

THE TRANSFORMATION OF ENGINEERING PROFESSION  
IN POST-SOVIET AZERBAIJAN

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## **ABSTRACT**

### **THE TRANSFORMATION OF ENGINEERING PROFESSION IN POST-SOVIET AZERBAIJAN**

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This thesis investigates how the changing relationship between state and society in the course of the post-Soviet transformation has affected the engineering profession in Azerbaijan. Utilizing qualitative methodology, namely, in-depth interviews with Soviet educated and post-Soviet engineers, I explored the changes in the profession along three dimensions: work orientations, informal relations among engineers and state bureaucracy, and the impact of global actors on the professions. Partial retreat of the state did not lead to re-professionalization of engineering profession along the lines of neo-weberian theory of professional autonomy. The impact of postsocialist transformation has been uneven, and led to stratification of the profession. A small group of engineers working in the oil industry has joined the ranks of global professional class. Engineers from manufacturing sector, which declined the most, either left the profession or reskilled and found new jobs in the growing construction sector. De-prioritization of industry and informalization of state bureaucracy led to decline in the quality of education and professional standards; individual engineers have struggled to maintain their professional values through informal mentoring and maintaining close ties with their professional circles. Engineers see the prospects of their profession as dependent on the economic strategy of the state.

**Keywords:** post-Soviet transformation, professions, engineers, informality,  
Azerbaijan

## ÖZ

### POST-SOVYET AZERBAYCAN'DA MÜHENDİSLİK MESLEĞİNİN DÖNÜŞÜMÜ

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Bu tez, post-Sovyet dönüşüm süresince devlet ve toplum arasındaki değişen ilişkinin Azerbaycan'da mühendislik mesleğini nasıl etkilediğini araştırmaktadır. Sovyet ve post-Sovyet dönemde yetişmiş mühendislerle derinlemesine mülakatları içeren nitel araştırma yöntemlerini kullanarak, meslekteki değişiklikleri üç ana boyutta ele almaktayım: mesleki yönelimler; devlet bürokrasisi ile ve mühendisler arası enformel ilişkiler; küresel aktörlerin mühendislik mesleğine etkileri. Devletin ekonomi ve toplumsal yaşamdan kısmi geri çekilmesi, mühendislik mesleğinde neo-Weberci türden bir mesleki otonominin ortaya çıkmasına yol açmamıştır. Post-sosyalist dönüşümün etkileri eşitsiz olmuş, ve meslekte bir tür yeni tabakalaşmaya yol açmıştır. Petrol sanayiinde çalışan küçük bir grup küresel profesyoneller sınıfına dahil olmuştur. En büyük düşüse uğrayan imalat sektöründeki mühendisler ya mesleği bırakmışlar, ya da gelişen inşaat sanayiinde iş bulmak için yeni mesleki beceriler edinmişlerdir. Sanayinin öncelikli konumunu kaybetmesi ve devlet bürokrasisinin enformelleşmesi sonucunda eğitimin ve mesleki standartların da kalitesinde bir düşüş yaşanmıştır. Kimi mühendisler, mesleki değerlerin korunması için enformel akıl hocalığı ile mesleki çevreleri ile sıkı bağların korunmasına yönelikmiştir. Mühendisler, mesleklerinin geleceğini, devletin ekonomi stratejilerine bağlı görmektedir.

**Anahtar Kelimeler:** post-Sovyet dönüşüm, meslekler, mühendisler, enformellik, Azerbaycan.

*To My Parents*

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## **LIST OF ABBREVIATIONS**

ADR	Azerbaijan Democratic Republic
AZI	Azerbaijan Industrial Institute (currently Azerbaijan State Oil Academy)
AZPI	Azerbaijan Politechnical Institute (currently Azerbaijan Technical University)
BO IRTO	The Baku Branch of Imperial Russian Technical Society
CPA	Communist Party of Azerbaijan
CPSU	Communist Party of Soviet Union
Fabzavkom	Factory and Plant Committee
GOSPLAN	State Planning Committee
GULAG	Main Camp Administration
ITR	Engineering-Technical Employees
NEP	New Economic Policy
OKB	Special Research Bureaus
PSA	Production Sharing Agreement
SOCAR	State Oil Company of Azerbaijan Republic
Sovnarkhoz	Soviet of People's Economy
VAI	All-Russian Association of Engineers
VARNITSO	All-Soviet Association of Scientific and Technical Workers for Socialist Construction
VSNKh	Supreme Soviet of the People's Economy
VTUZ	Higher Technical Educational Institution

VUZ              Higher Educational Institution

Zavod-vtuz    Factory college

## **CHAPTER 1**

### **INTRODUCTION**

This dissertation aims to analyze how the changing relationship between state and society in the course of the post-Soviet transformation has affected the engineering profession in Azerbaijan. In Soviet times, engineers were one of the largest groups of professionals in Azerbaijan, and especially in Baku and its suburban areas, working in many industrial enterprises. Indeed, Baku has been an industrial city since late 19<sup>th</sup> century, thanks to the industrial extraction of oil, which at its peak in 1901 constituted more than half of the world oil production (Goldman 2008: 4). In Soviet period, Baku and its suburbs remained highly, if not overly industrialized, as in addition to the oil industry Soviet Azerbaijan's economy was diversified to include machinery, chemical, and electronics industries. For Soviet authorities, industrialization was a measurement of success in modernization and development. In addition to the positive ideological implications, industry also meant investments, not only directly in production, but also in education and social welfare.

In Soviet society, engineers had a special place. Being involved in the highly prioritized sectors of economy, particularly, industrial production, they symbolized modernity values of scientific progress and development. But engineering was also a major avenue of social mobility: higher education in engineering remained the most accessible till the end of Soviet Union; various evening and distance learning programs made it accessible even for full-time workers. Employment opportunities were also ample, thanks to Soviet industrial policies that sought to develop industrial production all over the territory of the country. In Azerbaijan, by the end of Soviet Union, three different higher educational institutions were training engineers of various specializations – compared to only one Medical Institute.

Profession of an engineer also guaranteed access to many social benefits and privileges, from vacations to housing, which were allocated by the enterprises and trade unions. And finally, Soviet engineers formed a cohesive group with shared culture and a worldview that emphasized science, progress and development (Lipovetsky 2013).

But if in Soviet Azerbaijan engineering was one of the most numerous and salient professional groups, the collapse of socialism and dissolution of Soviet Union had hit it harder than other professions. Two other major Soviet occupations, doctors and teachers, despite the drastic decline in their incomes and standards of living, were at least able to retain their public sector jobs, as few schools or hospitals were closed. For engineers, the disruption of industrial links with other parts of former Soviet Union and withdrawal of investment meant that their former workplaces stopped operations, ceased payments of salaries, or even closed down. A “former engineer”, who in the post-Soviet period often became a repairman, a taxi-driver, an accountant, a shop-seller, or a businessman/woman became as much a symbol of postsocialism as an engineer was the symbol of previous social order. Without the ideological backup of Soviet variant of modernization, engineers also disappeared from the public discourse, much like the working class.

It was in this context of deindustrialization that I had entered the field for my first pilot interviews, with an intention to map the trajectories of post-Soviet social mobility of mostly former engineers, which I expected to be mostly downwardly mobile. However, I soon discovered that the post-Soviet transformation of the profession was much more complicated than the narrative of decline: that deindustrialization was highly uneven, hitting some sectors hard while leaving others more or less intact; that the trajectories of social mobility were rarely unidirectional; that there were many ways to remain engineer, to return to the profession, and even when such return was not possible, to retain the professional identity. The transformation that is still unfolding involves a complex interaction of state, society, market, and global capital, all of which work to restructure and redefine both the meaning of being an engineer and the content of engineering

work. It is this complex and uneven transformation that this dissertation seeks to illuminate.

Professions have a long history in sociology which can be traced back to Durkheim's ideas of professions as primary sites of social solidarity and ultimately the mediating institutions between individual and society (Durkheim 1984, 1992). While few contemporary scholars endow professions with the same degree of salience that Durkheim did, professions and professionals remain important actors in all modern societies, due to their positionality at the nexus of state and market institutions. This position – at the nexus of state and market – makes professions a fascinating subject to research in postsocialist societies, which have been profoundly affected by the triple – political, economic and social – transformation. The study of these changes in professions can thus yield important insights for our understanding of postsocialist change in general. Yet, in the by now vast research on postsocialist transformation, professions and occupations have been a rather marginal topic. Especially in the former Soviet Union, which was previously closed for social science research, the dramatic political changes, the acute character of many ethnic conflicts, and the eruption of new identities had dominated both public discourse and scholarship. Even a cursory look at the scholarly literature published in 1990s and early 2000s suggests that the main topics of interest were transition to market economy (Aslund 2002, Eyal et al. 1998), political transformation, including the role of political elites and especially democratization (Dawisha and Parrott 1994, Linz and Stepan 1996), nationalism and ethnic conflicts (Beissinger 2002, Smith 1999, Tishkov 1997), and gender (Ashwin 2000, Buckley 1997). In this context, professions and occupations appeared to be less salient and attractive topics.

One of the reasons behind this relative lack of attention to postsocialist professions is the limited applicability of existing theoretical approaches to professions. These approaches were developed in markedly different Western capitalist contexts, and do not take into account the specifics of socialist experience. Political and social institutions and markets for professional services which were crucial in

development of capitalist professions often did not exist in socialist societies and are only beginning to emerge in postsocialist countries. Furthermore, the frameworks developed in capitalist contexts cannot adequately capture the specifics and complexity of the impact of postsocialist transformation. In particular, the conceptualization of the state that is adopted in Western approaches to professions is often inadequate for dealing with the significantly different configurations of state-society relations in socialist and postsocialist societies. I argue that the sociology of postsocialist professions needs a more refined understanding of the multifaceted role of the state in organization of professions that would also be more sensitive to the socialist legacies. My dissertation takes up this issue by focusing on engineers' personal perceptions of post-Soviet transformation and their micro-level interaction with the state. The main question that I seek to explore is how the changing relationship between state and society in the course of the post-socialist transformation has affected the engineering profession in Azerbaijan.

In this introductory chapter, I offer a brief review of existing theories on professions focusing especially on their applicability to socialist and postsocialist contexts. In this review, I identify issues which are not adequately dealt with in the existing theoretical approaches and suggest possible solutions. I begin with a brief note on the definitions of professions, and the differences in capitalist and socialist approaches. I then review existing theoretical approaches to professions and discuss their applicability to socialist and postsocialist contexts. After the theoretical review I justify my choice of engineering profession in terms of its relevance for theory of professions. Section 1.4 introduces the reader to the context of Azerbaijan, focusing on changing state forms and the existing, rather limited, research on professions. In section 1.5 I describe my research question and the contribution to the literature that this dissertation seeks to make. In section 1.6 I outline the methods I have used in this research and describe the research process. I conclude with an outline of this dissertation.

## **1.1. Professions and occupations: problems of conceptualization**

The concept of professions has been a matter of considerable debates in sociology over the course of last century, and these debates still have important theoretical implications. In English language literature, three main approaches to the concept of professions can be identified: normative, taxonomic, and strategic (Saks 2012, Evetts 2013). Normative approach distinguished professions from other occupations based on their high status and role in maintaining of social order, with two classical professions – law and medicine – often used as ideal-typical models. This approach can be traced back to Durkheim (1984, 1992) and has been typical for early functionalism (Carr-Saunders and Wilson 1933, Parsons 1939). Scholars who employed the taxonomic approach were concerned with the distinction between professions and occupations. This was done by identifying specific features, or traits, of professions. Thus, if occupation refers to any regular engagement for the purpose of making a living, professions were understood as occupations that require complex knowledge base, obtained through specialized education, and characterised by 'service orientation' of practitioners (Parsons 1939: 458-459, Sciulli 2005: 916). Status, professional autonomy, self-regulation, 'level of professionalization' are other often cited traits of professions (Wilensky 1964). The approach was criticized for creating extensive lists of traits some of which inevitably overlapped with features of non-professional occupations or contradicted each other. Yet the link of professions with abstract body of knowledge, established within this framework, still remains relevant and is used in almost all current definitions (Saks 2012). Third, and finally, the strategic approach is associated with neo-weberian or 'power' perspective on professions. Scholars working in this framework focused on the monopolistic occupational control and the collective strategies of upward social mobility employed by various occupational groups (Freidson 1970, Larson 1977). An existence of such strategy, known as 'professional project', is what neo-weberian scholars identified as the core of professionalism (Larson 1977). This approach therefore abandoned structural definitions and instead sought to define professions by their collective agency. Paradoxically, the focus on strategies rendered the distinction between professions and occupations, which informed much of early research, obsolete and unuseful, as

it was demonstrated that non-elite occupations, sometimes dubbed as 'semi-professions' can also employ similar collective strategies in their attempts to control share of market (Etzioni 1969).

In continental Europe, the very term 'profession' was imported from Anglo-American literature after Second World War. Until then, what is now usually referred to as professions has been conceptualized as part of the educated middle class or civil service (Sciulli 2005, Jarausch 1990). As the concept of profession became widely adopted by sociologists outside of England and the US, and as sociology of professions itself adopted a more inclusive and comparative approach since 1980s, the conceptual distinction between professions and occupations became increasingly blurred. One of the responses to these conceptual difficulties was the trend by some scholars to abandon the concept of 'profession' altogether as overloaded, and replace it with 'knowledge-based occupations' or 'expert occupations', while retaining much of the problematic of the sociology of professions (Gorman and Sandefur 2011). In Russia and Soviet Union, the concepts of profession and occupation have been synonymous (Abramov 2014: 5-6; Ashwin and Popova 2006: 1413); 'professional' refers more to the mastery of skills and knowledge, both manual and mental, than to organizational characteristics of an occupation. In Soviet tradition of industrial sociology, the term 'specialist', referring to professionals with specialized higher education, was also used. The term is roughly equivalent to Western member of a knowledge-based occupation (cf. Abramov 2014).

Currently, although the debate is not settled, most scholars have 'moved on' (Evetts 2003; 2008: 527) from it, and simply provide their own operational definition of profession or occupation they are analyzing. I follow this suit, and use the term 'profession' to refer to any occupation which requires specialized training, usually at tertiary level. Because of my empirical focus on Soviet engineering profession, I also sometimes use the terminology of 'specialists' which is still widely used in the post-Soviet countries, to refer to professionals.

## **1.2. Review of literature**

### **1.2.1. Emergence of professions: the western view**

The emergence of professions is linked to European modernity and the rise of capitalism in 18<sup>th</sup> -19<sup>th</sup> centuries (Krause 1990, Krause 1996, Larson 1977 and 2005, Lo 2005, Johnson 1995). Professions do have links to premodern occupations and institutions such as crafts, guilds, and master-apprentice training arrangements, but it was the modern division of labor, brought about by industrialization, that produced the separation of specialized areas of knowledge which formed the basis of professions as expert occupations (Krause 1996). The development of science as a rational basis for solving social problems, and of universities as institutions providing formal education, as opposed to informal training in crafts, also played an important part in genesis of professions. The first 'classical professions' usually include law and medicine. Over the course of 19<sup>th</sup> century the list of expert occupations expanded and gradually came to include architects, engineers, and accountants; and multiplied in 20<sup>th</sup> century, leading some scholars to speak of "professionalization of everyone" (Wilensky 1964).

The intersection of two major institutions of modernity, the market and the state, is generally recognized as having been crucial in genesis of modern professions (Krause 1991, Jarausch 1990, Lo 2005). Initially the sociology of professions focused on the role of market forces rather than that of state bureaucracies. This was especially so in Anglo-American sociology, where the discipline of sociology of professions had originated. According to the functionalist view, which dominated the field until 1970s, the so-called 'free professions' were seen as the ideal-typical model of professionalism: professionals were self-employed solo practitioners guided by 'service orientation' to their clients. Their income, social status, and prestige were seen as ultimately depending on the market demand for their services (Parsons 1939). Beginning in 1970s, an alternative approach to professions emerged, critical of the functionalist focus on social integration and service ideals. This approach built on Weber's ideas about class, particularly commercial classes, which Weber defined as based on "marketability of goods and

services”, and social closure (Weber 1978: 302; 342). Weber considered most professionals to belong to “middle class”, and their class situation to be based on their qualifications and skills, which are their “opportunities for income” (Weber 1978: 304). These groups, like any groups with shared interests, seek to limit social and economic opportunities to outsiders. Accordingly, in this framework professions are conceptualized as self-interested collective entities seeking to establish control and monopolize sectors of the market, and the research focused on the strategies of market closure and professional dominance (Freidson 1970), later conceptualized as 'market shelters' (Freidson 2001). In a similar line of thought, Larson (1977) analyzed “professional projects” – the complex collective strategies of upward social mobility employed by different professional groups in order to maximize economic and status rewards from their skills and work. Finally, Abbott (1988) in his seminal study argued that market competition between various professional groups over specific jurisdictions, or task areas, was the major driving force behind professional development. While these approaches were critical of the earlier functionalist understanding of professions, they also put market rather than the state at the center of their analysis.

The research that emphasized the role of market in professions was based on Anglo-American historical experience. From this vantage point, the role of the state was seen as limited to the protection of professional monopoly, e.g. through licensing (Abbott 1988; Freidson 1970: 44) American sociologists did recognize that in other parts of the world, namely, in continental Europe, the historical trajectories of professions differed significantly and that state had played a more important role (Abbott 1988: 157-167, Freidson 1970: 23-46). However, the role of the state was rarely at the center of scholarly attention, and what was in fact historically contingent form of organization of expert work in England and North America became seen as a universal model. It was only after the emergence of historical-comparative studies of professions in 1980s that the role of the state in the development of professions became consistently examined in English-language literature (Rueschmeyer 1986, Burrage and Thorstendahl 1990, Thorstendahl and Burrage 1990, Krause 1996, Evetts 2008, Neal and Morgan 2000, Le Bianic 2003).

These studies followed the turn towards historical-comparative analysis in sociology, signaled by Evans et al.'s (1985) seminal work tellingly entitled "Bringing the state back in". As these studies showed, in continental Europe, in contrast to England and North America, the state and not the market has been central in development, regulation and organization of professions. In this model of professional development, which Siegrist (1990) dubbed as 'professionalization from above', the ideal type of professional was originally not the free practitioner, but its opposite – the civil servant. In Europe, and especially in Germany where this model is epitomized, state bureaucracies were the major employers of university graduates, incorporating them in civil service. Moreover, the universities, and therefore the production of the very knowledge base of professions, were also inextricably linked to state bureaucracies. The state not only provided funding for universities, but also incorporated the professoriate in the ranks of state bureaucracy and exercised ideological control over appointment of professors as well as the content of what was being taught (Krause 1991: 8). This 'bureaucratic' model of professionalism became so influential in continental Europe that even professionals employed in the private sector sought to emulate its features:

The civil service status with its formalized qualifications, seniority rights, salary classifications and tenure guarantees was not fully applicable in capitalist firms which became the main field of employment for engineers, managers and other experts, nor was it fully applicable in the world of the 'liberal' professions of self-employed lawyers, doctors, pharmacists and others. Still, the widespread acceptance of the civil service status as a model within the professions was significant. It influenced the way in which they formulated their demands and expected the state to support them. It indicated the close affinity between professionalization and bureaucratization in Germany [and Scandinavia]. (Kocka 1990: 73)

In spite of these differences, Anglo-American and European models of professionalism share considerable commonalities which had allowed for convergence of Anglo-American and European traditions of research on professions. In each of the models, both market and the state exert influence on

professions. Terence Johnson, for example, argued that the role of the state in Anglo-American contexts was in fact underestimated in literature due to ideological reasons (Johnson 1972). At the same time, in continental Europe “the bureaucratically created professions soon assumed a life of their own and began to resemble their western counterparts” (Jarausch 1990: 12). Further research had shown that even in early 20<sup>th</sup> century Europe, despite the dominance of the state, the professions still were able to gain some organizational autonomy which allowed them to strive for greater occupational control and bargain with the state (MacDonald 1995: 100; Jarausch 1990: 14-15; Malatesta 1995). In the post-war period there has also been much convergence between the two models. Thus, in North America and Britain professionals are increasingly employed by large organizations, distancing them from the free practitioner ideal and making them susceptible to the logics of bureaucratic and hierarchical organization (Hall 1968; Derber 1983). In Europe, after 1970s, the rise of neoliberal policies led to partial deregulation of professions and left them more open to market forces than before (Evetts 2008). The most important legacy of the two models and the two respective traditions of studying them has been the recognition of the importance of both state and market in shaping modern professions. However, both models deal with professions in capitalist societies. In the following section I describe how these models were applied to professions under socialism and their limitations.

### **1.2.2. Socialist professions**

Sociology of professions did not explicitly claim professions to be a specifically capitalist phenomenon – rather, they were described as a phenomenon associated with modern industrial societies. Yet, in practice they were conceptualized and treated as pertaining to capitalism, as socialist modernity played little role in the thinking of scholars of professions. The existence of professions, or, rather, expert occupations, in socialist societies was generally acknowledged, but they were rarely subject to serious analysis, and were usually mentioned only in passing. To some extent, this was due to the lack of empirical access to socialist societies: only after the fall of the Iron Curtain did analysis of socialist professions make its way

into English-language scholarship. Scholars who engaged in such analysis used the conceptual tools developed for different contexts, and the dichotomy of state and market, typical for capitalist societies, underpinned this analysis from the very start. The most obvious way forward for the analysis of professions under socialism has been the historical-comparative approach. Historical origins of expert occupations in Eastern Europe and Russia belong to the European bureaucratic model of professionalism, sharing with it the bureaucratic organization, the university system, and affinity with civil service (Krause 1991). Similarly, there also existed some market elements, such as private practice and professional associations (Balzer 1996). The rupture with European model of professionalism came only after the adoption of socialist system: after Bolshevik Revolution of 1917 in Russia and after 1945 in Eastern Europe. Market had been mostly eliminated, at least formally – some residues of market relations survived in what became known as 'shadow economy'.<sup>1</sup> Shadow, or second economy in socialist countries refers to the income generating activities and circulation of goods and services outside the formal system of state distribution (Stark 1989, Ledeneva 1998; see also chapter 4). Such economy included wide range of activities, from clandestine production of goods on state-owned premises, to provision of professional services, both in exchange for other favors and informal payments. Private tutoring and informal payments for sophisticated medical procedures are two common examples of professional services available in the 'second economy'.

Yet, for the most part, the organization of professional work was controlled by the state and the Communist Party; this involvement by far exceeded the role of the state in Western Europe. Elliott Krause places socialist professions on "a continuum of profession-state relations, ranging from the essentially private professions with limited state involvement and employment (the American example), to the state-involved professions of Western Europe, to the primarily state-located and state-

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<sup>1</sup> There exists some variation in terms of formal acceptance of market in various socialist countries and various times. Thus, the New Economic Policy period in Soviet Union (1921-1928) allowed for some private practice of doctors, lawyers and other educated specialists. Similarly, in late socialist Poland and Hungary doctors and lawyers were able to open private practice. Yet the official scope of the market remained minimal. For more detailed account of socialist professions see Jones (1991).

employed professions of Eastern Europe” (Krause 1991: 4). Thus, socialist professions are conceptualized as essentially similar to their Western counterparts. The differences between the two types are seen to lie in the extent of the influence of the state. Following this logic, the introduction of market forces, and thus the diminishing role of the state after the demise of state socialism would lead to a greater convergence between the two types of professions, allowing them more autonomy and self-regulation (Jones and Krause 1991). This view of socialist and postsocialist professions remains dominant today, and there indeed is some convergence between post-socialist professions and those in the West in terms of greater organizational autonomy of professions from the state. However, as I discuss later in this chapter, this convergence has been far from universal, and there are also other processes that impact post-socialist professions.

Two related assumptions, both rooted in neo-weberian approaches to professions, underpin this view of socialist and now of postsocialist professions: of professional autonomy as the main defining feature of professionalism, and of the state as a unitary actor external to society. I argue that both of these assumptions are problematic in socialist contexts, and remain problematic in postsocialism as well. In the rest of this section, I discuss these two assumptions before turning to postsocialist professions.

#### *Professional autonomy in capitalist and socialist contexts*

Professional autonomy has long been considered one of the central features of professionalism. The concept goes back to the Anglo-American model of professional as a self-employed practitioner: as such, he or she (although at that time it was usually 'he') was seen as possessing ultimate autonomy, being free from external intervention and in full control over the way his or her work is carried out. Regulation, if any, was not imposed by external actors, but came from peers – from bodies of self-regulation, such as autonomous professional associations. This understanding of professional autonomy was carried over and developed in neo-weberian studies of professions, where it is directly linked to the concept of

occupational control Freidson (1970: 44) defined professional autonomy as “sufficient power [...] to control virtually all facets of its work without serious interference from any lay group”. Two aspects of such autonomy have been examined in the literature: technical and organizational. Technical autonomy refers to the control of professionals over the technological aspects of their work, i.e. professional discretion and the freedom of the professional to carry out his/her work in a way he/she sees fit, without external interference. Organizational autonomy refers to the ability of a profession to collectively establish its own standards of practice and knowledge, and the degree of corporate self-regulation usually vis-a-vis the state (Freidson 1970: 23-24, Evetts 2002). Professional autonomy of such 'comprehensive scope' (Freidson 1970: 44) combining both technical and organizational aspects as originally defined by Freidson is rarely attainable – rather, it is an ideal type (Evetts 2002: 342). In real life, professional autonomy has always been constrained both by market and bureaucratic forces (Freidson 2001). From the market side, clients often have an influence over the way individual professionals carried out their work (Johnson 1972, Derber 1983). From the bureaucratic side, states can limit autonomy of professionals by regulating various aspects of their work and subduing them to external rules.

It is the organizational aspect of autonomy that is usually considered to be directly affected by the relationship with the state. In classical, Anglo-American account of professions, self-regulated professional institutions “have monitored education and training requirements, accredited institutional provision of training, awarded and renewed professional licenses, controlled aspects of professional practice and disciplined recalcitrant members” (Evetts 2002: 341). Professions also controlled their own size, by establishing the numbers of students to be trained. In both classical functionalist and neo-weberian approaches the existence of such institutions of self-regulation was often regarded as the main feature of professions, as opposed to occupations, which are distinguished in accordance to specialized division of labor, or “task area” (Abbott 1988: 33, 103). The process whereby occupations develop such institutions and gain this level of control is referred to as professionalization (Wilensky 1964; Neal and Morgan 2001).

In capitalist countries, especially in Anglo-American contexts, professionals have been usually described as having considerable organizational autonomy, with a wide network of professional organization bodies. The greatest threat to professional autonomy was believed to come from salaried employment in large bureaucratic organizations, and it affected the technical autonomy, or the discretion of the professional in performing his or her work (Hall 1968). Large bureaucratic organizations, if they are headed by managers who are not of the same profession as their employees, are referred to as 'heteronomous' (Abbott 1988: 125). They are different from autonomous organizations, such as law or accounting partnership firms, where professionals are managed by other professionals. In the most pessimistic view, the rise of salaried employment in such organizations could lead deprofessionalization or proletarianization of professionals, similar to the process experienced by craft workers in 19<sup>th</sup> century (Derber 1983 Braverman 1974, others).

The proponents of proletarianization thesis argued that

professional autonomy, under the emerging conditions of proletarianization, assumes largely symbolic forms. Professionals do not punch time-clocks and typically are free from extensive supervision, but are subjected in a more profound sense to the underlying regimens and constraints of proletarianized labor. Their work is folded into a division of labor conceived and enforced by management and they work according to the imposed rhythms of the organization and procedures and technology subject to administrative approval and review, if not outright dictation (Derber 1983: 310)

However, further research revealed that the impact of heteronomous employment on individual professional autonomy was more nuanced. Professionals generally managed to retain control over technical side of their work, due to often esoteric character of their knowledge; but they were less able to retain control over the choice of their job tasks or set their own goals (Derber 1983, Larson 1980, Baylin 1985, Evetts 2002). These two aspects of individual workplace autonomy were variously referred to as technical vs ideological (Derber 1983) or operational vs

strategic (Baylin 1983). More recently, Evetts (2002) had re-conceptualized such control over work as discretion – the process that 'enables workers to assess and evaluate cases and conditions, and to assert their professional judgment regarding advice, performance and treatment' (Evetts 2002: 345).

The ideal type of comprehensive professional autonomy combining organizational and technical aspects was also applied to socialist professions, despite the fact that the empirical research in capitalist societies has established that comprehensive professional autonomy is unattainable and inevitably constrained to various degrees. As such, socialist professions were viewed as lacking autonomy and described as 'deprofessionalized'. Thus, writing about Soviet engineers, Gloeckner contends that their "professional autonomy was abolished in a professional as well as organizational sense" (Gloeckner 1991: 111). Similarly, Krause considers Soviet doctors 'proletarianized' (Krause 1991:12). Indeed, socialist professions lacked independent professional associations which were either abolished or subordinated to the state (Krause 1991, Bailes 1978). For example, in Soviet Union, most of such professional associations, along with other civil society organizations were closed down after 1928, and replaced by state-sponsored organizations and trade unions (Evans 2006, Ilyna 2002). For most professions, the 'professional' basis of the organization was abolished: thus, trade unions, the largest social organizations in Soviet Union, which in Russian were called '*professionalnie soyuzi*', united those working in the same industry rather than in the same profession (Ashwin and Clarke 2003, 17-22). The only exception from this rule were the so-called 'creative unions', or the organizations of creative professions such as Unions of Artists, Architects, Composers, and Writers (Tomoff 2006). The functions of such organizations also differed from those of traditional professional associations: thus, Soviet social organizations of professionals could no longer independently establish standards of their profession; the numbers of students of various specializations were determined by the government; and the organizations had no impact on the content of university curricula (see Fitzpatrick 2002 for a detailed account of the changes in higher education system in Soviet Union). In their modernization efforts, socialist states educated very large numbers of specialists,

especially doctors and engineers, leading to overproduction (Kryshtanovskaya 1989, Krause 1991, Abramov 2014). This, in turn, resulted in a decline of their status and professional prestige (Krause 1991). At the same time, professionals under socialism managed to retain considerable technical autonomy, i.e. control over technical side of their work, although the extent of such autonomy varied at different time (Freidson 1970, Field 1991, Hoffman 1997).

It is important to note that broad technical autonomy in socialist workplaces was not unique to knowledge-based professions alone. On the contrary, as research on labor process in socialist countries has shown, all workers in Soviet-type economies in post-Stalinist period generally enjoyed a rather broad workplace autonomy compared to capitalist countries (Burawoy and Lucacs 1985, Burawoy and Krotov 1992, Kalleberg and Stark 1993, Lado et al. 1989). Lower level management was also rather autonomous and flexible in their choice of methods of work (Linz 1988). While local low level managers could not set their monthly/quarterly/yearly plan targets, they could exercise considerable discretion as to how and when achieve these targets. Slacking off in the beginning of report periods and 'storming' before deadlines are two typical examples of such workplace flexibility (Linz 1988: 186-187). This independent discretion was often required of workers because of the uncertainty of the production process, so they had to improvise in order to get the work done. Consequently, it was sometimes referred to with an oxymoronic term of 'forced autonomy' (Linz 1988, Lado et al. 1989, Kalleberg and Stark 1993).

This paradox – limited organizational and broad technical autonomy under socialism – although acknowledged by sociology of professions, was not elaborated upon. Instead, socialist professions were predominantly defined in terms of their organizational autonomy, and consequently, in terms of their relationship with the state. The conceptualization of this relationship was also borrowed from Western view of professions. I turn to this issue in the next sub-section.

#### *State and society in capitalist and socialist contexts*

In Western professions, the dominant view of the state has been as a unitary entity that is separated from society. This conceptualization of the state can be traced back, once again, to the Anglo-American sociology of professions. According to the society-centered, bottom-up view of professionalization, the state was conceptualized only as a provider of legitimacy to professions, which have already been established within civil society (Freidson 1970, Abbott 1988). Because of this limited focus on just one dimension of state's activities it was perceived as unitary and homogeneous (Fielding and Portwood 1980: 26). The state-centered approach challenged the perceived unity and homogeneity of the state and offered a more disaggregated view of state's engagement with professions. For Johnson, "The view that professionalization is not a single process with a given end-state also suggests that the relationship with **changing state forms** was also in flux" (Johnson 1982: 208, emphasis added). Indeed, in continental Europe, on which the state-centered studies of professions focused, the multidimensional character of the state involvement was apparent, as the states operated at the same time as creators of professional work, legitimating bodies for established professions, and employers of professionals. As Le Bianic noted, "the state apparatus comprises various segments, each acting in a different way towards the professions, and trying to promote a particular segment within the profession" (Le Bianic 2003: 2).

Yet, this clear-cut separation between state and society does not hold true in many non-Western contexts. Thus, in Turkey, state had played "economy and society shaping" role (Buğra 1998: 523; see also Buğra 1994 on the history of state-business relations in Turkey). With regards to socialist countries, where the "central role of the state" cannot be ignored (Krause 1991: 3), Elliott Krause suggested even more disaggregated conception of state. For him, state in relations with professions is a manifold entity whose subdivisions can have their own political interests. He suggests three sets of issues that need to be addressed in the analysis of these relations: the structure of the state, meaning the level of centralization and the system of coordination of different state bodies, the power-efficiency of the state, referring to the 'extent to which the state is capable of imposing its will on a

population' and various social groups, including professions, and the legitimacy of the strong central state which can result in either compliance or resistance from the side of professional groups (Krause 1991: 6).

Yet, while the view of the state as unitary and homogeneous has been challenged in sociology of professions, the idea of the separation between state and society has been more entrenched in the discipline, and particularly in research on socialist and post-socialist professions. This idea goes back to Scottish Enlightenment and the work of Hegel, and it has been developed in the context of Western modernity, capitalism and democracy (Hann 1996). In this framework, the state was envisioned as basically an administrative apparatus which exercises power over population, through both coercion and consent. The society, on the other hand, is the locus of independent, autonomous activities of individuals and their groups. State may oversee, control, provide security and intervene in other ways, but it is seen as remaining ultimately external to society. In sociology of professions, this view of state as external to society usually manifests itself in the language of 'state intervention' that is common in both state-centered and society-centered approaches. Thus, in his discussion of the role of state in development of French professions, Abbot describes this role as 'intervention' (Abbott 1988: 157-165; see also Rueschmeyer 1986).

Few scholars of professions have challenged the relevance of this paradigm for western professions: thus, Jarausch (1990) argues against a state-centered view that conceptualized German professions as being *created* by the state that is itself located outside of them. He contends that being incorporated into state bureaucracy professions and professionals could actually shape state policies, thus blurring the boundary between the two:

In contrast to the claim that their academic callings were created from the outside, German practitioners did play an important role in the emergence of their own professions. The *Berufskonstruktion* thesis underestimates the experts' individual influence in and collective impact on ministries or

industrial firms. It was not at all uncommon for former practitioners to become high-ranking bureaucrats or to mobilize the educated public on their behalf (Jarausch 1990: 16).

Terence Johnson in his later work goes even further and questions the paradigm that sees state and professions as separate entities (Johnson 1993). Instead, using Foucauldian approach, he suggests to conceptualize relations between professions and the state as a set of practices, all of which had been brought about by the rise of disciplinary power during modernity. But despite these criticisms and correctives, the notion of separation between state and society remains influential in the field. In research on socialist and post-socialist professions, the notion of state intervention has been almost universally accepted (Krause 1991, Kennedy and Sadkowski 1991, Hoffman 1997, Sanghera and Ilyasov 2008, Sanghera and Ilyasov 2008a, Riska and Novelskaite 2011, Buchner-Jeziorska and Evetts 1997, Seal et al. 1996). Yet it were precisely socialist states that have explicitly rejected such vision of state and society, in both theory and practice, and sought unity of the two. In the words of Grzymala-Busse and Luong, communist leaders “purposefully blurred the distinction between state and society in both their rhetoric and policy efforts” (2002: 534). Party-state and monopoly over system of allocation were two main mechanisms of this unification of state and society. Communist parties formed a set of institutions which considerably overlapped with formal state structures (Nettle 1968, Pakulski 1986). Formally, the aim of these overlapping institutions was the control of the state by what was nominally a social institution. In practice, Communist parties, especially in Soviet Union, performed many functions of state institutions (Nettle 1968). Together, state and party institutions monopolized the system of allocation of resources – which means both the production and redistribution of income, including welfare expenditure, organization of trade-unions, folk festivals etc (Verdery 1991). The merging of state and party institutions and the wide Party membership resulted in a situation where almost everybody could become a functionary of some sort (Migdal 2001: 258).

Thus, the mainstream accounts interpret interpenetration of state and society in

socialist countries in terms of control of the state over society. I argue that the reverse was also true, and that individuals and social groups were able to employ resources available to them through state and party institutions in order to influence and even shape them. Thus, the fact that all social organizations in Soviet Union were state-owned does not mean that professionals had no bargaining power. However, this bargaining power was directed not towards establishment of formal autonomy and market closure, as was the case in capitalist contexts, but rather towards maximizing control certain state and party institutions within the system<sup>2</sup>. Moreover, the rigidity of formal state structures was mitigated by proliferation of informal practices which allowed people to bend rules and 'to get things done' in their ways (Ledeneva 1998, Stark 1989). Under state socialism, the society and state therefore were intertwined in complex configurations that defy simple dichotomy. It is not possible to place any individual or groups, such as professions, firmly on either side of the divide, simply because the boundary between the two may not exist, may be blurred, or in a flux.

Furthermore, the particular configurations of state-society relations in socialist countries varied greatly across space, time, and different sectors of economy. First, there existed difference between Soviet Union and Eastern Europe. In Eastern Europe and Baltic republics of the Soviet Union, where socialist system was imposed on already existing independent states with some traditions of modern civil societies, the division line between state and society remained more salient and the state and society were not merged so deeply (Ekiert 1996, Grzymal-Busse and Luong 2002: 539). In Eastern Europe there even existed some formal autonomy in various sectors, such as Polish agriculture or Hungarian small business. In most of the Soviet Union, the permeation of social relations by party and the state went much deeper; yet there were also differences among different periods. Thus, during New Economic Policy (NEP) in Soviet Union in 1920s societal actors still possessed considerable collective autonomy in traditional sense; under Stalinism the autonomous associations were crushed, while in post-Stalinist

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<sup>2</sup> See Schmidt (2008) for an interesting account of such strategic competition between two branch ministries in late Soviet period

period state and society became so intertwined that drawing the boundary between the two became difficult.

Finally, even within Soviet Union, there existed difference among different professions. Thus, for example, in post-Stalinist period, lawyers, and particularly advocates, retained Collegium of Advocates, the analogue of the Bar in Anglo-American legal systems (Shelley 1991, Burrage 1990). In medicine, the classical and most researched profession in the world, the difference between minimal corporate and quite broad individual clinical autonomy could be observed (Field 1991, Freidson 1970). Both of these professions also remained to some extent dependent on relationships with their clients, and made use of informal payments, for example, for sophisticated medical procedures or legal services (Field 1991, Shelley 1991, Burrage 1990) In Czechoslovakia, many people chose to become doctors because they perceived this profession as non-political (Hoffman 1997). A different situation could be found in engineering profession which has become one of the major avenues of social mobility, as well as provided access to careers in state and party bureaucracy – *nomenklatura* (Fitzpatrick 1979, White and Kryshtanovskaya 1996). By virtue of their employment in industrial enterprises, most engineers in the country were incorporated in vertically integrated industrial systems, headed by a branch ministry, either at republican or Union level. Thus, they became part of large union-wide bureaucratic organizations, and not just of their immediate workplaces. As such, they had access to an array of resources and opportunities provided by this vertically integrates system, from vacations in distant parts of the country, to interest clubs, to post-graduate learning opportunities. Their professional experience also cannot be described in terms of heteronomy, as managers and administration of industrial enterprises were themselves engineers. They not only had formal engineering qualifications, but also usually followed a career path from blue-collar to engineering work within the same enterprise, and had strong corporate identities. More importantly for the purposes of this study, from 1960s onwards, engineering qualifications and experience became important asset for careers in Communist Party and state institutions, providing yet another avenue for blurring the boundary between engineering and the state. Thus, Soviet

economic ministries were usually headed by technocrats with extensive professional experience from blue-collar to engineering to managerial work (Kryshtanovskaya and White 1996).

### *Soviet state and the national scale of analysis*

A final issue to consider with regard to the role of the state in development of socialist and post-socialist professions is the nation-state bias that has informed both the sociology of professions and much of the research on post-socialism. As Evetts (2008: 525) had noted, literature on professions has until recently been dominated by 'within state theorising'. Driven by the aim of 'bringing state back in' the analysis of professions and emphasizing cross-national differences in organization of professions in European nation-states, the historical-comparative research on professions had inadvertently contributed to the reification of national scale of analysis (Faulconbridge and Muzio 2012: 140-141). Only recently this nation-state emphasis has subsided as scholars began to recognize how professions and professionals become increasingly affected by transnational forces such as the processes of economic globalization, the impact of transnational corporations, and supra-state regulation bodies, such as the EU and international organizations (Faulconbridge and Muzio 2012, Evetts 2008, Buchner-Jeziorska and Evetts 1997, Fourcade 2006). I return to these current transnational developments in later sections. More important for my present concern is the insufficient attention paid in sociology of professions literature to the historical forms of state regulation other than nation-state; namely, to imperial and colonial states. Among major theorists of professions, only Terence Johnson had devoted some attention to the role of imperial state (British Empire) in development of professions (Johnson 1982). In recent decades, more research on this subject began to appear, such as Ming-Cheng Lo's (2002) work on the role that Taiwanese physicians had played in the anti-colonial struggles, or the impact of post-colonial state institutions on development of accounting profession in former colonies (Anisette 2000), but it has yet to be incorporated in the mainstream research on professions.

With regard to socialist and postsocialist professions, the problem is further exacerbated by the assumption of nation-state as the 'model for political analysis', inherent in research on postsocialism (Kandiyoti 2002: 254). It stems from the focus of much of the research on Eastern Europe, where most countries became nation-states in the aftermath of WWI, and remained so throughout socialist period. The coextensive character of polities and national economies in Eastern Europe made it possible to speak of Polish or Hungarian professions much in the same way as of Italian or German professions, assuming relative homogeneity. Soviet professions were treated similarly, due to the central role of the state in organization of Soviet professions. In literature on Soviet professions, 'Soviet' usually means 'Russian' and findings concerning professions in urban centers of Moscow and Leningrad are extrapolated to the rest of country (see the essays in Jones (1991). The divergence in development of professions has been attributed to the post-Soviet period only (Riska and Novelskaite 2011, Sanghera and Ilyasov 2008 and 2009). Such a perspective glosses over the enormous internal differentiation in Soviet Union, both in terms of regional economic disparities and cultural diversity that may often surpass the differences *between* different Eastern European countries. Yet Soviet Union is better conceptualized not as a nation-state, but as a quasi-imperial formation, bearing many legacies of the Russian Empire, despite fervent anti-imperial rhetoric (Kandiyoti 2002, Heathershaw 2010). As such, the Soviet state had to develop various modes of interaction and accommodation to local societies, despite official centralization of state power and uniformity of formal institutions (Kandiyoti 2002, Luong 2000). For example, many observers have noted that in post-stalinist Caucasus and Central Asia, including Azerbaijan, local authorities were allowed considerable autonomy in their internal dealings, including informal networks of patronage and redistribution of resources, in exchange for political loyalty, adherence to economic plan targets, and ideological lip-service (Kandiyoti 2002, Luong 2000, Suny 1989).

The view of Soviet Union as a quasi-imperial state casts Soviet professions in a very different light. It suggests that despite standardized credentials, the role and meaning of professions varied in different parts of Soviet Union. Thus, the ethos of

colonial modernization and enlightenment of the backward societies informed professions such as teaching, engineering and medicine in the semi-peripheral and peripheral areas of the country, but was less relevant in European part of the USSR and especially the two capitals – Moscow and Leningrad. Furthermore, professionals in such areas were embedded in different social networks. It has long been known, for example, that in Central Asia and the Caucasus, the urban professional strata were disproportionately composed of the Russians and other Slavs, Germans (before WWII), and Jews, and in Azerbaijan and Georgia, also Armenians (Kandiyoti 2002, Lubin 1984, Pipes 1983). With the dissolution of Soviet Union many of such non-native professionals had left the newly independent states. The dissolution of the Soviet Union therefore had different effects on professions in different parts of the country.

### **1.2.3. Postsocialist professions**

These assumptions of state-professional relations that shaped scholarship on socialist professions – of professional autonomy as self-regulation and of the state as a unitary, homogenous, bound with nation but separate from society, have important implications for the study of postsocialist professions as well. The nexus of state and the emergent market became the main area of focus for scholars of postsocialist professions. The general expectation was that with the introduction of private enterprise and the withdrawal of the state and the Party from their regulatory functions, there would be some convergence with Western models of state professional relations (Krause 1991: 37-39), if not in their Anglo-American, then in Western European variant (Jones 1991: 234). Professions were therefore expected to 're-professionalize': to regain some of their organizational autonomy, understood as self-regulation via independent professional associations, that was lost during socialism. This was seen as a part of a more general process of expansion of civil society with a plethora of autonomous associations, which would be engendered by the breaking down of the party-state duality and the withdrawal of the state from many of its former functions. However, these expectations were not always materialized. As Hann had noted, "it has not been easy to establish the

rich network of associations outside of the state that comprises the essence of the romanticised western model of civil society” (1996: 8) Currently, civil societies in post-socialist countries are usually described as weak and driven by external donors rather than indigenous activity (Ergun 2005, 2010, Ishkhanian 2008, Ekiert and Kubik 2014).

This is not to say that the “re-professionalization” did not take place at all. Especially in Eastern Europe, professions did indeed begin to establish independent organizations (Benson 2002, Seal et al. 1996, Buchner-Jeziorska and Everts 1997). However, these organizations remain fairly weak, and re-professionalization is only a part of the story of the postsocialist development of professions, not the whole story. Even in Eastern Europe, where the states have adopted western liberal models of democracy, forces of unregulated market, globalization and vestiges of state regulation have been so far more influential than self-regulation in the early years of transformation (Seal et al. 1996, Buchner-Jeziorska and Everts 1997). For example, in Poland, “the withdrawal of the state from many functions connected with organizing the activity of a profession has not been replaced by professional self-regulation or by a state/professions partnership in regulation” (Buchner-Jeziorska and Everts 1997: 69). Rather, the professions were left “perhaps more susceptible to market mechanisms than either Anglo-American modes of self-regulation or western European models of state-profession partnership” (Jeziorska and Everts 1997: 71). In Czech Republic, a neo-weberian study of accountants that focused specifically on re-professionalization, understood as “a strategic project in which the participants’ attempts to control professional qualification, regulation and accounting knowledge are as significant as the new objective conditions created by the reform process”, found that post-socialism reforms did not bring about empowerment of the professions or rise in self-regulation (Seal et al. 1996). Rather, Czech accounting profession was more influenced by global accounting service firms (Big Six at the time of the publication of the article). Paradoxically, the national state has been crucial in promoting this external regulation, by adopting the *laissez-faire* ideology, which opened the country to the outside world but did not promote self-regulation at the national level. After the incorporation of most of

Eastern Europe in the European Union, the most significant processes related to professions in these countries have to do with harmonization of national and EU regulations, not with the development of autonomous national self-regulatory bodies (Evetts 2008).

In former Soviet Union, it appears that the withdrawal of the state did not lead to establishment of strong bodies of self-regulation either (Bazylevich 2010, Sanghera and Ilyasov 2008, Mansurov and Yurchenko 2013). One of the few examples of more or less successful re-professionalization appears to be Georgia, where lawyers have regained considerable autonomy (Waters 2004). However, the research on professions outside of Russia has been scarce, and little remains known. In Russia, western models of professionalization have been most useful for analysis of newly emerging professions, such as business managers (Abramov 2005, Moskovskaya 2010) and social workers (Iarskaya-Smirnova and Romanov, 2002), who are in the process of establishing closures for their professions. In the older professions, state remains an important actor, as it continues to employ most of professionals, and often provides access to state-controlled resources even for those who are only nominally employed and gain most of their income from private sector (Osinsky and Muller 2004, Ashwin and Popova 2006). Russian scholars of professions recognize the enduring importance of the state, and attempt to re-formulate western approaches. For example, with regard to public sector employees, the neo-weberian approach is reformulated so as to include, in addition to the traditional neo-weberian market closure, the “influence within the state sector in order to achieve upward social mobility and a legally underwritten monopoly” (Mansurov and Yurchenko 2013: 320). While such reformulation has helped to analyze 'strategies of upward social mobility' of Russian professionals and include those working within state sector, it leaves out of focus many other processes that are specific for the post-socialist transformation of professions but are not in line with neo-weberian conceptual frameworks. These include the reshuffling of post-socialist occupational structure and the ensuing changes in the prestige of various occupations, stratification and fragmentation of established professional groups, massive deskilling and re-skilling of professionals educated in socialist times as

they struggle to navigate the new realities of market. The privileged role of collective upward mobility projects within neo-weberian approaches to professions has led to the neglect of downward mobility of former professionals – a phenomenon that is very familiar to any student of postsocialism, but which is usually researched within fields other than sociology of professions.

To summarize, the research on post-socialist professions has been stifled by the use of conceptual frameworks that were developed in and for capitalist societies. Such theories are useful only insofar as they deal with processes and phenomena that resemble development of professions in Western capitalist societies, and especially for the emerging new occupations, but they are inadequate for dealing with the complexity of postsocialist development of professions. How can the study of socialist and postsocialist professions transcend this predicament? I suggest that two lines of inquiry, applied in parallel, can be helpful for resolving this predicament: first, situating study of professions in the multiple modernities framework, and second, contextualizing professions in their immediate social environments.

As I showed in earlier sections, from the early days of their sociological study, professions were conceptualized as specifically modern phenomena, different from pre-modern forms of organization of skilled and intellectual work (Lo 2005; Larson 1977, McDonald 1995). This emphasis on the links between professions and modernity was further strengthened after the historical-comparative turn in the discipline, when “scholars re-inserted professions in the historical transition to European modernity, viewing professionalization not as an independent process but a part of that macro history” (Lo 2005: 382) The major debate in sociology of professions – on the place of professions in relations to the formal structures of modern state and capitalist market, viewed as separate from each other, stems from the core modernist understanding of rationality and bureaucratization. In the studies of socialist and post-socialist professions, this implicit modernist framework is not problematized, partly due to focus on mid-level phenomena only, and partly due to transition paradigm, which informed much of the studies of postsocialism and saw

post-socialist societies as trying to recuperate with the lost Western modernity (Outhwaite and Ray 2005). Consequently, studies of socialist and postsocialist professions which are implicitly informed by this perspective, measure them against the model of capitalist, or more precisely, western modernity.

An alternative multiple modernities framework, conceptualizes modernity in terms of multiple paths; while they share common reference point – European, or western modernity – they develop “multiple institutional and ideological patterns” which are “distinctively modern, though greatly influenced by specific cultural premises, traditions, and historical experiences” (Eisenstadt 2000: 2). From this perspective, socialist societies represent a distinctive version of modernity, which on the one hand shared core characteristics of western modernity, such as tendency towards rational organization of society, bureaucratization, but at the same time rejected capitalist market and the clear-cut division between state and society. Arnason identifies planned economy, party-state and ideological orthodoxy as key dimensions distinguishing state-socialist modernity from Western capitalist. In the case of Soviet Union, the modernizing strategies were also subordinated to the task of rebuilding imperial state (Arnason 2000). Situating sociology of socialist and postsocialist professions in the multiple modernities framework thus can help to understand these professions on their own terms, in relation to institutions specific to state socialism, such as planned economy and party-state, rather than in terms of their distance or deviation from the capitalist ideal-types. The differences between socialist and capitalist professions may be due not to the incomplete achievement of the ideal-typical capitalist models, but rather to the different organizing principles of division of labor, stratification systems, relationship between state and society. Consequently, the postsocialist changes in professions should be conceptualized not in terms of drawing closer to the Western-style ideal type, but rather in terms of transformation, with open and contingent results. In other words, the old debate on postsocialist transition vs transformation (Burawoy and Verdery 1999; Bunce 1995) still bears relevance in the field of study of professions.

A second, and related, dimension of the study of socialist and postsocialist

professions has to do with contextualizing them in their immediate social environments. If professions are defined not in terms of their closeness to the pre-established ideal types but as locally specific constellations of institutions and practices, more attention should be paid to the processes taking place in their immediate contexts. In particular, sociology of professions could benefit from engaging with research carried out in adjacent fields of inquiry, such as stratification, sociology of work, studies of informality. In capitalist context, such engagement has been taking place in the last several decades (Sandefur and Gorman 2011). In post-socialist countries, too, many processes which affect professions and professionals are studied within these adjacent fields: thus, hybrid employment practices are studied within sociology of work (Ashwin and Popova 2006) and informality (Lonkila 2010, 2010a), reskilling and social mobility of professionals within stratification (Gerber 2002, 2002a, Popova 1999). Ethnographic studies of various professional groups are especially useful as they provide rich and thick descriptions of the changes that professionals have experienced in the course of postsocialist transformation (see Patico 2008 for a study of teachers in St. Petersburg, Rivkin-Fish 2005 for a study of doctors in Russia and Bazylevich 2010 for a study of female doctors in Ukraine) Reconceptualization of post-socialist professions would benefit greatly from incorporating this knowledge.

Drawing on these considerations, in the next two sections I describe, first, my reasons for focusing on engineering profession, which have to do both with general theoretical issues and the peculiarities of socialist and Soviet modernity projects, and second, the context of Azerbaijan and its relevance for the study of post-socialist professions. I then turn to the research question, namely, the impact of the changing state-society relations on the engineering profession, and its potential contribution to the field.

### **1.3. Engineering profession: relevance for theory**

The engineering profession has an especially important place in the modernization projects across capitalist and socialist societies of West and East (Larson 1977, Göle 1986/2012, 1993, Meiksins and Smith 1996, Balzer 1996, 1990). As Meiksins and Smith (1996: 3) had observed, “engineers have been at the center of the development of industrial capitalism from the beginning”. Beyond the West, the role of engineer was explicitly linked to the modernization project, understood as universally applicable process. For example, this has been the case in Egypt and in Turkey (Göle 1993, Downey and Lucena 2004). At the same time, engineers were crucial in the socialist industrialization projects (Fitzpatrick 1979, Bailes 1978). In the words of Kennedy and Sadkowski (1990: 169-170), in Soviet-type societies “the rise of engineers over other professionals symbolizes the triumph of *revolutionary modernization*” (emphasis by the author). Balzer (1990: 141) had compared the political role of engineers in Soviet social order to that of lawyers in the United States.

In fact, the comparison of the rising role of engineers in the state-led industrialization projects in Turkey and Soviet Union reveals considerable similarities (Göle 1986/2012; Kose and Oncu 2002). In both contexts, there existed congruence between states’ modernizing projects, which emphasized industrialization, and the technical rationality of engineering, which made engineers harbingers of development<sup>3</sup>. Yet from 1980s, the professional paths of engineers in Turkey and former Soviet Union began to diverge, parallel to the divergence of the socio-economic and political systems. In Turkey, in the course of the transition from import-substitution to export-led industrialization, engineers were able to convert their achieved social status into greater political influence and become a new elite, by abandoning their anti-capitalist ideology and adopting technocratic and rationalist approaches to state policy (Göle 1986/2012). At the same time, beginning with *perestroika* engineers in the former Soviet Union and elsewhere in Eastern Europe have largely lost their status and political influence. The neoliberal transition of the former socialist bloc to market economy has led to

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<sup>3</sup> See also Buğra (1994: 35-94) on the role of the Turkish state in industrialization.

decline of industrial production, and especially of manufacturing, leaving old industrial enterprises to crumble and industrial zones to decay (Bradshaw et al. 1998; Lynn 1999, Pickles 1998). Engineers, as an occupational group closely linked to the socialist industrialization project and previously one of the most numerous of expert occupations, have been hit hard by the post-socialist deindustrialization. Unlike teachers and doctors, who at least retained their public sector jobs, large numbers of engineers had lost work because of the closing down of industrial enterprises, and had to re-skill or leave their profession. Furthermore, with the decline of the role of industry in the postsocialist economy, engineers have been distanced from the political structures and lost their political influence.

Although the dramatic change of the role of engineers in postsocialism would appear to merit scholarly attention, sociological studies of postsocialist transformation are rarely concerned with this professional group, with few notable exceptions (Evetts and Buchner-Jeziorska 2001; Mansurov and Semenova 1998)<sup>4</sup>. In research on multiple professional groups engineers are often omitted. For example, Sanghera and Ilyasov in their Kyrgyzstan study cover five professional groups: university lecturers, lawyers, doctors, journalists and police officers but do not include engineers (Sanghera and Ilyasov 2008). Osinsky and Mueller in their study on Russian provincial specialists deliberately exclude engineers because they could not identify them with either of their two analytical categories – intelligentsia proper and technocrats (Osinsky and Muller, 2004: 205). This lack of interest to the post-socialist fates of skilled professionals in the industry is all the more striking considering the significant amount of research on the post-socialist industrialism and its transformation. Thus, there is considerable body of literature on the post-socialist working class (Burawoy and Krotov 1992, Stenning 2005, Mrozowicki 2011), on post-Soviet trade unions (Ashwin and Clarke 2003), on the management of post-socialist industrial enterprises (Clarke 2007), and on conversion of military enterprises (Cronberg, 1997 and 2003). Paradoxically, the engineers, previously the largest professional group in Soviet Union, are now the least visible professional

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<sup>4</sup> Thus, Evertts and Buchner-Jeziorska (2001) investigated the impact of the European market on the engineering profession in Poland, while Mansurov and Semenova (1998) studied experts working in the enterprises of the former military industrial complex in Russia.

group in literature.

But engineering is also an interesting profession from a more general theoretical point of view. Unlike classical professions of law and medicine, engineering is difficult to assess in neo-weberian terms of monopoly, occupational control and market closure even in capitalist contexts (Larson 1977, Meiksins and Watson 1989). Despite engineering's central role in modern industrial capitalism, it has remained mostly an organizational profession (Meiksins and Watson 1989). Even in the early industrializing countries, engineers have more often been salaried employees in large heteronomous organizations rather than solo practitioners; solo practice and entrepreneurship were rare and only available to elite engineers (Larson 1977: 27). However, engineers possess a generally unified cognitive base (Larson 1977: 32), and have occupied similar roles between managers and labor in a range of industrial capitalist countries (Meiksins and Watson 1996). Furthermore, engineers are among the most transnational professionals, because the core of their knowledge and skills are easily transferable and because of the rise in transnational corporations who employ engineers (Alsopp et al. 2009). But at the same time, engineers are also embedded in their immediate social contexts; the division of technical labor depends on the national contexts of education, organization of industry, the time of industrialization, as well as pre-industrial values and social hierarchies (Meiksins and Smith 1993).

In this study, I therefore focus on engineering profession because of its unique positionality in the nexus of modernity, both in its western capitalist and Soviet variants, the state, transnational capitalism, and local culture. Looking at this profession in Azerbaijan, a country that had experienced several different models of interaction between the state and industrial organizations over the course of two centuries, from colonial exploitation to Soviet mass industrialization, to post-Soviet resource-driven development, while remaining at the semi-periphery or periphery of the global economic processes has additional advantages of potentially revealing important aspects of development of professions that are not usually considered within mainstream approaches.

#### **1.4. Professions in Azerbaijan**

Azerbaijan presents an interesting site for studying post-Soviet professions. Modern professions appeared in the territory of modern day Azerbaijan after its incorporation into Russian empire in 1828. Initially, professionals were part of Russian colonial administration. However, in second half of 19<sup>th</sup> century, the industrial production of oil began in Baku, leading to rapid, albeit uneven and unequal, industrialization and modernization of economy and society. Baku and its surroundings quickly became one of the most industrialized areas of Russian empire (Dilbazov 1976). The growth of oil industry also led to development of other related industries, such as transportation and construction. The rapid development of industry required new knowledge and skills, including technical expertise of engineers.

However, these industrialization and modernization were a case of dependent, colonial development, based on production of a single commodity (oil) and its derivatives (Kandiyoti 2002). As such, this colonial economy relied on imported rather than local expertise. Most of the professionals who worked in Baku, including engineers, doctors, lawyers, came from outside of the region. Because of the lack of technical expertise in Russia itself (Balzer 1996a) many engineers came to Baku from Europe and the US. Only a small portion of professionals working in Baku was constituted by privileged locals who were able to receive education in imperial centers of Moscow and St. Petersburg (see chapter two for a more detailed account of Baku's oil industry development). Until the fall of Russian Empire in 1917, the only professionals who were trained in the region were teachers who studied in the Transcaucasian Teachers Seminary in Gori (currently Georgia) (Gasimov 2011).

When after brief period of independence (1918-1920) Azerbaijan was re-incorporated in Soviet Russia in 1920, the Soviet authorities declared their aim to

reverse this inequality. A number of higher education institutions were almost immediately established in Azerbaijan, aimed at producing professional expertise locally<sup>5</sup>. In late 1920s and 1930s, the policy of *korenizatsiya* (indigenization) sought to increase the number of native professionals (Martin 2001). During Soviet period, Azerbaijan had also experienced an explosive growth of credentialed specialists, trained both inside the republic, and in other parts of Soviet Union. However, like in the rest of Soviet Union, Azerbaijan had suffered from overproduction and low quality of education of specialists (Fitzpatrick 1979, Balzer 1990, Kryshtanovskaya 1989)

At different times throughout Soviet period, the authorities also sought to make Azerbaijan's economy more balanced and correct the dependence on oil as the major commodity. Indeed, Azerbaijan's economy was diversified to include other industries between 1956 and 1970 (see chapter 2). However, these efforts were only partially successful, and till the end of Soviet period Azerbaijan's economy remained dominated by oil-related industries, if not by oil extraction, such as chemical industry and manufacturing of oilfield equipment. This was largely due to the inconsistency of Soviet industrial policy itself, which changed from maximization of output in pre-WWII period (which emphasized oil extraction in Azerbaijan) to equalization and diversification in early post-Stalinist period, to withdrawal of investment from the Soviet peripheries, including Azerbaijan, and return to geographical specialization after 1970s (Van Selm 1997). Thus, despite the equalization rhetoric and some real achievements in terms of educational attainment, Soviet period retained considerable structural legacies of the colonial model of development. These structural inequality had played important role in the choice of oil-led model of development in the post-Soviet period, heavily dependent, once again, on the import of foreign technology and expertise (Luong and Weintal 2001). However, unlike in the colonial period, the new phase of oil-led development takes place in the context of first, national state, and second, the existence of a large local professional community, trained in the Soviet educational

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<sup>5</sup> First university in Azerbaijan was actually established during the short-lived independent Azerbaijan Democratic Republic (ADR) in 1919. However, as the Republic fell less than a year after in April 1920, the University was not able to produce any graduates (Musayeva 1979).

system.

Thus, throughout its modern history, Azerbaijan has experienced several different models of relations between the state and professions. At first, this was colonial professionalism, driven by the colonial Russian state, and partially by the forces of international capitalism. Then it was the peculiar Soviet model of professionalism, heavily dominated and penetrated by state institutions, which combined some emancipatory and equalizing policies while retaining many of the colonial structural legacies. And finally, in the post-Soviet period, Azerbaijan's professions appear to be 'on the road to elsewhere', shaped by different and often contradictory forces and legacies, including devaluation of professional work, integration of small number of local professionals into global professional networks, and the emergence of new state-society relations, for the first time in history defined by the boundaries of nation-state.

Very little is known about professions in Azerbaijan beyond the official statistics on the number of graduates of higher educational institutions (Musaeva 1979, Avakov and Atakishiev 1984). Despite Azerbaijan's, and especially Baku's high levels of industrialization, no significant sociological research on professions or occupations along the lines of Soviet industrial sociology (Abramov 2014) such as Iadov and Zdravomyslov's (1967) "Man and his work" or Iadov's (1977) "Socio-psychological portrait of an engineer" has taken place in Soviet Azerbaijan. This was probably due to the lack of local specialists in sociology until the end of Soviet period – first departments of sociology were established in two universities in Azerbaijan only in 1991 (Rumyantsev 2010). Until then, sociology in Azerbaijan was represented by a handful of individuals, trained in Moscow, who were mostly engaged with issues of social philosophy rather than applied sociological research.

Little remains known as well about post-Soviet development of professions. Overall, there is little evidence of (re)professionalization along the lines of neo-weberian framework. Unlike in Russia and Eastern Europe, there is virtually no research on new professions, such as auditors, advertisement specialists, or

business managers – the primary sites of postsocialist professionalization. Few studies focus specifically on professions, but some conclusions can be drawn also from literature dealing with transformation in various sectors of state and economy. Due to the sharp decline in GDP and public spending in early 1990s, virtually all occupations previously funded and subsidized by the state have suffered decline of their incomes and prestige. In the two major public sectors -health and education – informal payments for services became a widespread and common practice (Silova and Kazimzade 2010, Temple and Petrov 2004; Rzayeva 2013). As healthcare provision transformed from universal and comprehensive to minimalist and commodified, medical services are now only provided to those who can afford to pay for them. At the same time, the doctors also pay informally to obtain jobs, and expect to recover these costs during their practice (Rzayeva 2013). The rise of informal payments for medical services have led to income stratification of profession, especially between the capital, Baku, and the rural regions, where population is poor and cannot pay for the medical services. Low salaries, which remain low despite Azerbaijan's striking oil revenues of the last years, are usually cited as the main reason behind the spread of informal payments for medical care (Holley et al. 2004). At the same time, the informal market of medical services have allowed many doctors to improve their earnings and gain considerable incomes, also raising the prestige of the profession. Thus, Medical University consistently recruits better performing students (Silova and Kazimzade 2010: 64). However, while the fortunes of individual doctors may have been improved with the introduction of unregulated and largely informal market relations in the healthcare, the collective bargaining power of the profession has been reduced even further than in the Soviet period. Although during Soviet times doctors had limited influence on their salaries and conditions of work, they nevertheless played central role in organizing of medical care. If in the Soviet period, doctors could “set the scale and nature of health care provision by defining norms and standards, including factors such as the ratio of medical personnel and hospital beds to population” and “local health offices set the framework for planning and budget allocation by preparing draft needs assessments, priorities, and budget estimates to be discussed and negotiated with local Party and legislature representatives”

(Rzayeva 2013: 41), in the post-Soviet period medical professionals were pushed out from this decision making process which now takes place in the economic ministries, and especially Ministry of Finance (Rzayeva 2013: 54).

The teaching profession in post-Soviet Azerbaijan has suffered not only a significant decline of income, but also a parallel decline of social status (Silova and Kazimzade 2010). In post-Soviet Azerbaijan, teachers were 'stripped of their central status' in the educational systems. Similar to the case of doctors, the official salaries below subsistence levels gave rise to rampant spread of informal payments that complement teachers' salaries, and secondary work, usually in private tutoring (Silova et al. 2007). The teaching profession is also characterized by feminization and over-aging (Silova and Kazimzade 2010). Study of students entering teacher training institutions has shown that these institutions consistently recruit students with lowest placement test scores, signaling low prestige of teaching profession. Even so, majority of the graduates of teaching schools choose not to work as teachers; the state's programs aimed at ensuring professional placement have been inefficient. There has been no evidence of positive change in the bargaining power of teachers vis-a-vis the state.

The post-Soviet legal counseling is perhaps the only profession that has experienced something of a 'professionalization' and convergence with Western models of professionalism, albeit to a limited degree. In 1990s, the Collegium of Advocates had wielded considerable bargaining power, which allowed it to resist state's encroachment on its monopoly. Thus, the Collegium was successful in reversing the legislation that proposed alternative forms of licensing for court representation, and ensured that only Collegium members can represent clients in criminal courts (Waters 2004: 144). However, although the Collegium is formally an autonomous organization, it remains informally influenced by the executive. A peculiarity of post-Soviet development of legal profession in Azerbaijan, especially in comparison with neighboring countries, has been the presence and impact of global law firms, active in the oil industry. This 'oil patch' (Waters 2004: 147) has created a small group of local elite lawyers, distinct from majority of the profession

by their internationally recognized qualifications and internationally competitive incomes. Interestingly, these firms, while they employ local lawyers (although usually foreign trained) have remained largely outside of national regulation, with silent approval of the government.

Until recent restrictions on civil society, there also operated a number of independent professional associations that provided legal education and legal aid; on several occasions, independent lawyers successfully lobbied government on regulatory issues (Waters 2004: 145-146)<sup>6</sup>. These independent professional associations were usually founded by young lawyers, often educated abroad; and thus these 'reformers' were the main agents of western-style professionalization activities, similar also to neighboring Armenia and Georgia, where professionalization has advanced more. The donor-driven NGO sector has also provided an important arena for professional activities for many academics, both full- and part-time, who conducted policy-oriented research, usually sponsored by international donors (Rumyantsev 2010).

Although the existing research on professions in Azerbaijan is extremely scarce, a few tentative trends can be pointed out for further exploration. First is the obvious tendency towards informalization of professional services, manifested foremost in the rampant growth of informal out-of-pocket payments. Second is the changing role of state in the state-professions relationship. The state no longer exercises control over all aspects of professional work, as was the case in Soviet Union; however, it remains an important actor. Similar to Russia, the "continued, albeit inadequate state support" (Ashwin and Popova 2006: 1420) in the form of formal state employment, provides an institutional base to much of professional activity in the private sector, such as informal private practice by doctors, tutoring by teachers, or NGO research by academics. Finally, there emerge some pockets of professional activities supported or mediated by global or international actors, including international donors or multinational corporations. All three of these themes also

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<sup>6</sup> For details on the tightening of authorities' control over civil society organizations, see Crackdown on Civil society in Azerbaijan (2015); Human Rights Watch (2013).

emerged as relevant in my research and I explore them in my study.

### **1.5. Contribution of this study**

This study seeks to contribute to the literature on the relationship between professions and the state in post-socialist societies. The main question of this study is how the changing relationship between state and society in the course of the post-socialist transformation has affected the engineering profession in Azerbaijan. Following Osinsky and Mueller (2004) and Ashwin and Popova (2006), I maintain that the state remains a crucial actor in organizing postsocialist professions. The case of Azerbaijan, where the role of the state has not only remained strong but in fact was further strengthened in post-Soviet period in some respects (Luong and Weinthal 2010: 219-258), supports the relevance of this framework. However, in addressing the relationship between postsocialist Azerbaijani state and professions, I depart from the traditional narrative of professional autonomy and self-regulation, with their exclusive focus on professions' autonomous institutions and collective bargaining power. As I have shown in previous section, such an approach is highly problematic in socialist and postsocialist contexts. Instead, I take a different route and explore other dimensions of the interaction and interpenetration of state and engineering profession. The fact that the state remains a central actor in organization of professions does not mean that the specific mechanisms of regulation of and interaction with professions did not change. In exploring this change, I concur with Lo (2005, 2002) who emphasizes the need to draw attention to the ways in which professions are socially embedded in their immediate contexts. The three dimensions I focus on here include the relationship between engineers' work attitudes and the changes of state ideology, the embeddedness of engineers in informal relations with each other and the state bureaucracy, and the impact of international/global actors on professional engineers. Two of these – informality and the impact of international actors – also emerged as relevant themes in the review of literature on post-Soviet professions in Azerbaijan, as was mentioned in the previous section. The changes in engineers' attitudes towards their work are crucial for developing of understanding of the changes in the meaning of

engineering profession, first of all for engineers themselves.

I see postsocialist transformation as an ongoing, contingent process ridden with uncertainty (Burawoy and Verdery 1999). Following Vedres (2004) I seek to go beyond the simple temporal dichotomy of 'before' and 'after' the dissolution of Soviet Union. Instead, by using biographical material from in-depth interviews, I explore the changes and continuities in the course of engineers' professional careers, although my focus is on the changes and continuities between Soviet and post-Soviet periods. This has allowed a more nuanced analysis of different trajectories of professional change in the two post-soviet decades, suggesting an evolution in the relationship between state and professions.

Returning to the dimensions on which I focus in this study, namely, meaning of work, informality and globalization, all three of them have been previously found important in relation to postsocialist transformation (Lonkila 2010, Ledeneva 1998, Giordano and Hayoz 2013, Outhwaite and Ray 2005). However, my study attempts to bring these strands of research together in relation to each other and postsocialist professions – something that has not yet been done before. First, meaning of work, or more generally, subjective aspects of work experience including attitudes, work ethics, values, and motivation, form an empirical link between micro- and macro-level phenomena. They guide individual career strategies and professional choices, but at the same time they are linked to larger scale ideologies and cultural schemes of meaning. Generally, professionals are believed to have more intrinsic attitudes to their work, deriving satisfaction from the content and quality of work, rather than from extrinsic rewards, such as income or socializing. In former Soviet Union, the intrinsic attitude to work was ideologically approved and even imposed on the whole workforce (Abramov 2014). This was derived from Marxist framework, where work was seen as a core human activity carrying potential for self-actualization of the worker, the potential that is under capitalism stifled by the alienation of workers from the process and the products of their labor (Watson 2008:238). The alternative, communist ideal represented work as a free and ultimately creative activity, which would also be a source of highest intrinsic

pleasure, a reward in itself (Kommunisticheskiy Trud 1986: 209). Although this ideal was considered unreachable under socialism, some progressive features such as creative work and intrinsic attitudes were seen as indicators of drawing closer to the ideal (Strukov 1963, 1977). This ideology of work was widely popularized through system of education, literature, film, and mass media; and although the high standards of socialist labor were not necessarily adhered to in practice, these ideas have become part of the “cultural toolkit” (Swidler 1986) of ordinary citizens, which was demonstrated in Soviet research on work attitudes and job satisfaction (Iadov and Zdravomyslov 1967, Shlapentokh 1985, Yanowitch 1985)<sup>7</sup>. The ideals of creative work and intrinsic rewards also constituted the core of Soviet understanding of professionalism. With the demise of socialism, this ideology of work has seized to exist. However, evidence from Russia suggests that Soviet-era notions of work remain part of the post-Soviet cultural repertoire, especially among committed professionals (Ardichvili 2009, Osinsky and Mueller 2004, Ashwin et al. 2004). In this study, I attempt to understand what it means to be an engineer in post-Soviet Azerbaijan, to which extent this meaning is continuous with the Soviet notions of professionalism, and how it had changed.

Second dimension of state-professions interaction that I focus upon is the role of informal practices employed by engineers in their professional lives. Informal practices are strategies of actions employed by people in order to circumvent formal and often rigid rules and regulations (Borosz 2000). Informal institutions and practices have been central in the restructuring of states and development of markets across postsocialist space (Giordano and Hayoz 2013). Often, such practices originate in second economy formed during socialism, i.e. in the black market trade and clandestine production of goods on the margins of planned economy. This system existed with support and patronage of patron-client networks that permeated the ranks of *nomenklatura* (Willerton 1992, Grossman 1977).

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<sup>7</sup> According to Yanowitch (1985) Soviet research overstated the significance of 'creative opportunities' at work due to ideological bias. He pointed out inconsistencies in the results of various studies, as well as problems with research design. However, for my study it is more important that 'content of work' and 'creative opportunities' were part of the cultural repertoire from which engineers could (and still can) draw material for new meaning-making.

Azerbaijan has been widely known for the pervasiveness of its informal institutions and practices that dates back at least to the Soviet period (Willerton 1992: 191-222, Zemtsov 1976, Guliyev 2012). In postsocialist societies, informal practices have been the major mechanism of linking state and society, and they have been crucial in both the formation of postsocialist markets, particularly in the form of informal economy and employment, and in postsocialist states, which have often been found permeated by graft and patron-client relations (Borosz 2000, Buck 2006, Sik 1992, Aasland et al. 2012, Guseva and Rona-Tas 2001, Rodgers and Williams 2009, Ledeneva 1998, 2006, and 2008; Werner 2000, Karklins 2005, Lonkila 2010, Rasanyagam 2011, Giordano and Hayoz 2013). In this sense, informality bears importance for postsocialist professions, as it bridges state and market, and in fact forms a hybrid space where postsocialist public and private merge. In research on postsocialist professions the importance of informal practices has been recognized in terms of informal out-of-pocket payments for professional services, especially in medical profession (Polese 2008, Riska and Novelskaite 2011, Rivkin-Fish 2005) Riska and Novelskaite (2011) go as far as to contend that informality forms a special model of organization of professional work in postsocialist societies. However, little is known about the role of informal practices beyond out-of-pocket payments in the organization of postsocialist professions. In this study, I show how engineering profession in Azerbaijan is simultaneously embedded in horizontal and vertical informal relations, with bureaucracy and colleagues. I show that informality is both a threat to professionalism and an important resource in becoming and remaining professional in post-Soviet conditions. On the one hand, due to their particularistic character, informal practices impede the development of a single professional community. At the same time, they allow to engage resources that help individual engineers to remain in the profession, transmit knowledge or professional values. I further contend that informality should be conceptually integrated in the study of postsocialist professions.

Third dimension that I explore in my dissertation is the impact of the interaction between global actors and the state on the engineering profession in Azerbaijan. In

recent years, impact of globalization on professions has been one of the most actively researched topics in the discipline (Faulconbridge and Muzio 2012, Fourcade 2006). Global actors, such as transnational companies and supra-national regulatory bodies, have also been shown to play important role in the restructuring of post socialist professions (Seal et al.. 1996, Evetts 2008). Engineering profession has been considered one of the most international of professions, because of the historical importance of technology transfer since the beginning of industrialization and the standardized knowledge base (Allsop et al. 2009: 491). These international links of the engineering profession were not severed even during Soviet period, despite the Soviet autarkic policies. While Soviet Union emphasized domestic manufacturing and production, it at the same time had continued to rely on acquired technologies through most of its existence (Connolly 2013). As a result of these contradictory policies, Soviet engineers were familiar with western technologies, but mostly indirectly, often through Soviet reverse-engineered copies or old models. Only selected elite engineers had direct access to the knowledge exchange with foreign colleagues, through exchange programs, international conferences, or technology acquisition contracts. With the dissolution of Soviet Union and adoption of oil-driven development, Azerbaijan became heavily dependent on both foreign technologies and manufactured goods, as foreign investors brought their own technologies in the oil extraction, and domestic manufacturing shrank. At the same time, multinational companies working in Azerbaijan provided some employment opportunities for local engineers. This process had a profound impact on the labor market for engineering work, as well as reshaping the content of engineering work, pushing engineers to reskill and making many of their former skills, particularly in design and manufacturing, obsolete and redundant. But the state has been crucial in this process, as it were state policies and the strategic choice of oil-driven development that made this one-sided integration into global economy possible. In my study, I examine engineers' perceptions of the impact of these policies on their work.

The three dimensions identified here – meaning of work, micro-level interaction of professionals with each other and the state, and the impact of global actors on

profession-state relations – link together macro-level processes and structures of postsocialism with micro-level experiences of professional change. Taken together, they contribute to developing a more comprehensive understanding of how professions are socially embedded in structures and practices of ideology, informality, and globalization, and offer a more nuanced account of the multiple ways in which state and professions interact. This approach also helps to move beyond the dichotomy of modern vs traditional which had shaped sociology of professions (Lo 2005), by incorporating in the analysis professionals' informal ties and emotional responses to the the change they have experienced. Finally, the theoretical value of this study is enhanced by the fact that these findings maybe applicable to other post-Soviet societies which share similar characteristics with Azerbaijan in terms of semi-colonial legacies, neo-patrimonial state structures and resource-driven development models.

## **1.6. Methodology**

This study aims at accessing personal experiences and perceptions of post-Soviet change, and therefore from very beginning it has been designed as qualitative research. I agree with Burawoy and Verdery (1999) and Kandiyoti (2002) in that postsocialist change is best understood by exploring micro-level processes of change in their own context. By focusing on the personal experiences of engineers, I examine the links between the macro-level institutional changes and the micro-level lifeworlds of individual professionals. However, my approach is narrower in its focus than ethnographies of occupational groups (Patico 2008, Rivkin-Fish 2005, Bazylevych 2010). The method I have chosen – in-depth interviews with engineers with different specializations and working in different industries allows to reach wider range of experiences from a broader sample and to map changes across different sections of the profession, including those working in oil extraction, manufacturing, construction, in both state and private sectors. The primary method I used in my research was in-depth interviews with engineers. Baku was an obvious choice for my fieldwork, as it is the main industrial center in Azerbaijan, where engineers of different specializations are present. I also have various contacts with

engineers in Baku as it is my home city. I have also visited several workplaces of my interviewees, where I could complement my interviews with some personal observations, and held numerous conversations with individuals who worked with engineers, although not in engineering positions.

In addition to interviews, I have also consulted some secondary sources in order to clarify or support specific ideas and findings. This was an auxiliary method used particularly for the chapter on historical background of the engineering profession in Azerbaijan as well as contextualization of the findings from the interviews. The sources that I consulted included statistical records, published institutional histories and websites, articles in print and especially electronic media, and covered post-Soviet period (from 1991), and especially recent developments over the course of last decade.

### **1.6.1. Research process**

The empirical part of the research took place in several stages, in the course of which both my sampling strategies and the structure of my interview guide had evolved. The first phase took place in December 2011. At that stage, my aim was to develop more detailed and theoretically based research sub-questions which would also guide my sampling at the later stages of research. It was at this stage, after about 10 interviews, that I realized that my initial expectations of professional decline were too simplistic and that the transformation of the profession was structured along various sectors of economy, with some engineers, particularly from manufacturing sector, being deskilled and deprofessionalized, while others, mostly from oil extraction industry, enjoyed successful international careers. Also at this stage the tentative themes of meaning of work, informality, and the role of global actors have emerged.

The main part of my data collection took place in summer 2012. By this time, I had completed the historical overview of the engineering profession in Azerbaijan, conducted preliminary analysis of the interviews collected during the previous

stage, and reworked my sampling strategy. Three interviews were also taken in spring 2013 in Houston, Texas, USA, while I was spending a semester as a visiting scholar at University of Wisconsin in Madison, WI. The aim of these interviews was to deepen my understanding of the impact of globalization on Azerbaijani engineers.

I initially entered the field through personal and family contacts with several engineers. As engineering was one the most numerous Soviet occupations, finding engineers is not generally a problem. In the first stage of the research, I had cast a rather wide net, and aimed to get to as many different experiences as was possible. In the later stages of research, my sampling strategy changed and I searched for respondents aiming to saturate the categories which emerged as important in the course of preliminary analysis of my data. I used both my own contacts, as well as referrals by earlier participants. The provisional criteria for sampling at this stage included: generational differences, which I operationalized as Soviet-educated and post-Soviet-educated engineers (before and after 1991); last employment status (professional or non-professional); type of industry (oil, energy production, manufacturing and construction); type of engineering work (R&D vs production/construction), sector of employment (public and private sector, and also national or foreign companies). It is important to know, however, that these categories remained rather flexible; many of the participants had work experiences that spanned across the divisions that I identified, combining professional and non-professional work, having experience in public and private sector. In total, I have conducted 41 interviews with engineers (see Appendix A for list of participants).

### **1.6.2. Interview process and data analysis**

At the initial stage of the research I began with semi-structured interviews, following some themes derived from my preliminary review of literature on professions. I soon found the question-answer format of semi-structured interview to be rather restrictive and experienced difficulties in eliciting information. On the other hand, the interview format that used open-ended questions provided much

richer narratives, which usually covered most of the themes I was interested in. Because the aim of my research was to get at the experience of change I decided to opt for less structured interview format. I therefore usually started out by asking participants to describe their careers. In most cases, this question elicited sufficiently long narratives which covered most of the themes I wanted to address. I then followed with more focused, detailed, theoretically informed questions in order to clarify or elaborate any issues that were not well developed in the initial narratives. Such open interviews varied greatly in length, between 45 minutes and three hours, with an average interview lasting between 1-1.5 hours. All but two interviews were conducted individually: in one case, I interviewed a married couple, both of whom were engineers, together. In several cases, I also conducted short follow-up interviews with my first stage informants, in order to clarify issues that had emerged in the later stages of the research and were not addressed in the original interviews.

Prior to the interviews, I followed standard procedure and informed the participants of the aims and scope of the research, assured them of confidentiality, anonymity and privacy of all information they would provide. Initially, I intended to have all interviews recorded in order to preserve rich details of the narratives. However, many of my interviewees declined to be recorded, despite my assurances of anonymity. As one of my interviewees explained, he did not believe in anonymity, since anything that had been recorded could be traced down. Furthermore, some had also asked me to turn off the recorder in the course of the interview. Topics related to the role of state and individual bureaucrats were especially sensitive. In the end, slightly under a half (19) of the interviews I had collected were recorded, fully or in part. There is no direct relationship between sector of employment or current employment status and participants' decision to grant or refuse permission to record. However, those participants who did not know me personally prior to the interview and to whom I was referred by other interviewees were more likely to feel uncomfortable about being recorded.

In those cases when participants declined to be recorded, I took extensive notes

which I then used to reconstruct interviews as fully as possible and as soon as was possible; however, some narrative details were inevitably lost. There is no direct link between the level of openness of the participants and permission to record. However, in line with the general observations of many qualitative researchers, many informants spoke more frankly and openly after the formal end of the interview, when the audio-tape recorder was turned off. I also kept a detailed fieldwork diary, where I wrote down my observations, ideas and insights during the research process.

The data analysis was conducted manually, without the use of specialized data analysis software. The analysis of the data began early on and continued throughout the data collection. Because the tentative theoretical framework of my research was already determined prior to the interviews, both the interviews and the reading of the transcripts and reconstructed summaries were guided by the initial research questions. However, the techniques of data analysis evolved during the research process. In the early stages of data collection, although I sought out the themes that I was considering important, such as experience of post-Soviet transition, the relations with management, and contacts with foreign firms and technologies, I employed more open coding strategies, aiming to get as detailed picture of engineers' experiences as possible. Such codes were then grouped together, and three themes that form the basis for chapters three to five, were selected for further analysis.

My data analysis strategy was also influenced by the difficulties with recording of the interviews. For the recorded interviews which were transcribed verbatim I employed close reading and assigned codes which were then used to develop categories and themes. With the reconstructed interviews, open coding was more problematic, as many details were not present in the summaries that I wrote. With these reconstructed transcripts I therefore usually used the codes that were previously developed in the coding of fully transcribed interviews; however, I paid close attention to differences, inconsistencies and new information. Where such new information arose, I went back to other interviews, both transcribed and

reconstructed, in order to check its relevance. After coding each interview I also went back to the field notes and compared my codes with the comments written earlier. I also wrote memos, both on individual cases and on the emergent topics and sub-topics. I then reduced the data and organized it according to the themes that I identified during earlier stages of data analysis. The data analysis was also continued into the writing up stage. During the writing up, I often went back and compared my original field notes and memos, and looked up supporting evidence in statistical publications and media.

### **1.6.3. Research context and researcher identity**

Similar to most fieldwork experiences, my identity “along the continuum between insiderness and outsiderness” (Ergun and Erdemir 2010: 16) played important role in the access to the field and in the kind of information my interviewees were willing to share. As previous research had established, being an insider can help gain access and establish rapport between the researcher and the informants; at the same time time, researcher who is perceived as an insider may be expected to protect his or her community and not give away information that can be potentially embarrassing (Sherif 2001, Ergun and Erdemir 2010). However, the identities of insider and outsider in the field are never fixed, but are constantly negotiated. Citizenship, cultural or professional background, political affiliation, gender and age are some of the main factors that can influence researcher's identity of insider or outsider.

Conducting fieldwork in my home city, where I was born and raised, had immediately granted me a status of a partial insider, based on shared citizenship and background. I was also perceived as an insider in terms of social class, coming from the same urban educated milieu as the majority of my interviewees. Having family acquaintances among engineers has certainly made it easier to recruit participants through informal channels, and contributed to building rapport and establishing trust. At the same time, I was perceived as an outsider to the professional community, since I have no engineering background myself. Thus,

engineers often stopped themselves from relating more technical aspects of their work, because those were not understandable to me. Another dimension which made me a partial outsider was the fact that I was studying abroad, in Turkey. This suggested that the audience for my research is not local, but foreign.

The interplay of these dimensions of insiderness and outsiderness affected the relationship with interviewees as well as the information I received. Thus, the trust and rapport that were established due to shared citizenship and background were helpful in eliciting sincere opinions and important personal details on the biographies. At the same time, being a partial outsider by virtue of studying abroad was also helpful: the fact that my research was intended for foreign, rather than domestic audience, made engineers more open to discuss some specific issues, particularly those pertaining to the operations of Azerbaijani state. But these two factors together also played a role in determining what information my interviewees were willing to share with this perceived foreign audience. Thus, on a number of occasions I was asked to withhold some information that was discussed during interviews, from my final study. Interestingly, the information I was asked to withhold was never personal, but rather had to do with controversial political issues, such as interethnic conflict with Armenians. Thus, the interviewees expected me to protect the larger national community.

Although in professional terms I was an outsider, this identity was also renegotiated throughout my fieldwork. Being a graduate student (*aspirant* in Russian and Azerbaijani) served to mitigate my professional 'outsiderness': engineers with research background often perceived me as a fellow academic, albeit from a completely different field. The generational differences and my status of a student also contributed to the attitude of mentoring a young aspiring scholar on behalf of older interviewees. My previous work experience in foreign oil companies in Azerbaijan further complicated my identity, and made me a partial insider among those engineers who were themselves working in the foreign oil companies.

#### **1.6.4. Limitations of research**

As a qualitative study, this research is subject to the usual limitations that apply to all qualitative inquiry, such as problems of generalizability and validity. Although I had tried to diversify my sample according to gender, age, and sector of industry, the sample cannot be considered representative. In addition to relatively small size, there is also the issue of regional disparities which is not addressed in this study. Although Baku and the suburban Sumgait are the industrial center of Azerbaijan and most of engineers have traditionally been concentrated here, there are also industrial enterprises in other parts of the country, e.g. Gence and Mingechevir, where engineers work. In my data, there is some evidence of migration of engineers from those cities to Baku in the post-Soviet period, however, further research would be needed to account for the regional differences.

### **1.7. Organization**

This dissertation is made up of six chapters. In the first, introductory chapter, I inform the readers about the relevance of my topic, the current scholarly debates on postsocialist professions, and of the relevance of the case of engineering profession in Azerbaijan for the field. I also introduce my conceptual framework and discuss the potential contribution of this research to the literature.

Chapter 2 provides a historical overview of the development of modern engineering profession in Azerbaijan, from its beginning in the 19<sup>th</sup> century oil boom, to the current developments. The focus of the chapter is on the interaction of engineering profession with the state – or, rather, the states of which Azerbaijan has been a part: the Russian Empire, the Soviet Union, and independent Azerbaijan. I also discuss the transition from one state to another, and its impact on the organization of engineering profession. This chapter forms a background against which I then analyze the latest, post-Soviet transformation of the profession.

Chapters 3 through 5 are based on the fieldwork I have conducted in Azerbaijan and, partially, in Houston, USA. In these chapters I analyze the transformation of

the engineering profession in post-Soviet Azerbaijan along the three dimensions of state-professions interaction identified in the previous section. In Chapter 3, I examine the changes in the meaning of being an engineer in Soviet and post-Soviet Azerbaijan. In chapter 4, I examine the ways in which engineers employ informal practices and engage in informal institutions, and discuss their simultaneously constraining and enabling effect on the development of the profession. In chapter 5, I analyze the impact of global actors on the engineering profession. Chapters progress from micro-subjective analysis of individual attitudes to work and profession to micro-objective analysis of interactions of engineers with colleagues and state bureaucracy, to the analysis of impact of macro-level change, namely, globalization, on the work experience and attitudes of engineers. Within each chapter, the narrative is organized chronologically. This organization aims at generating a comprehensive understanding of the changes and continuities in the engineering profession, integrating changes at both micro and macro levels. Each of these three chapters follows a roughly similar structure: I begin with a review of the literature for each of the identified themes, followed by the analysis of empirical material, organized chronologically, and concluded with a brief summary of the findings.

The dissertation concludes with chapter 6, where I present a more detailed summary of the findings, and discuss their theoretical implications, particularly for theory of professions, as well as identify areas for future research.

## **CHAPTER 2**

### **HISTORICAL DEVELOPMENT OF ENGINEERING PROFESSION IN AZERBAIJAN**

#### **2.1. Introduction**

In this chapter I offer an overview of the historical development of modern engineering profession in Azerbaijan from its emergence in second half of 19<sup>th</sup> century with industrialization of oil production to the period after the dissolution of the Soviet Union. The main objective of this chapter is to describe the socio-political context in which the profession had developed and to introduce the reader to the formal institutional arrangements that made engineering work possible throughout these historical periods. For this purpose, in this chapter I therefore identify both enduring and short-lived characteristics of the profession in its historical development. This will be helpful for further understanding of the changes and continuities in the engineering profession in the course of post-Soviet transformation. The focus will be on the implications of institutional development for the engineering profession, rather than on general socio-political history<sup>8</sup>.

Given the overall focus of this dissertation on the professions-state nexus, in this chapter I also pay special attention to the various ways in which different state institutions of Russian Empire, Soviet Union and post-Soviet independent Azerbaijan have interacted with engineering profession and influenced its development. In my analysis, I employ some concepts derived from the neo-

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<sup>8</sup> For a general overview of socio-political history of Azerbaijan from Russian conquest to independence, see Altstadt (1992). For the late imperial period and Soviet takeover, see also Swietochowski (2004). For the post-Soviet period, see Cornell (2011) for an overview, Altstadt 2003 for the continuities between Soviet and post-Soviet ruling elites, De Waal (2003), Saroyan (1991) and Cornell (1999) on Karabakh conflict, Guliyev (2013) and Hoffman (2001) on political economy of oil.

Weberian framework, particularly, the notion of professional autonomy, occupational control and self-regulation. Although, as I have shown in the introduction, the framework is not fully applicable to Russian/Soviet professions due to different configurations of state-society relations, these concepts are adequate for dealing with some specific aspects of professional experience in this part of the world. However, the aim of this chapter is not to compare Azerbaijani/Soviet case to the Western models, but rather to illuminate the specificity of this particular case.

One of the issues I focus upon in this chapter is the development of engineering education in Azerbaijan. This is of particular importance for Azerbaijan, where until Soviet time all engineers were imported from educational institutions outside of the Caucasus. The development of republican system of technical education in the Soviet period (that is, under jurisdiction of Azerbaijan Soviet Socialist Republic), albeit fully integrated into the Soviet system, and especially the expansion of technical education in Azerbaijani language, played a crucial role in the development of indigenous engineering profession, as opposed to the imported expertise of pre-Soviet and Soviet periods.

Another cross-cutting theme to which I devote my attention here, as well as in further chapters is the relationship between engineers in Azerbaijan and in Russia/Soviet Union as a whole. Until 1991 the engineers in Azerbaijan were a part of, at first, Russian, and later, Soviet engineering profession, regulated by the imperial and then the federal state. At the same time there were important local differences, such as predominance of mining/petroleum engineers and the peculiar cross-cutting of social stratification and ethnic composition, when non-Azerbaijani ethnic groups, such as Russians, Jews and Armenians were over-represented in knowledge-based occupations. The relationship between engineering communities in Azerbaijan and Russia/Soviet Union has never been equal: In the Russian imperial period the relationship was purely colonial, and Baku was seen as a place for exploitation of oil reserves. Consequently, the imperial center was not interested in the development of either education or research in the colony. In the Soviet period, the relationship became more complex. There is an ongoing discussion in

the literature on whether the relationship between Soviet republics, especially in the Caucasus and Central Asia, with Moscow, can be characterized as colonial or not (Adams 2008; Chioni Moore 2001; Kandiyoti 2002). It is however generally accepted that this relationship, if not fully colonial, was nevertheless a dependent one. Azerbaijan, along with Central Asian republics, served as supplier of raw materials to the Soviet economy, and imported most consumer goods from other Soviet republics (Kandiyoti 2002, Adams 2008). In the sphere of scientific research similar pattern of center/periphery relations could be observed, where most advanced research was carried out in a few elite institutions, most of which were located in and around Moscow (Nesvetailev 1995). This unequal relationship is important to consider for understanding of the further development of engineering profession in post-Soviet Azerbaijan.

This chapter is organized chronologically in four sections. After this short introduction, I begin with describing the emergence of modern engineering profession in Azerbaijan in 19<sup>th</sup> century after beginning of industrial production of oil. In the second section I discuss the changes in the organization and identity of engineers in the early Soviet period, from 1920 (the year of Soviet takeover of Azerbaijan), through industrialization and Stalin's Great Terror of 1930s. This period was crucial for shaping many of the institutions that are still in place. In the third section the focus is the changes introduced during the Second World War, the destalinization and the late Soviet period. In the fourth section I describe the changes in the formal organization of the profession after the collapse of Soviet Union in 1991. I conclude with some remarks on the historical trajectory of the engineering profession in Azerbaijan.

## **2.2. The emergence of modern engineering in Azerbaijan**

### **2.2.1. The beginnings: the Oil Boom**

The emergence of modern engineering profession in Azerbaijan was prompted by industrialization of oil production in the second half of 19<sup>th</sup> century. Oil and gas were produced in and around Baku on Apsheron peninsula for many centuries, and constituted significant item of trade with neighboring countries and across the

Caspian Sea (Ashurbeyli 1992: 70). However, it was only after Russian conquest of Eastern Transcaucasia that the intensive industrial production of oil was begun (1813-1828)<sup>9</sup>. Early attempts at industrial production however were inefficient. Under Crown monopoly, which operated until 1821, the Russian state lacked resources that were necessary for development of the industry. Therefore in 1821 lease system (*otkupschina*) was introduced, whereas oil bearing land plots were leased out for four years (Martellaro 1985). But under the new system, the terms of the lease agreements were highly restrictive and did not promote long-term investments and technological innovations. The slow pace of growth of oil industry in Baku, especially when compared to rapid development of oil industry in the US, have finally convinced the government to liberalize oil industry and sell off oil-bearing plots in 1872 (Matveychuk 2005: 19).

The auction of December 30, 1872 became a turning point in the development of petroleum industry in Baku and Russian empire. In the first year of the new system the extraction of oil doubled, and by 1901 it reached its peak of 70,600,000 barrels (compared to 14300 barrels in 1872) (Altstadt 1992: 22). By then, Baku produced nearly half of world's oil and 90% of oil in Russian empire (Dyakonova 1999: 166). Baku rapidly became one of the largest industrial centers of Russian empire, with 13.7% of its population working in the industry, compared to average 9% in Russia as a whole in 1913 (Dilbazov 1976: 11). The expansion of oil industry also led to growth in other industries, such as refining, production of oil-related equipment, shipping and transportation. The demands of oil transportation were behind the development of Caspian shipping and the extension of Tiflis-Batum railroad to Baku. In 1887 first Transcaucasian kerosene pipeline that ran along the railroad was built by Nobel Brothers Petroleum Company, and in 1903 a state-operated crude oil pipeline was constructed (Alekperov 2011: 124; McKay 1984: 618–622).

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<sup>9</sup> The incorporation of the territory of the present-day Azerbaijan Republic into Russian Empire was a gradual process. Baku was incorporated in 1806, while struggle for other Azerbaijani khanates continued for several more years. In 1813, the Gulistan Treaty between Russian Tsar and Iranian Shah confirmed the incorporation of most of the territory of present-day Azerbaijan into Russian Empire, excluding Nakhchivan and Ordubad khanates. In 1826 Iranian Shah challenged the Treaty and started a new war with the aim to restore control over the lost territories to the north of Araz river. Yet Iran had lost in the war, and in 1828 new Treaty confirmed Russian domination of Azerbaijan, and added Irevan and Nakhchivan khanates (Altstadt 1992).

The oil boom also led to urban growth as the city needed to accommodate huge increase in population: from 14500 people in 1863 to 111,904 in 1897 (Baberowski 2004: 322).

### **2.2.2. Engineers in Baku's oil industry**

From the very beginning, engineers played an important role in the development of Baku's oil industry. The local technology of oil extraction was rather primitive, and oil wells were hand dug; storage and transportation facilities were lacking. In the early period of Crown monopoly the government sent some engineers as part of various exploration expeditions aimed at studying the commercial potential of Baku's oil fields. Thus, in 1825 for example, Major Voskoboynikov, a mining engineer, arrived in Baku as part of mining expedition, and ended up staying here for many years. Between 1834 and 1839 he was appointed Director of Baku oil and salt fields. During his time here he studied chemical composition of Apsheron oil, worked on improving well-digging technology and storage, and established first experimental refinery (Alekperov 2011: 26). A decade later, another mining engineer, Major Alekseyev drilled first oil well in Baku area in 1848 (Akhverdova 1960: 161). However, due to the constraints put on innovation under the lease system, technological development began seriously only after the abolition of the lease system and beginning of private industry. Thus, industrial drilling only began in Baku in 1872 (Mir-Babayev 2009: 36).

First engineers came to Baku from Russia, on more or less short term contracts and they were part of Russia's engineering community. In Russia itself, the position of engineering profession was complicated. In Russia, professions were generally dependent on the state, in a pattern that was rather different from Britain and United States but not dissimilar to continental Europe (Jones and Krause 1991: 234). Engineering in Russia started as a state function, from military engineering corps (Balzer 1996a: 55; Kryshtanovskaya 1989: 31). The first engineering school to be opened in Russia was the Mining Institute, established in 1773, followed in 1809 by Institute of Engineers of Ways of communication and in 1828 by Technological Institute in St. Petersburg (Timoshenko 1959: 1–4). The connection

of these first engineering schools and their graduates to the state was especially strong, as the schools were operated by the Government Ministries. Upon graduation the engineers received a military rank and were subsequently employed by the relevant ministry. In terms of social background, the first engineers belonged mostly to the nobility. Majors Voskoboinikov and Alekseyev both belonged to this generation of Russian engineers working for the state.

This pattern of training and career within the ministries was only challenged in 1860s, with Tsar Alexander II's liberal reforms (Balzer 1996a: 56). The pressure on the elitist education, and especially engineering education, came from two sides. On the one hand, the abolition of serfdom led to greater social mobility and eventually to the creation of an educated stratum with diverse social backgrounds – the so called *raznochintsi* who formed the core of Russian intelligentsia. On the other hand, the pressure also came from the demands of industrialization. Russia lagged far behind the West in its technological development, and had to import both technologies and engineers from abroad (Balzer 1996a: 68). In addition to that, at the end of 19th century the majority of engineers in Russia were of non-Russian, primarily German background (Kryshtanovskaya 1989: 75). In order to satisfy the growing demand for technical knowledge and to weaken the country's dependence on foreign technologies and experts several more technical schools were established in Russia: in Moscow, and then in the West and the East of the Empire – in Kharkov in 1886 and Tomsk (Western Siberia) in 1896, respectively. These schools followed the training pattern already established by older institutions, providing in the course of a five years long program a thorough training in theoretical subjects and then some specialization. In these years the pattern of employment of engineering graduates also changed, with most engineers now working in private industries and often combining work for the government and private business (Balzer 1996a: 56). This expansion of technical education was rather modest compared to the demands of growing economy and soon proved insufficient, and at the turn of the century the new type of engineering school – polytechnical institute – was introduced. The education program in polytechnical institutes was significantly shorter than in technical schools of previous

generation – 3.5-4 years, and it stressed more practical training as opposed to theoretical. Between 1895 and 1901 five new polytechnical institutes were established: in St. Petersburg, Riga, Kiev, Warsaw and Novocherkassk (Balzer 1996a: 59; Gracheva 2007: 146–151). Importantly, the expansion of engineering education in Russia and the changes in the patterns of employment of engineering graduates took place at the same time with the liberalization in the oil industry in Baku. This had provided emerging and rapidly growing industry with the expertise that was in such shortage.

But the expansion of technical education in Russia proper did not reach the Caucasus, despite rapid industrial development of Baku in the east and Batum in the west of this region. A major industrial center of Russian empire remained a firm intellectual, educational and scientific periphery. Despite some progress, technological development of the oil industry here was still lagging behind. While some important innovations, especially in drilling and refining, were developed in Baku, mostly they were ad-hoc, and their large scale implementation was limited by lack of research facilities (Akhverdova 1960: 163-167). Producers needed government permission for any major innovations, and these were cumbersome to obtain. The taxation policies also favoured simple crude oil extraction rather than technologically more sophisticated refining (Mostashari 2000: 92). Frequent talk about approaching exhaustion of Baku oil fields also contributed to the general attitude that Baku is the place to extract as much oil as possible and as fast as possible, and not a place to develop technology (McKay 1984: 616). Such was the opinion of a special commission headed by the renowned chemist Dmitriy Mendeleyev, which carried out an assessment of the Baku oil industry in 1881. Having previously visited oil extraction facilities in Pennsylvania, Mendeleyev was appalled by the state of technological development of Baku. The solution he offered, however, was not technological development of Baku industry, but on the contrary transfer of refining to central Russia while Baku would concentrate on crude extraction. For that purpose, he also recommended construction of crude pipeline, which would allow for easier access of crude to the market but would have essentially killed the refining business in Baku. But because of the opposition

of local refiners as well as disagreements within government administration, the construction of pipeline did not take place until 1903 and refining industry in Baku continued to exist (McKay 1984: 616).

While most of technology and majority of experts came to Baku from Russia, smaller but highly influential contribution was inadvertently made by foreign companies. Foreign capital first arrived in Baku in 1873, when Robert Nobel came to Transcaucasia in search of walnut wood for his rifle production, but ended up buying an oilfield and a refinery and establishing a business that would be a leader in the industry for the next thirty years (Mostashari 2000: 94; Altstadt 1992: 21-22; McKay 1984: 607). Nobels were leading in the oil extraction, oil refining, and until the construction of the railroad, controlled also the transportation of both crude oil and kerosene. Some of Nobel brothers' innovations in Baku include: constructing of crude pipeline from oilfields to refineries, building of the first oil tanker in Russian Empire and introducing seaway transportation of oil; construction of kerosene pipeline along the Transcaucasian railroad, generous support to chemical research in the laboratory of Baku Branch of Russian Imperial Technical Society. In addition, Nobel brothers had the resources to obtain expertise from Europe that was not available in Russian empire, through inviting specialists such as for example Swedish geologist Hjalmar Sjörgren and petroleum engineer Alfred Törnqvist, or sending their employees to US to learn from American experience, such as Alexander Bary (Gökay 1999; Tolf 1976, 66).

By 1880s a number of locally born technical specialists began to appear. Of these locally born (i.e. born in the Caucasus) engineers and scientists few were of Azerbaijani origin, such as Movsum-bek Khanlarov (1857-1921) who received his doctorate in chemistry in 1883 from Strasburg University; Farrukh Vezirov (1861-1920), the first Azerbaijani mining engineer, graduate of the Mining Institute in St. Petersburg (1886), who had held employment in the Mining Department, and then in Mirzoyev Brothers Company; Fatulla-bek Rustambekov (1867-1946), a graduate of St. Petersburg Technological Institute in 1893 who upon his return to Baku worked as a general manager in Musa Nagiev's oil company (Mir-Babayev 2009). The majority of locally born engineers were of Armenian origin, replicating the

existing pattern of socio-economic inequality that existed in the region (Altstadt 1992: 36-37). By 1920, there were only 12 Azerbaijani engineers with higher education (Musayeva 1979: 90). These figures were comparable to other professions: thus, in 1910 among 107 lawyers and their assistants only 4 were Muslim (48 Armenian), and in 1913 among 146 practicing doctors 10 were Muslim (Baberowski 2004: 323). Among the large army of blue and white collar workers employed in the oil industry Azerbaijanis along with other Muslims comprised the majority in the unskilled and low skilled jobs, while Russians and other Christians prevailed in skilled jobs (Altstadt 1992: 37). Few Azerbaijani engineers were usually of aristocratic origin, in contrast to more mixed backgrounds of engineers in central Russia.

In terms of professional organizations, the Baku engineers established Baku Branch of Imperial Russian Technical society (*BO IRTO*) in 1879. Strictly speaking, Imperial Russian Technical Society was not a professional organization, as it included not only engineers but also scientists and civil servants involved in technical work. At the same time, it was the only organization in Russia with universal reach that was open to engineers of all specializations and in all parts of Russian Empire. Opened in 1866, by the end of the century, IRTO had 40 regional branches. The activities of the society were diverse, and included development of educational policy, support of technical education, public lectures, publications etc. (Balzer 1996a: 61; Bradley 2002: 1117). Most of the Baku engineers and scientists, especially those who were educated in Russia, were already members of IRTO, and establishing its branch in Baku was the easiest way to self-organize. The Society opened a technical library and published a journal – “The Annals of *BO IRTO*” from 1886 (Mir-Babayev 2009: 113–114). One of the most important areas of the society’s activities was research in the chemical laboratory which was established with the financial assistance of leading oil and refining companies, especially Nobel Brothers Petroleum Company. Many of technical innovations that were developed in Baku were developed in this laboratory. Eventually the laboratory was transferred to Baku Polytechnical Institute when the latter was established in 1920 (Mir-Babayev 2009: 117). In 1909 the society also established its own Nobel Prize,

named after Emmanuel Nobel. The prize was awarded three times – in 1909, 1911 and 1914 (Mir-Babayev 2009: 127).

To summarise, the engineering community in pre-Soviet Baku was a product of complex and often paradoxical industrial development of the city. If in the beginning of this development all engineers were employed by the state, by the end of 19th century only a small proportion of Baku's engineers were state consultants. The majority worked in private enterprises which had boomed thanks to the Russian state's laissez-faire approach to the oil industry. The industrial boom created high demand for the engineering profession, thus ensuring good incomes and high prestige. Like elsewhere in Russia engineers attempted to organize into a professional organization. But while Baku may have been a booming industrial town, it was still an intellectual periphery far removed from the main centers of learning in Russian Empire, which were concentrated in state-run technical institutes and universities. While this distance worked to the financial advantage of engineers, driving demand for their knowledge even higher, at the same time this meant that most of this professional community were migrants who had neither strong ties nor commitment to the local community; many came temporarily and were prepared to leave if the conditions change. And this is exactly what had happened in the turbulent years of 1918 and 1920 when Russian Empire disintegrated and the city became arena of struggle between different political forces.

### **2.3. Soviet takeover and industrialization**

After the Bolshevik Revolution in Russia Azerbaijan had gained a brief independence. The two years of the independent Azerbaijan Democratic Republic (ADR), between 1918 and 1920 were plagued by war with the neighbouring Armenia, contestation of power in Baku by the Bolsheviks, and British occupation before Baku was finally taken over by the Red Army in April 1920 (Altstadt 1992, Swietochowski 2004). The effect of these two tumultuous years on the economy, including oil production, was devastating. The oil industry was already in decline following 1905 crisis and World War I with the oil output decreasing and

unemployment increasing sharply. Between 1918 and 1920 the oil industry was nationalized by Bolsheviks, then returned to the old owners a few months later, only to be finally nationalized again in June 1920 (Dilbazov 1976: 36-44). In addition, civil unrest and military actions in the region disrupted both production and transportation of oil, bringing oil production in 1921 to the lowest point in decades - 3.87 mln ton, compared to nearly 12 mln tons in 1901 (Dilbazov 1976: 75; Goldman 2008: 4). Other sectors of economy were also affected. Many professionals, especially foreign born, had left the city. The reconstruction of the oil industry and the reorganization of professional life under new principles only took place after Soviet takeover in 1920.

### **2.3.1. New Economic Policy**

The position of the pre-revolutionary professionals was radically changed with the Bolshevik revolution. From an upwardly mobile group of intelligentsia with high social status and prestige that often saw itself as a carrier of meritocratic values standing outside of class divisions, the professionals at once turned into a group with very ambiguous social standing. As part of the pre-revolutionary elite they were now considered class enemy, but at the same time their skills and knowledge were indispensable for reconstruction of the economy devastated by the First World war and then by the Civil war. The old intelligentsia was pejoratively called ‘bourgeois specialists’ (Fitzpatrick 1988: 600; Bailes 1978: 50–51). Specialists who did not explicitly embrace Soviet ideology were seen as allied with the old dominant classes – namely bourgeoisie, until proven otherwise. Accordingly, they were seen as inherently untrustable by the new authorities. At the same time they were often despised by workers and new Communist managers (commonly people without higher education) for their past ties with the old owners, higher standards of living and perceived arrogant demeanour (Fitzpatrick 2002: 114). Among these old cadres technical specialists, including scientists and engineers were especially important for rebuilding of the economy and thus cooperation with them became necessary. With the adoption of New Economic Policy (NEP) in 1921 this cooperation with the bourgeois specialists became official party policy. In the industry, specialists received protection from workers and managers baiting;

research institutes were being opened, and emigrant technical specialists were invited to return (Bailes 1974: 53–61; Fitzpatrick 2002: 75–79).

The Revolution also brought peculiar results in terms of engineers' occupational control and autonomy. In the workplace, the scope of autonomy was initially drastically limited by factory committees (*fabzavkomi*) (Sirianni 1985: 69). These were a form of workers' self-management that began to organize in 1917 before the Bolshevik revolution and in its immediate aftermath. The committees supervised operations, including issues such as working hours, hiring and firing, payment of wages, etc. The engineers, along with old managers and, before nationalization, owners, often resisted and sabotaged the decisions of these committees, which of course did not improve relations with the workers (Sirianni 1985: 75). However, this form of workers' control was short-lived, because of the overlap of competences with trade unions and the more general difficulties of decentralization that they presented. In 1918, the factory committees began to be merged with trade unions and a shift towards more centralized administration took place (Sirianni 1985: 80–81). When cooperation with bourgeois specialists became official policy during NEP, engineers were able to regain some of their autonomy. After the initial years of workers' control, the specialists now acquired very wide autonomy in technical matters, due to the ignorance of the Communist managers, who were usually appointed in their positions for political and not professional reasons. It often happened that the chief engineer not only supervised all operations, but also drafted most documents on behalf of the manager, including those that had to do with their own fate. The old specialists often worked in state agencies, including Scientific Technical Administration of VSNKha and the State Planning Agency, Gosplan, and were able to exert considerable influence on policy-making and decision-making processes (Bailes 1974: 460). But their upward mobility was blocked for ideological reasons – as non-communists they could not aspire to managerial positions. Thus, this ambivalent policy created a strange situation when professionals had wide autonomy in their workplace but the leadership and responsibility rested with the formal administration who often had little understanding of the production processes.

Relative freedom of association and the reintroduction of private publishing during NEP led to resurgence of professional organizations and publishing activities. The Imperial Russian Technical Society (*IRTO*), renamed Russian Technical Society, as well as a number of smaller organizations survived the revolution and continued their activities. In 1921 they were united in the All-Russian Association of Engineers (*VAI*). Under relatively liberal NEP policies *VAI* and other technical societies were able to publish journals, organize congresses and so on. In 1920s 16 engineering societies were active in Russia; most of them were politically neutral and avoided affiliation with Communist Party (Ilyina 2000: 173; Nikolaev 2005: 92). Another form of organization was trade unions. The peculiarity of the Soviet experience was that the trade unions were organized on the branch principles, and united all employees of a particular branch of economy rather than all workers of a particular occupation (Ashwin and Clarke 2003: 8). Thus, engineers and workers were united in one trade union according to their branch of industry. However, engineers were allowed to organize engineering-technical sections (ITS) in such Trade unions (Bailes 1978: 58). This move eventually turned out to be instrumental in promoting the development of branch specific identities as opposed to professional ones that became characteristic of the Soviet professionalism in the later periods.

In Azerbaijan, the main priority under NEP was the reconstruction of oil industry and supporting industries such as oil refining and machinery. After the second and final nationalization of oil industry in summer 1920 the workers' control was established in Baku when elsewhere in Russia it was already being dissolved (Dilbazov 1976: 72-76). The drive for centralization reached Baku in 1921, when the nationalized oil fields, drilling and refineries were united in *AzNeft* Trust under the direction of VSNKha of RSFSR and later USSR. The importance of Baku's oil industry for Soviet government can be seen in the appointment of Alexander Serebrovsky as the director of *AzNeft* Trust. Serebrovsky was an old Bolshevik and a professional engineer – an exceptional and highly valuable personality for the Party, since as late as 1928 there were only 138 Communist engineers (Fitzpatrick 1979: 378). Although not a specialist in the oil industry per se (Serebrovsky had

worked in several different plants as a mechanical engineer), Serebrovsky had some experience in Baku in 1905 and was considered by Lenin to be both sufficiently trustworthy and educated (Arushanov 2012). Several of the pre-soviet mechanical and refining workshops were reorganized into factories to increase the production of oil drilling equipment and refining of the petroleum products (Radjabov and Radjabov 2000: 64–66). As a result of all these efforts, by 1925/26 the industrial production in Azerbaijan reached 71% of the pre-war (1913) level (Dilbazov 1976: 102).

A major problem of the reconstruction of industry in Baku was lack of specialists – in the turbulent years after 1918 and nationalization many had left. To address this, more than 500 specialists and technicians were sent to Baku from Russia in 1921 (Dilbazov 1976: 72). The Soviet state had also decided to re-start cooperation with foreign companies, who possessed crucial technologies which were not possible to be reproduced in Azerbaijan or Russia. In addition to purchasing technologies, the Soviet state also hired foreign engineers and sent local engineers for training abroad, especially in the US (McKay 1974). In particular, Azneft signed a technological assistance contract with International Barnsdall Corporation, which helped to modernize infrastructure and restore the output (McKay 1974: 352). Efforts were also made to attract some of the old specialists previously employed in the private industries. Thus, Rustambekov, mentioned above as one of the first native Azerbaijani engineers, was invited to work at Azneft and enjoyed a successful career there until 1931 (Mirbabayev 2009: 116). Others were persuaded to return from emigration – such as Bahram Huseynzade who was sent to study to Germany as part of ADR government's scholarship program in 1919. In 1926 he returned to Baku and worked in Azerbaijan for over 10 years (“Sarah Hanim Ashurbeyli’s Memorial Site” 2012) The total number of the old specialists attracted to work in Soviet Azerbaijan is not known, but like elsewhere in Soviet Union the number of available specialists was insufficient for Bolsheviks' grand development plans.

Along with the policies towards pre-revolutionary specialists, the education of new intelligentsia, and especially technical intelligentsia, was an important issue on the

Bolsheviks' agenda. A number of new higher educational institutions (*VUZ*), mostly Pedagogical and Technical, were opened all over Soviet Union in the first years after Revolution. The opening of new institutes had two aims: to widen access to higher education for workers and peasants, and to decrease the influence of the older higher educational institutions which overwhelmingly opposed the new order (Fitzpatrick 2002: 64–65).

Access to higher education was traditionally an important problem in Russia where only a tiny minority of population had higher education, and even few people were literate. The Bolshevik ideal of education as put forward by Lenin and Lunacharsky, the first People's Commissar of Enlightenment, was creating a system with equal access to education regardless of class origin; and this education must be 'polytechnical' – which meant mastering a wide array of skills, including theoretical subjects and practical 'workers' skills and no specialization until higher education (Fitzpatrick 2002: 5–10). But this vision encountered a lot of resistance, from existing educational institutions, industry, and parents, and in the short term the education policy was very far from the ideal. First, despite the ideal of equal access, the affirmative action policy aimed at proletarianization was adopted. But because most of the workers and their children did not possess secondary education diplomas, the academic criteria for admission such as secondary education diploma and entrance examinations were abolished for several years (Fitzpatrick 2002: 42–43). Instead, 'workers' departments' (*rabfak*) were established at the *VUZy*. These were essentially preparatory courses operating on class basis – for workers and peasants. Admission to *rabfak* did not require completed secondary education, but those who passed *rabfak* were guaranteed admission to higher education. In addition, a quota of students was also nominated by the Party, Komsomol and Trade Unions.

In Azerbaijan, the situation with the higher education was even more difficult. Until 1918 no higher education institution existed in Baku; all professionals were educated either in Russia or in Europe. In 1919 the Azerbaijan Democratic Republic government established first University with two departments – medical and historical-philological; the first graduation from the university took place under

Soviet rule in 1922. In 1920-21 two more higher educational institutions were established in Baku: the Polytechnic Institute and the Pedagogical Institute. Because of the importance of the oil industry for Soviet authorities technical education was a priority, and Polytechnic institute was the first to be established - only six months after Soviet takeover, in November 1920 (Musayeva 1979: 92). This was the first higher technical institution not only in Azerbaijan, but in all of the Caucasus. The new institute was based on the old polytechnicum - a vocational school training workers for oil industry, and had five departments: petroleum, electrical-mechanical, civil engineering, agricultural and economic. The instructors were mostly brought in from other institutions in Moscow and Petersburg, and the number of instructors reached 30 people in 1923 (Musayeva 1979: 101). The first recruitment of students was quite large – 850 people, but the dropout rate was also very high: by 1929 only 71 engineers had graduated (Musayeva 1979: 186). However, the dropouts were a major problem common to all higher education during NEP (Fitzpatrick 2002, 106). Like elsewhere in Soviet Russia, efforts at proletarianization through selection of students based on class and *rabfaki* was taking place in Baku.

Another dimension of education and more generally cadre policy in Azerbaijan was *korenizatsiya*, or indigenization. Like in most cities on the Soviet periphery, the urban population in Azerbaijan was multiethnic, with Russians, Jews and Armenians constituting a majority. They were also disproportionately represented in the industrial sector, among skilled workers and especially specialists with higher education. As mentioned in an earlier section, this inequality dates back to the pre-Soviet division of labor in the oil industry. Thus, in Baku, out of total population of 453,333 Russians composed 159,491, compared to 118,737 Turks (Union Census 1926). Bolsheviks recognized the existing ethnic disbalance and in accordance with their understanding of development sought to eliminate it. It was expected that industrialization would eventually draw enough people from the rural areas to the urban proletariat, and the existing inequalities would be resolved there (Lieber 1991: 16). However, in the short term perspective affirmative action was seen as necessary to help eliminate these inequalities. In addition, policy of

indigenization was thought as a tool to legitimate Bolshevik rule both to the local elites and majority of population where they did not have much support. The *korenizatsiia* policy was adopted in 1923. It operated at many levels, especially targeting state administration, Party membership, industry and education. *Korenizatsiia* policy involved two components – mechanical and functional (Martin 2001: 132–146). The mechanical *korenizatsiia*, which aimed at creating national elites, in practice meant recruiting greater numbers of individuals with titular nationality in positions of expertise and leadership and replacing non-titular ethnics in such positions. Thus, in the Communist Party of Azerbaijan the number of Turks, as Azerbaijanis were called at the time, increased from 35 to 43% between 1923–1925, although they still constituted a minority (Altstadt 1992: 122-123). In education, *korenizatsiia* meant preferential admission of Azerbaijanis. However, the implementation of this policy in technical education was rather difficult. In the early years of operations of the Polytechnic Institute, very few Azerbaijanis studied there. Thus, in 1924/25 out of 2483 students in Polytechnic Institute only 323 were Azerbaijani (Musayeva 1979: 104). The main reason behind this was the use of Russian as the language of instruction at the Institute. The language problem was dealt with through the second, functional component of *korenizatsiia* policy: it addressed the use of titular languages in government and in education. In administration and government functional *korenizatsiia* was easier to implement and therefore more successful: in the early stage it required translation of documentation and instructions and hiring of Azerbaijani speaking personnel. In education, and particular in technical education, the situation was more complicated. The invited instructors naturally did not have a command of Azerbaijani; the number of pre-revolution Azerbaijani experts that were attracted to teaching in line with policy of cooperation with ‘bourgeois specialists’ was not sufficient. Nevertheless Azerbaijani sectors were opened in several VUZi, including Oil Institute (that was the new name of former Polytechnical after in 1930 agricultural and economic faculties were established as separate institutes) (Musayeva 1979: 191). However, even in the Azerbaijani sectors textbooks and other teaching materials used were mostly in Russian, which significantly limited the impact of *korenizatsiya* in the technical education.

### **2.3.2. First Five-year Plans**

The New Economic policy officially ended in 1928 and was replaced with central planning. This new policy was developed in 1926-1927 by state planning agency (Gosplan) and it meant complete re-orientation of Soviet economy. The mixed economy and private sector were to be abolished, and five year plans with set targets for production were introduced (Nove 1992: 141-146). The main aim of first three Five Year Plans, as envisioned by Joseph Stalin, was rapid and state-driven industrialization of the country, and it included construction of large heavy industry plans, creation of energy systems, and collectivization of agriculture in order to release labor that would be necessary for industrialization. The targets set by the First Five Year plan were very high and in fact unrealistic and unattainable (Bailes 1974: 61-64). It has been argued however that the main goal was motivational, and as such it was successful as the industrial output indeed increased multifold, although the actual target figures were never achieved. Thus, in Azerbaijan, the annual production target for oil set in 1930 was 40 mln ton, but in 1931 only slightly more than half of this amount was produced (22.1 mln ton) (Matveychuk 2011). But also the plan presupposed further diversification of industry. The areas of diversification included development of manufacturing of drilling equipment, the development of refining and chemical industries, and also mining in the western parts of Azerbaijan and textile industries (Dilbazov 1976, 106). The plants that were established in 1920s were expanded and equipped with new technologies. The aim of this industrial development was import substitution – to reduce the dependency of the Soviet oil industry on the imported equipment. In order to provide the growing industry with electricity the energy system of the Republic was expanded, and in 1938 large power plant was constructed in Baku suburb Sumgait. This marked the beginning of the Baku-Sumgait industrial center that expanded in the post-war decades (Dulaeva 1962).

Stalin's industrialization became crucial also in re-organization of the Soviet engineering profession, which involved abolishment of the vestiges of organizational autonomy, repressions against 'bourgeois specialists' and parallel creation of large group of 'red' technical specialists (Fitzpatrick 1979: 181-205).

This reorganization appears paradoxical: it would seem that in the context of rapid industrialization engineers' expertise would be ever more important and indispensable. Yet Stalin's vision of centralized and planned economy and the unity of the Party and the state precluded professional autonomy and the possibility of dissent that such autonomy entails. Indeed, dissent was present from the very inception of industrialization: many prominent technical specialists had opposed Stalin's version of industrialization as unrealistic (Bailes 1974: 460). Thus, the end of NEP and beginning of industrialization marked a change to a much more repressive policy towards old 'bourgeois specialists'. The most dramatic aspect of this new policy was the trials of old specialists for charges of wrecking and sabotage.

The first beacon in the series of such trials in Soviet Union was the highly publicized Shakhty Affair (1928). A group of mining engineers and other technical specialists from Donbass coal mining region were accused of sabotage, espionage and conspiracy in favour of old owners and foreign states. In total, 53 specialists, three of whom were foreign nationals, were convicted and received various sentences ranging from death to prison terms (Fitzpatrick 1979: 380; Bailes 1978: 90). Another big public trial was the Industrial Party Affair (1930). The prosecutors claimed that the defendants, all of them high ranking engineers and academics, were conspiring with some 2000 of their colleagues to create the "Industrial Party" with the aim to take over the government of Soviet Union (Bailes 1974: 447; 1978: 95-121). Many more cases of wrecking, sabotage, conspiracy and counter-revolutionary activities were 'uncovered' and tried between 1929 and 1931, and any more engineers, academics and technical specialists were convicted all over Soviet Union. According to some estimates, in 1931 alone 85 professors and 1152 engineers and technicians were convicted for 'participation in wrecking organizations' (Kislitsin 1993).

Several of such cases also implicated engineers and specialists from Azerbaijan. The biggest of them was the case of wrecking in the oil industry in 1931, in the course of which large number of engineers and managers in the Soviet oil industry, including Azneft, were tried and convicted (Alekperov: 133; Matveychuk 2012).

One of the convicts was the above mentioned Rustambekov, by then technical director of Azneft. He was initially sentenced to 10 years of imprisonment, but was released after just two years thanks to personal interference of Sergo Ordjonikidze, the People's Commissar for Heavy Industry. By this time the attacks on old specialists subsided, and Rustambekov returned to Baku (Djafarov and Djafarov 2001). But wrecking was not the only charge available to the prosecutors. Another popular accusation was participation in conspiracy and anti-Soviet activities – and another prominent case in Azerbaijan was about such an organization. Known as the Affair of Azerbaijan National Center this case involved 53 people accused of participation in a secret organization established in Istanbul in 1924 by ADR's former President Mamed Emin Rasulzadeh (U mudlu 1997). Of the 53 people convicted in this trial, 12 were professional engineers, most of them ethnic Azerbaijanis and all of them educated in pre-Soviet times. Thus, these trials signalled not only the change in the policy towards old specialists, but also the change of policy towards national cadres after the end of *korenizatsiia*.

The impacts of these repressive measures were even more far reaching. Many of those implicated in the trials were prominent academics and professors who opposed Stalin's reforms in technical education (Bailes 1978: 159-168). Stalin called for reduction of the term of education to 3.5 years, which for many specialists seemed not enough. The arrests curbed the opposition to these reforms. In addition, the trials, and particularly the Industrial Party Affair, were part of the attack on the autonomous organizations of professional engineers. Many of the convicts were leaders of the professional organizations, especially VAI and RTS. VAI and RTS as well as a number of other professional organizations, were shut down around 1930 (Ilyina 2000: 80). Instead, the All-Soviet Association of Scientific and Technical Workers for Socialist Construction (*VARNITSO*), a Communist party sponsored organization established in 1927, received official support. In 1930s a number of centrally organized engineering technical societies with open membership, thus aiming to breakdown the caste-like mentality of engineers began operation (Bailes 1978: 121).

It is important to note that the aim of these repressions was not the complete purge of old specialists from the industry – their knowledge was still necessary for the industrialization – but rather control and curbing of possible opposition. The knowledge and skills of many convicted specialists were used even after their conviction and imprisonment. In June 1929 Politburo of Communist Party passed a secret resolution “On the use of prison labor” (Gregory and Lazarev 2003, 9). This resolution formalized a practice that already existed from about 1926; but it also opened ways to organization of forced labor at much larger scale. A system of corrective institutions that included Collective Labor camps and labor colonies and some special confinement facilities, were created in the following years. This system, known as GULAG (Main administration of Labor Camps) existed until Stalin’s death in 1953. While most of the labor employed in the GULAG system was low skilled, the system also used the labor of specialists. The most elite scientists and engineers were confined to the Special Research Bureaus (*OKB*), informally known as *sharashki*. *Sharashki* became a home to much of Soviet technical research, especially in highly sensitive fields such as aviation, space and nuclear programs (Gerovitch 2008; Schmid 2008). Some of those convicted in the Industrial Party trial were imprisoned in these research bureaus, such as for example Leonid Ramzin, former director of the Thermal Technical institute (Bailes 1974, 459). But in addition to these closed facilities that confined the elite convicts, labor of specialists was used in other camps as well. Most of the convicts from oil and other extracting industries were sent to Ukhta-Pechora Camp (*UkhtPechLag*) in northern Komi (Alekperov 2011, 124). This camp also was the place of confinement for most of engineers from Baku due to their oil industry specialization. This first round of Stalin’s repressions against old specialists ended in 1931. After that, the trials for wreckage subsided, although the professional prestige of old specialists was irreversibly undermined and the ghosts of wrecking and sabotage charges continued to loom in the background.

Yet, the ultimate goal of the new policies was not just the undermining of the role of the old technical specialists, but rather the creation of new Soviet intelligentsia, closely bound with the Soviet stat. During 1930s, the very concept of intelligentsia

underwent a reconceptualization. If originally in Russia intelligentsia meant a stratum of educated people with a common ethos of social responsibility and critical stance towards the state (Gella 1979), during the early Stalinist years a new term 'working' or 'toiling' intelligentsia appeared (Fitzpatrick 1979, Bailes 1974, Tromly 2014). Unlike the pre-Soviet intelligentsia, this new stratum was seen as bound with the workers and peasants in terms of class position. At the same time, the ethos of social responsibility of intelligentsia was interpreted as their service to the Soviet people (Fitzpatrick 1979: 399)<sup>10</sup>. Engineers and scientists, or technical intelligentsia, were important in this new vision of intelligentsia because of their work in the highly prioritized production sector (Fitzpatrick 1979, Bailes 1978).

The replacing of old technical specialists was tackled at two levels. First, as a short term solution, the practice of dual management where technical decisions were made by specialists and overall management by Communist directors was to be eliminated and replaced by one-man management ("edinonachalie") in industry (Kuromiya 1984). For this system to work existing industrial managers had to be educated and improve their knowledge of technology. This was done mostly through correspondence courses organized at the so-called Industrial Academies (Fitzpatrick 1979, 380). The second and longer term policy was the expansion of educational system in order to increase recruitment and production of new specialists, especially from among the workers. New technical institutions were opened. In Baku, the Polytechnical Institute was reorganized in 1930, with Agricultural and Civil Engineering departments being transformed into separate institutes. The remaining Technological department was divided into two – geological and oil production, and the institute was renamed into Azerbaijan Oil Institute (Musayeva 1979, 186). One of the most controversial moves of the new policy was the reduction of the term of study in technical institutions to 3-3.5 years – and this was one of the moves that was especially opposed by the old specialists and professors. This was a very significant reduction, because despite official length of the program set at five years, it often took longer to graduate.

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<sup>10</sup> It is important to note that in later periods the original meaning of the term gained prominence once again (Tromly 2014, 244-250). With the rise of dissident movement in 1960s the opposition to the state re-emerged as one of characteristics of intelligentsia, albeit a highly contested one (Tromly 2014, 256).

Thus, in Baku Polytechnic institute, the program actually lasted for 7 or 8 years (Musayeva 1979, 186). But the most significant policy that had long lasting impacts on both the system of education and the social composition of new technical intelligentsia was '*vydvizhenie*' (promotion) campaign, begun in 1928. In the course of the campaign between 1928 and 1931, almost 20,000 students (the so called 'thousanders') were recruited, mostly for engineering institutes (Fitzpatrick 1979, 384). In Azerbaijan, the promotion campaign also included indigenization component, with the total number of ethnic Azerbaijani students reaching 50.5% in 1932, compared to just 27.3% in 1927 (Musayeva 1979, 191). Hundreds of students were also sent from Azerbaijan to technical institutes in Russia and Ukraine (Musayeva 1979, 190). In addition, as part of the promotion campaign, in the industrial enterprises workers were promoted to administrative and engineering positions and trained for them on the job and talented graduates, especially of proletarian origin, were encouraged to remain in the institutes and pursue academic careers (Fitzpatrick 1979, 386; Musayeva 1979, 191).

As a result of these reforms, the output of graduates increased dramatically: thus, in Baku, while only 42 engineers graduated in the academic year 1928/29, in 1932 the number of graduates increased more than 10-fold and reached 575 people (Musayeva 1979, 188). However this multifold increase in the number of graduates was achieved at the expense of quality, as VSNKha confirmed after the graduation of first *vydvizhentsi*. Because of that, the same year technical institutions were transferred from People's Commissariat of Enlightenment to the All-Soviet Committee on Higher Technical Education at VSNKha, so that the Commissariat could exercise at least some influence on the quality of education (Fitzpatrick 2002, 217–220). This, however, was not sufficient, and eventually the program was again extended to traditional 5 years.

The campaign of *vydvizhenie* was soon ended too – in 1935. Next year, new Constitution, the so called 'Stalin's Constitution' was adopted. In this Constitution all Soviet citizens were declared equal in rights regardless of their class origin. In the speech introducing the Constitution Stalin announced the new class structure of Soviet society which included peasantry, working class and intelligentsia as an

intermediary stratum (Fitzpatrick 2002, 235). The equalization of rights of all citizens meant the end of targeted class-based harassment of experts. However, a large number of specialists also suffered from the Great Purges between 1937-1939. Unlike the trials of 1928-31 this repression did not specifically target old specialists, but was more sweeping and affected many of the old Communist cadres, including industrial managers (Fitzpatrick 1979, 396). Thus, Alexander Serebrovsky, the former director of *Azneft* (1920-1926) and by then Deputy People's Commissar (equivalent of a minister) of Heavy Industry was arrested in 1937 (Matveychuk 2012). The emptied positions were commonly filled with young graduates, recent participants of the *vydvizhenie* campaign, who, according to Sheila Fitzpatrick, were some of the beneficiaries of the Great Purge (Fitzpatrick 1979, 401). Thus by the end of 1930s new Soviet technical intelligentsia not only appeared on the public scene, but to a large extent replaced both the 'bourgeois specialists' and old communists.

To conclude, by the end of 1930s, the engineering profession in Soviet Union had undergone a profound transformation. The period of the first Five-Year plan has been decisive in curbing pre-Soviet forms of corporate professional autonomy and reorganizing of the profession according to new principles. As a result of combined policies of repressions against old specialists and large scale recruitment of students into technical educational institutions, engineering profession transformed from a small and elitist group endowed with relatively autonomous professional organizations into a mass occupation, both in terms of numbers and the social origin of new engineers. After this reorganization was complete, it also became impossible to speak of engineering profession in the usual terms of 'state intervention' – as all self-regulating bodies were eliminated and all members of the profession became integrated into state institutions. The opposition between 'red' and 'expert' which has shaped state policy during NEP lost its relevance with the emergence of 'red experts' as a result of *vydvizhenie* campaign. This integration of engineering profession into the state has been the most lasting legacy of Stalin's industrialization, the influence of which lasted throughout the Soviet period.

Turning to Azerbaijan, Baku's role as the center of oil industry of Soviet Union was

re-established, and it also became one of the centers of education of oil specialists. Through *korenizatsia* greater number of Azerbaijanis of modest social origins were able to acquire education and join the ranks of new intelligentsia. As Stalin himself mentioned in his speech at the Eighteenth Party Congress in 1939, “The remnants of the old intelligentsia were dissolved in the body of a new, Soviet, people’s [*narodnaia*] intelligentsia.”<sup>11</sup> But although numerically the old technical professionals indeed became only ‘remnants’, their role should not be underestimated: some of them, often during or after a prison term, continued to work and even to head the most select technical programs in Soviet Union in the GULAG labor camp system. These prison bureaus are the most extreme case of curbing of professional autonomy; but for the rest of the profession their autonomy was limited as well. Their professional organizations were closed down or reorganized, their choice of research topics and projects where to work was limited, and arrest and imprisonment (in the best case scenario) were constantly lurking around the corner. The professional relations under Stalin represent the period of the least restrictions on the autonomy and power of the professionals in Soviet Union, including engineers. The situation changed after Stalin’s death, but many institutional structures, that were created in the 1930s continued to exist in some form till the end of Soviet period and beyond.

## **2.4. Engineering Profession from WWII to late socialism**

### **2.4.1. WWII and its aftermath**

The structure and territorial organization of Soviet economy and industry were much changed in the course of the Second World War. Many industrial plants were converted for military production; in addition, a number of strategic enterprises were evacuated in the beginning of the war to the Eastern part of the country, further away from the theatre of military operations. In Baku, several mechanical engineering plants and factories were also relocated to the Urals and Volga regions, together with their equipment and personnel (Radjabov and Radjabov 2000, 71). At the same time, the oil production industry became victim of two contradictory

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<sup>11</sup> Stalin J. “Otchetnyi doklad na XVIII s’yezde parti”, cited in Fitzpatrick (1979, 399)

imperatives: on the one hand Baku was crucial for supply of fuel, and the production targets increased in the first years of the war. Due to the importance of oil industry for the military the oil workers were even exempted from mobilization. On the other hand, Baku's location not far from the frontline, especially in 1943 when German army was approaching North Caucasus, made it vulnerable for potential attack, and therefore the central government sought to develop production in more secure new oil regions in the East – Volga-Urals and Western Siberia. Equipment and manpower, including both the workers and highly demanded technical specialists were evacuated to these newer oil regions that became known as 'Second Baku' (Alekperov 2011, 136–138). Thus, the years of the war became for Baku's oil industry both the peak and the beginning of decline. To this day, this transfer of oil industry assets to the East has two competing interpretations in Azerbaijan. On the one hand, it is a source of pride for the Azerbaijan's contribution to the victory in the WWII and to the development of Soviet oil industry as a whole. On the other hand it is seen as the undermining of oil industry in Baku that ripped Azerbaijan not only of new investments but also of existing assets, including the newly formed technical intelligentsia (Sultanov 2004).

After the war, the main task of the Fourth Five Year Plan (1946-1950) was rapid reconstruction of industry. This was a very intensive but relatively short period, with pre-war 1940 production levels exceeded already in 1950 (Hanson 2003, 25). In Azerbaijan in this period the existing industrial enterprises focused primarily on repair works, although some new factories began to be constructed in 1946-1947, such as Baku Electro-Mechanical Plant (Radjabov and Radjabov 2000, 75).

#### **2.4.2. De-stalinization and Khruschev's reforms**

After the recovery was complete it became obvious that the period of extensive and rapid industrialization was over and that the new program of industrial development was necessary. After Stalin's death in 1953 his successor Nikita Khrushchev emphasized diversification of industrial production and shifted focus from heavy industry to production of consumer goods. He also attempted to decentralize Soviet economy and introduced territorial Councils for People's

Economy (*sovarkhozy*) which were supposed to replace central ministries and bring decision making closer to the ground (Hanson 2003, 58–59). Another innovation of Khruschev's reforms was introduction of a new form of industrial organization in 1962 – the so-called production association (*proizvodstvennoye obyedinenie*) (Lewis 1984: 132). These were groupings of several related enterprises, previously subordinated to different branch ministries; their integration into one organization aimed to increase specialization of individual enterprises and achieve economies of scale. This was experimental measure, and the production associations were first established within one *sovarkhoz* – in Leningrad region (Lewis 1984).

In Azerbaijan, the trend towards further diversification and expansion of industry that was begun before the WWII continued. An important driving factor in this process has also been the decline of Baku's role as the center of Soviet oil production. After decades of extensive exploitation Absheron's onshore oilfields were depleted and the center of Soviet oil extraction shifted to Western Siberia. Some attempts to develop offshore oil production were made, most famously with construction of the offshore drilling town *Neft Daslari* (the Oil Rocks) off the Caspian coast in 1949 (Alekperov 2011, 142). But the rich oilfields in Western Siberia were more easily accessible and did not require investments in the development of offshore technologies, and production shifted there. Baku's new main specialization has become production of oil field equipment. In 1950s plants and factories established before the War were expanded, and several new ones were built, including also electrical and radiofactories. At the same time the industry was expanded outside of Baku: in Kirovabad (now Gence) electrical factory was established; in Mingachevir large hydroelectric power plant was constructed in 1954; and Sumgait near Baku was designated as a new industrial center specializing in chemical and metallurgical industries: a number of chemical plants were constructed there between 1952 and 1959, and pipe rolling and aluminium plants in 1952 and 1955. (Dilbazov 1976, 52; *Directions of Effective Integration of the Energy Systems of the South Caucasus Countries* 2004, 259; Radjabov and Radjabov 2000, 76). Thus, diversification of industry in Azerbaijan was once again

mostly concentrated in the heavy industry sector despite the declared union-wide shift towards consumer goods production.

Khrushchev's reforms also involved changes in technical education. Concerned to create stronger links between industry and education, prospective students were now required to have two years of working experience before entering higher education institution. The number and capacity of evening and distance learning degrees and courses was also expanded in order to attract more workers to technical education (Kudayarova 2010, 78). Pursuing the same goal of adjusting technical education to the needs of industrial production a new kind of technical educational institution – factory colleges (*zavod-vtuz*) was introduced in 1960 (Balzer 1982, 27–28; Kornev 2012: 8, Liusev 2009, 72). These technical institutions were organized under the auspices, and often on the premises, of specific industrial enterprises and trained engineers that were required for this particular enterprise. The factory colleges provided industry-specific training but awarded general engineering diploma. They were a controversial measure because of the disparities between graduates of traditional technical *vuzy* who received better training in fundamental disciplines, and the graduates of new *zavod-vtuz* whose training was narrower and targeted specific industries. The measure also raised questions about convertibility of technical diplomas awarded in factory colleges and general technical institutes (Balzer 1982: 27-28).

Reflecting the shift in industrial production, the technical education in Azerbaijan was also diversified and expanded. The Azerbaijan Industrial Institute *AZI* (formerly Polytechnical (1920-1930) and Oil Institute (1930-1934)) was reorganized once again in 1950. Several departments (Construction and Architecture, Transportation, part of Mechanical) became the basis for the new Azerbaijan Polytechnical Institute (*AzPI*) (Aliev 1984, 52). The Industrial Institute, the oldest technical education institution, thus became more specialized in training engineers for oil and supporting industries. In 1959 this specialization was reflected in yet another renaming of the Institute into Azerbaijan Institute of Oil and Chemistry, a name that the Institute retained till the dissolution of Soviet Union

1991<sup>12</sup>. In 1962 a branch of *AZI* was opened in Sumgait, with two departments. In 1965 the Sumgait branch became affiliated with the Synthetic Rubber plant as its *zavod-vtuz*. Finally, in 1975 a third technical institute was opened in Baku – the Institute of Civil Engineering, based on the Civil Engineering department of the Polytechnical Institute (Aliyev 1984, 53). In addition, between 1969-1982 a large number of students from Azerbaijan were sent to study to the universities and *vuzy* in other parts of Soviet Union (Aliyev 1998).

In addition to the changes in the structure of Soviet industry and the educational system, some other reforms initiated during Khrushchev's term in power affected the professional autonomy and the organization of engineering profession more directly. First, Stalin's system of forced labor, GULAG, was gradually dismantled after his death in 1953 and in 1959 the GULAG was closed down completely with the decree of the Council of Ministers of the USSR (Sokolov 2003, 41–42). *Sharashki*, the special prison research and design institutes which used to form the backbone of Soviet Union's most advanced technical research, were closed as well. With their shutdown the practice of research work as forced labor was put to an end and technical specialists regained some of the control over their work that they had lost during the 1930s. The success of two high priority projects in late Stalin's period – the nuclear and the space programs – has also contributed to the relative empowerment of scientists and especially of physicists and established them as the 'highest caste' among soviet scientists (Ivanov 2002, 321–322; Holloway 1999, 187–189).

The relationship between engineers and these elite scientists turned out to be crucial for the organization of engineering profession in post-Stalin era. Scientists sought to use the liberalization of Khrushchev's regime in order to consolidate and institutionalize their newly regained professional autonomy, however limited it was. They wanted to revise the notion of soviet science as 'people's' and 'Party' science, that is, science that is subordinated to the needs of the people under the direction of the Party (Ivanov 2002: 317). Instead, some of the leading physicists such as P.L.

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<sup>12</sup> Despite the multiple changes of the name, this institution remains informally known as "AZI", an abbreviation of Azerbaijan Industrial Institute, to this day.

Kapitsa, I.V. Kurchatov, A.I. Alikhanov argued that the relationship between science and practice should not be one of subordination; and that 'fundamental' science, abstract and disengaged from the needs of narrow practicality is in fact necessary not only for scientific progress, but also for technological advancement (Ivanov 2002: 320-321). Practically, this re-conceptualization of the role of science in Soviet society would mean that scientists would be allowed to determine the direction of their research and increased autonomy of the Academy of science.

However, the engineering disciplines which were until then an integral part of the Academy of Sciences, presented an obvious problem for this revised concept of Soviet science. The much higher interdependence between engineering research and industry did not fit the new vision of science's social role and in fact rendered Academy's aspirations for autonomy from the Party quite impossible. The solution offered by the physicists was separation of fundamental (theoretical and abstract) and applied (industry-oriented) science. Institutionally, this would mean that the Division of Engineering sciences in the Academy would be either shut down or transferred elsewhere. This proposition was opposed by some prominent engineers who argued that such sharp separation is artificial; and that 'fundamental' and 'applied' sciences are closely intertwined. But eventually the 'fundamentalists' won, and in 1959 the Division of Engineering sciences was reorganized. A much smaller and more narrow in focus Division of Automatics, Tele-Mechanics and Radio-Electronics was established in the Academy of sciences, while over 50 research institutes were at the same time transferred from the Academy to the relevant branch ministries and *sovmarkhozy* (Ivanov 2002, 333). The reform was finalized in 1961.

These reforms were crucial in shaping the institutional make up of engineering profession in Soviet Union. With shutting down of *VAI* in 1930s, the Department of Technical Sciences in the Academy of Science had remained the only union-wide organization that united engineers of different specializations. With closing down of this Department engineers had lost their last institution with cross-specialization membership. Khruschev's educational reforms, such as evening and part-time programs for workers and *zavod-vtuz*, ensured training of specialists with narrow

sets of skills intended to be applicable in a limited number of specific enterprises. Together, the reforms worked to strengthen narrow, industry-specific identities as opposed to a broader engineering identity.

#### **2.4.3. Late socialism: accumulation of contradictions**

Rather paradoxically, the tendency towards strengthening of industry-specific engineering identities was further reinforced with abolition of Khruschev's *sovarkhozy* under L.I. Brezhnev (1964-1982). Brezhnev's reforms aimed to reverse Khruschev's decentralization and to strengthen the vertical integration of Soviet industry. The reform made use of the previously implemented form of multi-enterprise industrial organization, and expanded it further. In addition to already existing production associations, a new type of organizations called scientific-production association, was introduced. Scientific-production associations aimed at optimization of production and especially sought to address the problems with innovations in Soviet industry by strengthening the links between research and production (Lewis 1984, 132–133). At the next level of hierarchy, the production and scientific-production associations were combined into republic- or union-wide industrial associations (*promyshlenniye obyedinenia*) or *glavks* (Gorlin 1985, 354). These complex organizations were then re-subordinated to the respective branch ministries, whose powers were restored with abolition of territorially-based *sovarkhozy* (Lewis 1984, 133.) Thus, for example, the jurisdiction of a union-wide industrial association KASPMORNEFTEGAZPROM, with headquarters in Baku, included, in addition to Azerbaijan, also Turkmenian, Kazakhstani, and Russian parts of the Caspian basin. The association was comprised in total of 68 units, including 4 production associations, a number of drilling agencies, and a research and design institute. The association was part of the ministry of the Oil and Gas of the USSR (Kaspmorneftegazprom n.d.) Although in principle the work of ministries was coordinated by central agencies – such as State Committees on Planning (GOSPLAN) and on Science and Technology, the Cabinet of Ministers, and CPSU organizations, in practice the ministries wielded rather wide powers that other agencies continuously failed to curb (Gorlin 1985). These complex bureaucratic organizations were in popular parlance often referred to as 'ministerial

systems' (*sistema ministerstva*) (Interviews).

These union-wide vertically-integrated systems were not only places of employment, but they served to organize many other aspects of lives of their employees. Many educational institutions, from vocational training schools, to higher educational institutions such as factory-colleges described in previous section, to advanced post-graduate courses were also integrated in such 'systems'. Workplaces were important nodes in the system of distribution of goods and services: access to housing, medical care, childcare, and leisure facilities, was often provided and coordinated through workplaces (Clarke et al. 1993: 26; 60-72; Cook 1993: 19-53). The common practice of lifetime employment within one enterprise or industry meant that many people passed their whole employed lives within a single, although quite large, organizations. As such, the vertically integrated organizations also became sites of formation of specific corporate cultures and industry-based identities that crossed occupations but united those working in the same sector of industry. The ministry-headed systems differed in prestige, level of state financing, access to resources, or specific professional tasks, and they often acted as competitors (Gorlin 1985, Schmid 2008). In Azerbaijan, for example, the oil industry workers (*neftchiler/neftianiki*) had traditionally formed a distinctive professional group, with very high prestige and their own professional culture. Thus, in Soviet Union the division of technical labor took place not so much among different specializations, but rather among different ministerial systems; in the absence of traditional professional organizations ministries acted as quasi-occupational structures. One of the major problems of this form of organization was lack of coordination and communication between different ministries.

While these vertically-integrated ministerial systems were highly hierarchical and bureaucratized, they cannot be considered heteronomous organizations in relation to engineers. In respect to professional work, heteronomy refers to organizations where professionals are subordinated to non-professional managers, and in capitalist societies heteronomous organization has long been a feature of engineers' work (Cf. Hall 1968, Abbott 1988). In Soviet Union, however, the management of all levels of these organizations, including the high level bureaucrats in industrial

ministries were appointed from among directors of plants and factories (Kryshtanovskaya and White 1996: 715). These managers, thus usually had long careers within their respective industries: as Clarke noted, a plant director “was somebody who had worked their way up the traditional career ladder within that particular enterprise, or at least a similar enterprise in the same industry, knowing the technology and production process inside out” (Clarke 2007: 33). Thus, both plant directors and high ranking ministry officials were professional engineers with experience, identity and social networks developed within their relevant ministerial systems; they were seen as insiders rather than outsiders by their colleagues. Of course, membership in the Communist Party was still a must for the administrative elite; yet, it was a by 1960s such membership alone was not sufficient and had to be combined with professional qualifications and experience (Kryshtanovskaya 1989, 114–118). This was a marked departure from early Soviet practice of dual management, when professional engineers were managed by unqualified Communist Party Members (Fitzpatrick 1979, Kuromiya 1984). Thus, by the late Soviet period engineering has become one of the paths to political leadership.

At the same time, in the post-Stalin period engineering in Soviet Union became even more mass profession than it was in Stalin’s time. In Soviet Union as a whole, technical *vuzy* produced the most number of graduates – in 1960 they comprised 28% of all graduates, and in 1987 – 38% (Kryshtanovskaya 1989, 93, 109). In Azerbaijan SSR, engineers were the second largest group of graduates, comprising 28% of all graduates in 1980, compared to 38% of teachers (calculated from Avakov et al. 1984: 192). In just ten years, between 1970 and 1980, the number of graduates from engineering institutions in Azerbaijan increased threefold (Avakov et al. 1984: 195). The quality of education provided by various institutions of engineering higher education was also uneven, with some producing highly qualified engineers and others having lower standards (Balzer 1991, 133). The technical *vuz* remained a major vehicle for upward social mobility, being one of the most available of all higher education institutions. In addition to full time studies the evening and distance learning programs that targeted workers were expanded, and together with factory colleges these programs encouraged recruitment of

workers (Kudayarova 2010, 77). This ease of entering technical education and the full employment policy adopted in Soviet Union resulted in overproduction of engineers, many of whom were underemployed – that is, hardly had to use much of their qualifications and instead occupied mundane and even clerical jobs (Kryshtanovskaya 1989, 109).

Another problem of the mass character of the engineering profession was its blurred boundaries. First, the category of ‘engineer’ existed both as qualification and an occupational position, and the two did not necessarily coincide. Many positions of ‘engineers’ were filled by people without special education, the so-called ‘*praktiki*’, a practice that dates back to Tsarist period. The official category for engineers and related occupations in industry was ‘engineering-technical employees’ (*inzhenerno-tehnicheskie rabotniki* or *ITR*) (Kryshtanovskaya 1989, 125). On the other hand, the boundary between engineers and scientists was also blurred, especially from 1970s with the adoption of the hybrid organizational forms in industry such as scientific-production associations described above.

The late Soviet period also saw a reversal of the original Soviet drive towards equalization of the regional inequalities. Earlier Soviet policies involved investments in industry in the less developed regions, redistribution of income through inter-republican trade, and the cultural equalization programs, namely, *korenizatsiya* (Van Selm 1997, Kumo 2004). But in 1970s, as Soviet economy began to decline, the policies changed towards maximization of output and increasing efficiency, which meant withdrawal of investment from Union republics and focusing on economic projects with more immediate financial returns (Van Selm 1997: 86-88). This also had an impact on the different demand in engineering specializations in different parts of the country. Generally, technologically more advanced industries and enterprises were concentrated in European part of the Soviet Union (Senik-Legoynie and Hughes 1992).

By 1980s the accumulation of these problems led to a crisis of the profession that was even recognized by the Central Committee of the Communist Party (Kryshtanovskaya 1989, 3–5). The problems cited included lack of coordination

between education and industry and between different branches of industry, overproduction of some engineering specializations, routinization and lack of creativity in many formally engineering occupations, decline of engineers' prestige, and downward mobility – engineers leaving professional employment to become workers because the latter had much better salaries, due to valorization of manual work by Soviet ideology. Professional mobility, especially upward professional mobility, became very slow – according to some estimates, in late Soviet period the average time spent by an engineer in one position was 10 years (Kryshtanovskaya 1989, 122). In Moscow, most of the mobility was at the same level, i.e. between engineer and junior scientist position (see Figure 1); only 11% of those who changed positions were promoted to a higher category<sup>13</sup>.

Industry-centered identities, competition between industrial ministries, and overproduction of engineers impeded development of strong engineering professional community. However, despite all these, Soviet engineers did develop a sense of common professional identity that transcended the sectoral divisions. Recent studies have shown that in Soviet context in the absence of formal civil society associations shared experiences were a major source of collective identity (Holloway 1999). For engineers, these shared experiences were acquired during higher education, especially in the full-time study programs, as well as through work experience and contacts with other professionals with similar credentials and work experience from all over Soviet Union. (Kudayarova 2010, 15–18). The shared values of technical progress and modernization also permeated internal divisions. A “technophile” (Kryshtanovskaya 1989, 92–93; Kudayarova 2010, 72–77) professional culture which romanticized and glorified technology and technical progress dates back at least to 1920s, when prior to the purge of bourgeois specialists a group of prominent engineers from *VAI* attempted to develop what they called ‘philosophy of technology’ (Bailes 1974, 455). Although the fate of engineers who proposed these ideas in 1920s was tragic, the Soviet state itself embraced the rhetoric of technical progress in its industrialization drive. Later, the

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<sup>13</sup> There is no official information on social mobility of engineers in Azerbaijan. However, according to the interviews I have conducted, in 1980s there was a similar pattern of slowing of career mobility of engineers in Azerbaijan, especially compared to 1960s and 1970s when several new enterprises and research institutes were opened.

growing prestige of physics and the importance of Scientific-Technical Revolution in Soviet official ideology made technophilia a dominant trend (Holloway 1999). Engineers naturally formed the core of this technophile strain in Soviet society. Because of this convergence of technocratic goals of engineers and the Soviet state the former's attitude towards the state was rather pragmatic (Schmid 2008, 106). Participation in the high priority industrial projects, whether it was energy, space program or machine building gave technical intelligentsia a sense of fulfilled duty and responsibility; dissident attitudes that were so common among cultural intelligentsia in the late socialist period were rare among them. In general, the technical specialists were satisfied with 'interesting life' – a combination of creative work and interesting leisure that the State provided (Ilkhamov 2002, 325–327).

To conclude, by the end of Soviet period, the engineering profession was ridden with internal contradictions. It has become one of the most numerous learned occupations in the country, however this meant overproduction of engineers and decline in standards of learning as well as status. Engineering qualifications and work experience still could gain access to administrative and political careers, when combined with political capital in the form of Communist Party membership. However, these opportunities were open only to select few, and generally upward mobility that engineering profession used to provide had slowed down significantly. The profession was thus highly diverse and internally stratified, and included both highly trained specialists working on complex technological projects and those who were underemployed in routine, and often largely clerical, rather than technical jobs. The stratification was based on the sector of industry in which engineers were employed, with high priority sectors, such as military, aviation or energy, enjoying better position in the system of state distribution of goods and services, higher earnings and higher status. The stratification also had a geographical dimension, as more knowledge intensive industries were concentrated in the European part of the Soviet Union while extractive industries continued to be mostly located in peripheries, such as Azerbaijan. This had an impact on the available expertise in different regions. At the same time, due to the integration of

engineers into Soviet state institutions, and the high level of interdependence between Soviet republics, engineers were embedded in union-wide professional networks, and developed strong 'Soviet' professional identities. The dissolution of the Soviet Union has therefore transformed these relations and engineers' work greatly.

## **2.5. Engineering profession in post-Soviet Azerbaijan**

### **2.5.1. Dissolution of Soviet Union: International and Domestic context**

One of the immediate effects of the dissolution of Soviet Union in December 1991 was the disintegration of the vertically integrated ministerial 'systems' (Filatotchev et al. 1993, Linn 2004). Union-wide industrial associations were split, and their parts were subordinated to the national governments. This had multiple implications for the economies of the former Soviet Republics. First, the enterprises located in the Newly Independent states have received an opportunity to engage in international trade directly, without the obligatory approval from Foreign Trade Organizations (FTOs), which used to be located in Moscow (Belkindas and Ivanova 1995). But the disintegration of the ministerial systems also meant the disruption of the union-wide networks and the inter-republican trade. This was most crucial for those former Soviet republics who depended heavily on the inter-republican trade, and that included Azerbaijan (Kaser 2003). Of all Soviet republics, only Russia had an economy that was self-sufficient (Senik-Legoinie and Hughes 1992: 370). In Azerbaijan, the manufacturing enterprises that used to produce semi-finished and finished products for industries in Russia were hit particularly hard: they suddenly found themselves without demand for their products, as it was now cheaper to produce them in Russia than import from Azerbaijan (World Bank 1993). Between 1990 and 2000, the Manufacturing Value Added (MVA) per capita in Azerbaijan decreased by 87% (Andreoni and Upadhyaya 2014: 25)<sup>14</sup>. Unlike commodities, such as oil, these products were intended for semi-isolated Soviet economy and were not competitive in the world market.

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<sup>14</sup> Manufacturing Value Added of an economy refers to the total estimate of the net output of all manufacturing activity, and it is a measure of a given country's level of industrialization (Andreoni and Upadhyaya 2014: 3).

In Azerbaijan, the economic situation was significantly aggravated also by a multi-scalar conflict over the Nagorno-Karabakh Autonomous Region (Altstadt 1997, Cornell 1999, de Waal 2003). This region, where majority of population was Armenian, had unilaterally declared secession from Azerbaijan and unification with Armenia (Henze 1991, 150). These demands led to mass protest movement and a violent military conflict unfolded, turning after 1992 in a full-blown war between Azerbaijan and neighboring Armenia. By 1994, when a ceasefire agreement between Azerbaijan and Armenia was signed, Nagorno-Karabakh and six surrounding districts were occupied by Armenian forces, leading to the forced displacement of hundreds of thousands of people who had to be integrated into the economy and state welfare system (see Cornell 1999: 31-42). The war not only led to a general deterioration of economic situation, but it also involved a severance of all trade relations with Armenia, which is still in force<sup>15</sup>. In addition to this, the conflict has had an unintended impact on the industrial employment in large cities in Azerbaijan, as many Russians and especially Armenians had left Azerbaijan. Thus, in 1979, the last census conducted before the beginning of the conflict, Armenians constituted 15%, and Russians 22% of population of Baku (Union Census 1979). According to the first post-Soviet census of 1999, the Armenian minority outside of Nagorno-Karabakh had disappeared almost in its entirety, while Russians constituted 6.7% of Baku's population and 1.8% of population of Azerbaijan (Yunusov 2001). While there is no data on the ethnic composition of those employed in industry, even proportional distribution of minorities by sector of employment suggests that up to a third of industrial employees have left the country. However, according to anecdotal evidence and the interviews that I have conducted, even in the last Soviet years the number of Russians and Armenians in industrial enterprises and research institutes was disproportionately high.

In this context of overall economic decline, crumbling union-wide industrial links, demographic change and political instability development of oil industry with the financial and technical assistance of Western investors was seen as the most certain path towards economic recovery. First negotiations with Western oil companies

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<sup>15</sup> Although the border remains officially closed, there is evidence of informal trade, usually conducted in the territory of Georgia (Huseynova 2009).

were in fact begun before the dissolution of Soviet Union, in 1989 in Moscow, yet these talks were never finalized (Spatharou 2001). Inside Azerbaijan, despite an ongoing political struggle between Communist Party leadership and national-democratic opposition headed by Popular Front was unfolding. The main contention between the two political forces concerned the treatment of Nagorno-Karabakh conflict: opposition accused Moscow of supporting Armenians and the Communist government in Baku of compliance, while Communist government attempted to hold an impossible middle ground – maintaining Azerbaijan's sovereignty over Karabakh while avoiding confrontation with Moscow (Altstadt 2003, Ergun 2010). Yet the contestation was an indicator of a much greater rift concerning radically different interpretations of the role of Russia and Soviet Union in Azerbaijan's history, and different visions of Azerbaijan's relations with its neighbors. Ayaz Mutalibov, the last First Secretary appointed by Moscow, predictably advocated preservation of Soviet Union and even supported GKChP-State Committee on the State of Emergency, a group that attempted a coup against President Gorbachev in 1991 with the aim to reverse perestroika and glasnost. Himself an engineer and 'industrial cadre' with a classical Soviet technocratic career from blue-collar work to plant director to minister, he prioritized economic links with Soviet republics. His opponent, Ebulfəz Elchibey, the leader of the oppositional Popular Front of Azerbaijan, a pan-Turkist nationalist, a former dissident and a member of cultural intelligentsia<sup>16</sup>, strove for independence of Azerbaijan and closer ties with Turkey. Yet despite these deep differences, both Mutalibov and Elchibey sought Western investment into Azerbaijan's oil industry: it was generally agreed that Soviet authorities did not invest sufficiently into Azerbaijan's oil industry since Western Siberian resources were prioritized. Mutalibov, despite his generally pro-Soviet stance, has even accused Moscow of being 'colonial', referring to the policy of withdrawing investment from Azerbaijan's oil industry (Spatharou 2001: 26). During the short period of his presidency in independent Azerbaijan, Mutalibov continued negotiations with potential foreign investors, however no agreements were reached. His government

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<sup>16</sup> For the role of cultural intelligentsia in the national movement in Azerbaijan, see Altstadt (1997), Derluguian (2003).

was brought down in March 1992, only three months after the dissolution of Soviet Union, following heavy losses in the Nagorno-Karabakh conflict. After a short transitional period, Abulfaz Elchibey became the first democratically elected president of independent Azerbaijan in May 1992.

While the political turmoil that surrounded Elchibey's time in office did not allow for the formulation of a coherent economic policy, Elchibey prioritized foreign investment in Azerbaijan's oil industry which he saw as the only guarantee of Azerbaijan's economic and, ultimately, political independence from Russia. Elchibey initiated reorganization of Azneft into State Oil Company of Azerbaijan Republic, integrating under one umbrella organization virtually all enterprises working in the oil and gas industry which used to be parts of different production associations and ministerial systems (Cornell 2011: 218). After intense negotiations, a preliminary agreement with British Petroleum (BP) was reached in spring 1993; however, President Elchibey was brought down in June 1993 just weeks before the expected signing (Spatharou 2001: 35, Altstadt 2003). As a result of a coup-d'etat, Heydar Aliyev, former First Secretary of Communist Party of Azerbaijan (1969-1982) came to power. He declared the need to re-negotiate the proposed contract. Finally, a Production Sharing Agreement (PSA) on exploration and development of Azeri-Chirag-Guneshli offshore oilfield, now widely known in Azerbaijan as 'Contract of the Century', was signed in September 1994 (Spatharou 2001, Bayulgen 2003, Polukhov 1997).

### **2.5.2. Oil-driven development, economic restructuring, and the engineering profession**

Since the signing of the Contract of the Century in 1994, Azerbaijan has been firmly on the road of resource-driven development (Auty and DeSoysa 2006, Luong and Weintal 2001, Schafer and Ziyadov 2011, Hoffman 1999). By the end of 2010, 32 more PSAs were signed between SOCAR and various foreign partners (Ciarreta and Nasirov 2012)<sup>17</sup>. Oil-led development strategy has been successful in

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<sup>17</sup> SOCAR website provides information of 14 PSA agreements; According to Ciarreta and Nasirov (2012) extraction is implemented only under 11 of these agreements, and by 2010 Azerbaijan had received profit from four.

reversing the drastic economic decline of early 1990s, as Azerbaijan has reached stellar levels of economic growth. Thus, between 2001 and 2009 the GDP growth averaged 16%. However, this growth has been at the expense of oil dependency that Azerbaijan has not been able, or willing, to reverse (Aslanli et al. 2013, Auty and DeSoysa 2006, Ciarreta and Nasirov 2012, Luong and Weinthal 2001, Schafer and Ziyadov 2011, Hoffman 1999, Hasanov 2013 *inter alia*). As of 2013, 92.8% of Azerbaijan's exports have been oil, gas and oil products (State Statistical Committee 2014a), and Azerbaijan has not been immune to 'Dutch disease' (Auty and DeSoysa 2006, Hasanov 2013)<sup>18</sup>. Although Azerbaijan has many times declared its commitment to diversification of economy, which has also been recommended by international financial institutions, diversification efforts have not yet been successful (Aslanli et al. 2013).

In 1996, Henley and Assaf argued that "with its oil and mineral wealth, industrial base and geographical location, Azerbaijan may have the best long-term potential for industrial development and balanced growth of any of the Central Asian Republics" (1996: 114). Yet, this scenario did not materialize. Instead, Azerbaijan's industry has been restructured considerably, with crude extraction sector dominating the economy. The implications if this restructuring varied for engineers working in different sectors of industry. After the collapse of early 1990s, manufacturing has never recovered; in some sectors, such as metallurgy and manufacturing, the decline in output between 1992 and 1999 constituted 93-94% (IMF 2000: 5-7)<sup>19</sup>. As a result, many of the engineers previously employed in non-

<sup>18</sup> Dutch Disease refers to a change in the structure of production in resource-rich countries, which was first experienced in the Netherlands in 1960s due to discovery of natural gas. The boom in the natural resource sector leads to movement of labor from manufacturing sector to the resource sector. At the same time, the increase in income in the country leads appreciation of local currency making domestic products uncompetitive and more expensive than imports. This chain of events ultimately lead to deindustrialization, and replacement of high tech manufacturing with commodity production. 'Dutch disease' is different from 'resource curse', which is a broader phenomenon and includes effects of resource endowment outside of economy as well (Corden 1984).

<sup>19</sup> After the dramatic collapse of 1990s, in recent years manufacturing began to grow. Between 2000 and 2010, the MVA per capita increased by 74%. However, the MVA per capita in 2010 still constituted only a fraction of this value in 1990: USD 112 compared to 492 (Andreoni and Upadhyaya 2014: 81).

oil industries were left without work. It is among this group of engineers that deprofessionalization and deskilling have been most common. However, some of those formerly employed in manufacturing enterprises were able to reskill and return to their profession in a wider meaning of the word – that is, to engage in engineering work, albeit not in their original specializations.

Those working in the oil industry, especially in oil extraction, can be considered 'the winners' of this restructuring. They were not only able to retain their jobs but also found new opportunities with the entrance of multinational oil and contracting companies into Azerbaijan. However, these opportunities were limited, as not all Soviet-educated engineers were welcomed in the new multinational companies (I describe this in greater detail in chapter 5). Finally, from late 1990s, as oil revenues began to flow into the country, construction industry has been on the rise. In the Soviet period, construction was one of the less prestigious of engineering specializations compared to aviation, nuclear, or even oil industry. However, as the oil revenues began to be invested into real estate, a construction boom in Baku has unfolded (Valiyev 2014), and the demand for engineers working in construction sector increased rapidly. The construction industry has absorbed many engineers from the declining sectors, particularly those who were willing to reskill.

Luong and Weintal (2001) have argued that resource-driven development has been the most rational development strategy for resource-rich post-Soviet states. Economically, Azerbaijan lacked alternative sources of revenue in the aftermath of Soviet collapse, yet it required massive investments into its dilapidated extractive infrastructure (Luong and Weintal: 380). However, the state policy and political elites has also played a role in this choice. Arguably, had Mutalibov stayed in power after the dissolution of Soviet Union, he could be expected to opt for more protectionist and Russia-oriented economic policies, similar to those pursued by leaders of Central Asian countries<sup>20</sup>. Himself an industrial cadre, in his cadre policy

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<sup>20</sup> Three of the five Central Asian states (Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan) have chosen either autarkic development or integration with regional institutions sponsored by Russia (Dearden 2009). Interestingly, the transition period leaders of Kazakhstan, Turkmenistan, and Uzbekistan were Soviet 'industrial cadres' with engineering education (Biography (n.d.); Biography and family (n.d.); Saparmurat Niyazov's biography (n.d.). Emomali Rahmonov, President of Tajikistan, had education in economics, and began his career in a collective farm

he tended to rely on technocratic industrial elite with vested interests in maintaining links with industrial enterprises across former Soviet Union (Musabekov 2001). In contrast, Heydar Aliyev (1993-2003) relied on the clientelistic network based on his place of origin in Nakhchivan (Hoffman 1999, Ergun 2010, Guliyev 2005). In the beginning of his presidency he did include a number of Soviet industrial cadres (Prime Minister Fuad Guliyev, Speaker of the Parliament Rasul Guliyev) in his team, which were purged by 1996 as the rift between him and them became obvious (Musabekov 2001). After this the oil-driven economic development has not been internally challenged, and was further reasserted during the presidency of Heydar Aliyev's son, Ilham Aliyev (2003-present).

### **2.5.3. Engineering education in post-Soviet period**

In terms of higher engineering education, the post-Soviet situation has been paradoxical. On the one hand, the number of institutions providing engineering degrees has increased almost three-fold. In addition to the three institutions that operated in late Soviet period several more institutions were established: Sumgait Branch of AZI was transformed into a separate institution - Sumgait State University in 1991, in Mingechevir, a home of the largest electrical plant in Azerbaijan, a former vocational school was also transformed into Mingechevir Polytechnical Institute in 1992, a National Aviation Academy was established in 1994, and nautical vocational school was transformed into State Marine Academy in 1996 (Ministry of Education n.d.; Mingechevir Polytechnical Institute n.d.; Azerbaijan State Marine Academy n.d.). With the exception of Sumgait State University, these new institutions retain strong links with state organizations which founded them and train industry-specific specialists, in a manner similar to the Soviet practice of training and industry integration in the form of *zavod-vtuz*. The graduates usually find employment in the state organizations, such as national airline AZAL, Caspian Shipping Company and the Mingechevir power plant.

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(Emomali Rahmon n.d.). The only Central Asian leader who pursued liberal economic policy was Askar Akayev, the President of Kyrgyzstan, who was an academic and did not have a career in the industry.

Engineering departments were also opened in two private universities – Khazar and Kavkaz (Ministry of Education website 2014). Most recently, Baku Higher Oil School (BHOS) was established in Baku under SOCAR's premises, in collaboration with Herriott Watt University, UK (BHOS n.d.). Another reform concerned the change of the five-year long 'specialist' program as was the case in Soviet Union, to a two stage education, including bachelor and master levels. In total, at the bachelor level currently training is available in 49 technical and technological specializations, including architecture (Ministry of Education n.d.). The number of engineering graduates also increased, and comprised 5396 people in 2000, and 5350 in 2012 (compared to 4812 in 1980). However, technical graduates are now only the third group in terms of size, following humanities/social sciences and economics/management groups of specializations (State Statistical committee 2014).

Despite the expansion in engineering education opportunities, the quality of this education has declined sharply. Of the institutions described above only AZI (currently State Oil Academy) has been ranked within top ten higher educational institutions consistently since 1995 (State Students Admission Commission 2004: 15; 2013: 28)<sup>21</sup>. In 2012, the newly opened BHOS rated first, but conclusions about the quality of the education provided there are premature, as no students have yet graduated from this school. The change towards two-level education (Bachelor/Master) has been received with mixed feelings by the older generation of engineers, who often find that four-year degree is insufficient for employment (Interviews). Another problem is that in the absence of centralized system of placement of graduates it is not possible to know how many of the graduates actually find employment as engineers. According to the interviews I conducted and anecdotal evidence, in 2000s in AZI, the best of the engineering schools, on the average between 10-20% of students sought jobs in accordance with their specialization. This seems to be changing, at least in the oil-related departments. However, the number of students who study for symbolic reasons of obtaining higher education diploma remains high. In part, this may be due to the

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<sup>21</sup> The rating is calculated on the basis of number of application per place and the average scores of accepted students (State Students Admission Commission 2004, 2012).

organization of university placement in Azerbaijan, where only top scoring students are able to enter the institution of their first choice (Silova and Kazimzade 2009). Higher education has also been a useful tool for postponing military service, as students receive draft exemption. The latter was especially relevant in 1990s, when the possibility of restarting military operations in Karabakh appeared greater. Thus, the expansion of engineering education in post-Soviet Azerbaijan does not reflect the growth of the engineering profession, as the links between engineering education and employment have been disrupted.

So to summarise, the post-Soviet development of engineering profession in Azerbaijan is still in the process of restructuring. The sectoral restructuring of the economy has been important in shaping the demand for different engineering specializations, with oil and gas and construction specializations being most in demand. At the same time, the engineering education provided in Azerbaijan, despite its expansion, appears to be out of sync with the demands of the labor market. With the disintegration of Soviet industrial organizations and the system of placement of graduates, the link between the state and the engineers has been weakened, as many of them now earn their living outside of state institutions. At the same time, this means the distancing of engineers from the power structures – a definite change compared to the Soviet period.

## **2.6. Conclusion**

This chapter described the profound transformation that the engineering profession in Azerbaijan has undergone over the course of the last century and a half. Brought into existence by the first oil boom in 19<sup>th</sup> century, the profession changed from a small and elitist professional group of about 500 engineers in 1920s, most of whom were arriving from outside, to a mass occupation numbering around 70,000 engineers by 1980s (Avakov et.al. 1984: 195). The absolute majority of these engineers were also educated in Azerbaijan, in three higher technical institutions that were established in Baku from 1920 to 1975. They worked in dozens of industrial enterprises and research institutes – and thus by the end of the Soviet period Azerbaijan in addition to industrial facilities possessed an educational and

scientific base. This large professional group was a part of the Soviet engineering profession while at the same time it had some local differences. As part of Soviet profession, engineers in Azerbaijan shared common problems such as overproduction, low salaries and routinization of work; they also shared the technophile culture, the corporate ministry-based identities and pragmatic attitude towards the state. They were also connected to their colleagues in other parts of Soviet Union through their relevant ministries and other branches of Union-wide production associations, they traveled a lot for training and making contracts with other enterprises, they often maintained contacts with their university friends who had moved to other locations, they were educated according to the same curricula and often in the same language (Russian) as their colleagues elsewhere. Although according to the formal criteria of the neo-weberian framework, such as professional autonomy, self-regulation and degree of state involvement, Soviet engineering can be considered de-professionalized, the integration into state structures allowed many engineers to gain access to power and political decision making process at the highest levels of state bureaucracy.

At the same time mobility of technical professionals from Azerbaijan was rather limited. Although the diplomas were formally equivalent, in general the quality of education in Baku technical *vuzy* was lower than in the best schools in Moscow, Leningrad and a few other centers of learning; some especially prestigious specializations were also simply not available in Azerbaijan. The differences in educational opportunities affected the chances in the job market for the graduates. Thus, while the system of '*napravlenie*' – 3 years long compulsory job assignment after graduates – in theory was Union-wide, in practice most of the graduates from Baku *vuzy* ended up working in Azerbaijan. There however existed difference across different specializations and different sectors of industry – thus, *AZI* continued to have a strong reputation in petroleum engineering across Soviet Union, and its graduates had opportunities to find jobs outside of Azerbaijan. But in general, most of Azerbaijan's industry and technical education were rather peripheral in Soviet Union and they were dependent on the technologies, curricula and policies that were developed in more central scientific and industrial facilities.

Thus, although the Azerbaijan engineers were part of Soviet community, the relationship with it was unequal. The center provided opportunities and at the same time imposed structural limitations.

The latest large transformation has begun with the dissolution of Soviet Union and is still in the making. Under this last transformation, the profession has been subject to even more contradictory forces than the combination of Soviet restrictions on corporate autonomy and political empowerment. Being cut off from the former Soviet networks with the disintegration of the union-wide ministerial 'systems', Azerbaijani engineers are no longer subject to the unequal relationship between Moscow and Baku; and Azerbaijan is now free do decide itself on the directions of technical education and/or research that it wants to develop. However, the opportunities that were available under the Soviet organization of education, research and industry are also gone, leaving many engineers out of work or opportunities for professional development. The tendency towards stratification of the profession that was observed during the late Soviet period has intensified. On the one hand, the expansion of technical education, along with lower standards of quality, is leading to even greater overproduction and decline of professional status of engineers. On the other hand, a smaller group of engineers are able to make use of the opening of Azerbaijan's economy to global capital, and gain international mobility and opportunities for professional education and work that were unavailable during Soviet period, as well as much better incomes and standards of living. Last but not least, the disruption of the links between the profession and the state has led to distancing of engineers from the political structures, thus making it impossible for them to exert an influence on the decision making process.

These dimensions – formal educational opportunities, changes in the sectoral structure of Azerbaijan's economy, and engineers' access to power – constitute the structural framework of the post-Soviet transformation of the engineering profession which this study addresses. In the following chapters, I turn to the materials from the qualitative interviews that I have collected in order to explore the less tangible and more subtle aspects of this transformation, such as changes in attitudes, work relations, and content of engineering work.

## **CHAPTER 3**

### **WORK ORIENTATIONS OF ENGINEERS IN POST-SOVIET AZERBAIJAN: SOVIET LEGACY AND POST-SOVIET CHANGE**

#### **3.1. Introduction**

In this chapter, I explore how engineers in Azerbaijan experienced the post-Soviet changes in their work. My particular focus is on work orientations – “the meaning[s] attached by people to their work which predispose[s] them to think and act in particular ways with regard to that work” (Watson 2004: 186). The sociological study of work orientations is a part of a broader research tradition that focuses on various subjective aspects of work experience, and includes also values, attitudes, motivations, preferences (Brief and Nord 1990, Gill 1999, Goldthorpe et al. 1968, Hackman and Oldman 1976, Harpaz and Fu 2002, MOW 1987, Rosso et al. 2010). Yet, most of these concepts were developed outside of sociology of work, particularly within organizational psychology, and as such, they exhibit signs of individual and psychological bias. The concept of work orientations, on the other hand, explicitly sought to overcome this, and instead to link people's work-related ideas and attitudes to their larger social context, particularly class and social background.

Because the concept of work orientation is designed to link individual ideas and larger social structures, it is particularly appropriate for explaining the changes in work-related attitudes and ideas in times of rapid structural change, such as the post-Soviet transformation. Although meanings are intricately related to social structure, this relationship is not one of simple causality. As Anne Swidler (1986: 208) had noted, culture, understood as the symbolic forms through which meaning

is experienced and expressed, and social action, are “loosely coupled”. Meanings neither automatically adjust in reaction to the change in social structures, nor do they always directly shape social action. Depending on the concrete situation, cultural meanings can be both a cause and an outcome of social action and social change. While meanings and attitudes do also change, the generation of the new meanings is a slow process, and instead of developing from scratch a completely new set of cultural forms that are appropriate for the changes in social structures, people usually make use of the meanings already available through “cultural toolkits” developed in a different historical context (Swidler 1986). This does not mean that such cultural forms are anachronistic – on the contrary, as Burawoy and Verdery (1999) have argued, people often employ symbols constructed in a previous social order in response to their new and changed contexts.

In this chapter, I therefore explore the continuities and changes in meanings that engineers attach to their work, and how these changes are related to both their own individual career strategies and the transformations of the social and institutional structures. With this aim, I analyse, first, the retrospective accounts of engineers of what work used to mean to them in Soviet times, and then their perceptions of the impact of post-socialist change. Then, I compare these with the narratives of meaning of work of the younger generation of engineers, those who were educated and/or entered labor market in the post-Soviet period. The cross-generational comparison serves to elicit the continuities that persist within the engineering profession in Azerbaijan despite differing institutional contexts.

This chapter is organized as follows. In section 3.2 I provide a brief overview of the concept of work orientations which informs my analysis in this chapter. I then proceed in section 3.3 to describe how subjective aspects of work experience were conceptualized in Soviet social science and discuss their implications for workers' perceptions of the meaning of their work. In this section I also identify and the three major work orientations among my interviewees: professional, instrumental and social. In sections 3.4 - 3.6 I turn to the analysis of interview data. Section 3.4 is devoted to the analysis of the retrospective analysis of the work orientations of

Soviet-educated engineers in Soviet times; section 3.5 looks into the changes in these orientations in the post Soviet period. In section 3.6 I turn to the meanings attributed to work by younger, post-Soviet generation of engineers.

### **3.2. Work orientations**

The concept of work orientation was originally developed by Goldthorpe and his colleagues in their research on the assembly-line workers in car industry in Luton, UK (Goldthorpe et al. 1968). The concept originates from Weberian perspective on “meaningful action” (Weber 1978: 4-5), and “takes employees' own definition of the situation in which they are engaged as 'an initial basis for the explanation of their social behavior and relationships” (Goldthorpe et al. 1968: 184). The Luton study found that the differences in orientations to work have their source in the social backgrounds of workers, particularly in family and class, rather than in the workplace itself. The major sociological contribution of this approach was that it had situated work orientations in the larger social context, thus overcoming the psychological and individualistic bias that had informed much of the earlier research on work-related values, attitudes, and motivations. In later research, work orientations have been found to be multi-stranded and dynamic, changing depending on the structural factors and the stage in the life cycle of the workers (Blackburn and Mann 1979, Hill 1976). Although originally this approach had been developed with regard to manual labor in the industry, with the rise of salaried organizational professionalism it began to be applied also to expert, knowledge-based occupations. Two concepts that are closely related to the work orientations perspective are professional and organizational commitment (Osinsky and Muller 2004, Wallace 1995, Watson and Meiksins 1991).

Goldthorpe and his colleagues originally identified three ideal-typical orientations to work, based on the main motivations of workers: instrumental, bureaucratic, and solidaristic (Godthorpe et al. 1968, 38-39). Instrumentally oriented workers see their work as a means to an end, usually income; for them, work is not a major source of their identity, and their personal lives are separated from working lives.

Bureaucratically or career-oriented workers are motivated by career progress, as well as the ideas of faithful duty to organizations; their work is a major source of their social identity. For solidaristically oriented workers work is a socially meaningful activity that involves identification with coworkers. The instrumental orientation turned out to be the most dominant among the Luton workers, which led the authors to put forward an idea that increase in income leads to instrumentalization of work motivations – an idea that later became known as 'instrumentalism thesis' (Gallie et al. 2012). Significantly, Goldthorpe and his colleagues' research suggested that intrinsic factors, that is the issues pertaining to the content and quality of work itself, play little role in the system of employees' orientations to work. However, it was later argued that the instrumentalism thesis is biased, because the Luton research was carried out among workers whose jobs were generally considered uninteresting and boring (Grint 2005, 25-27). In further research intrinsic rewards and motivations were also found to be important, especially among more highly-skilled workers and those with higher levels of education (Gallie et al. 2012). Consequently, many of the later classifications of work orientations were adjusted in order to account for more intrinsically oriented attitudes. Thus, Dooreward et al. (2004) in their research on female returnees to work identify 'job' orientation, 'money' orientation, and 'people' orientation. Unlike Goldthorpe et al.'s 'bureaucratic orientation', 'job orientation' is based on the workers liking of their work, rather than on the motivations of career progress. Similarly, Ashwin et al. (2004) in their study of workers of various occupations in post-Soviet Russia identified professional, instrumental, and social orientations to work. In their study, professional orientation is seen primarily in terms of intrinsic motivations: those with professional orientation “see their work as a means of self-realisation, and find it intrinsically rewarding and compelling” (Ashwin et al. 2004: 81). In research on professionals, it has been common to distinguish between professional and organizational orientations and/or commitment (Watson and Meiksins 1991, Wallace 1995, Osinsky and Mueller 2004). Here, professional orientation refers to the commitment of experts to their professional values, such as autonomy and maintaining their expertise rather than interest in rewards that are

available through organizational bureaucracies, such as career advancement, salary increases and managerial responsibilities.

The work orientation perspective was developed in and for the context of industrial capitalist societies. However, the sociologists in Soviet Union have also employed similar conceptual frameworks in their study of work attitudes. Before turning to my interview data, in the next section I therefore briefly discuss the premises and results of Soviet research on subjective aspects of work and their implications for post-Soviet societies such as Azerbaijan.

### **3.3. Work and its meaning in Soviet Union**

The official grand narrative of work in Soviet Union was derived from Marx and historical materialist tradition (Yanowitch 1985, Shlapentokh 1985). Particularly in his early writings on alienation of labor, Marx saw work as having a potential for self-actualization of the worker, although this potential was historically suppressed through exploitation of the workers by the dominant classes. According to this perspective, the highest form of exploitation is to be found in capitalist society, where workers are systematically alienated – from the process of their own labor, the products of it, and from each other. The self-actualization potential of work thus can be fully achieved only when all forms of exploitation are abolished – i.e. under communism. This ideal of communist labor defined as a completely free activity informed Soviet scholarship on work (Shlapentokh 1985).

This understanding of work as having potential for self-actualization of the worker had informed Soviet conceptualization of work attitudes and orientations, and especially the focus on intrinsic rewards, interesting work and creativity (Abramov 2014: 13-14, Yanowitch 1985, 47-58). According to Soviet philosophers, under communism such free work activity would also be a source of highest intrinsic pleasure, and thus a reward in itself (“*Kommunisticheskiy trud*” 1986: 209; Yanowitch 1985: 23). Meanwhile, although this ideal was not yet reached under socialism, some progressive features could also be found in the current social

formation. In particular, creative work was seen as a highest form of labor (Shlapentokh 1985, Iadov and Zdravomyslov 1967). Creativity was understood broadly, as productive innovative activity leading to social progress (Strukov 1963, 1977). At the same time, creative work was also an important component of personal development, or, in Soviet terminology, “rounded development of personality” (Smirnov 1971: 304-306). Rounded development of personality implied overcoming of various forms of artificial fragmentation of human experience, such as some forms of divisions of labor, the split between work and leisure, and between manual and mental labor and thus would lead to the restoration of a holistic personality. In this, the concept of 'rounded developed personality' has some affinity to the concept of craftsmanship in Western social theory, also derived from Marx (Mills 1956, Sennett 2008). Thus, C.W. Mills described craftsmanship in similar terms, as an “idealized model of work gratification” involving intrinsic motivation in the process of creation of a product and the overcoming of “split of work and play” (Mills 1956: 220-2).

Of course, the “communist labor” and “rounded personality” had never been practically achieved in Soviet Union, and in fact, the official discourse acknowledged that these were ideals to be reached in communism, not contemporary realities. Yet, they should not be dismissed as purely intellectual, academic constructions. Owing to the highly normative character of Soviet social science and its intertwining with state ideology these notions were actively used in policy formulation as well as popularized as dominant social values. In the industrial sector, real policies aimed at bringing life and work closer to each other and to overcome the division between manual and mental labor were implemented. Some of the examples of such policies include the provision of social welfare by/at the workplace, as well as the practice of employing young engineering graduates in blue-collar positions in order to familiarize them with manual work and create a more holistic understanding of production process. Popularization of the concepts of creativity, “communist labor” and “rounded personality” through literature, films, and media ensured that these ideas, although they were not necessarily

strictly adhered to, firmly entered into popular discourse and became part of the 'cultural toolkit' of ordinary Soviet citizens.

This was demonstrated also in the findings of sociological research on work values and work satisfaction, conducted in Soviet Union from 1960s onwards. "Content of work" and "creative opportunities" ranked first among factors influencing job satisfaction (Iadov and Zdravomyslov 1967, Shlapentokh 1985, Yanowitch 1985)<sup>22</sup>. In line with this ideologically informed philosophical paradigm, Iadov and Zdravomyslov, the authors of seminal Soviet study on the subjective aspects of work experience, identified two main orientations among workers: work activity seen as a means to an end external to work process itself, and work activity seen as an end in itself (Iadov and Zdravomyslov 1967). This seminal work in Soviet industrial sociology focused on manual industrial workers, which for ideological reasons were defined as the core social group (class) in Soviet society. The authors found correlations between the level of skills and education of the workers and their orientation towards intrinsic rewards. In later research on professional groups, creative and interesting work were found to be closely related to the work experience of intelligentsia – that is, in Soviet parlance, the specialists with higher education, and particularly, engineers.

In the post-Soviet period, important changes in the orientations to work have occurred in former Soviet republics. The instrumental orientations to work have been on the rise, especially among younger workers (Ashwin et al. 2004, Anikin 2013, Reiter 2010). At the same time, in Russia the centrality of work in people's lives has declined and is being replaced by family, friends, and leisure. Income and job security are now more important sources of job satisfaction than the content of work, although the latter still ranks third according to some survey research (Khakhulina 2001, 2008, Ardichvili 2009). However, for some groups of workers

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<sup>22</sup> According to Yanowitch (1985), Soviet research overstated the significance of 'creative opportunities' at work due to ideological bias. He pointed out inconsistencies in the results of various studies, as well as problems with research design. However, for my study it is more important that 'content of work' and 'creative opportunities' were part of the cultural repertoire from which engineers could (and still can) draw material for new meaning-making.

content of work and creativity remain important (Osinsky and Mueller 2004, Anikin 2013). Strong professional commitment in the context of constrained opportunities for professional employment have been found to be one of the reasons of downward mobility of professionals (Ashwin et al. 2004). Research on post-socialist Eastern Europe suggests that in these countries work is still more central in people's lives than in Western European countries with developed capitalism (Wallace and Lowe, 2011).

With this chapter, I seek to contribute to this debate by investigating the changes in post-Soviet work orientations among engineers in Azerbaijan. In line with previous studies, I have identified three major work orientations: professional, instrumental and social. However, there are some differences between the way I operationalize these categories and previous studies. Thus, the professional orientation in my study also includes career, and thus is a hybrid category combining Ashwin et al.'s (2004) intrinsically oriented approach cited above with original Goldthorpe et al.'s (1968) bureaucratic category. I have chosen to combine these two together because in the narratives of Soviet work experiences intrinsic factors and career advancement were often, although not always, presented as closely intertwined and mutually reinforcing. Social orientation is rather straightforward, and this category includes those whose primary interest to work is rooted in social relations, especially with colleagues, as well as with the issues of convenience and flexible working hours. Those with social orientation find it easier to subordinate work to other aspects of their life, most commonly to the needs of their families. Finally, the instrumental orientation refers to those for whom income is the main motivation for working. As all classifications, this one only approximates empirical reality and does not fully reflect the complexity of real life situations. I concur with previous research that orientations are always multistranded (Hill 1976, Blackburn and Mann 1979, Ashwin et al. 2004). Furthermore, the orientations are also dynamic; while previously dominant motivations may fade into background, previously muted or suppressed ones can come to the fore. In my study, the collapse of Soviet Union and of planned economy presents a clear watershed, which had an impact not only on labor market but also on the work motivation and

attitudes. The following sections of the chapter are organized in around this watershed event: I first analyse each of these orientations in Soviet period, and then turn to the post-Soviet experiences. In the final section of the chapter I turn to work orientations of post-Soviet generation of engineers in order to trace differences as well as continuities between these cohorts.

### **3.4. Work orientations in Soviet times**

#### **3.4.1. Professional orientation**

Professional orientation dominated among the Soviet-educated engineers I interviewed. These engineers generally were very proud of their profession: they considered it important in terms of its contribution to the development of Azerbaijan and technical progress in general, and were proud of the intellectual complexity that engineering work entails. An older pipelines engineer, Nasreddin (AZI 1959), looking back at his long career, saw no other professional choice for himself but engineering: “I cannot imagine being anyone but an engineer. This is a special mindset”. These engineers described work as a central activity and central value of their lives; work played an important role in the construction of their concepts of self. For instance, Aziza (electrical engineer, AZI 1966), a lifelong employee at an energy production association, reflecting on her biography, remarked that “the most important thing I had was my work”. Respondents with strong professional orientations often speak about their enthusiasm for work, their willingness to work long hours and take on extra responsibilities, their feelings of pride for doing good work.

Most of the professionally oriented engineers had strong intrinsic motivations and derived a sense of meaning and job satisfaction from the content of their work. Often they refer to engineering as “interesting” and “creative” work, very much in line with the Soviet ideological discourse outlined in the previous section. In their narratives, “interesting” work is opposed to routine and mechanical tasks:

It is not like when you are told to call someone and find some information. Like, making a table, calculating it and submitting. This is one kind of work.

But there is another [kind of] work, creative one, this is a very creative work. To understand all the interactions, make assessments, recommendations, improvements, [to consider] security issues, standards – you know, you need to know this well. (Aziza, AZI 1966).

[there is] mechanical execution, when you just follow rules, this is one thing. And I am inquisitive: what is this? Why is this like that? Because at the institute they do not teach each kind of fuel in such detail. Fuels are studied generally, classified, but not details. But here [we did], and it was a new fuel! (Fatima, AZI 1958)

Which activities are considered interesting and creative by engineers? While different engineers consider different activities interesting, they can be classified into several groups: design and developing of new products, resolving complex production tasks, and research. For instance, Nadir, (mechanical engineer, AZI 1979), speaking of his most interesting work referred to experimental design:

I liked to work with metal things. It was interesting, really. Especially, not in the plant, but in the design bureau, this was the freedom of thought, of specifically engineering thought. There is, so to speak, an artistic approach to metal things. Experimenting, experimental things.

Several engineers identified research as the most interesting activity. Usually, these engineers considered themselves to have special propensity for research work, which included abstract logical thinking and theoretical inclinations. Fatima, a chemical engineer quoted above, reflecting on her career, explains: “I liked research. You know, I had a well developed logical thinking, on everything. I was not just getting [results]”.

The sheer complexity of the work tasks that require a lot of intellectual effort and coordination is another source of interest for engineers. One engineer gives an example of such a complex task - calculating of optimal economic dispatch in the electrical network:

Because the industry, the plants, they were all on Apsheron<sup>23</sup>, and all electricity from all power stations went to Baku. Little was consumed in the regions. But here arises this task – before it reaches Baku, energy can be lost in the cables [...]. So first, these losses need to be minimized, and second, the energy load needs to be distributed between different stations, so that those close to Baku would receive more load and the losses would go down. But the stations also differ in terms of efficiency of their equipment, and so on. So each of these pieces of equipment consume different amount of fuel, of gas and heating oil, this is the most valuable. [...] This was [calculated] on computers. Not PCs, these were computing machines, when I remember this now, I am in awe. Now notebook computers have gigabytes of memory. And then we had a computer, which was three rooms like this, and it was 128 kilobyte. Not gigabytes! 128 kilobytes. [...] So, all these problems had to be resolved in such memory. So in addition to formulating the task, we had to fit it into this memory. And the programmers, all, yes, it were very big efforts. And we started each day with this task. Forecasting [daily] consumption for tomorrow, based on the statistics, so we also had to collect statistical database... (Ali, AZI 1966)

It is important to note that there was considerable overlap between different types of “interesting” activities. While engineers emphasized some tasks as more interesting, most of them stressed the importance of gaining a comprehensive, all-rounded professional experience. Throughout their careers engineers often combined different types of work, and were exposed to different stages and aspects of research, design and production processes. Thus, an important quality of ‘interesting work’, in addition to complexity, was its holistic character. Speaking of his first job at the design bureau of a large R&D institute, Nadir explained:

It was like that: drafting board, go draft, go to the plant and make the prototype, then go to the field and implement. So I received a huge engineering schooling, I went through... What I studied in the institute is

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<sup>23</sup> Apsheron is a peninsula where Baku and its industrial satellite Sumgait are located.

one thing – and what I started to do in practice... I mean, I was a designer, a technologist, a field engineer – and this is a great schooling.

This holistic approach, which reminds of the ideology of the “all-rounded development”, was highly valued by engineers and was seen as necessary to becoming a true expert in one's field. For some engineers, this meant working in different departments of their organizations, including research, design, construction and operations, in order to receive such all-rounded exposure to different technical processes. Yet, even those who were less mobile, also emphasized the integrative character of their work and exposure to different aspects of production cycle in their workplaces. An example of such holistic approach to work in a position seemingly removed from the production cycle is presented by Ali, formerly a head of a computation center:

Computation center, it is such kind of structure, in energy or any other sector, where all information is concentrated. So I knew about all activities. I knew about planning, finances, accounting, logistics, to say nothing about technology, technological process.

Indeed, the whole organization of the production process during Soviet times encouraged this integration of various production processes. Various mechanisms were developed in order to familiarize engineers with the work of the whole organization, as opposed to narrow focus on their immediate tasks. Aziza (AZI 1966) describes such mechanisms at the energy-related production association:

When I came [here] I did not know what is a power station, what is a generator, what is a transformer, well, you know, only in general. But we every day had a [...] car, which visited all of the stations [...]. We had opportunities to visit [them]. All of the departments would gather, each with their own questions, we would get on this bus, go to the place and get the information.

In the production sector, this all-rounded professional experience involved also exposure to manual work in blue-collar positions. The engineering graduates were

usually required to work a few months in manual labor positions, in order to familiarize them with work of industrial production workers. This practice is generally evaluated very positively by my interviewees, because of the understanding of the larger production process that this work experience provided:

In Soviet times there was this rule, that you need to work two years where they place you. So I was placed at the [...] plant. It still exists [...]. And I worked on a [refining] unit there. And I always tell everyone, when you start from the bottom, from the operator position, I started as an operator, it is a great schooling. (Fahriyya, AZI 1961)

The accounts presented above illustrate how the Soviet ideological notions of “all-rounded development of personality” and “merging of manual and mental work”, discussed in the previous section, were implemented in practice by ensuring that engineers with higher education would get exposure to actual production process and especially to the manual work. On the other hand, workers were also often encouraged to engage in part-time study and to gain engineering degrees. The comprehensive and versatile work experience was also necessary for career growth in the industry: as discussed in chapter 2, the management of an industrial enterprise was expected to have a thorough experience at his or her enterprise or industry.

### *Career orientation*

Turning to career-related motivations, in Soviet period they were usually intertwined with intrinsic ones, such as “interesting work”. In most cases, career advancement and interesting work were perceived as complementary and mutually reinforcing. To a certain level, career advancement was often a form of recognition for personal achievements, for well done work. Thus, hardworking and intrinsically oriented engineers could also expect to go up the career ladder in recognition of their achievements. On the other hand, career progress could also give access to more interesting and intellectually challenging tasks. Engineers with strong intrinsic orientations often describe their rapid career growth with considerable pride:

Once there was an urgent repair in the workshop, a crane broke down, and everyone stayed [overtime]. I am a technologist, I can leave, [...] but I stayed with them. He [workshop floor manager] enters, and sees that I hang there, doing something, and he says: 'look, he is a good guy'. And gave me salary rise, 10 roubles, himself. [...] So I worked with him, as a master, then technologist, and I often substituted for him, in fact, I was his deputy. And I was responsible for both technology and production process. There were meetings, production meetings, where all workshop managers gather. And I ask him: 'take me too.' [...] And then the production manager left, and they needed a candidate, and he became temporarily production manager, and I was his deputy. And that's how I went [up]. Deputy production manager, then acting production manager, then production manager, then deputy director. (Rashad, AZI 1966)

For those engineers who were inclined towards research, a post-graduate degree, *kandidatskaya*<sup>24</sup>, often served as a link connecting interesting work with more advanced positions: engineers could satisfy their interest in research, which could then be converted into career progress. In research institutes, postgraduate degrees were a must for career progress; among my interviewees who had worked in research institutes only three did not pursue post-graduate degree. Outside of specialized research institutes, in the industry, the relationship between post-graduate degrees and career progress was more ambivalent. First post-graduate degree, the *kandidatskaya*, was generally encouraged and could provide access to some higher positions. But research activity beyond *kandidatskaya* was seen as incompatible with production activities and discouraged.

While most of the intrinsically motivated engineers sought career progress, they did not want it to compromise their “interesting work” and their intellectual

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<sup>24</sup> In Soviet academic system, there existed two post-graduate degrees: Candidate of Science (*kandidatskaya*) and Doctor of Science. Candidate of Science was roughly equivalent to PhD in Western academic systems; Doctor of science has no direct equivalents in Anglo-American academic systems, but is analogous to habilitated doctor in Germany and some other continental European countries.

freedom. This meant that their career aspirations were at the level of a chief of a working group/department/laboratory or chief engineer of an industrial plant. Few sought advanced careers in the upper ranks of industrial management: work at the higher levels of managerial hierarchy involved, in addition to a mandatory membership in Communist Party, a lot of administrative duties and an understanding of industrial economics rather than technical expertise. Sometimes, engineers felt that they were forced to take higher administrative positions, and it was often difficult to refuse. In the following quotation, Fatima describes how she was appointed to the position of scientific secretary of her institute, which gave her higher salary but distracted from her beloved activity - research<sup>25</sup>:

My aspiration was – I liked research. If I stayed in the laboratory, I would do research, and maybe I would go for doctorate. But I was forced, I didn't want to, to become scientific secretary. The choice was like this – either accept or leave work.

Q. Why so harsh?

F. Harsh – well, you know, we were a Union-level institute. We used to have a very literate, good woman, good geologist, she later went to America. But she didn't know Russian very well. And we needed a scientific secretary who would... We had N., a good professional, everything, but she did not know Azerbaijani. The director said, when the chief of my laboratory said to him “I am not letting Fatima go, she is a good researcher, why do you want her, it is better for her to do research”. But [the director said]: “please understand, I need a person who knows Russian and Azerbaijani [...] I need Russian language, because this is a Union-level institute, [they come here] from all over [the Union], and we need... I was shocked – he was shouting. “It will be you, and that's it”. And where could I go? [...] Where could I go from here? I cannot go away from the oil. So I stayed.

However, there were also some intrinsically-oriented engineers who were not interested in career progress at all, and in fact, actively shunned career

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<sup>25</sup> Similar distinction between 'professional' and 'administrative' work was also reported by Gerber (2001) in his study of Russian scientists.

advancement. Thus, Aziza, for whom her work was “the most important thing”, never sought career progress:

I have never been career-oriented. I wasn't interested. I could, in principle, become a department head, if I wanted to. But I did not want that. I was interested *purely* in my work. Yes, this is how I was, I was more interested in this. I like to dig, to look deeper... [emphasis added – LS].

To illustrate this point, Aziza described how she resisted for several months a promotion to a position of deputy manager of a regime service unit, for fear of impostor syndrome – of finding herself in a position of responsibility for which she was not sufficiently competent.

I never wanted to be a manger or supervisor. Even when they offered me, persistently, to be the deputy manager of the service unit. Very persistently. And I can tell you, I was refusing all the time. And we had a chief dispatcher, he thought well of me, and once he talked on the phone when I was in the room. And I heard him saying: “I keep telling her, and she is refusing. I do not understand why she is refusing”. [Talking] with someone, I did not know. And then... And I thought, that in order to take a position, you need to be 100% competent. So in my position, I was working, I was [competent]. And this [position of] deputy manager, there were additional issues that I would also need to resolve. And that is why I was refusing, I thought I was not ready. But when I heard this, I thought that maybe I am making a mistake. So when he told me next time: “well, Aziza, let's decide”, I said, “Ok, I agree, but you will help me”. And the said “of course”. And then I agreed.

Yet, career and intrinsic motivations retained their mutually complementary character even for those engineers who did not seek career progress.

And it was a good decision. Because after I went there, when they reorganized us again, I got a position of a sector manager – and this was a good level, I did not lose anything in terms of salary. And then after that I was already independent, I had my own sector under my supervision.

Another source of job satisfaction for Soviet-educated engineers was the sense of contribution to a larger cause, such as advancing the technical and scientific knowledge or contributing to the development of Soviet Union's and Azerbaijan's science and industry. Work related to the top priority Soviet projects, such as space and nuclear technologies, ranked first in terms of feelings of pride, even though those who were involved in this work may not have known about its significance until much later. Fatima, a specialist in fuels, recalls how she found out that the fuel she helped to develop was used in the first launch of human into space:

F. So, when Gagarin went to space...

Q. In 1961?

F. Yes, then they gathered us all at the plant [...] And the head of Plant's Party Committee said that one of the stages of the rocket worked on the fuel that [we produced]. It is the stage which was in the space! Before that we did not know, I knew that this is secret thing, and worked carefully. Such an interesting fuel. (Fatima)

Similarly, Fahriyya, who worked on the topics related to nuclear technology, remarks:

You know, this was such an approach, it was like a Clondike – the first person who comes, wherever he would dig, he would find some [gold]. But being alone, he cannot develop everything, so he just puts up a sign that this [site] belongs to him. So that is what we did with our processes, and we received colossal results. [...]. In another institute, physics institute, we began to do it with them, so that we would be able to implement [this technology] in industry. And we reached such a level, in Orenburg, in an experimental plant, we worked there together with Kurchatov's institute<sup>26</sup>. People from Kurchatov's institute wanted this topic very much. But when they tried to copy our process, they could not reach the same results, so they did something a bit different. But this was ours, our [process] was the best. And even they admitted it.

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<sup>26</sup> Leading Soviet institute in the field of nuclear research.

Outside of the top priority fields such as the space and nuclear programs, engineers derived pride from the significance and contribution of their work in Soviet industry in general. The role of Azerbaijan's industry in the Soviet manufacturing of oilfield equipment (70% of all Soviet oilfield equipment was produced in Azerbaijan according to some of my interviewees), the groundbreaking work in subsea oil exploration and pipelaying, or more generally joining the ranks of elite institutions in Soviet Union are often cited examples of the achievements of engineers from Azerbaijan.

As these accounts suggest, the feelings of professional pride and of contribution to the larger cause are closely linked with the prestige accorded to engineers' work by higher authority – Moscow. Most of these enterprises/industries where advanced technologies were being developed or applied were subordinated to Union-level ministries in Moscow, not to the government of Azerbaijan SSR. Being directly subordinated to the center, to Moscow, had important material and symbolic implications for enterprises and research institutes where engineers had been working. In material terms, workplaces subordinated to Moscow had better resources, access to more advanced technologies than their republic-level counterparts. Beyond this, they often had access to more interesting work – through more diverse, more technologically advanced, larger scale union-wide projects. Thus, Fatima's institute worked on projects that geographically ranged from Western Siberia through Turkmenistan and Northern Caucasus. Other institutes with Moscow subordination worked more regionally, including Caspian Sea basin (Nasreddin) or southern region, including, beyond Azerbaijan, also Georgia and Dagestan (Rza).

The accounts presented here show that the official Soviet discourse on work was indeed very much internalized, at least by professionally oriented Soviet-educated engineers. The elements of this discourse, such as glorification of the role of engineering in the process of modernization and development, the stress on the creativity and intrinsic motivation to work, and the feeling of belonging to the

Soviet professional community did indeed become part of the cultural repertoires of engineers.

### **3.4.2. Social meaning of work**

As discussed in section 3.3, social orientation to work refers to those whose primary interest to work is rooted in social relations with colleagues, as well as with the issues of convenience. For many of my interviewees, work was also an important source of social contacts that often extended beyond workplace. Work “collectives”, as they are often referred to by Soviet-educated engineers, often became a source of life-long friendships. Lena (mechanical engineer, AZI 1982), described her friendship with colleagues with whom she used to work in 1985-1993:

My friends now, for example, the girls, they are from this plant. The ones that came on Sunday for my birthday. Four people – one used to work with me in the same department, another one in the library, and another one in the scientific-technical society, they used to rent office space [in the plant]. So we became friends then. All this time, since 1985 [...] 25 years.

Large Soviet enterprises which also provided housing and other welfare services, effectively blurred the boundaries between work and personal life. Thus, for Rashad, a former deputy director of a large manufacturing plant, his colleagues were also neighbors and personal friends. In the following quotation, he describes the complex relations with the workers:

It was interesting to work. We understood each other. Our friendship hit the roof! We could argue – for example, with shop floor manager [...] And I swear at him in the middle of the workshop: “I don't know, the director will fire you if the transformer does not leave today, he will fire me, and I will fire you. So do it immediately. Everybody climb that crane”. And he, poor guy, together with the workers, climbs the crane, and they work, and they did it, and the transformer is loaded [on the truck] and leaves. It's 6 o'clock, the director is leaving, we are waiting for him to leave, because without him

nobody can leave. And when director gets in his car - “let's go, guys”. And all together, there was a *kebab* place near by, we went there, drank, ate, had fun, as if we did not argue in the afternoon. This is the production process. If it is needed for work – we argue, but humanity, friendship – after work we figure it out.

Yet, social aspects of work rarely played central role in work-related decisions of Soviet engineers. As can be expected from research conducted elsewhere (see, for example, Ashwin 2006, for a similar assessment), considerations of convenience were most important in the work-related decisions of married women. In the context of Soviet Azerbaijan, this usually meant working closer to home and in jobs that demanded less overtime work, less travel, or less physical strength in order to accommodate housework and especially childcare. For engineers, most of whom worked in industrial enterprises, flexible working hours were generally not available. Thus, Lena, quoted above, changed her job after the birth of her daughter. Previously employed in a physically more demanding field-related position at an oil-refining plant, she moved to an office job in a technical department at another enterprise closer to home. In this decision, the considerations of her family played more important role than consideration of content of work or income. For men, having a family usually meant that they began to prioritize income, as opposed to focusing on “interesting work” only. Some took on extra part-time work, formal or informal; others moved from research to production, where their incomes would be higher.

Yet another dimension of social motivations for work has to do with the influence of families of origin on professional choices of engineers. In the beginning of their careers young engineers were also often persuaded by their parents to stay in Baku rather than to go elsewhere in Soviet Union for either studies or work, in order not to separate the families<sup>27</sup>. Thus, the parents of Javid (AZI 1973), Lidiya (AZI/AzPI 1986/93) and Ludmila (AZI 1959) objected to their studying in Moscow. Nadir wanted to go to Western Siberia (Tyumen) after graduation, but his father 'did not

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<sup>27</sup> For an analysis of the strength of family ties in Soviet Azerbaijan see Heyat 2002: 120-126

let him go'. Igor, who did go to Western Siberia after AZI, was persuaded by his parents to return to Baku after working there for three years.

On the whole, social motivations formed an important strand in the multi-stranded work orientations of Soviet-era engineers, but rarely constituted a dominant orientation. While they influenced decisions such as place of work or study, or taking on extra work, social motivations rarely affected choice of profession. Only four engineers from my respondents could be characterized as having primarily social orientations to work in Soviet period; all four were married mothers, for whom considerations of childcare were of greatest importance at the time.

### **3.4.3. Income as work motivation**

Income did play a role in the system of work motivations in Soviet period, however, it was rarely a primary consideration. Only one of my Soviet-educated sample could be categorized as having predominantly instrumental orientation in Soviet period. Indeed, because the salaries of engineers were lower than those of blue-collar workers, people with strong instrumental orientations usually did not choose to become engineers, or having received higher education, gave up engineering careers and worked in blue-collar positions instead. Rza (petroleum engineer, AZI 1966) describes this practice in some detail:

After graduating from AZI, from our department, everyone had to work for one year at the drilling rig as a manual worker, in order to go through all the stages. So, while you have a diploma, you still for one year have a kind of internship. Beginning from the very, from the assistant of 3<sup>rd</sup> rank driller [position], this is like the least skilled laborer [*raznorabochiy*] on the rig. And there is also a master, [...], and you need to become a master, and only then in a year time you become an engineer. And the moment you became an engineer, you begin to receive one fourth or one third of what you were making as a worker. So, if as a worker I received 300-400 roubles, it was good money then, even 500 roubles, then as an engineer I was making 220, because this is engineering [rate]. And many people tried, even paid money

to the Labour and Wages department, in order to stay at the worker rate. And many till the end of their lives stayed 'masters', not engineers. Because a master was receiving 1000-1200 roubles, and could buy a car from one month's wages, you see.

Generally, engineers spoke negatively of this practice as it implied that engineering work was less valuable and could erode the supposedly higher place of engineers in the workplace hierarchy. However, most engineers chose to pursue engineering careers despite lower incomes. Only one of the Soviet educated engineers I interviewed admitted to have made a decision about his career based on consideration of income – Niyazi (construction engineer, AzPI 1966), accepted an offer of administrative work in a trade union, with salary of 220 roubles, compared to 120 roubles he received as construction expert.

Yet, such cases are not common. Usually the increase in income was embedded in overall work experience and career progress. In the production sector, engineers, as well as all other workers also received extra income in the form of bonuses that depended on fulfillment and over-fulfillment of the plan. This extra income could be quite considerable and reach the amount of regular monthly salary. With each step on career ladder the salary also increased. In most accounts of work in Soviet times income is discussed with regard to the opportunity to gain some extra cash on top of salary from various side jobs. These could be both formal, usually in the form of part-time teaching, and informal. Informal side jobs among my interviewees included drafting projects for engineering students, making small electrotechnical appliances for sale, or trade in deficit goods. The income from such side jobs could also be quite substantial – thus, according to Nadir, who drafted projects for engineering students, one diploma projects could cost between 100-150 roubles – more than half of monthly salary of a young engineer.

Yet, overall, the considerations of income, although important, were not dominant in the system of motivations. Many engineers, as I will discuss in more detail in the next sections, assess this relatively low material interest in moral terms: they seeing

Soviet intrinsic attitudes to work as 'pure' while post-soviet instrumental ones as a sign of moral degradation and decay. However, there are also structural reasons behind these Soviet attitudes that shunned instrumentalization of work. As Nord et al. (1990: 57) had observed, "the value of working for money is likely to be affected by the attractiveness of what one can buy with money". And in Soviet Union's economy of shortage money could not buy so much. Victor (construction engineer, n/a) formulated this well: "There was plenty of money (*navalom*), but there was nowhere to spend this money – this was the Soviet order." Expensive and valuable deficit goods and services, from TV sets to vacations, were more easily available through the workplace-based system of distribution rather than through the market, which would in any case involve black market and overpaying.

To summarise, the accounts of Soviet-educated Azerbaijani engineers generally support the findings of Soviet research on work attitudes and work motivations. Overall, the professional orientation, combining intrinsic and career motivations, is reported as the most dominant orientation to work during Soviet period among my interviewees. In evaluating their Soviet work experiences, professionally-oriented engineers emphasize interesting and creative work, its contribution to the larger goals of Soviet state, and the integrative, holistic character of their work experience. Social orientation is in a distant second place (with four engineers); like elsewhere in former Soviet Union and beyond it is connected to gender and period in the life-cycle, and thus is found among working mothers. Income considerations play relatively smaller role in the narratives of Soviet work experience.

### **3.5. Post-Soviet dynamics of work orientations: from Soviet “golden years” to where?**

For many of the older professionally-oriented engineers, their Soviet experiences of work were highly positive and provided the 'self-actualization' that they sought. Soviet period is described as "golden years" (Ali), as a time when it was possible to "fulfill all fantasies" (Fahriyya). It is important to note that these engineers reflect on the nostalgic colouring of their memories; often, they are at the same

time critical of some aspects of Soviet organization of industry and engineering work. Yet in many ways, which they deem important, their Soviet work experiences appear especially positive when contrasted with the post-Soviet developments. In this section, I explore how the patterns of meanings have changed in the post-Soviet period while paying special attention to the contrast with the Soviet period.

Orientations to work were profoundly affected by the structural changes brought about by post-Soviet transition in Azerbaijan. The transition, with its differentiated restructuring of various sectors of Azerbaijan's economy, disruption and reshuffling of established hierarchies of subordination, social polarization and deinstitutionalization of much of daily life resulted in quite different trajectories of professional development for engineers. In some enterprises and research institutes, especially in the strategically important sectors of energy and oil extraction, pockets of institutional continuity, where engineers could continue along their pre-established career paths, were maintained. Few engineers were able to make use of the opportunities that arose with the emerging market relations and the entry of transnational corporations in Azerbaijan, starting their own businesses or joining the ranks of global professional class. In other cases, especially in the disintegrating manufacturing sector, engineers left the profession in search of livable income, and eventually were completely deprofessionalized. Yet others more or less successfully resisted the pressures to deprofessionalize, and struggled to remain in the profession, often by juggling several side jobs, professional and not.

But while individual professional trajectories of engineers varied, the overall structural and interpretative context which used to sustain the engineering profession and in which meanings of work had been previously generated, had changed for everyone. Introduction of market and the retreat of state had restructured the social stratification, previously based on the place in the state-organized production system, along the lines of income and lifestyle, thus changing the notions of success, status, and prestige (Outhwaite and Ray 2005: 35-37). Even

for those who remained in the pockets of institutional continuity, their professional trajectories now had to be charted in a very different, rough and irregular terrain. The fragmentation of ministerial 'systems' that used to integrate enterprises all over Soviet Union broke down union-wide professional communities, disrupted the flow of professional knowledge and information, thwarted careers, and reduced the geographical span and scope of work available for Azerbaijani engineers. Soviet ideological narratives of "socialist development" and "scientific-technical progress" on which the perceptions of significance of engineering work had been previously based, were abandoned.

The flux and fluidity of the post-socialist labor market are something that is very new and unfamiliar for Soviet workers. Work in the Soviet times, as my interviews suggest, was perceived as stable and secure. This, of course, does not mean that change was completely absent from work experience – people acquired new knowledge and skills, got promotions, changed positions, jobs, workplaces, and so on. But in Soviet times, change was predictable – it was embedded in a certain established order and followed certain rules that were often taken for granted. This orderliness of the Soviet past contrasts dramatically with the images of disarray, disorder and constant flux of the post-socialist period.

Interestingly, my interviewees locate the beginning of this overwhelming change not in the post-socialist period, but in late 1980s, about the middle of perestroika<sup>28</sup>. Some of the reforms introduced during perestroika are actually often evaluated positively, for example cost accounting which allowed enterprises to make their own contracts, democratization of enterprise management and elections of directors, efforts to improve efficiency and discipline, introduction of cooperatives. The beginning of collapse (*nachalo razvala*), which refers to major structural shifts and beginning of economic disintegration of Soviet Union, is usually dated by years 1988-1989; and early 1990s as 'the hard times' (*tyajelie vremena*).

By many of the professionally oriented engineers, the post-Soviet transition and the

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<sup>28</sup> Similar observation was made by Shevchenko (2009: 37).

ensuing decline of industry in Azerbaijan was experienced as a catastrophe, as a collapse of their world and the overturn of their values system. They often contrast Soviet-time achievements with the images of post-Soviet decline and decay, and evaluate these in emotionally charged terms, such as “heart ache”, “heart break”, being “sick to one's stomach”. This sense of catastrophe experienced as a personal tragedy is captured by Nadir:

The whole worldview had changed and this is very hard for the true Soviet engineers, those who are like... Very hard to transition, internally. My heart breaks when I see plants taken down. When I see steelwork machinery taken to the dump, at this moment my heart breaks. Seriously – I feel this very strongly.

The adaptation to this profound change of their professional world was easier for those engineers who in Soviet period held non-professional, i.e. social orientation. They also found it easier to reskill and change the sphere of their activity. Finally, in some cases it is possible to speak of change of orientations to work. Two of the engineers I interviewed can be considered to have changed their orientations from professional to instrumental.

Yet most of the engineers retained their dominant orientations to work Nevertheless, the relative 'weight' of different motivations and sources of meaning has changed considerably. Overall, there can be observed the rise in the importance of instrumental and decline of intrinsic motivations. There is also a newly emerging theme of professional autonomy, as well as the change in the social significance of engineers work. I turn to each of these motivations in the following sub-sections.

### **3.5.1. Instrumentalization of work and its limits**

During the early transition period, up to mid-1990s, the considerations of income suddenly came to the fore. As operations of many enterprises stalled and salaries were either not paid at all, or even when paid, became inadequate due to hyperinflation, income became an issue of survival. It was in this period that many

engineers had left their engineering jobs and began to earn their living through non-professional activities. This is how Lidiya describes how she decided to leave her work in a research institute and seek income from elsewhere:

In 1992 it was over, salaries, they were giving us leaves of absence, and I understood that there is nothing to do there.... One more thing: when I was graduating in 1992, the chief of my laboratory [...], he said: 'let's do dissertation'. So we were going to continue, and he was taking me to his lab, and he wanted to supervise my dissertation and found me a consultant in Moscow. But the thing is, his wife was Armenian, and during these events, they had to leave. And my dissertation was over. And as my studies finished, I graduated from Polytechnical, and absolutely, because everything fell apart, all the scientific activity in Azerbaijan, and I had to find a way how to survive in this environment.

During this period engineers often had to combine and juggle several jobs, both formal and informal. The range of jobs taken in this period by the engineers I interviewed included: accounting, suitcase-trade tours to countries as varied as India, Turkey and Poland, house-cleaning, baby-sitting, waiting tables, shoe-making, construction and repair work<sup>29</sup>. Professionally oriented engineers who struggled to remain in their profession often supplemented their professional jobs with side work. Nadir describes his return to profession after several years of unemployment and non-professional work:

For two years I made shoes, in the shoe-making workshop. I was the best shoe-maker there. And then in 1992 I went to work to the air-conditioners plant design bureau, as a sector leader, and in 95 I became department head. But these years were very hard. 92-93 were not so, but 95-96 were really terrible. Then we organized, I organized a brigade and we began... Then the apartment refurbishment began, and we did the electrics in apartments.

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<sup>29</sup> The so-called suitcase trade, was common in the early transitional period, and involved informal trade in consumer goods carried out by 'tourists' who brought the goods in their suitcases, hence the name. Turkey has been a central site for this activity for all post-Soviet countries, and also for Azerbaijan (Eder and Oz 2010, Heyat 2002a, Yukseker 2007).

By the end of 1990s, the most difficult times had passed, and more work became available. Yet, the importance of income remained high. This is how Khayam, (electrical engineer, AZPI 1976), a specialist in electronic alarm systems, explained his decision to settle for self-employed refurbishment work rather than seek a professional job in line with his specialization in private security companies which are rampant in the current construction boom in Baku:

Because what do they pay there? 300-400 roubles. For example, I will go there as an installation specialist – it will be 300, 350, 400 roubles. What would 400 manat<sup>30</sup> cover, for example? It will not cover anything. So when I work, for example, in a day I can put 4-6 square meters of tiles. This is 60 roubles, if 10 roubles per meter. Ok, let's make 50 roubles. And how many days are there in a month? For example, plumbing is about 600 roubles. And I can do it for 450. And this is all the time, I am never without work. And plumbing takes only 4-5 days to do. Then why would I work as an installation specialist, as an engineer, when I can just connect some pipes and that's it?

Engineers' attitudes towards the new importance of income however are ambivalent. On the one hand, the importance of income has been generally accepted. But while engineers do make their work-related decisions based on considerations of income, they do not necessarily like this change. Thus, according to Nadir, from 2000s onwards engineers have turned from “creators” into “money making machines”. He also feels, and resents, being bought:

Yes, they pay me, but, it's like I was bought. This is it. And this is killing me. Although they are good guys, my masters (*khozyaeva*). But as a Soviet person, I can't comprehend this. Maybe, this is right. Maybe, this is how it is supposed to be. But it bothers me. There is this gnawing somewhere inside, I don't let it out completely.

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<sup>30</sup> Current Azerbaijani currency is called 'manat'. However, many of the older engineers use 'manat' and 'rouble' interchangeably, referring sometimes to Soviet currency, and sometimes to the present Azerbaijani currency. In this quotation, “rouble” and “manat” are used to refer to Azerbaijan New Manat (AZN).

Furthermore, while there is a certain rise in the importance of income considerations during post-Soviet period, the instrumentalization of work orientations has been limited. Income is rarely considered for its own sake; for the most part, engineers struggle to balance higher pay with other issues, such as type of work, the level of stress, and especially the level of autonomy in their workplaces. Several professional engineers have chosen to return to their professions even though the non-professional work paid better. Both current and former engineers also decline jobs that are incompatible with their notions of good or decent work. Thus, Nadir had declined an offer to work in the state customs agency, notorious for its bribery, because “this is not for [him]”; Khayam despised his work in trade and eventually settled for refurbishment as a more morally acceptable job; Ali refused a high-paying consulting job because he found it “too nerve-wrecking” to conduct negotiations with Azerbaijani authorities. Overall, while the importance of income motivations in the post-Soviet period has clearly increased, they did not completely replace other considerations. When work is no longer the matter of providing for minimal subsistence, as was the case in early 1990s, engineers once again turn to professional, rather than purely financial, considerations in their work-related decisions.

### **3.5.2. Content of work: how interesting is post-Soviet engineering work?**

For professionally oriented engineers, one of the major outcomes of transition was the fundamental change in the content of their work. This is true both for those who reskilled and changed their specialization, and those who remained in the pockets of institutional stability. With change of subordination of the industry from Union center to Baku, many of the projects were simply stopped and abandoned. Fatima provides an example of a research group whose expertise became simply redundant in the new conditions:

You know, we had a group working on the North, Tyumen, they used to travel to Minsk, to Komi, to Tyumen, they worked on prevention of hydrate deposits in the North. [...] there was a special laboratory dealing with prevention of hydrates. They received state awards [for this work]. And

now – where [to work on this]? There are no hydrate deposits in Baku.

Most of the engineers I interviewed evaluate the changes in the content of their work rather negatively. They say that engineering work in the post-Soviet period has become less interesting, less creative and lost much of its holistic character. They identify three major reasons for the decline in complex and creative engineering tasks. One is the state policy, which de-prioritized industrial development, education and especially research, sometimes in paradoxical ways. An striking example of this paradoxical policy has been the closure of a major gas research institute, noted by several of my interviewees. As Fahriyya, a lifelong researcher at the institute remarked: “My heart breaks. They opened the institute when there was no gas, and now, when it is not only here, but also exported abroad – now the institute is closed<sup>31</sup>. ”

The second issue noted by my interviewees is mass import of technology that has also led to routinization of engineering work. The growing gap between the declining level of technical education, still using obsolete Soviet teaching materials, and the requirements of advanced technologies that can be purchased from developed countries has resulted in turning many engineers into “button pushers”: those who only follow instructions, but do not participate in the more complex and intellectually challenging tasks such as research, design or production these technologies. It is important to note that engineers are never against the new technologies – on the contrary, they wholeheartedly welcome technical progress. However, they strongly resent the current situation where engineering expertise in Azerbaijan is being reduced from production of technology to mere operations. An illustration of how this removal of engineers from technical matters is provided by Vahid (power engineer, AZI 1961). He described the case of acquisition of equipment from Germany for one of the industrial units in his production association. While the original project envisioned training of Azerbaijani engineers in Germany, at the time of commencement this idea was abandoned. Instead, the budget was reallocated, and only a group of administrators went to Germany to

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<sup>31</sup> This refers to the recent discovery of large gas reserve in ShahDeniz field in the Caspian Sea.

receive the equipment. As the engineers are becoming also removed from the management, their impact on decision making is being reduced.

The third reason behind changes in the content of engineering work identified by my interviewees is the corrupting effect of the “easy” oil money. The following quotation from Ali conveys these ideas:

When I headed this [computing] center, this was a collection of intellectuals. Even though, they were 'young specialists', they were intellectual, intelligent, educated, knowledgeable engineers. And this level now, which... after I saw this, I did not want to go there again. Although now we have many more resources than before. But this is what corrupted us. You know, when Turkish Turgut Ozal, when he was President, he said a very interesting thing: “God was merciful to us that he did not give us oil”, meaning, to the Turks. And we, this oil, it corrupted our brains, and turned them off. This is free money that is flowing in, and there is no need to think. I say – to compare our resources in [...] then and now. I mean, financially. There are no restrictions, any equipment can be bought, any services ordered, contracts can be made with any organizations. And in the past, all this was restricted, we had to think ourselves. Maybe it was a little primitive, but the brains developed. So next time, something better could be invented. And now this is gone.

However, there is one sector where the change in the content of work is evaluated positively, and where work is perceived to have become more, rather than less interesting: construction. The construction engineers have found it very interesting to create buildings from scratch, to think of non-standard solutions to various design problems, to coordinate their work with clients and architects. During Soviet period the scope of individual creativity in construction was limited. State-managed construction projects were administered by large multi-level bureaucracies, with long chains of coordination, from approving a project to finally approving a finished building. Most of the designs were standard, especially in housing, and

they were used for typical buildings all over Soviet Union. The introduction of market in post-Soviet period lead to an exponential growth of the private construction sector, both in terms of individual housing and commercial property. As the legal constraints on private construction were lifted, the new rich began to rapidly improve their housing, which was previously restricted both in terms of size and design. Niyazi, a construction engineer by training, who returned to his professional activity after a decade in administrative work at a trade union, reflects on his post-Soviet work experience:

The building of private houses was the most interesting work. All of them. Why? Because I knew a guy, I still know him, an architect, whom I invited. He made a project, and then helped in controlling the construction process. So the two of us built from the ground to the last needle. To the curtains. Usually they say 'turn-key'. Turn-key or to the curtain. This was interesting. It was creative.

As construction became a highly lucrative business, construction engineers, previously one of the less prestigious Soviet specialists, unexpectedly became highly demanded on the labor market. Because of the diversity and variability of clients' demands, engineers are actually forced to do more creative work than was the case in Soviet times. According to Victor, a specialist in industrial ventilation, in the post-socialist time construction site engineers began to apply their knowledge more actively:

Well, the site supervisors (*prorab*), they only began to use this knowledge now, when all the institutes fell apart. In principle, you didn't even need to know anything special. Why? Because the drawings were ready, given, and site supervisor was only needed to sign "form No.2". And provide materials to workers. Rubber, fillers, nails, those things. Knowledge wasn't needed at all. Very superficial knowledge. And when everything fell apart, then you actually need to calculate everything yourself.

These accounts of construction engineers also point to the connection between "interesting work" and professional autonomy. In evaluating the changes in content of their work and work environments the construction engineers stress the

importance of professional discretion – the ability to make autonomous professional judgments, to decide how their work should be done. But the concern with autonomy is not restricted to construction sector alone: indeed, it appears in many narratives of post-Soviet-work experience while it is almost absent in memories of Soviet time. Moreover, the concern with autonomy transcends various work orientations and can be found both among those who had found ways to remain or return to their profession and those who left the profession and are engaged in other, non-engineering work.

### **3.5.3. Autonomy**

As I discussed earlier in Chapter 1, professional autonomy both in its organizational and technical varieties has been a central problem in sociology of professions (Abbott 1988, Freidson 1970). It is usually discussed in the context of organizational employment, where professional employees are seen as compromising their ability “to initiate and conclude action, to control the content, manner and speed with which a task is done” (Spenner 1983: 829). The highest form of autonomy is believed to be found in self-employed and entrepreneurial work, as expressed in the classical model of professional as a solo-practitioner.

While much of the research over last decades in the capitalist societies has challenged these notions of professional autonomy as too crude, and had consistently refined the conceptual framework, the findings of my study suggest the relevance of the notion of professional autonomy in its classical, solo-practitioner variation, in post-Soviet Azerbaijan<sup>32</sup>. Among the engineers I interviewed the highest levels of job satisfaction in post-Soviet period were found among the self-employed and entrepreneurs. Indeed, self-employment has been a strategy of choice of more than a third of my sample: 12 of the engineers I

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<sup>32</sup> Thus, building on Freidson’s distinction between organizational and technical autonomy Derber (1983) and Bailin (1983) distinguished the control over the technical side of work and the choice of professional tasks and goals, conceptualized as technical vs ideological, and operational vs strategic types of autonomy. Everts (2002) conceptualizes professional’s control over performance of their professional tasks as “discretion”.

interviewed had been self-employed. Of them, only one had eventually found full-time job in a private company, and one returned to employment in state sector.

The value of autonomy is usually discovered in comparison with working for someone else in the post-Soviet period. An example of such discovered importance of autonomy can be found in the account of Lidia, who decided to start her own business after a period of working in private sector in 1990s. Speaking of her decision to leave employed work, she said: “I cannot work for a master (*na khozyaina*). I can't. It is against my character. I cannot stand when I am under somebody's command.” Nadir, who now works as a chief engineer in a medium-size private company, expresses a strikingly similar attitude to hired work:

In this sense, this work now is satisfying. Materially, and in general. It is motivated. But I am not.... I would have been, in Soviet times, I would have become more. There I would be for myself, self-sufficient. I would be a manager, *I would be my own master (khozyain)*. But now I am not my own master. This is what bothers me.

The difficulty that Soviet-educated engineers experience in deferring to the command of managers in private companies bears on the classical debate on the professional autonomy in heteronomous organizations (Meiskins and Watson 1989; Hall 1968, Bailyn 1985, Derber 1983). This literature suggests that there exists a constant tension between organizations and professionals, where professionals try to resist bureaucratic infringements on their autonomy, especially in heteronomous organizations where professionals are subordinated to non-professionals. However, this begs a question of how post-socialist deference to management is different from subordination in Soviet times. Engineers with experience of work in Soviet organizations express a strong sense of fundamental difference between the forms of subordination in Soviet state sector and post-Soviet private sector, but they find it difficult to formulate this difference. The following quotation demonstrates this difficulty:

In Soviet times, when you were working for the state, you could grumble, but now you are working “for an uncle” (*rabotaesh na dyadyu*). *Although at that time as well... Although the guys are very good.... Well, I don't know, somehow, in some way*, I used to be able to just turn away and go work in another place. Here I can't just turn away. That is, my degree of freedom is a little infringed, do you see what I mean? (emphasis added – L.S.) (Nadir).

In my opinion, there are two interrelated reasons for these different perceptions of subordination in Soviet and post-Soviet periods, both rooted in the different organizational principles of Soviet enterprises and the contemporary private firms. First, the Soviet enterprise, at least in the late Soviet period was not a heteronomous organization. To reiterate, the term 'heteronomous' in sociology of professions refers to the organizations where professionals are subordinated to non-professionals (Hall 1968). As I discussed in chapter 1, in Soviet enterprises this was not the case, and management and administration were usually recruited from among the engineers with long career within the same organization. In fact, Soviet industry had a completely different problem – lack of professional management, because management was seen more as a side-function of general production activity. The engineers in such enterprises did not feel opposed to the management, which in any case had limited disciplinary power. Any disciplinary decision had to go through complex bureaucratic procedure, and could be challenged at different levels, from higher level management to local party committees. In post-Soviet private sector, on the contrary, the relationship between the owners and employees is very different: unregulated by formal rules and personal. Often, informal ties are used to find jobs or personnel, and work can be based on informal agreements rather than formal contracts. The employment decisions are at the discretion of the owners, and employees have little legal protection as much of the private business activity is informal. The employment in private sector is thus based on interpersonal trust, which can be rather binding, as Nadir's case presented above suggests.

The second reason is the legacy of the Soviet tradition of broad workplace autonomy (Burawoy and Krotov 1992). In Soviet Union, with its policy of full employment, working hard was a matter of personal choice and not a condition of employment. Popularly, the relaxed attitudes towards underemployment are known by a catchy phrase “they pretend to pay us, and we pretend to work.” Among my interviewees, Lidiya provided an illustration of this practice, describing her work at a research institute: “you drank tea for four days, and then you started experiments on the fifth”. It is worth noting that Lidiya at the time was a professionally oriented employee, receiving her second engineering degree and planning career in research. Another interviewee, Khayam, who was in a managerial position at the department of electronic security in police, recalls that he did not even go to work everyday, and instead worked from his home lab. In industrial enterprises, despite formally stricter controls over working hours, the periods of “storming”, when monthly or quarterly plans were fulfilled in the last few days before the end of the reporting periods, were alternated with relatively relaxed periods, when workers could leave earlier or organized parties at the workplace during the working hours. It was because of this workplace flexibility and perception of hard work as a choice rather than obligation, that engineers often had time and were encouraged to take on additional activities of their own choice. Thus, the spare time at work could be used for professionally related “creative” activities that were not formally part of anyone's job description:

once in our Center we, the electronics guys, connected a normal TV to the computing machine. There was no PC [at the time]. Information was read from punch cards. So we had to perforate, punch these holes, put them into the input device, and the punch card had to be of certain quality... In short, this was a problem. And so we made this TV, we changed the circuit board of the TV, connected it to the computing machine and the information could be read [from screen]. So many people came to see this from all over Soviet Union! (Ali)

Thus, for Soviet-educated engineers working hard and late is not a matter of imposed formal discipline, but rather of personal choice, motivation and

commitment. Same people recall working late hours to complete projects or to finish work that was of intrinsic interest to them. Yet they oppose, and sometimes resist the imposed norms of formal discipline, as I will show in the paragraphs below. This ability to control one's own work that the Soviet workplace autonomy provided is closely connected in the minds of Soviet-educated engineers with the idea of interesting and creative work:

I think that science is... a person needs to feel free. It is not necessary to sit there. I can come [home] and, I don't know, make dinner, and this [*points to her head*] is still going. It should not be stopped, by making you sit in one place. This was something completely unacceptable for me, always (Fahriyya)

The tradition of wide workplace autonomy and lax control over workers was carried over into post-socialist period in those state enterprises and research institutes which I earlier dubbed as pockets of institutional continuity. Especially in the early years of transition, when salaries were well below subsistence levels, it was common for workers to juggle several jobs and to use their workplace resources to complete side work. Management, who was often engaged in the same activities, rarely opposed these practices. Monetary compensation and flexible working hours are often experienced as a trade-off.

In recent years, these practices of wide workplace autonomy appear to be on the wane. Profit-oriented private firms can no longer allow such space for personal freedom. But even in the state sector, such relaxed attitudes to work discipline are beginning to change. In most state sector workplaces, management began to monitor the working hours of their employees, often through the use of electronic controls of entry, such as card-operated turnstile gates. While some employees accept and adapt to this change, others resist. Thus, Fahriyya had changed her contract to part-time in order to avoid control over her working hours:

Because of this, in the last years I worked part-time. This was nonsensical – I was chief of a laboratory, on part-time contract. Because every day I left, and by this time there were these electronic turnstile gates, and they would

tell me “you have 30 absences”.

The controls over employees' time appear to be strongest in high-priority state-run workplaces with high official salaries, such as enterprises of the SOCAR system. Several of my interviewees referred to the current disciplinary practices there as 'prison regime'. The tight disciplinary control over SOCAR employees is also indirectly supported by the difficulties I had with arranging interviews with SOCAR employees, both current and former. Other state-sector employees were much more approachable.

### **3.5.4. Social significance of work**

The changes in content of engineers' work are also related to the changes in the perceptions of its social significance. As high-tech Soviet projects were abandoned following the withdrawal of state funding, engineers who used to be involved in them no longer feel that they are at the cutting edge of global technology. On the one hand, as engineers encountered Western technologies directly, rather than through Soviet analogues, they had come to realize clearly that in many aspects Soviet technology was behind and was globally uncompetitive. Thus, describing his first trip abroad in 1989, Ali recalls a sense of shock at the difference in technological development in France and in Soviet Union: “My head was full of impressions, I was... My Moscow colleagues even said to me: ‘Ali, it is as if you were hit on the

head with a brick’. And I said: ‘Of course I was hit! Look what they are doing and what we are doing’”.

In the beginning of transition some engineers harbored hopes for catching up with Western technologies, yet this did not happen. On the contrary, a deterioration of quality of education and expertise can be observed. As the state policy focused on acquisition of ready-made foreign technology rather than on developing or even copying it, the engineers' expertise became largely redundant. This created a sense of decline and deterioration, often expressed in terms of “collapse” (*razval*) and

“decline” (*padenie urovnya*).

In this context, engineers see significance of their work in trying to reverse or at least resist the decline. Rahman, a professor of power engineering (Moscow Energy Institute 1960) provided the most elaborate explanation of this task. He described the current situation of engineers in Azerbaijan in terms of a three-tier technological world system. According to this perspective, technologies and innovations are designed and produced in the first tier countries from which they are then exported and copied. The second tier countries copy technologies produced by others, but have enough intellectual and technical resources to creatively adapt and adjust them to their own needs; finally, the third tier countries simply import and install ready-made technologies and are wholly dependent on foreign expertise for their implementation and even maintenance. Rahman's hope for Azerbaijan is to “catch the train” of the second tier, and his fear, shared by many others, is to “slide into” (*skatitsa*) the third.

Engineers resist the decline at two levels. At the macro level, engineers in position of responsibility can somewhat influence policy making, providing consultations to the government agencies. At the micro-level, many engineers are involved in training and mentoring younger colleagues who suffer from lower standards of education. Nearly half of my interviewees who are still working as engineers are involved in training young people in various settings, both formally and informally. They supervise PhD students in research institutes, mentor recent graduates in industrial enterprises, tutor high-school students, or participate in the education of their own grandchildren. For the older engineers such mentoring activities become a source of meaning as well as provide a sense of continuity of their profession, linking the past with the future.

However, the engineers are also aware of the limited potential for change that their efforts carry. The older generation is concerned that in the absence of coherent state policy of education and industrial development, the macro-level structures no longer support professional development of young engineers:

There are a lot of very good [young people]. But, where will they work? Where? Today, before you came, there was a program about some high-school students who went to the US, to Silicon valley and met there with some Nobel laureates. And they were telling this. Very [good], they speak English, they speak, they think. They exist. We were like that too. But when we came – all the conditions were created for us. All the conditions.

Thus, although individual efforts to maintain professional standards are being made, the ultimate responsibility for the decline is still placed on the state, and the absence of coherent “policy of development of cadres” (Javid). But while the current situation is experienced as a decline compared to the Soviet past, the future is not universally seen as grim. Many, including those who are deeply frustrated with the current state of affairs are hoping for “a new stage” (Nadir) in engineering. This hope is inspired by the young engineers who still continue to emerge even in these unfavourable conditions. Thus, teaching and mentoring activities help Soviet-educated engineers to maintain a sense of continuity between the larger professional body to which they used to belong and the future. In the next section, I turn to the analysis of the work orientations of this generation of engineers.

### **3.6. Post-Soviet engineers: balancing life and work**

Comparing the orientations to work of Soviet and post-Soviet engineers is not an easy task: the differences between the two groups are great and they often seem to belong to different worlds. The social context in which post-Soviet engineers began their careers has changed radically from that of their older colleagues. The institutional framework which used to organize Soviet engineering careers has been dismantled: the quality of education declined, the disparity between formal education and workplace requirements grew larger, and the Soviet system of placement of graduates to relevant enterprises is gone, leaving graduates to navigate unstable labor market by themselves. At the same time, opening of Azerbaijan's economy, especially its oil production sector, to global market and transnational companies, provides new opportunities for work and education, both

inside and outside of Azerbaijan. With the new opportunities and limitations, the post-Soviet labor market is much more precarious, fluid and informal than what Soviet engineers had to deal with when they entered the profession.

Soviet and post-Soviet engineers also speak from very different places in their careers and life cycles. Soviet engineers' narratives are retrospective and often inevitably nostalgic, if not about the Soviet social context then about their own youth. Their interviews are thus largely reflections on the past, in which they reconcile their own past expectations, as they are remembered, with their perceived achievements and failures. Younger engineers on the other hand speak of the future – their dreams, goals and aims, their understanding of the complicated professional world around them and how to achieve their goals.

At the same time, continuities between the two groups exist. Many younger engineers come from engineering families; they often studied in the same university as their older colleagues – especially AZI – and often with the same professors. The dominance of oil sector in the industry is another example of a Soviet, and even pre-Soviet legacy that has been strengthened in the post-Soviet period. The informal networks and various corrupt practices in education and employment, although more wide-spread now, are also nothing new and date back to the Soviet period when they successfully coexisted with institutional mechanisms of education, employment and career advancement. It is therefore not surprising that perceptions of work show a mix of continuities and changes, just like the work itself. The process of change in the engineers' orientations to work can be described more as transformation and evolution rather than direct replacement of old motivations with new. Income, interesting work, and professional autonomy are still relevant, although their roles in the overall structure of work meanings has changed. This is largely because the grand narratives of work from which older engineers have drawn meanings, such as the narrative of technical progress of which engineers used to be a part, and the narrative of self-actualization through work, are no longer dominant. Yet, younger engineers are still aware of these cultural repertoires, and they sometimes refer to them, either

identifying with some of the previous period's values or denying them. Thus, they often speak of the 'old school' and 'Soviet' professionals with considerable respect, contrasting them to the post-Soviet deterioration and corruption:

In 1993, even up to 1996-1997, the schooling was good. At that time there were still, well, Soviet time teachers, and corruption did not spread yet. [...] So then it was normal. I mean, teachers did take money and all that, but then you could easily study without money, and they gave good knowledge, these old cadres. Well known professors were still there, it was OK. In 1998-1999, when I was in the master's program, it was getting worse and worse. (Yashar, Chemical Engineer, AZI 1999)

Yet, on the other hand, they may view some Soviet engineering practices as outdated:

But who needs this [platform] to stand so many years. You know as we say "Your BP built one platform, and it burned out<sup>33</sup>. And we built these huge Oil Rocks, they are still standing". But of course they will stand – they are overfunctional! Cars can drive over them – but who needs this? (Zohrab, quality engineer, AZI 1994).

Perhaps the most striking change in the narratives of post-Soviet engineers is the centrality of work in engineers' lives. Younger engineers are more pragmatic; they view their work more instrumentally, as a means to an end. This end, however, is not seen strictly in terms of financial or material gains; rather, the ultimate goal is having a good, interesting life, of which good work is a part. While the concept of all-encompassing dedication to work is still familiar to the post-Soviet engineers whom I interviewed they do not identify with it themselves. If older engineers are likely to see such dedication as a path to self-actualization, younger engineers can dismiss it as workaholism. Aziza's attitude "For me the most important thing has always been my work", which, although not shared by everyone, seems natural in the Soviet generation of engineers, appears strange and overwhelming for the new generation. Yashar (chemical engineer, AZI 1999), who now works as a process

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<sup>33</sup> Deepwater Horizon platform in Gulf of Mexico which exploded in 2010 is the case in point.

engineer in Houston, TX, USA, explains his attitude towards work in this way:

At the end of the work, *if it is work*, you still have to work. Spend so many hours at work and deliver. I am not a workaholic, so it is difficult for me to answer. I don't think that work is 'number one' and I never get stressed about any work. No matter how much work I have, and what the deadlines are, I don't get stressed out. For me work is not in the first place. [emphasis added: L.S.]

If such a statement came from a Soviet engineer, I would probably categorize him or her as someone with social rather than professional orientation. Yet, Yashar's professional history resists such categorization – he is a highly motivated professional who had put a lot of personal effort in staying in the profession, having also explored other opportunities. Thus, work and particularly his profession are important to him, but they no longer occupy the central place as was the case with the previous generation of engineers.

The change in the centrality of work in people's life is also indicated by their goals. Several engineers mentioned that they do not want to remain engineers till the end of their lives; instead, they see the profession as a way to accumulate various assets for their future projects. Thus, Anar, plans to eventually return to Azerbaijan and do something good for his country; he is not yet sure what it will be, but "definitely, not an engineer". Currently, Anar is developing a "skill set" that he can use to "support the country". The skill set to which Anar refers is also wider than the technical expertise on which Soviet engineers had focused. Anar in fact explains his successful career in the US in terms of soft, non-technical skills rather than his expertise:

US is a very open place in terms of having different background, coming here, working here, but to be successful you've got to find the same language with them. And then, university life is very different than work life. In work life you are... These people are very competitive. In work life you are, they are pretty competitive, and you've got to find a way to build relations. First time, coming from Baku, my thinking was "as long as I do

things right, I don't care about having a relationship". Then, in two years I realized that "Man, I am going such a good job, technically, but I don't have that relationship built." Then I said "You know what, that's my next challenge. I am gonna work with people, try to understand how, what can I do to be more successful here?" So that's the piece I've been working on. And it is very hard, it is not that easy to build a relationship in a second or two. I am still working on it. I think I have been successful. Right now, my scale, my competitors, they are all US people.

For the post-Soviet generation of engineers, the importance of income is clearly much higher. The importance of income is often discovered early on in the professional career, or even while choosing profession. This is particularly so for the engineering specialization related to oil extraction, which once again have become lucrative professions thanks to the foreign investment in this sector. Yet, unlike older engineers, who find the growing importance of income as regrettable, younger engineers take it for granted; it is experienced as a neutral fact of life rather than a loss. However, this does not mean that all young engineers make their work-related decisions based on income alone: money, although important, is also not everything. This is especially the case for those younger engineers who have already achieved some level of financial security, such as those whom I interviewed in Houston. Thus, Anar explains his career motivations in the following way:

I have made a decision in my life I will not go for money. So if I go for money today, I can go right across the street, different companies, make a lot of different, a lot of money, extra money. I made that decision, for my choice, I said "I am not going to sell myself for money, I am going to make right decision in my career to move on."

This quotation points to both similarities and differences between the younger and older generation of engineers. Anar and Nadir, whom I quoted earlier, share similar negative attitude to working for money only, of 'selling themselves' and 'being

bought'. Yet, the context in which they make their work decisions is very different. Anar career is on the rise: since moving to US seven years ago he has moved up the career ladder, accumulated skills and work experience, gained US citizenship, and has many job offers from competing companies. Anar has choices – of jobs, and of whether to make those decisions based on income alone or on other considerations. At the same time Nadir's options of work are highly restricted, due to his background of skills, education, age, and social location in the informal private sector of Azerbaijan. He therefore does not have the luxury of refusing to 'sell himself' for money, as it will likely lead to unemployment and might result in leaving the profession.

A yet more detailed account of different work motivations involved in decision-making about work is presented by Yashar, who at the time of the interview was just starting a new job:

I changed [my job] because the new one is much more interesting, it's at a different scale. They are constructing and designing much bigger processing units. Plus, they are closer to home and they offered better pay. So it is the combination of these three factors, not just one, and I left. But, let's say, in my previous job, when I was leaving, they told me "we can give you the same pay, and the same conditions, stay". But I left anyway, because this work is much more interesting. There, it's a professional leap. Although formally the position is the same – senior process engineer here, senior process engineer there. But in the new job I will be working with much more complex projects, and this was my main motivation for leaving. But, of course, the pay, I mean, the amount of salary is also important. I mean, for example, if they, at my previous job, offered me at least 10% more than the new job, probably I would consider this, because... Well, extra money doesn't hurt, right?

Thus, similarly to the place of work in life, which is seen instrumentally, as an important component but not the main goal of life, income is also seen as an important component of overall career strategy rather than the ultimate goal of

work. Rather, income is a means to ensure a certain lifestyle. For example, for Yashar, income is a means to ensure a certain lifestyle and “level of comfort”. This was revealed more clearly in our discussion of the possibility of his return to Azerbaijan. Yashar would like to return, for reasons of being close to his family and friends and having a different, Baku-style social life, which was not replaced by social life in Houston. However, a major consideration is providing good education for his children, which in Baku is very expensive. He explains: “In principle, I could agree to a smaller pay in absolute terms than I have here. But of course, not lower than a certain level, and the package must include education for my children.”

In terms of interesting work, for post-Soviet engineers it is less important than their older colleagues. Whereas Soviet-educated engineers often spoke of their intrinsic interests unprompted, with younger engineers this was not the case. Even when prompted, they had to think about the question and sometimes had difficulties in defining what work they found interesting. This decline in the importance of interesting work may be explained not just by the cultural changes, but also by the objective changes in the technical complexity of work tasks available to post-Soviet engineers. These tasks no longer involve research or design, but mostly operation of ready technologies supplied from abroad. In addition, post-Soviet engineers are also much younger, and most of those I interviewed only had a few years of professional experience, so they may not have sufficient time to understand what work they like.

After considering the question, post-Soviet engineers' descriptions of interesting work tasks are similar to those of their older colleagues. Like them, post-Soviet generation of engineers shun routine work and seek technical challenge, which is now found mostly in problem-solving and project work, where engineers are involved in development of a project from start to end. There is, however, less emphasis on creativity in work, which has to do with the fact that the most creative engineering work – design – is largely unavailable to Azerbaijani engineers. But interest to design, which engineers continue to see as quintessential engineering

work, is still there, and they regret that it is unavailable. In the words of Farid (electrical engineer, Turkish University, 2006):

Here in XY we don't do any design. This work is done by subcontractors, and we just install. Rather, we are *technical managers, not engineers*. For me, that's what I always thought, *engineering is design*. And assembly, installation is done by technicians. [...] when I was studying, I always thought that I will work somewhere in NASA or Google and do design, but it turned out very differently. [emphasis added - L.S.]

In these conditions, engineers have to make their work interesting themselves. This may include taking on additional tasks outside job description in order to gain a more profound and holistic understanding of the production process; networking, which could eventually lead to more interesting projects; seeking diverse professional experience with the aim of eventually starting one's own company. Two features of Soviet approach to work can be found here: using one's workplace premises for a personally interesting project, and holistic approach to work. Compare Zohrab's description of his work as a quality engineer to the previously cited examples of Soviet holistic approach:

"[In our work] we have to kind of step back and analyze the whole project. In essence this is an audit of the whole project. And when you do that, you know everything inside out. I can take a look and see that something will not work on the ground, even if it looks good on paper. And they ask me – how do you know? And I of course know, because I have seen it all before."

Another point of convergence between work attitudes of Soviet and post-Soviet engineers is that they expect to find autonomy in their own businesses rather than in organizational employment. For post-Soviet engineers in particular, being "one's own master" is often seen as a main life goal. In contrast, organizational career is seen as a means to achieve the ultimate end – establishing one's own business. No one of my younger interlocutors is yet at that stage, but having one's own business for this generation is a way to overcome the separation of work and life that are at the core of employed work in capitalist society. The most vivid expression of such

holistic way of life that incorporates visions of work, income, leisure and social contribution, was given to me by Natik:

It's tuning. Tuning of cars. For now I am planning, well, not planning, I just have these ideas to start with tuning of motorcycles, not cars. Maxi-scooters, that's how they are called. I even started to find out how much they cost, in Georgia, in Thailand. I was in Thailand, and I saw them there.[ ....]Because we have these terrible traffic jams. So I think, it takes me 15 minutes to walk to subway, then 30 minutes in subway, then a bus, it is a whole hour. And if I had a scooter, I would be there in 15 minutes, and I wouldn't spend that much on transportation. So now I have this idea. And then I thought, this could be a business. And I would be my own boss. At some point you want to be your own boss. And I thought – maybe it will work in Azerbaijan. Because I saw in other cities scooters being used by tourists and by students. This is not just to rent them and make money, but to create kind of clubs. So that those who buy these scooters from you, you become friends with them. *And so that life would be interesting, and you would enjoy it yourself, and make money too.* This is the kind of thing I'd like to do. And then, if I make money, then I could organize tuning. I could gather, like my father did, I could gather people, maybe one artist, another – good electrician, and to gather them and to create this core of people in one factory. And to make luxurious cars. [emphasis added - LS]

A final aspect of work motivation that had undergone considerable change is the sense of contribution to a larger cause. Traces of Soviet valorization of scientific-technical progress can be still found in the narratives of older individuals from this group, those who are now in their mid-thirties. Thus, Yashar still believes in superiority of scientific knowledge; according to him, mathematicians and physicists are the people who can understand "how life works". Zohrab is trying to persuade his son to become an engineer because engineers 'make the world better' by constructing useful things and solving problems. Yet, unlike their Soviet colleagues who were involved in the prestigious sectors of Soviet industry, there is

no strong feeling that they are contributing to a larger cause themselves through their work. However, several of my interviewees mentioned their plans for making some social good sometime in the future. The contributions they think about include helping disabled people, troubled teenagers, or establishing businesses that provide services not yet available in Azerbaijan. These contributions are potential, not actual – young engineers do not feel that they are contributing to society yet. But at the same time, in a stark difference to Soviet generation of engineers, these potential contributions are not directly related to engineering work, indicating the decoupling of work and larger societal goals and values.

Thus, overall, the work orientations of post-Soviet generation of engineers appear to be more multi-stranded and more balanced than those of their older colleagues. Work is important, but it is rarely at the center of their lives. Younger engineers are more prone to balancing various aspects of their life and work to achieve their goal of interesting and meaningful life. Self-directed business activity, rather than excellence in their profession, is the new model of self-actualization.

### **3.7. Conclusion**

The meaning of engineers' work in Azerbaijan, like the organization of work process and the socio-political context had changed considerably after the dissolution of Soviet Union. However, despite the fact that images of rupture and discontinuity dominate the narratives of Soviet engineers, in the realm of meaning of work it is more appropriate to speak of the transformation and evolution. The main components of the overall structure of work motivations have remained the same, but the significance of work in individual lives has changed. The change, at the risk of some oversimplification, can be conceived as the flipping of the instrumental relationship of means and end. In the Soviet period, self-actualization was to be found through work; and career advancement, income opportunities, extra training and relations with colleagues were all subordinated to this goal. In this sense, the intrinsic interest in work is actually not intrinsic, but also

instrumental – it is a means towards the end of self-actualization. Among the post-Soviet engineers, self-actualization is no longer sought in work; yet work is a part of meaningful life. Meaning, and self-actualization, are now to be constructed individually; and intrinsic interest, as well as career advancement and income are parts of the larger assemblage. In a way, post-Soviet engineers are now crafting their own lives, skillfully arranging different elements, including work.

Soviet and post-Soviet meanings of work however, converge on the goal of holistic life, incorporating both work and leisure. In Soviet period, such holistic life was articulated by the concept of “rounded development of personality” which was part of the official ideological narrative. In the post-Soviet period, due to ideological fragmentation, there is no equivalent ideologically charged official concept. Yet, from the shared vocabulary of post-Soviet engineers, it is possible to conclude that a comparable idea is conveyed through the concept of being “one's own master”. Using once again the metaphor of craftsmanship with its connotations of holistic approach to the product, skill, and autonomy, if in the Soviet period engineers crafted products, whether they were equipment or energy systems, and in the post-Soviet period engineers craft their own careers, and ultimately, lives, through careful assembly of various resources, from technical expertise to networking and strategic sequences of employment.

## **CHAPTER 4**

### **BECOMING AND REMAINING AN ENGINEER IN POST-SOVIET BAKU: THE IMPORTANCE OF INFORMAL PRACTICES**

#### **4.1. Introduction**

In this chapter I consider the role of informal practices in professional strategies of engineers in Azerbaijan. Based on in-depth interviews, I explore how engineers strategically use both formal structures and informal practices to navigate complex state-society relations pertaining to their professional fields. I argue that informality has been the main arena of interaction between the state and society in post-Soviet period. As such, it has also become the space where professionalism is negotiated.

Informalization of many aspects of social life has long been described as one of the most salient consequences of transformation in post-socialist societies (Ledeneva 1998, 2006; Lonkila 2010; Sik 1992), deploying at different levels, from state bureaucracy to everyday life. Although many of the existing studies describe the use of informal practices and the spread of informal networks among various professionals (Lonkila 2010; 2010a, Rivkin-Fish 2005; Salmi 2003; Semenova 2004, Yakubovich 2005), there are few detailed studies of the impact of informality and informalization on professions and on professionalism (Sanghera and Ilyasov 2008, Riska and Novelskaite 2011). Thus, Riska and Novelskaite (2011) argue that informality represents a “fourth logic” of professionalism, along with market, bureaucracy, and classical professionalism *per se*. Despite this important intervention, the role of informality in post-socialist professions has not been extensively studied, beyond the practices of informal out-of pocket payments for professional services, usually to doctors and teachers (Riska and Novelskaite 2011,

Polese 2008, Silova et al. 2007). This lack of interest to informality in professions is due to two reasons: first, low interest to the issues of professionalism among scholars of the post-socialist transformation, which I discussed at length in chapter 1, and second, the traditional focus on formal institutions within the sociology of professions. Since professions were conceptualized as modern phenomena, formal characteristics of professions, such as development of professional organizations and institutions, credentialization and licensing, as well as the relationship between professions as collective bodies with the state, have dominated sociological research on professions (Abbott 1988; Freidson 1970, 2001; Krause 1996; Rueschemeyer 1986). Yet, it is important to look at informality in professions, precisely because it goes against the modernist logic of professionalization, traditionally understood as based on commonly accepted rules and procedures, and objective and measurable standards. Thus, where formally organized professions would seek licensing for limiting access of outsiders to the professional field, informal self-employment would undermine those efforts. Where professions would establish credentials for entry into profession, informal practices and corruption in education would work to devalue these formal credentials; where professions would seek to establish the standards of abstract knowledge, informal task-specific training can undermine those efforts and instead lead to establishment of informal professional fraternities (Hall 1946) based on interpersonal trust rather than objective standards can work against that.

In the post-socialist contexts, informalization is also important from the point of view of its impact on professional autonomy. Under socialism, professionals retained technical autonomy – i.e. control over the technical side of their work, while their organizational autonomy was restricted by the state. The state was the sole formal employer of professionals (although many were generating additional income through informal activities), and moreover, it exercised control over education, credentials, professional organizations (Freidson 1970; Hoffman 1997; Jones and Krause 1991). It was therefore expected that market reforms and withdrawal of the state would lead to the development of competitive labor market and open ways for self-organization of professions thus gaining them more

autonomy (Jones and Krause 1991). This process is still in progress, at various pace in different societies; however the development of professional organizations and bodies is hindered by the lingering role of the state on the one hand, and by informalization of professional activities on the other. The state still remains the main employer of professionals in post-Soviet countries as varied as Lithuania, Russia and Kyrgyzstan (Riska and Novelskaite 2011, Osinsky and Mueller 2004, Sanghera and Ilyasov 2008). At the same time, the closely knit informal networks of colleagues are based on personal trust and therefore exclusive and do not promote establishment of more inclusive professional associations.

Thus, in this chapter I argue that in post-Soviet Azerbaijan a wide range of informal practices has been crucial in sustaining engineers' professionalism. Although my main interest is in the current informal practices that interlink profession and the state, I trace them to their origins in the Soviet second economy and the practices of exchange of favors, in order to reveal the changes and the continuities that have been taking place in this field. This chapter is organized as follows. In the next section I provide a brief overview of the current literature on the post-socialist informal practices and their origins in the second economy of state socialism. I then turn to the experiences of Soviet-educated engineers with informal practices during their education and work. This is followed by a section where I describe the use of informal networks and practices in the post-socialist period. In the fourth and final section I compare these with the experiences of younger engineers, who were educated and began their careers in the post-Soviet period. In conclusion, I remark on the changes and continuities in the informal practices that were revealed in the analysis.

## **4.2. Post-socialist informality: concepts and implications**

### **4.2.1. Informal practices and informal networks**

Informal practices can be defined as strategies of action that circumvent existing formal rules and procedures established for dealing with a particular set of

problems, i.e. taking examinations or job recruitment (Borosz 2000). Often such practices are developed and employed when the existing regulations are either two cumbersome or insufficient; by offering flexible solutions to rigid formal constraints informal practices improve the efficiency of formal institutions, cut down transaction costs and compensate for deficiencies. But informal practices are not always and necessarily benign – because of their inherently particularistic character they include some actors while excluding others, and can potentially undermine collective action or public good. This is the case with the practices that are usually referred to as corruption. A fundamental feature of informal practices is that despite being outside of the formal regulatory field they are nevertheless intricately intertwined with the formal institutions, by the very virtue of trying to circumvent them. In modern societies, informal practices are always a response to bureaucratization which itself is an inevitable consequence of modernity (Stark 1989). To borrow Stark's (1989) telling metaphor, informal practices help “to bend the bars of the Iron Cage”. In using informal practices, people often rely on trust-based personal networks built around kinship or friendship relations (Lomnitz and Sheinbaum 2004.)

#### **4.2.2. Informal practices under socialism**

While informal practices and networks are a global phenomenon, in postsocialist societies their development was structured by the specific state-society relations that are peculiar to state socialism (Ledeneva 2008, 2012). In the conditions of shortage economy, citizens of socialist countries relied on informal channels to gain access to deficit goods and services (Stark 1989, Grossman 1989, Ledeneva 1998). In Soviet Union, for example, a system of reciprocal exchange of favors known as *blat* helped citizens to mitigate economic hardships while at the same time subverting formal distribution networks (Ledeneva 1998). Beyond such non-monetary informal exchange of goods and services, a second economy including black market trade and clandestine production of consumer goods existed in all socialist states (Stark 1989). Socialist second economy shared with capitalist informal sector some key features, such as circumventing of formal rules and

regulations, social embeddedness, reliance on the interpersonal networks of trust. Yet the fundamental difference between the two types of informal economies lay in the degree of their congruence with the organizing principles of 'first' or formal economy: in the capitalist societies the informal sector, while avoiding some regulations, is nevertheless in line with the market principles on which formal economy is based. In contrast, in the socialist societies, second economy was incongruent with the organizing principles of 'first' economy; operating according to primitive market principles it was opposed to the socialist centralized redistribution (Stark 1989). Much of socialist second economy was also criminalized and severely repressed by the state. It also meant that the role of interpersonal networks based on trust was far greater – trust was a primary condition of success and a protection against state's possible intervention as it ensured secrecy (Portes and Haller 2005).

Another difference of socialist informal economy was its intertwining with formal political institutions. Because the formal economy was planned and in fact operated as a system of distribution of goods and services directed by the state, second economy worked to re-distribute these resources. By virtue of the very interpenetration of state and society which I discussed in chapter 1, the existence of this second economy was made possible by toleration of the authorities. As Clark (1993: 261) observed in reference to corruption in the Soviet Union, "if society in general came to embrace, if only out of necessity, alternative systems for the distribution of goods and services, so had that class of officials who were charged with the duty of administering Soviet society". Many informal economic activities, including parallel production, long-term embezzlement schemes, paddling of official production figures received protection from above in the framework of clientelist networks (Willerton 1992).

Although second economy and patronage networks existed all over Soviet Union, they are believed to be especially widespread in the so-called southern tier: in Central Asia and Transcaucasia, including Azerbaijan (Clark 1993, Grossman 1989, Mars and Altman 1983, Zemtsov 1976). Usually, the predominance of informality

in this region is explained by the dominance of traditional pre-Soviet social structures based on kinship and place of origin, as well as by local culture based on honor and shame (Mars and Altman 1983). Zemtsov, who worked as a sociologist in the Administration of Communist Party of Azerbaijan, called Azerbaijan “a plundered republic” and claimed that the corruption networks spread all the way from individual enterprises to top levels of Communist Party hierarchy (Zemtsov 1976). According to research conducted by Clark (1993), Azerbaijan was a leader in Soviet Union in terms of “corruption saturation rate” – the number of convictions of state officials for corruption per population<sup>34</sup>. While the especially high rates of conviction may be attributed to the anti-corruption campaign carried out by Heydar Aliyev during his term in power as First secretary of CPA (Altstadt 1992: 181-182), wide spread of corruption, second economy, and more generally informal practices is acknowledged by both scholars and lay public.

#### **4.2.3. Postsocialist informality: economy, political institutions, and corruption**

After collapse of state socialism, informality in post-socialist societies did not diminish, but has become a persistent feature of post-socialist transformation (Borosz 2000, Buck 2006, Sik 1992, Aasland et al. 2012, Guseva and Rona-Tas 2001, Rodgers and Williams 2009, Ledeneva 1998, 2006, and 2008; Werner 2000, Karklins 2002, Lonkila 2010, Rasanayagam 2011, Giordano and Hayoz 2013). On the one hand, after the introduction of market reforms and the sharp economic decline informal economic activities aimed at poverty reduction proliferated. These included as petty trade, self-employed work in service provision, part-time secondary jobs in order to complement inadequate incomes from primary employment (Gerber 2002a, Sik 1992, Clarke 2002, Humphrey 2002, Kandiyoti

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<sup>34</sup> It is important to note that high 'corruption saturation rate' does not necessarily reflect wider spread of corruption in Azerbaijan than elsewhere in Soviet Union, but rather the specifics of anti-corruption campaign carried out by Heydar Aliyev (Clark 1993, Altstadt 1992: 181-192, Willerton 1992: 191-222). From his appointment as First Secretary of CPA, anti-corruption campaign had been one of the main features of his rule. This campaign has been interpreted alternatively as a 'purging' of Communist party from corruption (Zemtsov 1976), and as Heydar Aliyev's attempt to replace existing patron-client networks by his own (Willerton 1992: 202-209.)

1998, Rasanayagam 2011). Such behavior is in line with the developmental perspective on informal economy, common in international development organizations. Building on the work of Keith Hart (1973) in this perspective informal economy is seen as a feature of poverty and underdevelopment, characterized by low productivity, low levels of skills and technology, and low capacity for accumulation (Portes and Haller 2005: 404). However, as time went on, it became clear that the spread of informality has transcended the poverty-reducing strategies of individual households. Informal economy in many postsocialist countries is being institutionalized: on the one hand, it acquires features of popular resistance to excessive taxation and exclusive economic policies that favor limited economic elites (De Soto 1989, Wegerich 2006); on the other hand, there is a process of linkage between business and political elites (more on this below). At the same time, old style informal practices such as ‘exchange of favors’ are monetized and increasingly being replaced by informal payments and bribes (Ledeneva 2008). Informal networks also play important role in the formal sector of economy, for example, for the purposes of job search and recruitment (Yakubovich 2005, Semenova 2004, Lonkila 2010a). Even the development of formal market institutions such as credit cards market in Russia has been shaped by the existing informal networks of bank workers (Guseva and Rona-Tas 2000).

In Azerbaijan, informal economy has remained large throughout post-Soviet period. While most economists agree on this, their estimates vary greatly, between 31.5 (Abdih and Medina 2013) and 61% (Schneider et al. 2010), depending on their selected method of calculation. A large part of the labor force, up to 38% in 2001 (Yoon et al. 2003) and 21.6% in 2009 (ILO 2011), are estimated to be engaged in informal economy. Many of the informal practices in the economy are however difficult to measure quantitatively due to both their hidden character and often hybrid forms of coexistence with formal structures. Beyond informal employment, there also exists the practice of so-called “envelope wages” – when the amount of cash employees receive is different from the officially reported figures (Safiyev 2013; interviews). Ethnographic research on rural livelihoods has also revealed transnational trade networks, based on kinship ties that organize production of

agricultural goods in Azerbaijan for their subsequent export in Russia (Yalcin-Heckmann 2010: 123-127.)

Similar to socialist period, informality in the economic sphere is closely tied to the informal practices within formal state institutions. Clientelism, bribery and state capture are the most common examples of informal practices that permeate postsocialist states (Collins 2002, Iwasaki and Suzuki 2007, Karklins 2002, Stefes 2005, Wank 2002). At the lowest levels of public administration, street-level bureaucrats serve as gatekeepers to public services, and accept or demand payoffs for access to them. Public education and healthcare have been two textbook examples of informalization in the state sector and there exists a burgeoning literature on the out-of-pocket payments or bribes for access medical procedures, education, or grades (Ledeneva 2006, Osipian 2009, Polese 2008, Rivkin-Fish 2005, Riska and Novelskaite 2011). An informal payment to a doctor at a public medical institution is the most basic example of an informal transaction that is both economic and political in character. At the higher levels of state bureaucracy, informal practices link private and public sectors, blurring the boundary and leading to hybridization of the two. Thus, bureaucrats who control state property may grant access to these resources to individuals and businesses based on informal ties and particular interests, or in exchange for bribes, rather than on the basis of universal norms and procedures. On the other hand, businesses may seek to control state officials in order to obtain state resources or gain other preferences, in a process referred to as state capture (Iwasaki and Suzuki 2007). Such practices lie at the heart of oligarchization and other forms of business-state alliances that plague post-socialist countries (Wank 2002, Auty and DeSoysa 2006). Often, these alliances take on the shape of patron-client relationships, based either on the friendship networks acquired through education or workplace in Russia and Eastern Europe (Ledeneva 2006, Borosz 2000) or more traditional kinship and local solidarities in the Caucasus and Central Asia (Stefes 2005, Collins 2002, Ilkhamov 2007).

The informal practices in political institutions that lead to hybridization of state and

private sector are often conceptualized as corruption (Karklins 2002, Borzel and Pamuk 2012, Treisman 2003). This conceptualization has been especially influential among international developmental organizations (Ledeneva 2009). This literature usually employs the definition of corruption developed by Transparency International, a leading agency that has been measuring perceptions of corruption in the world since 1995. Corruption is commonly defined as abuse of (entrusted) public power for private gain. Transparency International claims that this definition is "clear and focused" (Transparency International nd), however, it is so broad that nearly any informal practice in which a public official is involved can be classified as corruption. The organization consistently places post-Soviet countries, as well as China among the more corrupt countries; the rankings of Eastern European countries are on the average better, but within the EU they still are perceived as more corrupt compared to the old member states. While this definition strikes a chord with popular public sentiments about the pervasiveness and omnipresence of corruption, such broad definition makes it very difficult to address concrete practices. Moreover, in a way this broad definition works to the benefit of corrupt officials: while tackling the whole system is deemed impossible, any action directed against specific individuals or incidents can be presented as 'anti-corruption campaigning' while leaving intact critical networks that sustain corruption.

Anthropologists and other researchers employing bottom-up approaches to the study of society have resisted this tendency to conflate all forms of informality with corruption and cast all informal practices in a negative light. They argue that informality is a much broader phenomenon than corruption; that the boundaries between corruption and informality are blurred and that the local meanings of even the less ambiguous practices (from the point of view of the observer) such as gift giving, for example, may differ significantly from those of theory laden foreign observers (Ledeneva 2009, Polese 2008, Werner 2000). In general, some informal political institutions can be complementary or substitutive and contribute to the overall strength of the political system (Helmke and Levitsky 2004). But even ambivalent informal practices that breed corruption, such as clientelism, can in

some cases be employed for public benefit. For example, clientelist relations help to connect center with periphery (Gunes-Ayata 1994). Moreover, informal practices, although an impediment to the development of universalistic norms and values, can provide channels for access to resources and political power for otherwise disempowered and disenfranchised groups and individuals (Gibson 2001). Thus, rather than simply efficient or simply corrupt, informal practices in the state sector are inherently ambivalent. This ambivalence, as mentioned above, is structural, as it stems from the tensions between complex social reality on one hand and universalistic bureaucratic norms (Stark 1989; Portes and Haller 2005).

In Azerbaijan, informal practices within state institutions, such as bribery, corruption and clientelism, have been widely recognized and are fairly well researched (Borzel and Pamuk 2012, Guliyev 2012, Safiyev 2013, Stefes 2005, Auty and DeSoysa 2006). Transparency International has placed Azerbaijan among the top 10% of countries in terms of perception of corruption for the last several years. In both healthcare and education, informal out-of-pocket payments and bribery have been rampant (Temple and Petrov 2004, Rzayeva 2013, Sadigov 2014). In a recent study, Barrett (2014) describes in considerable detail how street-level officials of the gas distribution network have used their power to extract undue payments from Baku residents<sup>35</sup>. At the higher levels of state hierarchy, political sphere in Azerbaijan has been described as “systemically corrupt” (Stefes 2005) and dominated by particularistic patron-client networks, often referred to as “clans” due to their consolidation around place of origin and kinship (Guliyev 2012, Sidikov 2004). In Azerbaijan, the patron-client networks are not just the channels of distribution of political power, but also of economic wealth, particularly of the quite significant revenues derived from oil (Auty and DeSoysa 2006, Guliyev 2012). Small and medium business is also connected to these political patronage

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<sup>35</sup> In recent years, the government has taken steps to minimize bribery at the lowest levels of state bureaucracy. Barrett describes also an overall successful reform in the system of payments for utilities that involved smart metering technology and decreased the scope of power of rent-seeking bureaucrats (2014: 524-25). More generally, a one-stop-shop agency providing a range of public services, called “ASAN” was established in 2013. The Agency provides transparent public services for official fees, and has been rather effective in curbing the power of street-level bureaucrats of various agencies (<http://www.asan.gov.az>)

networks, commonly known as “monopolies” (Safiyev 2013). In fact, these are not monopolies but rather oligopolies, where economic spheres of influence are divided among several groupings connected to the state administration.

Existing research both in the economic and political sphere points to the important role of “stronger ties”, especially those based on kinship, in Azerbaijan. Beyond patron-client relations that dominate political sphere, kinship networks have also been found to be the basis for transnational organization of trade in agricultural produce, which is grown in Azerbaijan and then exported to Russia (Yalchin-Heckman 2010). Yalcin-Heckmann also argues that the agricultural reform in Azerbaijan was deliberately designed to strengthen dependence on family ties (Kaneff and Yalcin Heckmann 2003). Other research shows that outside of these closely knit kinship networks social capital in Azerbaijan is rather weak: thus, Hasanov (2009) describes it as insufficient, and Auty (2006) as deficient. These findings were also corroborated by Lepisto (2010), who used a micro-level perspective to analyze the process of network formation among provincial youth in Azerbaijan. He found that with the deterioration of formal institutions which used to structure various activities of schoolchildren and youth the venues for forming social relationships had significantly contracted. These findings are interesting in the light of the “strength of weak ties” thesis, put forward by Granovetter in his seminal article (1973). He argued that it were the weaker ties outside of kinship and friendship circles that bring most benefits because of their ability to link various networks. Thus, while informal ties have the potential to link more people in more ways, it appears that in Azerbaijan, the reliance on the stronger ties of family may hamper development of wider and more loosely connected networks. This is especially interesting to consider in professional relations, which are traditionally considered to be based on weaker ties. Thus, in exploring the use of informal practices of engineers, the question that I seek to answer is whether the reliance on the stronger ties of kinship affects professional relations in Azerbaijan?

To conclude, there is sufficient evidence demonstrating that in Azerbaijan informal practices and networks have been crucial in linking postsocialist state and society.

Furthermore, both popular beliefs and scholarly research suggest that the impact of informality in Azerbaijan has been more far-reaching than in other postsocialist contexts. However, the mechanisms through which these linkage operates require further research. In particular, the role of informal practices in shaping professional relations in Azerbaijan has not been researched beyond the issue of informal payments to doctors and teachers. Taking into consideration the findings of previous research on the pervasiveness of informality in Azerbaijani society and the importance of 'strong ties' of family and kinship-based networks, in what follows I explore how engineers rely on their informal networks and employ informal practices in their professional work.

#### **4.3. Engineers' informal practices in Soviet period**

In this section, I consider how engineers in Soviet Azerbaijan strategically used informal practices in order to achieve their professional goals. I begin with higher education and follow their working lives to gain a background understanding of the interplay between formality and informality in the Soviet period in order to trace the continuities and changes that occurred in the post-Soviet Azerbaijan. Entry to most occupations, and especially those that require formal training and abstract knowledge, begins before the first job, with formal education or even earlier. At this entry stage future professionals not only acquire knowledge and learn basic professional skills, but also learn to navigate their professional fields and establish first contacts with their future colleagues. For most of my interviewees the decision to become an engineer was a simple rational choice, sometimes a social mobility "lift" from unprivileged background, and sometimes a "second best" compared to their more artistic first choice preferences. But a significant number of future engineers were informally influenced, either by their parents or by other mentors, such as teachers and older peers. Several of my interviewees come from engineering families, and have experienced strong influence from their parents, usually fathers, but also sometimes mothers. In some instances, this influence was experienced negatively, as a pressure, when a young person had to enter engineering higher educational institution against his or her will. Such was the case

of Rza, who wanted to be a musician but felt forced to follow the footsteps of his father, a prominent engineer in the oil industry. More common, however, was a positive experience of influence, when young people willingly followed the professional paths of their parents.

Others followed the example of non-family mentors, even against the will of their own families. School teachers, informal school clubs and communication with older peers were especially important. As is often the case with informal practices, these relationships with teachers and peers compensated for the deficiencies of formal education system and gave future engineers a broader perspective on their profession. In some cases, relationships formed at that stage became a source of life-long support networks, which became especially important in the post-Soviet period.

Coming to the formal education, almost every conversation with the graduates of AZI included a variation on the theme “bribes were unknown back then”. This, for example, is quotation from Said, power engineer (AZI 1971): “So they advised me to go to AZI, because the education is good and there is no bribery. Well, at that time *in general* there was no bribery, but in AZI there was no bribery *at all*. [emphasis added – L.S.] But as these qualifications “*in general*” and “*at al*” suggest, the situation was not as unambiguous. Further probing reveals that bribery, although indeed rather rare, did exist, but it was relatively less spread in technical higher educational institutions. But there also existed other, more widely spread practices of bending the formal rules. While no one from the Soviet cohort of my interlocutors confessed paying bribes or employing other informal practices during their studies, they mentioned two such practices as fairly common. One of them was hiring students or recent graduates to complete course projects (more on this practice below). Another common practice was using *tapş*, or Azerbaijani variation of Soviet system of exchange of favors, to adjust grades.

The word *tapş* is of Azerbaijani origin and comes from the verb '*tapşırmaq*' which means to entrust or consign something or somebody into someone else' custody.

Although *taps* is sometimes subsumed with Russian *blat* (Aliev 2013), the two practices are not the same<sup>36</sup>. That the two are different is also indicated by the fact that the word “*taps*” was adopted in Bakuvian urban Russian slang, and is usually used without translation along with, rather than instead of, *blat*. Moreover, russified verbal forms of *tapshanut'* (to entrust) or *tapshanut'sa* (*to be entrusted*) have been widely used. If at all translated into Russian, they would be translated as “to ask for someone” (*poprosit za kogo-to*). *Blat* and *taps* both developed in the structural constraints of Soviet shortage economy and centralized distribution of resources, and therefore share some common features. Thus, both were informal practices used to circumvent formal rules, and both made use of interpersonal networks; both reached their height during Brezhnev's stagnation of 1970s-1980s.<sup>37</sup> At the same time, *blat* and *taps* were embedded in the differently configured social networks. *Blat* is based on non-hierarchical relationships and presupposes more or less symmetrical reciprocity between participants (Ledeneva 1998: 52). In contrast, while some *taps* transactions can involve a horizontal connection or two, a vertical element of patronage is usually involved. In terms of the structure of the transactions, *blat* is a more generic practice, it can be either a simple dyadic exchange or circular chain of favours involving many intermediaries; *taps* on the other hand is at least a triadic transaction: one person is asking a second person for a favour to be done for a third person. An example of a most simple triadic *taps* in an educational setting would be a parent (person A) calling his acquaintance at the university (person B) and asking to help his or her child or another close person (person C) with an examination. The relationship between A and B can be either

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<sup>36</sup> Aliyev treats *blat* as a generic concept, subsuming all other interpersonal informal networks all over former Soviet Union. This is convenient for accounting for the common traits of post-Soviet informal practices, which were conditioned by the core features of Soviet political organization. However, this approach glosses over fundamental differences between various types of networks in different parts of Soviet Union; moreover, it empties *blat* of its meaning as a specifically non-hierarchical practice (Fitzpatrick 2000: 63; Ledeneva 1998: 52).

<sup>37</sup> Here I follow Ledeneva's definition of *blat* (1998: 37) 'Blat was an exchange of “favours of access” in conditions of shortages and a state system of privileges. A “favour of access” was provided at the public expense. It served the needs of personal consumption and reorganised the official distribution of material welfare. Blat exchange was often mediated and covered by the rhetoric of friendship or acquaintance: 'sharing,' 'helping out,' 'friendly support,' 'mutual care,' etc. Intertwined with personal networks *blat* provided access to public resources through personal channels'.

horizontal, if they are friends or former colleagues, or vertical, if A, for example, is a former professor, supervisor, older relative, etc. The relationship between B and C on the other hand is usually vertical, as well as the relationship between A (the person asking for a favour) and C (the person who will receive the favour).

Unlike some of the currently practiced forms of bribery, when grades can be “sold” according to an unofficial “pricelist”, *taps* in examinations was more restricted in its scope. Usually, it did not imply giving highest grade to someone who did not study at all. Rather, it meant leniency in grading or assistance in raising the grade, for example from 3 (satisfactory) to 4 (good). Such assistance could be in the form of additional questions, a chance for make-up examination, overlooking small mistakes etc. Yet, for those who come from families of prominent engineers it is probably fair to suggest that instructors were likely to show greater leniency towards them than towards regular students, even without being asked to do so. On the other hand, some, like Rza, report increased pressure to study well in order to uphold the good name of his father. It is also worth noting that the grading procedures and the style of examinations themselves encouraged subjectivity and personal approach on behalf of instructors. Unlike in Western educational system, where grading is spread onto various assignments throughout a semester, in Soviet system the semester grade depended on the final examination alone. Thus, if an otherwise good student for some reason failed the exam, it would be a failure of the whole semester. At the same time, the practice of oral examination left sufficient space for instructors' discretion in the grading process. Using this discretion to help students pass or get a better grade, for whatever reason, be it *taps* or personal sympathy, was widely practiced. Thus, for example, instructors could ask additional questions beyond the standard three, and use these extra responses to improve the final grade.

Formal education and the informal relationships with professional engineers were important for developing networks, both horizontal and vertical, that were used in professional life after graduation. The “strong ties” of family could gain young engineers access to the professional networks (or the “weak ties”) of their parents,

which could be useful for career advancement or simply for consultation and advice in navigating difficult professional situations. Former classmates often became colleagues; professors who were working in the industry often selected prospective talented students with whom they would like to work right in the classroom, and thus became their professional mentors. But lack of such early networks from family circles or universities did not immediately disadvantage young professionals. In fact, most engineers I interviewed found a professional mentor after graduation, in the workplace, when their professional interests, strengths and weaknesses began to take shape in the course of practical experience.

Mentoring can be defined as a learning-oriented asymmetrical relationship between two individuals, the goal of which is the development of skills and talents of the junior member of the relationship, usually referred to as '*protégé*' or '*mentee*' (Eby et al. 2010: 10). Mentoring in the workplace refers to activities aimed at improving the competence of young professionals. Many of my interviewees described their relationships with older colleagues, either supervisors or more experienced peers, as crucial for their professional development. Thus, in the words of Aziza, "it is very important in whose hands you fall as a young person". Some of such learning relationships were formally institutionalized, such as the mandatory mentoring of "young specialists" by a more experienced professional during the three years of compulsory '*placement*' after graduation, or supervision of post-graduate research. Post-graduate research was a common undertaking in the Soviet period: out of 33 Soviet-educated engineers that I interviewed, 12, or more than a third, have received *kandidatskaia* degrees, and three are Doctors of Science; two more had begun a post-graduate program but did not finish it; and three of the *kandidats* have expressed regrets for not pursuing their doctorates. Often, mentoring was informal: a more experienced professional at some point felt sufficiently confident in a young colleague and began to share his knowledge and understanding of the "tricks of the trade"; this was, for example, the case of Lena, who learned some working techniques from her older colleague. At the same time mentoring was not necessarily dependent on the close everyday interaction, and mentors could exert important influence on their proteges even over a great distance. Such was the

influence of Vahid's (power engineer, AZI 1961) *kandidatskaia* dissertation supervisor, a renowned scholar based in Leningrad, who supervised Vahid's highly controversial dissertation which several other potential supervisors had refused. Yet, whether formal or informal, based on everyday interaction or long-distance, the success of mentoring in terms of professional development of the young specialist largely depended on the quality of informal relationship between the mentor and his/her protege. Often, such relationships became personal as well as professional in the context of Soviet vertically integrated organizations with life-long employment, blurring the distinction between 'strong' and 'weak' ties (see also Lonkila 2010). These relationships could become so close that engineers often invoke the language of family ties to describe them. Thus, speaking of the director of his institute, who was based in Moscow, Rza says "he loved me like a son".

An important dimension of mentoring in the context of Soviet Azerbaijan is its proximity to patronage. In Western literature, the two concepts are usually discussed in different bodies of literature: mentoring in organizational psychology and human resources, while patronage is conceptualized in terms of access to political resources. Yet the specificity of Soviet vertically integrated industrial ministries meant that career advancement of an engineer was intertwined with his or her professional development. Thus mentoring, i.e. the assistance in improving professional knowledge and skills, and patronage, i.e. the assistance in career development, converged in the Soviet system. A mentor who happened to hold an important position in the administrative hierarchy of an industrial enterprise or research institute could provide patronage, including career advancement, access to work-related resources or even welfare and leisure facilities. On the downside, a "fall from grace" of such mentor/patron, or his/her passing away meant a halt in the career of the protégé. This is what happened to Fahriyya (AZI 1961). She encountered her future mentor, Professor A. in her first job after graduation, when she was working in a chemical laboratory in an oil processing plant in Baku and he was conducting some of his experiments in the same lab. A couple years later, when he became director of a research institute, he invited Fahriyya to work there and supervised her *kandidatskaia* dissertation. Upon receiving her degree, AK

appointed Fahriyya a laboratory chief. In a manner not uncommon for personally close mentoring relationships Fahriyya describes Professor A. as a “surrogate parent”:

He was like a Dad. When I was defending [my dissertation], my relatives, my Dad came from the province [*rayon*]. And he, A., was sitting like that and he put his hand like this (*shows how he put his hand over her shoulder*-LS) and he was so proud! Maybe even more than my own father, you see? And when there is a defense, the supervisor has the floor usually, and [my opponent] D. says: “A., you don't need to say anything”. But for him it was such a pleasure, he was sitting like he was the happiest man ever. He was happy.

But when her mentor fell out of grace with the higher ranks of management and eventually died, Fahriyya's career, and in fact the research direction that he had patronized, was also halted:

So we were working on these processes, and we were getting colossal results. And we were just claiming these [directions of further research]. But unfortunately, it happened that this man was... he died, and he was disgraced... It was such times. I don't want to [talk about it]. And this direction, it was left, well, using slang, without a 'roof' (*bez kryshi*), to use such a language.

The use of the term 'roof' in this context is very telling. According to Humphrey (2002:78) the term originally meant protection racketing by criminal groups in late 1980s-1990s, but has been since used in dual sense, in reference both to patrons in the formal political structures and rackets. With her reference to such semi-criminal slang, which she is reluctant to use, Fahriyya points out the commonalities between different forms of patronage.

Last but not least, Soviet practice of informal work played an important role in the shaping of informal employment practices in the post-Soviet period.

Complementing income from full-time employment with part-time side jobs was a widespread practice in Soviet Union (Clarke 2002: 16). Some of these side activities were formal part-time engagements – part-time teaching at technical schools was one common formal source of additional income. But more often engineers combined their primary formal work with some informal activities, such as private tutoring, drafting of projects for engineering students, trade in deficit consumer goods, participation in large scale embezzlement schemes or side production in the second economy. The scale and scope of the informal activities depended on financial situations, on personalities of engineers, as well as on the sectors of industry in which they were working. Thus, construction industry was infamous for its links with the second economy: embezzlement and working on private projects, known as '*khaltura*', with the use of tools and materials from public projects, were common. In manufacturing, official extra income in the form of bonuses dependent on fulfilment or over-f fulfilment of plan. Yet in practice, the figures of plan fulfillment were sometimes, or according to some of my interviewees - systematically manipulated and falsified, through a practice known as '*pripiski*'<sup>38</sup>. But in addition to *pripiski* there also existed underreporting of production in manufacturing enterprises, which was sold in the black market.

This second economy operated on the market principles, but as a shadow economy, it was sustained not by the formal legal system but by interpersonal trust and informal networks, both vertical and horizontal. In individual informal activities horizontal networks were crucial because they provided both clients and referrals, whether it was work on technical projects, tutoring or illicit trade in deficit consumer goods. The larger scale activities that included many participants, such as the over- and underreporting of production, the embezzlement schemes and some of *khaltura* projects were embedded in more complex networks, including connections between those who did the work and patronage by Communist Party officials. The incomes were distributed through complex schemes involving many participants at different levels, from warehouse workers to the Communist Party

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<sup>38</sup> For an explanation of Soviet false accounting, including '*pripiski*' see: Barsukova and Radaev (2012), Lampland (2010), Harrison (2011).

patrons.

The interdependence of participants of the networks of Soviet second economy that is ensured by combination of interpersonal loyalty, monetary pay-offs and patronage links with the state is very important for understanding the nature of post-socialist informal practices and their relations with the state in post-Soviet Azerbaijan. The market reforms aimed to dismantle the formal structures of command economy, but they did not target and largely left intact the informal institutions of second economy.

#### **4.4. Formalization of the formal: the post-Soviet experience**

One of the consequences of market reforms and the retreat of the state from many spheres which it previously supported was the reversal of roles of formal and informal work. With state enterprises ceasing to function as the nodes in the centralized system of distribution of resources formal employment in the state sector ceased to be the primary income generating activity and became a sort of “plug” connecting individuals with the state institutions, necessary for providing some basic subsistence as well as calculating future pensions and other state benefits. At the same time, informal work turned from a part-time endeavor for a bit of extra money into the primary source of income.

This process was differentiated and did not affect everyone to the same extent. As already discussed in Chapter 2, various sectors of industry were affected differently, with manufacturing and processing industries being hit the hardest, while oil and energy production remained better insulated from the shocks of transition due to both their greater profitability and greater support from the state. But even within a single industry and single enterprise, individual engineers were affected differently. Factors such as age, gender, family situation played an important role in the income generating strategies. Thus, early to mid-career professionals who had families to support generally moved more readily into the informal job market, while older established professionals held on to their secure, albeit poorly paid state jobs more

firmly. In my sample, men were likelier to change jobs; yet they retained stronger informal connections with their professional milieus. At the same time women, when they left their engineering jobs, were likelier to sever their ties with the profession altogether and have not sought to return.

Several types of informal work in the post-Soviet period could be identified among my interviewees: side jobs; informal work as a primary activity; informal employment at a private workplace, self-employment; and informal cooperative work, sometimes leading to establishment of, mostly informal, business.

Side jobs are the most common type of informal work activity in post-Soviet period; majority of those interviewed admitted to engaging in such activities. Side jobs aimed to supplement, or, in early post-Soviet period often substitute the inadequate income from official workplace. Although such jobs may have been the source of most of income, in these cases continued to invest most of their time and efforts in their primary, official jobs. This option was usually available to those engineers who remained in the pockets of institutional stability, such as research institutes, or functioning industrial enterprises. These jobs were structurally most similar to Soviet informal work and *khaltura*.

In other cases, informal work became primary activity, both in terms of income generation and time spent. This was usually the case with engineers from enterprises that simply shut down; and also with those who intended to make use of new opportunities of the market economy. However, informal work as a primary activity did not necessarily mean severing all ties with formal labor market. In some cases, engineers remained formally employed at some state enterprise for the purposes of accumulating years of work experience necessary for receiving pensions later in life. Usually such arrangements were made based on personal agreement with the management, and such employee gave his or her official salary to the management. This is how Lena (AZI), who was at the time working informally as a waitress, describes her experience with such practice:

Nadir gave my labor book, to... This is the employee of S.G. [her father in

law – L.S.], so he arranged my employment as a technologist. “Admitted to the position” [reads from her labor book- LS] in 1993. Just so that labor book would be [registered], wouldn't be just standing idle. He used to joke calling me *legkotrudnitsa*<sup>39</sup>, because I didn't receive salary.

Like side jobs, the practice of being registered at some workplace while not working there, is hardly a post-Soviet invention; it had been practiced also in the Soviet Union in the framework of second economy and false accounting.

Most of the engineers engaged in informal self-employment, including taxi-driving, tutoring, babysitting, apartment cleaning or repair work. In some cases, however, people organized and worked together, in a kind of informal cooperatives – this was especially popular in construction and refurbishment sector. Few of such brigades were eventually developed into more or less successful, albeit informal, businesses.

Then, we organized a brigade, I organized a brigade and we began... When the refurbishments in apartments began, we used to do electrical wiring in these apartments. This is when the fashion for '*euroremont*' [European style refurbishment] began. The English started to come in 1990s, so for them, they wanted electric wiring according to English standards. And all these outside wiring, all these cables, protection and so on. We had Roma, he used to be chief electrical engineer of N theater, he is now in America, so Roma, and we, in principle, we were not electricians, me and Alik. He used

to be chief designer in a design bureau, and I was head of design department. So we did this electric wiring<sup>40</sup>... (Nadir)

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<sup>39</sup> *Legkotrudnitsa* is an informal term from Soviet labor practices, referring to pregnant women who could be transferred to easier work for medical reasons. Lena's situation, however, is an inversion of this practice, because such women continued to receive salary and benefits appropriate for their regular, harder work, while she did not.

<sup>40</sup> All names were changed.

It is important to note that the distinctions between types of informal work presented here are analytical; in practice, engineers have employed various combinations of informal activities, which also changed over time. Thus, Khayam had worked as a solo suitcase trader, organized (informally) chicken incubator with a group of friends, and worked on a construction site in Moscow; eventually he settled for self-employed work in refurbishment of apartments, due to a combination of income and autonomy that such work provides. Informal businesses have become increasingly difficult to maintain, and they were either formally registered or dissolved. Self-employment however, remains the primary form of informal economic activity throughout the two post-Soviet decades. Moreover, informal work needs to be understood in the context of household, rather than individual, strategies: while some members of a household could be holding on to state employment and receiving meager, but regular salary or state pension for minimal subsistence, others would be working informally to gain extra income for covering larger expenses, such as education, medical care and contingencies. For example, in Nadir and Lena household they alternated formal and informal employment and income, until Nadir succeeded to secure a stable, formal and well-paid job.

As accounts presented here suggest, most of informal work opportunities were not professional. Only engineers from construction industry, such as civil engineer Niyazi and ventilation specialist Viktor, could secure informal jobs according to their specializations. But it would also be incorrect to say that engineering skills did not matter in post-Soviet informal work. Thus, Lidiya, who has degrees in chemical and electrical engineers, eventually settled for tutoring in mathematics, physics, and chemistry, after some work as an accountant and an unsuccessful attempt to start her own trading business. Khayam, speaking of electric wiring in his refurbishment projects says that “this is almost my own profession”. But even in jobs seeming very distant from engineering, professional skills sometimes still matter. Thus, speaking of his job in a shoe-making workshop, Nadir notes:

In about 3-4 months I became the best master. I began to take special orders, and clients used to come directly to me. [...] Special orders. Because

engineer is everywhere an engineer. I mean, the engineering approach, I don't approach as a shoe-maker, you see? I approach creatively – the drawing, the pattern, everything needs to be correct and accurate. My patterns, because they fit well to the, what is it called, shoe last, people used to fight for my patterns.

As can be expected, it is the engineers with strong professional orientations who emphasize the relevance of their professional skills for their non-professional work.

Informal networks, both horizontal and vertical, became the primary resource for search of jobs, both formal and informal, both for those who sought menial jobs for survival and for those struggling to remain in the profession. Both 'strong' ties of family and friends and 'weak' ties between colleagues and acquaintances were used in this process. My sample suggest a slightly greater reliance of women on family ties and of men on professional networks. However, often they are so closely intertwined that it is difficult to draw a neat boundary between the two. This has to do with the Soviet practice of long-term work experience in a single workplaces, when colleagues often became friends for life (see also Lonkila 2010a). Personal trust, which is a feature of these relationships, has been crucial in the informal work arrangements of the post-Soviet period. Those who have attempted to start their own businesses in the post-Soviet period have similarly relied on the networks of colleagues/friends that were formed in their Soviet workplaces. But in addition to these horizontal networks, the vertical ties of patronage have also been indispensable for the success in the post-Soviet workplace, both in the state and private sectors, as I will demonstrate below.

As I have shown in the previous section, patronage was an important element of Soviet informal networks as well; however, it was closely connected also with professional expertise. In the post-Soviet period patronage has gained a significance of its own. For example, the links between mentoring and patronage that existed in the vertically integrated Soviet organizations, are loosening. Several of my interviewees, speaking after the recorder was turned off, mentioned that

appointment of senior managers in research institutes and industrial enterprises, has become increasingly based on kinship relations to e higher-ranking officials rather than on professional expertise. As a result, managers in high positions who are well-placed in the networks of political patronage can sponsor their clients' career advancement, but are not able to help them learn intricacies of the profession. In contrast, older engineers who mentor younger colleagues, are no longer able to assist in their career advancement. Thus in order to have a successful career in the state enterprise, a young engineer would need both a mentor and a patron. At the same time, the role of mentoring in the workplace has also changed and gained new importance in the post-Soviet period: it is now the primary way to compensate for the deficiencies in the formal education system, which I will discuss in greater detail in the next section.

The informalization and rampant corruption in the state sector also makes patronage indispensable for the operation of the private sector, both in its formal and informal varieties. To understand the role of such patronage, let us compare two cases of private business enterprises that were stated in early 1990s: one has failed and another that has survived and even grown and was eventually formalized. The first example is an R&D spin-off intending to produce card-operated electronic energy meters, a technology that was at the time unknown in former Soviet Union. It was started in 1990, as a cooperative, by Ali (electrical engineer, AZI 1967) and a group of his colleagues. Ali became acquainted with this technology during a visit to France in 1989, and decided to emulate it in Azerbaijan. Ali intended this to be a fully transparent private business, and so the cooperative was officially registered, while the partners left their full-time jobs in state enterprises to concentrate on this project. The technological side of work was quite successful, and the team designed and assembled a pre-production prototype which successfully passed all tests. However, the industrial production of the meters required permissions from several state agencies, and it was at this stage that the project came to a halt. In Ali' words:

Every single stage [of this process] was nerve-wrecking. Brains stopped, only nerves were working. And at some point, I simply broke down, and all the guys, we all broke down. Simply, you know, wherever we came – [they

asked]: “What am I going to have from this?” And these were people in high positions! And for one, we would make something up, just fantasize, to another we would have to lie, and yet to another, if he was really taking part in it, promise something. But there was nothing to sell yet, so we were just “eating the calf in the cow's belly” (*delili shkuru neubitogo medvedia*).

Lacking both the financial resources with which to bribe the officials, and a powerful patron in the high ranks of state administration, Ali and his colleagues were unable to overcome these bureaucratic hurdles, and disbanded the enterprise in 1995.

In contrast, Viktor (HVAC engineer, practical) operated his business informally. In early 1990s, he started an enterprise that designed and installed ventilation systems in newly built or refurbished buildings. In all his activities Vassiliy heavily relied on informal networks: he rented workshop space from an acquaintance, informally; he employed his former colleagues; he used his contacts to obtain old unused equipment for free which his team then refurbished themselves. The business turned out to be successful. In all the years of operations the enterprise was never registered, and Viktor shunned away from any formal engagement with the state. He also never paid any taxes, fees or fines. To avoid them, he used an array of different tactics, from making pay-offs to state officials to keep his workshop below the state's radar to juggling the support of multiple patrons within the state administration. An example of his resolving a problem with tax agency is illustrative in this regard. Once he found his workshop sealed by two men with official ID's from the tax office. The men demanded that he pays them the tax to re-open the workshop. However, Vassiliy understood that these tax officers were simply using their official positions to extort bribes: as his business was not registered, there was no record of unpaid taxes; and an official investigation would have fined him for not registering his business in the first place rather than demand taxes. To resolve this, he first approached his landlord who was at the same time his patron with connections in the state administration. When the landlord showed reluctance in resolving this issue, Vassiliy threatened by going over his head to

another patron, a former client, a general in the Ministry or Defence:

I used to work there, with this general, and I new this place in and out. I said: 'I just received a phone call, from a colonel [in his command] and he says he needs me. I don't know why, probably to do ventilation somewhere. And so I went to this guy, from whom I was renting the [workshop] space, and I said 'Listen, I am going there now, to see him [the general], and he will ask me to do something. And I will say that I can't. Why? I will say: "Because my workshop is sealed". And I can assure you, that the moment I come back [from there] they will tear this seal off with their own teeth'.

Beyond the differences in the individual strategies of the two entrepreneurs, these two contrasting examples indicate also an important continuity between Soviet second and post-Soviet informal economies. Thus, Ali, who had worked in a prestigious formal organization with direct subordination to Moscow, had in Soviet times limited experience with second economy. He modeled his business on an ideal type of market enterprise; his ideas were largely derived from the Western models, which apparently did not work in post-Soviet Azerbaijan. In contrast, Viktor in operating his post-Soviet business made use of his pre-Soviet informal networks. He had worked in construction industry, and was well familiar with *khaltura*, various construction projects that went beyond the books, and was included in various profit-sharing schemes: "Why did Soviet Union collapse? One of the main reasons in bribery. *Pripiski. Pripiski.* I will not lie, even I, when I received salary, gave something. This, it was impossible to fight with this."

In practice, patronage and non-hierarchical ties with colleagues operate in a complementary manner. Thus, in running his business Viktor relied on patronage ties for protection, but on his former colleagues to actually get the job done. The interconnection between patronage and horizontal connections is even clearer in Nadir's case. The owner of the HVAC company where Nadir is working has a patron in the state administration which allows him to run his business and to provide jobs for his former colleagues; Nadir has played an important part in gathering the team from among former colleagues. Nadir is also acting as a mentor

(but not a patron) to two young engineers, recruited from Technical University.

It is important to clarify that simply having strong personal relations with former colleagues may not be enough to succeed in the post-socialist labor market. For those who do not have very powerful patrons and rely on horizontal collegiate ties, the primary form of available social capital that is embedded and sustained by these networks is professional reputation, or recognition of one's professional competence by colleagues, to which some of my interviewees referred to as 'respect' (*uvazhenie*). Professional reputation is also closely intertwined with interpersonal trust, and both have usually been developed in the more stable Soviet workplaces many years ago. This is how Nadir describes his current colleagues and the relationships in his workplace now:

They are very, very good guys, and they have respect for me, *both as a specialist and as a comrade (tovarishch)*, so we always... In this sense they are very good guys, all urban (*gorodskie*) guys, and all factory (*zavodskie*) guys. Our relations are based on comradeship. Not familiarity, but comradeship. It's not like "I am the boss – you are an idiot", or "I say – you do" [emphasis added- L.S.].

Thus, an ideal colleague in such post-Soviet workplace is someone who combines both professional reputation and interpersonal trust. Yet, this is difficult to achieve in full even with dense and multiplex ties inherited from Soviet workplace. The interpersonal trust, unlike generalized trust, can put limitations on professional discretion. Thus, Nadir feels restricted in his freedom to 'leave and go somewhere else to work', both because the number of potential workplaces is low and because of the personal commitment which would be difficult to breach. On the other hand, professional reputation and interpersonal trust can be at odds with each other. Thus, Viktor had to let go a trusted colleague and a personal friend who did not perform work according to Viktor's professional standards. In this respect, it is also interesting to note that there is virtually no indication of class solidarity, and engineers do not see themselves as a part of working class, regardless of their earnings or the actual content of their work, which may at times be actually manual.

Engineers see their relations either in terms of ‘work collective’ (in the Soviet period) or in terms of interpersonal networks (in the post-Soviet period), but not in terms of class.

To sum up, informal networks have been an indispensable resource for Soviet-educated engineers in the post-Soviet period. The networks, both vertical and horizontal, were used for finding jobs, protection of businesses, finding personnel, developing clientele by the self-employed. Engineers used both personal (family and friends) and professional networks; however, these networks often overlap, with colleagues often being simultaneously friends or relatives. Because these professional ties were formed in the vertically integrated and stable Soviet ‘collectives’ they are often stronger than professional ties envisaged by Granovetter in his seminal study on the ‘strength of weak ties’ (1973). The deep interpersonal trust developed in such networks has been an asset for professionals and business in the highly unsecure and volatile post-Soviet labor market. At the same time, the very density of these professional networks makes the social capital that is available through them more bonding than bridging, thus limiting engineers’ mobility opportunities, the formation of broader associations and development of larger-scale solidarity.

#### **4.5. Young engineers: becoming professional**

##### **4.5.1. Informal practices in higher education**

If in Soviet times bribery in higher education was covert and comparatively infrequent, in the post-Soviet period it has become widespread, open, and generally acknowledged. It is also tolerated and sometimes even encouraged by higher-ranking officials, who participate in the income sharing schemes reminiscent of the Soviet-time embezzlement practices in manufacturing. The scale of bribery, and the concomitant decline of quality of education have even led some, to speak not of decline, but of total collapse (*razval*) of the educational system in general and of engineering education in particular. Generally, bribery in education is condemned, yet, through the sheer volume and scale of bribery in universities, it is being

normalized as more and more people are being involved on both the giving and the taking ends. As in other post-Soviet contexts, giving of bribes is seen as less morally reprehensible than taking them as most people see themselves being forced to pay. But there are also narratives that explain, if not justify, taking of bribes as well. Among my interviewees, the most common explanation is that of survival strategy, referring especially to the 'hard times' of early 1990s when official salaries were so inadequate that making a living without extra income was not possible at all. Choosing between low-skilled options of income generation, such as cabbing or house cleaning, which were often seen as incompatible with high social status of instructor in higher education, many opted for the easily available option of taking bribes from students. Yet, this explanation falls short in accounting for the even greater spread of bribery in 2000s, when economic situation stabilized and salaries became sufficient for at least survival, if not for decent life. To explain this seeming paradox, engineers I interviewed invoke more general explanations of social and moral change. Thus, according to Edhem, a former professor in AZI and Sumgait Industrial Institute, the spread of bribery is related to the changes in the prestige of engineering profession in late Soviet period, when directors of shops and markets became "the masters of the situation". Edhem's pointing to these particular occupations is significant, because it refers to shifting scales of prestige in Soviet Union between the so-called 'productive' and 'non-productive' sectors. While trade ideologically was a less attractive occupation, the position of those who worked in the trade became especially valuable in late Soviet period, with the development of consumerist culture and the economic decline. Having access to shortage goods, they traded these goods on the black market or helped to obtain them through informal networks (Ledeneva 1998: 130). Often, they were wealthy, but they lacked prestige of the more educated occupations.

In other words, bribery in higher education is presented, and sometimes justified, as an attempt to maintain instructors' social prestige in a changing stratification system where one's status is no longer determined by his or her place in the system of production, but by one's capacity to consume in accordance with certain perceived standards. The ultimate blame for this situation is therefore once again

attributed to the macro-level actors such as the state or society at large, rather than individuals involved in the corrupt practice, in a manner described by Karklins as 'the system made me do it' (2005).

The evils of bribery in educational system are well known and described, and they include the devaluation of formal credentials, as well as production of credentialed but incompetent 'professionals' (Temple and Petrov 2004). All of these outcomes can be observed in Azerbaijan, and not only in engineering education (Temple and Petrov 2004, Sadigov 2014). Yet despite this, competent professionals do continue to emerge from this highly corrupt educational system. Experienced engineers working in the profession make a distinction between those who give bribes during education, and those who 'study themselves'. According to some accounts, AZI graduates are even more knowledgeable, in terms of theoretical engineering knowledge, than graduates of engineering departments in private universities Khazar and Qafqaz, which are relatively free of bribery, and presumably more modern and better equipped. Thus, Farid, an electrical engineer with a degree from a technical university in Turkey and now working in a transnational oil company in Baku, provides this interesting assessment of competence of his colleagues from AZI with whom he began working together in 2006:

About 5-6 people were from AZI (from 15-20 people cohort of new recruits - L.S.) In general, from AZI we get some very good engineers, who understand how oil industry works. They have good basics. I can compare myself with one power engineer from AZI, we used to work together. He adapted to the platform well, to the oil industry conditions. Because my specialization, electrical and electronics engineering, is not quite power engineering. And in AZI they teach exactly what we need for work.

How this is made possible? What strategies do students that are committed to becoming competent professionals employ in order to achieve their goal in the context of decline of education and devaluation of formal credentials?

To answer this question, let us first look at the perceptions of the progress of

bribery in higher education among successful young to mid-career engineers. This is an account by Yashar, a chemical engineer (AZI 1998), who now works in Houston, USA. Yashar has received a degree in chemical engineering from AZI in 1998, then an MS degree from the same school:

In 1993, even up to 1996-97, education was good. At that time there still were soviet time teachers, and corruption wasn't as rampant... [.....] So at that time it was still ok. I mean, of course, *teachers used to take money* and all that, but *you could easily study without money*, and they were giving good knowledge, these old cadres. There were still well known professors teaching, and it was rather ok. In 1998-99, when I was studying in the master's program, it was kind of getting worse and worse. I mean, many of the old ones were leaving, either because of age, or just going abroad, somewhere to the West. Professors, experienced instructors were leaving. And also, people were just getting tired. Even those who did not take money, they were getting tired *from getting by in this misery*, and they were slowly starting to [take bribes] as well. So it began to deteriorate. I don't know how it was after 1999. But, now, I know, it is a total mess (*bardak*)<sup>41</sup>. Our [professor], he is, in principle, very knowledgeable, and he used to have principles. At that time he did take money himself, but he did not press anyone, and he used to promote students who wanted to study, and even motivated them to some degree. And then he became corrupted, now he is a real villain (*posledniy negodiy*). [emphasis added, L.S.]

The further spread of bribery and concomitant decline of the quality of teaching in AZI can be understood from the following account from Elmira, drilling engineer (AZI 2008), who at the time of the interview was working in energy-related consulting company in Moscow:

Well, frankly, AZI was hell. Corruption there is terrible. For two years I honestly tried to study myself, but the instructors, 40% of them were just squeezing us and demanding money. We had one, in [...] class, I would be

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<sup>41</sup> The Russian word for mess that he used, '*bardak*', comes from brothel, and denotes moral decay as well as disorder.

doing something, and she would say: “wrong, change it”. So I would change it, and she would say: “no, this is wrong, do it this way”. And I would say: “but this what I did in the previous drawing, and you said to change it”. And she would say: “no, I didn't say that”. The point of this is to [make students] give money. After that, we gathered together with the people from other groups and wrote a complaint about her and they talked to her, and she stopped doing this. Or another one, he was just saying directly: “I already gave eight ‘fives’”<sup>42</sup>, which means for money, “so I can only give a few more, you decide among yourselves who should get them”. But there were good instructors too, in drilling, for example, or theoretical mechanics. About 30% demanded bribes, 30% didn't care, I mean, they would take money if offered, but they didn't demand it, but they also didn't teach well. And about 30% were really good instructors, who wanted to teach us something.

Interestingly, none of my post-Soviet interviewees mentioned *tapsh*, so it appears that this is no longer an important practice in adjustment of examination results. This is in line with Ledeneva's (2008: 136) observation that Soviet practices of exchange of favors are being monetized in the post-Soviet period. The monetization of informal practices is caused by the changing role of money, which has become 'new shortage' in the economy, whereas in the Soviet times money was abundant while goods were in shortage. This also suggests that there is more structural continuity between Soviet and post-Soviet informal practices in education than the proponents of 'collapse' of the education system believe. This, however, does not mean that there has been no change in the scale of these informal practices – the volume of such transactions does indeed appear to be much greater, to the extent that informality has become normalized and is no longer a way to 'bend rules' but sets the rules themselves.

So how do students who are determined to receive an education, rather than just credentials, achieve their goals in such a system? They employ a range of tactics,

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<sup>42</sup> Top grade.

mostly informal, to counteract the rent-seeking instructors and to complement for the deficiencies in their education. Thus, students can organize and formally complain to the administration about bribery, as in the example above. Other methods include private tutoring, self-study groups and various arrangements to get hold of specialized literature not available from the university library. Students from engineering families often rely on the informal training of their parents. But not all of the students' practices are benign as well. Thus, Elmira, in order to relieve herself from pressure from the instructors, became an intermediary in the bribery, collecting bribes and passing them on to the instructors. In return, such intermediaries are left alone and are no longer subject for squeezing and extortion.

Engineering students in oil-related departments have been lucky to have access to the professional development programs offered by transnational companies operating in Baku. These programs target students from about third year of their studies, and offer various additional training opportunities, summer internships, and can eventually lead to part-time or full-time employment. They have been crucial in educating young engineers in Azerbaijan. Yet, for those outside of the scope of interests of the transnational oil companies, the options of professional development beyond the basics provided by formal education are limited to self-education and informal learning in the workplace.

The role and the quality of formal education have clearly undergone a significant change in the post-Soviet period. Receiving a degree, even if a student does his or her best to study honestly and not pay bribes, does not guarantee gainful employment. Yet, formal education still cannot be dismissed entirely. Even those who, like Elmira, consider that 'AZI is now an empty name', do not dismiss formal education in their strategy to become an engineer. Thus, Elmira not only received her diploma, but also remained one of the top students in her class. As Sadigov (2014) had demonstrated, in Azerbaijan diplomas are status symbols, and most students enter universities to obtain this status. But beyond bestowing a status higher education diploma, however devalued it may be, is still a consideration in employment, although only in combination with other factors. Sadigov argues that

diplomas serve to cover up nepotism in employment, by providing the veneer of formally transparent employment process (Sadigov: 56). My interviews suggest that diplomas, when supported by additional factors, such as evidence of knowledge as skills, usually through referrals from trusted colleagues, also play a role in employment. Thus, describing his recent work experience, Namik mentions how it was his formal education and evidence of 'technical mindset', rather than previous practical experience or the recommendation of his father, that convinced his boss to allow him to take on a new task with which he was not thoroughly familiar. And despite the reported differences in the scope and quality of education, the descriptions of the role of formal education between engineers of Soviet and post-Soviet cohorts remain remarkably similar. Thus, Nadir (AZI) explains the role of formal education in this way: 'The kind of knowledge that institute gives is the skill to work with books'. Similarly, Namik (AZI 2008) remarks: 'institute gives a person the skill of working with books.'

The difference between the roles of formal education in Soviet and post-Soviet periods can be best conceptualized as change in the relationship between formal institutions and informal practices: if Soviet informal practices were embedded in the formal educational system, the post-soviet formal education is embedded in informal practices.

#### **4.5.2. Professional networking**

Like their older colleagues in post-Soviet period, younger engineers are acutely aware of the importance of social networks and social capital, and this is true both for those who work in the transnational companies and in local firms. Thus, Namik, despite having access to his father's professional network, is trying to go beyond it and is building his own reputation:

To be honest, I looked for jobs myself, this is [important] for me. Because I understood that my father is helping me all the time. Help – I mean, he directs me to his acquaintances. At first, when you come to any place, you are respected, or you meet people, through your father. And if you [show]

yourself well, then you begin to gain your own respect. It happened so that I always tried... Yes, I found jobs through my father, but slowly I acquired respect not as somebody's son but as a person who is doing his job. Many people told me personally that "we thought you would be sitting in your father's office under air-conditioner". And then they saw me doing something up on a 35 meters tall trestle, and they didn't think [I would do that]. So when I came down [from there], they would come up to me and say 'we heard about you, but we didn't meet. We thought you would be in your father's office with a computer and an air-conditioner'. And I said, you know... Because my father also went this road, and the knowledge I have from him, I understand that life is not... My father is not always going to be in that chair, and in any case, life is a very long thing, and you need to gain your own respect.

But the networks of post-Soviet engineers differ from those of older generation in one key respect: they are weaker and more flexible. Whereas the soviet professional networks were formed in rather closed vertically integrated organizations and stable workplaces where people used to work together for decades, in the post-Soviet period these networks are shaped in the context of flexible employment, often short term and part-time. Younger engineers tend to have wider circles of acquaintances, but the ties between them are often weaker; multiple mentoring, in different jobs is another example of changing informal relationships. Namik, with his many jobs throughout his short career, is one of the examples of this process. Changing jobs is now seen as normal; it is a part of professional growth, rather than impediment to it. This is how Shahin (electrical engineer, Turkish university 2005), currently working in a transnational company, describes an optimal career path for a young engineer in contemporary Baku:

In terms of career, once you graduate from university, I wouldn't say that you have to have experience abroad. But at least you have to have experience in a company who is doing engineering work. So once you studied, you gained some experience, after, let's say 3-4 years, then you can

move to another company if you wish, or you can go abroad to broaden your knowledge. So of course, having experience in international company is always benefit

Even in transnational companies – the most secure workplaces for engineers in present-day Baku – there is a high circulation of employees, with many – as much as 70-80%, according to some estimates – of the trained employees leaving for abroad after a few years of employment. Compared to Soviet workplaces, employment in transnational companies is still less secure and more mobile; moreover, the practice of expatriate secondment means that many of the experienced professionals who have been mentoring the young engineers are usually there only for a few years, making impossible the long-term mentoring relationships experienced by older engineers<sup>43</sup>.

But weaker professional ties have an advantage of being easier to bridge. Again, this is something that younger engineers are aware of and actively use in their professional strategies. An example of a career explicitly built on bridging networks can be found in the account of Zohrab (systems engineer, AZI, 1994). He started his career in a deteriorating manufacturing plant in Baku; he had since worked in a number of oil related companies until settling in Houston, USA. Zohrab explains his successful career by his 'luck' in working with many 'wonderful people who were much smarter' than he, from whom he was able to learn – an example of multiple mentoring. In the flexible world of contracting, his mentors, when moving, shared information about job opportunities and provided referrals, which have taken Zohrab to different projects from Azerbaijan to Dubai to Siberia to Brazil, before his current job in Houston. Zohrab's roadmap for successful career in the oil industry includes moving between (bridging) different levels of the oil industry structure: from sub-contractors to engineering contractors to oil companies in order to understand the interrelations between different

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<sup>43</sup> The outmigration of young engineers working in transnational companies in Azerbaijan and the practice of international secondment are linked to the inequality between local and expatriate professionals, which I discuss in greater detail in Chapter 5. See also discussion on migration and brain drain in footnote 51.

segments of the industry.

It is also the younger engineers, with broader and weaker professional networks who have made the first attempt to establish a professional engineering organization in Azerbaijan: Caspian Engineers Society. Now a formally registered non-governmental organization, the Society began in 2007 as a series of informal meetings of a group of engineers in one of transnational oil companies in Baku. All of the members of this informal initiative group were educated abroad, and during their studies have been exposed to the activities of professional engineering associations in the countries where they lived. Their initial motivation was therefore to emulate the professional practices that exist in the developed countries, and to use the in Azerbaijan to create a common forum for engineers of various specializations where they could exchange their experience. The membership base of the Society was still not very wide in summer 2012, as it included only 140 permanent members, both professional and students; and the board was dominated by the group of engineers who had studied abroad and worked in transnational companies. Yet the greatest potential of the organization lies in its ability to provide institutional framework for linking engineers and engineering students of different industries, specializations, and universities. The society organizes workshops and training seminars for interested students, and works with companies to provide opportunities for internships. One of the most interesting activities of CES has been engineering summer camps – one week residential programs where group of students selected from all technical universities active in Azerbaijan visit industrial sites and communicate with practicing engineers. With these practices, CES provides crucial links between higher education and potential employers, something that has been missing in the post-Soviet educational system. Thus, the

Society is undertaking some steps, small but significant, to institutionalization of school-to-work transitions.

#### **4.6. Conclusion**

Ledeneva (1998) has suggested in her seminal book that informal practice of *blat* in Soviet Union had a twofold effect on the socialist system: it simultaneously subverted the system and helped to sustain it. I argue that in post-Soviet Azerbaijan informal practices have had a threefold role in sustaining engineering profession. On the one hand, some informal practices, such as bribery in higher education and kinship-based patronage divorced from mentoring have undermined universality of professional standards and have worked to devalue formal credentials. On the other hand, engineers themselves have been using informal practices to preserve professionalism and professional standards, as they understand them. Thus, engineers have used professional networks for job search and employment, they relied on informal mentoring to ensure transmission of professional knowledge and resist the decline in the quality of formal engineering education, and they engaged their connections with the existing patronage lines in the state administration to overcome bureaucratic hurdles and make their work possible.

But the particularistic nature of informal practices is at the same time subversive of the development of profession as a whole. While these practices help individual engineers and their networks to stay afloat and succeed, they at the same time undermine the development of broader and more inclusive professional community, which in turn limits the potential for organized collective action. Thus, while informal workplace mentoring allows to improve competencies of individual engineering graduates and compensate for the deficiencies in their formal education, it does little to exert organized pressure on the system of education as a whole to reverse the overall decline in its quality or combat the bribery. The informal professional networks based on interpersonal trust remain small in size; formed in the vertically integrated organizations of Soviet Union, they include rather strong ties and thus are also quite exclusive; this makes bridging between different networks difficult. The corruption of the state sector and the proliferation of patronage impede the development of generalized social trust and reinforces exclusiveness of the small collegiate networks.

However, the professional development of younger generation of engineers who

have been educated in the post-Soviet period, is taking a different route. They have neither the support nor the restrictions of Soviet vertically integrated institutions and life-long employment. In order to succeed in the insecure and volatile labor market, they must and do form more open and flexible networks. These networks, which include multiple mentors and colleagues from a wider range of workplaces, already appear more prone to bridging. As the experience of Caspian Engineers Society, this early harbinger of professional self-organization, demonstrates, engineers are beginning to claim some responsibility for the development of their profession. However, at present, Caspian Engineering Society remains an only example of such professional organization; it is also rather small in size and still remains restricted in its membership. As such, it does not yet define the engineering profession as a corporate actor. Whether it will grow to become such representative body still remains to be seen.

## **CHAPTER 5.**

### **AZERBAIJAN'S INTEGRATION IN GLOBAL ECONOMY AND THE ENGINEERING PROFESSION**

#### **5.1. Introduction**

The objective of this chapter is to explore the changes in the engineering profession in Azerbaijan as Soviet economic space had collapsed and Azerbaijan began the process of integrating into global economy directly, without the mediation of Soviet institutions. I address the issues of relations between engineers in Azerbaijan and international institutions, and the changes in the professional jurisdiction (task area and professional control) (Abbott 1988). My particular focus is on the impact of unraveling of Soviet center-periphery relations and Azerbaijan's place in the new global hierarchy of core and periphery.

As the union-wide economic links broke down following the dissolution of Soviet Union in 1991, Azerbaijan has pursued a policy of resource-driven economic development, attracting foreign investment into its oil sector (Luong and Weintal 2001, Bayulgen 2003, Bayulgen 2005, Bayulgen 2010, Hoffman 1999, Spatharou 2001, Polukhov 1997, Ciarreta and Nasirov 2012, O'Lear 2007). In 1994, the first Production Sharing Agreement (PSA) was signed with a consortium of transnational oil companies for the development of three major oil fields in the Caspian. By the end of 2010, 32 more PSAs were signed between State Oil Company of Azerbaijan Republic (SOCAR) and various foreign partners (Ciarreta and Nasirov 2012). Currently, Azerbaijani oil and gas are exported to Europe mainly via Georgia and Turkey through Baku-Tbilisi-Ceyhan oil pipeline and Baku-Tbilisi-Erzurum gas pipeline (Shaffer 2010). The policy of oil-led

development has been successful in reversing the sharp economic decline of 1990s, and leading, in 2000s, to stellar economic growth (Onder 2012, 1-2). However, the over-reliance on oil sector has significantly reshaped the economy and industry in Azerbaijan, changing the structure of employment opportunities for engineers. Thus, manufacturing sector, which was previously tightly integrated in Soviet industrial networks, has declined and is unlikely to recover, leading engineers to either leave their profession or, where possible, reskill in order to find employment in either oil-related industries or booming construction sector (Gill et al. 2014: 148-153; IMF 2000: 57). Although oil industry is the dominant sector in terms of GDP (51% in 2010) it provides less than 2% of total employment (Onder 2012, 26). But the impact of this opening to the world has been more complex and nuanced than simply closing or opening employment opportunities. In addition to reshaping the structure of economy, the entry of foreign actors has lead to the 'deep transformation of the local way to do business itself' (Fourcade 2006: 150). Foreign investors have brought with them technology, equipment, and international standards, leading to piecemeal replacement of Soviet standards and technologies with international ones. Revenues from the oil exports have also made it possible to import the foreign technologies and re-equip those industrial facilities that had survived the transition or are being newly developed, such as electricity production or construction industry. Multinational corporations had also brought foreign-trained engineers, reshaping the labor market and the professional jurisdictions of local engineers, as well as creating new inequalities. Finally, the integration of Azerbaijan into global economy has created opportunities for international mobility of Azerbaijani engineers.

In this chapter, I argue that the main driving force behind these changes have been the restructuring of global economy and the unraveling of vertically integrated Soviet industry into vertically specialized global commodity chains (Gereffi and Korzeniewicz 1994). In this new spatial organization of global industrial production, Azerbaijan was able to seize its place at the beginning of the oil and gas production chain (Bridge 2008) while becoming a consumer in nearly all other manufacturing chains (Gereffi 1994) This has necessarily changed the professional

jurisdiction of engineers in Azerbaijan, leaving them with operations and maintenance tasks while research and design functions are concentrated in other locations, such as Dubai, Houston, or London.

This chapter consists of six sections. In the next section, I consider the existing debates on globalization of professions in sociological literature. In section three, I give an overview of Azerbaijan's engagement with global economy since Soviet period focusing especially on oil industry as the main sector of Azerbaijan's economy which has been provided most employment opportunities for engineers. In sections four and five, I analyze, first, engineers' perceptions of their place in the world as part of Soviet Union and Soviet profession, and then examine how Azerbaijan's re-integration into world economy has affected their careers and work. I conclude the chapter with a discussion of the changes and continuities in the professional jurisdictions of Azerbaijani engineers, as well as identify some trends of the future developments.

## **5.2. Globalization and engineering profession: theoretical considerations**

As I mentioned in Chapter 1, sociology of professions has traditionally focused on national scale of analysis (Faulconbridge and Muzio 2012). This was due originally to the dominance of the Anglo-American models of professionalism in literature (Larson 1977, Freidson 1970). In 1980s, with the emergence of the rich literature on the role of state in professions that tried to 'bring state back in' the analysis of professions, the national bias was further strengthened (Rueschmayer 1986, Burrage and Thorstendahl 1990, Jones and Krause 1991). The debates about different conceptualization of the role of state in professions in the more liberal Anglo-American and interventionist continental European contexts have shaped the field of sociology of professions for two decades and somewhat overshadowed other important processes affecting professions, namely, globalization. In the meantime, professions became increasingly affected by the processes of globalization, such as transnationalization of the employers of professionals (Faulconbridge and Muzio 2012), the rise in international demand for professional

services and development of international labor markets (Allsop et al. 2009), transnationalization of regulation of professions (Evetts 2008, Evetts and Buchner-Jeziorska 2001, Faulconbridge and Muzio 2012), and the emergence of transnational professional jurisdictions (Fourcade 2006, Seabrooke 2013).

In this chapter, I draw on two themes from this burgeoning literature. First is the role of transnational companies in the globalization of professions. Transnational corporations have long been identified as key actors in globalization processes in general (Dicken 2011). As employers of professionals, transnational corporations play important role in creating international demand for certain professional skills and credentials (Allsop et al. 2009). However, their influence stretches beyond this obvious impact. As Faulconbridge and Muzio (2012) note, companies which work globally “employ locally qualified and regulated professionals in every market they operate in but ask these professionals to adopt global standards of professional practice” (Faulconbridge and Muzio: 143). While Faulconbridge and Muzio focus on professional service firms, this is also true for the large corporations that are professional service firms' clients and that employ professionals as well. One of the important ways of how transnational companies promote adoption of global professional standards is through education, often superseding credentials issued by national educational and licensing institutions. In this chapter, I show how multinational companies in the oil industry impact the education and credentials of engineers in Azerbaijan, particularly through their recruitment and training programs.

The second theme I take on is the interconnections between professions in the developed and developing countries (Fourcade 2006, Ballakrishnen 2012, Liu 2013). In general, the literature on globalization of professions has been dominated by research on North America and Western Europe, leading some to speak of 'North-Western lens' (Kuhlman 2013). However, there are important studies that highlight the links between the 'North-West' and the rest of the world. Globalization in general, and of professions in particular, is an asymmetrical process, with actors in developed countries having power and resources to affect changes in the

developing world. While these links are especially strong between former colonies and their metropoles (Annisette 2000), they now incorporate more world regions. Writing about economists, Fourcade has demonstrated how educational institutions in the core countries of North America and Western Europe act as licensing institutions for the rest of the world, creating 'geographically unspecific jurisdictions' for their graduates (Fourcade 2006: 152). The transnational corporations are once again key agents linking the developed and developing countries. Working on the other side of the core-periphery continuum, Ballakrishnen (2012) shows how association with multinational companies in the legal outsourcing industry in India not only helps to diffuse American norms and working practices to India, but also endows Indian lawyers with high prestige. The prestige comes from the mere association with 'American' companies, and is not related to the mostly routine and simple content of these lawyers' work. In linking developed and developing countries, the transnational corporations can create avenues for international social mobility for professionals from developing countries (Weiss 2005). While this mobility leaves intact the overall hierarchy within transnational companies whose top management is still dominated by white men from the global core, and few, if any, professionals from developing countries can ever reach the top managerial levels within TNC hierarchies, for mid-level professionals such employment can be very empowering. The data on the employment of Azerbaijani engineers in transnational companies that I present in section 4 confirms these earlier findings. Work experience in transnational companies in Azerbaijan can propel engineers into international careers, providing them higher incomes and often giving access to more complex engineering tasks.

In mapping the place of Azerbaijani engineers in these international hierarchies, I also draw on the global commodity chain (GCC) and Global Production Network (GPN) approaches (Gerefii 1994, Gerefii 1999, Bair 2005, Coe et al. 2008, Bridge 2008). Originally based in the world-systems perspective, these approaches explore how the production of various goods and services is organized in transnational chains or networks, integrating geographically dispersed segments of the production process (Gerefii 1994, Bair 2005). Unlike vertically integrated

manufacturing systems that were typical for Fordist type of production, including the Soviet industrial organization, under globalization manufacturing becomes vertically specialized, with different functions concentrated in different geographical locations across the globe. GCC research has highlighted how developing countries' participation in different segments of the production process is linked to their development strategies. The GCC/GPN framework is relevant for understanding the industrial restructuring in transitional countries like Azerbaijan, whose industries used to be vertically integrated within Soviet Union and who had to find their place in the specialized production networks (Bair 2005, Pawlicki 2012, 13). Azerbaijan in the post-Soviet period has been able to integrate in the exploration and extraction segment of the oil and gas production network thanks to the FDI in its oil industry (Bridge 2008). Beyond oil and gas sector, post-Soviet Azerbaijan has mainly been a consumer of manufactured goods, rather than producer of manufactured goods.

Due to its focus on industrial development and manufacturing processes, the GCC/GPN framework is especially useful for understanding the international inequalities within engineering profession (Pawlicki 2012, 20013). Engineering has long been considered one of the most international/globalized professions due to standardized knowledge base and international labor market (Allsop et al. 2009, Fernandez-Stark et al. 2010). Yet this does not mean that the profession is internally homogeneous and engineering credentials and skills are easily transferable and convertible. On the contrary, as the GCC/GPN research demonstrates, different engineering skills are required for different functions at different geographical locations of production chains. For example, more technically complex functions such as package production or design (Original Design Manufacturing in GCC terminology) require a different set of skills and expertise, and therefore a different education system than assembly from pre-fabricated parts. There also exists an hierarchy between credentials received in the core countries, especially in North America and the UK, and those received in the developing world. However, as I demonstrate in section 4, the employment in transnational companies to some

extent can challenge this hierarchy and grant access to engineers from developing countries to the centers of global engineering.

### **5.3. Azerbaijan and global economy**

While a detailed account of industrial development in Azerbaijan can be found in Chapter 2, in this section I highlight a few issues pertaining specifically to the history of Azerbaijan's engagement with global economy. Prior to its independence in 1991, Azerbaijan engaged with the world economy through Russia – as part of Russian Empire and then Soviet Union. Oil production had been the driving force of this engagement. Initially, most of the oil produced in Baku oilfields was consumed within the vast Russian market. However, after construction of Trans-Caucasian railroad between Baku and Batumi in 1884 the export of Baku crude oil increased multifold, and constituted on average about 15% of total production (calculated from data presented in Goldman 2008: 5-6). Some of the oil was also exported after processing into kerosene, at processing facilities in Baku, Batumi and elsewhere in Russia. Baku's oil industry also was one of the leaders in Russian Empire in terms of foreign investment: Nobel brothers, Rothschilds, Royal Dutch Shell and Siemens are some of the most significant international firms who had been operating in Baku before WWI (McKay 1974).

After the establishment of Soviet power in Azerbaijan in 1920, oil industry was immediately nationalized, followed by other industries over the course of 1920-1921 (Dilbazov 1976: 36-44). Foreign companies had left Baku, yet, international cooperation continued for some time under the New Economic Policy (NEP) as Soviet Union acquired western technologies, hired foreign engineers, and sent local ones abroad for training, especially to the US (see chapter 2 for details). It was only after the onset of Stalin's industrialization and the beginning of the First Five Year plan that the Soviet policy had changed towards a more autarkic model (Connolly 2013), and foreign companies and engineers were driven out of Soviet Union (Mckay 1974: 354). A strategic decision to build socialism in one country was

adopted, and economic and technological independence were seen as preconditions for this purpose (Dohan 1976).

Soviet Union never achieved full autarky, and it continued to engage in trade with other countries, exporting grain and raw materials and importing machinery and technology from the West. Beginning in 1960s, Soviet Union also began to rely increasingly on imports of manufactured consumer goods from Eastern European countries of CMEA (Connolly 2013: 57). Thus, many engineers were engaged in various projects aimed at acquisition of these technologies, from few official programs of knowledge exchange and technology transfer to reverse engineering activities – trying to reconstruct /emulate acquired technologies<sup>44</sup>. Many enterprises in Soviet Union, including some in Azerbaijan, also operated under licenses from Western or Japanese companies (Bornstein 1985, Sultanov 1977). At the same time, after decolonization, Soviet Union exported its own machinery, technology, as well as professional labor, to the Third World countries.

In the international arena, Soviet Union acted as a single actor. All foreign relations were regulated centrally, from Moscow. Foreign trade was also administered through Moscow, via industry based Foreign Trade Organizations (FTOs), subordinated to the Ministry of Foreign Trade (Belkindas and Ivanova 1995). Thus, individual enterprises could not have direct contracts with partners abroad, but made contracts with the FTOs who then on their behalf made contracts with foreign partners. Foreign trading partners were selected in Moscow, often based on ideological, political, and other non-economic considerations; republican governments had little influence on this process. One of the effects of this policy for Azerbaijan was minimal trade with its neighbors – Iran and especially Turkey, which was member of NATO and deemed dangerous for Azerbaijan due to strong cultural similarities (Kaser 2003: 461). The access of engineers to technology transfer programs was also determined in Moscow. To some extent, the access to

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<sup>44</sup> e.g., US-Soviet joint commission on cooperation in the field of Science and Technology and academic exchange programs.

international trade and foreign technology was also related to the regional disparities in the level of economic development: thus, enterprises and engineers from Western parts of the USSR, where more knowledge intensive manufacturing was located, had more access to foreign technology and programs of knowledge exchange than those in the so-called “Southern tier” of Caucasus and Central Asia where extractive industries were located (Kumo 2004, Van Selm 1997, Senik-Legoynie and Hughes 1992). As a result, by the end of Soviet period, the Soviet republics, including Azerbaijan, had neither institutions nor professionals capable of facilitating international trade relations. Thus, Azerbaijan's rather diversified Soviet industry was only feasible in the framework of single Soviet economic space. In terms of professional engineering expertise, this also meant that engineers were educated according to plans established in Moscow, with their expertise geared towards maintaining this unified Soviet economy rather than towards international competitiveness.

To summarise, although in Soviet period Azerbaijan was not isolated from the world and its engineers had some access to foreign technologies, this access was highly restricted, and limited only to the few available programs of technology transfer as well as semi-legal reverse-engineering projects. The extent of such access was also decided upon in Moscow, although with some consultations with local authorities. With the decline of Soviet equalization policies, the access to such programs of engineers from peripheral regions was becoming more limited as Azerbaijan was not prioritized under the conditions of scarcity of resources. The oil industry, the main sector of Azerbaijan's economy, particularly suffered, because Soviet Union had no technologies for the exploitation of technically more sophisticated offshore fields in Azerbaijan, and yet was reluctant to invest in foreign technologies as easily accessible Western Siberian fields supplied cheap oil. Because all the decisions on international relations were made in Moscow, Azerbaijan had neither institutions nor the expertise that were capable to navigate world market. This, as well as the interdependent character of Soviet economy and dependence of Azerbaijan's industries on interrepublican trade became important structural constraints for the integration of Azerbaijan into global economy in the

post-Soviet period.

With the disintegration of the Soviet Union, oil turned out to be the only easily available export commodity in Azerbaijan (Luong and Weinthal 2001, Hoffman 1999). However, as oil was now located in the offshore areas of Caspian Sea, foreign technologies that were previously not available in Soviet Union were required for further development. These two factors predetermined the choice of resource-driven development with foreign investment by Azerbaijani elites (Luong and Weinthal 2001, Hoffman 1999). Although in the late soviet and early post-Soviet period the domestic political scene in Azerbaijan became an arena for bitter conflicts of interests and personalities, as discussed in Chapter 2, there existed a broad consensus on the need for foreign investment in the oil industry. Both Communist Party leadership and the national opposition supported the idea of foreign investment. (See chapter 2 for a more detailed account of the political context during early transition period).

The first contract with international investors was made in September 1994 (Spatharou 2011, Polukhov 1997). The Production Sharing Agreement (PSA), now commonly known in Azerbaijan as the "Contract of the century" was made between State Oil Company of Azerbaijan Republic (SOCAR) and 10 international oil companies for the development of a large offshore oil field Azeri-Chirag-Guneshli (Spatharou 2011, Polukhov 1997)<sup>45</sup>. To date, Production Sharing Agreements remain the main form of international involvement in Azerbaijan's oil industry: between 1994 and 2010, 32 Production Sharing Agreements were signed between SOCAR and various foreign partners (Ciaretta and Nasirov 2012).

PSA is a mechanism of foreign investment in extractive industries which has first been developed in 1960s. It involves an agreement between an international

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<sup>45</sup> The original participants of the first PSA included, in alphabetical order: Amoco, BP (UK), Delta Nimir (Saudi Arabia), Lukoil (Russia), McDermott (USA), Pennzoil (USA), Ramco (UK), Statoil (Norway), TPAO (Turkey) (Spatharou 2001: 44). Currently, the shareholders include: BP (UK), INPEX (Japan), Statoil (Norway), Exxon-Mobil (USA), ITOCHU (Japan), Amerada Hess (USA) (SOCAR n.d.)

operating company (a contractor) and a host government, often represented by a national oil and gas company, SOCAR in Azerbaijan's case (Bindemann 1999, Bayulgen 2003, 211-212). Under PS agreements, the contractor or operating company bears all the costs of exploration and production from the contract site, and the profits are shared by the operating company and host government. Production Sharing Agreements usually operate under specially designed legal and tax regimes. In Azerbaijan, Production Sharing Agreements are also ratified by Parliament: they therefore assume the force of law and are insulated from the changes in legislative and political environment. While this step was justified in 1994 by the need to insulate 'Contract of the Century' from the political instability, it has effectively put operations of such companies outside of the rest of local legislation (Bayulgen 2003: 211-212).

In addition to the foreign oil companies who signed Production Sharing Agreements with Azerbaijan, many engineering service firms also began operating in Azerbaijan following the start of the PSA projects. Oil companies generally outsource much of their engineering, design, drilling and other field activities to professional service companies (sub-contractors)<sup>46</sup>. Many of such service companies are also multinational, and provide a range of technical solutions to different projects across the globe. Unlike operating companies, which, if the exploration is successful, operate for 25-30 years, such engineering companies work under shorter-term sub-contracts; at the same time they can be working in a number of different projects, servicing both foreign and local oil companies. Finally, SOCAR has also established a number of Joint Venture (JV) companies with foreign partners, for provision of various services, such as construction, drilling, tools maintenance etc. (SOCAR nd).

The opening of the oil industry for foreign investment affected engineers in Azerbaijan and their work in many important ways. New technologies and new technical standards were introduced, sometimes revealing gaps in knowledge of local engineers. Foreign companies brought with them many foreign engineers,

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<sup>46</sup> See Bridge (2008) for a description of oil industry production chain.

changing the labor market. At the same time, Azerbaijani engineers also gained new opportunities for training, expanding their expertise, and for international mobility. The agreements also include provisions for employment of local personnel, including engineers. Thus, according to the first PSA, on Azeri-Chirag-Gunesli fields, on which subsequent agreements have been modeled, operating company is required “to give preference, as far as is consistent with efficient operations, to employing citizens of the Azerbaijan Republic in the performance of Petroleum Operations to the extent reasonably practicable, provided that such citizens have the required knowledge, qualifications and experience” (Agreement 1994, Article 6). The agreement also contains provisions for the increase of the share of local professionals: thus, according to the agreement, in the beginning of the operations, the share of local personnel was established at 30-50% for professional and 70% of non-professional staff<sup>47</sup>. With the commencement of commercial operations, this share was supposed to increase to 90 and 95% respectively in five years after full-field development (2006).

Following these investments, oil and gas industry in Azerbaijan has become the dominant sector of economy in the post-Soviet period (See chapter 2, section 5.2 for a discussion of oil dependency). Compared to the oil and gas industry, other sectors of Azerbaijan's economy are less integrated into the global economy. In the words of Oksan Bayulgen, “Azerbaijan's shot at globalization is sector-specific” (Bayulgen 2003 216). Non-oil sectors have received far less foreign investment: according to some estimates the FDI in non-oil sector comprised as little 12% of the total FDI from 1993 to 2010 (Hübner 2011). Yet this does not mean that non-oil sectors were completely insulated from international impacts - but the primary mechanism of international interaction in non-oil sectors has been not foreign investment, but import of technology, equipment, as well as manufactured goods (Gunther and Jindra 2009). As the manufacturing continued to decline, due to both 'Dutch disease' and the unwillingness of the political elites to diversify the economy, Azerbaijan's record in R&D and innovations has also been deteriorating. The

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<sup>47</sup> Provisions for local personnel are exactly the same in another large PSA agreement, for Shah-Deniz gas field, signed in 1996 (Agreement 1996). In Shafag-Asiman PSA, signed more than a decade later in 2010, the provision is 50-70% for professional staff (Agreement 2010).

expenditure on R&D has remained very low throughout post-Soviet period (Gzoyan et al. 2015); the R&D personnel is aging, with more than 60% of PhD holders being over the age of 60 in 2008 (UNESCO 2015, 326), and Azerbaijan is lagging behind in terms of scientific publications and patents (Gzoyan 2015). The combination of these factors – the dominance of oil industry, continuing de-industrialization, the emphasis on the import of ready-made equipment, and the residualization of local R&D capacity had significantly changed task areas of engineers, both in the oil and non-oil sectors of industry.

Thus, the post-Soviet integration of Azerbaijan into global economy had significant impact on all sectors of industry where majority of engineers were, or are employed. The extent of this impact however has been uneven across different sectors, reflected different mechanisms of engagement with global actors. Having outlined some macro-level structural changes, in the next sections I turn to engineers' personal experiences of the engagement with international actors in the Soviet and post-Soviet periods and the impacts of the post-Soviet opening of Azerbaijan's economy to foreign investment and trade.

#### **5.4. Azerbaijani engineers' perceptions on their place in the world: the Soviet period**

In this section, I analyse how engineers perceive the changes in the place and role of Azerbaijan's engineering profession in the global division of labor following the dissolution of Soviet Union. As in previous chapters, the analysis is organized chronologically: I first focus on the Soviet period, and in the next section explore the post-Soviet developments.

The place of Azerbaijan's industry and technical research in the Soviet Union and the relations with the union center (Moscow) figure prominently in the accounts of the soviet-educated engineers that I interviewed. Thus, they point out the role of AZI in technical education in the Soviet Union, especially in the oil industry; the careers of two prominent graduates of AZI, Nikolai Baibakov, Minister of oil

industry of USSR (1944-1955) and Chairman of the State Planning Committee (Gosplan) and first deputy of the Prime-minister (1965-1985), and Sabit Orudzhev, Minister of Gas industry (1962-1972) are the most cited examples of AZI's influence. Other examples of Azerbaijan's importance in the Soviet industry include the role of Baku's oil in the Soviet victory in the WWII, the contribution of Azerbaijani specialists in the development of oil and gas industry in Western Siberia, the achievements of manufacturing industry, which used to produce 70% of all oil-field equipment in Soviet Union<sup>48</sup>. Research engineers point out the high quality of technical research that used to be conducted in their research institutions, several of which used to oversee research work beyond Azerbaijan, in the greater region, including Turkmenistan, Dagestan and Georgia; contributions made by Azerbaijani institutions to the top priority Soviet projects, such as the space program. For example, the reactive fuel used for the first launch of human into space in 1962 was partially developed in Baku; and the engineer who worked on that project recalls it with great pride and nostalgia.

Yet, the relations with the central institutions were complex and usually asymmetrical. Of course, Azerbaijani institutes and enterprises were subordinated to the ministerial 'headquarters' in Moscow, and thus hierarchy and inequality were to some extent embedded in the formal organization of industry. However, the asymmetry in the relations between Azerbaijan and Russia went beyond this formal subordination. Rather, it represents a case of a more general relationship of domination similar to what Galtung (1971) referred to as cultural imperialism, and Alatas (2000) as intellectual imperialism. According to Galtung, cultural and more narrowly scientific imperialism are characterised by a situation when 'the division of labor between teachers and learners is clear.... The Center always provides the teachers and definition of what is worthy of being taught...and the Periphery always provides the learners' (1971: 93). Writing about intellectual imperialism, Alatas similarly identified tutelage as one of its six defining features (2000: 23). The interviews with Soviet educated engineers present many examples of such tutelage relationship between teachers and learners. Thus, Ali (electrical engineer,

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<sup>48</sup> According to World Bank (1993: 121), Azerbaijan produced 65% of this equipment.

AZI 1967) describes the relationship with the Ministry in Moscow to which is organization was subordinated:

We were in a close contact with Moscow colleagues. Very close. Well, first, they were our bosses. We had no Ministry of Energy in the Republic. There was MinEnergo of the USSR, and here we had one branch. And we had to, willingly or unwillingly... They *used to scold us, praise us, help us* – everything. I traveled very often, and I've been to all main cities of the Soviet Union. And from each such visit I came back enriched. Talks, conversations, so much information. Maybe, this is because there was no internet, and our 'window to Europe' was through Moscow. And beyond information, they were helping us very much. [...] This work with central organizations in Moscow gave very much to Azerbaijan [emphasis added – L.S.].

This relationship between teachers and learners can also be observed in engineers' accounts of their post-graduate education and research. Despite the common assertions of the high standards of education in AZI and of research in select R&D institutions in the oil and gas industry, Moscow and Leningrad remained the places of higher learning. The advanced levels of post-diploma professional development courses, which were necessary for career advancement, also took place in Moscow and Leningrad. Conducting one's post-graduate research in Moscow or Leningrad, or even holding the defense of one's degree there endowed Azerbaijani research engineers with special prestige; such qualifications were valued higher than the formally equivalent qualifications received in Azerbaijan. Another common practice was validation of local degrees by inviting scientific opponents from Moscow or Leningrad. These two cities were perceived as the places where it was possible to work with 'world class scholars', and especially talented students with 'capacity for abstract thinking' and inclination towards theoretical work were often advised to continue their post-graduate research there. This positioning of Moscow and Leningrad as centers of higher learning reflects a deeper structural issue of the division of intellectual labor between core and periphery which 'places theory, together with civilization and culture, in the core' (Boatca 2006: 328).

The research conducted by Azerbaijani engineers was also sometimes appropriated by institutions in the 'core', without acknowledging the contribution of original authors. The coordinating role that centrally located institutions held allowed them to 'reap off the cream', in the words of one of my interviewees, of the best research work. This is how Fatima (chemical engineer) describes this relationship with central institutions:

You know how it used to be done between us and Moscow. They would learn [something] from us, and then they would do this themselves, and we... So they take our fuel, and we don't know what they do with it afterward. So they develop it and do what they want.

Material inequality, such as access to publications, technology and resource endowment was also embedded in the center-periphery relations: thus, institutes and enterprises in Moscow were the first to use computer technologies; some specialised literature, especially published abroad, was only available in select libraries in Moscow and Leningrad; 'central' institutes and enterprises were better equipped (Interviews; Egorov 1995, Balzer 1982, 1991). Interestingly, similar differences in resource endowment also existed between organizations in Baku with local (Azerbaijani) and central (Moscow) subordination. For example, Rza, who had worked both in a research institute in the Azneft system, subordinated to the government of Azerbaijan SSR, and later in a Baku branch of a Moscow-based institute, described this difference in the material endowment of two institutes, who by the way shared the same building, in the following way:

And we, from outside, as employees of Azerbaijani institute, well, not me, but some young guys, were jealous. Why, on the same land, in the same building, we have this, and they have that. Salaries – 30% higher, vacation vouchers in Moscow region, at 14 roubles for a four-person family voucher, presents for New Year, well... And [the relations] were more democratic, everything was much better.

Although most of my interviewees were well aware about the asymmetry and

inequality in their relationship with the Union center, they do not seem to mind and overwhelmingly describe their relationships with Moscow in positive terms. Thus, together with providing examples of structural inequality between Baku and Moscow, engineers insist that their own relations with colleagues in Moscow were 'enriching', 'incredible' (*potryasayushie*), based on 'friendship'. At most, engineers express an ambivalent, rather than explicitly negative attitudes towards Soviet Union and the hierarchy embedded in center-periphery relations. Thus, Fahriyya, the most critical of my interviewees, who believes to have been exploited by Moscow colleagues, asserts that in the Soviet system, 'there were both good things, and these kinds of things too'. When asked about the good things, she once again points out the learning dimension:

I would not make a mistake if I say that all science in Azerbaijan is still using the Soviet information. Same books, same articles, same scholars. Although, there used to be these speeches "Soviets killed us", I don't know, like the Popular Front, [who said] "we would be far ahead" [if it was not for Soviet Union]. I don't know. I think, that even the most basic moral concepts are from there. The scientific world of USSR, of these Russians, should not be confused with politicians. We were not always concerned with politics. And this Russian scientific world is highly moral. Highly moral. They always helped, altruistically (*beskorystno*). And this should not be lost, I think. And we went through very good schooling with them. And still many people are using this, this schooling.

As this quotation suggests, one mechanism that allowed Azerbaijani engineers to develop the positive attitude towards the domination by Russia was the separation of knowledge from power, or in Fahriyya's words of 'science from politics', and of personal relations from structures of domination. It is also important to note that although the relations with the center were asymmetrical, they were not unidirectional. There was a strong sense of belonging and identification with the union-wide vertically integrated institutions, to which engineers routinely refer as 'our system' or 'our ministry'. These created trans-republican professional networks which allowed for personal relationships of mutual respect to develop. Furthermore,

they provided space for some mobility for engineers from periphery. The case of Sabit Orudjev, a Soviet Minister of the Gas Industry (1962-1972), is one of the examples of such mobility.

Second, the asymmetrical relationship between center and Azerbaijan in the narratives of engineers appears to be justified in the framework of Soviet model of modernization which is closely tied to the level of technological development. In the official Soviet Marxist ideology, this hierarchy would be organized according to the 'level of development of social relations'; but for Soviet-educated engineers in the context of official glorification of 'scientific-technical progress', technological development serves as a proxy of social development. The relations with Moscow are therefore not just bilateral, but a part of a much larger global hierarchy of development. The developed capitalist countries, often lumped together as 'the West', despite the fact that they also included Japan, were perceived as located at the top of this hierarchy. At their best, Moscow and Leningrad are seen as capable of competing with these advanced countries; top Soviet engineers and scientists are often described by my interviewees as 'world renowned scholars'. For Azerbaijani engineers, the access to world-class research or technologies was always mediated through Moscow: "our window to Europe was through Moscow" (Ali)<sup>49</sup>. In late Soviet period, when Soviet Union intensified acquisition of Western technology, many engineers were engaged in reverse engineering projects, trying to reconstruct /emulate acquired technologies (Yegorov and Carayannis 1999). Many enterprises in Soviet Union, including some in Azerbaijan, also operated under licenses from Western or Japanese companies, such as air conditioners factory in Baku (Bornstein 1985, Parrott 1985, Sultanov 1977). Select Azerbaijani engineers were able to participate directly in the few existing programs of knowledge exchange and technology transfer, such as commissioning of high tech equipment, academic exchange programs, or the US-Soviet Joint committees on scientific cooperation. Among my interviewees, three people had spent several times abroad in the

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<sup>49</sup> The use of the 'window to Europe' metaphor by Ali is itself quite telling. The metaphor belongs to Peter the Great, who is said to have made 'window to Europe' when he established St. Petersburg on the western edge of Russian Empire. Significantly, this was part of his strategy to 'catch up' with more developed Western Europe in 18<sup>th</sup> century.

framework of such programs. Thus, engineers were well aware of the technological superiority of the West.

The perceptions of the West, and particularly of Western technologies were therefore formed not just through official state discourse and propaganda, but also through contacts with technology, literature, and rare direct encounters with foreign engineers and scientists. Back home, the narratives of these infrequent trips abroad were circulated in the workplace and among family and friends. The very exclusiveness of such foreign secondments, and the high level of Communist Party approval, of course, from Moscow, required for participating in such programs, contributed to the valorization of Western experience, making it a marker of special prestige (cf. Yurchak 2006: 158-206)

If advanced capitalist countries, Moscow and Leningrad were seen as located at the top of the developmental hierarchy, Third World countries and the less developed parts of the Soviet Union were perceived to be at the bottom, below Azerbaijan. In this sense, Azerbaijan's position both in Soviet Union and more generally in the world was seen as located in between more advanced scientific-technical centers in Russia and the less advanced peripheral regions; as the achievements cited in the beginning of this section indicate, this was a place of considerable importance. As can be expected, the vector of knowledge exchange is from North to South and from West to East: thus, Ali mentions that while "we" were learning from Russia and the Baltics, representatives of energy agencies from Central Asia used to visit Baku to learn from 'us'. Similarly, in discussion of professional placement practices upon graduation from AZI Nadir contrasts placement to Western Siberia, which was a place to learn and with assignments to Turkmenistan, which was a place for rapid career growth:

... our Azerbaijani guys, [from] AZINeftekhim, who received placement in Turkmenia, in a year or two became chief engineers of Oil and Gas Exploration Agencies, chief engineers of plants, chief mechanical engineers. It was very... in Middle Asia, our AZI specialists were highly valued. And in

other places, too, in Tyumen. Half of our department went to Tyumen. Russians, many Russians, but Azerbaijanis as well, I mean our indigenous cadres, it was very good.... After 5-10 years there they became super-specialists, they could return...

AZI also received a large number of students from developing countries of Asia and Africa; José Eduardo dos Santos, President of Angola, 1969 graduate of AZI, is an often-cited example. Significantly, these hierarchical relations are not simply between republics and large regions, but rather between different nodes in technological networks. Baku may have been less developed than Moscow and Leningrad, but it was still more developed than much of Russian provinces. As Rza says: “Do not confuse Petersburg and Moscow with Russia. In a hundred kilometers [from Moscow – L.S.] you find yourself in pre-historical, with *drevlyans, polanes, selyans*” (names of ancient Slavic tribes).

This structural location between more advanced and less advanced development nodes bestowed on Azerbaijani engineers important modernizing and civilizing functions, both towards less developed Central Asians and Africans, but also for Azerbaijan itself. Professional recognition of even individual Azerbaijani engineers was seen as contributing to the development of Azerbaijan as whole, rectifying its status as a backward province and of Azerbaijanis as primitive and uneducated. Describing his encounters with Azerbaijani engineers in the Ministry in Moscow, Nadir explains that

This was schooling, in the end these were national Azerbaijani... the developing of the intellect of Azerbaijani people. It was really nice to see somewhere in Moscow, in the ministry, a normal Azerbaijani engineer, who works in Russia, in Moscow. Not in a market [*bazar*], but...

The trope of market is another common and culturally important image that kept recurring in my interviews. On the one hand, it demonstrates the internalization by Soviet-educated Azerbaijani engineers of an ideological distinction between the 'good', 'productive' work of engineers and ambivalent, non-productive, profit-

oriented and semi-legal work of people working in trade. On the other hand, this is a reference to a stereotype of the citizens of Caucasian and Central Asian republics as 'speculators' (*spekulyanti*), which became widely held in Moscow and Leningrad beginning with 1970s, with the appearance of market traders from the south there (Sahadeo 2007, 2012). Beyond this class division, engineers, especially those who were professionally recognized in Moscow and Leningrad actively took on a civilizing mission towards less privileged Azerbaijanis. Thus, reflecting on his work in Sumgait branch of AZI, where mostly poorer students from regions of Azerbaijan studied, Edhem (power engineer, AZI) described his efforts to bring professors from Baku to teach there, to send his students to internships in Moscow in Leningrad by his mission to present them with models of Azerbaijanis who work in science and not in markets.

Thus, even in Soviet Union Azerbaijani engineers were not completely isolated from the world. However, their access to foreign technology and more generally to the outside world, as well as to other parts of Soviet Union was mediated and controlled by the central authorities in Moscow. While this relationship was asymmetrical and unequal, it was justified by the hierarchical framework of development adopted in the Soviet Union. Engineers in Azerbaijan adhered to the view that saw technology as a proxy of development. In this view, Moscow's modernizing and civilizing mission was generally perceived positively since it contributed to Azerbaijan's development. In line with this ideology, the engineers in Azerbaijan saw themselves not so much as subjects of Russian civilizing mission, but rather as participants in it, both within Azerbaijan and in other, less developed regions both inside and outside of Soviet Union. The dissolution of Soviet Union had fundamentally changed the mode of interaction of Azerbaijan with outside world, removing Moscow's control and mediation, but also the investment in Azerbaijan's development. In the next section, I look into how these changes affected Azerbaijani engineers work as well as their perception of their place and role in the world.

## **5.5. Azerbaijani engineers in the post-Soviet world: a new periphery?**

In this section, I explore the impact of Azerbaijan's post-Soviet integration into global economy on engineers' work. As I discussed in chapter 2 and in the introduction to this chapter, this integration, as well as post-Soviet transformation more generally, has been an uneven process, with some sectors affected more profoundly and in shorter period of time than others. In particular, in the oil industry the impact of international actors has been the most pronounced and visible, due to the entry of many multinational oil companies and engineering firms into Azerbaijan's labor market. Consequently, my analysis in this section is separated in two sub-sections: first, I look at the impact of international actors, norms and practices on engineers working in such multinational companies, and then I turn to those who work in local companies, both private and public.

### **5.5.1. Multinational companies as employers of engineers**

When the multinational companies entered Azerbaijan after 1994, they had brought with them not only new equipment and technologies, but also foreign engineers. In the operating companies under PSA agreements the shares of local and foreign personnel were determined in the agreements. Thus, in two of the larger PSAs, for Azeri-Chirag-Guneshli and Shahdeniz fields, the share of local professionals was established at 30-50% at the beginning of the operations (70% for non-professional staff) (Agreement 1994, article 6; see also O'Lear 2007, 215). In addition, the Agreements contain provisions for prioritization of SOCAR employees to other local professionals. Thus, in the beginning of operations of multinational companies in the oil industry of Azerbaijan the majority of professionals, including engineers, was constituted by foreigners. Operational companies were also employing contractors where the share of local and foreign staff was not regulated by PSA's so strictly. The influx of foreign engineers in Azerbaijan has received mixed reaction from local professionals. The skills and expertise they brought with them were often highly specialised and not available in Azerbaijan; local engineers

recognized that. At the same time, the influx of foreign engineers created new inequalities that were not experienced during Soviet period. The expatriates receive much higher compensation than local engineers employed in the same company. This was especially obvious in the early years of operations, when expatriate engineers received 'internationally competitive salaries', plus expatriate packages covering relocation costs, renting of apartments, etc. Salaries of local personnel were very high by Azerbaijani standards, but meager compared to expatriates'. The difference in incomes was huge compared to the Soviet differences between engineers working in Baku and Moscow: if it was around 30%, now it became as high as 200-300%, not considering the relocation package<sup>50</sup>. Beyond difference in income, a new hierarchical relationship was created, where Azerbaijani engineers were subordinated to expatriates who taught them how to do their work. Thus, recalling his experiences in the oil fields back in 1980s, Nadir remarks:

I had seen people in the oil fields who from the sound of the motor could understand what was going on 1000 meters under the ground, seriously. And now the English come and *teach* [emphasis added – L.S.] these people to do something”.

In recent years, in accordance with PSA provisions, the number of Azerbaijani engineers working in operating companies increased; the compensations received by local engineers are becoming closer to the internationally competitive ones; moreover, some Azerbaijani engineers in the large PSA projects have moved to the positions of 'senior engineers'. However, the decision-making overall remains in the hands of expatriates, while local engineers still largely remain in subordinate positions and 'work as little engineers' (*rabotayut inzhenerikami*) (Nasreddin, interview). Thus, a new relationship of intellectual domination was formed, with

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<sup>50</sup> According to some news reports, in 2012 foreign workers in Azerbaijan received on average 11 times higher salaries than local workers (Azerbaycanda...2013). However, this data does not take sector of employment into account. For oil and gas industry, in 2009, the average salary for local staff in foreign oil companies in Azerbaijan was USD 53000, while for expat staff it was USD 144000 (Hays 2010, 7). This is the third highest differential in the world, after Malaysia and Indonesia (Hays 2010, 7). It is also worth noting that the amounts quoted include only salary, not relocation package and other expatriate benefits. While no official data is available for 1990s and 2000s, according to interviews and anecdotal evidence the difference used to be even greater in the early years of operations.

Azerbaijani engineers once again being in the position of learners, while 'the West' and Western specialists being in the positions of teachers.

Notwithstanding material inequality and the intellectual domination, employment in foreign companies has been preferred and sought after, both by engineers and other professionals. The differential in income between local and foreign-owned workplaces was the most important consideration. However, finding job in a foreign company was not an easy task. Early on in the operations, multinational companies in Azerbaijan had made a strategic decision to target only senior professionals at the managerial level, who also had a command of English (Interviews). Employing senior managers is a common practice for multinationals operating in the developing world, as they first and foremost seek the connections with higher ranks of state bureaucracies that such senior professionals and managers possess (Liu 2013). However, in early post-Soviet Azerbaijan, the condition of English language meant that the group of engineers targeted was extremely narrow, and only included those who had previous experience abroad (Interviews). According to Javid, one of such senior professionals hired by foreign company in 1992, the management explicitly decided not to target mid-career professionals, as they would require considerable retraining. However, this retraining did not concern so much the technical skills, but rather the issues of economic thinking and workplace culture which were significantly different among foreign and Soviet engineers. In practice, the requirement of English language for professional positions served to exclude the majority of local engineers from seeking employment in foreign companies. Formally, this is not stipulated in the PSAs, which only mentions 'the required knowledge, qualifications and experience' (Agreement 1994, Article 6), however this was a requirement for almost all jobs in foreign companies.

However, the reliance on the few senior managers with international experience was not sustainable in a long term perspective. For one thing, Production Sharing agreements contained provisions about progressive share of employment of

Azerbaijani personnel. The ambitious targets of 90% of professional staff in the context of expanding operations meant creating many employment opportunities for Azerbaijani engineers. To fulfill these targets, multinational companies focused on hiring and training young engineering graduates rather than on incorporating mid-career professionals. For young engineers seeking work in multinational companies, the command of English and international experience were important assets in gaining employment in multinational companies. According to two of my younger interviewees, in early 2000s having educational experience at an American university could get you a job at an international company in Baku within a month (Yashar, Anar, interviews) For example, Anar, who had spent a year at a US university as a graduate student, recalls applying to several (at least three) different companies upon his return, including one oil company and two engineering subcontractors, and receiving job offers from all of them. Significantly, it was not a degree from an American university that was crucial but rather some experience at an American university. Thus, Anar himself only completed one year of a two-year long graduate program; but the multinational oil company whose offer he eventually took persuaded him that it would be enough for his future career, as they will provide him with enough in-house training opportunities to compensate for the incomplete degree.

For those who had no experience abroad and still wanted to work in foreign companies, the entry was not completely closed, albeit difficult. While getting an engineering position from the start was near to impossible, working one's way up from a non-professional position towards a professional one was practiced. Along the way, such engineers could improve their English skills, make use of available in-house training opportunities and sometimes even convert their qualifications to internationally recognized ones. While some of such engineers remained in non-professional or semi-professional positions, such as middle supervisory personnel, others were able to launch successful international careers.

However, the number of engineers with American educational experience and/or those working their way up in the companies' structures remained small and could

not satisfy the growing demand for professionals as the operations expanded. One solution, especially favored by larger companies, has been to target students rather than graduates, through specialized scholarship and recruitment programs. Typically, such programs, which begin roughly during 3<sup>rd</sup> year of studies, involve introductory orientations, some competitions with various awards for the winners, including scholarships, summer internships, part-time work opportunities, all ultimately leading to full-time employment for those who successfully complete previous stages of the program. This way, a student can be familiarised with working practices of the firm and trained in corporate culture prior to being employed. Such recruitment programs in Azerbaijan target students of oil-related departments of Oil Academy, as well as two private universities – Khazar and Kavkaz. In addition, there are also recruitment programs targeting Azerbaijani students in Turkey as a country with large Azerbaijani student population. Turkish technical universities provide quality education, but employment opportunities in the country are less attractive, thus making it more likely for students to return (Javid, interview). Conversely, few of those who had studied in the US or the UK return to Azerbaijan for entry-level engineering jobs. Upon employment in the international companies, young engineers continue to be intensively trained, both through formal training programs, on-the-job training and through mentoring by their supervisors.

Yet even these recruitment programs have been insufficient to reach the 90% professional staff targets. Because of the general decline of education, only few of the total pool of students in Azerbaijan can actually be trained to become globally employable engineers. Multinational companies are now therefore focusing on retraining of graduates from adjacent specializations. For example, graduates of chemical department at the university, who are chemists rather than chemical engineers, are retrained to become process engineers; physicists and mathematicians are offered additional training opportunities to reskill as mechanical engineers and so on. The English requirement has also been relaxed, although English skills are now much wider spread than in 1990s. Incoming engineers are trained in English in addition to technical skills.

### **5.5.2. Multinational companies and international mobility of engineers**

Yet another reason for Azerbaijani engineers to prefer employment in multinational companies is the opportunity for international mobility that such employment provides<sup>51</sup>. After 2-3 years of work and training engineers become internationally employable, and many of them choose to leave Azerbaijan. The volume of such circulation is quite high, creating a constant problem of recruitment for the management of the multinationals operating in Baku. According to one observation, by Elmira (drilling engineer, AZI 2008), between 70 and 80% of her former colleagues at a multinational oil company had left country. She herself at the time of the interview was visiting her family in Baku, while living and working in Moscow.

For those engineers who seek international careers after working in multinationals in Baku, there are two viable options. One, more secure, but also more difficult to achieve, is the option of being seconded abroad by their employer. This option usually becomes available after some years of service to the company and demonstrated achievements on behalf of engineers. Usually, this option is chosen by those who intend to have their careers within the same multinational company. Although engineers are expected to return to Azerbaijan upon completion of their secondment, in practice many choose not to. This, for example, has been the case of Anar (Industrial engineer, Kavkaz 2001). After competing his secondment,

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<sup>51</sup> In this study, I intentionally do not employ the concept of brain drain. The concept emerged in post-war period and was used to denote the flow of skilled professionals, especially in science and technology, from developing to developed countries, and was seen as benefiting developed countries only (Gaillard and Gaillard 1997: 195). In recent years, some researchers have argued that the north-south divide in professional mobility has been broken down (Iredale 2001) and that brain drain is being replaced by ‘brain circulation’ (Gaillard and Gaillard 1997). From my interviews it appears that the international mobility of engineers from Azerbaijan has been more complex than the unidirectional flow implied in the concept of brain drain. Thus, some of the practices that I describe, such as assistance in obtaining US citizenship for especially well performing engineers, do fall within the conceptual scope of “brain drain” literature. At the same time, most of the secondments within transnational companies aim to develop local expertise and then return to Azerbaijan, rather than to “drain” it. It is also difficult to conceptualize as brain drain an emigration of engineers who want to work in design but only have maintenance or operations tasks available to them in Azerbaijan, since there is no demand for their skills in their home country.

having made use of training opportunities and receiving awards for his performance, he could literally 'go across the street' (the interview was taking place in an area of Houston where the headquarters of several large oil companies and service firms are located) and get a job pretty much anywhere in the world where oil is produced. His company therefore decided to allow him to stay in the US rather than make him return to Azerbaijan. He had since acquired US citizenship, and was pursuing a global career path - at the time of the interview he was preparing to move from US to UK, to work on a project in North Africa.

Other engineers search for jobs abroad independently. Different strategies are used: some relocate to the Australia, Canada, UK or US through various programs of high-skilled migration, and look for work upon arriving. Others are recruited for work abroad, primarily in Russia and Middle East, in Azerbaijan, by international headhunting agencies or oilfield service companies. Why do people choose to leave Azerbaijan, and are willing to do so early on in their careers? One reason is money – although the salaries offered by multinational companies in Azerbaijan are highly competitive by local standards, engineers can make much more money abroad. According to Elmira (AZI, 2008), the distinction between 'local', or 'national', and 'expatriate' personnel is important in these decisions. By going abroad, Azerbaijani engineers themselves become expatriates, and can receive higher incomes than in Azerbaijan. Another set of reasons include considerations of quality of life beyond income; for mid-career professionals with families the future of their children, and in particular education opportunities are an important concern. Related to this is the issue of the future of Azerbaijan, and concerns with corruption, political environment, and lack of economic policies to tackle Dutch Disease (Zohrab, quality engineer 1991, interview).

A final set of reasons has to do with professional opportunities available in Azerbaijan and abroad. Azerbaijan's location in the global oil industry production networks means that multinational companies are only present in the upstream phases of the network – exploration and extraction (Bridge 2008). Value-adding and knowledge intensive activities, such as processing, refining, project design and

oil and gas research are generally carried out elsewhere. Thus, those engineers who would like to move out of the operations and work with research or design have to leave Azerbaijan:

Most important thing in engineering is that, besides operational work you have to gain some exposure in project design part of it. It is important that project design and operational side, you get exposure to both of them. So without having operational experience, designing something doesn't fit all the time all purpose. You have to be in some operational experience and you have to be in some design experience. At the moment what XY does there is some operational activities, so because XY is operating here. But we do some design as well, but design is generally outside Azerbaijan, it is in UK, America or other countries. So my next career is probably moving to [another] project as an electrical engineer, so I will have exposure to design. So I will probably stay a couple of years abroad. (Shahin, Turkey, 2005)

Thus, multinational companies in Azerbaijan's oil industry have been much more than just providers of employment opportunities. They have redefined the content of engineers' work and opened doors of international mobility - and now engineers from Azerbaijan have opportunities to work in any oil-producing region in the world, from Australia to Canada. In doing so, the multinationals have acted as quasi-credentializing global institutions, providing training and validating local qualifications.

It is interesting to note that all of internationally successful engineers I interviewed have formal engineering degrees only from Azerbaijan: one from Kavkaz university and all the rest from AZI. It is the on-the-job training provided by their companies plus actual work experience that propel them to international careers, rather than international reputation of their alma mater. This is illustrated by the case of Yashar (chemical engineer AZI 1999). A chemical engineer with a few years of work experience at a multinational company in Baku, he had been working for last 4 years in the US. When I asked him if he felt that his basic education from AZI was sufficient for the work he did in these companies, he gave the following

explanation:

Yes, more than enough..... and when I started to work as an engineer in 2006, the situation in [the company] was like this: there were virtually no people who studied engineering in the West. Mostly, engineers were more mature people, who graduated long before, and came to [the company] from, let's say State Oil company and so on. So they were experienced. There were very few young people, and they were all very new, just graduated, from AZI, went through some trainings and so on. And my education was completely enough, and I even easily communicated with those experienced people from SOCAR, professionally, I mean. So I never felt that I was behind in something. And even here, in America, I also feel that this is quite sufficient.

L. So you don't feel that you need to update, for example, to go back [to school?]

Y. No, update – no. Of course, some things get forgotten, but it is enough to just open a book and read again, I mean, basic principles.... I mean, everybody forgets formulas, but basic principles, the understanding how things work, how processes operate – this is quite enough.

The experiences of internationally mobile engineers suggest that multinational companies in Azerbaijan act as global 'elite licensing institutions' (Fourcade 2006) for engineers, validating and even replacing national educational qualifications. Fourcade had argued that this function is taken on by educational institutions in North America and UK for economists; the example of Azerbaijan shows that in the case of engineers in the oil industry, multinational companies provide not only licensing, but also a channel for global social mobility. Whereas in the case described by Fourcade, economists from peripheral countries go to the core to validate their credentials, here we see a change in the direction of the movement: multinational companies come from the core to periphery and validate local engineers' credentials on the site. This 'license' then makes it possible for such engineers to find work in what Fourcade had called 'geographically unspecific jurisdictions' (Fourcade 2006, 152). Moreover, multinational companies in

Azerbaijan penetrate the national education system, and offer supplementary industry specific training and internship opportunities. In this way they tailor existing curricula to their needs and compensate for state's diminished capacity to provide state-of-the-art education.

### **5.5.3. Azerbaijani engineers in local companies and the acquisition of foreign technology**

Outside of multinational companies, in local companies where engineers were not subject to strict requirements of compliance with global standards and practices, the access to Western technology and equipment has been a major influence on Azerbaijani engineers and the work they do. After the dissolution of the Soviet Union and liberalization of foreign trade, Azerbaijan could now freely acquire foreign technologies. Yet it was only after the beginning of the inflow of oil revenues into the country since 2000s that Azerbaijan began to massively import technologies and to invest in large infrastructure projects. In public discourse and local media, especially pro-governmental, the access to advanced foreign technologies is celebrated as a sign of modernization and development, as 'catching up' with the developed world ("Azerbaijan is developing in all spheres"). Moreover, the direct access to advanced technologies without Moscow's mediation is often interpreted as a symbol of Azerbaijan's sovereignty, somewhat similar to the interpretation of the large scale transformation of the urban environment in Baku (Grant 2014).

However, the engineers I interviewed are ambivalent about the impact of import of technologies on their work and professional skills. The emphasis is on the acquisition of 'hardware' – equipment, machinery, ready-made products and turn-key projects, rather than on transfer of knowledge and development of skills. This happens in a wide range of industries: drilling rigs and pipes for the oil and gas pipelines are shipped from abroad and only assembled in Azerbaijan; celebrated new buildings such as Crystal Hall, the venue of the 2012 Eurovision contest, and the award winning Heydar Aliyev Cultural center, designed by the famed British

architect Zaha Hadid, were designed and constructed by foreign specialists. Engineers in Azerbaijan do not participate either in R&D or in the manufacturing process, and have limited opportunities to acquire the 'tacit knowledge' which is an integral part of any technology (Radosevic 1999: 14-30). Thus, they act only as consumers of the imported equipment or technology, or at best, participate in assembly. As a result, their understanding of new technological process remains superficial and is limited to "routine tasks" (Vahid, interview) of assembly, operations and maintenance. A telling metaphor used by several of the interviewees was that such engineers only "push buttons". This is of course counter to the view of engineering as a creative process.

To a certain extent, the limited access of Azerbaijani engineers to R&D and manufacturing is a globally driven process. Modern industrial production is a transnational process, and many functions that used to be vertically integrated in the autarkic Soviet industrial system, are now divided between different locations in the world (Gereffi 1994, 1999). One of the examples of such international division of labor is the separation of R&D and oil and gas extraction in the petroleum industry discussed in the previous sub-section. Engineers recognize this existing global division of labor as a given, but their concern is that Azerbaijan is increasingly 'sliding down' (*skatyvayetsa*) in this hierarchy of division of labor, in terms of the capacity of its engineers to master modern technologies. If well educated Soviet engineers were seen as 'on par' (*na urovne*) with Western colleagues, this is no longer the case. The wholesale import of turn-key technologies and the decline of engineering expertise are seen as two mutually reinforcing processes. The fear, most explicitly expressed by Rahman, a professor of power engineering, is that Azerbaijan would turn into a country that is not even able to adjust foreign technologies to its means, but will join the ranks of the least developed countries that have to import foreign expertise as well as foreign technologies. In his words, 'we would need to hire foreigners in order to change a light bulb'.

According to several of my interviewees, the ultimate responsibility for this state of

affairs lies with state policies. Besides the oil-led development, my interviewees identified specific problems with R&D and education policies. According to Edhem, professor of Power engineering, under current policies active enterprises are encouraged to import equipment and technologies, through a variety of means, including funding and crediting mechanisms<sup>52</sup>. At the same time, the state support for domestic industrial R&D has been minimal, and there are currently no mechanisms that would encourage private investments. As a result, both state enterprises and private entrepreneurs are not interested in going through time-consuming and financially risky processes of design and testing of new products. The extensive infrastructure of industrial research institutes inherited from Soviet times has shrunk considerably with many institutes closed, downsized, or merged with others, and their innovation capacity has been very low (Gzoyan et al.. 2015). In general, downsizing of Soviet-time R&D institutions may not necessarily be a bad thing, given the longstanding Soviet problem of overstaffing, as well as the redundancy of some of their functions. Thus, much Soviet-time R&D had to do with reverse-engineering of Western products – a function that is redundant now when Azerbaijan can freely buy new technologies and/or obtain licenses. But the downsizing that took place in Azerbaijan appears to have been erratic and ad-hoc, and is a result of continuous residualization of R&D rather than of a coherent national strategy of restructuring. For example, the downsizing has also affected the areas of strategic importance, such as oil and gas industry. The closing down of a gas-related research institute is an example of how this process has been taking place. Opened in the beginning of 1960s, the institute used to conduct research on gas for the whole of Soviet Union, including North Siberia, Turkmenistan, Northern Caucasus, as well as abroad – in countries of the Eastern bloc. Most of this work was withdrawn since 1991, but some laboratories continued to participate in cooperative projects with Russia well into late 1990s. According to Fatima, formerly a Scientific Secretary of the institute, by the time of the closing down, it had about 80 full-time researchers; to compare, in 1980s, it had 800. Only a few pipeline designers were offered full-time jobs at the much smaller R&D division the State Oil Company, for the purpose of designing national network of gas

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<sup>52</sup> Aslanli et al. (2013: 55-59) describe some of such available credit mechanisms.

distribution. Other former employees are occasionally invited for consultations in SOCAR on short-term and part-time contracts. The irony of the situation is that the Institute was opened when Azerbaijan was producing very little natural gas, and it was closed when Azerbaijan became a significant producer and exporter following the discovery of two major oil fields.

Low priority assigned to research and design activities by the state is also apparent from another case, described by Aziza (electrical engineer, AZI). The energy related agency where she had worked decided in 2009 to not renew contracts with retirement-age employees. However, after being dismissed, a number of valued specialists were invited by the management to sign new employment contracts, with a research institute that is part of the same production association. Interestingly, these employees work at their old workplaces, in the same capacities as before, but are formally employed as 'researchers' at the research institute, with salaries that are 2/3 of their pre-dismissal salaries. The case reminds of the soviet-time false accounting practices (Linz 1985, Harrison 2011) used to mis-report production figures. Similarly, here the research institute will show a number of employees who in fact are not engaged in research activities and are actually working for another enterprise. This case highlights how research institutes are treated by authorities as auxiliary institutions, used for massaging of official reporting, rather than as places where genuine innovations can be produced. This does not mean that no research work is done in these institutes: post-graduate students are still being trained, and there are even some publications in international peer-reviewed journals (Rahman, interviews). Yet, research engineers report difficulties with attracting talented students to research due to low salaries. Therefore, they either have to work with mediocre students, or with some committed individuals who nevertheless cannot fully concentrate on research because they need additional sources of income. As a result, whatever research is being produced in Azerbaijan, is done thanks to the efforts of committed individuals and despite official policies.

Another important problem is the growing gap between skills acquired through

formal education and the requirements of new technologies. In the previous section I have discussed how multinational companies bridge this gap through offering training opportunities for students. Outside of oil-related specializations such extra training is unavailable to students. Moreover, the mandatory links between engineering education and industry which existed in Soviet times, such as internships and various forms of practical lessons at working industrial enterprises, have been disrupted. Thus, even in the best case scenario, i.e. when a student is committed to mastering the profession, and professors are competent to teach, formal engineering education in state universities provides little more than 'the skill of working with the literature' (Namik, interview). At the same time, the older experienced professionals lack IT and English language skills that are necessary for mastering new technologies. They therefore have to rely on those who have such skills; but often English-speaking young people do not have sufficient technical background. As a result, even routine tasks of operating a piece of foreign equipment often require a combination of skills which are distributed among different people and require their interaction. In the words of one interviewee, Mehti (Qafqaz 2001) "there are very good engineers in our organization, but they don't understand English. So they need some guy who would stand nearby and explain and translate. In this organization, I became such a guy".

Besides formal education at the engineering universities, the changes in the practices of on-the-job training, as well as the practices of acquisition of foreign equipment, have important impact on the mastery of the new technologies. In Soviet times, engineers were usually involved in the various stages of acquisition of the commissioned equipment. For example, Nasreddin described the process of acquisition of a pipelaying vessel from a Western European manufacturer back in 1970s. At that time, Nasreddin together with two other specialists who would later work on the vessel, spent nearly a year at the manufacturing plant, taking part in the design and assembly of the vessel. This allowed him to develop a thorough knowledge of the acquired equipment. Another, non-conventional form of technology acquisition involved reverse-engineering of Western products, where engineers disassembled acquired products in order to replicate or create modified

version of the same product. The reverse-engineered products then went through the whole technological process, including design, prototype, testing, before being introduced into mass production. This allowed engineers to master the technology they were copying, and develop tacit knowledge about its characteristics<sup>53</sup>. This is how Rza describes this process:

Design – well, they took American packers<sup>54</sup>, I went through all this. Because I went through all the stages. I used to work in the special design bureau, where we received American packers from N company. And we had to make a drawing, change some parameters, and this packer turned from [...] into [...], received a Soviet name. This was the same packer as that of N company, regular one, but it did not work in the same way as the original.

With the technologies purchased on a turn-key basis, such tacit knowledge of the acquired technology is no longer developed. Azerbaijani engineers do not participate in either design or manufacturing processes; even the assembly or installation of the purchased equipment is usually conducted by foreign specialists. These decisions are made at the level of administrations, and in the conditions of increasing heteronomy of the management (see chapters 1 and 4). Engineers now have more limited impact on the decision making in industrial organizations. Thus, new technology is acquired by the management and presented to engineers who are expected to find out how to operate it themselves.

It is important to note that my interviewees are no Luddites, and they are not against the acquisition of advanced foreign technologies per se. Despite their pride in some Soviet technical achievements, in general engineers recognize the superiority of Western technology compared to the Soviet one – see the quotation from an interview with Rza above. This ambivalence was perhaps best summed up by Nasreddin, pipelines engineer. He regrets the loss of Soviet comprehensive

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<sup>53</sup> It is worth noting that Soviet methods of technology acquisition were considered superficial (Radosevic 1999). Yet compared to the acquisition of turn-key technologies that is currently practiced in Azerbaijan, they involved greater element of knowledge transfer.

<sup>54</sup> An element of the drilling equipment for oil and gas wells.

rounded approach which allowed him to acquire a thorough understanding of subsea pipelines; yet he describes western products as “pretty, clean, and neat” and overall of higher quality. Appreciation, even admiration for superior technology is inherent in engineering profession. Engineers are proud with the access to advanced technologies that they now have, but it is the mode of acquisition of these technologies as turn-key that raises criticism. An alternative that would be more favored by engineers would look something like this:

This is my personal opinion, we had such an infrastructure, we had engineering [of oil field equipment-LS]. Maybe we should have re-equipped these plants? Maybe, we should have left 7-8 strong plants, give them new technologies, new equipment, not privatize, but to keep and to revive them, so that the English [working in Azerbaijan – LS] would not be buying equipment from the Norwegians. Let us produce this equipment here in Azerbaijan, what we can; introduce new technologies and work for the region, including maybe the Middle East, our oilfield equipment. And instead, we followed the course of the least resistance ... (Nadir, mechanical engineer, AZI)

What Nadir is proposing here is a form of state-assisted export-led development – a model that seems to be preferred by many of the Soviet educated engineers. It is opposed to the current model of oil led development, to which Nadir refers here as 'the course of the least resistance', and which is widely seen as a death knell to manufacturing in Azerbaijan.

It is important to note that as the fieldwork for my research was being completed, several important developments signalling possible changes of state policy took place in Azerbaijan. One of them has been the launch of Baku Higher Oil School, connected to SOCAR (see also chapter 2). Currently, the school has recruited its second year students. This indicates a possible change in the educational policies, at least with regards to the priority area of petroleum engineering. Another important development is President's recent announcements of the need of import-substitution manufacturing as way to reverse post-Soviet deindustrialization and

diversify Azerbaijan's economy (State program 2014). The launch of Sumgait Technologies Park in 2009-2011, an industrial complex with 18 plants and factories, is a part of that strategy. While the efficacy of Import-Substitution Industrialization as a development strategy is by itself a matter for debate, this may in the future have important consequences for the development of engineering expertise in Azerbaijan.

### **5.6. Conclusion**

In this chapter, I have attempted to understand how the engineering profession in Azerbaijan has changed with the reintegration of Azerbaijan into global economy following the dissolution of Soviet Union. Based on the interviews I have conducted, two particular processes appear significant: opening of the oil industry to transnational companies and free access to foreign technologies. The first of these has created a cohort of engineers who are globally employable and mobile, while the second has rendered redundant some Soviet-time task areas, such as research and design. Both of these trends are parts of a larger pattern of global restructuring of industrial production, where Azerbaijan has been so far inserted only at the exploration and extraction segment of the oil and gas global production network (Bridge 2008). Currently, Azerbaijan is a consumer in nearly all other global production networks. For the engineering profession, this means a move from a more or less full cycle of technological process that included research, design, testing, manufacturing, construction, procurement, operations and maintenance, to a situation where Azerbaijani engineers' functions have now shifted towards construction, procurement and operations segments of production chains. Engineering tasks that require creative or conceptual approach, abstract thinking and higher technical expertise are no longer available in Azerbaijan.

Yet despite these significant changes brought about by the integration into the global economy, the underlying relationship of intellectual dependency remains in place. What we can observe in post-Soviet Azerbaijan is a 'change of peripheral axis' (Badescu 2004, cited in Boatca 2006: 86) from Soviet periphery to that of a

more diffused Western core. In the new division of intellectual labor the Center that provides the 'teachers' has changed, but Azerbaijan still provides the 'learners' (Galtung 1971). It is the contents of what needs to be learned that have changed.

Second important impact of the integration into global economy, particularly in the oil industry, has been the profession's stratification into two groups: 'global' engineers, which includes internationally mobile professionals working in mostly in the oil industry, and the larger group of 'button pushers' who maintain or operate foreign bought machinery. The current trends of migration of the 'global engineers' suggest that unless Azerbaijan can offer something more in terms of professional opportunities, these engineers are unlikely to return. The long-term prospects of engineering profession in Azerbaijan ultimately depend on the government's strategy of economic development.

## **CHAPTER 6**

### **CONCLUSION**

In this study the changing relationship between state and society in the course of the post-Soviet transformation has been investigated and it has been studied how this change in relations affected the engineering profession in Azerbaijan. Taking as my theoretical point of reference the neo-weberian “power” approach to professions I depart from the common interpretations of professional autonomy as self-regulation and from the analysis of “professional projects” focusing on upward mobility of occupational groups (Freidson 1970, Larson 1977). I argue that these concepts and theories are embedded in the history of Western capitalist modernity and as such are problematic in socialist and post-socialist contexts. Instead, I contend that an understanding of socialist and postsocialist professions requires us to re-situate the sociology of professions in the ‘multiple modernities’ framework (Eisenstadt 2001). I view socialist modernity as sharing some key features with Western modernity, particularly rational organization of society and bureaucratization, while rejecting free market and the clear-cut separation between state and society (Arnason 2000). Turning back to the professions, this approach suggests that the understanding of professional autonomy as self-regulation by autonomous professional associations, and consequently of professional autonomy under socialism as “restricted by the state” is at odds with the socialist experience of intentional interpenetration of state and society institutions. With regard to socialist professions it is therefore more appropriate to speak of the bargaining power or political influence of professions *within* the state rather than of their organizational autonomy. Such re-conceptualization of the role of professions at the nexus of state and society also casts the expectations of post-socialist ‘re-professionalization’ in a different light. With the emergence of market and partial

withdrawal of the state, professionals did not rush to create professional bodies and restore self-regulation. Rather, they are engaged in a complex and uneven process of renegotiating their role in a messy web of relations among state institutions, often still powerful, and often informal, as well as an emerging market for their services and international actors.

I focused on the engineering profession in Azerbaijan for a number of reasons. Previously, one of the most numerous Soviet professions, it was hit hard by the post-Soviet deindustrialization, which left many former engineers without work as Soviet economic links broke and industrial enterprises closed down. With the abandoning of Soviet industrialization the profession has also lost its privileged position in the state bodies, when during the Soviet period the engineering degrees and employment in industry, combined with Communist Party membership, opened access to career in *nomenklatura* as well as management of Soviet economy. Engineering profession has also lost its symbolic role of harbinger of modernization and progress. Furthermore, in Azerbaijan the state with which the profession is engaged has changed itself: from a quasi-imperial formation with multiple levels of decision-making centered in Moscow it became a much smaller nation-state, relatively more open to the global economy and with a different economic strategy (oil-led development vs. Soviet industrialization). Previously, Moscow placed restrictions on engineers' professional activities but at the same time provided opportunities beyond the capacities of republican government; now, Azerbaijan has become free to choose its own strategy of development, but the dismantling of Soviet industrial links led to the destruction of opportunities for engineering work as well as restrictions.

Utilizing qualitative methodology, namely, in-depth interviews, I explored the impacts of these structural changes on the profession and engineers' responses to them along three dimensions: work orientations, informal relations among engineers and state bureaucracy, and the impact of the integration of Azerbaijan into world economy. The three dimensions, proceeding from the analysis of subjective perceptions to micro-level interactions to the impact of macro-level

changes on the professional experiences of engineers link together micro and macro levels of analysis and provide a comprehensive view of what has happen to the profession. More specifically, my aim was to capture the experience of post-Soviet transition, and to identify areas of continuity as well as directions of change.

In the area of work orientations of engineers important changes took place after the dissolution of Soviet Union. For professionally oriented Soviet educated engineers, who are the majority among my respondents, work during Soviet period was often perceived as a central value, a source of self-actualization and pride. They describe their work in Soviet times as interesting, creative and meaningful, and take pride in their own achievements as well as in the progress of Soviet science and technology. Work orientations are multi-stranded, and in the narratives of Soviet engineers intrinsic motivation is often intertwined with career aspirations. Yet, considerations of income played little importance in decisions about work - not because they were unimportant, but because income was rather unproblematic: stable salaries were complemented by bonuses and generous welfare provision. Having internalized Soviet discourse on work as a creative activity leading to self-actualization, many of these engineers experienced the collapse of Soviet Union and the ensuing deindustrialization as a catastrophe that destroyed their life's work. The destruction of Soviet industrial links radically reduced the range of engineering tasks available for engineers in Azerbaijan, particularly in manufacturing industry; however new opportunities emerged in the oil and construction sectors. Interestingly, the only engineers who said that their work in post-Soviet period became more interesting were those working in construction sector: in the absence of strictly enforced standards they can adopt more creative approaches in their work. Outside of the few pockets of institutional continuity, such as energy related enterprises, work in post-Soviet period is experienced as a struggle for survival, in contrast to Soviet "golden years". Consequently, work becomes instrumentalized - from a source of self-actualization it turns into a source of income, necessary for survival; many Soviet-educated engineers resent this change.

For the post-Soviet generation of engineers, the importance of income is clearly higher, and the content of work does not hold such a central place. Yet, despite the tropes of collapse and rupture that dominate the narratives of older engineers, a closer look into work orientations of post-Soviet engineers indicate evolution and continuity. The main components of the overall structure of work motivations have remained the same, but the significance of work in individual lives has changed. Among the post-Soviet engineers, self-actualization is no longer sought in work; yet work remains a part of meaningful life. Meaning and self-actualization, are now to be constructed individually; and interesting work, career progress, and income are all parts of this process. Soviet and post-Soviet meanings of work converge on the goal of holistic life, incorporating both work and leisure. In Soviet period, such holistic life was articulated by the concept of “rounded development of personality” which was part of the official ideological narrative. Among the post-Soviet engineers, a comparable idea is conveyed through the concept of being “one's own master”; both notions bear resemblance to the concept of “craftsman” in Western discourses (Mills 1956, Sennett 2008). The means of achieving this goal have changed, however: if in Soviet times, the organization of the work process itself was geared towards providing all-rounded experience, now young engineers have to ‘craft’ their own careers, combining jobs to achieve their desired career goals.

The informalization of state institutions and the rise of informal practices represent perhaps the most striking area of transformation for the engineering profession. Informal practices such as clientelism, corruption, bribery were widespread in Azerbaijan in Soviet period, yet in the post-Soviet period they have come to dominate the relations between state and society. I have found that the roles of formal institutions and informal practices have been inverted in the course of post-Soviet transformation. In Soviet times, informal practices were used mainly to circumvent rigid and cumbersome formal rules; while in the post-Soviet period as the formal interpenetration of state and society was put to an end, informal networks are often used to provide missing connections, and to link state and society. Often, formal procedures and rules are applied for legitimization of

informally made decisions. Engineers encounter and employ informal practices in many different settings during their careers. Thus, bribery in higher educational institutions has become nearly universal; in the absence of formal institutions of job placement informal contacts are crucial for job search; having a patron in state bureaucracy is a must for running private business. Those who chose self-employment work in a market that is also largely informal. These practices have undermined universality of professional standards and have worked to devalue formal engineering credentials.

In the public sector, a major development has been the rise of kinship- and region-based patronage. Career progress, and especially appointment to high ranking managerial positions is now only accessible to members of patron-client network, usually centered around kinship and/or place of origin, indicating a recombination of traditional and legal forms of authority, and the rising importance of the former (Weber 1978). This is not to say that kinship-based patronage did not exist in Soviet times; yet, it was more restricted in its scope and had to be coupled with professionalism. In the post-Soviet period professional credentials serve mostly for legitimating appointments of the members of patron-client networks to administrative positions.

The rise of patronage is also linked to the erosion of professional autonomy and the decrease in the political influence of the profession, which emerged as an important theme in the narratives of Soviet engineers. With the removal of most industry professionals from political institutions, engineers have lost the bargaining power that they had possessed in the Soviet period. Furthermore, as discussed in chapter 2, Soviet industrial organizations were essentially “autonomous”, in the sense that engineers working there were subordinated to other engineers. But, in the post-Soviet period engineers have now found themselves subordinated to non-professionals - either in explicitly heteronomous private enterprises, where owners are often not engineers, or, in the public sector, where supervisors may have formal engineering qualifications, but lack professional reputation and owe their positions to their positions in clientelist networks.

But at the same time, engineers themselves have been using informal practices to preserve professionalism and professional standards, as they understand them. In the context of devaluation of formal credentials, professional reputation has become a stronger indicator of professional expertise. Engineers rely on informal mentoring to complement and resist the decline in the quality of formal engineering education and ensure the transmission of professional knowledge. In fact, with the decline of formal education such mentoring serves as a primary method of transmission of professional values in Durkheimian sense of the word (Durkheim 1992). Engineers also engage their connections with the existing patronage networks in the state administration, the same networks that have undermined meritocratic career progress, in order to overcome bureaucratic hurdles and resolve professional problems. However, while these efforts are important in ensuring some continuity in knowledge transfer, they are insufficient for reversing the overall decline in quality of education and professional standards, and they do not form the basis for solidarities on larger scale, e.g. class or even enterprise. Thus, while informal workplace mentoring allows to improve competencies of individual engineering graduates and compensate for the deficiencies in their formal education, it does little to exert organized pressure on the system of education as a whole to reverse the overall decline in its quality or combat bribery. The informal professional networks based on interpersonal trust remain small and exclusive. Formed in the vertically integrated Soviet organizations, they are linked to strong ties of personal friendships, which makes bridging between different networks difficult. The corruption of the public sector and the rise of kinship-based clientelism impede the development of generalized social trust and reinforces exclusiveness of the small collegiate networks. Similar to exchange of favors in Soviet Union (Ledeneva 1998), informal practices both undermine universal professional standards and help to sustain engineering professions in the context of withdrawal of the state.

Among the younger generation of engineers, who have been educated in the post-Soviet period, the use of informal networks and practices is taking a different route.

For them, bribery and patronage are the context in which they begin their professional socialization. Thus, they know that they cannot rely on the formal education system to become professionals; they need to act themselves, and employ all available resources, including networks of their parents and peers, in order to gain access to training. Having experienced neither the support nor the restrictions of Soviet vertically integrated institutions and life-long employment, post-Soviet engineers must form more open and flexible networks in order to succeed in the volatile labor market. They form professional networks while moving from one workplace to another, and learn from many colleagues and mentors along the way. Young engineers, especially those who were trained abroad, also demonstrate attempts at formalizing their informal networks, exemplified in the case of Caspian Engineers Society, the first attempt of professional self-organization. However, at present, Caspian Engineering Society remains an only example of such a professional organization; it is also rather small in size, and few engineers outside the group see much value in joining. As such, it does not yet define the engineering profession as a corporate actor. Whether it will grow to become an inclusive body representing the interests of the whole profession is still a matter of future.

Third dimension of my study looked at the impact of (re)integration of Azerbaijan into the global economy. In the Soviet period, all connections of Azerbaijan's industry with the outside world were mediated by the central Soviet institutions. However, within the Soviet vertically integrated industrial organizations Azerbaijani engineers were engaged in all stages of technological process, including research, design, experimental production, manufacturing and so on. With the dissolution of Soviet Union, Azerbaijan became able to enter the global market directly, without the mediation of central Soviet institutions. However, as the demise of Soviet economic space coincided with the global process of restructuring of industrial production into vertically specialized global commodity chains, Azerbaijan has been able to integrate mostly in the exploration and extraction segment of the oil and gas production chain, owing to the massive foreign investment in this industry since 1994 (Bridge 2008). In nearly all other

commodity chains Azerbaijan remains a consumer. This has radically reshaped the professional jurisdictions, i.e. the professional tasks available to engineers in Azerbaijan, with research, design and manufacturing becoming unavailable.

On the other hand, the integration of the oil and gas industry into global networks through transnational companies operating in Azerbaijan has created a cohort of engineers who are globally employable and internationally mobile, and have joined the ranks of the global professional class. However, their numbers remain small, and the outmigration of this group of engineers from Azerbaijan is high. The rise of the oil revenues also made possible large scale acquisition of ready-made foreign technology, which Azerbaijan can now afford. This also contributed to the further shrinking of engineering professional jurisdiction. Although engineers in general welcome access to advanced technologies, they resent being relegated to the role of “pushing buttons” as they refer to the routine tasks of assembly, operation and maintenance. These are opposed to the currently redundant tasks that require creativity and conceptual approach, such as research and design. At the same time, the underlying relationship of intellectual dependency between ‘core’ and ‘periphery’ remained in place: whereas in the Soviet period the technology came from “the center”, now it comes frequently more from the diffused Western core. However, whereas previously Azerbaijani engineers used to be involved in development and modification of technologies, now they mostly only operate them.

To summarise, the post-Soviet transformation of the engineering profession in Azerbaijan has been a highly uneven and heterogeneous process. The major dynamic underlying this transformation has been the equally heterogeneous process of separation of state and society. The uneven and partial retreat of the state from some of its former functions has resulted in the erosion of the bargaining power of engineering profession, as with deindustrialization specialists from industry were distanced from high ranking positions in the state bureaucracy. An important dimension of this process has been informalization of state power, and the increasing role of kinship- and region-based patronage in the elite recruitment. Contrary to the Soviet experience, engineers now find themselves dependent on

decisions that are made by non-professionals. This represents a shift towards traditional rather than legal form of authority (Weber 1978), and basically precludes monopolistic ‘closure’ that would be based on professional expertise as envisioned by the original neo-Weberian approach to professions (MacDonald 1995).

At the same time, the informalization of the state power has led to the erosion of workplace autonomy. Whereas in the late Soviet period the bureaucratic organization of Soviet industry (see chapter 1) had created a rather broad space for workplace autonomy of all workers, including engineers, the much more personalized power of the post-Soviet period makes engineers more dependent on their management, who often does not belong to the engineering profession. While this has been a common development in both public and private sectors, engineers generally report greater restrictions on their autonomy in the private companies. Combined with often low wages, restrictions on their autonomy have pushed many engineers into self-employment activities, both professional and non-professional.

An interesting finding of this study which was not fully investigated here but merits further exploration has been the nearly complete lack of the sense of solidarity beyond small professional networks based on interpersonal trust. Even among those engineers who experienced exploitation in post-Soviet private businesses, I did not detect any signs of class consciousness, even though class struggle is clearly a part of their cultural repertoires from Soviet times. In the face of exploitation, the strategy of choice was individualized withdrawal into self-employment rather than any attempts at collective action, or even discursive references to it. Engineers’ class allegiances have been notoriously varied, from left-wing activism in Turkey in 1960s and 1970s (Göle 1986/2012) to the American experience where engineers see themselves as part of the managerial class (Cech 2013; see also Meiksins et al. 1996: 12-18). In US context, ideologies of depoliticization and meritocracy were identified as obstacles for awareness of social justice problems, including class (Cech 2013). Similarly, research on post-Soviet Russian nuclear scientists also indicated lack of social consciousness

(Gerber and Ball 2002). My own data also suggests the importance of discursive depoliticization, or separation of ‘knowledge’ from ‘power’, in the process of formulating social and political concerns (see chapter 5). Yet a more general postsocialist condition which downplays the importance of class divisions and is particularly critical of the working class may be also at work in this process (Kideckel 2002, Stenning 2005).

A final, and related issue to consider is the stratification of the post-Soviet engineering profession itself. While a small group of engineers, mostly those working in the transnational companies in the oil and gas industry, has been able to join the ranks of global professional class and greatly increase their earning and standards of living, the majority of the profession had to accommodate to the reality of deindustrialization. Importantly, the post-Soviet social mobility of engineers is often determined by extra-professional factors: not their technical expertise, but the economic strategy of the state, the formal and especially informal links to the state bureaucracy, access to global professional institutions and language skills. In Weberian terms, the dimensions of status and power, i.e. employment in oil industry and belonging to patronage networks, have been more important in the post-Soviet stratification than engineers’ own skills, which form their “opportunity for income” in the market (Weber 1978: 926-39; 304). In difference to the Soviet period when party membership played a role in engineers’ place in the social structure, the post-Soviet power is based on traditional rather than legal authority.

Thus, the state remains an important actor in the organization of post-Soviet engineering profession, although its role is markedly different both from the regulatory apparatus of Anglo-American historical experience and the omnipresence of the Soviet period. While some regulatory functions, such as education and industrial policies are still present, the major development has been the role of the state and its bureaucrats as gatekeepers who can provide or deny access to state resources, contracts, jobs for local engineers and entrepreneurs on the one side and to local industries and market for foreign investors on the other. It

is also important to note that the majority of Soviet-educated engineers continue to place the responsibility for the development of their profession on the state. Without exception, Soviet-educated engineers were highly critical of the current situation of decline in the quality of higher education, and held the state responsible for it. In some cases, it was evaluated as a conscious policy aimed to create an “uneducated” population which is easier to govern. However, my data does not allow a sound evaluation of the role of the state in higher education, and further research, particularly focusing on the differences between public and private universities, is needed. Engineers also believe that the long-term prospects of engineering profession in Azerbaijan ultimately depend on the state, or more precisely on the government's strategy of economic development. For engineers, the strategy of choice would involve state-led industrialization while maintaining access to advanced foreign technology. However, the engineers I interviewed, including those who had previously held high posts in the state hierarchy, felt that the profession no longer has influence on the decision making processes.

Yet, indications of a possible change from oil led development to an economic strategy emphasizing local production and re-industrialization began to appear during the last two years, as the fieldwork for this study was being completed. At least at the rhetorical level, President Ilham Aliyev in his speeches has stressed the need to decrease oil dependency and suggested import-substitution as a strategy for Azerbaijan's future development, and a State Program on development of industry was adopted in 2014 (State Program 2014). The current plunge of the oil prices and the decline of oil revenue may indeed make industrialization a more attractive option. If such change of strategy will occur, the engineering profession in Azerbaijan may see yet another transformation; then, it would be interesting to see whether Soviet engineers' efforts of maintaining continuity with the next generation will prove to be successful.

This research is based on a relatively small number of interviews, and therefore the results are not generalizable. However, as an exploratory study, it does provide important insights into the postsocialist transformation of work and professions,

and more generally, relations between postsocialist state and society. The analysis of interviewees' perceptions, interpretations and experiences along the three dimensions of orientations to work, informal relations among themselves and with state bureaucracy, and the responses to globalization link micro- and macro-levels of analysis and help to situate the post-Soviet transformation of engineering in Azerbaijan in a larger regional and global context. This study contributes to the sociological research on work and professions beyond the case of Azerbaijan; the modified neo-Weberian approach to professions that was developed here may also be useful for further research of other professions in other postsocialist and non-Western contexts.

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## APPENDIX A.

### LIST OF INTERVIEWEES

Name <sup>55</sup>	Gender	Education	Year of graduation	Type of industry	Type of professional work	Latest work	Sector of last employment
Ahad	M	AZI/ Baku/ Moscow	1960	research	R&D	professional	Public/ national
Ali	M	AZI/ Baku	1966	energy	production	professional	Private/ foreign
Aziza	F	Politekh /AZI/ Baku	1966	energy	production	professional	Public/ national
Anar	M	Kavkaz/ Baku	2001	oil and gas	production	professional	Private/ foreign/abroad
Edhem	M	AZI/ Baku	1961	research	R&D	professional	Public/ national
Elman	M	AZI/ Baku	1981	manufacturing	production	professional	Public/ national
Elmira	F	AZI/ Baku	2008	oil and gas	production	professional	private/foreig n/abroad
Elshad	M	AZI/ Baku	1958	oil and gas	production	professional	Public/ national
Fahriyya	F	AZI/ Baku	1961	research	R&D	professional	Public/ national
Farid	M	Turkey <sup>56</sup>	2006	oil and gas	production	professional	Private/ foreign
Farida	F	AZI/ Baku	1958	oil and gas	R&D	professional	Public/ national
Firangiz	F	AZI/	1958	oil and	R&D	professional	Public/

<sup>55</sup> All names are changed to protect the identity of participants.

<sup>56</sup> The names of the universities in Turkey are not disclosed in order to protect anonymity of participants, as the number of graduates from Turkish universities working in oil and gas industry in Azerbaijan is limited.

		Baku		gas			national
Gulara	F	Universi ty	1966	oil and gas	R&D	professional	Public/ national
Gulya	F	Narkhoz / Baku	1972	manufact uring	production	other	Private/ national
Hadi	M	Politekh	1976	manufact uring	production	other	Private/ national
Ibrahim	M	AZI/ Baku	1961	oil and gas	production	professional	Public/ national
Igor	M	AZI/ Baku	1975	oil and gas	production	professional	Public/ national
Javid	M	AZI/ Baku	1973	oil and gas	R&D/produc tion	professional	Private/ foreign
Khadija	F	AZI/ Baku	1958	oil and gas	R&D	professional	Public/ national
Lena	F	AZI/ Baku	1982	manufact uring	production	other	Private/ national
Lidiya	F	AZI/ Politech /Baku	1986/ 1993	energy	R&D	other	Private/ national
Ludmila	F	AZI/ Baku	1959	oil and gas	R&D	professional	Public/ national
Mehti	M	Qafqaz/ Baku	2001	energy	production	professional	Public/ national
Mikail	M	Politekh / Baku		construct ion	R&D	professional	Public/ national
Nadir	M	AZI/ Baku	1979	construct ion	R&D/produc tion	professional	Private/ national
Naila	F	AZI/ Baku	1982	energy	R&D	professional	Public/ national
Namik	M	AZI/ Baku	2008	construct ion	production	professional	Private/ foreign
Nasredd in	M	AZI/ Baku	1959	oil and gas	R&D/produc tion	professional	Private/ foreign
Nuri	M	AZI/ Baku	1966	construct ion	Construction / managerial	professional	Private/ national
Rahman	M	Moscow	1960	research	R&D	professional	Public/ national
Rashad	M	AZI/	1966	manufact	production	other	Private/

		Baku		uring			national
Rza	M	AZI/ Baku	1966	oil and gas	R&D/produc tion	other	Private/ national
Sabina	F	AZI/ Baku	1975	energy	production	professional	Public/ national
Samed	M	AZI/ Baku	1972	energy	production	professional	Public/ national
Shahin	M	Turkey	2005	oil and gas	production	professional	Private/ foreign
Tagi	M	AZI/Ba ku	1966	energy	production	professional	Public/ national
Vahid	M	AZI/ Baku	1961	energy	production	professional	Private/ national
Viktor	M	Constru ction/ Baku	N/A	construct ion	production	professional	Private/ national
Yana	F	Politekh / Baku	1981	manufact uring	production	other	Public/ national
Yashar	M	AZI/ Baku	1997	oil and gas	production	professional	Private/ foreign/abroad
Zohrab	M	AZI/ Baku	1994	oil and gas	production	professional	Private/ foreign/abroad

## **APPENDIX B.**

### **Interview guide**

1. How and why did you decide to become engineer?
2. Can you describe your jobs and your work in Soviet times?
3. Did your job/work change after the dissolution of Soviet Union? If yes, how?
4. If you compare Soviet and post-Soviet periods, what positive and negative changes do you see?
5. What was your most interesting work throughout your career?
6. Do you have plans for the future? What are they?
7. How do you evaluate the current situation with engineering profession in Azerbaijan?
8. How can the current situation be changed?
9. How do you see the future of the engineering profession in Azerbaijan?

N.B. For post-Soviet engineers, questions 2-4 were omitted.

## APPENDIX C.

### LIST OF AZERBAIJANI AND RUSSIAN TERMS USED

<i>Arkha (az.)</i>	Lit.: back; here: protection in the state bureaucracy
<i>Aspirant (Rus.)</i>	Postgraduate student
<i>Bardak (rus.)</i>	Mess, with connotations of moral decay; also brothel
<i>Bazar (az.)</i>	Market
<i>Beskorystno (rus.)</i>	Altruistically
<i>Blat (rus.)</i>	Soviet practice of exchange of favours
<i>Drevlyane, polyane, selyane (rus.)</i>	Names of ancient Slavic tribes
<i>Edinonachalie(rus.)</i>	One person rule
<i>Euroremont</i>	European style refurbishment
<i>Gorodskie (rus.)</i>	Urban (pl.)
<i>Kandidatskaya (rus.)</i>	Postgraduate degree
<i>Khaltura (rus.)</i>	Side work
<i>Khozyain (rus.)</i>	(Pl.: khozyaeva) master, owner
<i>Korenizatsiya (rus.)</i>	Soviet policy of indiginization
<i>Krysha (rus.)</i>	Lit.: roof; here: protection
<i>Legkotrudnitsa (rus.)</i>	Pregnant woman transferred to easier work for medical reasons
<i>Na urovne (Rus.)</i>	On par
<i>Nachalo razvala (Rus.)</i>	Beginning of collapse
<i>Narodnaia intelligentsia (Rus.)</i>	People's intelligentsia, recruited from working class
<i>Navalom (rus.)</i>	Plenty
<i>Nomenklatura (rus.)</i>	Members of Communist Party who are appointed to positions in government
<i>Otkupschina (rus.)</i>	System of leasing of oil bearing plots employed in

	Baku between 1821-1872.
<i>Padenie urovnya (Rus.)</i>	Decline
<i>Posledniy negodiay (Rus.)</i>	True villain
<i>Potryasayushie (rus.)</i>	Incredible
<i>Pripiski (rus.)</i>	False accounting practices
<i>Professionalnie soyuzы (Rus.)</i>	Trade unions
<i>Proizvodstvennoye obyedinenie (Rus.)</i>	Production association
<i>Promyshlennoye obyedinenie (Rus.)</i>	Industrial association
<i>Prorab (rus.)</i>	Construction site supervisor
<i>Rabfak(rus.)</i>	Workers departments (at higher education institutions)
<i>Rabotat' na dyadyu (Rus.)</i>	Lit: to work for an uncle; refers to employed work in private sector
<i>Rayon (Az., Rus.)</i>	Administrative division; here: province
<i>Raznorabochiy(rus.)</i>	Low skilled manual worker
<i>Razval (rus.)</i>	Collapse
<i>Sharashki (rus.)</i>	Prison R&D institutes in GULAG system
<i>Sistema ministerstva (Rus.)</i>	Ministerial system
<i>Skatitsa (rus.)</i>	To slide down
<i>Spekulyant (rus.)</i>	Illegal trader in consumer goods during Soviet period
<i>Tapsh (az.)</i>	Azerbaijani practice of exchange of favors
<i>Tovarishch (rus.)</i>	Comrade
<i>Tyajelie vremena (Rus.)</i>	Hard times
<i>Vydvizhenie (Rus.)</i>	Promotion campaign, referring to recruitment of large numbers of workers into higher education in 1930s
<i>Zavodskie (rus.)</i>	Factory workers
<i>Zavod-vtuz (Rus.)</i>	Factory college

## **APPENDIX D.**

### **CURRICULUM VITAE**

#### **PERSONAL INFORMATION**

Surname, Name: Sayfutdinova, Leyla  
Nationality: Azerbaijani  
Date and Place of Birth: 26 August 1978 , Baku, Azerbaijan  
Marital Status: Married  
Address: j.k. Lagera, block 33, apt. 14, Sofia, Bulgaria  
Phone: +35 989 937 3841  
Fax: n/a  
email: leylsayf@gmail.com

#### **EDUCATION**

<b>Degree</b>	<b>Institution</b>	<b>Year of Graduation</b>
PhD	METU Sociology	2016
BA	St. Petersburg State University, Philosophy	2004
BA	Baku State University, Law	2001
High School	Secondary School no. 160, Baku, Azerbaijan	1995

#### **WORK EXPERIENCE**

<b>Year</b>	<b>Place</b>	<b>Enrollment</b>
October 2015-	VUZF University, International Faculty, City College, Sheffield University, Sofia	Adjunct Instructor
January 2016	ADA University, Baku, Azerbaijan	Adjunct Instructor
February-June 2014		
January-May 2013	Department of Sociology, University of Wisconsin (Madison), WI, USA	Visiting scholar
July 2005-April 2006	2005 National Human Development Report on Gender Attitudes, United Nations Development Programme, Baku, Azerbaijan	Project Manager

#### **LANGUAGES**

Russian (native), Advanced English, Intermediate Turkish/Azerbaijani

## PUBLICATIONS

Sayfutdinova, Leyla.“Informal practice of 'Taps' in Azerbaijan”. Encyclopedia entry.  
In: Ledeneva, A. (ed.) *Online Encyclopedia of Informality* (Forthcoming)

Sayfutdinova, Leyla.“Negotiating Welfare with the Informalizing state: Formal and  
Informal Practices among Engineers in Post-Soviet Azerbaijan”, *Journal of  
Eurasian Studies*, 2015

Ataşer, Gökhan A. and Sayfutdinova, Leyla. “Baku”, in M. Yılmaz, A. Ç. Kavuncu  
(eds.) *Türk Dünyası Başkentleri (The Capital Cities of the Turkic world)*. Ankara  
2014 (in Turkish)

Sayfutdinova, Leyla.“Good” and “Bad” Armenians: Representation of the  
Karabakh Conflict in Azerbaijani Literature, in: *Changing Identities: Armenia,  
Azerbaijan, Georgia*, Tbilisi, HBF, 2011

Sayfutdinova, Leyla. “The Alley of Martyrs: Deaths, Memory, and the Nation”. In:  
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## CONFERENCES

“Engineers in post-Soviet Azerbaijan: From 'creators' to 'button-pushers'”,  
Technosciences of Post/Socialism conference, EASST,  
Budapest, Hungary September 3, 2015

“Globalization of Engineering profession and professional Autonomy: the case of  
Azerbaijan”, ISA RC52 (Sociology of Professions and Occupations)  
Interim Conference “Challenging Professionalism: New Directions in Policies,  
Publics and the Professions”, Lisbon, Portugal November 2013

“Becoming and remaining engineer in post-Soviet Baku: the importance of  
informal practices”, ASCN conference on Informal Practices in  
Eastern Europe and Central Asia, Fribourg University, Switzerland November 2013

“Professional identity in re-stratification of engineers in post-Soviet Baku”,  
annual conference of British Association for Slavonic and Eastern European  
Studies (BASEES), Fitzwilliam College, Cambridge University, England March 2012

“Re-stratification of engineers in post-Soviet Baku”,  
2<sup>nd</sup> Annual PhD Workshop, Azerbaijan Diplomatic Academy,  
Baku, Azerbaijan December 2010

“Representations of Armenians in Azerbaijani Literature: the ‘good’ and  
the ‘bad’”, Annual BASEES conference, Fitzwilliam College,  
Cambridge University, England March 2010

## **APPENDIX F.**

### **TURKISH SUMMARY**

Bu çalışma, Azerbaycan'da Sovyet sonrası dönüşüm süresince devlet ile toplum arasındaki değişen ilişkinin mühendislik mesleğini nasıl etkilediğini araştırmaktadır. Sovyet döneminde özellikle Bakü ve çevresindeki çok sayıda sanayi kuruluşunda çalışan mühendisler, en büyük profesyonel meslek gruplarından birisini oluşturmaktaydı. Gerçekten de Bakü 19'uncu yüzyıl sonlarından itibaren, 1901'de zirve noktasına ulaşan ve o dönem dünya üretiminin yarıdan fazlasını karşılayan petrol üretimi sayesinde (Goldman 2008: 4) bir endüstri kenti olagelmiştir. Sovyet toplumunda ise mühendislerin özel bir yeri vardı. Ekonominin, sanayi üretimi gibi yüksek öncelikli alanlarında çalışan mühendisler, modernitenin bilimsel ilerleme ve kalkınma değerlerini temsil etmekteydi. Ancak mühendislik aynı zamanda, teknik yüksek öğrenimin en erişilebilir ve sanayi istihdam olanaklarının en bol olduğu dönemlerde, toplumsal mobilite için de en önemli kanallardan birisiydi. Sovyet döneminin en kalabalık meslek gruplarından birisi olarak mühendisler üç-ayaklı post-sosyalist dönüşüm –siyasi, ekonomik ve sosyal– tarafından da derin şekilde etkilenmiştir. Mühendisleri etkileyen başlıca faktörler ise sanayisizleşme ile Birlilik çapında faaliyet gösteren sanayi ağlarının sektöre uğramasıdır.

Mesleklerin incelenmesi, Durkheim'in meslekleri toplumsal dayanışmanın birincil alanları ve bunun uzantısı olarak birey ile toplum arasındaki aracı kurumlar olarak görmesinden itibaren (Durkheim, 1992) sosyolojide uzun bir geçmişe sahiptir. Günümüzde pek az araştırmacı mesleklerle Durkheim kadar büyük bir önem atfetse de, devlet ve piyasa kurumları arasındaki bağıda sahip oldukları konum nedeniyle modern toplumlarda meslekler ve profesyoneller önemli aktörler olarak varolmaya devam etmektedirler. Bu konum, –yani devlet ve piyasa arasındaki bağ konumu– meslekleri post-sosyalist toplumlarda, siyasi ve ekonomik alanda yaşanan eşzamanlı dönüşüm nedeniyle çekici bir araştırma konusu haline getirmektedir. Bu

yüzden bu dönüşümlerin meslekler üzerindeki etkilerinin incelenmesi, genel olarak post-sosyalist dönüşümlerin anlaşılmasında önemli ipuçları elde etmemizi sağlayabilir. Buna rağmen halihazırda geniş bir hacme ulaşan post-sosyalist dönüşüme dair araştırmalar dahilinde meslekler oldukça marjinal bir konu olarak kalmıştır. Post-sosyalizmde mesleklerle olan ilgi eksikliğinin nedenlerinden birisi mevcut teorik yaklaşımların mesleklerle uygulanabilirliğinin kısıtlı olmasıdır. Bahsedilen bu yaklaşımalar, birbirinden oldukça farklı Batılı kapitalist bağamlarda oluşturulmuştur ve sosyalist deneyimin özgün koşullarını dikkate almamaktadırlar. Kapitalizmde mesleklerin gelişimi için var olan siyasal ve toplumsal kurumlar ile profesyonel hizmetler için var olan piyasa, sosyalist toplumlarda çoğunlukla bulunmamakta, post-sosyalist dönemde ise henüz yeni oluşmaya başlamaktaydı. Dahası, kapitalist bağamlarda geliştirilen kavramsal çerçeveler post-sosyalist dönüşümün de özgün ve karmaşık yönlerini de kapsamakta yetersizdi. Özellikle, Batı'da mesleklerle karşı yaklaşımada yer alan devlet kavramsallaştırması, sosyalist ve post-sosyalist toplumlarda önemli ölçüde değişiklik gösteren devlet-toplum konfigürasyonlarını anlamakta çoğunlukla yetersiz kalmaktaydı. Benim iddiam, mesleklerin post-sosyalist dönüşümünün sosyolojisinin sosyalizm mirasına daha duyarlı, devletin mesleklerin organizasyonundaki çok yönlü rolüne dair daha incelikli anlayışa ihtiyacı olduğudur. Yazdığım bu doktora tezi, mühendislerin post-Sovyet dönüşüme dair kişisel algılara ve onların devletle mikro ölçekteki etkileşimine odaklanarak bunu başarmaya çalışmaktadır.

Profesyonel mesleklerin ortaya çıkması, 18 ve 19. yüzyıllarda Avrupa modernitesinin ve kapitalizmin ortaya çıkması ile ilişkilendirilir (Krause 1990, Krause 1996, Larson 1977 and 2005, Lo 2005, Johnson 1995). Modernitenin iki ana kurumu, devlet ve piyasanın kesişimi genel olarak modern mesleklerin ortaya çıkışının son derece önemli kabul edilir. Anglo-Amerikan bağlamda piyasanın rolü birincil önemdedir ve devletin rolü mesleki tekellerin korunması ile kısıtlı olarak görülür. Burada profesyonel meslek sahibi, hizmetlerini serbest piyasada satan serbest çalışan olarak görülür. Bu modelde devletin ana rolü mesleki tekellerin korunması olarak görülür. Kıtâ Avrupası'nda, İngiltere ve Kuzey Amerika'nın tersine, piyasa değil devlet mesleklerin gelişimi, düzenlenmesi ve

organizasyonunda merkezi role sahiptir. Siegrist'in (1990) "yukarıdan profesyonelleşme" olarak adlandırdığı bu profesyonel meslek gelişim modelinde profesyonel meslek sahibi ideal tipi serbest çalışan olarak değil, tam tersine, kamu görevlisi olarak görülür. Üniversite mezunlarının en büyük istihdam kaynağı, onları kamu hizmetine dahil eden Avrupa devlet bürokrasileriydi. Dahası bu nedenle üniversiteler ve dolayısı ile mesleklerin bilgi altyapısının üretimi de ayrılmaz biçimde devlet bürokrasileri ile ilişkiliydi.

Doğu Avrupa ve Rusya'daki uzmanlık mesleklerinin tarihsel kökleri Avrupa bürokratik profesyonellik modellerine aittir ve bu modelin bürokratik organizasyon, üniversite sistemi ve kamu görevleri ile yakınlık gibi özelliklerini paylaşır (Krause 1991). Benzer şekilde, serbest çalışma ve mesleki örgütler gibi piyasa elementleri de mevcuttur (Balzer 1996). Avrupa modeli profesyonellikten ayrılma, 1917'de Rusya'daki Bolşevik Devrimi ve 1945'te Doğu Avrupa'nın komünistleşmesi ile sosyalist sisteme geçişten sonra piyasanın büyük oranda ortadan kalkması ile gerçekleşmiştir. Elliott Krause, sosyalist meslekleri "meslek-devlet ilişkilerinin oluşturduğu, tamamıyla özel olarak icra edilen ve kısıtlı devlet müdahalesi ve istihdamından (Amerikan örneği) Batı Avrupa'da devletle ilişkili mesleklere, oradan da Doğu Avrupa'nın devlet kurumlarında istihdamına uzanan bir süreklilik" içerisinde dahil eder (Krause 1991: 4). Bu mantıkta hareketle, devlet sosyalizminin çözülüşünün ardından piyasa güçlerinin girişi ve bu nedenle devletin rolünü zayıflaması iki tip profesyonellik arasında gittikçe artan bir yakınsamaya yol açacak, daha fazla otonomi ve özdenetime izin verecekti (Jones ve Krause 1991).

Eski sosyalist ve şimdiki post-sosyalist mesleklerle ilgili bu bakış açısının altında birbiriyle ilişkili iki varsayımdır: profesyonelliğin tanımının ana ögesi mesleki otonomidir ve devlet, topluma dışsal üniter bir aktördür. Ben, bu varsayımların her ikisinin de sosyalist bağlamda problematik olduğunu ve post-sosyalizmde de problematik olmaya devam ettiğini iddia etmekteyim.

"[h]erhangi bir denetleyici grup tarafından ciddi bir müdahaleye uğramadan işi

ilgilindiren her meseleyi kontrol edecek [...] yeterli güç” (Freidson 1970: 44) olarak anlaşılan mesleki otonomi kavramı, Anglo-Amerikan kendi içinde çalışan pratisyen modeline dayanmaktadır. Bu şekilde profesyonel meslek üyesi, mutlak otonomi sahibi, harici müdahalelerden korunan ve yaptığı işe ilgili verdiği tüm kararlar üzerinde tam kontrol sahibi şahıs olarak görülür. Denetleme, harici aktörler tarafından değil meslaktaşlar, yani bağımsız meslek örgütleri gibi özdenetim organlarında uygulanır. Literatürde bu otonominin teknik ve örgütsel olmak üzere iki yönü ele alınmıştır. Teknik otonomi profesyonellerin işleri ile ilgili teknolojik meseleler üzerinde kontrol sahibi olmalarını ifade eder; örneğin mesleki gizlilik ve kişinin dışarıdan müdahale edilmeden, işini uygun gördüğü şekilde yapması gibi. Örgütsel otonomi ise bir meslek grubunun kendi bilgi ve uygulama standartlarını kolektif olarak belirleyebilme ve –devlet karşısında– örgütlü öz-denetim derecesini ifade eder (Freidson 1970: 23-24, Evetts 2002). Bu türden öz-denetim kurumlarının varlığı, profesyonel mesleklerin temel özelliği olarak değerlendirilir. Meslek gruplarının bu tür kurumları oluşturarak bahsedilen düzeyde bir kontrol elde etmelerine profesyonelleşme denir (Wilensky 1964; Neal ve Morgan 2001). Teknik ve örgütsel otonomiyi birleştiren kapsamlı mesleki otonomi, sosyalizmdeki mesleklerde de uygulanmıştır. Ancak sosyalizm altındaki meslekler teknik otonomilerini önemli ölçüde korumayı başarmalarına rağmen, çoğunlukla örgütsel otonomi, yani devletle olan ilişkileri üzerinden algılanmışlardır. Sonuç olarak, otonomiye sahip olmadıkları ve “profesyonelliğin ortadan kalktığı” öne sürülmüştür (Gloeckner 1991, Hoffman 1997, Krause 1991).

Devletle olan ilişkinin bu şekilde kavramsallaştırılması, Batılı profesyonel meslek anlayışından ileri gelmektedir. Batılı profesyonel meslekler sosyolojisinde devlet toplumdan ayrı ve onun dışında bir yapı olarak kavranmaktadır. Bu çerçeve dahilinde devlet, gerek zor gerekse de rıza yöntemlerini kullanarak nüfus üzerinde iktidarı uygulayan idari bir aygit olarak tahayül edilmiştir (Hann 1996). Öte yandan toplum, bireylerin ve onların oluşturdukları grupların bağımsız, otonom faaliyetlerinin merkezi olarak görülmüştür. Devlet farklı şekilde denetleme, kontrol etme, güvenlik sağlama ve müdahale etme olanaklarına sahiptir; ancak nihai olarak topluma dışsaldır. Sosyalist ve post-sosyalist meslekler hakkında yapılan

arastırmalarda devlet kontrolü ve müdahalesi kavramları neredeyse evrensel olarak kabul edilmiştir (Krause 1991, Hoffman 1997, Sanghera ve Ilyasov 2008 ve 2008a, Riska ve Novelskaite 2011, Buchner-Jeziorska ve Evetts 1997, Seal ve d., 1996). Ancak bu türden bir devlet ve toplum anlayışı tam da sosyalist devletler tarafından hem teoride hem de pratikte açıkça reddedilen bir görüştür ve devletle toplumun bütünlüğü amaçlanmıştır. Grzymala-Busse ve Luong'un ifadesi ile, komünist liderler "hem söylemleri hem de politikalarıyla devlet ve toplum arasındaki farkı bilinçli şekilde bulanıklaştırmışlardır" (2002: 534). Devlet ve Parti kurumlarının bütünlüğü ve yaygın Parti üyeliği, neredeyse hemen herkesin bir tür memur haline gelebildiği bir duruma yol açmıştır (Migdal 2001: 258).

Bu nedenle anaakım değerlendirmeler sosyalist toplumlarda devlet ve toplum arasındaki ilişkiyi devletin toplum üzerindeki kontrolü olarak yorumlamaktayken ben bunun tersinin de doğru olabileceğini ve, bireyler ile toplumsal grupların kendilerine devlet ve Parti kurumlarında sağlanan kaynakları, bu kurumları etkilemek ve hatta şekillendirmek için kullanabileceğini öne sürüyorum. Profesyonel meslek sahipleri için bu, dikkate değer ölçüde pazarlık güçleri olduğu, ancak bu gücün kapitalist toplumlarda olduğu gibi formel otonomi kurmaya değil, sistem dahilindeki belirli devlet ve Parti kurumları üzerindeki kontrollerini artırmaya yöneltildiği anlamına gelir.

Devlet kurumları üzerinde profesyonel meslek gruplarının sahip oldukları bu etki, mühendislik alanında özellikle belirgindir. Sanayi kurumlarında istihdam ediliyor olmaları nedeniyle çoğu mühendis, cumhuriyet veya Birlik seviyesinde bir sektör bakanlığının başında olduğu dikey örgütlenmiş sanayi sistemlerine dahildiler. Bu şekilde sadece kendi çalışıkları iş yerlerinin değil, aynı zamanda Birlik çapındaki bürokratik organizasyonun da parçası haline gelmişlerdi. Böylece yatay olarak örgütlenmiş bu sistem içerisinde sağlanan bir dizi kaynağı ve fırsat erişimleri vardı. Sanayi kurumlarının başlarındaki yönetici ve idarecilerin aynı kurumda çalışan, geniş mesleki tecrübeye sahip mühendislerden oluşması nedeniyle, profesyonel deneyimleri de harici kontrol çerçevesi içerisinde tanımlanamaz. Sanayide istihdam, devlet ve bürokraside kariyer imkanları sunmakta

(*nomenklatura*) ve bu nedenle mühendislik ile devlet arasındaki sınırları daha da bulanıklaştırmaktaydı (Fitzpatrick 1979, White ve Kryshtanovskaya 1996). Bu yüzden Sovyet ekonomi bakanlıklarının başındakiler genellikle mavi-yakalı mühendislik ile idari görevleri kapsayan geniş bir profesyonel deneyime sahip teknokratlar arasından gelmekteydi.

Sosyalizm altındaki mesleklerde devlet ve profesyonel meslekler arasındaki ilişkiye dair varsayımlar, yani öz-denetim olarak mesleki otonomi ve devletin toplumdan ayrılığı, post-sosyalizmdeki mesleklerin de araştırılması üzerinde önemli bir etkiye sahiptir. Devletle olan bağlar ve oluşmakta olan piyasa, post-sosyalist meslekleri inceleyen araştırmacıların odaklandıkları asıl alandır. Genel beklenti, piyasanın oluşması, devlet ve Parti'nin düzenleyici işlevlerinin geriye çekilmesi sonucunda Batı tipi devlet-profesyonel meslek ilişkisi ile bir tür yakınsamadır (Krause 1991: 37-39). Bu nedenle mesleklerin "yeniden profesyonelleşmesi," yani sosyalizm altında kaybedilen örgütsel otonominin, bağımsız meslek örgütlerince sağlanan öz-denetim şeklinde yeniden kazanılması beklenmektedir. Ancak bu beklentiler her zaman somutlaşmamıştır. Denetimsiz piyasanın güçleri, küreselleşme ve devlet denetiminin kalıntıları, dönüşümün ilk yıllarda öz-denetimden çok daha etkili olmuşlardır. (Seal ve diğerleri. 1996, Buchner-Jeziorska ve Evetts 1997). Devlet profesyonel meslek çalışanlarının çoğunu istihdam ederek ve devlet kontrolündeki kaynaklara erişim sağlayarak önemli bir aktör olarak kalmaya devam etmektedir (Osinsky ve Muller 2004, Ashwin ve Popova 2006). Ancak post-sosyalist meslekleri incelerken Batı kavramsal çerçevesini kullanan araştırmalar, Batı bağlamına benzer şekilde ortaya çıkan süreçlere ayrıcalıklı yaklaşmakta, post-sosyalist toplumlara özgü durumları görmezden gelmektedir.

Post-sosyalist mesleklerin Batılı kavramsal çerçevelerle ele alınmasının ortaya çıkardığı kısıtları aşmak için iki çözüm önermekteyim. Birincisi, sosyalist ve post-sosyalist mesleklerin sosyolojisini çoklu-modernlik çerçevesine yerleştirmektir. Meslekler modern bir olgu iken, bu konu çoğunlukla Batı modernitesi kapsamında yorumlanmıştır (Lo 2005). Öte yandan post-sosyalist mesleklerin dönüşümünü

araştırılması, post-sosyalist toplumların, bir zamanlar kaybettikleri Batı modernitesine geri dönmeye çalıştığını varsayan geçiş paradigmاسının etkisindedir (Outhwaite ve Ray 2005). Moderniteyi, “özgün kültürel öğeler, gelenekler ve tarihsel deneyimler içerde de belirgin şekilde modern” (Eisenstadt 2000: 2) çoklu izlekler şeklinde kavramsallaştıran çoklu modernite çerçevesini kullanmak, mesleklerin kapitalizm altındaki ideal formlarından ne kadar saptıklarını incelemek yerine bunların planlı ekonomi ve parti-devleti gibi devlet sosyalizmine özgü kurumlar bağlamında anlaşılmasına yardımcı olabilir.

Mesleklerin sosyalist ve post-sosyalist toplumlarda araştırılmasının ikinci boyutu bunların doğrudan etkileşimde oldukları toplumsal çevre bağlamına oturtulması ile ilgilidir. Şayet meslekler önceden tanımlanmış ideal tiplere olan yakınlıkları anlamında değil de yerel kurumsal yapı ve pratiklerin özgün birleşimi dahilinde incelenekse, mesleklerin doğrudan ilişki içinde oldukları çevreye daha fazla odaklanmak gereklidir.

Azerbaycan'da devlet ve mühendislik meslesi arasındaki değişen ilişkinin bu değerlendirmeler ışığında ele alındığı bu çalışmada ben şz konusu ilişkinin üç farklı boyutuna odaklanmaktadır: değişen devlet ideolojisi bağlamında mühendislerin işleri ile ilgili tutumları; devletin meslekleri denetleme görevinden kısmen geri çekildiği bir ortamda mühendislerin birbirleri ve devlet bürokrasisi arasındaki enformel ağlara dahil olma durumları; ve uluslararası/küresel aktörlerin profesyonel mühendisler üzerindeki etkisi. Bu boyutların her birisi meslek/devlet bağlamının farklı bir yönünü ortaya koymakta ve mikro ve makro düzeydeki analizleri bütünlüğe getirerek dönüşümün kapsamlı bir görünümünü ortaya koymak için öznel algılardan mikro-düzeydeki etkileşimler ile mühendislerin profesyonel deneyimlerini etkileyen makro-düzey değişikliklere ilerlemektedir.

Bu çalışma nitel araştırma yöntemlerini kullanarak gerçekleştirmiştir ve mühendislerle yapılan 41 derinlemesine mülakata dayanmaktadır. Görüşülen kişilerin 33'ü Sovyetler Birliği döneminde eğitim almışken 8'i kariyerlerinin henüz başlarında olan genç profesyonellerdir. Görüşmeler 2011 ve 2013 yılları arasında

üç ayrı saha çalışmasında yapılmıştır. Görüşmelerin 38'i Bakü'de, 3'ü ise, özellikle mühendisliğin küreselleşmesine odaklanarak, çok sayıda Azerbaycanlı'nın petrol sanayiinde çalıştığı Houston, Texas'ta gerçekleşmiştir. Görüşmeler 45 dakika ile 3.5 saat arasında sürmüştür ve ortalama süreleri 1-1.5 saat arasındadır. Görüşmelerin yarıdan biraz azı (19) kısmen veya tamamen kayıt edilmiş, diğer görüşmelerde ise görüşmecilerin isteği üzerine ses kaydı alınmamıştır. Kayıt edilen görüşmelerin çözümlemesi yapılmıştır. Görüşmecilerin ses kaydı alınmamasını talep ettiği durumlarda, görüşmelerin daha sonra olabildiğince hızlı ve eksiksiz şekilde yeniden oluşturulabilmesi için kapsamlı notlar almıştır.

Bu doktora tezi altı bölümden oluşmaktadır. Giriş mahiyetindeki ilk bölümde okuyucuları konunun bağlamı, post-sosyalist meslekler hakkındaki günümüz akademik tartışmaları üzerine bilgilendirerek Azerbaycan'da mühendislik mesleğinin bu konu bağlamındaki öneminden bahsetmekteyim. Bu bölümde ayrıca kullandığım kavramsal çerçeve ile bu araştırmamanın akademik literatüre yapabileceği katkıları ortaya koymaktayım. İkinci bölüm Azerbaycan'da, 19'uncu yüzyılın ikinci yarısında yaşanan "petrol patlaması"ndan bugüne modern mühendislik mesleğinin gelişimini anlatmaktadır. Tarihsel gelişimin ele alındığı bu bölümde odak noktası mühendislik mesleğinin devlet ile, ya da daha doğru bir ifade ile Rusya İmparatorluğu, SSCB ve bağımsızlık dönemlerindeki Azerbaycan devletleri ile etkileşimidir. Bu nedenle bir devletten başka bir devlete geçişin de mühendislik mesleğinin örgütlenmesi üzerindeki etkilerini tartısmaktayım. Bu bölüm, nihai olarak yapacağım post-Sovyet mesleklerin dönüşümü analizi için de bir arkaplan oluşturmaktadır.

Bölüm 3, 4 ve 5, Azerbaycan ve kısmen Houston, Texas'da yaptığım alan çalışmalarını içermektedir. Bu bölümlerde post-Sovyet Azerbaycan'da mühendislik mesleğinin dönüşümü önceki bölümde açıklanan devlet-profesyonel meslekler ilişkisinin üç boyutunda analiz edilmektedir. Üçüncü bölümde Sovyet ve post-Sovyet Azerbaycan'da mühendis olmanın ne anlama geldiğini ele alıyorum. Dördüncü bölümde mühendislerin enformel pratiklerini ve enformel kurumlarla olan ilişkilerini inceleyerek bu pratik ve kurumların mesleğin gelişiminde

oynadığı –eszamanlı– kısıtlayıcı ve ön açıcı etkilerini tartışıyorum. Beşinci bölümde ise küresel aktörlerin mühendislik mesleği üzerindeki etkilerini analiz etmekteyim. Bu bölümler, işe ve mesleğe karşı tutumların mikro-öznel analizinden mühendislerin meslektaşları ve devlet bürokrasisi ile etkileşimlerine, ve ardından makro-düzeydeki değişikliklerin, yani küreselleşmenin mühendislerin iş deneyimlerine ve tutumlarına etkilerine doğru ilerlemektedir. Her bir bölüm içerisinde anlatı kronolojik olarak düzenlenmiştir. Bu düzenlemenin amacı mühendislik mesleğinde gerçekleşen değişim ve sürekliliklerin, mikro ve makro düzeydeki değişiklikler ile bir araya getirilerek kapsamlı bir şekilde anlaşılmasını amaçlamaktadır. Bu üç bölümün her birisi benzer bir yapıyı takip etmektedir: ele alınan konu başlıklarına dair literatürün incelenmesi ile başlayıp, empirik materyalin analizi ile devam eden, kronolojik olarak düzenlenmiş bölümler bulgular ve kısa bir özet ile son bulmaktadır. Bu tezin son bölümü olan altıncı bölümde ise bulguların daha detaylı bir özeti yaparak hem teoriye, özellikle mesleklerin teorisine, katkılarını tartışmakta, hem de gelecekteki olası araştırmaların çerçevesini çizmekteyim.

### **Tarihsel Arkaplan**

Bu araştırmmanın bulgularına geçmeden önce, Azerbaycan'da mühendislik mesleğinin tarihini yeniden gözden geçirmek faydalı olabilir. Azerbaycan'da modern mühendisliğin ortaya çıkışının 19'uncu yüzyıl ortalarında petrol üretiminin sanayileşmesi ve Rusya ile Avrupa'dan, petrol sahalarında çalışacak mühendislerin gelişiyile başlar. Bu dönemde mühendislerin çoğu Bakü'ye dışarıdan gelmiş ve meslek, oldukça küçük ve seçkin bir grubun ellerde kalmıştır. Azerbaycan 1920'de Sovyetler tarafından ele geçirildiğinde buradaki mühendislerin sayısı 500 civarındaydı. Bu mühendislerin ezici çoğunluğu petrol ve ilgili alanlarda çalışmaktadır. Ancak çoğulukla çeşitli devlet kurumları için çalışan bir kaç inşaat ve demiryolu mühendisi de vardı. Rusya İmparatorluğu'nda en gelişkin sanayi bölgelerinden birisi olmasına rağmen Azerbaycan eğitim açısından tam bir çevre ülkesi konumundaydı. Bakü'de mühendis eğiten yerel yüksek öğrenim kurumunun (Politeknik Enstitüsü) kurulması ancak 1920'deki Sovyet iktidarından sonra mümkün

olmuştur. Sovyet dönemi boyunca Bakü'de iki ayrı yüksek teknik eğitim kurumu daha kurulmuş ve mühendislik eğitimi daha yaygın hale gelmiştir. Azerbaycan petrol sanayii, Sovyetler Birliği'nin erken dönem sanayileşmesi ve İkinci Dünya Savaşı süresince oldukça önemli bir rol oynamıştır. Savaşın ardından SSCB daha ucuz olan Batı Sibirya petrollerine yönelmiştir. Ancak bu süreçte Azerbaycan'ın da sanayi altyapısı petrol ile sınırlı kalmamış, imalat, kimya ve elektronik sanayiine doğru genişlemiştir. Azerbaycan özellikle tüm SSCB için gerekli olan petrol madenciliği makinalarının imalatında önemliydi. Böylece Sovyet döneminin sonlarına doğru mühendislik yaklaşık 70,000 kişinin çalıştığı büyük bir istihdam alanına dönüştü (Avakov ve d. 1984: 195). Azerbaycan'da kurulan üç ayrı teknik yüksek enstitü ile de sayısız sanayi kuruluşu ile araştırma enstitülerinin ihtiyacı olan mühendisler yetiştirilmiştir.

Sovyet Azerbaycan'ında mühendisler, Sovyet profesyonel meslek sahiplerinin oluşturduğu geniş topluluk içerisinde yerel ve ulusal niteliklerini korumayı başarabilen gruptardandı. Sovyetler Birliği'nin geri kalanına benzer şekilde Azerbaycan'da da mühendislik aşırı üretim, düşük ücretler ve çalışmanın rutinleşmesi gibi sorunlarla yüzleşmekteydi. Aynı zamanda teknoloji-hayranı kültür ile çalışıkları kuruluşun bağlı olduğu bakanlıklar çevresinde oluşan sanayi kimliklerini de paylaşmaktadır. Azerbaycan da dahil olmak üzere Sovyetler Birliği'ndeki bütün mühendisler aynı müfredat ve genellikle aynı dilde (Rusça) eğitim alırlardı. Ancak pratikte Azerbaycanlı mühendislerin Birlik dahilinde hareketlilikleri bazı nedenlerden ötürü kısıtlıydı. Sovyetler Birliği'nde verilen mühendislik diplomaları kağıt üzerinde eşit kabul edilseler de, Bakü teknik enstitülerinde verilen eğitimin kalitesi Moskova ve Leningrad'daki eğitim merkezlerinden düşüktü. Ayrıca kimi prestijli yüksek teknoloji uzmanlıklarında eğitim Azerbaycan'da verilmemekteydi. Mezuniyet sonrası zorunlu işyeri rotasyonu teoride tüm Birlik için geçerliyken, Bakü enstitülerinden mezun olanlar pratikte Azerbaycan'da kalmaktaydı. Bu durumun en önemli istisnası, petrol mühendisliği alanındaki büyük şöhreti ile AZİ'ydı ve buranın mezunlarının Azerbaycan dışında iş bulma olanakları çok daha yüksekti. Ancak diğer çoğu alanda Azerbaycan'ın sanayisi ve teknik eğitimi Sovyetler Birliği'nde geri kalmıştı.

Dahası, Azerbaycan'daki sanayi dalları çoğunlukla merkezdeki kurumlarda geliştirilen teknolojilere bağımlıydı. Bu nedenle Birlik merkezi, profesyonel meslek sahipleri için iş olanakları yaratmaktayken, aynı zamanda da aşılması güç yapısal engeller de oluşturmaktaydı.

Sovyetler Birliği'nin dağılması, Azerbaycan'da mühendislik mesleğinin yeni zorluklarla karşılaşmasına neden oldu. Bu dönüşümün çerçevesi üç ana eksende kavramsallaştırılabilir: Azerbaycan ekonomisinin sektörel yapısındaki değişiklikler, formel eğitim olanakları ve mühendislerin iktidara erişim olanakları. SSCB'nin dağılması ile Birlik çapında kurulmuş olan sanayi ağları sekteye uğradı. Azerbaycan, artık kendi kalkınma stratejisini, teknik eğitimdeki yönelimlerini ve teknik araştırma için öncelikli alanlarını belirlemekte özgürdü. Ancak Sovyet endüstriyel ilişkilerinin ortadan kalkması, kısıtlamalar gibi fırsatların da yok olmasına yol açtı: pek çok kuruluş, hatta tüm sanayii sektörleri, post-Sovyet Azerbaycan'da atıl hale gelerek pek çok mühendisin istihdam dışı kalmasına neden oldu. Mühendislik mesleği için imalat sektöründeki keskin düşüş özellikle önemliydi. Aynı zamanda Azerbaycan ekonomisinin, daha doğrusu petrol sanayiinin, küresel üretim ağları ile entegrasyonu da küçük bir grup mühendisin daha önce var olmayan eğitim, uluslararası hareketlilik, yüksek gelir ve hayat standartlarına ulaşmasıyla meslekte katı bir tabakalaşmanın yaşanmasına yol açtı. Bu yüzden post-Sovyet Azerbaycan'da sanayii, petrolün baskın olduğu Sovyet-öncesi dönemin yapısına çok daha benzeyen bir hale geldi.

Post-Sovyet sanayisizleşmeye Azerbaycan'da paradoksal şekilde teknik eğitimin yaygınlaşması eşlik etmekteydi. Bunun nedeni yüksek öğrenimin rolünün bir toplumsal prestij kaynağı ve askerlik hizmetinin ertelenmesine yarayan araç olarak değişmesiydi. Bu durum, pek çoğu kendi mesleğini yapmayan diplomalı mühendislerin aşırı üretimine ve mühendislerin mesleki prestijlerinin azalmasına yol açtı. Ekominin piyasalaşması ve sanayisizleşme ile mühendislik, modernleşmenin sembolik yol göstericisi olma rolünü kaybetti. Sanayisizleşme ve devletin meslekleri denetleme görevinden kısmen geri çekilmesi de mühendislerin devlet bürokrasisinden uzaklaşarak siyasi karar alma süreçlerine olan etkilerini azalttı.

## Bulgular

Mühendislikteki dönüşümün araştırımada ele aldığım üç boyutunun ilkine, yani çalışmaya atfedilen anlama bakacak olursak, önemli değişiklikler görülebilir. Sovyet döneminde eğitim almış mühendisler için çalışma sıklıkla merkezi bir değer, kendini gerçekleştirmeye ve gurur kaynağıdır. Bu mühendisler çalışmayı ilginç, yaratıcı ve anlamlı olarak tanımlamakta, kendi başarıları ve Sovyetler'in bilim ve teknolojideki ilerlemeleri ile gurur duymaktadırlar. Sovyet mühendislerinin çalışma ile ilgili değerlendirmelerinde ücretlerle ilgili kıstaslar pek fazla öneme sahip değildir. Bu, ücret önemli olmadından değil, fakat sorunsal bir bağlam taşımıdığını dandır: Sovyetler Birliği'nde ücretlere primler ve cömert sosyal yardımlar eşlik etmekteydi. Bu mühendislerin pek çoğu Sovyetler Birliği'nin çöküşünü ve takip eden sanayisizleşmeyi, tüm emeklerini yok eden bir felaket olarak deneyimlediler. Sovyet sanayi bağlantılarının yok edilmesi, Azerbaycan'daki mühendisler için uygun işlerin kapsamını, özellikle de imalat sanayiinde, büyük ölçüde daralttı. Ancak petrol ve inşaat sektörlerinde de yeni fırsatlar ortaya çıktı. Sovyetler dönemindeki "altın yıllar"ın tersine, post-Sovyet dönemde çalışma sıklıkla hayatı kalma mücadeleisinin bir parçası olarak deneyimlendi. Sonuç olarak, çalışma araçsallaştırıldı, yani bir kendini gerçekleştirmeye kaynağı olmaktan çıkıp, hayatı kalma için zorunlu olan bir gelir kaynağına dönüştü. Sovyet dönemi mühendisleri bu değişimden özellikle üzüntü duymaktadırlar. Gözlemlenen bir diğer ilginç gelişme ise post-Sovyet dönemde ortaya çıkan mesleki otonomi değeridir: Sovyet kurumlarına sadakat konusunda sorun yaşamayan mühendisler, özel sektörde başka kişiler için çalışmayı zor bulmakta, bunun yerine kendi işlerinde, uluslararası şirketlerde veya kamu kuruluşlarında çalışmayı tercih etmektedirler.

Çöküş ve kesinti anlatılarının aksine, post-Sovyet mühendislerin çalışma yönelimleri bir tür evrim ve sürekliliğe işaret etmektedir. Çalışma motivasyonlarının genel yapısındaki ana bileşenler aynı kalmış, ancak çalışmanın bireysel yaşamdaki önemi değişmiştir. Post-Sovyet mühendisler arasında kendini

gerçekleştirme artık iş hayatında aranmamaktadır ancak çalışma, anlamlı bir hayatın hala bir parçasıdır. Anlam ve kendini gerçekleştirme artık bireysel olarak inşa edilmektedir. İlginç bir işe çalışmak, kariyerde ilerleme ve gelir, bu sürecin parçalarıdır. Çalışmaya dair yüklenen anlamda Sovyet ve post-Sovyet görüşler, çalışma ve boş zaman'ı içeren bütüncül bir hayat amacında birleşmektedirler. Sovyet döneminde bu türden bütüncül bir hayat anlayışı, resmi ideolojik anlatının parçası olan “kişiliğin çokyönlü gelişimi” terimi ile ifade edilmektedir. Post-Sovyet mühendisler için benzeri bir fikrin “insanın kendi patronu olması” kavramı ile sürdürdügü sonucuna ulaşılabilir.

Bu araştırmmanın ikinci bulgusu, mühendislerin mesleki yaşamlarında enformel pratiklerin rolü ile ilgilidir. Azerbaycan'da Sovyet döneminde kayırmacılık, rüşvet gibi enformel pratikler yaygın olsa da, post-Sovyet dönemde bu pratikler devlet ve toplum arasındaki ilişkiyi tamamen belirlemeye başlamıştır. Mühendisler kariyerleri boyunca pek çok durumda enformel pratiklerle karşılaşmakta ve gerçekleştirmektedir. Bu nedenle yüksek öğrenim kurumlarında rüşvet neredeyse evrensel kural haline gelmiştir. İş bulmada resmi kurumların yokluğunda enformel bağlantılar iş bulma için elzem hale gelmiştir. Devlet bürokrasisinde bir hamının olması özel bir işletmeye sahip olmak için şarttır. Özel sektörde kariyerde ilerlemek sadece –genellikle akrabalık ve coğrafi kökene dayanan– himaye ağrı üyeleri için mümkündür. Bu pratikler mesleki standartların evrenselliğine zarar vermektedir ve formel mühendislik eğitimi almış kişilerin toplum nezdindeki değerini düşürmektedir. Fakat belirtmek gerekir ki aynı zamanda mühendisler de profesyonelliği ve mesleki standartları, kendi anladıkları şekilde, muhafaza etmek için enformel pratikleri kullanmaktadır. Bu nedenle mühendisler de mesleki ağlarını iş arama ve istihdam için kullanmış; formel mühendislik eğitiminin kalitesindeki düşüşe direnmek ve mesleki bilgilerin aktarılması için enformel akıl hocalığı yapmış; bürokratik engelleri aşarak işlerinin devamını mümkün kılmak için devlet dairelerinde bulunan himaye bağlantılarını kullanmışlardır. Ancak bu çabalar bilgi aktarımı konusunda önemli olsalar da, eğitimde ve mesleki standartlarda yaşanan keskin düşüşü tersine çevirmekte yetersizdir. Bu nedenle işyerinde enformel akıl hocalığı yapmak, genç mühendislerin formel eğitimlerinden

kaynaklanan eksiklikleri giderip mesleki yeterliklerini artırmalarına yardım etse de, bir bütün olarak eğitim sistemi üzerinde örgütlü bir baskı oluşturarak kalite düşüşü ve rüşvete karşı mücadele etmekte işlevsizdir. Bireyler arası güvene dayalı enformel mesleki ağlar küçük çaplı kalmaya devam etmektedir. Sovyetler Birliği'nin birbiri ile dikey ilişkili kuruluşlarında oluşan bu ağlar, oldukça güçlü ve bu nedenle de dışlayıcı olabilmekte, bu da farklı ağlar arasında ilişki kurulmasını güçlendirmektedir. Devlet sektöründeki rüşvet ve himayeciliğin yaygınlaşması genel olarak toplumsal güvenin gelişimini engellemekte ve bu küçük ağların dışlayıcılıklarını daha da tahlkim etmektedir.

Üçüncü boyutta, yani mühendislik mesleğinin küresel ekonomi ile bütünlüğüne bağlamında iki süreç özellikle önemli görünmektedir: petrol üretiminin ulus-aşırı şirketlere açılması ve yabancı teknolojilere serbest erişim. Bu akımların her ikisi endüstriyel üretimin küresel yeniden yapılanmasının bir parçasıdır ve Azerbaycan henüz sadece küresel petrol ve gaz üretimi ağlarının arama ve üretim aşamalarına dahil olmuştur (Bridge 2008). Halihazırda Azerbaycan neredeyse tüm diğer küresel üretim ağlarında tüketici konumundadır. Azerbaycan petrol üretim sanayiini 1994'te yabancı yatırıma açmış, ve o dönemde bu yana devasa boyutlarda yabancı yatırımı cezbetmiştir. Azerbaycan'da petrol sanayiinde faaliyet gösteren ulus aşırı şirketlerdeki çalışma deneyimi, küresel olarak istihdam edebilen, uluslararası hareketliliğe sahip bir mühendis sınıfı ortaya çıkarmıştır. Ancak bunların sayısı düşüktür ve bu gruba dahil mühendisler arasında Azerbaycan'dan göç etme oranı yüksektir.

Petrol gelirlerinin artması, ikincil bir süreci de belirlemiştir: Azerbaycan'ın artık bedelini karşılayabildiği yabancı teknolojilerin büyük ölçeklerde satın alınması. Ancak bu teknolojilerin satın alınmasında mühendislerin karar alma ve gerçekleştirmeye süreçlerine katılımı düşük olmuştur. Mühendislerin alınan teknolojiyi yeniden üretmeleri beklenen Sovyet teknoloji transferi programlarının aksine, mevcut halde çoğunlukla kendi üretmedikleri teknolojileri işleyen teknisyen konumundalar. Yabancı teknolojiye erişimin mümkün olması, araştırma ve tasarım gibi Sovyet dönemi çalışma alanlarından bazılarını işlevsiz hale getirmiştir.

Mühendislik mesleği için bu durum Azerbaycan'da araştırma, tasarım, test, üretim, inşa, tedarik, işletim ve bakım gibi öğeleri içeren neredeyse tam bir teknolojik süreç döngüsünden üretim zincirleri içinde inşa, tedarik ve işletim segmentlerine kaymayı beraberinde getirmiştir. Yaratıcı veya kavramsal yaklaşımlar gerektiren mühendislik görevleri, soyut düşüncce ve yüksek teknik uzmanlık artık Azerbaycan'da artık revaçta değildir.

Özetlemek gerekirse, Sovyet sonrası dönemde Azerbaycan'da mühendislik mesleğinin dönüşümü son derece eşitsiz ve heterojen bir süreç olarak gerçekleşmiştir denebilir. Bu dönüşümün altında yatan en önemli dinamik, devlet ile toplumun aynı derecede eşitsiz ve heterojen şekilde ayrışmasıdır. Devletin, daha önce bulunduğu konumları ve yerine getirdiği işlevleri kısmi ve eşitsiz bir şekilde terk etmesi sonucunda mühendislik mesleği mensuplarının çeşitli konularda inisiyatifleri zayıflamış, bunun yanı sıra sanayisizleşme ile de mühendislerin devlet bürokrasisi içerisindeki üst düzey konumlardan uzaklaşması söz konusu olmuştur. Bu sürecin en önemli boyutlarından bir tanesi devlet iktidarının enformelleşmesi ile üst düzey mevkilere yapılan atamalarda kan bağı ve bölgesel kökene dayalı kayırmacılığın önemli bir faktör haline gelmesidir. Sovyet deneyiminin aksine mühendisler artık kendilerini uzmanlık sahibi olmayan yöneticiler tarafından alınan kararlarla karşı karşıya bulmaktadır. Bu durum, yasal otoriteye kıyasla geleneksel otoritenin (Weber 1978) daha geçerli hale geldiğine işaret etmektedir ve temelde mesleklerne neo-Weberci yaklaşımın öngördüğü (MacDonald 1995) uzmanların tekeli hakimiyetini olanaksız hale getirmektedir.

Devlet iktidarının enformelleşmesi eş zamanlı olarak işyeri otonomisinin de erozyona uğramasına neden olmuştur. Sovyetler Birliği'nin son dönemlerinde Sovyet sanayiinin bürokratik örgütlenmesi (detaylı bir incelemesi 1. Bölüm'de yapılmıştı) mühendisler de dahil olmak üzere tüm çalışanlar için oldukça geniş bir hareket alanı sağlayan işyeri otonomisi yaratmıştır. Ancak Sovyet sonrası dönemin çok daha kişiselleşmiş iktidarı ve otoritesi mühendisleri, genellikle uzmanlık alanı mühendislik olmayan kendi yöneticilerine çok daha bağımlı hale getirmektedir. Bu hem kamu kuruluşlarında hem de özel sektörde yaşanan ortak bir süreç olsa da,

özel şirketlerde çalışan mühendisler otonomilerinin kısıtlanmasına yönelik daha büyük müdahaleler ile karşılaşlıklarını bildirmektedirler. Kısıtlanan işyeri otonomisi ve düşük ücretlerin bir araya gelmesi neticesinde çok sayıda mühendis kendi meslekleri haricinde veya dahilinde, hem formel hem de enformel çalışma olanaklarını zorlamaya başlamışlardır.

Bu çalışmada elde edilen ve bütünüyle incelenemese de daha derinlikli bir araştırmayı hak eden bir diğer konu da kişilerarası güvene dayalı küçük mesleki ağların ötesinde bir dayanışmanın hiç bir şekilde bulunmamasıdır. Post-Sovyet dönemde özel sektör tarafından istismar edildiklerini belirten mühendisler arasında bile sınıf bilincine dair herhangi bir ifadeye rastlanmamıştır. Bu durum, “sınıf mücadele” kavramı kültürel repertuarlarına Sovyet döneminden miras kalmış olmasına rağmen böyledir. Sömürük karşısında tercih edilen strateji kolektif eylem, hatta kolektif eylemin sadece söylemsel düzeyde dile getirilmesi yerine özistihdama yönelme şeklinde olmuştur. Mühendislerin sınıfı sadakatleri, 1960’lar ve 70’ler Türkiye’sindeki sol siyasi aktivizmden (Göle 1986, 2012) mühendislerin kendilerini yönetici sınıfın bir parçası olarak gördükleri Amerikan deneyimine (Cech 2013; ayrıca bkz. Meiksins ve d. 1996: 12-18) uzanan geniş bir yelpazede çeşitlilik göstermektedir. ABD bağlamında depolitizasyon ideolojisi ve meritokrasi, toplumsal adalet sorunlarının, örneğin sınıfı eşitsizliklerin, farkındalığının karşısındaki engeller olarak tanımlanmışlardır (Cech 2013). Benzer şekilde post-Sovyet nükleer biliminsanları üzerine yapılan bir araştırma da toplumsal bilinç eksikliğine işaret etmektedir (Gerber ve Ball 2002). Benim elde ettiğim veriler de toplumsal ve siyasal konulardaki endişelerin formüle edilmesi sürecinde söylemsel düzeyde depolitizasyonun, veya “bilim”的 “siyaset”ten, “bilgi”的 “iktidar”dan ayrıştırılmasının önemine işaret etmektedir (bkz. 5. Bölüm). Ancak bu süreçte sınıf farklılıklarının önemini küçümseyen ve işçi sınıfına karşı belirgin şekilde eleştirel bir yaklaşımı temsil eden daha genel bir post-sosyalizm durumundan da bahsetmek mümkün olabilir (Kideckel 2002, Stenning 2005).

Bu konu kapsamında değerlendirilmesi gereken son başlık mühendislik mesleğinin post-Sovyet dönemde geçirdiği tabakalaşma sürecidir. Çok gaz ve petrol

sanayiinde faaliyet gösteren ulus-aşırı şirketlerde çalışan küçük bir grup mühendis küresel profesyonel sınıfına katılabilmiş, gelir ve yaşam standartlarını önemli ölçüde yükseltebilmiştir. Buna karşın mühendislik mesleği mensuplarının büyük çoğunluğu sanayisizleşme sürecinin gerçeklikleri ile yüz yüze gelmek zorunda kalmışlardır. Burada değinilmesi gereken önemli bir husus, mühendislerin post-Sovyet hareketliliğinde meslek dışı faktörlerin rol oynamasıdır: teknik uzmanlıklarını değil, devletin ekonomi stratejileri, devlet bürokrasisi ile olan formel ve daha da önemlisi enformel bağlantılar, küresel mesleki kuruluşlara erişim ve dil becerileri, mühendislerin toplumsal hareketliliğini belirleyen etkenlerdir. Weber'in terminolojisi ile ifade etmek gerekirse statü ve gücün, yani petrol sanayiinde istihdam edilmiş olmak ve kayırmacılık ağlarına dahiliyet, mühendislerin post-Sovyet tabakalaşmasında, yani piyasada “gelir firsatı”nı (Weber 1978: 926-39; 304) oluşturan kendi kişisel kabiliyetlerinden daha önemli bir rol oynamıştır. Parti üyeliğinin mühendislerin sosyal yapı içerisindeki konumlarını belirlemeye rol oynadığı Sovyet döneminden farklı olarak post-Sovyet dönemde iktidar yasal değil geleneksel otoriteye dayanmaktadır.

Post-Sovyet dönemde devlet, hem Anglo-Amerikan tarihsel deneyimindeki gibi düzenleyici bir role, hem de Sovyet dönemindeki gibi her yerde mevcudiyete sahip olmaktan önemli ölçüde uzak olsa da, mühendislik mesleğinin örgütlenme pratikleri üzerinde önemli bir aktör olarak kalmaya devam etmektedir. Bazı denetleme işlevleri, örneğin eğitim ve sanayi politikaları, halen mevcuttur, ancak asıl gelişme devletin ve onun bürokratlarının devlet kaynaklarına, sözleşmelere ve iş olanaklarına erişimi sağlayan kapı denetçilerine dönüşmüştür. Bu denetçiler söz konusu fırsatlara erişimi bir yanda yerel mühendislere ve girişimcilere, diğer yanda ise yerel sanayi ve yabancı yatırımcı piyasasına sağlayabilmektedirler. Şunu da belirtmek gerekir ki Sovyet döneminde eğitim almış mühendislerin büyük çoğunluğu, mesleklerinin gelişiminde temel sorumluluğu devletin üzerinde görmektedir. Sovyet döneminde yetişmiş mühendisler istisnasız şekilde eğitimdeki mevcut duruma, yani yüksek öğrenimde kalitenin düşmesi konusuna son derece eleştirel yaklaşmakta ve bu durumdan tamamen devleti sorumlu tutmaktadırlar. Bazı örneklerde bu durum, yönetilmesi daha kolay olan az

eğitim almış bir toplum yaratma amacıyla bilinçli bir politika olarak değerlendirilmiştir. Ancak belirtmek gerekir ki benim topladığım veri, devletin yüksek öğrenimdeki rolüne dair net bir değerlendirme yapmaya izin vermemektedir. Bu nedenle, Azerbaycan'da hem kamu hem de özel üniversitelerde özellikle eğitimin organizasyonu ve kalitesini karşılaştırmalı olarak ele alabilecek araştırmalara ihtiyaç vardır. Mühendisler ayrıca Azerbaycan'da mühendislik mesleğinin uzun vadeli geleceğinin nihai olarak devlete, ya da daha net bir ifade ile devletin ekonomik kalkınma stratejisine bağlı olduğunu düşünmektedirler. Mühendisler açısından bu konuda izlenmesi gereken yol devlet öncülüğünde, ancak gelişmiş yabancı teknolojilere de erişimi sağlayacak bir sanayileşme stratejisidir. Ancak benim gördüğüm ve daha önce devlet bürokrasisi içerisinde önemli mevkilerde bulunmuş olan mühendisler, artık mesleklerinin karar verme süreçlerine hiç bir etkisi olmadığını düşündüklerini belirtmişlerdir.

Azerbaycan'da mühendislik mesleğinin uzun vadeli geleceği nihai olarak devletin ekonomik kalkınma stratejisine bağlıdır. Bu araştırmanın saha çalışmasının yürütüldüğü iki yıl boyunca petrol merkezli kalkınma yerine yerel üretime ve yeniden sanayileşmeye vurgu yapan bir kalkınma stratejisine geçişin işaretleri ortaya çıkmaya başlamıştı. En azından söylemsel düzeyde de olsa, Devlet Başkanı İlham Aliyev konuşmalarında petrole bağımlılığının azaltılmasının gerekliliğini vurgulamış, hatta Azerbaycan'ın gelecekteki kalkınması için ithal-ikamesinin kullanabileceğini belirtmiştir. Petrol fiyatlarında yaşanmakta olan sert düşüş, bu tür bir stratejiyi daha cazip ve gerçekçi hale getirmektedir. Bu tür bir strateji değişikliği ortaya çıkığı takdirde Azerbaycan'da mühendislik mesleği yeni bir büyük çaplı dönüşümü yaşayabilir.

## **APPENDIX E.**

### **TEZ FOTOKOPİSİ İZİN FORMU**

#### **ENSTİTÜ**

- Fen Bilimleri Enstitüsü
- Sosyal Bilimler Enstitüsü  x
- Uygulamalı Matematik Enstitüsü
- Enformatik Enstitüsü
- Deniz Bilimleri Enstitüsü

#### **YAZARIN**

Soyadı : Sayfutdinova  
Adı : Leyla  
Bölümü : Sosyoloji

**TEZİN ADI** (İngilizce) : The Transformation of Engineering  
Profession in Post-Soviet Azerbaijan

**TEZİN TÜRÜ** : Yüksek Lisans  Doktora  x

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir.
2. Tezimin indekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir.
3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz.  x

#### **TEZİN KÜTÜPHANEYE TESLİM TARİHİ:**