HEALTH, TECHNOLOGIES, AND POLITICS IN POST-SOVIET SETTINGS: **NAVIGATING UNCERTAINTIES**

Edited by
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Health, Technologies, and Politics in Post-Soviet Settings

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Navigating Uncertainties

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Preface

The contributions that form this volume took shape during two conferences held in Tomsk, Russia, in 2014 and 2015. These two conferences were a part of an ongoing international conference series entitled 'Social Sciences & Health Innovations', jointly organised by the National Research Tomsk State University and Maastricht University along with the participation of Siberian State Medical University and European University at Saint-Petersburg. Funding from the Higher Education Support Program and Limburg University Fund/SWOL enabled the conferences to convene. The conference series explores the dynamics of health innovations by engaging perspectives from the social sciences, including science and technology studies (STS), medical anthropology, sociology, and history. Furthermore, it is meant to serve as a platform to facilitate dialogue between disciplines, sectors, and geographies. The conference series considers health innovations on different levels (from bedside to national health systems and global programs) and of different kinds (from pharmaceuticals, devices, procedures, to delivery methods and organizational structures).

The overall theme of the book is the result of the 'Social Sciences & Health Innovations' conference series unique interest in the engagement between scholars and practitioners working in the field of health innovations in the post-Soviet region and globally. The post-Soviet region remains underexplored and underrepresented in global research as well as

in discussions pertinent to health and society. With this book we aim to bring more attention to the specificities of these settings and to facilitate mutual learning.

We thank all the participants of the 'Social Sciences & Health Innovations' conferences and staff involved in the organisation of these events over the years. Also we express our sincere appreciation to the members of the Policy Analysis and Studies of Technologies Centre at National Research Tomsk State University and the Department of Health, Ethics, and Society in Maastricht University. We are grateful to Jessica Mesman, Eduard Galazhinskyi, Vladimir Demkin, and Evgenii Kulikov have served on the Conference Advisory Committee in different years; Olga Melnikova who contributed greatly to making the series and this book possible; and Rob Houtepen and Lloyd Akrong for providing feedback and encouragement. We thank Abel Polese who helped to improve the parts of this book that concern the studies of informality. A special thank you goes to Jean Kollantai for proofreading various versions of the manuscript and providing helpful tips for improvement. We are very grateful to the editorial team and to Palgrave Macmillan for their support, and to the anonymous reviewers who helped to improve the volume considerably.

Finally, we thank the authors of the chapters for all the time and hard work they have invested in making this book. Preparing it has been a learning process for all involved and one we have thoroughly enjoyed!

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2017

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Introduction. Dealing with Multiple Uncertainties in Post-Soviet Health, Technologies, and Politics

Olga Zvonareva and Klasien Horstman

Contemporary societies are imbued with uncertainties. Yet, there are settings where uncertainties multiply, making decisions, practices, and relations in everyday life precarious. Post-Soviet locations are among such settings, where uncertainties multiply, and actors are left to navigate them at their own risk. This book investigates how actors deal with the uncertainties that permeate the interfaces of health, technologies, and politics in post-Soviet settings. It makes visible rich repertoires of skills, innovation,

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and creativity in navigating continuous flux, surviving instability, and exclusion. In so doing, this book encourages critical learning about ways to ensure the resilience of individual and societal health in situations of profound uncertainties. Our project is to set two worlds in dialogue: the world of science and technology studies (STS) and the high-income liberal democracies of the West which this discipline has mostly focused on to date, on one hand, and studies of post-socialism and post-Soviet settings, on the other, to allow these worlds to learn from each other.

Let us begin by using the example of HIV/AIDS to show what 'multiplying uncertainties' means here and how these uncertainties permeate health, technologies, and politics in the settings in question.

In December 2016, the Russian Academy of Sciences (RAS) proclaimed that it would innovate a strategy of combating the HIV/AIDS epidemic in the country. Instead of the promotion of traditional family values that had dominated the local disease control measures to date, academics insisted on moving towards a more 'scientifically sound' approach. During a dedicated meeting of the Academy's council on December 28, Vadim Pokrovsky estimated that currently 1.5 million Russian citizens were infected with HIV and predicted that in five years that number would grow to 2 million. The scientist went on to explain that the HIV epidemic was halted in Germany, for example, by sensible prevention measures, including sex education for adolescents, legalisation of prostitution, and medical surveillance of sex workers, as well as opioid substitution therapies for drug users, and needle and syringe exchange programmes. Academics criticised Russian officials for being, in the words of Anatoly Vishnevsky, 'embarrassed to say the word condom'; the mass media for focusing on Ebola and Zika, which had not killed a single Russian citizen, instead of discussing HIV/AIDS, which had already claimed 240,000 lives in the country; and decision makers for not funding HIV/AIDS research. One after the other, the speakers called for 'science-based' efforts to combat the epidemic and stressed the significance of this development for the country's future and its very existence ('Who will need missiles, when we won't have population in the country in fifty years?'). They also highlighted the importance of supporting HIV/AIDS science for the national economy ('If you do not invest in your own science, you will be buying foreign drugs') and international standing ('Otherwise Russian scientists will never catch up with Western ones'). At the end of the meeting, the RAS vice-president concluded that the matter of science-based

HIV/AIDS control measures was a political issue, admitting that implementing sex education, opioid substitution therapy, and harm reduction strategies required 'political decision', and that the RAS must work closely with the state decision-makers to make this innovation possible.

This episode illustrates the complex relations between health, technologies, and politics. We see how the issue of HIV/AIDS prevention and treatment becomes linked with morality. The participants in the RAS council meeting present an apparent dichotomy between the idea that health policies should contribute to a 'pure' and 'virtuous' society through promoting 'family values', and a disease-control approach that emphasises decreasing the numbers of new infections through science-based methods and appears to have little concern for the moral characteristics of the citizens. We see how the topic of HIV/AIDS plunges us into debates about the role of technoscience in societal development. Would knowledge and technologies improve the society's well-being through helping to contain the epidemic, or would they stimulate the erosion of 'traditional' boundaries to the point of eventual societal downfall? We also see struggles over national identity, sovereignty, and visions of the national future when different approaches to combating the HIV/AIDS epidemic tap into different visions of what Russia is and should be.

Interfaces between health, technologies, and politics with regard to HIV/AIDS in Russia remind us of what has been so convincingly articulated by STS scholars. They have shown that decades of technoscientific development did not eliminate uncertainties, but, instead, have stimulated the emergence of new questions and dilemmas. Numerous studies of interdependencies between health, technologies, and politics in various parts of the world attest that decisions about how to improve people's health continue to be made amidst the greatest uncertainties. The development of new reproductive technologies, for example, has made in vitro fertilisation (IVF) a routine procedure in many countries but also stimulated debates on the moral status of embryos and the meanings of kinship, with politics seeping into protocols that detail who is eligible for publicly financed treatment, the flow of ova between countries, and donor selection practices.

While STS research has demonstrated how the dynamics of health, technologies, and societies go together with new uncertainties, there is something about the meeting at the RAS that also sets it apart from much

of the STS literature on the topic. It is difficult to gather this distinctiveness only from reading about the episode. But by zooming out of it to take a broader look at the context where it is embedded, one would notice multiple uncertainties of a different kind. The RAS, the most important organisation representing scientists in Russia, has recently undergone sweeping government-initiated reforms and lost its independence and property; its status, form of existence, and future prospects are uncertain. Health-care provision is precarious because of the rapidly changing regulations. For example, the centralisation of procurement procedures urgently designed by the Ministry of Health to combat price increases and corruption has resulted in critical shortages of antiretrovirals in several Russian regions at the beginning of 2017—or so the patients claim, while officials disagree. Plans have been announced by another governmental body for foreign-produced antiretrovirals to be excluded from the state-financed reimbursement programmes. How, then, will the quality and availability of the locally produced substitutes be ensured? What else will be changed and when, and how will it play out in practice? In this brief outline, one senses uncertainties that exceed those linked to the limits of science in informing the governance of society, uncertainties that can be linked to specific characteristics of political processes in post-Soviet settings. Apart from uncertainties linked to advances in technoscience itself, the post-Soviet health domain is characterised by multiple and profound uncertainties borne out of rapid societal transformations, major instabilities in governance arrangements, and non-transparent and often exclusionary decision-making. To understand the costs and consequences of these multiple uncertainties, we need to study how they are dealt with in practice. The specific focus of this book is on how actors in post-Soviet settings navigate these uncertainties in healthcare, public health, and research and development (R&D), and what the implications of their chosen navigation routes are for relations between health, technologies, and politics.

Now that we have discussed the emergence of multiple uncertainties in post-Soviet settings and their relation to health, technologies, and politics as the focus of the book, let us situate our work among the relevant bodies of literature. In our undertaking, we bring together insights from the two domains of scholarship that, for the most part, have flourished independently from each other: first, STS research on health, technology, and

politics and, second, studies of post-socialism concerned with informality. To date, the body of STS literature has provided many insights about the mutual influence of science, technology, and society but has paid little attention to the multiplication of uncertainties related to health, technology, and politics in post-Soviet settings and ways in which they are dealt with. Post-socialist studies of informality have highlighted informality as one of the defining elements of post-socialist societies: it is understood as an instrument used in various forms by citizens to deal with the absence of formal state-defined processes and structures or with their inadequacy. Yet this literature has tended to bracket technology and uncertainties associated with technologies themselves. By drawing on these two scholarship domains, the book explores the dynamics of health, technologies, and politics in settings where healthcare, public health, and R&D are continually destabilised. For the purposes of this book, we take technology broadly to include artefacts as well as non-physical, systematic methods of making or doing things (Hecht 2009, p. 15).

This book explores how multiple uncertainties evident in the post-Soviet health domain are navigated and the implications of navigation routes that actors develop. This implies, first, a specific reading of politics not only as formal policy procedures but also as everyday (informal) practices. Inspired by the STS tradition of looking for politics beyond official spaces, such as state regulatory structures, parliaments, and policies, we also locate politics in doctors' offices, laboratories, treatment standards, and health technologies, and by studying the operation of politics in practice. This fits well with how studies of informality propose to understand messiness and incoherence in large-scale political transformations on the ground. Second, as a consequence, the book does not delve into comparative analysis of political regimes in post-Soviet countries. Numerous studies of post-socialism have documented the dramatic transformations that the countries of the former Soviet Union underwent following the USSR's collapse, and the diversity of political arrangements they arrived at, with many refusing to live up to the widespread expectations of thorough democratisation. The value of this book is rather different. We use cases reported by a number of researchers to develop an understanding of the work involved in navigating the multiple uncertainties evident in the post-Soviet health domain generally, despite the individual differences of the countries of the former Soviet

Union. Although the book does not represent all countries of the former Soviet Union, it aims to analyse the costs and consequences of multiple uncertainties characteristic of the post-Soviet health domain. In this way, our focus is not so much on policies, regulations, or state regulatory structures; nor is it solely on day-to-day production of certain health technologies or functioning of a specific health-care facility or system. Rather, the focus is on the interaction between the two and the trade-offs involved.

The book as a whole contributes to extending the enquiry into ways in which health and technology become entangled with political processes and with the production, exercise, and contestation of power, to settings outside of established liberal democracies, which have been the main focus of existing research on the topic. The cases comprising this book provide new resources for learning about choices that may be made in conditions of shifting rules and destabilising governance arrangements that multiply the uncertainties to be navigated in practice and the consequences of such choices. Such learning resources acquire a particular significance globally now, when even long-established liberal democracies of the West are becoming less predictable, and global political arrangements appear increasingly fragile.

In the rest of this introductory chapter, we introduce the main scholarly fields the book draws on and sketch relevant developments in post-Soviet settings. To be sure, these introductory sections are to provide background for the book and do not aim to fully cover these fields and discussions therein, but an interested reader will find many references for further reading. We first introduce ideas from the field of STS that are an important source for understanding the interdependencies of health, technologies, and politics. To grasp the multiple uncertainties in the domain of health in post-Soviet settings, we then outline the social-political developments following the dissolution of the USSR and the challenges for health, healthcare, and science and technology in these settings. Since the scholarship on post-socialism and informality is highly relevant for understanding the skills and agency of people in navigating uncertainties in the post-Soviet public sector, we then introduce this literature. The chapter concludes with an outline of the remainder of the book.

Understanding the Relations of Health, Technologies, and Politics: Insights from STS

The example of HIV/AIDS above may appear to suggest a totalising view of the influence of politics over science, technology, and health, where the latter are being forcefully directed and shaped by the former. However, STS research on health science and technologies suggests a more nuanced picture indicating mutual influence and interaction. These ideas from the STS field provide a helpful resource for studying health, technologies, and politics in post-Soviet settings.

Most important is that STS scholarship indicates the mutual shaping of society, science, and technology, rejecting both the possibility of social determination of science and technology and technoscientific determination of society. Recognising this mutual shaping is important, according to Jasanoff, to 'make sense of the untidy, uneven processes through which the production of science and technology becomes entangled with social norms and hierarchies' (Jasanoff 2004, p. 2). For example, Zvonareva (2016) explored the co-shaping of the Soviet pharmaceutical industry and Soviet politics. The study demonstrated that, on one hand, the organisation of the Soviet pharmaceutical industry was modelled to reflect an imaginary future society, where efficiency and rationality are achieved through excluding private monetary profit opportunities, and science and technology are employed to transcend inequalities, in explicit opposition to capitalist systems. On the other hand, Soviet pharmaceutical technoscience was an integral part of the wider socialised health-care system that allowed not only articulating the Soviet vision of society within the country but also shaped the Soviet foreign policy agenda, allowing the pursuit of the project of expanding the communist regime to engage other countries. Also, this study explored the formation of the culture of collecting and evaluating evidence in the USSR's drug development, showing how particularities of this culture, such as rejection of the three-phase clinical trial system introduced in the USA in the 1960s, allowed a vivid articulation of the Soviet ideals and also allowed making political claims for the superiority of the Soviet vision of society. This analysis suggests that politics, health, and technologies in the USSR mutually underwrote each other's existence.

STS studies indicate that nowadays health technologies also become entangled with wider processes and dilemmas related to political identity and (re)construction of nationhood amidst turbulent geopolitical landscapes. Sunder Rajan (2006) argues that genomic R&D in India is being configured in line with the national project to become a strong player in the global marketplace. In these efforts, 'The Indian state[…]frames itself as a market entity engaged in "corporate fights" with the Western industry' (Sunder Rajan 2006, p. 70). One of the critical points of contention for the Indian state here is benefit sharing. With local population being a rich source of valuable genomic data, it requires that intellectual property rights are granted to Indian organisations when genetic material from India is used extensively in international research, which has resulted in much disagreement and conflict in the globalising genomics field. It is therefore important to understand and reflect on how macropolitical commitments and considerations are being entangled with health and technologies.

The arena of health and technologies is densely populated with micropolitical struggles as well. Political processes here are not confined to state legislative offices charged with policymaking but rather pervade the organisation and practice of producing and using technologies for health. An example of the pervasiveness of politics in the arena of health and technologies comes from the field of drug innovations. Brazil's highly acclaimed response to the HIV epidemic, when in 1996 it became the first developing country to institutionalise universal access to antiretroviral drugs, was made possible by a multitude of actions and influences. These included activists who demanded access to recent therapies and HIV patients who filed legal suits to force government to maintain the inflow of medicines; Brazilian officials who challenged and renegotiated patents and pricing structures of global pharmaceutical companies; industry that invented new ways of making profits in emerging markets; and the contributions of non-human actors as well, with Brazil's generic drug production infrastructure doing much to lower the costs of therapy (Biehl 2007). That is, health technologies can become 'enrolled in relations of conflict and power' (Brown 2009: xii) in diverse spaces, including physicians' offices, court proceedings, and the work of NGOs and R&D facilities. Biehl (2007) further points out that the implementation of

Brazil's HIV policy 'raises an array of micropolitical questions' (p. 1110) because the poorest HIV patients, including homeless, tend to remain outside the system, rarely becoming activists, engaged instead in day-to-day 'politics of survival'. With no political voice, their individual experiences and needs have been 'both disregarded and made invisible' (p. 1119), and the pharmaceuticalised HIV public health programme has paid little attention to the dire conditions of their lives and to the dismantling of institutions of care more generally (Biehl 2007). Since technologies may have unintended (health) consequences generated, for example, through disequalising dynamics and potentially exclusionary and disempowering organisation, it is equally important to illuminate microlevel political stakes and struggles.

The work of STS scholars provides resources relevant to this study of politics, technologies, and health in post-Soviet settings. Irwin (2008) suggests that the approach described here, that recognises mutual shaping of society, science, and technology, has a number of practical implications. First, political power is not just contained within specific institutions but is co-produced 'within particular governance practises, sociotechnical interactions, and cognitive assumptions' (p. 589). Therefore, it is important to study politics in everyday practices in healthcare, research, and development settings, going beyond formal policies and regulations. Second, STS scholarship suggests that straightforward demarcation of what is political is problematic. In several works, Latour has demonstrated how science and politics cannot be clearly separated but rather are mutually constructed. Studying the work of Pasteur, Latour (1993) showed how the scientist linked microbes that he isolated in the laboratory and various societal interests in a network of allies, thus doing political work and consequently transforming the world through innovations in sanitation and hygiene. This work suggests that demarcations between science and politics, and identification of such categories as objective knowledge, values, expertise, and public opinion are not a stable part of 'reality', but are fluid and negotiated. These insights are important for understanding the dynamics of politics, technologies, and health, because they signal the need to avoid making categorical judgements in advance and engage instead in critical reflection and empirical investigation, as we do in this book (Irwin 2008).

Finally, STS scholarship has paid particular attention to responding in democratic ways to interconnections between science, technology, and society by studying and advocating for citizens' involvement in governance of (health) science, technologies, and care. In this spirit, initiatives to facilitate public engagement have become more widespread, especially but not exclusively in Europe (see, for instance, Hagendijk 2004; Hagendijk et al. 2005). It is expected that introducing citizens' knowledge and concerns can make technologies and healthcare more responsive and beneficial to various population groups. Involving the public in technically complex decision-making can serve larger purposes, such as rebuilding trust in regulatory institutions by operating in a more open, inclusive, and transparent manner, as well as enhancing the legitimacy of policy processes by engaging with public concerns and views. While multiple studies have highlighted limitations of the practice and outcomes of such participatory initiatives, aspirations to make public engagement a 'normal and integral part' of the (health) policy processes (House of Lords Select Committee on Science and Technology 2000, p. 43) have facilitated the development of the infrastructure for making these aspirations possible. This infrastructure includes proliferation of innovative democratic techniques, ranging from improved consultative procedures to e-initiatives and so-called mini-publics, such as consensus conferences, citizens' juries and forums, and deliberative polls (Dryzek 2008).

Against this background, it is important to highlight that uncritically applying the STS concept of democratisation to post-Soviet settings, many of which do not have long-established democratic traditions and institutions, makes little sense. This statement can be illustrated by a study conducted by Michele Rivkin-Fish, during the 1990s, in St. Petersburg, Russia, that examined the World Health Organization (WHO) project of democratisation of maternal healthcare in the city, whereby WHO consultants hoped to promote women's social well-being, improve their health, and contribute to the larger process of bringing freedom to Russian society (Rivkin-Fish 2000). However, this project neither incorporated local knowledge nor addressed the structural relations underlying clinic-level interactions, pushing instead for universal definitions of inequality and exclusion in maternal healthcare as rooted in lack of respect for women's rights among powerful health professionals.

Consequently, physicians were asked to act democratically while continuing working in a precarious deregulated market environment. They remained blocked from influencing the larger political and economic context, which generated poverty and ill health, and unable to openly pressure state policymakers and pursue their interests. Rather than animating political empowerment, this attempt at democratisation worked to deflect attention from the inability of health-care providers and women to attain the rights they were entitled to or to demand new guarantees. Rivkin-Fish concludes that it is not surprising that the project did not achieve the results it aimed for and ended up antagonising health providers, who rejected the 'democratisation' that did not extend the benefits of democracy to them. We revisit the STS ideas about democratisation in the concluding part of this book in light of the insights provided by the different chapters.

STS scholarship is an important background for unravelling the uncertainties of health, technologies, and politics in post-Soviet settings. In the next sections, we sketch the post-Soviet transformations and their implications for health, healthcare, and R&D to understand how and why these uncertainties multiply.

Post-Soviet Transformations: Contradictions of a 'Transition' to Democracy and Markets

Let us, first, briefly sketch a general outline of post-Soviet transformations before delving specifically into the domain of health. The rapid disintegration of the Soviet Union in 1991 took many observers, both within and outside the then world superpower, by surprise. So consolidated did the country and its satellite states appear to be by the single-handed communist party rule and its centralised control over institutions and resources that it was difficult to imagine its total disappearance. Nonetheless, towards the end of 1991, one Soviet republic after another declared its independence, and on December 26, 1991, the Supreme Soviet of the USSR issued a formal declaration that the Soviet Union ceased to exist. Instead, 15 new independent states emerged. Countries of the so-called Eastern bloc that were not a part of the USSR but were

strongly aligned with it, in their politics and economy, also suddenly became free from their ties. All these states have gone through a series of political rearrangements that transformed their communist political systems, with results ranging from democracies to new forms of authoritarian rule (Ekiert and Hanson 2003).

In every country that abandoned communism at the time, especially in the countries that had been republics of the Soviet Union, astonishing transformations have taken place. The retreat of communism opened ways for the development paradigm centred around liberalisation, privatisation, and deregulation commonly associated with the Washington Consensus (Gore 2000; Marangos 2009) to arrive in these countries (Murrell 1996). The US government and various international bodies, including the International Monetary Fund (IMF) and the World Bank, promoted this set of approaches to development as the path to economic growth and societal well-being. These developments have framed the period following the collapse of the USSR as a 'transition' from central planning and communism towards a market economy and a more democratic society.

The early years of 'transition' saw an emphasis on structural adjustment, meaning 'reallocation of resources in the economy following the introduction of market forces' in the words of Jeffrey Sachs, who advised a number of governments in Eastern Europe and the former Soviet Union, including most notably Poland and Russia (Sachs 1996, p. 128). Yet in practice, reforms to initiate and sustain adjustment were far from coherent. Ideas of development through liberalisation, privatisation, and deregulation, often supported by international financial institutions, interacted with daily balancing acts between new policies, population welfare, and scarcity that local decision-makers had to perform in the midst of rapid change that they often appeared to be losing control of. Scholarship on post-socialism has documented a surprising persistence of Soviet-borne material structures, bureaucratic organisation, and social norms (Collier 2011), suggesting a nuanced view of the post-socialist transformations. In this view, the transformations were shaped by the project of marketisation and state retrenchment that can be understood as 'formal economics' just as much as they were shaped by the existing infrastructures, routines, and norms involved in satisfying

human material needs that can be understood as elements of the 'substantive economy' (Polanyi 1977) and by everyday practices spanning both economies.

An example from the field of pharmaceuticals in Russia is provided by Alexandra Vacroux (2005). She described how decision-makers on the ground, suddenly 'free' from central planning, employed divergent ways to do their job in the transforming environment:

> Russia's transformation[…]was overseen by bureaucrats who were either supporters, opponents, or opportunists. Reformers in the small, first category were convinced that Russia had to change in order to survive, and were ready to throw themselves into the implementation of reforms. Opponents (including the majority of officials that I encountered in the privatization agency in 1992 and 1993) were openly resistant to the policies they were supposed to be implementing, and hopeful that the democratic interlude would be short. Opportunists, meanwhile, positioned themselves to profit personally from new economic rules. (p. 67)

While architects of market reforms in Russia saw the state and its bureaucrats as obstacles to the country's social and economic development as well as integration in the world economy, decision-makers on the ground, confronted with decentralisation and the opening of markets, often had other conceptions of their responsibilities and tasks, and of the overall role of the state. According to Vacroux (2005), some continued to apply Soviet-era legislation, maintaining centralised medicine purchase and distribution structures in their regions, and resisting development of private healthcare. She describes an instance when '[t]he Marii El official in charge of licensing [of pharmacies] in 1996, Galina Otmakhova, had come to her post as the former director of one of the capital's largest pharmacies (Ioshkar–Ola). She didn't believe in private health care and tried hard to find problems in the license applications of private pharmacies' (p. 73).

These mixtures of economic and political reforms and changes in resource flows in the context of established material infrastructures and bureaucratic routines have shaped a diverse range of development trajectories among post-Soviet states that challenge the idea and possibility of 'transition' to a specific common destination characterised by market

economy and democracy, through a package of market reforms. Political scientist Herbert Kitschelt has argued that 'there is no region or set of countries on earth with a currently larger diversity of political regimes' than that found among the countries of the former Soviet Union and the Eastern bloc (Kitschelt 2003, p. 49). Yet at the same time, such divergences mask some similarities in relations between states, populations, and public institutions that are noticeable throughout post-Soviet societal transformations (Cerami and Vanhuysse 2009; Cook 2007). One such similarity is the multiple uncertainties faced by actors in post-Soviet settings. To understand the depth and magnitude of these uncertainties, the next sections explore how the transformations following the collapse of the USSR have affected health, healthcare, and science and technology in post-Soviet settings.

(Caring for) People's Health in Times of Societal Turmoil

Throughout the societal turmoil associated with the transformations described in the previous section, health deterioration has been common in post-Soviet countries. Life expectancy in the Soviet Union had already begun stagnating in the 1960s, increasingly diverging from that of Western Europe (Andreev et al. 2003; MacKenbach 2013). But the deterioration of health reached full force immediately following the end of the USSR. One indicator of the deterioration of health is a dramatic rise in premature mortality, particularly among males of working age. This trend was most pronounced in the Russian Federation, where by 1994, male life expectancy dropped to 57.6 years, falling from 63.8 in 1990, with other countries showing similar drops, for example, Ukraine, where male life expectancy declined from 65.7 years to 62.4, and Belarus, where it declined from 66.3 years to 63.5[1] in the same period. In that period, citizens of the countries formerly part of the Soviet Union found themselves in the midst of dislocating changes that were heightened by economic crisis with hyperinflation that eroded the value of their financial means and cuts in welfare that removed their safety net, and were marked by such trends as growth in poverty, inequalities, unemployment, and, in

many settings, violent crime. Concurrently, the transformations and breakdown of familiar institutions and social structures brought uncertainty about how to navigate the environment and make life choices. In the situation of insecurity and impoverishment, many citizens were struggling daily for survival and experiencing high levels of stress, and men in particular were engaging in hazardous alcohol consumption (McKee and Shkolnikov 2001). Scholars have identified this combination of societal change, absence of safety nets, and increase in consumption and binge drinking of alcohol as driving the unprecedented decline in health following the end of the USSR (Bobak et al. 2000; Cockerham 1999; Cornia and Paniccià 2000; Nemtsov 2002).

Slow recovery followed, with some post-Soviet countries only now having reached the level of life expectancy they had more than 25 years ago and the region as a whole lagging behind the countries of Western Europe in this regard (Rachel et al. 2014). Today, the overall burden of disease in the post-Soviet region is dominated by non-communicable diseases, with the main immediate causes of adult mortality being diseases of the circulatory system. But threats of infectious diseases, in particular HIV/AIDS and (drug-resistant) tuberculosis, persist as well. For example, in 2014, in the entire WHO European region, the tuberculosis incidence rate was highest in Moldova (153 per 100,000 population), followed by Kyrgyzstan (142 per 100,000) (ECDC/WHO 2016), and for several years, some of the former Soviet countries, including Russia and Ukraine, experienced the fastest-growing HIV epidemics in the world (Field 2004).

Qualitative studies of post-Soviet citizens' views regarding their health and well-being highlight difficulties they have experienced in caring for their own and their families' health (Tikhonova and Manning 2009). For example, in the early 2000s, Ukrainian and Russian men and women described feeling unable to improve their health because of stress, lack of time, and financial insecurity, all caused by larger structural factors over which they had little, if any, control (Abbott et al. 2006). Researchers concluded that when old certainties and regularities of people's daily lives vanished and many of 'the templates that provided the framework for action are no longer available or appropriate', people's ability to exercise agency and look after their health suffered, negatively affecting their sense of well-being (Abbott and Wallace 2007, p. 200).

The state of healthcare was a particular concern for many of those living through societal transformations in the countries formerly part of the Soviet Union. A widely shared perception among (potential) patients and health professionals alike was that healthcare deteriorated. Lack of state financing and often-chaotic attempts to make health-care systems inherited from the USSR work in new circumstances undermined possibilities for adequate provision of treatment. A statement by a participant in a series of focus groups organised in Ukraine, in 2002–2003, provides a telling illustration of how prohibitive access to healthcare appeared to people: 'We think with terror about the possibility that we will need to get medical help. We don't have the money; there is no money to pay for treatment' (Abbott and Wallace 2007, p. 192).

Indeed, health-care systems and those operating them faced enormous difficulties as well. The fully public Soviet health-care system, established soon after the revolution of 1917, was governed centrally from Moscow and oversaw the ministries of health of the republics. Funding, resources, norms, and guidelines were disseminated and controlled by the central government. This centrally planned and hierarchically organised health-care system was named after Nikolai Semashko, one of its main architects. It aimed to achieve wide geographical coverage and to be free at the point of delivery. Despite achievements of this system in ensuring universal access, it experienced problems with efficiency, quality, and sustainability (Balabanova et al. 2004; Rechel and McKee 2009). The new market realities exacerbated these problems, and post-Soviet countries, all faced with catastrophic financial problems, began reforming the organisation and governance of their inherited health-care systems.

The intensity and specific directions of these reforms have varied greatly between countries, but most involved decentralisation to a certain extent, introduction of private players, and changes in financing. In many cases, these health-care reforms were more akin to reactions to immediate financial challenges and administrative changes than to long-term comprehensive strategies and had unanticipated side effects (Rechel et al. 2013). For example, the decentralisation of power to regions and municipalities initiated in many countries induced confusion over responsibilities at different levels of government and funding inequalities across regions (Danishevski et al. 2006; Sheaff 2005). Introduction of market

elements such as private insurance further complicated matters and contributed to discord among governance structures responsible for the health-care system. These experiences have inspired yet another wave of reforms in some countries, including Kazakhstan and Armenia, to recentralise their health-care systems (Footman and Richardson 2014). In most countries of the former Soviet Union, privatisation was limited to dental care, pharmacies, and manufacturers of medicines and medical equipment, except in Georgia, which has sought to privatise almost all health-care facilities. A private health-care sector emerged through the establishment of new private providers, who, at least initially, tended to receive poor regulatory oversight, further contributing to problems of access to and quality of healthcare (Footman and Richardson 2014). Overall, the initial situation on the ground following the end of the USSR was similar among most post-Soviet countries, characterised by financial problems in the Semashko health system's inability to raise necessary funds, insufficient affordability of pharmaceuticals and technology now at world prices, or even higher due to newly privatised distributors' eagerness to profit, and trial-and-error reform attempts (Rechel and McKee 2009).

New Uncertainties in Post-Soviet Science and Technology

Scientific and technological R&D in the post-Soviet countries suffered a fate similar to that of the health-care system but experienced perhaps even deeper transformations after the end of the Soviet Union. In the USSR and Eastern bloc countries, science and technology had long played a major role in building the national and international political community. During the Soviet period, for example, initial large-scale industrialisation efforts led powerfully to consolidating and shaping both the communist party rule and the Soviet identity. The Soviet vision offered a development path that led to socialism through large-scale industrialisation supported by progress in science and technology (Hecht 2011). Later, the space programme was instrumental in claiming the preeminent place of the Soviet Union among other countries.

The Soviet science and technology sector was organised in three major units: Academy of Sciences institutes that focused on basic science; branch (or industrial research) institutes and military research institutes that focused on applied R&D; and universities devoted almost exclusively to education (Couderc 1996). Following the principles of specialisation, rationalisation, and centralisation, this institutional complex was governed through plans based on forecasting scientific and technological developments for the coming years and establishing priorities. Production units tasked with simply executing production plans were institutionally separate from R&D. Communication between different types of R&D and between R&D units and industry was to be organised through the centre. The separation of education, basic research, applied R&D, and production and the fragmented communication between them were the hallmarks of the Soviet science and technology system (Dyker 1998; Gerber and Yarsike Ball 2009). There are indications, however, that just as in other spheres, people working in science and technology overcame the institutional separation and fragmentation through developing 'elaborate ways of getting around the system[…]all of which relied on informal networks' to get things done (Balázs et al. 1995, pp. 616–617).

The period following the USSR's dissolution has been hostile to science and technology in the newly independent countries. Institutes of the Academy of Sciences and branch institutes, where basic and applied R&D, respectively, were concentrated, were not privatised but underwent a number of deep structural changes facilitated by declining expenditure and a changing economic environment. In the context of severe economic crisis, funding for R&D declined sharply. Studies indicate that in many of the countries, total expenditure on R&D as a share of gross domestic product (GDP) fell from around 2–3 per cent to less than 1 per cent, while GDP itself came crashing down (Balázs et al. 1995; Gaponenko 1995). Faced with such funding difficulties, R&D institutes lost a considerable share of their personnel (Egorov 1995; Graham and Dezhina 2008). While the decrease in numbers itself was not necessarily problematic, because the Soviet science and technology sector was overstaffed, the problem was the loss of highly qualified younger staff, driven not only by meagre and intermittent salaries but often also by the lack of necessary

equipment and insufficient maintenance of research facilities. Furthermore, with the demise of central planning, formal connections between different units of the science and technology system in post-Soviet countries were gone as well. This breakdown of formal connections was accompanied by difficulties in maintaining informal ones in the newly emerged market environment, further exacerbating fragmentation of R&D (Dyker 1998).

At the same time, most R&D institutes obtained more freedom to pursue economic activities and greater organisational flexibility. For the reasons outlined below, the nascent local industry generally was not interested in R&D activities, but there were still occasional requests for research. In such cases, using old contacts, industry actors tended to contract, personally, small groups of scholars through 'under-the-counter' contracts, in that way avoiding paying overheads to academic organisations and dealing with unclear intellectual property rights regulations (Bychkova 2016). Additionally, groups of scholars within R&D institutes, and those few who created private R&D enterprises (which nonetheless tended to stay close to the public infrastructures), also received contracts from foreign research partners and companies (Soubbotina and Weiss 2009). Such contracts tended to facilitate the outflow of previously developed knowledge, technologies, and artefacts to foreign entities. It appears that, in the 1990s, the survival of science and technology organisations was largely supported by the sale and resale of the results they already had (Bychkova 2016).

While Soviet R&D institutes mostly stayed public, albeit transformed and often unable to carry out their primary functions, the production units were generally privatised. In most countries, privatisation took the form of issuing citizens vouchers or stocks of the formerly state-owned enterprises (Balázs 1995; Balázs et al. 1995). Often, those employed by these enterprises were the primary recipients of such vouchers and stocks, and also had significant discounts for buying a larger share of ownership, as is demonstrated in the example below from the pharmaceutical industry in Russia. Many of these were rapidly sold by the individual holders for cash, leading to concentration of ownership. The new owners were inexperienced in operating in market conditions, while (hyper)inflation and soaring interest rates made investment very expensive and capital

barely accessible for the local firms. Consequently, many of these firms faced bankruptcy or were unable to expand their markets, while domestic markets were becoming saturated with foreign imports that were now allowed. Particularly devastating was the break of the formal economic ties between newly independent countries that had previously been united by a network of exchanges reckoned in roubles. After the breakup of the USSR, the necessity to trade in hard currency facilitated a chain reaction when firms in different countries and sectors, one after the other, proved to be unable to pay for goods and services or to have their conventional buyers pay for their products. In response, total industrial production fell dramatically, by about 30 per cent (Balázs et al. 1995). In an environment of such uncertainty, scarcity, and rapid shifts, actors in science and technology, both private and public organisations, were unable to pursue long-term goals, including long-term investments in R&D.

The case of the pharmaceutical industry in Russia can illustrate these dynamics. In 1992, Presidential Decree No. 721, which came into force on July 1, stipulated compulsory privatisation of pharmaceutical industry production units by November 1. In 1992–1993, 28 state-owned factories, which in total had been producing about 70 per cent of all Russian-produced pharmaceutical products, were converted to privatised companies (Balashov 2012). In most cases, the majority stake came to belong to workers' collectives and regional property funds, and many stocks were also bought by top managers of the newly privatised enterprises, other private individuals, and a few investment companies (Balashov 2012, p. 66). In the Soviet Union, production of pharmaceutical substances was mostly concentrated in Russia, while factories producing finished pharmaceuticals were built in other Soviet republics, including Ukraine, Belarus, and the Baltic states. When, with the end of the Soviet Union, the unified system of cooperative relationships between pharmaceutical factories in what were now independent states also broke down, Russian plants producing pharmaceutical substances faced a serious decline in demand for their products. Concurrently, price liberalisation caused a sharp increase in the costs of raw materials, energy, and transport, driving a corresponding increase in production costs, while facilities that manufactured pharmaceutical

substances faced tough competition with cheap substances that now were being delivered from China and India. Simultaneously, few facilities for production of finished ready-to-use pharmaceuticals remained in the country after the separation of the former Soviet republics, and these facilities were dealing with the same challenges, including mass imports of pharmaceutical drugs they were expected to compete with. Consequently, the volume of Russian-manufactured pharmaceutical products sales dropped by 48 per cent in comparable prices between 1991 and 1997 (Balashov 2012). In 1994 alone, local production of 57 drugs, including those for oncology, tuberculosis, and cardiovascular disease, was ended (Dorofeev, in Balashov 2012, p. 65). As import regulations became significantly simplified, the ratio of local to imported drugs shifted from 6:4 in 1990 to 3:7 in 1995, so that the newborn Russian pharmaceutical market was largely moulded by foreign pharmaceutical companies (Balashov 2012).

Some new companies were formed after privatisation as well. However, studies of pharmaceutical industry dynamics in the country, for example, by Balashov (2012) and Zvonareva (2016), suggest that initially Russian companies, both newly created and privatised old factories, generally focused on low-added-value production such as packaging, palletisation, or production of simple medicines, such as infusion solutions, phytochemical ointments and creams, and drugs that were already produced in Soviet times, without engaging in pharmaceutical R&D. They focused on extracting immediate profits and competition by dumping and economising to lower the production costs of their products, which resulted, among other things, in loss of quality. Important here also is that pharmaceutical R&D remained located in the state institutes and laboratories, while production sites were now privatised and separated, and did not have a tradition of or experience in in-house R&D. All these translated into work strategies incompatible with the long and costly processes of innovating in pharmaceuticals.

Overall, the developments summarised in this section suggest that science and technology have undergone a period of abandonment in post-Soviet countries, where governments were occupied with cutting back expenditures and managing the profound crisis unleashed by the USSR's dissolution.

Navigating New Uncertainties in Everyday Life: Insights from Informality Studies

The context described above had the effect of fuelling a wide range of informal practices regulating access to healthcare and (re)distributing scarce resources across post-Soviet spaces. These informal practices were not immediately understood as such, because the initial tendency by international organisations and scholars was to label them as corruption and treat them as a practice to eliminate, or one that would disappear once the state acquired more effective mechanisms of governance. A number of studies from the late 1990s, however, started giving informality the dignity it deserved, supported by the particularity of the region but also by a more nuanced discourse on informal relations beyond the control of the state (Ledeneva 1998; Lonkila 1997; Patico 2002; Polese 2008). The field has now expanded and is already supported by a large body of scholarship beginning with empirical findings from the region to attempt a theorisation of informality that goes beyond the assumption that it is a temporary phenomenon or something to be totally eliminated (Giordano and Hayoz 2013; Henig and Makovecki 2016; Polese et al. 2016; Williams et al. 2013).

Indeed, our story so far has emphasised despair and confusion among the citizens in post-Soviet locations after the collapse of the USSR. Yet there is also another story to be told about living through dramatic societal transformations, a story about tactics and strategies to cope with inadequacies in welfare provision and, more widely, institutions and practices of governance. Such well-documented phenomena in post-socialist settings as informal payments and informal exchange, especially in the health-care sector, may indicate such attempts to cope (Morris and Polese 2014; Rivkin-Fish 2005; Stepurko et al. 2015). Scholars of informality have suggested that informality can be interpreted as a widespread instrument and even a defining element of post-socialist society created and used by citizens in a bottom-up contestation of formal, state-introduced processes and structures or lack of thereof (Harboe 2015; Polese et al. 2014). Informality, then, can be taken to mean 'unrecorded or unregistered activities that benefit a segment of the population but fall

outside the control of the state' and co-constitute mixed economies, where informality complements and sometimes replaces formal arrangements where the latter are absent or perceived as inadequate (Polese and Morris 2014, p. 1). This body of scholarship suggests that rather than being unable to exercise their agency, citizens in post-Soviet locations find informal, indirect, and covert ways of exercising it.

A series of studies conducted throughout 1990s in St. Petersburg, Russia, is illustrative of these dynamics in the health-care sphere. The main feature of these dynamics is the importance of informal social relationships, some but by no means all of which involve the exchange of money. This feature highlights continuity between Soviet and post-Soviet systems, because the importance of relationships in obtaining access to scarce goods and services is widely acknowledged as characteristic of life in the USSR (Brown and Rusinova 1997; Rusinova and Brown 2003). Yet, after the dissolution of the USSR and in conditions of health-care crisis, this 'economy of personal connections' acquired new significance and forms. Rusinova and Brown (2003) describe how, using their networks of informal connections, individuals living in St. Petersburg embarked on identifying the best medical professionals and diagnostic services. This was an important initial step in accessing healthcare that allowed people to avoid incompetence and poor quality services, both widespread problems in the city's healthcare at the time. Armed with diagnostic results and doctors' recommendations, they demanded specific services still meant to be provided for free, that is, paid by the obligatory state-mandated medical insurance. Importantly, the authors argue that where informal payments were involved, they were not a decisive element in accessing healthcare and receiving adequate treatment. It was the number of healthcare system contacts in their respondents' informal networks and the status of these contacts in the medical hierarchy that was central. Those with 'better' networks in fact tended to control their health expenditures by seeking treatment early when costs were lower and taking advantage of services still sporadically available through free state health insurance.

While the economy of personal connections made the failing healthcare system work for some St. Petersburg locals, those lacking such connections (who also turned out to be those with less education and often,

but not necessarily, less money) bore the brunt of the health-care system's inadequacies. They doubted their ability to find the best or simply adequate medical care, were less skilled in taking advantage of free services, and followed routine practices of the impoverished state health-care system, encountering diagnostic failures, indignities, and enormous inconvenience. As a result, they tended to avoid seeking any medical care at all, allowing their health problems to reach an advanced stage, when they were more difficult and costly to treat. This research suggests that informality indeed has been central to post-Soviet citizens' coping with societal transformations and public sector problems, indicative of people's agency in making failing formal institutions work 'from below'. Yet this research also suggests that informality operates selectively, favouring some groups and further disadvantaging others. A more recent household survey conducted in the former Soviet republics indicates that about half of the respondents who had a health problem in the previous month that they perceived as necessitating medical care, did not seek such care (Balabanova et al. 2012). This data indicates the persistence of inequalities in access to healthcare in post-Soviet settings. Overall, the studies of informality testify to the agency of citizens in finding, adapting, and using tools, including informal ones, to survive throughout the societal transformations and navigate uncertainty, to the power of such tools in substituting for inadequate welfare provision, and to their limitations in remedying problems in the post-Soviet public sector.

Another illustration of this thesis can be found in the field of health R&D. Following the period of abandonment, science and technology in the post-Soviet region have received more attention and resources, as countries turn to promoting innovation and revitalising their economic and social potential. Against this background, post-Soviet countries such as Russia have turned to emphasising development of innovation capacities and a collaborative environment where the academic and industrial actors, barely connected in the past, would develop innovations and drive economic growth. However, a recent study by Bychkova (2016) on innovation environment in Russia demonstrated that in response to massive funding and policies to ensure collaboration, universities and companies have accommodated the state demands without meeting them in the intended ways. Bychkova notes that, aiming to

survive in an uncertain shifting environment with multiple and unpredictable external pressures, these actors prefer avoidance and manipulation responses to the state demands and engage in ceremonial pretence that demonstrates symbolic compliance to gain legitimacy and retain economic benefits from the government. This ceremonial mode of university-industry collaboration in Russia often produces 'fake innovation'—a 'material object (a light bulb or screw developed in Soviet years) shown as legitimate evidence of the collaboration expected by the regulators and supposed to appear in reports' (p. 528). Bychkova concludes that this 'partly explains why the reports produced by Russian universities and state companies envisage a great number of technological innovations, while there are in reality few effectively commercialized technical inventions' (p. 531).

This example highlights the complexity and ambiguousness involved in science and technology in post-Soviet locations. Interactions between networks of actors involved in science and technology, their institutional structures, and the objects produced and sustained by them may be filled with coercion and disguise. Because the rules of the game are continually redefined or unclear, or both, the goals and definitions of productive research, development, and innovation are shifting and multiplying. Once again, one can discern here agency and skills in navigating profound uncertainty and ensuring survival. On the flipside are potential negative implications for the ability of science and technology to be responsive to society.

Outline of the Book

The previous sections made clear that the domain of health in post-Soviet settings is imbued with profound uncertainties borne out of rapid societal transformations, non-transparent and exclusionary decision-making, and instabilities in governance arrangements. Chapters of this book take into account the insights from the two bodies of literature introduced above: STS research that indicates the fruitfulness of looking for politics beyond official spaces by turning also to clinics, standards, and measurements, and studies of post-socialism concerned with how actors devise

and employ various informal ways to navigate precarious environments. The book is divided into two parts that have a different focus in exploring how multiple uncertainties that populate the post-Soviet health domain are dealt with. The chapters in the first part focus on how actors mediate the multiple and conflicting demands they face, managing to proceed with their work in continually shifting environments (e.g., health-care provision and development of medical devices and drugs). The chapters in the second part are devoted to how actors manage to capitalise on uncertainty to pursue their goals (e.g., building new professions and obtaining resources).

Part 1 'Mediating Uncertainties: Struggling with Conflicting Demands'

This first part of the book brings together four chapters that analyse creative responses by the actors 'on the ground' in the spheres of healthcare and R&D to changing, often contradictory, demands in their work. These changing demands leave actors uncertain regarding which rules they are obliged to follow, the results expected from them, and resources they can rely on.

The chapter by Pavel Vasilyev travels to the early Soviet era and investigates private provision of healthcare. After the Revolution of 1917, health-care provision was reorganised to reflect aspirations to exclude market forces, establish efficient central planning, and make medicine universally available and free. It was under these circumstances that private medicine emerged for a time. The chapter investigates how health professionals eager to provide private health-care services struggled to do so amidst conflicting decisions and signals by the new government bodies and the multiplicity of unmet health needs. Vasilyev's chapter establishes a historical background common to all subsequent chapters.

Moving to present-day Russia, the chapter by Olga Zvonareva focuses on the state efforts to boost innovative drug development in the country and argues that efforts to stimulate pharmaceutical innovations have become related to processes of nation building. The chapter analyses how academics and industrialists deal with the rapid pace of the Russian

government's attempts to stimulate local drug innovation. Zvonareva highlights that the resulting modes of navigating the rapidly shifting environment risk breaking the links between technoscientific development and public health and well-being.

Evgeniya Popova explores a situation where the Russian state has become closely involved in the field of innovation in medical devices. The chapter investigates what developers of high-tech medical devices do to satisfy government demands for increasing local production when paths to the market and state support are murky. The routes taken by developers ensure survival of their organisations but often hamper actual development of beneficial technologies. Popova shows that, at first sight, paradoxically, the establishment of more national policies has actually increased uncertainty and created risky environments.

Alena Kamenshchikova examines the operation of medico-economic standards (MES), a recent innovation in Russian healthcare aimed at controlling the cost and quality of healthcare that introduces the possibility of democratising the position of patients. The chapter studies how health-care practitioners attempt to reconcile the demands of MES, the realities of their practice, and the demands of patients. Kamenshchikova stresses that in mediating these, health-care practitioners place themselves in the precarious position of balancing between being legally sanctioned and providing inadequate medical help.

Part 2 'Transforming Uncertainties: Negotiating New Practices'

The second part of the book brings together four chapters that highlight how actors manage to use uncertainty in healthcare and public health to build a fragile order, where they pursue their goals, such as building new professional spaces and developing opportunities to obtain profits and data.

Ekaterina Borozdina turns to midwifery services in Russian maternity care. Following traditions established in the Soviet times, Russian maternity care continues to be highly medicalised. This chapter investigates how, with the advent of marketisation and liberalisation in the 1990s,

midwives have performed informal institutional work to craft a professional space for themselves in this setting and introduce changes in maternity care. The chapter emphasises the uncertainty of the results achieved and the continued precariousness of midwives' professional position, highlighting midwives' skills in informal negotiations, and navigating contingency.

In her chapter, Alexandra Kurlenkova discusses how the arrival of markets in post-Soviet settings enabled an emergence of trade-like practices with ova in the domain of infertility treatment. The chapter investigates how this new domain was shaped and how private actors managed to develop and structure the practices of ova exchange to their advantage. The chapter highlights how given the lack of state regulation of ova exchange, individuals operating private infertility clinics play the primary role in shaping the field of reproductive medicine and establishing the notion of ova as a commodity.

The chapter by Tetiana Stepurko and Paolo Carlo Bell explores how health-care facilities in fact operate amidst the uncertainties of post-communist transformations in Ukraine. The authors demonstrate the functioning of informal mechanisms in how priority-setting, personnel selection, professional performance assessment, and medical technologies are governed in health-care facilities. The informal governance mechanisms that proved to be barely penetrable by formal regulation allowed health-care organisations to survive through societal turmoil and disorientation. But through relying on extraction of profits for those on top of the health-care organisations, these mechanisms threaten the accessibility and responsiveness of health-care provision.

The chapter by Susanne Bauer opens up the links between uncertainties in post-Soviet settings and global technoscience. It focuses on northeast Kazakhstan, where Soviet nuclear testing was conducted for multiple decades, and on efforts to document long-term health effects of exposure to radiation. Bauer follows the routes chosen by scientists and those responsible for public compensation programmes to navigate the uncertainties of radiation exposure in local communities around Semipalatinsk. These choices have configured the extraction of benefits in the form of unique data from the local communities, while not making an effort to remedy environmental injustices experienced by the members of these communities.

The chapters in both parts of the book make visible multiple ways in which power is produced and resisted. It is intriguing to see how many actors have managed to pursue their research, development, and healthcare activities, and to continuously navigate profound uncertainties. At the same time, all authors highlight trade-offs involved in devising ways to navigate precarious post-Soviet settings. In the concluding chapter of this book, we reflect on these trade-offs, first of all for people's health. Thus, beyond advancing our understanding of the costs and consequences of the uncertainties pervading the post-Soviet health domain, this book further opens up new opportunities for critical appraisal and action.

Notes

1. European Health for All Database http://data.euro.who.int/hfadb/

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Part I

Mediating Uncertainties: Struggling with Conflicting Demands

2

Flirting with the Market: The Early Soviet Government and the Private Provision of Health Care, 1917–1932

Pavel Vasilyev

Introduction

The history of early Soviet health care remains unfortunately understudied, and the historiography continues to be dominated by the idea that the Soviet state was characterised by a unitary model of centralised planning and administration of health care and universal access to high quality, free medical and pharmaceutical services. This model is usually associated with the so-called Semashko system, named after Nikolai A. Semashko, the first Soviet People's Commissar for Public Health from 1918 to 1930 (Belitskaia 1978; Mekhanik 2011). There are significant exceptions in this stereotypical picture, in particular those described by Williams (1989) and Ewing (1990), who also explore tensions, debates, and disagreements between Soviet health-care authorities and practitioners. Importantly, very few historical works focus on the organisation of health care on the local and micro levels, while such studies could shed light on important questions about the effectiveness of the system,

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regional disparities, and the limits of central planning. In most studies, the existence of private medicine and pharmaceutical business in Soviet Russia is particularly neglected; when introduction of market elements in Soviet health care is discussed in existing literature, it has tended to be presented as a chaotic conglomerate of hucksters and quacks, driven only by the desire for profit (Vinogradov 1954; Vinogradov 1955; Barsukov et al. 1966). In fact, private medicine and pharmaceutical business were rather suddenly (re)introduced in the country in the 1920s, during the New Economic Policy (NEP) era, and, as this chapter shows, they performed quite well in the difficult economic conditions of that time.

This chapter investigates how 'medical entrepreneurs' managed to make use of the opportunities opened by the NEP period (ca. 1921–1928) in the situation of ambiguousness of the government-defined rules, unclear long-term prospects, and precariousness of entrepreneurs' position. In tracing how private health care in Russia uneasily coexisted with the Semashko state health-care system, the chapter pays attention to the shifting government's stance towards private provision of health care and the conditions these shifts created for those interested in pursuing private medical practice under the communist rule. To this end, I studied underresearched archival materials from the Central State Archive of St. Petersburg (Tsentral'nyi gosudarstvennyi arkhiv Sankt-Peterburga, hereinafter referred to as TsGA SPb), focusing in particular on the collections of the regional department of public health (*gubernskii otdel zdravookhraneniia*, or *gubzdravotdel* for short), which provide valuable insights into the organisation and regulation of early Soviet health care. By examining these local materials, the chapter pays particular attention to the adjustments of the 'medical entrepreneurs' in these new conditions and the specificities of the local socio-political context. This perspective is complemented by the discussion of personal historical materials such as opinion essays, diaries, and anecdotes.

In the next section, I first sketch the debates about Soviet health care under communist rule in 1917–1921. Next, I examine the re-introduction of private health care in the era of the NEP from 1921 until the early 1930s. Then, I analyse how these reforms were practised in the urban and rural regions, including responses of private health-care providers. I conclude by examining some reasons for the decline of this market innovation

(including political ones), establishing directions for future research, and making some comparisons between the NEP period and the current health-care culture in Russia.

Early Soviet Health Care in Theory and Practice, 1917–1921

Popular perceptions of the early Soviet economy (and the health-care economy in particular) have often been plagued by inaccurate depictions of swift centralisation beginning in October 1917 (Barsukov et al. 1966; Petrovskii 1967). In fact, however, the nationalisation of the economy was a much a more gradual, complex, and prolonged process that intensified in 1918, and the People's Commissariat for Public Health was created only in July of that year (see Khodiakov 2001 and Musaev 2011). Indeed, theorists of early Soviet health care such as Nikolai Semashko and Natan Vigdorchik were themselves much more nuanced when expressing their visions of the new health-care economy. Of course, they were in favour of state health care, which they had lobbied for since the early days of the Russian Revolution (Vigdorchik 1917). But, instead of resorting to repressions, the socialist state was supposed to drive the private capital out of the domain of public health through a type of competitive process, as evident from the following quote from Semashko's 1919 work, *Osnovy sovetskoi meditsiny* [The Foundations of Soviet Medicine]:

> nationalisation of medicine should not be understood in a vulgar sense, as a closure of private hospitals and prohibition of private medical practise; in fact, it means actual 'governmentalisation' [*ogosudarstvlenie*] of medicine; i.e. the state makes a pledge to provide everyone with free and qualified medical help immediately upon request. And it is only after that that all private entrepreneurial hospitals and commercial 'private medical practise' will disappear, as darkness flees from the light. (Semashko 1919: 14)

However, critical historians can of course doubt this line of reasoning and perceive it rather as a certain type of sophistic and strategic

argumentation. It remains seriously questionable to what extent the 'competitive process' envisaged above was really aimed for and whether the desirable 'results' of this 'competition' were not already planned by the Soviet authorities from the very beginning. For example, in the same text, Semashko was also quick to dismiss one of the foundational principles of the capitalist economy and note that 'sanitary inspection should not and can not be stopped by the principle of private property as a sacred threshold, nor any man be allowed to transgress it' (Semashko 1919: 13).[1]

In practice, the reorganisation of public health reflected some of these ambiguities. Over the course of 1918, all pharmacies and nursing institutions were subject to compulsory nationalisation and became the property of the new government (Grekova and Golikov 2001: 42, 328). The early Soviet health-care reformers themselves acknowledged that in order to organise in-patient treatment, they often had to resort to a 'revolutionary method that came into common use those days as an everyday life phenomenon [*bytovoe iavlenie*]—the method of requisition', meaning forced nationalisation of private hospital premises (Vigdorchik 1923; see also Strashun 1927).

The nationalisation trend in the early Soviet economy intensified greatly at the beginning of 1921 (Khodiakov 2000), and this was immediately reflected in the organisation of public health. In 1921, the People's Commissariat of Public Health issued a special circular letter that introduced very significant limitations for the doctors not employed by the state and seemed to effectively render a 'capital sentence to private medical practise' (Bobrov 2008):

> Private medical practise as a remnant of capitalism contradicts the basics of the correct organisation of medical and sanitary service and the basics of socialist building. Being available only to those who can pay enormous fees, it disorganises medical and sanitary work, brings chaos and rupture between medical personnel, distracts medical forces [*medsily*] from Soviet work for the good of the workers, leads to speculation, charlatanry and medical Sukharevka. (Erendeeva 2012)

The use of militarised language such as 'medical forces' and the reference to Sukharevka, a traditional street market in downtown Moscow and the epitome of backwardness, chaos, and disorganisation to the early

Soviet reformers, are once again to be understood here in the context of the ongoing Russian Civil War and the radical anti-market measures that were briefly introduced in early 1921. This trend, however, was very soon reversed as the experimental economy of 'war communism' proved to be ineffective and unsustainable in the long term.

The political course of the Soviet government and its attitudes to private property changed several times over a relatively short period from 1917 to 1921. These tectonic shifts in the early Soviet political economy had nothing to do with the field of public health per se, but they largely determined the fate of the private provision of health care in this turbulent period. Openly challenged by the new socialist authorities in the wake of the 1917 revolution and explicitly undesirable in the world of communist utopia in early 1921, private health care re-emerged only a few months later with the arrival of the market-oriented NEP.

Transition to the New Economic Policy and the Legalisation of Private Health Care

In March 1921, the 10th Congress of the Russian Communist Party (RKP(b)) rather suddenly announced the NEP, which was supposed to provide a more market-oriented solution to the hardships of the Russian economy devastated by the First World War, the Russian Revolution, and the civil war that followed. It entailed such 'capitalist' elements as private property, market relations, entrepreneurship, and foreign capital. However, the (re)-introduction of these elements in the Soviet economy in the early 1920s should not be understood as simply a return to the pre-revolutionary economic system. As historian Mary Schaeffer Conroy noted, the NEP period was an 'uneasy amalgam of market policies and government control' (Conroy 2006: 76), and this fully applied to the domain of public health.

The state of the Soviet medicine in the beginning of the 1920s was outright dire. Hardships of Russia's 'continuum of crisis'—the First World War, the revolutions of 1917, and the prolonged civil war (Holquist 2002; see also Lindenmeyr et al. 2016)—led to a significant deterioration in the nation's health. Outbreaks of infectious diseases such as typhus,

typhoid, cholera, and malaria were accompanied by substantial increases in alcoholism, drug abuse, and venereal diseases (Conroy 2006: 75). The disastrous famine in the Volga region in 1921–1922 was perhaps the most dramatic expression of the health-care crisis, to which the Bolshevik state could no longer turn a blind eye. At the same time, as Semashko himself acknowledged, the crisis in public health could not be solved by a government decree:

> We cannot reduce our activity in the field of health care, as would have been possible with industrial or even educational work. Because in those cases we can decree: due to the lack of funds let's close this factory or plant; or even, with a sore heart, this educational institution. But here we cannot issue a decree to the population: 'Don't get sick'; and we cannot disengage ourselves from a commitment to heal the sick and to fight the epidemics. (Semashko 1922: 7)

Finding themselves in this difficult predicament, the Bolshevik authorities refused to introduce payment for medical treatment, which they readily dismissed as a ridiculous 'tax on disease' or 'payment for misfortune'. Instead, a solution that was found aimed at 'attracting the whole population to the provision of health institutions, and not relying on the state alone' (Semashko 1922: 8–9). In practice, this meant that private hospitals, clinics, pharmacies, sanatoria, and other medical institutions were allowed to operate freely, as confirmed by the Resolution of the Council of People's Commissars (the Soviet government) from 9 January 1922 ('On the Opening of Private Medical Institutions and Pharmacies'). 'Rules on the Supervision of Private and Rented Medical Institutions', which came into effect on 20 September 1922, further confirmed that health-care institutions could also be rented by groups of physicians or their organisations (cooperatives) (Erendeeva 2012).

At the same time, however, private health-care institutions were subject to intense scrutiny from the very beginning of their functioning (for discussion of the Bolshevik visions of strict control over the 'class enemy', the 'bourgeois' MDs, see also Ewing 1990). A private medical institution could only be opened following an explicit sanction of the health-care authorities, and the Soviet state retained the right to launch thorough,

systematic, and regular inspections of their premises and to evaluate their material conditions, financial standing, and approaches to medical treatment. Whenever the inspecting authorities discovered certain issues, they could order the institution to be closed on relatively short notice. Further, the proprietors of the private institutions were also obliged to present regular reports to the health-care authorities themselves, and archival materials attest to the implementation of this practice (Erendeeva 2012; see also Gosudarstvennyi arkhiv Rossiiskoi Federatsii (State Archive of the Russian Federation, GARF), *fond* A-482, *opis'* 1, *delo* 303).

The conditions for the private provision of health care in the NEP-era Soviet Union were spelt out in more detail in the Resolution of the All-Russian Central Executive Committee and the Council of People's Commissars from 1 December 1924 'On the Professional Service and Rights of Medical Workers'. The resolution re-affirmed obligatory registration of private medical practices and introduced numerous forms for official reports and bureaucratic documentation. Private 'medical workers' without required professional qualifications who tried to establish an independent medical practice (such as paramedics) were commonly criminally prosecuted, as well as those who refused to provide urgent medical help 'without reasonable excuse'. Significant restrictions were also placed on the right to advertise private medical services (Danilevskii 1921; Karanovich and Cherniak 1927; Lik 1928; Drosner 1929).

While, as discussed earlier, the period 1917–1921 is usually inaccurately described as an era of a completely nationalised economy, there is a similar imbalance with regard to the NEP years. In many works, there is a tendency to present the NEP as a paradise for private entrepreneurship and to exaggerate the role of the private capital (see Goland 1991). However, recent research demonstrates that this interpretation is not entirely adequate. The 1920s did offer more business opportunities than any other period in Soviet history until perestroika, but, as historian Alan M. Ball has shown, the system was explicitly designed to introduce numerous restrictions on private capital and was subject to random administrative tweaking throughout its existence. Moreover, the policy was widely perceived as temporary and thus introduced a climate of distrust and gave the entrepreneurs the wrong incentives. Most importantly, this uncertainty created the desire to 'make a fast buck' and scared the

entrepreneurs away from long-term investments (Ball 1990; see also Fitzpatrick, Rabinowitch, and Stites 1991). All of this fully applied to the private provision of health care, but this was additionally complicated by the state's requirements for safety and the cost of treatment, which resulted in increased operational costs and higher prices for an average consumer.

The return to market relations and private property in the early 1920s allowed the Soviet authorities to re-introduce hundreds of private medical institutions (in particular, in major urban locations) with the goal of alleviating the difficult health-care situation. In order to function in the new socio-economic conditions, however, private health care had to be adjusted and placed under constant political and ideological scrutiny by the Bolsheviks. In the following section, the (re)-introduction of private health care in practice is examined in more detail on the examples of a major Soviet city (Petrograd/Leningrad)[2] and the rural countryside.

Reforming Health Care in the 1920s: Urban and Rural Perspectives

The Case of Petrograd/Leningrad

In early 1922, the Petrograd Region's health-care authority, the *Gubzdravotdel*, was quick to issue its own resolution in the wake of the central initiative that effectively legalised private entrepreneurship in the area of public health. Resolution 597 'On Private Medical Institutions' reflected the ambiguities of early Soviet health-care policies outlined above. While private medical entrepreneurs were now officially allowed to run their businesses, they were obliged to present a detailed letter of motivation and to register their proposed institution at the *Gubzdravotdel* within three days. Moreover, it was stressed that failure to comply with these regulations would result in criminal prosecution (TsGA SPb, *fond* 4301, *opis'* 1, *delo* 1042, *list* 4).

The analysis of local responses to the new government policies and Resolution 579, as documented in the archival materials, allows us to study the specifics of the health-care situation 'from below', but also, and

perhaps more importantly, to see the reaction of the private 'medical entrepreneurs' to the new conditions. Clearly, they were able to detect a window of opportunity in the more market-friendly policies that enabled them to gain financial profit or at least to have a more comfortable position for self-employment. However, as the new entrepreneurial climate was still very restricted and to a large extent affected by the ideals and rhetoric of the socialist revolution of 1917, private entrepreneurs had to take a more balanced stance and to emphasise the health-care needs of the Soviet population more generally. Archival materials attest to the swift Bolshevisation of language and consciousness of these entrepreneurs in the aftermath of the revolution. Similarly, scholars such as Lebina (1999) and Iarov (2006) have traced the influence of political ideology on the popular mentality in the early Soviet period and showed how ordinary people learnt to feel, speak, and live their everyday lives in a 'Bolshevik' manner in just a few years after 1917.

Many private medical entrepreneurs deliberately sought to distance themselves from the stereotypical image of a greedy capitalist. In doing so, they stressed that their primary identity was medical, not entrepreneurial, and that their main motivation for opening a hospital or a pharmacy was to alleviate the difficult public health situation in Petrograd. For example, applicants Dr. Khodetskii and Dr. Kostiurin, writing in March 1922, assured the *Gubzdravotdel* that they would 'pursue labour principles only, and this hospital cannot be viewed as a solely commercial enterprise' (TsGA SPb, *fond* 4301, *opis'* 1, *delo* 689, *ll.* 1–1 rev.). In some of the petitions, prospective hospital owners stated that they were ready to admit a certain percentage of economically disadvantaged patients at a substantial discount or even free of charge.

Some of the applicants clearly considered the importance of using Bolshevised language, even when choosing the name of their enterprise. A group of private physicians, for instance, chose to call themselves the Petrograd *Labouring* Physicians Union (*Petrogradskoe trudovoe vrachebnoe edinenie*, or *Trudvrach*). They further sought to associate themselves with the socialist project by quoting official government resolutions and highlighting their own material need. *Trudvrach* enthusiastically embraced the government's NEP and specifically underlined how allowing private hospitals to operate again in Petrograd would kill two birds with one stone.

On the one hand, it would enable Soviet health care to 'serve the medical needs of the population to the full extent', for example, by enacting the principles of prophylactic medicine (*profilaktizatsiia*) and in-patient care (*gospitalizatsiia*) and by developing a network of specialised clinics (*dispanserizatsiia*), including in the under-served districts of Petrograd. But it would also be important from a different perspective: by allowing the 'labouring physicians' to continue practising their specialty, the government would take a preventive measure to save them from falling into the shady business of the underground health-care economy. In their proposed statute, *Trudvrach* stressed that every member of the 'union' would receive exactly calculated, standardised, and proportional payment—which, it was pointed out, would also help in the 'organised labour struggle against arbitrariness of some practising individualist physicians [*vrachei-odinochek*] who charge unreasonable exaggerated fee for their services' (TsGA SPb, *fond* 4301, *opis'* 1, *delo* 689, *ll.* 10–12). In this way, the professional community of physicians was navigating a difficult and uncertain political situation in order to justify their entrance into the private market while at the same time maintaining their loyalty to the Soviet state.

The contradictions between the traditional private status of a practising doctor and the prescribed new role of a socialist physician are well reflected in the letter that a Dr. Abel K. Pivovarskii sent to the Petrograd *Gubzdravotdel*. While writing a subservient petition to the new Soviet authorities, Pivovarskii nevertheless continues to write in the old orthography[3] and refuses to use the appropriate Communist salutation 'comrade'. He starts by lamenting the closure of his private hospital that had functioned since 1911. However, while he argues that in the formative years of Soviet power, public health authorities 'took all possible measures to extirpate private practise', Pivovarskii now applauds 'the recently changed tendency in the views of the Highest Government [sic] to support private initiative and labour' (TsGA SPb, *fond* 4301, *opis'* 1, *delo* 689, *l.* 15). Clearly, in his petition, Pivovarskii attempted to make use of the volatile political moment and asked the *Gubzdravotdel* to reverse the decision regarding the closure of the hospital. At the same time, he remained very cautious in his writing and readily (albeit perhaps unenthusiastically) acknowledged the new relations of power in post-revolutionary Petrograd.

Viewed with Suspicion

A major set of questions that often arises in the discussions of private and public health care (and in broader economic debates more generally) relates to issues of profit, effectiveness, and work motivation (see e.g. Brotherton 2008). In the early Soviet context, the efficiency of solely moral or ideological incentives in the nascent socialist economy has been recently put in doubt. Indeed, researchers have demonstrated that various financial incentives (such as material rewards and numerous fringe benefits for shock work) remained important to Soviet workers throughout the 1920s and 1930s (Zhuravlev and Mukhin 2004). However, whether certain ways of attracting financial revenue in the health-care sector were appropriate and/or legitimate often remained unclear. A famous quote, attributed to Stalin and Semashko, among others—'A good physician will always be subsisted by the people; and we don't need any bad physicians' (*Khoroshego vracha prokormit narod, a plokhie nam ne nuzhny*)—suggested, on the one hand, that physicians should be adequately reimbursed (either by the socialist state or with informal payments from the patients), but emphasised at the same time that medicine should not become a money-making business.[4]

While the 'Highest Government' did indicate its readiness to admit more private capital into the health-care economy in 1921, both bureaucratic and popular perceptions of private medical practice remained mostly negative. This is evident, for instance, from the numerous court cases that were opened by the judicial authorities of Petrograd/Leningrad against the physicians accused of 'illegal treatment' or 'charging high prices' (TsGA SPB, *fond* 52, *opis'* 3, *delo* 246). This practise was condemned as 'disorganising', 'inadmissible from the view of medical ethics', and indeed 'a special form of the most heinous speculation possible'. Such moralised perceptions of 'medical speculation' necessitated criminal sentencing, including bans from practice for private physicians and hefty fines that in many cases also led to the closure of practice (TsGA SPB, *fond* 4301, *opis'* 1, *delo* 923, *ll.* 4, 7–9).

The existence of this suspicion towards private medical practice can also be corroborated by the anecdotal evidence present in personal historical documents, such as the description of prominent Soviet writer

Kornei Chukovsky in his diary of a visit to Dr. Iakov Ratner in January 1926. Ratner, a promising young neurologist and endocrinologist who already had a solid network of clients in Leningrad, was recommended to Chukovskii by a friend. The very ambiance of the doctor's flat and his practice, however, was very unappealing to Chukovskii, who perceived it as a 'fake luxury of a beginning specialist who wants to blow smoke [*puskat' liudiam pyl' v glaza*] and to be seen as famous'. After asking all sorts of odd questions and examining the patient's armpits, nose, and belly button, Ratner only gave a recommendation to avoid Charcot's douche (which Chukovskii was not even considering taking) but was quick to 'swiftly catch' a five-ruble note from his client (Chukovskii 2012: 257). In a similar vein, Ratner was also rumoured to transfer some of his patients for additional check-ups to another doctor on a neighbouring street—who turned out to be his own wife, Dr. Raisa Golant, practising on the other side of their flat with a different entrance (Dubin 2005: 348). As a matter of fact, what appeared to be strange techniques on the part of Ratner might be essentially explained by the cultural context of early twentieth-century neurology and endocrinology (and in particular by the influence of Freudianism), but these anecdotes clearly show the degree of suspicion and contempt that the early Soviet patients continued to experience towards private medical practice well into the 1920s. In my opinion, this demonstrates once again the very successful influence of the Bolshevik ideology on the early Soviet mentality that was mentioned in the previous section.

'The Class Principle' of Urban Health Care

The other aspect that is usually ignored by the scholars of the history of Soviet medicine (cf. the discussion in Mekhanik 2011) is that the Semashko system was in fact not universal but rather class-based. By law, every citizen of the Soviet Republic had the right to demand free health care from the state, but 'citizen' was only defined as such if he or she was a '*labouring* citizen' (*trudiashchiisia grazhdanin*) (on conflicting definitions of terms such as 'socialist', 'workers' interests', 'social utility', or even 'working class' in the early Soviet period, see Ewing 1990). A great num-

ber of Soviet citizens from the former propertied classes were thus legally deprived of many rights granted to other citizens, including the right to free medical care. For these social groups (in most cases without substantial financial resources anymore), the only remaining solution for health problems was the private clinic.

This problem also had an explicit spatial dimension, because in the 1920s the former propertied by and large continued to reside in the most central areas of Petrograd/Leningrad. Mapping the network of health-related institutions (hospitals, specialised clinics, research institutes, and pharmacies) in Petrograd/Leningrad in the 1920s allows us to reconstruct the medical map of the city and better visualise several problematic issues in the history of early Soviet public health. In particular, analysing the provision of medical and pharmaceutical services in specific city districts and areas helps in assessing the respective contributions of the state and cooperative and private institutions and in highlighting the actual accomplishments and effectiveness of private health care in the extraordinarily unfavourable conditions of the 1920s.

The initial analysis of the archival documents from the NEP era shows that private clinics and pharmacies, motivated by profit, were at least as successful as their state and cooperative counterparts. The reports of the public health authorities unwillingly confirmed that private pharmacies in particular were able to satisfy consumer demand by radically decreasing waiting times and creating branches in certain areas and city districts where state institutions were lacking (TsGA SPb, *fond* 4301, *opis'* 1, *delo* 2393). As evident from Map 2.1, private hospitals, too, tended to concentrate in the most central areas of Petrograd/Leningrad (and especially in and around the city's main thoroughfare, Nevsky Avenue) and not in the working-class suburbs to the north and the south, where socialist health care was readily available to the residents (TsGA SPb, *fond* 4301, *opis'* 1, *delo* 689, *l.* 5).

Rural Health Care and the Fight Against *Znakharstvo*

In the 1920s, private medicine was by no means confined to the urban realm—but the situation in the Soviet countryside was quite different.

In the village, the 'class enemy' that opposed emerging socialist health care was not the bourgeois medical doctor, but rather a heterogeneous group of folk healers of all sorts. In the Russian context, this branch of traditional medicine is usually described with the umbrella term *znakharstvo*.

In theory, peasants were most certainly 'labouring citizens': Semashko, for one, was himself born in the countryside, knew the everyday life of the peasants very well, and was fond of many of its aspects. At the same time, he and his colleagues at the People's Commissariat for Public Health were extremely critical of what they perceived as the 'petty bourgeois essence' of Russian peasants. *Znakharstvo*, too, was seen as one of the 'remnants of capitalism' and thus dismissed by the Bolsheviks as an archaic form of medicine, bordering on outright quackery or charlatanry.

Map 2.1 Registered private hospitals of Petrograd, March 1922 (after: TsGA SPb, *fond* 4301, *opis'* 1, *delo* 689, *l.* 5)

Thus, the official goal of the public health authorities in the village was always to eliminate *znakharstvo*. Yet, even in the late 1920s, it was acknowledged to be a very complicated struggle, one that was linked closely to the social policies of the Soviet government in the rural areas, various educational and cultural campaigns, and anti-religious propaganda (Popov 1927; Churaev 1927).

Early Soviet literature on *znakharstvo* provided readers with many amusing tales about unreasonable absurdities of quackery in order to deter them from the folk healers. For example, in the key reference work on the subject, Semashko's *Narodnoe zdravookhranenie v derevne* (1927), it was narrated that some healers deployed barking dogs at maternity stations in case of a difficult delivery in order to scare the child and 'get him back inside'. Apparently, kissing a certain tree was believed to help acute toothache, while to cure a fever one had to sacrifice a dog or a cat by hanging it on a rope and then wrapping the rope around its body. A child's urine was supposed to help against uncleared bowels and gynaecological diseases, while the ultimate medicine against hiccups was believed to be the urine of seven widows (and, as some folk healers were quick to observe: 'If it doesn't help, then one of those widows is under suspicion') (Semashko 1927: 15). Clearly, in telling these stories, early Soviet healthcare reformers sought to lay bare the reactionary and religious essence of *znakharstvo* and to dismantle the functioning of its 'magic', as evident also from the following passage:

> This is how a Karelian witch [*koldovka*] named Volgina … treats rickets: she takes the sick child to the sauna, puts him on the back of a puppy and beats the hell out him with sauna switches … and keeps saying: 'If he's meant to die, [he] will die; if he's meant to live, [he] will get better'. That's the quackery's dirty trick. If the child got better—all right, if he died—that's God's will. (Semashko 1927: 15)

But as bizarre as these tales might seem to the contemporary reader, the beliefs and practices of traditional medicine that they describe were well established in the mindset of the early Soviet village dweller. To take a later example: in Russian traditional culture, rickets was closely linked to the symbolic imagery of the dog and even labelled 'canine senility'

(*sobach'ia starost'*). This belief is well documented and mentioned in many works of Russian literature from Chekhov to Mayakovsky. It is thus understandable that many folk healers advised people to take a dog to the sauna together with a suffering child and to lash both the child and the dog with a birch broom to achieve transfer (first symbolic and then real) of the sickness from the human being to the animal.

Additionally, as several influential studies have shown (Lock 1990; Hamphrey and Urgunge 1996; Ernst 2002), traditional medicine phenomena such as *znakharstvo* cannot be simply dismissed as outdated forms of irrelevant knowledge. Massage and baths are indeed widely used in the rickets therapy today, and oak bark certainly relieves gum pain and toothache. Official Soviet medicine itself sought to use female urine as the basis for the creation of a 'miracle drug' in the mid-1930s, as documented in the history of experimental substance called *gravidan* (Ostroglazov 2008; for broader perspectives on the history of twentieth-century endocrinology and its unfulfilled promises, see Nordlund 2011 and Pettit 2013). Moreover, many forms of traditional medical treatments experienced a certain revival in post-communist Russia in a social, political, and cultural climate characterised by growing ideological disarray, dormant nationalism, and increased attention to 'traditional historical roots' (Kharitonova 1995, 1999). Of course, post-Soviet transformations of the welfare and health-care sectors were also accompanied by rapid privatisation and persistent distrust of state medical institutions (see e.g. Rivkin-Fish 2005). Indeed, an interested reader might be surprised to find out that some of the contemporary neo-pagan websites on the Russian Internet offer recommendations for the treatment of 'canine senility' that bear a striking similarity to the 'recipes' from the 1920s (Velemudr 2009).

This section has demonstrated the precarious position of private medicine and pharmaceutical business in the transformation of the early Soviet health-care economy. Scrutinised and viewed with suspicion by the government and the population alike, they were out of place in the new society that was built around the declared principles of equality, solidarity, and moral altruism. Tolerated in some urban contexts, private provision of health care was able to make certain contributions, but its impact was limited by the government regulations and the overall structure of

the NEP economy. In the countryside, however, the government was not willing to demonstrate the same degree of flexibility and increasingly persecuted private medical services as backward, unscientific, and detrimental to the health of the people.

The Decline of Private Health Care in Soviet Health Care

In the context of the Soviet Union, the end of the 1920s has often featured in broader historiographical debates about 'the great retreat', 'betrayed revolution', and the genesis of Stalinism (Timasheff 1946; Deutscher 1959, 1963; Carr 1960; Daniels 1960; Sharlet 1978; Engelstein 1993; Gill 2002).[5] It also witnessed yet another return to the principles of a centrally administered economy, strict restrictions on private entrepreneurship, and the liquidation of foreign capital. Private medicine, too, came to be seen as more and more marginal. Official medical publications of the period characterise private medicine as 'playing a very insignificant role' in the Soviet health-care system, a role 'that is more and more diminishing with the growth and consolidation of socialist health care' (Semashko 1928–1936). In essence, private medical help was reduced to providing health-care services to a very limited circle of wealthy Soviet citizens who themselves were increasingly perceived as morally degenerate, ideologically suspicious, and potentially dangerous. For example, Vasilyev (2016) traced the purported connections between bourgeois modernity, free-market capitalism, and drug abuse.

Private and rented pharmacies were the first to feel the new trend in the reorganisation of the economy. Citing concerns over improper storage and sale of poisons and recreational drugs such as cocaine or morphine (unsupported by the respective reports of pharmacy inspectors; see TsGA SPb, *fond* 4301, *opis'* 1, *delo* 2393), Soviet officials closed or forcefully transferred most of these institutions to the auspices of the government by the end of the 1920s, and reorganisation or closure of other private health-care institutions followed in the early 1930s (Mar 1930; Williams 1994; Conroy 2006: 316). The changing political and ideological climate

necessitated measures that had little to do with the actual efficiency and safety of private health care or the health needs of the population.

The history of private medical and pharmaceutical institutions in early Soviet Russia demonstrates the difficult position that private health-care services and medical innovations more generally occupied in this authoritarian society. Being dependent on the whimsical political leadership and its changing attitudes (in this case, in/tolerance of private capital), private medical and pharmaceutical institutions were intermittently allowed and banned by the governmental orders and decrees. However, after being officially abolished once again for a longer period till the time of perestroika, private health care, arguably, shapeshifted to a certain extent into the 'economy of favours' characteristic of the Soviet health care as described in the first chapter of this book. Since medical entrepreneurship did not exist formally, no institutional separation between public and private health care was possible. Rather, individuals and groups increasingly came to rely on informal exchange of favours and resources with public and private as well as formal and informal spheres coexisting and overlapping. The implications and the current state of this mix in post-Soviet settings are analysed in another chapter of this book by Tetiana Stepurko and Paolo Carlo Bell.

Private Medical Practice in the Early Soviet Era: A Risky Innovation

In this chapter, I have discussed private health care in NEP Russia as an alternative to the Semashko system and examined the evolution of government policy towards private provision of health care and its implementation in urban and rural areas. My findings suggest that private entrepreneurship in the medical and pharmaceutical spheres in early Soviet Russia performed quite well in the difficult economic and administrative conditions and was able to complement state-funded health care in certain ways, in particular by addressing the medical needs of the former propertied and serving the more central districts of early Soviet cities. The reasons for its decline were primarily administrative, since the Soviet state deliberately adopted a policy of prioritising state institutions

and pushing private capital out of the economy by the end of the 1920s. The rhetoric that accompanied this decision actively employed the above-mentioned stereotypical images of private health care, but in fact disorderliness, incompetence, and ineffectiveness remained inherent features of the government-funded medical and pharmaceutical institutions throughout the Soviet era (Bobrov 2008; Conroy 2006; Conroy 2008).

At the same time, the atmosphere of uncertainty made private medical practice a risky innovation, which many entrepreneurs still embarked on using a variety of ways to navigate the situation. When entrepreneurs attempted to enter this business in the early 1920s, they had to balance their rhetoric and frame their discourse in the ways that were acceptable to the new socialist authorities, create organisational forms that suited the socio-economic conditions, and develop additional measures to make their existence justifiable. Yet, any private medical institution faced a constant threat of comprehensive sanitary inspections, hefty fines, and closure of the business. The situation was especially difficult for private medical practitioners in the countryside, since the government refused to recognise them as legitimate healers and instead vocally dismissed their clinical lore as backward and superstitious. Thus, while private health care was called upon to alleviate the difficult situation, its ability to support public health care was hampered by uncertainties, random administrative tweaking, and a continuous threat of closure and persecution. In such circumstances, entrepreneurs were wary of developing long-term strategies and unable to partner with the state for developing collaborative arrangements for health-care provision.

The analysis presented here has mostly addressed developments in private medical practice in European Russia. Historical trajectories in the Russian Far East, Central Asia, the Caucasus, or Ukraine might have been very different, and that is something that should be considered separately in more detail. Prospects for further research may also include paying more attention to comparative and transnational aspects of the problem. For example, the health-care system in Weimar Germany also experienced socialisation, but not to the same extent as in the Soviet Union. However, a comparative analysis of the health-care provision network in Petrograd/Leningrad and Berlin would be desirable. It would also contribute to a deeper understanding of political and scientific coop-

eration and knowledge transfer between the two countries in the interwar period. The situation in Petrograd/Leningrad can be contrasted with that in other cities in Russia and abroad that experienced similar health-related challenges in the 1920s. The cities that experienced a comparable downgrade from an imperial capital to a more provincial city (such as Vienna or Istanbul) are of especial interest in this regard.

Overall, the chapter suggests several implications of the case of the NEP era for studying health system transformations and their governance. The circumstances of the 1920s bear significant resemblance to some of the post-Soviet developments in public health, and there are important lessons to be learnt about private health-care innovations in the region. On the one hand, my analysis confirms strong connections between high politics and the seemingly apolitical field of medical practice, as seen in its dependence on the fluctuations of the political course of the government, in particular, in relation to its economic orientation. At the same time, this study highlights the precarious position of private medical entrepreneurs in health-care economies in transition. While the authoritarian state might suddenly resort to private provision of health care in order to attend to its ill citizens in a moment of crisis, these private medical institutions can be ordered removed from the economy just as quickly under the current political regime. Medical entrepreneurs and other actors in the field of health have proved to be able to adapt to changing political and economic conditions in a variety of ways but resulting arrangements may bring limited public health benefits if any at all. Health-care innovations are thus always to be considered within the larger dynamics of governance frameworks, property rights, and hierarchies of values (see also Zvonareva 2016).

Notes

1. Curiously, here, Semashko invoked a biblical quote from the Book of the Prophet Daniel (Chap. 6:8): 'Now, therefore, O king, confirm the sentence, and sign the decree: that what is decreed by the Medes and Persians may not be altered, *nor any man be allowed to transgress it*'.
2. St. Petersburg was renamed as the more Russian-sounding Petrograd in 1914, soon after the outbreak of the First World War with the Germans.

In 1924, the city was renamed once again, this time after the recently deceased Bolshevik leader Vladimir Lenin (Leningrad).

3. Among many other things, Russian orthography, too, was reformed in 1917–1918. The new orthography was considered by its critics to be an unjustified over-simplification, and the reform was thus widely perceived as a controversial move on the part of the Bolsheviks. Some prominent Russian intellectuals openly refused to follow the new rules in their writing.
4. Popular reception of this view can be traced in the patients' files, such as a thank-you letter that a former patient, Yurii Safronov, wrote to the staff of Bekhterev State Psychoneurological Research Institute. In the letter, he warmly thanked his doctors and expressed the view that 'a Soviet physician … will achieve a lot, because he doesn't worship dollars' (Tsentral'nyi gosudarstvennyi arkhiv nauchno-tekhnicheskoi dokumentatsii Sankt-Peterburga [Central State Archive of Scientific and Technical Documentation of St. Petersburg, TsGA NTD SPb], *fond* 313).
5. 'Socialism in one country' was Stalin's theory that it is possible to build a socialist state within a single country. It is thus opposed to classical Marxism and to Trotsky's idea of 'permanent revolution', which is global in its scope. In his 1936 book, *Predannaia revoliutsiia* [The Revolution Betrayed], Leon Trotsky famously dismissed the Stalinist state as an aberration of the revolution and the triumph of the bureaucracy over the proletariat.

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3

(Re)Imagining the Nation? Boosting Local Drug Development in Contemporary Russia

Olga Zvonareva

Introduction

In 2009, the Strategy for the Development of the Pharmaceutical Industry of the Russian Federation to 2020 (Pharma 2020) was adopted by the country's Ministry of Industry and Trade (Minpromtorg 2009), followed in 2012 by a dedicated state programme that specified the actions to follow (Minpromtorg 2012). The Strategy aims to ensure the 'innovative development of the Russian pharmaceutical industry', with one of its primary objectives being 'fostering of research, development and production of innovative drugs' (Minpromtorg 2009, p. 4). The adoption of the Strategy has been accompanied by discussions of the crisis in the Russian

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pharmaceutical industry. One sign of this crisis, which was often featured in the media and in professional materials at the time of the development and implementation Pharma 2020, is the fact that drugs produced by Russian companies constitute only about 20 per cent of the country's market value (DSM Group 2006). Moreover, this share consists mostly of cheap generic drugs (DSM Group 2006), indicating low innovation activity among local producers, who appear to generally focus on imitating long-existing technologically simple medicines. The Strategy document itself compares the national pharmaceutical industry to the US and European Union producers, stating that more than half of the production portfolio of the latter consists of innovative medicines and that this illustrates the weakness of the Russian pharmaceutical sector.

In the course of the development and implementation of this set of policies, pharmaceutical innovation appears to have made its way to the highest political levels. Consider, for instance, an announcement made by then-president Dmitry Medvedev during the traditional presidential address to the Federal Assembly in 2009, the year of Pharma 2020's adoption. Standing on a podium in Georgievsky Hall in the Grand Kremlin Palace in front of hundreds of people, he announced:

> In the nearest future we will substantially increase the production of our own drugs. […] Already in five years the share of local production on the [Russian] pharmaceutical market has to become not less than a quarter, while by 2020, more than half of all medicines. This is the aim.

How to understand such public statements? When the president promises to substantially increase the production of local drugs, does he simply indicate new public investments in (bio)pharmaceutical science and technology? Or do these kinds of statements indicate how the topic of medicines—so important for citizens' well-being—becomes involved with state power and with specific ideas about the Russian nation? And, importantly, how do these bold promises relate to everyday realities? How do local actors involved in drug innovating themselves relate to the new Pharma 2020 policies?

In the field of science and technology studies (STS), scholars have abundantly demonstrated that science and politics are intertwined in many different ways. For example, a group of studies concerned with social

construction of technologies demonstrated that technological design is not just a matter of the internal qualities and efficiency of a technology itself, but rather it reflects the preferences and interests as well as the economic and political resources of its makers and users (Pinch and Bijker 1987). A conceptual framework that incorporates these insights into the interplay of the scientific, technological, and social is that of the coproduction of science and society. Coproduction is defined by Sheila Jasanoff as 'shorthand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from ways in which we choose to live in it' (Jasanoff 2004, p. 2). This framework suggests that innovations in science and technology are shaped not only by scientific breakthroughs but also by political agendas, ambitions, and (un)certainties, while politics as well interact with and are animated by technoscientific opportunities and constraints. As was highlighted in the first chapter of this book, post-Soviet settings are characterised by multiplying uncertainties. This chapter explores how uncertainties emerge alongside the state-led efforts to boost local pharmaceutical innovation and shape the dynamics of coproduction.

I base my account on document and media analysis and 30 interviews with actors involved in drug innovation in Russia. I collected the data in 2014, starting with analysis of the content of the Pharma 2020 Strategy and related documents, reports, and publications. Next I held in-depth interviews with 30 actors involved in boosting drug innovation in Russia (academics, representatives of industry, and decision-makers) to understand how visions of innovation and the futures of the nation are being conceived, articulated, and contested in practice, because these actors actually make and implement drug innovation policies and efforts.

The rest of the chapter is organised as follows: I begin by briefly sketching existing insights on cross-national differences in innovative performance from the fields of innovation studies and STS. Then I outline the content of the Pharma 2020 Strategy and analyse how problems it aims to solve are framed and what kinds of future(s) are being envisioned in formulating and implementing this policy. My analysis is performed in three steps. First, I explore how the problem to be addressed through development of pharmaceutical science and technology was constructed. Second, I focus on the notion of national pharmaceutical security articulated by Pharma 2020 and explore how this notion contributes to

formulating a specific vision of the Russian nation and its future. Third, I reflect on the role of Pharma 2020 in local practices of drug development: how do actors in drug development relate to the imaginary of an independent and self-sufficient Russian nation? In the conclusion, I return to the question of how pharmaceutical innovation has become entwined with politics in contemporary Russia and what the implications are of the local dynamics of coproduction.

Understanding Cross-National Differences in Innovative Performance

The project of boosting drug development and production in Russia can be considered congruent with a globally prominent view that scientific and technological advances are a driver of economic and social development (Gibbons et al. 1994). The focus on innovation as central for development has been replacing another influential development paradigm, the Washington Consensus, a package of policies prescribed by the US government and such powerful international bodies as the International Monetary Fund and the World Bank as the path to economic growth and hence the improved well-being of various societies. This policy package is based on the three pillars of liberalisation, privatisation, and deregulation and promotes neoliberal globalisation, doing so especially forcefully in the 1980s and 1990s. However, in the aftermath of the limited success of these policies in closing the gaps between rich and poor societies, another, albeit related, view of development has gained popularity. This view suggests that to develop, economies and societies must innovate.

This view of development as innovation has prompted a wide adoption of policies and an influx of state funds aimed at stimulating advances in science and technology and their translation into enhanced innovation, especially in many developing countries (Gibbons et al. 1994). Substantiating the necessity of this, economists and innovation studies scholars Metcalfe and Ramlogan (2008) give the example of Latin America. There, trade liberalisation has facilitated restructuring local economies to exploit comparative advantages based on resources such as

steel and soya and low-skilled intensive labour that often become an element in global supply chains. While there was some success in macromanagement and stabilisation of the investment climate, lack of attention for building local innovation capacity risks locking Latin America into unfavourable trade terms and out of capitalising on technoscientific advances. The authors conclude that the 'danger of a low (tech) road to development is manifested in this constellation of practises' (p. 434). In this emerging dynamic, we can discern that knowledge is becoming the primary wealth of nations, overshadowing natural resources, and that scientific knowledge and technical expertise are becoming possibly the most important form of capital (Jasanoff 2005, p. 4).

A large body of literature addresses the process of innovation at the national and also regional and sectorial levels, seeking to explain differences in innovative performance across countries and thus equip policymakers with knowledge of how to stimulate their countries' capacities to innovate. This literature, originating primarily in economics and innovation studies, invokes the notion of national innovation systems to explain differences between countries (Nelson 1993). One of the popular definitions of a national innovation system is that it is:

> […] the system of interacting private and public firms (either large or small), universities and government agencies, aiming at the production of science and technology within national borders. Interaction among those units may be technical, commercial, legal, social and financial, inasmuch as the goal of the interaction is the development, protection, financing or regulation of new science and technology. (Niosi et al. 1993, p. 212)

Proponents of the concept argue that differences in innovation and hence economic performance across countries are due to the combinations of institutions involved and their interactions. The latter point, interactions, is important, because national innovation system literature does not limit the institutional environment to the 'hardware' of the formal structures, as illustrated by the statement of an OECD policy paper:

> The overall innovation performance of an economy depends not so much on how specific formal institutions (firms, research institutes, universities, etc.) perform, but on how they interact with each other as elements of a

> collective system of knowledge creation and use, and on their interplay with social institutions (such as values, norms, and legal frameworks). (OECD 1994, p. 4)

In other words, variation in national innovative performance is attributed in this body of scholarship to 'institutional differences in the mode of importing, improving, developing and diffusing new technologies, products and processes' (Freeman 1995, p. 20).

The streams of scientific and policy literature mentioned above have advanced significantly our understanding of variations between countries in innovative performance. Nonetheless, the problem of difference in socio-technical outcomes across nations is not fully accounted for by the analytic tools available in this tradition. For instance, how do differences arise that lack obvious grounding in natural, economic, or social disparities in the institutional environments? An example of such a comparative puzzle derived from the work of Jasanoff (2005) is cited in the introduction to this book. Jasanoff investigated how several economically and socially integrated Western nations, the US, Germany, and the UK, differed in their reception and governance of biotechnology and the ways in which biotechnology featured in their national strategies for meeting economic and social challenges. She documents that embryo research, which has been an important driver of new, evolving reproductive technologies, has been allowed in the UK with limits related to embryos' developmental stage, prohibited in Germany, and not regulated at all by federal law in the US. She explains that these differences can be best understood against the background of the different sets of actors involved and divergent stabilities in policy- and decision-making styles, as well as connections to broader national narratives. These narratives include progress through medical innovation and free market logic in the US; 'building a principled *Rechtsstraat* in Germany' (p. 201); and state-led maintenance of a 'well-ordered space for research' (p. 201) built on trust in empirical observation and demonstration in the UK (Jasanoff 2005). This example stresses the necessity of analytical tools geared towards discerning meaning-making processes, because differences shown in the aforementioned example cannot be explained simply through referring to divergent economic conditions and states of technological development.

The field of STS offers a particularly suitable concept for this task of analysing meaning making, that of socio-technical imaginaries. The original definition of this concept is 'collectively imagined forms of social life and social order reflected in the design and fulfilment of nation-specific scientific and/or technological projects' (Jasanoff and Kim 2009, p. 120). While this original definition emphasises nations, a more recent one goes beyond nations, because these imaginaries 'can be articulated and propagated by other organized groups, such as corporations, social movements and professional societies' (Jasanoff 2015, p. 4). This more recent definition explains that socio-technical imaginaries are 'collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology' (Jasanoff 2015, p. 4). Irrespective of the unit of analysis, which in this chapter aligns more with the older definition focusing on the work of imagination on the level of nation, the concept attends to what a wide range of studies has demonstrated: Contemporary innovation in science and technology is intensely future oriented, emphasising prospective new opportunities and capabilities (Brown et al. 2000). Scholars interested in scientific and technological change have highlighted the central role of expectations, imaginings, and visions in driving activities, attracting interest and resources, and providing legitimation (Abrishami et al. 2015; Borup et al. 2006). More than that, socio-technical imaginaries not only encode visions of what is attainable through science and technology, but also of how a particular society ought or ought not to live, expressing in this way shared societal understandings of good or evil as well as contributing into (re)formation of national identities. For example, in her study of reception of several technologies, including agricultural biotechnologies, in Austria, Ulrike Felt (2015) shows how 'a national identity, a specific kind of "Austrianness", became tied to an imaginary of technological choice, namely, keeping a set of technologies out of the national territory and becoming distinctive as a nation precisely by refusing to embrace them' (p. 104).

The concept of socio-technical imaginaries helps to approach a number of otherwise troublesome questions, such as why trajectories of technoscientific development diverge even between relatively homogenous

Western liberal democracies, and how durability and change in these trajectories come about. Jasanoff (2015) explains that both the materiality of technoscience and the belief systems that give it value and meaning play a role: '[t]echnological systems serve on this view a doubly deictic function, pointing back at past cultural achievements and ahead to promising and attainable futures, or to futures to be shunned and avoided' (p. 22). It also can help to unravel the relationship between national policies and innovative practices through highlighting construction of the futures shaping both. In what follows, drawing on the concept of sociotechnical imaginaries, I analyse how meaning-making processes involved in development and implementation of Pharma 2020 policies have worked out in framing the goals and trajectories of drug innovation and in making national futures in Russia. I also show how through (re)imagining the nation and its future, the relationship between pharmaceutical innovation practices and politics is shaped.

Uncertain Connections Between Pharmaceutical Innovation and Public Health

Both my respondents and media accounts describe the crisis experienced by drug R&D and production in Russia after the collapse of the USSR as unprecedented and prolonged. Pharma 2020 was meant to change the situation. Pharma 2020 aims to ensure 'innovative development of the Russian pharmaceutical industry by 2020'. It lists seven goals, which, however, as I show below, receive different degrees of attention in the implementation of this policy. These differences point to a particular definition of the problem that the Strategy seeks to address. The goals of the Strategy are specified as follows (Minpromtorg 2009, pp. 2–3):

1. improvement of the supply of the Russian population, health-care institutions, the defence sector, and other federal services with nationally produced essential drugs and drugs for rare diseases;
2. improvement of the competitiveness of the national pharmaceutical industry through harmonisation with international good practice requirements;

3. support for research and development of innovative medicines and support of the export of Russian drugs;
4. protection of the internal market against unfair competition and levelling out market access requirements for national and foreign producers;
5. technological upgrade of the Russian pharmaceutical industry;
6. improvement of quality control and removal of excessive bureaucratic registration barriers; and
7. improvement of specialised education, including creation of training programmes according to international standards.

In the Strategy, the problem to be addressed through development and implementation of this policy is defined as a market problem. First, the Strategy suggests that local producers fail to take advantage of the country market, which has grown considerably since its inception at the beginning of the 1990s and that it is foreign pharmaceutical companies that reap the benefits. A diagram at the beginning of the Strategy document depicts the value shares of Russian and foreign producers in the country market in 2007 (20 per cent and 80 per cent, respectively) and those expected in 2020 (50 per cent and 50 per cent). Graphics depicting current not-balanced market shares of the local and foreign pharmaceutical industry and the envisioned equal shares have been featured in many media and professional publications. Second, the Strategy specifies that local Russian producers also miss the profits of the international market, pointing out that export of Russian drugs constituted less than 0.04 per cent of the value of the pharmaceuticals sold globally in 2006.

Another component of the market problem constructed in the Strategy is the composition of the internal market in terms of generics and original drugs. The text of Pharma 2020 compares the Russian market structure with that of 'developed countries' and concludes that the core difference is a marked prevalence of generic drugs in the Russian market, while stressing that Russian innovative drugs occupy only 1 per cent of the entire Russian market, something which ought to be changed. The composition of the market is seen as problematic for several reasons. First, very few new drugs are present in the country market, meaning that patients are being treated with old pharmaceuticals and newer, potentially safer and more effective drugs as well as drugs developed for previously

untreatable conditions are not available. Second, original drugs are the most profitable. Because the vast majority of the original drugs that are available on the Russian market have been developed by foreign companies, it is foreign companies that obtain these profits, while the Russian generic-focused industry settles for low added value and correspondingly meagre returns. This situation adversely affects the development prospects of the local industry, as summarised in the text of the state programme that followed the publication of the Pharma 2020 Strategy:

> Currently the Russian pharmaceutical industry loses to foreign companies in terms of development level, technoscientific potential, production volume, and assortment in competition for the Russian market. Profits made by local drug producers are insufficient for financing research and development work for development of highly profitable innovative drugs. In such conditions they have to adapt outdated low-profit drugs to market competition, while foreign pharmaceutical producers devote significant resources to scientific research and assemble their product portfolios in such a way that more than half of these portfolios are formed by highly profitable innovative drugs. (Minpromtorg 2012, p. 61)

The current market composition is problematised widely in the country's governance circles, beyond Pharma 2020 and related policy texts. For example, on November 21, 2013, Minister of Health Veronika Skvortsova alarmed the government by announcing that the proportion of generics on the Russian market was 77 per cent, giving Russia third place in the world after China and India in the market share of generics. She stressed the need to support local drug innovation to increase access of the population to newer, good quality, and more effective drugs and to enable Russian industry to exploit the potential of the country market. Pharma 2020 explicitly states that even focusing on development of modern high-quality generics would not be enough. According to this policy, if such development were set as a target of the current state efforts, then the industry's development capacity would be exhausted once Russian industry achieved a dominant position in the generics sector of the local market. Rather, the Strategy aspires to the Russian pharmaceutical industry developing and producing 'high tech' innovative drugs and 'successfully

competing with foreign producers in internal and external markets' (Minpromtorg 2009, p. 29).

Thus, the problem to be addressed by Pharma 2020 is framed in economic terms as that of market. This formulation of the problem is also evident in the expected results of the Pharma 2020 implementation, which are also vocal in delineating a desired future (Minpromtorg 2009, pp. 6–7):

- increase in the share of locally produced drugs to 50 per cent (in value terms) on the internal market by 2020;
- increase in the share of innovative drugs to 60 per cent (in value terms) in the portfolios of local producers;
- increase in pharmaceutical products export by eight times over 2008;
- ensuring of the pharmaceutical security of Russia according to the list of strategic medications and vaccines; and
- establishment of pharmaceutical substances production sites in Russia for the output of 50 per cent of finished substances (in value terms), sufficient for production of no less than 85 per cent of the strategic drugs list.

Importantly, while the first articulated goal of the Strategy is 'improvement of the supply of the Russian population […] with nationally produced essential drugs and drugs for rare diseases', the actions foreseen by the Strategy focus largely on the market and its regulation, capacity building for local industry, and investments in R&D. The Strategy states that 'innovative development of the Russian pharmaceutical industry' will lead to a 'general increase of the drugs supply for those who need them up to the average European level in quality and quantity indicators' (Minpromtorg 2009, p. 10). However, measures to ensure that the population will actually have improved access to relevant drugs and that population health needs will be met in a better way receive much less attention. It is assumed that such improvements will happen more or less automatically and with the support of existing regulatory mechanisms such as subsidised drug coverage, once measures to support the innovative development of the industry are realised.

The Pharma 2020 Strategy does mention one new mechanism to link the industry development measures with the health needs of the citizens. It is a list of strategically important drugs whose full production cycle needs to be organised in the Russian Federation (p. 40). This list, consisting of 57 drugs currently not produced in Russia, was developed by the Ministry of Industry and Trade together with the Ministry of Health (in 2010 it was called the Ministry of Health and Social Development) and approved by Government Decree No. 1141-r in July 2010. However, Pharma 2020 does not provide details about how to ensure that all strategically important drugs from this list are actually being locally produced in sufficient quantities and are accessible.[1] Also left out of the picture is the development and updating of the strategic drugs instrument itself to ensure that it corresponds with the changing health needs of people and the state of the pharmaceutical science and technology.

The relations between envisioned industrial development and the well-being and health of individual citizens are uncertain, not only in the policy papers but also in the perceptions of many involved actors whom I interviewed. For instance, a biomedical scientist involved in a Pharma 2020 working group could not see a direct link between Pharma 2020 implementation and population health:

> I think these things [Pharma 2020 and health of the population] are completely unrelated. Quality of life is not directly dependent on realisation of Pharma 2020, because Pharma 2020 is aiming not at increasing quality of life, but at improving the condition of pharmaceutical sector and production of pharmaceuticals and medical devices. This will have positive influence, of course, but very indirect. (9PM 2014)

Another example is the elaboration of a biomedical scientist who also works in a countrywide state programme for supporting development and production of drugs and medical devices. This scientist explained his understanding of relations between the state initiatives discussed and population health (which agrees with the reasoning of the previous respondent):

> [Pharma 2020 and public health] are related somewhat indirectly. In Russia there are some targets specified by the MoH: to increase life expectancy, lower death rates, something else. These targets are specified in numbers.

> It is clear that to meet these targets directly, it would be easier to buy quality pharmaceuticals and directly distribute them. Then success would be more noticeable. Clearly, implementation of such programmes [as Pharma 2020] is directed not only and not exactly at human health. Probably, this is also what is called pharmaceutical security, innovative development, creation of jobs, competitiveness, scientific potential, etc. So we probably cannot say that this will have direct impact on health […] while at the same time, it is simple human logic, that if someone somewhere starts to live better, where more quality things are produced, probably this can influence somehow. (7IR, 2014)

The way in which these and many other actors to whom I spoke conceptualise the connection of boosting local drug research, development, and production with population health is generally in agreement with the economic framing of the problem and the corresponding solutions articulated in the Pharma 2020 strategy and the related documents, including the Pharma 2020 programme.

Overall, the market formulation of the problem to be addressed by the Pharma 2020 strategy and the corresponding programme of development leads to the market- and industry-focused solutions offered by these policy documents and create uncertainties with regard to improvements in public health. It can be argued that while Pharma 2020 and related state initiatives focus largely on the industry itself, on increasing its capacity and ultimately the profits acquired by it, there are other actors and state programmes that address health directly, for example, the government-developed Reimbursement Drug List. At the same time, focus on the pharmaceutical industry's development in both policy and many actors' narratives can be understood as a particular characteristic of the technoscientific imaginary of the Russian nation, where images of mighty local industry overshadow individual citizens' health needs. These health needs are expected to be addressed somehow in the process of erecting a strong pharmaceutical economy or by other means, while the state acquires political weight in the international arena and power becomes more concentrated within the country as well.

However, one may question whether, without specific measures linking pharmaceutical industry development with citizens' health, efforts to boost local drug development and production in Russia will result in

improvements in people's access to medicines and in their health. Innovation studies scholars Reid and Ramani (2012) make a similar argument with regard to the efforts of the Indian government to develop biotechnology in that country:

> Despite the confirmation of continued State support for capacity building in biotechnology, it is of utmost concern that there does not seem to be any focused effort to bring out biotechnology innovations that will impact the poor in a major way […] The reigning premise seems to be that supporting the accumulation of industrial capabilities in the biotechnology sectors is sufficient and positive results will percolate in some measure to the poorer masses on their own. Clearly, this may not happen. (p. 652)

Pharmaceutical Innovation and Uncertain Meanings of National Security

The core concept of the Pharma 2020 Strategy and the associated programme of development is that of national pharmaceutical security, which is envisioned to be one of the main expected results of the implementation of the Strategy, as described in the previous section. Appeals to national security in the policy texts justify the active involvement of state and large public investments in pharmaceutical industry development. For example, the programme states: 'In the current situation in the Russian Federation, participation of the state is required to solve key problems in pharmaceutical industry development to ensure national security in the health care and health of the nation' (p. 61). Against this background, a paramount risk appears to be perceived in 'increasing dependency of the consumer market on imported products' (Minpromtorg 2012, p. 5), that is, foreign-developed and produced drugs. Associated risks mentioned include foreign exchange risks and external macroeconomic shifts such as global financial crisis.

My analysis suggests that the aspirations to national (pharmaceutical) security in Pharma 2020 work to encode an imaginary of an independent and self-sufficient Russian nation. Many respondents recognised and shared these aspirations, for example, a director of a large private pharmaceutical company:

> The goal of this programme [Pharma 2020] is to create an advantage, to saturate the market, create certain domination and, ultimately, a certain security for Russia in terms of import substitution and everything else. As I understand, the situation, based on the current collisions, may dramatically speed up. (22BK, 2014)

The imaginary of independence and self-sufficiency is also promoted by the emphasis on the need to have the full production cycle of drugs, especially of the strategically important and other 'essential drugs', within the country. Measures to support organisation of the full production cycle within the country involve a revival of the pharmaceutical substances manufacturing that drastically declined after the USSR's collapse. (Between 1992 and 2008, the output of pharmaceutical substances produced in Russia declined by about 20 times, as suggested in Pharma 2020, p. 17.) Producing pharmaceutical substances locally is nonetheless important to ensure independence of the national pharmaceutical industry from foreign pharmaceutical substances producers, because currently even those drugs that local industry does produce are manufactured using mostly imported substances. Hence, one expected result of the Pharma 2020 strategy implementation, already mentioned in the previous section, is '[e]stablishment of pharmaceutical substances production sites on the Russian territory for the output of 50 per cent of finished substances (in value terms), sufficient for production of no less than 85 per cent of the of strategic drugs list' (Minpromtorg 2009, p. 7). According to a biomedical scientist who is also a member of a relevant government working group, the focus on independence and self-sufficiency acquires special importance in the current time period:

> I think that this programme [Pharma 2020] is very timely in a sense that […] we see the kind of political situation developing around Russia, and it is very good that someone in our government or circles close to government is so farsighted that they thought of the issues of national security. […] It will still raise our confidence for tomorrow, from the point of provision of medicines. If the situation deteriorates somehow at least we will be producing essential medicines here. (9PM 2014)

The Pharma 2020 strategy reaffirms the importance of the nation state boundaries in the increasingly interconnected world. In a recent article, Elbe, Roemer-Mahler, and Long (2015) draw attention to that the

literature on pharmaceuticalisation, which studies changing patterns of the development, production, and use of pharmaceuticals in society, has largely overlooked the important role of governments in pharmaceuticalisation processes. In line with their findings, my analysis illustrates that government actors are contributing to and shaping pharmaceuticalisation much more actively than has long been acknowledged. They are doing so through a variety of political instruments, one of which is linking pharmaceuticals with national security strategies. Importantly, considerations of national security feature prominently in the strategies of governments outside of Russia, first of all in the US and the European countries. However, the national security strategies and measures of these governments in the area of pharmaceuticals focus mainly on developing and stockpiling 'medical countermeasures', that is, antivirals, vaccines, antibiotics, and antitoxins, to protect their populations against threats of bioterrorism and pandemics (Elbe et al. 2015). Russia, while also interested in medical countermeasures, broadens the pharmapolitics of national security, conceiving local development and production of drugs and saturation of the local market with them as a matter of national security as well.

The vision of a self-sufficient and independent Russia is expected to be realised through developing the pharmaceutical industry, securing for it the dominant position in the local market, and strengthening Russia's position in the international market under the lead of the state: The state is the primary investor and regulator in the arena of Pharma 2020. That is, pharmaceutical security that involves having essential drugs of good quality, including new and innovative ones, is also (just as the problem Pharma 2020 aims to solve) being framed in predominantly economic terms with the state taking the responsibility for boosting drug R&D and production and expecting these measures to 'trickle down' more or less on their own to meet the Russian population's drug needs. This creates uncertainties with regard to what is actually being secured. While it appears that pharmaceutical security, as an expert commentator from the foundation Open Economy put it, 'will serve to provide the country with pharmaceutical drugs in case of an emergency' (Gordeev 2009, p. 6), Pharma 2020 does not give much attention to measures for ensuring the actual satisfaction of people's health needs, be there an emergency or not. The Russian population and its health needs are thus being silenced in

the vision of self-sufficient nation. Aspirations for national (pharmaceutical) security appear to paradoxically justify the nation's struggle for a potent national industry, economic independence, and strong international standing taking precedence over people's health.

Only few respondents actually made links between ensuring national security and meeting basic drug needs of the Russian population. For example, the director of a Russian Contract Research Organisation elaborated on what Pharma 2020 could have looked like if it had been connected to the health sphere and stressed that only in that case could a national pharmaceutical security be achieved:

> A strategy with a title like 'assuring drug security of Russia' […] has to firstly contain prospective treatment standards. […] In my opinion, from the beginning treatment standards should have been the starting point. To understand, which products should be used for treatment of which nosology in a particular time perspective, realising that these are unlikely to be breakthrough innovative products created in Russia. What can be used for treatment of arterial hypertension in 5–7 years? […] Only based on an understanding of what the state needs in 5–7 years to treat its citizens, a support strategy should have been built so that in 5–7 years what can be used to treat patients would be obtained for state money.
>
> From my point of view, the process turned another way. I am not saying that this is completely absent, but I have never noticed in talks, or in publications, or during conferences, never heard from anyone that the state has a concrete strategy of treatment, particular standards that we are supposed to reach. … Therefore now, when money is being provided for pharmaceutical companies, this is stimulating single growth points to some extent, but it is not a formation of a coherent system of Russian pharmaceutical industry that would allow meeting the needs of the Russian Federation in Russian-made drugs. (23CT, 2014)

This respondent stated that pharmaceutical security in terms of supplying the Russian population with needed drugs is unlikely to be achieved by the current Pharma 2020 implementation. He further elaborated that in his view, public health benefit should be the ultimate goal of the state efforts to boost drug development and production in the country, which is not addressed by the current innovation support policies.

Pharma 2020: Shaping the Imaginary of an Independent and Self-Sufficient Nation

How are we to understand the visions of the nation and the national futures encoded in the Pharma 2020? Is it a case of a pre-existing and widely shared socio-technical imaginary shaping pharmaceutical policies? Or is it an attempt by political elites to disseminate their vision through policymaking? I suggest another option. The development and implementation of Pharma 2020 can rather be more productively viewed through the lens of the coproduction of science, technology, and politics, which in this case is also being shaped by multiple uncertainties local actors have to deal with in practice. Gabrielle Hecht (2001), who has analysed designing nuclear reactors in France from a similar angle, provides an illuminating account of such coproduction:

> Ideas about national identity do not grow by themselves. They must be actively cultivated in order to persist. Further, articulating and rehearsing these ideas often reformulates them. So, I argue, does grounding these ideas in the material realities of technological systems. […] Invocations of national identity are thus not gratuitous acts: this is one reason why historians of technology must take them seriously. Deliberately or not, people usually invoke the nation to perform political, cultural, and sometimes even technological work. (Hecht 2001, p. 225)

We can therefore trace the pre-existing elements of the socio-technical imaginary of an independent and self-sufficient Russian nation, as analysed below, but Pharma 2020 is not simply a manifestation of it. Through bringing together and articulating these elements, Pharma 2020 on one hand reformulated them, giving them a concrete form, expression, and grounding in the pharmaceutical research, development, and production system. On the other hand, it also strengthened the resulting vision through rehearsing, disseminating, and publicly enacting it.

First, the socio-technical imaginary of the pharmaceutically secure and independent Russian nation articulated by Pharma 2020 points to what is perceived as the achievements of the Soviet pharmaceutical sector. The USSR's drug industry was far from being perfect both in terms of innova-

tion and making essential drugs available and accessible for the entire population (see, e.g., Conroy 2006; Jack and Mason 1987). However, in the aftermath of the large-scale deterioration of the local industry in the 1990s, the Soviet pharmaceutical industry appeared to many actors to be strong, well developed, and importantly, almost solely producing drugs for the entire country's population, without relying on imports of either pharmaceutical substances or already-manufactured drugs, while also exporting pharmaceutical substances and even some drugs. Many of my respondents praised the Soviet drug development and production sector for being self-sufficient:

> In Soviet times a clear and understandable structure and system of implementation of new drugs was built. And if we remember (you probably can't remember those times, but I can), if we remember Soviet pharmacies, most drugs there were local Soviet drugs. (19SKSE, 2014)

Second, in addition to reminding of the Soviet self-sufficiency, Pharma 2020 integrates more recent elements into the imaginary of a pharmaceutically independent and self-sufficient nation. These elements are market and innovation. The ideas of market forcefully infiltrated Russian society at the beginning of the 1990s, brought in by the wave of neoliberal reforms. But in the technoscientific imaginary of the nation articulated by Pharma 2020, market is not the powerful information-processing mechanism or a form of collective decision-making that should be free from the state's interference, as many neoliberal thinkers thought market to be. Rather it is a space where profits can be made, and the state is to control and arrange this space within the country to make it exploitable to the national advantage and to facilitate extraction of resources from markets outside the country. The barriers to international trade that in the neoliberal view need to be eliminated on the way to achieving a level playing field in the global market are being erected here, and market is meant to strengthen nation state borders. Innovation in Pharma 2020 is also interpreted largely to fit a closed-up imaginary of an independent and self-sufficient Russian nation state. Pharmaceutical innovation is a tool to achieve national control over the internal market and a prominent position in the external market.

It must be noted that in the text of the implementation programme that followed the Pharma 2020 Strategy, the need for integration of the national pharmaceutical industry into 'international chains of development and production of pharmaceutical and medical products' (p. 10) is mentioned several times. This view of the pharmaceutical national future as integration in the global pharmaceutical arena diverges from the discourse of national security as articulated in Pharma 2020 and can be viewed as an element of an alternative socio-technical imaginary, where pharmaceuticals become a vehicle for expanding socio-technical networks instead of erecting borders. While it appears that Pharma 2020 and related policy papers tried to reconcile the closing-up dynamic of reaching pharmaceutical independence and self-sufficiency with the opening-up trajectory of concurrent integration into the global pharmaceutical arena, the two directions of development appear to be too different. The closing-up direction, rooted in the perceived reliability of the self-sufficient Soviet pharmaceutical industry and animated by the generally negative experiences of the Russian pharmaceutical industry upon meeting the market, has outweighed aspirations for international integration, as can be seen in the Pharma 2020 implementation. The measures that were supposed to ensure progress in the integration such as harmonisation of the Russian regulatory sphere with the international one (e.g., mutual acceptance of clinical trials results and mutual acceptance and harmonisation of Good Manufacturing Practices requirements) largely were not realised (Nikolaeva 2016; Satyibaldin 2016). Rather, the emphasis was placed on measures to jump-start development and production of local drugs on the way to self-sufficiency, such as distribution of funding for R&D to Russian academic and industrial organisations, preferential purchase of locally produced drugs by the state, and support for modernisation of production facilities in the country (Neverova 2016). Moreover, the lack of positive experiences of working internationally among local actors reinforces the dominance of the closing-up strategy in the country. For example, head of a large company providing drug development and testing services and developing active substances described experiences illustrating the dangers of trading and engaging with foreign entities:

> All this time [after the USSR's collapse] the country was being cleaned out by foreign 'walkers', who were bartering old ideas for basically beads and shells. The Soviet Union was very productive, there were many interesting substances. They were taking out everything possible. Those scientists who were working on these projects, ideas, they mostly were people with the old mentality. They did not understand what business is and how they are being fooled, tricked. I watched it multiple times. And intellectual property was flowing away like a landslide. (5BK, 2014)

Such past experiences of unfair exchanges by actors unfamiliar with the new market environment may contribute to the ongoing apprehension of many actors regarding working internationally. Overall, there was a noticeable discomfort and hesitation among many respondents about Russian drugs, businesses, and other resources leaving the country and also about relying on foreign-produced resources, including pharmaceutical substances. Finally, Pharma 2020 has grounded the imaginary of an independent and self-sufficient Russian nation in the technoscientific system of pharmaceuticals research, development, and production. Pharmaceutical science and technology have a special significance and everyday relevance for many of the country's citizens. Therefore, the discourse of national pharmaceutical security that appears to hold promise of responding to the health needs of people can resonate with their hopes, further contributing to the strengthening and persistence of the vision described. Also, for those active in the local pharmaceutical arena, such as scientists, developers, and industry representatives, the importance of the national security concern means the active return of the strong state that disappeared with the end of the Soviet Union, and of the associated support and clarity. For political actors, articulation of a technoscientific imaginary of a self-sufficient Russian nation provides an opportunity to earn more support for the political agenda of the concentration of power and strengthening state control over various aspects of societal life. Thus, Pharma 2020 became a reformulation of a particular vision of the Russian nation, one that was rehearsed in the policy texts and in the media and professional discussions of Pharma 2020 and publicly performed through the Strategy implementation efforts. The Pharma 2020 initiative also grounded this vision in a pharmaceutical technoscientific system, granting it more strength and immediate relevance for different groups of

actors. Consequently, this vision came to be commonly adopted and thus a full-fledged socio-technical imaginary (Jasanoff 2015, p. 4), whereas nascent alternative imaginings failed to take root amidst uncertainties of still new market environment and continuous turbulent societal changes.

Conclusion

In this chapter I considered how the processes of meaning making involved in the development and implementation of the Pharma 2020 set of policies have shaped developments in pharmaceutical science and technology in Russia and concurrently contributed to producing specific visions of the Russian nation and its futures. Importantly, this chapter highlighted how state-led effort to boost local drug development has produced new uncertainties. My analysis is structured around the texts of the Pharma 2020 Strategy and other related policy documents and the views of actors who work in the Russian pharmaceutical arena. The analysis demonstrated that in Russia, the lack of locally developed and produced drugs has been predominantly defined as a paramount threat to national security in both policy documents and in the reflections of actors involved. The country's dependence on foreign companies in delivering medicines and the current failure of local companies to harvest profits from the growing Russian market have been defined as long-term risk factors. Consequently, the problem to be addressed by the Pharma 2020 policies has been defined in economic terms as that of market rather than in terms of population health. That is, the research, development, and production capacities of the Russian pharmaceutical industry must be enhanced to solve the current problem of the inability of the local industry to dominate the sizeable local market and harvest profits from it. However, profound uncertainties have emerged with regard to public health benefits of enhancing pharmaceutical research and development.

This market problem definition, together with the focus on the national pharmaceutical security in the development and implementation of Pharma 2020, has then worked to articulate a particular vision of the nation and its future. The intensified state efforts to stimulate and support

local drug innovation have contributed to and been animated by a widely shared socio-technical imaginary of an independent and self-sufficient Russian nation. This vision drew on pre-existing, historically rooted aspirations with respect to self-sufficiency, on recent national experiences of living through drastic market reforms, and on novel technoscientific opportunities for innovating in pharmaceuticals. Pharma 2020, related policies, the media, and professional discussions brought together these elements and reformulated and consolidated them into a powerful vision of independence and self-sufficiency, which then has been publicly performed through the Pharma 2020 implementation efforts. Concurrently, the Pharma 2020 initiative grounded this vision in the pharmaceutical technoscientific system, granting it more strength and immediate relevance for different groups of actors, such as the population, pharmaceutical professionals, and politicians, and making it communally adopted. Pharmaceutical technologies, in turn, opened up political possibilities to articulate the need for the concentration of state power and (re)erecting the nation state's borders after their opening with the dissolution of the USSR in the 1990s. That is, pharmaceutical innovation has become entwined with politics in contemporary Russia through producing an imaginary of the nation and its future, with this imaginary of an independent and self-sufficient Russia shaping specificities of the state and governance of pharmaceutical technoscience. Importantly, nascent alternative imaginaries failed to fully develop and gain influence in the settings where many actors feel disoriented amidst continuous societal changes, still unfamiliar market environments, and unclear rules. Even though independence and self-sufficiency are being framed in terms of the market rather than in terms of people's health needs, the dominant technoscientific imaginary powerfully diverts public attention from the question of whose security is being ensured.

Notes

1. For example, Viktor Dmitriev, Director of the Association of the Russian Pharmaceutical Manufacturers (ARPM), explained his vision of how production of these strategically important drugs could have been ensured.

> Officials from the Ministry of Industry and Trade should have arranged a meeting with producers and scientists and discussed who would assume responsibility for which of the strategic drugs. 'Then we will see whether companies, science, have desire to do so or not. And if yes, then what is needed. […] Somebody would need a production line, others will need money to increase turnover volume so that from this turnover they finance the science part themselves. I think we need to begin from a meeting, where we would clearly work from the list: Bupivacaine—responsibility for its development is taken by such research centre or such company. Agree between each other, who does what, in which stage, make a business plan, which can be controlled via benchmarks, according to dates: what and when is done, when we will see the finalised drug. The most important is a plan. Each company that takes part in it needs to understand how it is going to develop the process, for which a business plan is needed. For each drug we need to appoint a responsible entity, deadlines […] and work accordingly. To distribute resources to develop drugs without specific details is equivalent, I think, to sending money into a black hole' Shevchenko (2010).

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4

Risky Economies: Innovation of Medical Devices in Russia

Evgeniya Popova

Introduction

Innovation by definition entails entering new worlds and trajectories and brings about new uncertainties. From innovation studies, we know that interaction and exchange are crucial requirements of innovative environments, as they provide opportunities to learn, anticipate, and attune to the environment. An abundance of innovation studies literature demonstrates that innovations are the result of collaboration of both public and private sector institutions. For example, the Organisation for Economic Co-operation and Development (OECD) had already stated in 1995:

> The overall innovation performance of an economy depends not so much on how specific formal institutions (firms, research institutes, universities, etc.) perform, but on how they interact with each other as elements of a

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> collective system of knowledge creation and use, and on their interplay with social institutions (such as values, norms, and legal frameworks). (Smith 1995: 72)

There are different concepts to understand the idea of interactions in innovation environment, for instance, the Mode 2, Mode 3, and Mode 4 models of knowledge production (Gibbons et al. 1994) and Helix models (Etzkowitz and Leydesdorff 2000; Parker, Vermeulen, Penders 2010). Common to these approaches is that they highlight the importance of interaction, dialogue, and exchange between different actors in the innovation environment. Interaction provides opportunities to formulate and discuss alternatives to established innovation policy, to the choice of innovative products, and to the definition of problems requiring innovative solutions (Page 2007; Stirling 2010). Different ways to define problems may lead to different innovation pathways, and there is no scientifically proven calculus to determine the most rational way to spend resources for specific innovation pathways (Stirling 2010). Thus, decisions on priorities for innovation and its aims are 'inherently partly subjective and political, rather than purely technical or economic' (Walport 2014: 50) and depend on the engagement of specific participants. The call for interaction raises questions about the role of nation states and individual non-governmental agents in the field of innovation (Irwin 2008; Sunder 2005; Jasanoff 2004). While some authors stress the crucial importance of the state to extend narrow market approaches to innovative development (Mazzucato 2013; Breznitz 2007; Block 2011), others emphasise public discussions as an important element of innovation policy (Page 2007). Nevertheless, all too often, relationships between the government, industry, and academia will unavoidably be fraught with uncertainty and projects are liable to fall short or fail (Zomer et al. 2010).

Many countries search for the balance between state, market actors, and the public to develop innovative environments. How can the state create and ensure a playing field and act as a participant at the same time? Sometimes the state may take the lead in innovation, substituting for industry or academia (Etzkowitz 2008). But for formerly authoritarian post-communist states, it is dangerous to be more statist than needed: 'The communist experience demonstrated that state-run economies are

not particularly effective at fostering innovation. Authoritarian regimes may achieve some priorities (weapons, space launches), but they more often stifle creativity' (Balzer and Askonas 2016). Considering this, one would expect that, after the collapse of the Soviet state, a variety of innovative pathways would start to flourish and that all types of new entrepreneurial collaborations would develop. However, this is not the case. In Russia, the state still is a central actor in innovation:

> Russia has a relatively consistent innovation policy, despite significant changes in the political sphere, from the break-up of the Soviet Union to the re-centralizing of political control during the Putin era. Government was and is the central actor in the innovation system; this system continues to be hierarchical. (Dezhina and Etzkowitz 2016)

In this contribution, I explore the innovation strategies of entrepreneurs in Russia, and to that purpose I will focus on the field of medical equipment. How do entrepreneurs experience the balance between government and market, how do they experience the space for innovation, and which strategies they develop to innovate? I begin by explaining how I studied the world of entrepreneurs in medical equipment. Next I sketch the medical equipment market and the economic policies in the medical equipment field of Russia, because these policies are important beacons for entrepreneurs when developing their business models. Then I explore the notion of uncertainty as it characterises the activity in this field of innovation in Russia. After presenting the results of the analysis of innovation strategies of entrepreneurs in medical equipment in Russia, I reflect on the interrelationships between the state activities and business models that are operative in Russia.

Studying the World of Entrepreneurs

This chapter originates in a broader study of the culture of innovation in Russia initiated in 2012. This study was based on the framework of the project 'Hi-tech Entrepreneurship in for Countries: Russia, South Korea, Taiwan and Finland' by the European University at St. Petersburg, sup-

ported by RUSNANO.[1] I have used various sources including legislative acts, reports, and media publications, and in 2015, I performed fieldwork in the cities of St. Petersburg, Moscow, and Tomsk, all of which are flagged as 'hotbeds of innovation' in terms of their developed innovation ecosystems. I also interviewed 15 market respondents and used interviews with more than 20 experts from regional institutes of development, gathered by colleagues of the RUSNANO project. However, this chapter is mainly based on 15 biographical interviews with directors of medical equipment companies. I invited them to tell me their life story in connection with their ideas about running a company and the meaning of technology and collaborating with other firms and officials. I asked them to talk about their dreams, images of the future (company and technology), fears, and practices of business planning. While these stories were diverse, based on my analysis, I suggest a typology of business models that the companies employ.

The Medical Equipment Market in Russia

In Russia, the state is the main buyer of medical equipment. The Russian health-care system is financed by mandatory medical insurance, insurance contributions of employers (5.1 per cent of wages), and by the state budget,[2] which spends 2.56 trillion roubles per year, while in commercial medical sector about 580 billion roubles are spent annually in the country (Health Systems 2015: 155–159). Data on the Russian medical equipment market are experts' estimates as official statistics are lacking, which can be considered a reflection of the lack of state interest in the industry until recently. Compared to other high technology sectors in Russia, the medical equipment market is rather undeveloped, although small and relatively simple devices by Russian producers account for a significant market share. For example, while Russian suppliers account for only 5 per cent of the MRI scanner market (Kalininskaya and Kovalev 2012), in the artificial heart valve market, Russian companies account for 65.1 per cent of production and 37 per cent of market share. According to estimates by market experts, all parts of CT scanners are imported, and the Russian manufacturers do 'kit-form assembly' in Russia (Grischenko

2011). *Rossiyskaya Gazeta* states, 'Today only 5–7 per cent of medical equipment in our polyclinics and hospitals is produced in Russia. The rest is all either imported or at best a "kit-form assembly job" from imported parts' (Nevinnaya 2007). This situation has a long history: In the Soviet Union most of medical equipment was produced by a few military plants and research institutes (Medicine is powerless 2014), and although imports are mentioned in special literature (Medical Industry 1980), they are not in the official statistics (see e.g. Foreign Trade of the USSR, 1987). The result of this is that then and now, the quantity and quality of medical equipment in Russian hospitals is inferior to that in high-income countries (see Table 4.1).

When the Soviet Union collapsed in 1991, this tradition continued. Many products in this sector are Russian in name only and 'kit-form assembly' inside the borders of Russia is dominant, which is mere assembling of technology modelled on foreign equivalents and often with original parts from the foreign company that developed it. In the 1990s, part of the state arms industry was dismantled, and a pool of scientists and engineers became unemployed or began to receive very meagre salary and faced a sharp decline in their living standards. Some of them used their expertise and know-how to develop technology businesses, including medical equipment. Market conditions at the time were quite favourable for Russian medical equipment companies. Imported equipment, paid for in scarce foreign currency, was so much more expensive that by simply copying imported equipment and locally assembling several devices a

Table 4.1 Differences in the share of medical equipment per million inhabitants in developed countries and in Russia in 2010

Type of medical equipment	Facilities in developed countries, pcs./1 mln. population	Facilities in Russia, pcs./1 mln. population	Differences (%)
Ultrasonography	230	78	66
MRT	10	3	67
Linear accelerator	5.2	0.35	93.3
PET, PET/CT	1.2	0.08	93.3
SPECT, SPECT CT	6.2	1	84

Source: Medical Industry of the Russian Federation's development strategy for the period up to 2020 (http://www.garant.ru/products/ipo/prime/doc/70239972/)

year, a very reasonable living could be made. As one interviewee told me: 'In the mid-90s imported heart valves cost $1500–2000, while we marketed them for $500 each' (Interview, Moscow). These developments in the 1990s led to two strategies to develop medical equipment in Russia. The first was a 'shady' market with semi-formal schemes for bringing imported used equipment (second-hand) into Russia as scrap metal according the documents. Then companies were assembling and selling this scrap metal in Russia as a new Russian product. Second, companies could develop technologies that existed abroad and produce them in Russia under Russian company names. In 2010 in some sectors, at least 20 per cent of the high-tech medical equipment bought by Russia was such 'recovered' equipment (Nevinnaya 2007; Medical Industry 2013). Foreign companies catering to the demand for cheaper, used equipment in Russian clinics are currently trying to organise sales of it. However, foreigners have limited opportunities in this area, as an interviewee expresses: 'We entered this market much earlier, and we often understand more about recovering equipment than the official distributors, who have less experience' (Interview, Tomsk).

The medical equipment sector was mostly haphazardly regulated from the late 1980s until after 2010. There was no legislation regulating the circulation of medical products.[3] There have been several attempts to change the situation: In 2002, a draft bill was drawn up to regulate the circulation of medical products, and in 2011, Federal Law No. 323-FZ 'On the Fundamentals of Health Protection in the Russian Federation' was enacted, containing three articles related to the circulation of medical products in Russia. However, because this law is not a specialised law, issues such as technical guidelines and responsibility for the poor quality of medical products remain unregulated. In 2015, the Federal Law on the Circulation of Medical Products was enacted. According to Prime Minister Medvedev's instructions in 2014, the Health Ministry and Public Health Inspectorate should bring Russian legislation on the circulation of medical products in line with international standards, including international classification of medical production circulating in the Russian Federation. A definitive list of medical products allowed in Russia was drawn up only in early 2016. Lack of discussions about the list causes many complaints from market players, including directors of small

companies and distributors of medical products, who had not participated in any discussion on the issue. The lack of state regulation, except in the field of licencing, the lack of protection of intellectual property, and the lack of market players imply a major uncertainty for investors and producers both from Russia and abroad, and the demand by venture corporations for R&D development in medical devices is limited. (For more detail on the strategies of Russian venture capital funds on the medical equipment market, see Kamensky 2014.)

In the teeth of previous policy, after 2010 the Russian state began to prioritise Russian-made equipment. The government programme, 'Development of the Pharmaceutical and Medical Industry Until 2020', which promised state support of some companies and fields, was adopted in 2013. Under the programme, the target was for Russian-made medical products to reach 40 per cent of total sales by value on the domestic market over 10 years, with the proportion of imported medical products without Russian equivalents falling to 30–40 per cent. Similarly ambitious figures have also been prescribed by the Ministry in another document, 'Strategies for the Development of the Medical Industry Until 2020' (Medical Industry 2013). The Ministry underlined its faith in the growth of the market and hence the increase of the share of Russian products by pointing to the fact that modernisation of health care in Russia was only in the early stages and that the medical equipment market was as yet unformed. However, Russian policy documents display quite some ambiguity. It is, for example, vague on the proportion of Russian-made medical instruments, because the definition of medical products also includes disposables, such as syringes and dressings. The bureaucratic logic of the Russian market requires records of items 'produced in Russia', and because all major players have an interest in maintaining the status quo, figures often conceal the true state of affairs.

According to Trade and Industry Ministry data, 45 per cent of functioning CT scanners are already produced in Russia. By 2018, the Department intends to reduce the proportion of imports in the CT sector to 13 per cent; this was the target announced in the Ministry's Order No. 655 of 31 March 2015. However, as market insiders report, it is hard to term even the current 45 per cent of CT scanners locally produced when existing assembly lines use 70 per cent imported parts (Goncharova

and Kruglikova 2015). To protect the Russian medical market, the 'Government Decree On Restricting Access for Certain Types of Medical Products Originating From Foreign Countries for the Purposes of Procurement for State and Municipal Needs' was passed in February 2015.

Given the state of regulation and the ambiguity in state policies, innovation in post-Soviet Russia is characterised by uncertainty. In the next sections, I show how entrepreneurs deal with this.

Innovation Strategies in the Medical Equipment Industry in Russia

The majority of heads of med-tech companies in Russia interviewed mentioned difficulties in working in the Russian economic system: uncertainty related to the lack of transparent legislation and lack of protection for intellectual property; problems related to decisions on state registration of new technology and government bodies that regulate business; problems related to lack of clarity in strategies for providing hospitals with equipment; and problems related to the quality of personnel, due to the unpredictability of education outcomes (constant education reforms initiated by the government lead to a worsening in the quality of human resources, according to employers). Apart from the fact that for people engaged in innovation in Russia, policy-making processes are not transparent and they cannot anticipate them, rules for entrepreneurs also often change (Kossals and Ryvkina 2002; Barsukova 2004; Paneyakh 2008; Volkov 2000) and heads of companies must constantly safeguard themselves and diversify their activity in every possible way. In the literature, it is argued that these kinds of uncertainties will reduce an organisation's ability to map out and pursue strategic choices (Miller and Friesen 1984).

A number of strategy typologies and taxonomies are developed in the strategic management literature (see e.g. Abell 1980; Chrisman et al. 1988; Segev 1989). The Miles and Snow (1978) strategic orientation typology has been accepted as a robust description of the adaptive deci-

sion patterns. A prospector strategy focuses on product innovation and market opportunities (Stathakopoulos 1998; Russell and Russell 1992). A defender strategy searches for market stability, and offers and seeks to protect a limited product line for a narrow segment of the potential market (Stathakopoulos 1998). While organisational theories sketch many variants of company behaviour, in my study I found four types of entrepreneurial strategies:

	Localists	Globalists
Strive for changing the health-care system	Smaller-scale tactic adherents—Engage in communication with chief physicians, personal relations with the decision makers, supplying equipment for education needs	Reformers—Attempt to influence the federal institutes, actively search for external markets
Adapt to the current system	Conformists—Operate in the frameworks set by the system, most often living on state grants and combining a position in a university/research institute with business	Isolationists—'We will reach global markets, while for the time being develop things slowly by themselves'

Below I illustrate these four strategies to address uncertainty in policy and economics.

Smaller-Scale Tactic Adherents

Smaller-scale tactics are employed by entrepreneurs who work on the local level and do not try to create technology for the world or even nationally for Russia. We can see this strategy in entrepreneurs who produce medical equipment for individual consumers, such as tonometer and blood glucose metres, and in entrepreneurs who make simple devices for hospitals such as scalpels or stone grinders. They develop rather simple production chains and do not try to create a large plant.

In the 1990s, such simple, unbranched chains were quite functional for sales and for the survival of small companies. It was sufficient to work with one or two doctors and reach an agreement with a hospital director on the procurement of the newly developed product:

> At that point in time [the company's] sales were all through personal contacts with the heads [of hospitals] […] well, with the people who controlled the money. When the tenders appeared also, you had to get the interest of the person who files the tender requisition. He would have to include in the tender documents some features that only you have. In that sense, by the way, the European CE certificate helped a lot. It was enough to just include […] the priority given to a Russian manufacturer and for some reason the availability of the CE certificate with this manufacturer. (Interview, Tomsk)

Uncertainty in this strategy aligns the relations defined with the local hospitals and officials:

Respondent: Then at the initial stage it was craftwork. Craftwork. [Director's name] came to the chief physician and they agreed that he takes this one. At that point in time not a single device would be sold without the infamous kickback. I mean I even sold devices in the northern regions, I mean I sold them everywhere with a kickback. It was normal. You come to the chief physician…

Interviewer: That is you come with a sack of money…

R.: Well, not with a sack but with a small bundle of notes. They buy the device. (Interview, Tomsk)

Such companies never grow to be more than small firms that resemble craft workshops. Because of their close relationships with local hospitals and openness to their needs and problems, these companies can survive for many years by solving the specific problems on the local agenda. Their methods are related to personal contacts and small transformations. For example, while in the 1990s they developed good relationships with decision makers who bought equipment for local hospitals, a more up-to-date strategy is to develop networks with medical students, mostly by providing the equipment for medical education. By supplying equipment free of charge to universities to teach future doctors with the use their equipment, the companies ensure that these professionals become accustomed to their equipment design and are developed into future clients.

Initially, this type of market promotion was adopted by foreign companies, but in recent years, more and more private Russian companies have been using this method to find personnel for their production and to capture future consumers.

Small-scale tactics do not relate to major technological innovations. In the recent Russian discourse, such companies work on import substitution:

I: Did you develop a new non-existent technology?
R: No, much of it is overseen elsewhere. Of course, we were at the Dusseldorf Medic Expo, saw what world companies do in the field. Our electro-surgery is spotted all over. (Interview, Tomsk)

Recently, this type of business has been supported by Russian state policy (Medical Industry 2013). For instance, in one case highlighted by the respondents, the appearance of special economic zones in Russia with an advantageous tax regime and customs duty concessions on imported components, combined with restrictions on purchases of imported medical equipment from 2011, encouraged agreements with foreign high-tech companies which knowingly supplied all components and design documentation to the Russian 'kit-form assembly' companies supplying 'Russian' equipment for government tenders:

R: After the interviewer's question, calling by phone to the director of another company: Hi, can you tell me, have you had any sponsorships, any German money? (*pause*) Oh, they provided equipment, right? (*pause*) And they also provided the technology, right? You assemble and everything is for free, am I correct? (*pause*) Oh, thanks, bye. He said, yes, the plant and equipment were German. As for the R&D, he said, they recast what the Germans gave them and made a small alteration to call it a new Russian technology. (Interview, Tomsk)

So, smaller-scale tactics with respect to innovation of medical equipment imply that the companies do not develop a new technology. They work on the local level, adopting global technology to local circumstances, addressing problems of the local medical professionals.

Conformists

A conformist innovation strategy refers to entrepreneurs who try to transfer scientific research results to industry; often they transform non-medical technologies into medical ones, for example, an ultraviolet purifier. They operate within the frameworks set by the system. An entrepreneur tracks the research of the institute, identifies new ideas, and searches for partners to develop and implement the technology:

> When I was PhD student in chemistry, my supervisor was very interested in how to extract profit from science and involve his students and colleagues in his projects and push them to make market R&D. (Interview, Novosibirsk)

Another respondent recalled that, in the early 1990s when the salary in the research institute was very much diminished, he started different companies for resale of clothes, food, and so on. He continued by saying:

> At the middle of the 1990s, some Americans came to the Institute and said: 'It is very interesting technology. We are ready to invest in it.' I understood I might make money on the science. And start to work in this. Now I have seven companies, four of them are focused on medical equipment. (Interview, Tomsk)

This business strategy is still rather local. All interviewees work in their own regions, not globally or even in the whole of Russia. One of the high-tech entrepreneurs who sells medical equipment developed by the research institute laboratory tried to expand his contact network and attract funds from foreign partners but failed to reach the foreign markets or the wide Russian market:

> Well we won't earn much, but we earn somewhat. […] those 60 hospitals purchased the devices and now they will come to us because they need consumables and so on and so forth, cartridges. Yes, those are, let's say, small incomes but it's still income. If you have five flower stands each making some profit, you won't destroy the stand just because the profit is small.

> On the contrary you will try to put up the sixth and seventh. (Interview, Tomsk)

Most developments in academia become commercialised by chance and mostly following the 'as luck would have it' model with no passion or any big expectations towards the business strategy. The developers are happy with 'bread with occasional caviar and we aren't ready to go beyond that'. An example:

> I can't say that I rake in millions and billions; the niche is somewhat specific, and taking into account that the goods are clearly medical and the staleness of our health-care system, […] and the issue of price is not even important here, because I made it on purpose, as I know the market, and the pricing of the product was lower on purpose despite its higher quality compared to the other product. Well, this is even despite the purely economic factor, the promotion. (Interview, Novosibirsk)

Such directors understand that they need to work with doctors and the health-care system:

> The problem is this: I [the doctor] have the old one [device], which works and, I mean, if I am happy with the old one, why would I try something new? Of course … we try, we work, we don't operate at a loss, that is we advance.[…] We hope it gets better. (Interview, Novosibirsk)

But to work with this problem, he should make an effort for which he is not ready. He is a scientist, not a businessperson, and he does not create a clear business strategy, which is why he could not talk about working with uncertainty:

> The director was waiting for big funds from somewhere. He lobbied a special programme, in the government, in Moscow. It is because there is no state programme, there is nothing. (Chief engineer, Tomsk)

The state is viewed by these companies as the main expert in determining the quality of the products manufactured and as the decision maker on which manufacturer's products to procure for Russia's hospitals. For

example, if there is disagreement between doctors and manufacturers over Russian- and foreign-made equipment, the doctors prefer imported equipment and consumables (valves, prosthetics, etc.). Russian producers describe stereotypical behaviour by doctors who do not want to try new equipment, or who use medical products with which they are familiar. Producers turn to the state for arbitration in solving these disputes:

> The results, particularly for our products, are quite comparable to the results for American-produced items. If you compare imported and Russian valves, no one has any direct evidence that one is better and the other worse. The findings for valves and their long-term performance inside patients' bodies are identical. Therefore only the government can decide the issue of import substitution in the valves sector. (Interview, Moscow)

So, conformists try to transfer R&D made in universities and research institutes. They use many possibilities provided by the Russian state in funding of this activity, but it is very difficult for them to establish trustworthy relations with the scientists (see Bychkova et al. 2015). Many of them are able to use the opportunities provided by the state or corruption schemes in a skilful way, but they do not have sufficient expertise to assess the market potential of the technology. They also do not consider the strategy of access to global markets.

Reformists

In Russia, the strategy of a single entrepreneur making changes in the health-care system proved to be a very costly one. My respondents more often than not described how they integrate into the existing rules of the game rather than change them on the system level. This may be related not only to the expensiveness of the strategy but also to the fact that I conducted the study in the regions and, while the health-care policy is formally transferred to regional authorities, most regional health-care development strategies are related to the trends set by the federal government. However, several entrepreneurs attempted to influence the situation. Efforts to communicate with the federal government may be

beneficial: It may maximise certainty as to the sales markets, and it may result in more subsidies that can be used to enter foreign markets.

The companies that employ this strategy emerged in the beginning of the 1990s and managed to grow to medium-level companies by using the opportunities that arose from the integration in government programmes (bureaucratic logic) instead of the opportunities in global markets. As one of the directors of a medium-sized private company said: 'I said this (about the games of the Ministry of Health and Social Development) during government sessions; that is I have no scruples about it.' This is possible when entrepreneurs have connections with the federal decision-making structures, as demonstrated by one informant from Omsk, who stated that at the end of the 1980s, they started manufacturing gynaecological speculums in addition to medical equipment upon instructions from Raisa Gorbachev, the wife of Mikhail Gorbachev, the first and last president of USSR, to the Healthcare Ministry and at the request of the Ministry. Another company from Tomsk mentioned the main problem facing the director: 'to somehow make it to the federal level in order to lobby for this arrhythmology programme […] so that the federation provides money for it'. Oftentimes such leaders view not only business strategy but also their product as a revolution in medicine: 'These technologies are innovative, the best in the world', and also demand changes in the health-care system: 'A new approach towards medical rehabilitation is being developed.'

Health care is viewed as a system that needs to be changed by the reformers. That is why the work is devoted to parallel technology and to building the bureaucratic connections in the government, as well as to the sphere of education and personnel training: 'An innovative process is an interrelated social-economic cycle […] that is why one should start systematically' (Interview, Tomsk). These companies often work with the opportunities created by the ambiguity. An important strategy is their rhetoric about company activities as providing state security and therefore in need of and deserving state support. For example, since Government Decree 102[4] was passed, almost all structures in the medical market have acted in a similar fashion, asking the government or the president to include their product in the list of protected items. For instance, in May 2015, heart valve producers, who had failed to make it

on the lists of industry sectors that were state-sponsored, themselves approached Deputy Trade and Industry Minister, Sergey Tsyb, asking for specialist companies to be included in the plan of protectionist measures by the Department (see e.g. Makarova 2015). Another case revealed how relabeling a Russian product as coming from a Slovenian company meant the product could enter European markets as 'made in Europe'. Thus, labelling products in line with changes in regulatory documents and policy shifts in the procurement of medical equipment in Russia and Europe means that forces can be realigned on the economic playing field.

Reformists try to change the health-care system. They try to engage in political decision-making processes in the region or even the country, and they try to change the medical education and the medical equipment tender procedures. With their reformist strategies, they try to obtain benefits for their companies.

Isolationists

This is the strategy more often seen in IT, although it is possible among the medical innovators. More often than not, these entrepreneurs are scientific workers who do their research with government programmes and grants, while simultaneously counting on some interest in their project from consumers and large transnational companies. Because they mistrust government priorities, they develop an independent strategy: 'They [the government] want us to reproduce old designs of overseas CT scanners. We do not want to be involved in pseudo-import-substitute projects, but they will not allow us to promote Russian designs.' Because of the difficulties of breaking into the Russian market, they have no close connections with decision makers, do not make an effort to have them, and do not communicate with state officials and local hospitals, and they aim their strategies at overseas markets from the outset.

Companies that make medical equipment and adhere to this model typically try to establish large networks with a medical research institution and a foreign manufacturing plant, but the outcome of such a business strategy is as yet unknown. At the time of the interview, these were start-ups rather than established companies. One Tomsk-based company

tried to establish the production of orthopaedic prostheses. Initially it had a connection to the Ilizarov Center for Reconstructive Traumatology and Orthopedics, a Russian scientific centre, but the connection was suddenly broken off and had only just begun to be formed with foreign partners. This was two years after the beginning of the work on their manufacturing project in India, and that was too short a timeframe for production to stabilise in the region. Another example is the attempt by a Novosibirsk company that had innovation plants in the non-medical sphere and tried to establish a large network for a medical device for which they had already determined a sales market:

> Transcranial doppler … well, the market is ready to buy these things. There is a sales company that is ready to do it. The sales, that is. In America there is a company that says: 'As soon as you do it, we will add it to our own list and will promote it.' We found some development partners in Israel. I went there for a meeting and we had negotiations about how to make it happen there. And the research partners in England—the same story there; we'll fly there in one and a half months. Well, basically in England is the research part. These guys supply the knowledge and skills in the domain of electronics and we do the same here for mechanics. (Interview, Novosibirsk)

Such interaction between different-level agents is rare among Russian medical equipment companies, the business strategies of these latter being very limited. This company may have benefitted from being initially set up and setting up their business as an IT company, whose R&D engineers and customers were not subject to geographical restrictions. They have extended this model to the medical side of their business.

While being a rare model in the Russian context, these isolationist entrepreneurs are rather innovative compared to the other types discussed previously, who focus on local needs or import substitution. To that purpose, they pay attention to what happens in the country and they intend to produce abroad knowing the risks connected with the behaviour of state actors. Their strategy is 'nothing except the brain remains in the country':

> The bonus of an innovative company is that the ideas the company produced cannot be an object of raider seizure. It is senseless because no brain, no company. The production, of course, has to be outside the country. (Interview, Tomsk)

Isolationist entrepreneurs do not focus on one or two main innovative fields, for that would be risky considering the changing rules and corruption, even though it would have been economically viable in some circumstances. If a company produces newly developed made-to-order products in small batches, and remains small, the chances of a 'shakedown' and misappropriation are small. The more economically successful a business becomes, the higher the risk of it becoming an attractive target for the extortion of payments in favour of specific employees from the inspection authorities, for tax and other auditing inspections, or for an illegal takeover (Paneyakh 2008). To prevent that from happening, the heads of med-tech companies use different strategies: diversification (Isolationists and sometime Reformers); moving production abroad and operating outside of the Russian market (Isolationists, about effectiveness of such strategy among Russian companies, see Radaev 2009), and maintaining the status quo (Smaller-scale Tactic Adherents and Conformists). For example, according to one of the respondents, the tax inspectorate will not arrive for a full audit of a company unless specifically pushed to do so from 'above', if the company is not big enough to generate large fines that will generate a kickback to the auditors. For most companies, it results in short chains and non-innovative technologies.

Innovations, Uncertainties, Imaginaries, and Politics

Innovation which by definition means the development of something new is by uncertainty, a lack of precise knowledge. In economics, this is formulated as lack of knowledge of 'expected value', based on a probable calculation of future costs and benefits (Aven and Renn 2010). The lack of precise knowledge of development outcomes is 'normal' for business activity in innovation (Funtowicz and Ravetz 1992; Jasanoff 1991), and

in the Russian innovation environment, it is not seen as a problem. However, entrepreneurs do consider another type of uncertainty a problem: uncertainty deriving from the fact that the state changes the rules in an unpredictable way. In this situation, companies can hardly anticipate the behaviour of state officials or that of competing companies. For example, almost all companies try to lobby officials to give preferences for some equipment, and it is difficult to predict who will be the winner. Another source of uncertainty is ambiguity stemming from what some authors define as 'contradictory certainties' (Thompson and Warburton 1985). In other words, this is the strategic use of situations of uncertainty by actors who manipulate information in order to achieve certain actions by other communication participants: This is also characteristic of a culture of innovation in countries with high political uncertainty, such as Russia currently (Bychkova et al. 2015).

The political system in Russia and the style of decision-making can be termed a 'fiduciary approach'. This approach (Renn 2008) entails political decisions being made by a small group of political leaders without involvement of the public.[5] The assumption is that these leaders have as their aim 'the common good'. The public may put forward various arguments for or against policies being pursued, but does not become part of the discussions or the policy-making process. The system is predicated on the careful selection of a closed group of experts and belief in their competence. Under this system, transparency in decision-making is regarded as weakness in relation to decisions made and diffusion of power. As a result, there is no discussion whatsoever of the risks of investing money, time, and other resources, nor any discussion about the risks of new technologies to users or to society as a whole. In line with this, Russia also lacks discussion on the effectiveness of Russian innovation policy. Actually, several studies emphasise the ineffectiveness of it (Balzer and Askonas 2016; Bychkova et al. 2015). Simachev et al. (2014) stress that the Russian state has underdeveloped institutional space for business and that the state makes efforts to compensate the insufficiency of the institutional arrangement but is not successful.

Continual changes in the Russian state's positions and programmes create uncertainty for the market agents, and most of them try to decrease uncertainty by not focusing on innovation. The first three business mod-

els described above act this way. Some entrepreneurs attempt to change the situation. Individual reformers connect with government activities and negotiate rules that affect business opportunities and conditions. Isolationists, who are very rare, produce truly innovative technologies, and they do so through using imaginaries.

The concept of an imaginary devised by Sciense and Technology Studies researchers, Suchman and Bishop (2000), refers to vision, dreams, and fantasy, while preserving inherent corporal, cultural, and historical resources. The notion of imaginary as produced and shared by a specific social circle is gaining popularity in the analysis of innovation processes (Fujimura 2003). Social circles of the imaginary will represent certain joint actions produced by businesspeople who are unconnected in everyday life that stem from several common perceptions of the present and the desired future. An example of how imaginaries work is the formation of many Russian medical start-ups in the 2010s. State-sector medicine does not include R&D in its operations, and the private medicine market is very small and does little to promote the spread of technological innovations. How to understand the growth of medical start-ups since 2010?

The answer is to be found abroad. In the USA, there has been a boom in digital medicine for several years now, which is directly related to the rapid growth of American health care, primarily in money terms. Russian entrepreneurs reason that if there is growth abroad, then let's launch a project in Russia in the field of medicine, one day it will grow and we will be able to make money (Sazhin 2015). Thus, new businesses do not arrive because of concrete needs, but because of an imaginary of what might be possible, an imaginary stimulated by developments abroad.

In Russian political rhetoric, the value of innovation is that it makes the country's position more stable at the international level; it is not perceived as something that will improve the life of society (see e.g. Medvedev 2014). Since 2006, the Russian state has endeavoured to increase innovations while making decisions about innovative products outside the arena of public discussion. To do this, several types of contests are set up: scientific project contests, start-up contests, and institute[6] contests. But these contests do not create new business models, and therefore 80–95 per cent of sophisticated instruments still come from foreign manufacturers.

A key question for innovation policy is about the guarantee of multiple approaches to technology development (Stirling 2014). However, in Russia, the main investor is government institutions whose key performance indicators are quantitative, and debates about innovation within governmental bodies and among the public are lacking. Balzer and Askonas (2016) mention how measures of loyalty are played out against creativity. In a situation where there is no public polemic bringing together the various agents—scientists, politicians, and non-profit organisations—various definitions of problems and alternatives solutions are not brought to the table and tested. It remains unclear which criteria are used by policy makers to decide who is leading in a scientific field and where the industrial giants are heading. Russian politics prevents a climate of experimenting in which alternative innovative routes can compete freely in deliberation.

Where the political and public agenda is set by the country's leading figures alone, the innovation development situation appears very narrow, as do the tasks put to R&D departments in universities and private companies. When the country's 'race for innovation' began in 2006 (Bychkova et al. 2015), the objective set was to build a knowledge economy and develop and introduce new innovations. Less than ten years later, starting in 2011, government discourse and the defining of government policy objectives took a different turn, towards the more modest concept of 'import substitution'. High-tech medical instrument making, which had never been Russian R&D engineers' strong suit, ceased to be a strategic aim before it had even begun, because the government programme for the development of medical innovations was only adopted in 2013. In this context, the main strategy of medical companies in Russia is not to create their own imaginary, but to second-guess the agenda set by government agencies, since even in a situation where there are competing positions, the government side wins. In May 2016, in discussions between President Putin and Alexei Kudrin,[7] the latter clearly highlighted the contradiction between import substitution and Russia becoming part of the global innovation system. In response, the Russian president invoked the wider concept of the principle of sovereignty, applicable also to innovation policy, as the rationale for import substitution and for the success of the policy pursued. In this situation, most companies prefer to neglect the innovativeness of technologies they develop.

The uncertainty over the rules in case of medical equipment market in Russia results in an obedient private sector and inadequate conditions for the birth of innovative ideas. As Balzer and Askonas (2016) argue:

> In Russia, productive 'bottom-up initiatives' tied to the 'emergence of regions' and 'growth of civil society' have been conspicuously absent. Following the supposed 'chaos' of the 1990s, Russia's government has emphasized control. Bottom-up initiatives are viewed with scepticism, regions are rewarded on the basis of political loyalty rather than being given incentives to foster initiative, and civil society groups receive funding based on political criteria rather than creative contributions.

In the development of manufacturing of medical equipment, it is important that the main customer of medical devices in Russia is the state-owned hospitals. One of the most winning strategies for Russian entrepreneurs is the use of ambiguity, that is, to second-guess the agenda set by government agencies and use the official rhetoric in negotiations with officials.

One might have expected that especially in such a situation, imaginaries might be a vehicle for innovation. However, uncertainty about rules and ambiguity in political priorities results in an imaginary drama—imaginaries in med-tech companies do not exist, and innovation does not either. The majority of Russian entrepreneurs are people who cannot imagine the future. Their normal planning horizon is a week or a month. Rare cases are when director of a med-tech company who was interviewed was able to set a planning period of one year. In a single case, the director of several companies that began in the IT sector plans organisational work for a period of three months and technical issues for 3–5 years. Their discourse is of monsters (most often the state, in the form of registration and monitoring bodies), the monsters are here and now, and even if they are not yet physically present, all are ready to encounter them. All respondents focus on the process, and therefore, not one interview revealed any expectations or model for the future of R&D or of the company. These entrepreneurs are not visionaries, but neither do they formulate rational business models, because in a country with a high level of uncertainty, this is quite a difficult exercise. Thus, most strategies by

entrepreneurs do not envisage going beyond the bounds dictated by the current situation; there is no imagination, no future prospect. In this context, instead of creating genuinely new technologies for new problems, entrepreneurs focus on making versions of already existing technologies aimed at solving known problems, thus putting innovations for health on hold.

Notes

1. RUSNANO is corporation that 'implements state policy for the development of the nano-industry in Russia, acting as a co-investor in nanotechnology projects that have substantial economic or social potential'. http://en.rusnano.com/about
2. The state budget used for the unemployed individuals and for purchasing high-tech medical interventions.
3. Federal Law 'The circulation of medical products' is devoted to control of the technical tests, clinical trials, efficacy, safety, production, manufacture, sale, storage, transportation, and importation of medical devices.
4. Russian Federation Government Decree of February 2015, 'On Restricting Access for Certain Types of Medical Products Originating From Foreign Countries for the Purposes of Procurement for State and Municipal Needs'. Known as 'three's a crowd', it restricts competition in tenders to supply imported medical items to state-sector medical establishments. A reminder here that 80 per cent of Russian medicine is state-run.
5. According to research on Russian politics, since 1993 (the adoption of the Constitution of the Russian Federation), the Parliament has not played any significant role as a public institution, or a significant role in the system of separation of powers (see e.g. Gelman 2015).
6. The development institutes are a 'government policy tool that stimulates innovation processes and infrastructure development using private–public partnership mechanisms. The main aim of the development institutes is to overcome so-called gaps in the market in order to solve problems that cannot be optimally realised through market mechanisms, for the purpose of securing steady economic growth and diversification of the economy' (Economic Development Ministry, http://economy.gov.ru/minec/activity/sections/instdev/institute).

7. Alexei Kudrin, the former Finance Minister, now heads a working group of the Russian Presidential Economic Council.

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5

Medico-Economic Standards in Russia: Balancing Legal Requirements and Patients Needs

Alena Kamenshchikova

Introduction

Since the beginning of the twentieth century, a movement for medical standardisation has taken place in most Western countries. The standardisation of medical education and the introduction of unified patient-centred record-keeping practices stimulated the development of standardised medical terminology, diagnostics, and treatment. This process was facilitated by and contributed to the opening of the consultation room to third parties, be it the state, insurance companies, or the police (Horstman 1997; Rothman 1991; Timmermans and Berg 2003). Simultaneously, standardisation has stimulated the development of new methods of control over professional practice (Bowker and Star 2000). The introduction of infor-

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mation and communication technologies in health care in the 1970s was another boost to the processes of standardisation. Large quantities of standardised medical data have been produced that made professional practice more visible and measurable. In a time when concerns about the costs of health care were growing, standardisation facilitated finding 'a way to measure and cost the output of hospitals' (Fetter 1993). In this context, a hospital payment system based on diagnosis-related groups (DRGs) was created in the USA in 1973. DRGs are 'a multivariable system which operationally defines the hospital product in terms of patient classes, which utilise similar sets of services' (Rodrigues 1993). DRG-based hospital payment systems have been adapted by most EU member states. In the last 30 years, these systems have become one of the most widely accepted patient classification systems in the world.

Russia has also adopted the national DRGs system as a method of payment for medical care. In addition, Russia has created medico-economic standards (MES) as a more specific elaboration of DRGs, and these standards as well as how medical professionals deal with them is what this chapter is going to explore. MES have been designed by the Ministry of Health on the basis of already existing clinical recommendations, which in turn have been developed by medical professionals on the basis of data from clinical trials. MES are instruments that are used by insurance companies to assess the quality of medical care. Although Russian health-care policies have stressed the importance of medical standards since 1992, we lack insight into the meaning of MES to professionals and into how demands of MES are reconciled with realities of medical practice and patients' needs and preferences in Russia. In this chapter, I explore these questions, by focusing on MES.

First, I provide an introduction to MES as an innovation in Russian health-care practice. Then, I sketch the theoretical perspective that I use to explore MES in Russian health care. Next, I explain my methodology: I conducted a qualitative study with paediatricians from public hospitals in a city in Russia. After providing historical context for the creation of MES, I discuss how paediatricians give meanings to the standards in their everyday practice and navigate multiple tensions between demands of the standards and particularities of the contexts where they are applied. In the conclusion, I reflect on how MES are performed in practice, and on how the relationship between standardisation policy and standardisation

practices in Russia should be considered, compared to the experiences of standardisation in the USA and the EU member states.

MES in Russian Health Care

MES were introduced in Russia as a part of reforms in health economics and have been used in different regions for calculating rates in the system of compulsory medical insurance (Shishkin et al. 2005). MES aim to secure optimal use of health resources within public health care and to assure the rights of both patients and practitioners. Therefore, MES have a legal status (The Ministry of Health of the Russian Federation 2011).

MES are documents that specify the requirements for the accomplishment of medical care for patients of a certain age group with a specific health condition. These documents articulate the kind and average frequencies of services, including diagnostic measures, treatment procedures, medication, and average duration of treatment (The Ministry of Health of the Russian Federation 2011). These frequencies can vary from 0.01 to 1.0, where 1.0 indicates that every patient who receives treatment according to a particular standard must be provided with an indicated service (e.g. general blood analysis). If the frequency is less than 1.0, it means that this particular service is provided not to every patient, but depending on a particular frequency the services may be provided to 10% of patients (the frequency indicator would be 0.1), or to 5% with the frequency indicator 0.05 (Kucheriavenko 2013). Services that are indicated with a frequency of 1.0 constitute a list of essential health-care services that must be provided to every patient, while services with frequencies less than 1.0 comprise a list of supplementary services that should be provided to a patient depending on the state of disease. Table 5.1 shows a truncated version of MES for heart failure implemented in the Sverdlovsk Region (The Ministry of Health of Sverdlovsk Region 2012).

MES enable insurance companies to monitor and control health-care practices. Control is organised as follows. Every month medical records with histories of illness are transferred to the Territorial Compulsory Medical Insurance Fund for randomised inspection. This process consists

Table 5.1 Medico-economic standard of care for patients with heart failure (fragments of the documents)

1. Model of a patient
Age category: adults
Nosological entity: heart failure as clinical prevailing (the main)
Phase: progressive, acute
Complication: any
Type of medical care: specialised
Service terms: in-patient care, cardiovascular care unit
The average duration of treatment: 19 days

Code	*Name*	*Frequency rate*	*Average number*
2. List of diagnostic services			
A01.10.001	History taking and complaints collection in cardiac disease and pericardium	1	1
A02.01.001	Body mass measurement	1	1
A02.03.005	Growth measurement	1	1
3. List of diagnostic and treatment services in 19 days			
A01.10.001	History taking and complaints collection in cardiac disease and pericardium	1	12
A01.10.003	Palpation at cardiac disease and pericardium	1	12
A01.10.004	Percussion at cardiac disease and pericardium	1	12

Pharmacotherapeutic group	International non-proprietary name	Drug form	Frequency rate	Estimated daily dose	Equivalent course dose
4. Drug therapy					
Diuretics			1		
	Hydrochlorothiazide	Pills	0.8	50	750 mg
	Acetazolamide	Pills	0.05	250	1 gr
Medications for cardiovascular system			1		
	Beta-blockers		0.8		
	Metoprolol succinate	Pills	0.2	100 mg	1900 mg

5. The criteria for the effectiveness of treatment
Determination of the aetiology of heart failure
Relief of acute heart failure
Reduction of functional class of chronic heart failure

6. The cost of medico-economic standard
The cost of MES on the expenditure side, financing under the funds of compulsory health insurance: 37,215 roubles.

of two stages: medical and economic inspection. Medical inspection is conducted by medical professionals who must assess the quality and conformity of the treatment performed under the requirements of MES. After medical control, histories of illnesses have to be assessed by economists for the relevance of expenditures. In addition to the Territorial Compulsory Medical Insurance Fund as a controlling agency, the prosecutor's office also has the right to assess medical records for compliance with standards. All MES that practitioners use in their work are public and can be accessed by any person on the Internet or through the direct request by a health-care institution.

Busse, Geissler, Quentin, and Wiley (2011) showed how DRG-based hospital payment systems were introduced in 12 EU countries (Austria, England, Estonia, Finland, France, Germany, Ireland, the Netherlands, Poland, Portugal, Spain, and Sweden). Although MES are rooted in these internationally implemented DRGs, these are applied only in Russia (Skliar 2011). Busse et al. (2011: 24–25, emphasis original) defined four main characteristics that constitute all DRGs systems: '(1) *routinely collected patients discharge data* … are used to classify patients into (2) a *manageable number* of groups (that is, DRGs), which are intended to be (3) *clinically meaningful* and (4) *economically homogeneous*'. Busse et al. (2011) argue that there were two main reasons for the great popularity and adaptation of the DRG system throughout the Western world: the increase in the transparency of hospital work and care provision, and the improvement of the utilisation of resources in hospitals 'by paying hospitals on the basis of the number and type of cases treated' (Busse et al. 2011: 10). However, the authors raise the question of whether these goals to improve health care have been achieved in EU countries and what actual effect they have had on different health-care systems. This question is also relevant for Russian health care, where only a limited number of studies have been conducted.

It is important to note that, contrary to DRGs, which aim to be clinically meaningful and align with clinical evidence-based guidelines, MES have a difficult relationship with clinical recommendations implemented in Russian health-care practice. While clinical recommendations have an advisory nature to support health-care practitioners in their decision making, MES are based on clinical recommendations but consist of a

precise number of procedures that, because of their legal status, must be applied to every patient with a certain condition (see Skliar 2011; Sheiman and Shishkin 2009). The resulting tension raises the question of how MES are used in and affect professional practices.

Theorising Standards: Politics at Work

It may be suggested that medical standards are essentially depoliticised documents, as their role is to standardise health-care practice through the use of scientific evidence about diagnosis and treatment. However, scholars in science and technology studies have recognised that standards are, on the contrary, inherently political in how they function in health-care practice. In their analysis of the politics of standards in health-care practice, Timmermans and Berg (2003: 53) argue that standardisation in medicine is a political enterprise, because it stimulates negotiations and re-orders professional practices. '[T]he process of standardisation is typified by ongoing negotiations between a host of actors, none of whom is in control or oversees all issues that may be at stake'. Therefore, it is the role of standards to connect and to coordinate dispersed actors in health care (Timmermans and Berg 2003: 53). Standards coordinate the actions of patients, physicians, nurses, laboratory specialists, pharmacists, hospital managers, and insurers. Through this process, Timmermans and Berg (Timmermans and Berg 2003) argue, standards inevitably and often intentionally reorder health-care practices and the power positions of actors. A standard may assign more or less specific diagnostics, thereby providing a specific medical speciality with more or less power. A standard may include patient preferences or not, thereby either assigning or not assigning a patient choice and responsibility. For example, a standard defines more or less medicalised notions of the risks of home birth, thereby providing either the midwife or the obstetrician more power. In other words, standards do political work. Standards may be used to coordinate the work of different professionals, but they do not leave the content of their work untouched.

Since Timmermans and Berg (2003) conducted their study, many scholars have discussed the unintended influence of standardisation and

the implementation of evidence-based medicine in health-care practice. For instance, Greenhalgh, Howick, and Maskrey (2014) argue that the evidence-based movement is in crisis. They distinguish five reasons for this crisis: (1) 'the evidence based "quality mark" has been misappropriated by vested interests', and the pharmaceutical and innovation industries have become powerful players in the field of evidence-based medicine and acquired power to define disease and its severity; (2) '[T]he volume of evidence, especially clinical guidelines, has become unmanageable', because too many guidelines exist, so practitioners can barely manage the whole scope of standardised prescriptions; (3) '[S]tatistically significant benefits may be marginal in clinical practice' because evidence-based clinical trials have focused on "non-disease" risk-potential conditions rather than actual established clinical issues'; (4) '[I]nflexible rules and technology-driven prompts may produce care that is management driven rather than patient centred'; and (5) '[E]vidence based guidelines often map poorly to complex multimorbidity', because established standards exist separately from each other and each of them focuses only on a single medical condition (e.g. asthma) without taking into account the possibility of concomitant disease (Greenhalgh et al. 2014).

Following these reasons, Greenhalgh et al. (2014) propose the return to 'real evidence medicine'. They propose rethinking current practices of doctor–patient communication in favour of participatory collaboration and shared decision making in treatment orders. The authors argue that actual evidence-based medicine should be focused on an individual patient and her particular needs. Therefore, they insist that rather than providing standardisation, evidence-based research should facilitate a patient-centred approach in health care, while empowering patients with comprehensive information. Similarly, van der Weijden et al. (2010) state that evidence-based clinical practice guidelines should be redesigned in a way that would allow active participation by patients and patient values in decision making about treatment trajectories. These proposals again demonstrate the politics of standards.

Many STS scholars build further on Timmermans and Berg when studying the politics of standardisation in health care. For example, Moreira (2012: 326) studied dementia drug guidance in the UK and argued for the use of individual case studies to mediate generalisation and

singularisation. Some authors have conceptualised standards in terms of boundary objects, a concept that was initially introduced in 1989 by Star and Griesemer to illustrate the mechanisms of coordination and generalisation of heterogeneous scientific work done by different actors (Star 2010). A boundary object is 'an analytical concept of those scientific objects which […] inhabit several intersecting social worlds […] and satisfy the informational requirements of each of them' (Star and Griesemer 1989: 393). For instance, a zoological library museum or an atlas connects the worlds of different users—scientists, farmers, amateur collectors—providing them with general information that can be used in and adapted to different concrete situations. Allen (2014) in his study of integrated care pathways (ICPs) in the UK hospitals, distinguished between positive and negative boundary objects. Integrated care pathways are structured care plans or guidelines that are supposed to 'to enrol clinicians and managers in continuous improvement' (Allen 2014: 808). As boundary objects to coordinate meanings between managers, nurses, and doctors, ICPs became a positive boundary object, because they granted coordinating and controlling powers over the care process to nurses, while simultaneously ICPs proved to be a negative boundary object between managers and doctors when doctors resisted using care pathways.

Russian MES have much in common with the medical standards studied by the aforementioned authors, because they are constructed to control costs and assure sufficient quality of care. However, MES in post-Soviet Russia also differ from clinical standards in the USA and Europe in an important respect. Specifically, they have an established legal function in health-care practice. What does this legal function entail for how MES are functioning in practice?

Studying MES in Practice

To study MES in practice, I have used a qualitative approach, because it gives us an opportunity to look into the world of the daily routines of health-care professionals through the lens of their own stories. Qualitative study allows examining the meanings that professionals give to MES and understanding their experiences and judgements about the impact of MES in their work.

The qualitative study was conducted in state paediatric medical institutions in a Russian city from May to September 2014. There were two reasons to conduct this research with paediatricians. First, paediatrics is one of the most standardised spheres of medicine in Russia, along with surgery, therapy, and gynaecology (Grachëva 2010). Second, paediatrics is one of the fields of medicine that can face particular difficulties in applying rigorous standards of treatment to its unique patients: children. This study comprises 20 in-depth discussions with practicing paediatricians. The respondents' ages varied from 31 to 58 years at the time of the interview; the gender distribution was 2 males and 18 females. Interviews consisted of open ended questions about the meanings practitioners give to MES, their experiences of working with MES, their judgements regarding its influence on their daily work, and their assessments of current MES.

The Historical Construction of MES in Post-Soviet Russia

In the 1980s, during the time of *perestroĭka* (restructuring) and *glasnost* (openness), the health-care system of the USSR was facing large financial and organisational changes. The Soviet health-care system was based on the principle of free provision of a broad range of medical services to every citizen of the state. The health-care system was entirely governed and funded by the state, which aimed to guarantee equity in the provision of health care. The financing of the health-care system in the USSR followed the residual principle, whereby the amount of funding the health-care system received was based on what was left over after other sectors of the economy were attended to (Twigg 1998). After the economic collapse in 1991, the health-care system faced a severe funding deficiency. Until 2000, there was a steady decline of public spending for health care, which heavily depended on budget priorities of the state (Sheiman and Terent'eva 2015). One of the first steps to reform the health-care system was the introduction of market-based system of compulsory health insurance in 1993. The insurance-based system was intended to transform the centralised system of public financing into a flexible health-care system that would be financed through different sources, including 'a 3.6% payroll tax on employers, with 3.4% going to oblast [region]-level governmental

health insurance funds, and 0.2% going to a federal-level Fund' (Twigg 1998: 588). An insurance-based system was supposed to be more efficient and responsive to the actual needs of the population as opposed to the state governed health-care system, while at the same time, it had to ensure the principle of free provision of medical service that had been established in the USSR (Tompson 2007).

The system of compulsory health insurance was intended to support the development of institutional mechanisms that would address the specific issues and needs of each region of Russia, thus moving medical care from the federal to the regional level and creating a more responsive health-care system. Actors in the mandatory medical insurance system include citizens, insurers, health insurance companies, medical institutions, and mandatory medical insurance funds, as well as public authorities of the subjects of the Russian Federation and local government bodies that may act as insurers of unemployed citizens (Shishkin et al. 2005). Regional funds consolidate all insurance payments and distribute them through the network of private insurance companies on a capitated basis; thereafter, insurance companies further allocate payments to health-care institutions that provide medical care for insured patients (Twigg 1998). The main idea of this structure is that insurance funds are supposed 'to be the separation of purchasers from providers of health care' (Twigg 1998: 588).

One of the aims of the insurance-based health-care system in Russia was to reduce public funding for health care, to increase the quality of care, and to recruit additional funding through the competition of insurance companies. In practice, many regions did not develop a competitive insurance system; in some places, there were only one or two insurance companies that were not able to create a competition among medical institutions to encourage improvements. Sheiman and Terent'eva (2015) argue that one of the main obstructions that prevented the new system from realising improvements in health care was a predominant focus on the transformation of health-care funding, more focus than on necessary transformations in the content and quality of health-care work. This is expressed in the fact that primary care has remained the weakest element in Russian health care, thus not realising its promises (primary care in Russia constitutes only 13% of all physicians, compared to 35–45% in EU countries) (Sheiman and Terent'eva 2015). Moreover, despite the introduction of social health insurance, the Russian health-care system

preserved many of the principles of the tax-financed system with its 'deep structural disproportions within health-care sectors' (Sheiman and Terent'eva 2015: 8), and active state engagement that may have blockaded development of treatment delivery in the market. In addition, comparing the Russian insurance-based health-care system with the one in post-Soviet Estonia, Sheiman and Terent'eva (2015: 8) demonstrate that insurance companies in Estonia work to support and increase the quality of medical care through audits of health-care programmes. At the same time, health insurance companies in Russia are much more bureaucratic, controlling the quality of treatment delivery through the control of medical documentation.

One of the tools that facilitates health insurance companies' ability to control treatment delivery is MES, which aim to ensure that every patient receives a particular level of treatment within the boundaries of standardised treatment schemes and established prices. Although these standards are a part of finance system reforms, because of their medical aspect they may influence daily practices of physicians and thus influence treatment delivery at large. In the next section, I will analyse how MES are dealt with by medical professionals and what role they play in the daily delivery of care.

Legal Requirements and Patient Needs

MES can be analysed from two perspectives. First, they can be seen as an innovation that protects the clinical autonomy of practitioners and establishes a scientific basis for medicine as a profession. Data contained in standards are established scientific facts that professionals must translate in their daily practice, thus working together with MES in mediating the worlds of medical science and medical practice. Second, MES communicate with the world of practice by guaranteeing and protecting the rights of patients to an obligatory level of medical service. It is mandatory to provide a minimum set of measures determined by MES to a patient with a certain medical condition. In other words, MES create specific boundaries within which they collaborate with practitioners in facilitating their decision making, and simultaneously the same boundaries provide a protection for patients from overtreatment or undertreatment, guaranteeing

them a specific level of health care. However, the same boundaries may violate clinical autonomy and reduce the expertise of practitioners into a stipulated scheme of treatment, and they also may violate the rights of patients to a quality of care, keeping the treatment process within certain medico-economic limits and not allowing flexibility in the prescription of treatment.

In the analysis of the interviews with paediatricians, I came across two types of dilemmas that these standards may create in medical practice: discrepancy between notions of protection and violation of clinical autonomy, and controversy between empowerment and silencing of patients. In the following section I analyse the nature of these dilemmas by demonstrating how paediatricians give meanings to MES in their daily practice, how they relate to the formal aims of MES, and how they deal with the influence of MES on their everyday work.

Protection/Violation of Clinical Autonomy

Through the standard framework of treatment, MES take on part of the therapeutic responsibility of health-care practitioners and support their decision making. In the interviews, paediatricians expressed different approaches that they adopted with regard to the role of MES. Some practitioners stated that MES provide concrete schemes of treatment for different health conditions and that by following the standards they could protect themselves from possible complaints from patients or insurance companies:

> Medical standards for doctors are a kind of protection. I complied with the standard, and that is all—I am right. (Interview 3)

Another paediatrician expressed that MES do not merely protect practitioners but also help to maintain the provision of health care within particular medico-economic boundaries of treatment:

> Standards are a statistical instrument to protect everyone either from overfulfilment or inadequate diagnostic and treatment measures. … It is a protection for both doctors and property of the state. (Interview 2)

Other paediatricians emphasised that MES are a helpful innovation that facilitates and supports them in their everyday care work. A practitioner stated that MES have been created for professionals to support them in their daily routine:

> Standards are needed to check yourself if you forget something, or forget to prescribe something, standards help us to check if we did not forget anything … they are made to help doctors. (Interview 5)

In addition, one of the practitioners argued that MES have helped to increase the quality of health care:

> Introduction of medical standards for nursing underweight and premature babies, for example, help to decrease infant mortality. (Interview 17)

As do any other medical standards, MES propose decontextualised schemes of treatment that are not adapted to the local nuances and circumstances of different medical institutions and individual patients. However, to fulfil the function of boundary objects, MES must imply the possibility of adaptation to local conditions and be plastic in application to individual cases. Practitioners expressed different judgements about the flexibility and applicability of MES to individual circumstances. One of the paediatricians stated that MES allow the practitioner to manoeuvre between different standards and shape them in a way that would be necessary for an individual patient, yet he emphasised that, in practice, a physician will rarely need to go beyond the framework of MES. However, practitioners can use the flexibility of standards only at the beginning of the treatment process: Then they must make a choice of the standard they will follow and adhere to that:

> You can apply two standards in parallel, but you will not do that because a patient was admitted to either in the department of gastroenterology or cardiology. Cardiologists will not apply standards from gastroenterology because the patient was admitted to a hospital with a cardiovascular problem. But if that will be necessary, you can apply standards, they are not mutually exclusive. (Interview 2)

Other respondents, however, expressed that they have experienced difficulties in applying different standards in practice. Specifically, one of the respondents complained that she has to perform some actions prescribed in a standard even if she thinks that this action is unnecessary. Therefore, MES may threaten the quality of care provided by professionals:

> General blood analysis will not always help you to establish a diagnosis. According to standards, you have to take a specimen of blood, and sometimes even few times. But for children, we are trying to minimise skin penetration because it is a stress factor for them. For example, I know that I treated this child last month, and I don't need to take a lot of blood specimen from him, but according to standards I have to. So I do that. (Interview 15)
>
> For example, if a child has some MERS virus, standards tell you to do the analysis for every imaginable infection. First, it is very costly. Second, I am not sure how reasonable it is. And also, it all takes a lot of time. (Interview 14)

Some paediatricians described local complexities regarding the lack of sufficient resources to fulfil MES, such as technical equipment or sufficiently trained specialists that may be necessary. Practitioners expressed that standards can be helpful in their daily work but there are many infrastructural obstacles, such as lack of particular devices, that may hinder applying MES:

> These standards are implemented without considering the capacity of departments, hospitals and so on. […] Well-written standards prescribe what should be a minimum, without which you cannot do, but sometimes the standard constitutes procedures without which you can do, and we nevertheless have to perform this standard. (Interview 18)
>
> For example, we have received an MRI machine, and only now we are starting to teach people how to work on this machine. All these have to come as one set, but this does not work. I mean, people that would work on this machine, all the necessary technology, and the reagents that are needed for work have to come together. (Interview 12)

Interestingly, practitioners who expressed infrastructural difficulties in applying MES propose informal practices that would fit the formal

framework of standards. When there is lack of sufficient infrastructure to implement and apply MES, paediatricians create informal adaptation strategies:

> Not every time can we fulfil it [MES] because of some technical issues, but everything can happen. We are all living people. Someone can be ill, or something else could happen, there could be no reactants at this point—just finished, or there could be no specialist—left for a business trip. A child cannot wait here for a half a year when this specialist will come back. We do whatever we can at a particular moment. (Interview 3)
>
> Of course we fulfil the standards. Not every time we can do that because of some technical reasons, but everything can happen. (Interview 1)
>
> Once, we needed one particular drug. It was sent to re-registration and we had to find it somehow. We were looking in Belorussia and in Kazakhstan where we had some friends; they bought it there and brought it to us. It happens, everything can happen. (Interview 4)

However, despite local complexities that may occur in practice, inspection bodies have the right to fine a medical institution if MES have not been fulfilled. Yet, it is an obligation of hospital managers to ensure that a hospital has all necessary equipment and specialists to be able to provide care according to MES:

> We have an infectious disease ward in this hospital. Let's assume we receive a child with an enteric infection. For example, salmonellosis, dysentery, but we can make a diagnosis only for rotavirus infection. We will make an enzyme immunoassay for rotavirus. But there can be *n* number of viral infections that may be accompanied by diarrhoea. We don't have diagnostics, unfortunately. When we submit our history of illness for control, they always set up a defect. That means they will cut a curtain amount of payment. (Interview 3)

Administrators are responsible to equip public hospitals with all the necessary equipment and specialists to enable the functioning of MES. However, financing of public hospitals depends on the state budget as well as on the funds of compulsory health insurance and often falls short. So, MES prescribe obligatory requirements of treatment, while unable to ensure that medical institutions are capable of performing these

requirements. Rather than protecting clinicians, MES construct a situation where health-care practitioners can find themselves in a gap between the requirements of standards and practical infrastructure that may lack particular resources.

However, there is a way to sidestep the prescriptions of MES. There is one legal way that allows health-care practitioners to depart from MES: the permission of a medical board. A medical board is a committee of a minimum of three people from the same hospital who should be organised specifically for the purpose of judging physicians' applications to withdraw from standards. For example, if a practitioner thinks that it is necessary for a particular patient to be prescribed some medicine or given diagnostics that are not articulated in a standard, a health-care practitioner must prove to a medical board the necessity of additional spending. However, as was seen from the empirical research, paediatricians expressed hesitation about these kinds of permissions, because in everyday practice they do not always have enough time to confirm all of their decisions with a medical board. Although this procedure provides an opportunity for practitioners to exercise their independent clinical autonomy, it is too bureaucratised to become a routine practice:

> You can prescribe whatever treatment you think is needed, but to do that you have to get permission from a medical board, and you have to write a lot of papers. There are 5–8 people in the board to whom you have to prove the necessity to act beyond standards. You can go there one time, another, but next time you will already hesitate if you have to prove the treatment again. (Interview 12)

Paediatricians described different practices of adapting MES to their daily work. If some practitioners prefer to follow the standards and perceive them as advisory documents, as was shown above, others may disagree with prescribed standard schemes and prefer to act based on more trusted clinical recommendations. For example, one of the respondents described a situation when a standard contained a serious mistake about antibiotics prescription, and as she was disagreeing with it, she decided to

act in accordance with clinical recommendations instead. The following demonstrates that some standards may contain very serious content errors with which professionals must deal daily:

Respondent: For example, in MES for antibiotics you can often see, for example, five antibiotics that can be prescribed and everywhere they put one [means that it must be prescribed for every patient]. So if we have a child we have to prescribe all five antibiotics, if they put one everywhere!
Interviewer: What do you do in such situations?
Respondent: I send this standard to where it deserves to be [i.e. she dismisses the standards as being useless] and act on clinical recommendations. (Interview 4)

At the same time, some paediatricians argued that when practitioners choose to act beyond standards, it may create risks for both practitioners and patients. One of the paediatricians stated that practitioners are able to create any medical history record that would fit a standard. If one standard does not cover all the necessary expenses for a particular patient, a practitioner can decide to apply another more expensive standard in order to cover the treatment. At the same time, this possibility may indicate insufficient power of MES to facilitate care work. One of the paediatricians expressed this worry as follows:

> The doctor can add to a history of illness record whatever is required by standards, but who knows what a patient really had? (Interview 6)

Paediatricians see MES as both an instrument of protection for healthcare professionals and a violator of clinical autonomy, although most of the respondents expressed that standards violated their autonomy rather than supporting decision making. Protection is ensured as long as practitioners follow the MES, despite possible local difficulties and complexities that may occur in practice but that could be overcome if sufficient infrastructure, including medicines, technologies, and specialists were provided.

Collaboration with Patients: Dilemma of Rights and Protection

One of the main goals of MES is to ensure the guaranteed minimum level of care to every patient. One of the respondents mentioned that MES could protect patients from two possible extremes in health care, overtreatment or undertreatment, by ensuring that patients will receive an obligatory minimum set of medical services prescribed in MES:

> Standards protect from two extremes: If a patient comes and sneezes, and you prescribe him MRI, CT scan, and etc., and spend one million, whereas he just sneezed and you had to just auscultate him and prescribe pills for 5 rubles. And from another extreme, when a patient is severely ill, but you just auscultate him and prescribe pills, while he needed more serious treatment. So standards tell you that you should auscultate every patient with symptoms of respiratory tract infections, that to every patient you need to do this, to every second patient you need to do X-ray, and to every tenth patient you need to do CT, for example. (Interview 2)

It may be suggested that MES empower patients because they provide explicit schemes of treatment that patients have a right to require from a health-care provider. In this line of thought, MES provide patients a tool for monitoring and controlling the work of practitioners. During an interview with one of the paediatricians, a telling incident with a parent of a child patient occurred. The interview was conducted after visiting hours, but a practitioner remained in the office to give me an interview. In the middle of it, a mother of a young patient came to the office and insisted the practitioner give her child a particular medicine, as 'she has a right to receive this medicine for free'. The health-care practitioner explained that the hospital did not have this medicine in stock and could not provide it to her child. However, the mother insisted that she wanted that medicine at that very moment because was entitled to it. The situation was not resolved; the mother insisted and claimed her rights, but the health-care practitioner could not do anything because the hospital did not have that medicine available. This frequently occurring situation

indicates the gap between rights, obligations, and infrastructure that MES legally establish but cannot fulfil in practice. Standards give a legal basis to which patients can refer if they do not agree with a proposed scheme of treatment, and thus patients can influence the treatment strategies. One of the paediatricians expressed that every patient does have a possibility to access standards and check whether they receive a sufficient level of treatment; if patients disagree with a treatment, they have a right to make a complaint:

> If a patient requests information, he can access everything. All the information is open, we live in the age of information. You can just open the Internet and find whatever you want. Patients now are very smart, they even sometimes know standards better than a practitioner. They can write a complaint if they disagree with a treatment, every complaint is analysed and a patient receives an answer. (Interview 3)

Some practitioners worry that patients are locked into the legal boundaries of standards. This implies that a patient as well as a practitioner may manoeuvre within the same boundaries of treatment that do not always take into consideration nuances of medical institutions or of an individual patient. Therefore, rather than empowering patients in their participation in treatment processes and decision making, MES fix standard care trajectories from which patients cannot exit:

> We should not take into account if a patient has co-morbidities, standards do not envisage that. (Interview 17)
>
> Not that long ago, we were at a meeting in the Cardiology Centre. They have their own MRI tomographic scanner and anaesthesiologist. It happened that they received a child with a disease profile not fitting their specialisation. We told them: 'Make an MRI', they: 'How? He is not in our specialisation', we: 'Please, do! You have MRI next door'. But before we did not have these problems. (Interview 4)

Some paediatricians expressed that MES may be seen as a good initiative but does not work coherently in practice. Practitioners have difficulties in applying standards because of the insufficient infrastructure or

limited flexibility of MES. Practitioners expressed that standards have a positive intention yet could not fully secure their own requirements:

> I think that it is not a bad idea, but it should be modified, everything has to be in place for this: specialists, technology, and sufficient salaries. (Interview 1)

Some of the respondents were hesitant about whether MES can facilitate the care work of paediatricians because of their primarily economic orientation to cost savings. Practitioners elaborated that current MES predominantly had economic power and could not regulate decision making in health care:

> They should be something in the middle between economic and medical standards, because now it is only economic standards that are used by inspection bodies, clinicians do not need them. Clinicians need clinical standards. (Interview 6)
>
> If before we did additional tests for those patients for whom it was necessary, then now we have these standards. Everyone is thinking: This test is not in the standard, it is additional money. Nobody will pay for it. (Interview 4)

MES involve patients in a professional dialogue with practitioners that may be guided by standards. They also make medical practice more visible for non-experts, such as patients, but one may ask what exactly this visibility does. Hypothetically, as one of the respondents noted, any person can access every MES through the Internet or by requesting it from a medical institution. However, the questions remain open whether these standards can be understood by laypersons because they are written in technical language, and whether patients have the possibility to influence their treatment trajectory beyond the scope of a standard. In this perspective, the potential role of MES to make health-care practice more transparent and to empower patients is rather counterproductive, because it replaces medical expertise with an expertise based on MES, with the latter being at least as closed for laypersons as the former and thus replacing one black box with another.

Controlling Costs and Quality: MES in Practice

From the literature on standardisation, it is clear that clinical standards are both rigorous and plastic enough to facilitate and guide practitioners in their decision making rather than impose obligatory procedures. From Busse et al. (2011) we know about DRG standards that have been widely accepted in the Western world as a means to improve quality in a financial framework and have much in common with MES in Russia. However, as we could see from the empirical results, the nature of MES in Russia is different from standards introduced in Europe and the USA in important aspects: In Russia, MES bear a legal character and are a basis for control of care by non-professionals, patients, and insurance companies. In that context, I studied how practitioners deal with MES and how these documents affect their daily work.

It has become clear that health-care practitioners encounter a number of difficulties working with MES. Paediatricians argue that they would like to have standards that would support and facilitate their decision making: They have a more positive attitude towards clinical recommendations than towards MES. While MES aim to prevent over- as well as undertreatment, professionals point to serious flaws in the content of standards that in fact might lead to over- or undertreatment and may entail serious risks for the health of patients. Lack of flexibility to attune care provision to individual patients, once a treatment has started, is a serious issue, especially when patients suffer from co-morbidities. Moreover, most practitioners agree that MES do not fulfil its function, because hospitals and practitioners often do not have enough resources to fulfil MES requirements: Sometimes diagnostic technologies or medication is simply not available. These problems can be understood by the very nature of compulsory state-insurance system in Russia. Sheiman and Terent'eva (2015) elaborate that Russian state-insurance system has been always focused on control rather than on quality of health-care services. In addition, work by Sheiman and Shishkin (2009) emphasised that MES have been developed without careful consideration of actual state funding for health care.

In this context, the obligatory implementation of MES in Russian health care has provoked professionals to develop a number of informal practices, such as the mobilisation of other parties to acquire medicines that are absent in a hospital. These practices appear to support the claims of der Weijden et al. (2010) and Greenhalgh et al. (2014) about the need to re-think evidence-based medicine priorities towards a patient-centred approach. This argument is more valid in the case of such MES that are a hybrid expression of evidence and societal ideals as access to health care while at the same time aimed at cost containment.

In their analysis of European experiences with DRGs, Busse et al. (2011) explain that although DRG-based hospital payments systems aim to improve the efficiency of health care, in practice, countries have been facing a number of challenges that have led to unintended consequences in health care. For example, the authors noted that focus on cost reduction without adequate capacity to monitor quality of care will lead to 'cost reductions but not to improvements in efficiency' (Busse et al. 2011: 30). Therefore, for standards to fulfil the function of a boundary object between policy and practice and to improve the efficiency of health care, an adequate health-care infrastructure must be put in place. In Russia, we may conclude, this is not the case. Because of their legal status, MES do connect policy and practice, but in a rather non-transparent and informal way: The intended effects of these standards for patients and professionals are rather invisible.

David, Garcia, Rawls, and Chand (2009) apply the concept of boundary object in their ethnographic study of the process of medical record creation with the use of speech recognition technology (SRT) by medical transcriptionists in the USA. SRT is a technology that creates 'a written transcript of a doctor's dictated notes on a medical encounter' (David et al. 2009: 926). Although this technology is supposed to be cost-effective because it reduces the need for human transcriptionists and provides more privacy for patients, the techno-transcripts always require editing by human transcriptionists, because they miss important social and contextual meanings of a doctor's speech. SRT, as a boundary object between the worlds of various medical specialists and patients, can only perform this function as a facilitator of skilled human transcriptionists and not as a surrogate of the whole process of creating medical records.

Although MES are a very different tool than SRT, the lessons of David et al. might be taken to heart. MES need human doctors to contribute to the quality of costs as well as care.

Like other standards, MES are not neutral tools in Russian health care, but are political. MES in Russia, because of their legal status, are obligatory passage points. That is why MES reduce the room for professional interpretation and action. The tight fit between policy and practice creates a misfit between policy and practice. It leaves physicians and patients unprotected, and it forces physicians to search for informal solutions, such as ignoring standards and creating medical history records to cover the necessary treatments, which may be illegal and thus risky. Physicians find themselves in the precarious nexus of conflicting demands. In their attempts to reconcile requirements of MES, realities of their practice and needs and preferences of the patients, physicians aim at a moving target and engage daily in balancing acts between being at risk of legal sanctions and providing adequate medical help. To make MES really innovative with respect to costs and quality, their role must shift from a controller to a facilitator.

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Part II

Transforming Uncertainties: Negotiating New Practices

6

Introducing 'Natural' Childbirth in Russian Hospitals. Midwives' Institutional Work

Ekaterina Borozdina

Introduction

Studies in maternity healthcare tend to associate innovations predominantly with groundbreaking technological achievements such as assisted reproductive technologies (ART) or methods of genetic testing that challenge both medical practises and societal assumptions about parenthood (see for example Rapp 2000; Ettorre 2002). However, cutting-edge initiatives that transform health-care environments and health-related behaviour are not confined exclusively to the sphere of scientific advancements and their implementation. Sometimes, quite paradoxically, innovations can be linked to promoting methods of treatment deemed traditional.

This chapter considers the development of the 'natural' approach to childbirth in Russian maternity hospitals as an institutional innovation

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that emerged after the dissolution of the Soviet Union in the 1990s. This institutional innovation has been driven by midwifes who in the situation of organisational uncertainty managed to craft a new space for themselves where they are able to provide care despite the lack of formal recognition and their marginal position in relation to the official medicalised childbirth model. Departure from state socialism stimulated the liberalisation and marketisation of medical services. While many scholars have associated these shifts with an increase in inequality in access to healthcare and with corruption (Shishkin et al. 2004; Cook 2014), others saw potential for innovation and a promise of improving the quality of services. Proponents of the natural approach to childbirth are a group for which reforms opened opportunities for entrepreneurship, enabling a transformation of natural childbirth from a marginal practise into institutionalised forms of care provision (Belousova 2002: 53).

In this chapter, I employ the concept of institutional work to investigate the experiences of and work performed by Russian midwives as they engage in changing maternity healthcare in the country. Building on insights from sociological studies of post-socialist healthcare and feminist studies of maternity care, I apply the institutional work perspective to fill lacunae that can be identified in both these fields. First, I question an assumption about Russian health-care professionals being the unrepentant victims of dramatic ideological shifts and socio-political reforms (Field 1957; Schecter 1992; Mansurov and Yurchenko 2004), lacking professional autonomy and exposed to extensive state control. I study midwives as institutional actors who strive to establish a demedicalised model of childbirth through navigating the volatile context of increasingly politicised and commercialised health-care services. Second, I develop a context-sensitive analysis both of midwives' professional project and natural childbirth (Wrede et al. 2006). Social scientists have conceptualised endorsement of the natural approach to labour as an alternative to an official medicalised perspective on childbirth and as a political instrument that midwives use to legitimise their claims to a distinct professional jurisdiction (De Vries et al. 2001). However, just as official models of maternity care vary significantly in different societies, there is a variety of 'natural' alternatives to them, and it is crucial not to reduce them to an overarching essentialist view on natural delivery but to study how 'naturalness' is constructed in particular circumstances (Macdonald

2006: 251). To date, sociologists have tended to emphasise midwifery movements and the organisation of maternity care in high-income Western countries (Canada, the Netherlands, the USA, and others), while the situation in other socio-political contexts has remained largely understudied. In this text, I address this gap by looking at what kind of natural childbirth[1] is produced by midwives in Russian maternity hospitals.

Independent midwifery practise was not officially recognised in the Soviet Union, and neither it is licensed in contemporary Russia.[2] The lack of formal standards and uniform organisational rules leads to a multiplicity of organisational practises. This chapter explores the case of a centre for midwifery care that functions as a structural subdivision of a state maternity hospital in a major Russian city and the strategic use of organisational uncertainty by midwives to implement the natural approach to delivery. There are several centres for midwifery care in the country, and this one has been chosen as one of the most successful and sustainable of them. It was founded in the late 1990s and has not failed to attract clients during the almost two decades of its existence. Though this very particular local case is not representative of macro-level trends in Russian maternity care, the insights gained from analysing it are quite instructive about the ground-level mechanism of institutional innovations in healthcare and the paths of midwives' struggle for professionalisation in the post-Soviet context.

The remainder of the chapter is structured as follows. First, I present some theoretical background on the notion of 'institutional work' and on the methodology. Then I sketch the context of Russian maternity healthcare and highlight circumstances that have contributed to the development of the professional project of midwives since the 1990s. Next I describe the institutional work accomplished by midwives while advancing a natural approach to delivery in hospital settings, and I conclude by discussing the sustainability of the institutional innovation introduced by their work.

Theorising Institutional Innovations

Innovations can be considered the interplay between actors and institutions. Institutional studies tend to prioritise the structural side of this opposition and view actors as 'cultural dopes', whose conduct is almost fully determined by institutional arrangements. The concept of institutional

work reflects the agentic turn in neo-institutional theory and endorses a more balanced analysis of entrepreneurship and innovation. Highlighting the cultural premises of organisational life, this approach pays particular attention to how symbolic frameworks that constitute institutions are reproduced and altered through actions and relations (Lawrence and Suddaby 2006; Lawrence et al. 2009; Muzio et al. 2013).

Neo-institutionalists have argued that professionals are key actors in institutional transformations as they choreograph regulatory, normative, and cultural–cognitive dimensions of these changes (Scott 2008). Roy Suddaby and Thierry Viale (2011) suggest that because professions are deeply embedded in organisational fields, their manoeuvres affect the whole structure. The authors apply the established categories of 'professional project' (Larson 1977) and 'professional jurisdiction' (Abbott 1988) to argue that by expanding the boundaries of their expertise and judgement, professionals inevitably reshape institutional landscapes. In this light, field-level organisational changes are reconceptualised as an 'ecology of multiple, often overlapping "projects" of both professionalization and institutionalization' (Suddaby and Viale 2011: 426).

In my study, I employ two assumptions that spring from such linkage between professionalisation and institutionalisation. The first is that professionals' attempts to widen their jurisdiction coincide with the construction of new classifications and principles and result in creating new spaces for intellectual and economic enterprise (Suddaby and Viale 2011: 428). The development of the natural childbirth approach provides a good example of this case. The natural approach is often portrayed as a 'soft' alternative to the technocratic view of birth that prevails in modern hospitals and focuses predominantly on the anatomy of labour, while underestimating its emotional and spiritual components (Davis-Floyd 2001b). In this framework, midwives are portrayed as members of a female occupation and specialists in physiological pregnancies and deliveries. Their professional perspective is associated with empathy, care, and egalitarian relations with clients. Doctors, on the contrary, are viewed as specialists in pathology—rational, detached, authoritative, 'masculine'. However, this clear-cut normative distinction between professions and their approaches to labour has been proven deceiving. Later authors have noted that the discourse of natural delivery, though on the surface it

corresponds to a feminist agenda, actually functions as an ideological instrument in a power struggle between professions. Both the static view of the doctor–midwife distribution of responsibilities and the essentialist understanding of natural childbirth are incorrect. Midwives strive for more authority and develop a natural approach to extend their control over female reproductive experiences (Annandale and Clark 1996). By outlining their specific sphere of competence—natural childbirth—midwives construct and make claims for a particular area of professional jurisdiction, as well as for a separate market niche. Comparative studies have shown how in Western countries, midwives' professional projects are built into institutional projects of other actors, including the state, which is interested in decreasing expenditures on healthcare, and feminist activists who aim at reassessing the social value of female experiences (De Vries et al. 2001). These alliances stimulate the invention of new organisational forms such as midwifery centres and provoke further innovations in maternity care at both the regulatory and cultural levels.

The second principle on which I rely connects professionals' institutional work with creating new identities and populating social spaces with new legitimate actors (Suddaby and Viale 2011: 430). Intertwined processes of professionalisation and institutionalisation produce not only new social spaces where action can be taken, but also new institutional scripts and roles that individuals appropriate. Returning to the case of midwives' professional project, we can evidence how in different social settings it has resulted in the emergence and legitimisation of new identities for the midwives themselves, for their clients, and for other professionals, who like doulas have gathered under natural childbirth banners.

In my analysis of Russian midwives' institutional work, I focus on their contextualised professional practises through which a new institutional space of 'natural hospital birth' is constructed in the post-Soviet healthcare system. I also examine the particularities of new identities, principles, and patterns of practise that members of this occupational group introduce in their quest for professional autonomy. The natural approach to delivery is a concept that assembles all the diverse elements that constitute an institutional innovation in maternity care. In the next section, I will introduce the setting where I studied midwives' work and my methodological approach.

The Centre for Midwifery Care: A Portrait

The centre for midwifery care that is the primary setting of the study operates as an autonomous, self-financed unit of a state maternity hospital. The centre's clients are urban women (and couples) expecting a child, up to three months prior to the due date. Most of them belong to the professional middle class. One of the midwives noted ironically, 'Our target audience is a 32-year-old woman, first birth, with two diplomas of higher education' (midwife, age 50). Preparation for childbirth consists of 12 midwife-led lessons in the hospital (lectures, gymnastics, watching training films) and weekly classes in the swimming pool and sauna. If necessary, clients can consult with the hospital's doctors during the course of the pregnancy and use the hospital's diagnostic facilities. It is assumed that a woman (a couple) who has attended the classes will have the baby delivered by the very same midwife who was responsible for the training. Deliveries take place in a separate individual maternity ward that is equipped with a tube and a fit ball, which are used to facilitate contractions. Instead of lying flat, which is a customary position for delivery in Russian hospitals, women are encouraged to choose a body position for labour that is comfortable for them. The centre also has individual postnatal wards where new mothers are supervised by their midwives in their breastfeeding and baby care. Several weeks after being discharged, the clients are visited by midwives who answer questions related to the care of the infant and the health of the mother. Obstetricians are minimally involved in the work of the centre. During pregnancy, a woman is to attend the hospital's obstetrician at least once to check if vaginal birth is possible for her. At the birth, unless there are complications, the doctor is expected to appear only once or twice.

There is a considerable demand for the services of the centre. In the past five years, the annual number of clients of the centre has varied from 300 to 400. In 2014, there were over 300 births there, 90% of which occurred as uncomplicated deliveries. Only five births took place on obstetric delivery beds, and just one delivery occurred with the assistance of epidural anaesthesia. Thirty caesarean sections were performed. The average age of first-time mothers was 29 years; the youngest women giving birth was 18 years old and the oldest 44. More than one-third of the

clients used the centre's services for the second or third time. The centre provides services only on commercial basis. In 2016, the 'basic package' that includes training for expectant parents, midwife assistance at labour, and postnatal care cost approximately 1200 euros or 2.8 times the average monthly salary in the country. The prices of the centre's services have risen since 2014; however, they remain at the average level of commercial maternity care services in the city (the highest price for a comparable service package is 5600 euros).

To get insight into the institutional work of midwives, I did a qualitative study in the setting described above. In 2014 (when the interviews were collected), six midwives involved in delivering babies and running courses were employed at the centre, and three midwives worked in the postnatal ward. I conducted eight interviews with midwives who work at the centre and 15 interviews with their clients, and I observed 24 hours of the childbirth training provided. The interviews with clients were focused on how the women (families) chose a maternity hospital and childbirth assistant, how they organised access to desired form of medical help, how they prepared for childbirth, and how the actual delivery took place. The interviews with midwives were structured in the following thematic blocks: (a) how 'natural' childbirth is defined, (b) how it is organised in the settings of maternity hospitals, (c) how mothers are prepared (including self-preparation) for such births, and (d) how the interaction of mothers and midwives occurs before, during, and after childbirth. The head of the centre was additionally asked how the centre was founded in 1990s and how it developed. As organisational rules and practises vary substantially in different Russian maternity hospitals, to get a better understanding of the 'natural approach', I also performed 15 interviews in four other maternity hospitals across the country.

To get insight in the institutional work of midwives, it is also necessary to reconstruct the organisational context in which this work is accomplished. For this purpose I did a thematic analysis of official documents and regulations that determine the provision of obstetrical and midwifery care in the country. Among the texts analysed were the following types of documents: (1) federal laws that regulate the protection of public health; and (2) decrees of the Ministry of Health issued after 2005 that regulate the work of maternity hospitals and professional activities of midwives

and obstetricians (including decrees on implementation of social policy programmes in the field of maternity care).

Russian Maternity Care in the Post-Soviet Era

Childbirth is significantly medicalised in contemporary Russia. Official regulations advise expectant mothers to register at antenatal clinics before 12 weeks of pregnancy, to visit an obstetrician–gynaecologist at least seven times during the following months, and to do numerous medical tests including three ultrasound screenings. Deliveries take place in maternity hospitals (usually, state ones) and are attended by a team consisting of an obstetrician–gynaecologist, a midwife, a neonatologist, and an anaesthesiologist (if anaesthesia is administered). Some antenatal clinics function as subdivisions of maternity hospitals, but there is no continuity of care between these institutions—most women give birth with medical personnel whom they see for the first time. Parents' compliance with these norms is secured through bureaucratic mechanisms. On one hand, in medical institutions, women receive various documents that they need to qualify for paid maternity leave and other welfare bonuses. On the other hand, if an individual violates the established order, this can cause obstacles at subsequent stages of her 'institutional career' as a parent. For example, women who have not had the required medical check-ups during pregnancy are suspected of being carriers of contagious diseases, and thus they can give birth only at specialised 'infectious' wards.

This medicalised model of childbirth gained its dominant position in the country in the second half of the twentieth century. It was imposed by the Soviet state in the centralised health-care system, which provided standardised services available to almost all groups of women free of charge (Gradskova 2007). However, the prevalence of the medical approach to delivery corresponded not as much to the increase in doctors' professional authority as to the expansion of state control over citizens' private lives. In the relationship between obstetricians and women, the former were responsible for transmitting the state's paternalistic care of the health of population at the cost of their own professional autonomy, as well as the autonomy of their patients (Field 1957; Freidson

1988: 35–47). This relationship has been described by several scholars as a distinctive (post-)Soviet path of the medicalisation of childbirth, different from the Western one (Rivkin-Fish 2005: 23–28; Belousova 2012). Midwives within this system are referred to as middle-level medical personnel, i.e. specialists with secondary medical education. They play a subordinate role in maternity care by acting as obstetricians' technical assistants with occupational duties limited to auxiliary tasks. Midwives are not allowed to independently consult women during pregnancy or to attend deliveries without a doctor's supervision, so their professional role is actually close to that of obstetrical nurses.

Since the dissolution of the USSR, Russian maternity care has undergone a series of major transformations. The core trend of the reforms has been the introduction of neoliberal principles in the regulation and financing of medical institutions. The economic changes have been manifested in the creation of the health insurance system and the development of the market of commercial medical services provided both by state and private clinics (Cook 2014). Informal payments in healthcare also proliferated, with maternity care featured among medical fields where such payments spread most widely (Shishkin et al. 2004). This constellation of changes has advanced the development of new conditions and forms of medical help at childbirth. Commercialisation of healthcare has created a pool of childbirth options for demanding clients (Temkina and Zdravomyslova 2008). In urban areas, parents with sufficient financial resources can select an individual delivery ward and postnatal ward, choose the obstetrician who will attend their delivery, and hire a psychologist to accompany them during labour.

Shifts in economic relations have been accompanied by revision of the standards of medical performance, although development in this direction has been far from coherent. In the 1990s, state hospitals were encouraged to participate in WHO projects promoting breast-feeding and early skin-to-skin contact for mothers and their newborns (the Baby Friendly Hospital Initiative was the most prominent of those projects). These demedicalisation initiatives were conceptually connected with democratisation of the country's social services (Rivkin-Fish 2005: 35–39). But by the mid-2000s, democratisation rhetoric was abandoned. The state authorities became concerned about the decrease in the country's population,

discursively framed as 'the dying-out of the nation'. Amelioration of medical services for pregnant and birthing women became associated with creating highly technological medical units and facilitating patients' access to obstetrical care, which in turn should have contributed to recovery of the birth rate.[3] Thus, in spite of liberalisation of healthcare, the Soviet-inherited role of obstetricians as authorised state agents was strengthened, with their work perceived as a contribution to the realisation of state demographic policy. After a brief period of the country's participation in international demedicalisation initiatives, the correlation between 'good' maternity care, the protection of state demographic interests, and medicalised delivery was established. This, however, did not result in citizens' satisfaction with the quality of care provided in maternity hospitals. Studies highlight patients' deep institutional distrust towards state health-care structures, because women associate utilising medical services with health risks and emotional vulnerability (Rivkin-Fish 2005; Temkina and Zdravomyslova 2008).

The practises of midwife-assisted natural delivery have entered into this peculiar assemblage of post-Soviet changes in maternity care. Historically, the natural approach to childbirth in the country dates back to the late 1970s and is related to a water birth movement. This dissident movement developed mostly in the capital cities of Moscow and St. Petersburg. Deliveries took place at families' apartments and were attended by enthusiasts, only some of whom had midwifery or medical education.[4] In the first stages of the movement, assistance at water birth was framed as a gift, help provided to allies on a free-of-charge basis and an act of proselytism (Belousova 2012). The main concern of the movement members was not the struggle against medical authority but resistance to the state control over female reproduction. It constituted an attempt to turn childbirth into a private experience that takes place at home as an intimate family occasion (Belousova 2002: 51).

In the same period, Western home-birth activists who were influenced by feminist ideas perceived the empowering potential of natural delivery for women, a delivery without superfluous medical interference into female bodily processes. In the Soviet context, proponents of the water birth movement lacked this perspective. Instead, they loaded 'naturalness' with metaphysical and utopian connotations. This doctrine has implied that natural delivery (equated with water birth) occurs in

accordance with sacred cosmic rhythms, and thus it strengthens newborns' connection to superhuman powers, endowing babies with flawless physical health, intellectual brilliance, and deep spirituality. The main concern for the water birth activists was not the mother's comfort but raising a new superhuman generation (Belousova 2012).

Over the last 25 years, homebirth has been transformed from a marginal practise into a business. In major Russian cities, centres have proliferated that offer mothers and couples courses on natural childbirth and natural parenting. Switching from a gift economy to for-profit services, they attracted clients predominantly from the educated middle class who sought an individually tailored scenario of delivery and were ready to pay for it (Belousova 2002; Melnikova 2012: 384). On the ideological level, the Russian home-birth initiative was affected by the ideas of the international midwifery movement. Post-Soviet proponents of homebirth have adopted from their foreign counterparts a client-oriented approach and human rights rhetoric, which were not characteristic of the first Russian home-birth enthusiasts of the late-Soviet period (Belousova 2012). The movement's quest for an ideal baby has been replaced with the quest for the woman's (family's) satisfaction from the labour and birth experience.

However, in spite of these attempts at institutionalisation, homebirth remains virtually prohibited in Russia, as it is not officially licensed.[5] In 2009, a midwife from St. Petersburg and one of the leading figures of the home-birth movement in the country, Elena Ermakova, was sentenced to five years in prison for practising illegally and causing human death (a child died in a home delivery attended by Ermakova). This incident stimulated the media to coin a repulsive image of home delivery by accentuating the risks of this practise for mothers' and children's health and (often rightfully) emphasising birth attendants' lack of sufficient qualifications. Below is an example of such an attitude excerpted from a material on Russian homebirths that was published in 2011 by RIA Novosti, a state-operated Russian news agency.

> The problem is that many women trust so-called spiritual midwives, trying to push medical professionals aside from the process of delivery. Although official statistics on home birth do not exist in Russia, doctors say that nine home births out of 10 result in serious health complications (…) 'In all the

> cases that I know when a woman and a child died, the deliveries were always attended by some midwives, who are nearly shamans. Only God knows how they treat [women—E.B.], and this leads to children's deaths,' says Natalya Karpovich, the vice chair of the Duma Committee on Women, Family and Children.[6]

Although many Russian parents have doubts about the quality of medical help in state maternity hospitals and long for a more individualised approach to labour, homebirth also seems a dubious option due to its illegal character and potential health risks. For midwives, the opposition of hospital and home deliveries has also created a problematic choice between, on one hand, abandoning professional ambitions and being subjugated to obstetricians' authority, and on the other, being exposed to the hazards of illegal medical practise. Both clients' and professionals' demands for a compromise between the two polarised approaches to delivery contributed to the development of a hybrid—a natural hospital birth.

Midwives' Institutional Work

The space offered by the dissolution of the Soviet health-care system and the emergence of a market for medical services was a niche for innovation in maternal care and childbirth. However, it required specific institutional and innovative work by midwives to make fruitful use of this space and to introduce a natural approach to delivery in state maternity hospitals. In my analysis of midwives' day-to-day practises, I distinguish two types of institutional work: (1) defining new institutional space, and (2) creating new identities for those who populate this space.

Defining New Institutional Space

Russian maternity care is characterised by a bold distinction between two models of childbirth—hospital/medical, on one hand, and home/natural, on the other. The institutional work of those midwives who advance a natural approach to labour in hospital settings is aimed at constructing

a new space at the border of these two fields. The essence of their efforts consists in symbolic demarcation of new territory, which would be distinct from both a pure medical and a pure natural view of delivery. The institutional work of midwives includes three elements. First, they draw a difference between a medicalised obstetrician-led and a natural midwife-led birth through negotiating the boundary between physiology and pathology in regard to delivery. Many of the health conditions that Russian obstetricians consider problematic and requiring medical intervention, the midwives interviewed classify as tolerable variations in a healthy labour process. Midwifery activists in Russia define physiological delivery as a separate area of expertise and put forward professional claims for it. The centre for midwifery care presents itself as a zone for healthy people (women) in medical surroundings.

> We insist (by saying 'we' I mean [the name of the center]) that physiological birth is an area of midwifery occupation. A doctor is responsible for pathology; a midwife is responsible for physiology. The edge between these two is very thin and extremely difficult to define, but we are working on it. We are probably the only place in the country where midwives do make some decisions [during the delivery, E.B.], where you can really have a physiological labour. I mean, formally a doctor carries the legal responsibility [for the outcome of the labour, E.B.], but actually the doctor here plays just an advisory role. (centre midwife, 35 years old)

Second, midwives distinguish between segmented and holistic approaches to childbirth. Regular Russian maternity care distributes responsibility for pregnancy, childbirth, and postnatal care among different institutions and specialists. The midwives interviewed stress that such discrepancies in care are both emotionally harmful to women and have a negative impact on the quality of medical help, because none of the specialists develops a full and comprehensive picture of the client's health status. Moreover, such organisation leads to the fragmentation of midwifery practise itself. In contrast to this situation, the centre has the principle of continuity of care at centre stage. One and the same midwife consults a woman during pregnancy, attends her delivery, and monitors her condition after labour.

> Have I told you already why we do not accept women after week 25 of pregnancy? We do not accept them because otherwise we would not have enough time to correct flaws that probably have been made in their pregnancy monitoring, and we also would not have enough time to establish psychological contact [with patients, E.B]. So, yes, we have these two points here. With the most people it takes from 12 to 15 face-to-face interactions to get used to each other, to establish trust. And we also should see her health condition during the third trimester. When she is passing by in the corridor you already can spot if her legs or her eyes have become swollen (…) So, yes, what we are doing here? We focus on prophylactics to avoid doctor intervention. She won't need these interventions, because she has attended sauna, because we have advised her on her diet, and just because she feels relaxed. (centre midwife, 50 years old)

Third, and closely related to the notion of continuity of care, midwives organise maternity care in such a way that, unlike the formalised and bureaucratised relations commonly adopted in Russian hospitals, the career of a pregnant woman at the centre implies personal contact between her and her midwife. They meet each other weekly over a period of three months at lectures, exercise classes, and sessions in the sauna and swimming pool. Women are encouraged to consult their midwife at the centre or by calling them on their personal phones at almost any time of day. As the result, they are prepared for the teamwork during delivery and a client receives truly tailored service.

> This approach is fundamentally based on the individual. This is an essential element. There are some women I have been seeing since 22 or even 18 weeks of their pregnancy, every Friday I spend four hours with them. We have a chat together, joke around a bit, we socialise beyond just the lectures. Then I see them at the pool. Sometimes I might even be able to help them with family problems. (centre midwife, 48 years old)

Personalisation of the relationship between the specialist and the client, as well as continuity of care, constitutes signature features of the approach adopted by Russian proponents of homebirth. Midwives who work at the centre admit that their practise has been influenced by ideas from the home-birth movement, because many of them have attended

courses led by movement leaders. However, the midwives tend to stress the difference, namely the medical component of their work. Even when discussing water birth practise, part and parcel of Russian home-birth movement, they frame it as medical, scientifically based, and approved by Western (presumably, more advanced) experts.

> So yes, we have had water births here, because water birth reduces some health risks. This is proved by English research data […] So this idea about using water during labour, in our variant it is not related to any spiritual or religious things. No, we have been interested in completely technical things. (centre midwife, 50 years old)

According to the head of the centre, the main motive for its creation was to combine in a single organisation the attractive features of both home and hospital deliveries, i.e. personalised and emotionally involved care and reduced risks related to childbirth through adequate use of medical technologies. Institutional space that has been constructed to fulfil those intentions becomes a distinctive compromise between the two approaches.

> So, yes, we have this niche. We are trying to work with people who are oscillating between homebirth and hospital birth; metaphorically speaking, those people who want to climb a pine and not to get scratched […] So, yes, we will do everything you want: we won't touch a pubic cord, you will squat down, we will turn off the light and bring aromatic candles, but we will also have an anaesthesiologist waiting behind the wall. (centre midwife, 50 years old)

However, this representation of the innovative practise should not be considered a coherent scheme. Because the institutional work that we have reviewed occurs at the level of everyday practises, it does not produce a stable, comprehensive definition of natural hospital delivery. Instead of developing a clear-cut framework, midwives' efforts result in creating volatile and experiential understandings of childbirth, understandings that can be shared with others only in a limited way. One of the centre's employees recalls: 'At first it was hard for me to communicate with the staff [of the centre, E.B.], because everyone still has her own

view on natural delivery, and these views are not identical to each other' (centre midwife, 35 years old).

Creating Professional Identities

In the process of defining new institutional spaces, midwives also reformulate relations between actors and institutions, i.e. create new identities. First of all, their efforts result in constructing a new identity for midwives themselves. Along with the established division between home midwives and hospital midwives who function as obstetricians' technical assistants emerges a third possible identity: a midwife who works in a medical institution but enjoys (partial) professional autonomy and is able to advance a demedicalised approach to delivery.

The key task here again is to demarcate boundaries between this new kind of specialist and the two other kinds of midwives. Research participants provide several criteria for such a distinction. The first, a quantitative one, is the number of births attended by a midwife per year. As home births are relatively rare,[7] and hospital births are almost universally available, there is a dramatic difference in the workload of midwives in these two domains. Our informants estimate that midwives in hospitals attend eight times more labours than home midwives. The yearly number of deliveries at the centre per midwife is midway between these two poles, approximately 80 deliveries per year. Though at first glance we are speaking here of purely statistical matters, at its core this threshold reflects the balance between professional skill maintenance and specialists' ability to pay individual attention to clients.

> When a lay midwife has 20 deliveries a year she loses her qualification. She may know every woman client personally, she may know her condition from head to toe, she may know her grandmother and grandfather, but she loses manual skill. And another pole is when a midwife has, let's say, 150 deliveries a year. It's like a conveyer. She barely remembers these people. So yeas, there is a limit of professionalism and human physical capacities. (centre midwife, 50 years old)

An image of the mundane, conveyer-belt work that is assigned to hospital midwives frequently emerges in interviews with the centre person-

nel. Along with physical exhaustion, it is associated with midwives' inability to make any decisions in labour process, because the strategy of delivery is determined by doctors. Striving for professional autonomy (at least, at the workplace level), midwives reject this purely technical role for themselves.

Extensive emotional involvement represents the opposite challenge to professionalism in midwifery. Professional authority presumes some power distance between the specialist and the client. While not explicitly addressing power relations, the midwives in interviews discuss their efforts to maintain professional and emotional distance from women in order 'not to be swallowed up by clients' (centre midwife, 37 years old). In this sense they distinguish themselves from home midwives, who (as our informants assert) develop too close, even quasi-familial relations with expectant mothers.

> I think that a woman who comes to our centre, she has a particular character, a tough inner core, personal principles. She doesn't need a midwife to cling to. Because for those who want to cling to some particular person, there are home midwives. (centre midwife, 35 years old)

The above also indicates that centre midwives help to construct new identities for their clients. The natural birth practise that minimises medical intervention ascribes to a woman a role of a healthy and strong subject who is capable of giving birth without external support. To this general feature of the natural approach, the work of the centre adds a community-building element. While attending together classes for parents for quite a long period, clients develop a community of natural mothers and preserve these ties long after their children are born.

What is more, the development of the natural approach to childbirth in hospital settings contributes to creating new identities for other occupational groups related to delivery and child rearing: sling consultants, breast-feeding consultants, prenatal psychologists, doulas, and others. Interviewees talk about their work connections with members of these new occupational groups: The head of the centre recollects how she has presented lectures on midwifery at some training for doulas, and sometimes lectures of breast-feeding consultants or sling consultants are

included in the centre's curriculum for expectant parents. Midwives collaborate with centres for early childhood development, whose professional efforts are considered to be a logical continuation of midwives' work. These alliances reflect the holistic attitude to the reproductive experience that is characteristic of the natural approach to labour.

> One of our midwives, she worked here for a half of a year and then opened a centre for child development. So she leads music classes for children less than year old, painting classes for children less than three months old, and English language for foetuses. And there is some reason in this. We will stand by your side during labour, but we will leave you afterwards, while you will need to figure out how to wear slings and to teach your week-old baby English. (midwife of the centre, 50 years)

The transformations of Russian healthcare have enabled the development of natural childbirth practise in hospitals as an important compound of midwives' quest for professional autonomy. However, the very form that natural delivery has taken in the country is quite specific, having been shaped by the peculiarities of organisational constraints and opportunities. In the following, I elaborate further on how exactly natural birth is advanced in different Russian hospitals and what context-specific features it acquires in the process.

Natural Childbirth in Russia: Shades of Grey

A series of reforms in Russian maternity care since the 1990s proved to be rather inconsistent. Liberalisation of health-care provision has coincided with preserving a high level of state intervention in a centralised health-care system, while standards that regulate midwives' professional performance are lacking. These contradictions and lack of regulations create a climate of organisational uncertainty, and health-care workers rely more on the local customs adopted in a particular institution than on official regulations. Explaining patients' demand for commercial childbirth services, a midwife explicitly relates the deficiency of coherence at the level of regulation to the spread of personalised trust relations and informal practises in hospitals.

> The notion of standards in obstetric and midwifery care provision is very important. In Russia there are no uniform standards: each hospital on the basis of its practical experience, as well as medical and statistical research, creates its own standards. These become the rules and the guide to action in a particular health-care institution. Therefore, the main task facing future parents is to find specialists whom they trust and who adhere to the essence of the standard, rather than its wording. (midwife, 44 years old)

This space of ambiguity is used by midwives of the centre to implement the natural approach to delivery. Natural birth does not fully comply with official medical standards. First, ministry decrees stipulate that an obstetrician's presence is essential at every birth. These are doctors who determine the delivery strategy and bear legal responsibility for its outcome. In this situation, a natural childbirth guided by a midwife cannot be even documented. Second, principles of the natural approach presume adherence to the unique pace of each delivery and avoiding medical interventions, but hospital rules, though they might allow a certain degree of ambiguity, contain quite pronounced norms (interviewees refer to them as algorithms that provide the norms with a connotation of mathematical precision). Some of these norms determine how long physiological pregnancy lasts and when labour should be stimulated: If labour has not started by week 41, a woman is recommended to undergo hospitalisation; if labour still has not started by week 42, it is an indication for labour induction. Other norms regulate the time that can be spent without medication after water breaks (which is usually 12 hours). These quantitative distinctions between the norm and pathology adopted in medical institutions are at odds with natural delivery.

Midwives' efforts to develop natural delivery practise in hospitals, as one can observe in the centre under consideration and at the other research sites, rely on situational adjustments and compromises rather than on transformation of official regulations. Compared to doctors, midwives lack professional authority and legal recognition; thus they must employ subtle practises and seek gaps in guidelines in order to reappropriate a delivery room. Most commonly, their attempts to influence local maternity care customs adhere to the tactics of the weak model (de Certeau 1983: xii) and not to the model of open negotiations. One midwife provides an outline of the situation by drawing a sharp parallel

between midwives' position in the Russian hospital and the position of a woman in a patriarchal family.

> The hospital hierarchy is very rigid: a midwife is on the one step, and an obstetrician–gynaecologist is on completely another step. And it is so difficult to tell a doctor: 'You're doing something wrong.' There always can be a situation when such a comment will bounce back and hit you. Our relationship with doctors is like one in a family, where a nice wife talking to her husband decides not to insist, but to wait and see. And after some time in more suitable circumstances she returns to the same issue. (midwife, 39 years old)

Asked to describe how coordination of the midwife's and doctor's actions is typically conducted in an ordinary delivery ward, another interviewee tells the story of practical adjustments that are situational and fragile, based on personal contact and the obstetrician's good will.

> It is based on some signs and hints. But if he [the doctor, E.B.] sees that the midwife is not going to actively participate in the delivery, he takes everything on himself and implements the full programme. But if the midwife is active, if she says, 'Oh, maybe we do not need anaesthesia? Maybe we can wait and put the woman in the shower instead?' And he says, 'Ok' […] But it really depends [on the situation, E.B.]. It's, well, not easy. (midwife, 37 years old)

As discussed above, the demand for natural childbirth and personalised care has formed a market niche for the midwives. Commercialisation of childbirth services has provided the midwives with resources to vindicate their position more deliberately. Relations with particular doctors frequently rely on financial incentives: A contract for a delivery usually includes payments for an individual obstetrician who will attend the delivery. In cases of uncomplicated labour, doctors are expected not to intervene in the process. Thus, they are actually paid for their readiness to cooperate with a midwife during labour and for abstinence from superfluous action.

> Just imagine that there is a classic approach to something, and you are trying to introduce some alternative. It is very difficult, because the people

> they are all the same—midwives, obstetricians, head obstetrician—they are all the same, you can't change their views immediately. They need some time to see the results [of the natural approach to childbirth, E.B.]. So that's why commercial deliveries were introduced. So that they [obstetricians, E.B.] would understand that they were paid for closing their eyes on something. (centre midwife, 50 years old)

However, some clients of the centre report cases when obstetricians actively intervened in the delivery despite the fact that customers had purchased natural childbirth service. Midwives sometimes turn to sabotaging doctors' instructions to prevent complaints.

> The obstetrician told the midwife to make an injection. And she told me: '[Name], I won't make this injection. I'll just take some blood from your vein, so there will be a mark left by the syringe'. So they are doing something in secret from obstetricians. They can't openly say, 'We have a natural delivery here, and this woman doesn't need oxytocin injections to cope with the labour'. No, a doctor administers oxytocin, and a midwife injects the patient with something else. That was really astonishing. (mother, 33 years old)

There is no common approach to natural delivery in Russia (and its ideal type, home birth, is not legally sanctioned in the country). This results in the variety of natural birth practises: Their mode and content are determined not by commonly accepted norms or ideology but by situational options to transgress formal rules that are possible (or not) in each individual maternity hospital. Thus what natural deliveries in Russia share is their grey character.[8]

They are grey in several senses. They are grey because they flourish in the space provided by organisational uncertainty, in lacunae not covered by the rules of obstetric care provision. They are grey in the sense that their implementation is related to minor violations of regulations for maternity care provision (e.g., when a midwife is one who actually attends the delivery, while a doctor only completes official documents). They are also rather uncertain and grey from the client's perspective—parents can never be sure whether they will receive the kind of service they have paid for or whether an obstetrician in charge will insist on medicalised

delivery. In Russian hospitals, a natural approach to childbirth does not form an open opposition to the prevailing medicalised model, but functions as sets of creative situational adjustments to the officially recognised scenario of delivery and other organisational rules.

Natural Hospital Birth: An Insecure Innovation

A core assertion of the neo-institutionalist approach to professions posits that as occupations expand or redefine their jurisdictions, they inevitably initiate institutional changes. The case of the Russian centre for midwifery care considered in the article illustrates this thesis perfectly. The midwives' efforts to widen the scope of their professional autonomy at the ground level by introducing natural childbirth practise into the maternity hospital resulted in a distinctive niche on the border of homebirth and medicalised birth. In contrast to a widespread assumption about Russian health-care professionals being minor state bureaucrats (Freidson 1988; Schecter 1992; Mansurov and Yurchenko 2004), this study shows that through everyday institutional work, professionals are able to introduce innovations in post-Soviet medical services.

Since the 1980s, the spread of homebirth practise in Russia has conditioned a professional division between hospital and home midwives, one which is analogous to the classification proposed by Davis-Floyd for midwives in Mexico (Davis-Floyd 2001a: 193). Hospital midwives who have remained on one side of the borderline abide by the official regulations and are subordinate to obstetricians. The other side has been occupied by midwives involved in independent practise. They take the risk of assisting without license in home deliveries while enjoying workplace autonomy from the medical profession. In this text I have examined the enterprise of a third group of Russian midwives. Struggling for professional authority, but also unwilling to violate the law, they have created a unique institutional innovation in Russian maternity care—natural hospital birth. These midwives from the third group have strategically drawn on organisational uncertainties in Russian maternity care and situated their practises in the precarious space between incoherent official regulations, expectations of clients, demands of obstetricians, and local customs in particular institutions.

However, midwives' institutional work has not yet generated changes on a structural level of health-care organisation. Their professional project has not found support from the state, and their institutional work is not reflected in official regulations in the way that it is in the Netherlands and Great Britain (De Vries et al. 2001). Midwife-assisted deliveries lack legal back-up and are not covered by insurance. The natural approach to childbirth is realised not through transforming formal rules, but through informal practises. The absence of any common standard leads to the coexistence of various forms of the practise adopted in different medical units. What these forms share is their grey character, i.e. lack of transparency and predictability for all parties involved in the interaction. Yet, the new space created by midwives constitutes an attractive target for invasion by other professional groups. Centres for natural childbirth in maternity hospitals have proved to be profitable enterprises that meet the demands of affluent clients, but midwives lack state support to turn this niche into a protected market shelter for their profession. Thus, some Russian obstetricians have claimed this institutional space created by midwives: For example, in 2015 in the private maternity hospital "A Mother and a Child" in Moscow, a medical ward for home deliveries was created, where parents presumably can have a safe natural birth attended by an obstetrician, an anaesthesiologist, and a neonatologist. Midwives risk losing the benefit of their innovation work if it is not officially recognised and safeguarded by external authority.

Notes

1. In Russian medical parlance, 'vaginal birth' is typically defined as 'delivery through the natural birth canal', and 'natural birth' frequently serves as a short form of this phrase. To avoid possible misunderstanding, I would like to stress that in this text I use the term 'natural childbirth' in another, more limited sense. To define 'natural' childbirth, I refer to the following (broad) criteria: (1) mothers are supposed to actively participate during labour, making decisions about the scenario; (2) a natural birth requires from parents some specific physical and psychological training; and (3) at the core of natural childbirth lies the principle of reducing, almost reject-

ing, medical intervention, with homebirth (attended by a midwife, or doula, or neither) as the prototypical form of natural birth (Mansfield 2008).

2. In December 2016, one of the federal Russian newspapers announced that the Ministry of Labor was developing new professional standards for midwives. If these standards are approved by the Ministry of Healthcare and the Council for Professional Qualifications in Healthcare, midwives will receive the right to attend deliveries without doctors' supervision in cases of uncomplicated physiological labours. However, the newspaper also stated that at the time the article was published, the draft standards had been discussed in the Ministry for three years (Berishvily, N. [23 December, 2016] Midwives Want to Attend Deliveries without Doctors. *Izvestia*. Retrieved 26 January 2017 from http://izvestia.ru/news/653785).
3. Plans for building new, highly technological maternity hospitals were officially approved by the Russian government in early 2016 as part of the Plan of Measures for Realization of the 3rd Stage of the Strategy of National Demographic Policy to 2025 (official webpage of the Ministry of Labor and Social Security of Russian Federation. Retrieved 29 January 2017 from http://www.rosmintrud.ru/docs/mintrud/protection/237/Proekt_plana_meropriyatij_na_2016-2020_gody_7-10-15_-proverennyj.doc).
4. The charismatic leader of the movement and inventor of the water birth method, Igor Charkovsky, is actually a swimming instructor by training.
5. Decree No. 572n of the Ministry of Healthcare of Russian Federation, issued on 1 November 2012 "On Establishing the Order of the Provision of Medical Help in the 'Obstetrics and Gynecology' profile (with the Exception of Assisted Reproductive Technologies)". Published in *Rossiyskaya Gazeta,* special issue № 6066, 25 April 2013.
6. Barykova, O. (24 October, 2011) Comfortable Homebirth with the Risk for Two Lives. *RIA Novosti*. Retrieved 28 January 2017 from https://ria.ru/analytics/20111024/469778847.html
7. There are no official statistics on homebirths in Russia.
8. I am grateful to Tetiana Stepurko for suggesting this metaphor.

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7

Ova Exchange Practises at a Moscow Fertility Clinic: Gift or Commodity?

Alexandra Kurlenkova

Introduction

Technologies for health such as MRI or anaesthesia often give the impression of working the same everywhere around the world, because they rely on the same type of medical and technical knowledge, employ similarly trained people, and use common protocols. They appear to be biomedical machinery running like clockwork once all the necessary human and non-human components are in place. However, taking a closer look, one finds biomedical practises to be rather heterogeneous. Depending on

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legal frameworks and cultural repertoires, medical enterprises rely on different schemes of procuring valuable bio-assets needed to get 'the machine' going.

Egg donation[1] practises are one illustrative example. It has been shown that in countries such as the UK, France, and Belgium, ova are exchanged as gifts between family members and friends, or as mutual reproductive services between female patients ('egg sharing') (Pennings et al. 2014: 1081). Some authors on Eastern Europe, however, have argued that the gift model is not operative in that region and that ova donation in Eastern Europe has acquired all the features of monetised markets, including financial remuneration, financial interests, and impersonal relationships (Waldby and Cooper 2014; Nahman 2008). Meanwhile, the Russian fertility market is poorly studied. A few recent works discuss the organisation of Assisted Reproductive Technology (ART) businesses in Russia (Rusanova and Isupova 2009), popular prejudices and difficulties experienced by the reproductive patients (Brednikova and Nartova 2007), and commodification of motherhood as viewed by clinic personnel (Dushina et al. 2016). With rare exceptions (Berdysheva 2012: 77), these works do not address the issue of camouflaging egg vending practises to look like altruistic acts.

This chapter aims to provide insight into the economic and social framing of egg donation in Russia focusing specifically on how in the absence of state attention private actors managed to shape the field of reproductive medicine to their advantage. I will first introduce several theoretical models to conceptualise egg donation: the gift model and the clinical labour model. Next, I will explain how I did fieldwork in a Moscow ART clinic. Then, I will sketch the landscape of assisted reproduction in Russia. From there I will move to analysis of my field data, looking at specifics of the management style, clinical values, and perceptions of female reproductive cells in clinic N. In conclusion, using results of a pan-European survey and other sources, I will compare the status of ova in different countries, arguing that in Russia they function as a commodity rather than a gift, with private infertility clinics taking primary role in developing and structuring the practises of ova exchange.

Theorising Ova Exchange: Gift Giving Versus Clinical Labour

Altruistic donation as a benchmark for the exchange of human blood was analysed by Richard Titmuss (1970), who compared systems of paid and unpaid blood donation in several countries, including the UK and the US. His findings depicted a pejorative image of US paid donors, mostly low-income and stigmatised. Medical journals of that time described them as 'narcotics, dope addicts, liars, degenerates, unemployed derelicts, prison narcotic users, bums, the faceless, the undernourished and unwashed, junkies, hustlers and ooze-for-booze donors of Skid Row' (Titmuss 1970: 114–115). Titmuss put forward a pragmatic argument against paid donation: it is unsafe, because it attracts many people who are sick and poor. This will necessarily make them lie about their health for the money. Voluntary unpaid donation, in contrast, would attract selfless and healthy people and create powerful social bonds.

Titmuss reinforced his ideas by appealing to Marcel Mauss's theory of gift exchange. In a rather romanticised manner characteristic of early anthropologists, Mauss contrasted a traditional economy of gift giving to the modern 'individualistic economy of pure interest' (Mauss 1966: 73) and the unique and personal character of the gift to the equivalent value of a commodity on the market. Following Mauss, Titmuss looked down upon impersonal, individualistic relations between the seller and the client and praised gift-giving relations based on a strong sense of moral and social obligation (Titmuss 1970: 72–73). However, as Mauss noted, neither of these forms of exchange is disinterested. While in trade we see explicit economic interests of the parties, the exchange of gifts is aimed at 'profitable alliances' (Mauss 1966: 71) between tribes, the prestige of tribal leaders, and establishing power hierarchy. Bourdieu added to this the idea of a time interval between the gift and the counter-gift that helps to perceive exchange relations as something not obligatory and disinterested. The duration of gift relations in time hides the interests of all the parties that would become evident in the case of immediate restitution. Exchange of gifts is 'one of those social games which can be played out

only as long as the players refuse to recognize to know, and most importantly—to recognize the objective truth of the game…' (Bourdieu 1980: 179–180). Thus, interests stand behind both gift giving and trade; people sell and buy items having equivalent value on the market, while they give and receive more complex and less easily convertible material and symbolic goods (reputation, prestige, and credit).

Such domains of biomedicine as transplantology and reproductive medicine, since their inception in the 1960s and 1970s respectively, have relied heavily on the imagery of gift giving. The language of 'gift' and 'altruism' employed by medical professionals became an important linguistic reservoir necessary 'to secure the provision of human tissue of various sorts from the public' (Shaw 2008: 15). The model of the gift became institutionalised in national legislation (which is evident in the choice of the word 'donation'), international guidelines,[2] recommendations of professional medical societies,[3] and ethics committees. This model prohibits direct payments to egg donors, leaving however the possibility of paying 'reasonable compensation' for inconveniences and expenses incurred by the donors. The professional guidelines of the American Society for Reproductive Medicine (ASRM) underline that this compensation is not payment for eggs, which would imply that 'they are property or commodities' and 'devalue human life' (ASRM 2007: 306). The compensation is compared to 'expenses' incurred by human subjects in biomedical research, as well as 'employment and other situations in which individuals are compensated for activities demanding time, stress, physical effort, and risk' (ASRM 2007: 306). In this way, the American guidelines circumvent the problem of commodification of eggs: donors are paid not for them, but for the time and effort spent.

Historically, voluntary agreement to expose one's body to scientific/medical manipulations came about in bioethics as a guarantee of the safety of subjects of biomedical experiments. The language of bioethics became the most widespread way to describe human research, and later, tissue donation, in Euro-American culture (where it first appeared). The doctrine of informed consent was used to cast a trial volunteer or a woman who is an egg donor as a pro-social activist willing to take risks in order to promote scientific discoveries and help infertile people. Potential donors were legitimately encouraged to take 'visceral' risks (Waldby and

Cooper 2014: 17), that is, expose themselves to hormonal drugs and medical interventions, under two conditions: (1) they understand the health consequences of ova extraction; and (2) they are not threatened (coerced) or offered extraordinary benefits in exchange. In fact, the language of bioethics creates an image of science (fertility medicine) and of volunteers (egg donors) as essentially uneconomic, deprived of its market dimension. The bioethical model of relations between clinics, patients, and donors lacks recognition of the actual economic interests of the agents involved. Scientific enterprises and fertility businesses around the world include research companies (contract research organizations, or CROs), state-sponsored and private clinics, licensing organs, lawmakers, and donor recruitment agencies. Research 'volunteers' take part in clinical trials to earn money or get access to health-care delivery (Petryna 2009: 11). Likewise, women decide to 'donate' eggs for reasons ranging from 'I need this money' to 'I want to do something good to put up with a past trauma' (Orobitg and Salazar 2005). In Russia, particularly, egg donation took the form of a monetised market, a situation similar to that in Romania, Ukraine, and Cyprus (outside the EU), and the Czech Republic, and Spain (in the EU) (Waldby and Cooper 2014: 69).

Contrary to using the bioethical language, some researchers (Waldby and Cooper 2006; Nahman 2008; Pfeffer 2011) stress the economic dimension of reproductive medicine. Rather than perceiving egg donors as altruistic promoters of group interests, they see them as 'entrepreneurs of self' who strive to find the best solutions to their financial problems from all the options present in the employment market. Waldby and Cooper view egg donation as a new form of employment, one that is characterised by contract types of labour, outsourcing of services, and regulation of business by private law. The appearance of new types of labour such as egg donation and surrogacy is inherent in economic transformations, as well as in the history of female emancipation (Waldby and Cooper 2006: 29). As theorised by Gary Becker and the Chicago School of Economics, these changes blurred the boundaries between 'productive' (male, industrial, waged) and 'unproductive' or 'reproductive' (female, domestic, service-based, unpaid) labour, leading to the incorporation of the private sphere into the productive economy. Viewed in this light, egg donors are not only independent contractors, similar to other 'outsource

workers' performing manual, menial jobs, but also gendered labourers, like 'maids and nannies, cleaners and waitresses, sex workers of various kinds' who convert their traditional feminine capacities for care and reproduction into 'negotiable assets able to be traded for money' (Waldby and Cooper 2006: 64–65). Waldby and Cooper's model highlights the economic nature of donor practises. Rather than seeking non-monetary benefits, such as the prestige of the donor status that the gift-giving model assumes, egg sellers engage in capitalising their body as a way to solve their financial problems. The question is whether this model holds true for Russia as well.

Fieldwork in a Fertility Clinic

To gain insight into the values articulated in fertility treatment as an everyday routine, I performed intensive fieldwork in a private egg donation clinic in Moscow from fall 2011 until spring 2012. The clinic was recommended to me by one of my university peers as a good research setting to explore the ethical side of medical practises involving complex technological treatments. After writing an application letter to the director of the clinic, I was offered the position of 'overseas patients manager'.

My research methods included participant observation of the events inside the clinic (which I documented in a field journal), as well as conversations with doctors, administrative staff, and egg donor managers. Because I was introduced to the clinical staff as one of their colleagues, I did not go beyond the scope of this role and did not engage in formal interviews with doctors, managers, or egg donors. My research mission was known to the director of the clinic who gave permission for it, four managers I closely worked with, and several reproductive tourists I accompanied around the clinic—I told all of them that I was interested in ethical issues of ART and wanted to collect data on this topic. Other clinical staff did not know I was doing research, but perceived me in my role of interpreter/manager. I asked for and received feedback from the medical director on my first publication that utilized data from the clinic[4] to check whether my observations and interpretations made sense. I anonymised all names of places and people.

My responsibilities at the clinic included answering e-mails from non-Russian-speaking clients, as well as helping out those who came in person for treatment. Some of them coming from Italy, Portugal, France, Great Britain, and the USA contacted the clinic for the first time to get more information about its prices, procedures, and Russian legislature in general; others had already undergone IVF (in-vitro fertilisation) at the clinic and had their biological materials stored there (i.e. embryos conceived with eggs from a Russian donor). In face-to-face encounters during my eight-month stay in the clinic, I assisted five non-Russian couples either to go through a full-fledged IVF cycle or to undergo separate diagnostic tests.

Over time, my attention shifted from general ethical issues of ART use to the more specific topic of egg donors' motives for giving away their ova. I saw a discrepancy between donors' altruistic (voluntary, pro-social) motivations stated as a prerequisite for all donation practises in the Western world, and the sheer financial need these women vocalised at meetings with the clinic's psychiatrist. In psychiatric reports of egg donors that came to me in my role as an interpreter, I read 'confessions' of women who found themselves in harsh financial situations and had to engage in rather stigmatised jobs. These reports contained expert evaluation of donors' personalities, which, although having a professional and institutional bias, presented a rather dry and informative account of women's life stories and motivations for donation. My interest was facilitated by the physical space too: My desk stood in the same room as the desks of two egg donor managers who recruited women and helped them around the clinic. Because of this, I overheard bits of their conversations and saw donors entering and exiting the room and signing papers.

The State and Private Actors in Providing ART Services

To gain more insight into the practises involved in egg donation, it is important to sketch the landscape of assisted reproduction in Russia. As I show in this section, regardless of state initiatives to enable the use of ART in state clinics, most reproductive services related to egg donation

and surrogacy are now performed in private centres. This creates a peculiar character for egg donation in Russia: It is performed mostly in private commercial centres that are mostly free to establish their own rules and procedures. Being the only mediator between egg donors and patients, and having relatively few state guidelines, the administration of the clinics, as well as the medical personnel, have a great deal of decision-making authority and, thus play a particularly important role in shaping the egg donation domain.

The first IVF baby in the USSR was conceived in a Moscow state clinic and born in Luhansk (now Ukraine) in 1986. Extensive use of ART in Russia, however, began only later (in the late 1990s) and not in state clinics, but in a few small private centres (Lebedev 2016). At that time, commercial IVF centres had no trouble finding new clients: They were literally lining up to get access to new reproductive services (Lebedev 2016). Over time, the fertility industry took shape as a rather competitive market in big cities such as Moscow and St. Petersburg (there were more than 50 clinics in Moscow), while smaller towns and even some regional centres had few or none (Yakovenko 2014).

After 2000, the state initiated several projects to enable the use of IVF among infertile Russian couples. In 2006, the Ministry of Health included IVF in the list of services of a 'highly technological medical care', which allowed allocation of federal quotas and giving patients an opportunity to have two state-sponsored IVF attempts. From 2009 to 2011, the number of quotas gradually increased, reaching 9600 in 2013 of 24,435 cycles conducted in both state and private IVF centres (Zaytsev 2016).

In 2013, another state initiative was launched. The Federal Fund of Compulsory Medical Insurance began to pay for IVF for women aged 22 to 39, both single and married, who could prove their infertility diagnoses (Act of Government of the Russian Federation as of October 22 No. 1074). This new mechanism of state-sponsored IVF allowed compensating about 105–160,000 roubles (depending on the city) of the cost of a patient's treatment (Zaytsev 2016). However, the Fund covered only a standard IVF procedure and did not allocate money for donors' or surrogate mothers' check-ups and compensation, which would be paid out of patients' pockets.

Since egg donation is not covered by the state programmes, state clinics usually have short lists of donors. A woman who comes to a state

clinic to donate eggs automatically becomes 'the donor of the Patient Z': She is immediately matched with a particular patient. This means that patients cannot choose cells from a bank of frozen gametes. The state clinics have limited lists of donors and have a deficit of female gametes. Alternatively, to eliminate the shortage of eggs, state clinics buy donor materials from private fertility centres. For instance, as the commercial director of clinic N. noted, it sells some of its stored eggs to one of the biggest state fertility centres in Moscow (personal conversation).

Because of how the state structured the application of ART, reproductive services in Russia may be divided into standard IVF procedures, which have recently started to get increased state support, and more complicated fertility treatments based on egg donation, which are outsourced to private clinics. In other words, the state politics that exclude egg donation and surrogacy from state-sponsored projects created the conditions for the advent of ART in private fertility centres.

On the other hand, the state legislation regulating egg donation and surrogacy is quite poorly detailed. The few lines devoted to describing these procedures in the federal law[5] do not contain any information on whether these practises may be paid, and, if so, the range of allowable compensation. The current legal regulation of assisted reproductive technologies seems to enable the privatisation and marketisation of egg donation, as each clinic is free to set the prices for gametes taking into account the average market rates. There are no obligatory forms of informed consent for egg donors, so clinics choose the templates they find appropriate. The state law also does not regulate responsibility for donors' health and potential complications after hormonal stimulation.

The privatisation and marketisation of egg donation practises have determined some of their characteristics in the Russian context. First, as I show in the next section, it made it possible and even necessary for private clinics to set their own policies and protocols for dealing with donors. In some locations, such as clinic N., many major decisions in regulating egg donation were set by one person, the director of the clinic. Second, as will be shown later in this chapter, the commercialisation of eggs turned them into a commodity, one that is treated as distinct from the biological donors and bought and sold as the property of the clinic. Overall, in the midst of regulatory uncertainty, private infertility clinics have worked to

create an order that facilitated the establishment of trade-like practises with ova and shaped the flows of resources in a corresponding way.

Inside a Private Moscow Clinic

To understand ova exchange practises, it is important not only to focus on patient–donor–doctor relationships but also to consider the governance of a clinic. In the small private clinic N., the management style and handling of medical, social, and ethical issues relied very much on the personality of its director, Dr. A. The clinic seemed to be his pet project, as Dr. A. came up with the idea and fulfilled it in 2002. A biophysicist and graduate of the biological faculty of Moscow State University, he was invited in the 1990s to join a US embryology laboratory to research mammal cloning. There, as he described in one of his public interviews, he learnt the basics of mammal embryology, as well as working in an IVF lab. Back in Moscow, he decided to open an ART business 'having at hand all written American methodologies and protocols' (interview).

The clinic that Dr. A created had a homey atmosphere; even its two-storied building reminded one of a noble manor, with a large open balcony and white vertical columns, the kind where gentry families of the late nineteenth century lived. Being the *pater* of this business, Dr. A. translated many of his personal views and understanding of how such a business should function into clinical practise. The bank of donor gametes was treated by him with special care. This was not surprising, because egg donation programmes, as well as surrogacy programmes, were the major source of income for the clinic, as well as the major point of attraction for reproductive tourists from other countries. Only two trusted persons (donor managers) were given access to paper and electronic data on donors. In the clinic, care for stored eggs was combined with relatively little attention to the donors. Dr. A felt responsible for health complications for a donor, and if a donor developed complications after hormonal stimulation, he covered the costs of the treatment. Meanwhile, the informed consent form suggested to donors at the clinic was not comprehensive. It included a detailed account of possible short-term side-effects of hormonal drugs including headache, swelling, mood swings, 'insignifi-

cant risk of infection during aspiration of oocytes', and lastly, the risk of ovarian hyperstimulation; but information on potential long-term effects of hormonal induction drugs was lacking.

One of the basic values articulated at clinic N. was female reproductive/maternal capacity: the value of a woman's potential to become mother, to have maternal feelings; the value of the mere fact of birth; and the value of the health and well-being of children born through IVF. This female reproductive capacity was held to be a precious object, an exhaustible, fragile resource. In one of our informal conversations, the commercial director of clinic N. expressed concern about the fact that there were fewer and fewer women with good fertility, which meant there were more patients with problems and fewer good donors. Fertility was considered an important resource that exists under precarious conditions: women lose it with time and its quality worsens, while the likelihood of genetic diseases increases. Doctors also recognised the iatrogenic sources of risks, including that hormonal hyperstimulation can sometimes result in partial or total resection of ovaries, the reservoirs of the precious eggs. That is why, as the commercial director explained, clinic N. recruited only those egg donors who already had their own children. 'We don't take 18- to 20-year-old students who have not yet given birth to a child…. Maybe something will happen…. There were cases when women lost their ovaries…. So they would never be able to have children again!' (conversation with the commercial director). Doctors felt strongly about the value of these precious objects, the eggs, as they saw dozens of women with 'empty ovaries' or 'bad-quality eggs' who come to the clinic in search of fertility. Children and the maternal role of women were also highly valued by the medical team. The well-being of children and, hence, the health of mothers, made doctors and managers treat egg donors and surrogate mothers with care: 'These women have children of their own, we can't leave those kids orphans!' (field journal 2012). Examples of a negligent attitude to the health of surrogate mothers in other clinics was criticised by the commercial director and surrogacy manager: If these women did not go through a sufficient medical check-up, maternal obligations to their own children were put at risk.

The values of the maternal role and female reproductive capacity were combined with quite a paternalistic way of handling information.

Information was considered something that should be held in the hands of doctors, as they were agents carrying the responsibility for all concerns and problems in the course of IVF treatment. Information control helped them decide important issues in closed circles and not make them a topic of negotiations with patients or tissue providers. Keeping information, and hence responsibility, inside corporate structures was justified by viewing patients as rather ignorant, sometimes blinded by the desire to have children, and not always capable of making an informed, responsible decision. Egg donors were seen as poorly educated and not able to properly deal with extra information (field journal 2012).

During fieldwork, clinical personal shared some stories about patients being negligent of the health of future offspring. Dr. O. shared a story of a successful businesswoman with a serious skin pathology who brought a model-handsome sperm donor to the clinic to conceive a child. The clinic asked her to sign papers confirming she was informed that the child could inherit her medical condition. She signed the papers, but the child happened to have the same disease: He did not have eyelids, and his skin was seriously mutilated. The patient was not satisfied with the 'result'; she gave up her parenthood and wanted to sue the clinic. The doctor expressed concern about the future of the child, who ended up in an orphanage. Another story was told by the chief embryologist of the clinic. An Orthodox couple brought embryos from a European clinic, and one of them was transferred to the patient's uterus. It turned out that chromosome 13 of the embryo was damaged, something which, in the words of the embryologist, has serious consequences for a child's health. The patient miscarried. The clinic still had two embryos of the same couple, who wanted to undergo another IVF as soon as possible. The woman refused to have preimplantation genetic testing of the embryo, because both preimplantation genetic diagnosis (PGD) and amniocentesis[6] were prohibited by the couple's religious advisor. The clinic, in turn, refused to use the cryo-conserved embryos without PGD.

In this context, the clinical staff did not decide to broaden and improve education and information, but to limit it. The staff considered it their main job to initiate the woman's pregnancy and carry it to term, instead of considering improving information. Of course, the decision-making authority of patients is recognised in situations that involve informed

consent forms. In other situations, when ad hoc and non-formalised decisions regarding patients' treatment are needed, doctors assume control and responsibility for them. One can say that the patient received IVF treatment as an end result, a hermetic 'black box' (Latour 1987: 2), while all the 'rough edges', 'uncertainty, people at work, decisions, competition, controversies' (Latour 1987: 4) were hidden from the end user and kept in the narrow circle of clinical managers and medical specialists. 'The clean distinction between a context and a content' (Latour 1987: 4) of clinical practise, between the corporate world of decision making and the outer world of doing treatment *to* (not with) the patient, was supported throughout the treatment process.

I observed a similar kind of paternalism in relations between donor managers and egg providers. In winter 2012, I learned that clinic N. had been selling cryo-conserved donor ova to a UK clinic. Knowing that egg donation in Britain is not anonymous (meaning that all donor-conceived children who reach 18 years of age can get information about the identity of their biological mother, see Human Fertilisation and Embryology Act 1990), while the eggs stored at clinic N. were from anonymous donors, I consulted the administrator of this project. I asked him how we were going to inform the donors about their identifiability by donor-egg-conceived children. The reply was, 'We can't get in touch with these donors again, many of them do not come to us for a pretty long time, while we keep their eggs in storage', and 'They have already signed a consent form, they have passed eggs in our property, so we can use them at our discretion…' (the field journal 2012). Then, I volunteered to call some of the donors to tell them the news. Two or three donors I managed to talk with responded rather indifferently, giving the impression they did not really want to think about the future of their gametes. Once, when I asked for the phone number of another donor from a manager, she said quite abruptly: 'I won't give you her phone number, she is a smart girl…' (the field journal 2012). These observations elicit the interpretation that the clinic, both on the side of the donors and that of the ART specialists, considered female gametes objectified entities that lost the quality of being unique and personal objects when they left the body of the woman and became the depersonalised property of the clinic.

One way of turning eggs into economic goods is the work of anonymisation performed by the clinic. The universe of patients and the

universe of donors at clinic N. were separated from each other by many small, barely noticeable efforts of the medical personnel. The donor managers kept the medical records of donors in a special lockable bookcase; they always remembered which information they could release and which they needed to hide from both patients and donors. A doctor could fake non-recognition if the patient and her donor occasionally met each other at the office doorstep: Her face would not reveal the actual connectedness of these persons, as they were not supposed to know each other. Anonymisation and objectification of eggs on the side of medical professionals is, in Charis Thompson's words, a part of 'work' routinely performed inside ART clinics 'to establish and disambiguate kin relations' (Thompson 2005: 145). Clinic N. did its best to separate donors and clients, so that all kinds of affectionate, personal bonds between them were excluded. This cancelled social bonds between donors, recipients, and the child, but also gave a donor egg the status of a commodity, an impersonal good, which can be commercially exchanged on the market of reproductive services. My phone conversations with donors made clear that they shared this impersonal view on their eggs: Many of them seemed to avoid thinking of gametes as potential children altogether and did not show interest in the future of their ova.

Conversations with doctors and donor managers at clinic N. made it clear to me that most women came because they needed money. A routine procedure in donor recruitment went as follows. Women got to know about egg donation by word of mouth from other women who had had this procedure. Despite the issue of financial motivation, my observations in 2011–2012 showed that women coming to the clinic had not surfed clinics' websites to look for better financial options. At that time, clinic N. suggested a rather small amount of compensation, around 35,000 roubles, which was lower than the average compensation offered by other clinics in Moscow. This made one doctor assume that before coming to the clinic N., egg donors did not check market prices for their services (field journal 2011). They did not search for information about clinics, amount of compensation, or the effects of hormonal stimulation on their health. My suggestion on how they knew about the clinic was that these women got referrals from other donors they knew or heard of;

some of them kept coming back to the same clinic for several donation cycles, with the permitted 3-month interval.

Apparently, for some clinics, as well as for the clinic N. because it increased the donors' compensation (up to 50–55,000 roubles in 2016), Internet advertisements[7] became one of the recruitment strategies, attracting IT-literate donors who used internet resources to search for better earning possibilities. However, during my field study in 2011–2012, doctors and managers often saw donors as rather ignorant, lower-income women not able to get well-paid jobs. As one of the donor managers put it, 'People with higher education who can earn 100,000 roubles or more per month [more than $3 000 at that time] do not come here.' A quick calculation, based on the Egg Donor Catalogue from the clinic's website,[8] showed that empirically this statement of the manager is not accurate: Of 121 women, 55.4% had technical education, and 34.7% higher and 9.1% unfinished higher education. However, regardless of educational parameters, the manager was correct in noting that all women recruited by clinic N. as egg donors had limited earning opportunities.

The distress of egg donors about their financial position became clear from psychiatric examination reports. When clinic N. began selling cryoconserved donor ova to clinics in the UK, it needed to accompany biomaterials with the results of the donors' medical check-ups. Five psychiatric reports contained specific traces of donors' material needs:

Report #2 … considers her behaviour natural, as she is motivated by monetary remuneration, considers her position as hard enough to become a donor, take drugs.

Report #3 Mental status: … looks her age, dressed simply. Enters conversation reluctantly, nervous, answers are formal and short, only after some time bursts in tears and tells that she is in dire straits. Later on calms down, starts a conversation, speech is confident, correct. Views on life are rational, straight. Prone to mood shifts, can become rude without a reason, quick to take offense. Takes part in donation program only for financial reasons.

Report #4 … takes donation at this stage as a chance to earn additional money, as found herself in harsh material conditions.

Report #5 … has a mature attitude towards donation. Counts on monetary remuneration.

The psychiatrist notes that money is a natural motivation for a donor, calling such an attitude towards donation mature. One of the psychiatric reports contains another reason for donation: According to Report #1, the woman sees donation as a chance to 'check up her health', that is, to go through a medical examination for free (its price is included in the egg donation program paid by the patients).

The reports also show details of complicated life stories, such as early pregnancy, single parenthood, a move to Moscow, menial jobs, and rented apartments. Some donors come from other regions of Russia and the CIS (Ukraine, Moldova, and Central Asia), such as this 22-year-old from Transnistria (formerly part of the Moldova Republic):

Report #1 Anamnesis: Heredity is not psychopathologically tainted, according to the donor's words. Born from a normally developing pregnancy, on time. Early in life grew and developed normally, went to school on time. Did not manage to enter university because of pregnancy (17 y/o). Before 2010 lived permanently in Transnistria, marriage with the child's father not registered, single mother, stays in Moscow for about half a year, works as a waitress, came to Moscow to earn some money, the child stays at her parent's place. Lives in a dormitory. In need of money. Does not abuse alcohol, does not take drugs.

From these reports as well as from the fieldwork, it becomes clear that the money donors earn at the clinic was aimed to help relatives, pay for rent, and cover basic household needs. Most egg donors at clinic N. had their own children, so, ironically enough, by helping other people to solve their fertility problems, they earned money to fulfil their own 'parental duty': to secure education and other goods for their own children. Such an outsourcing of traditional feminine capacities for care and reproduction linked donors to the 'global care chains' (Hochschild 2001) of migrant women engaging in different types of care, such as nannying, cleaning, and elder care, to earn money to take care of their own kids.

The donors acted as outsource workers who, according to the terms of agreement with the clinic, were required to abstain from alcohol and cigarettes, take hormonal injections, and attend regular medical check-ups. The clinic, in turn, paid them a fixed sum of money. To term donors' activities, Waldby and Cooper coin the term 'clinical' or 'reproductive labour', which refers to activities that are intrinsically part of valorisation of a bioeconomic sector while therapeutic benefits to the participants are absent or incidental (Waldby and Cooper 2014: 8). Clinical labour does not require specific qualifications or education on the part of donors. So, in addition to comparing egg donors' work to that of nannies, it can be compared to manual jobs performed by dockworkers and cleaners, and to all sorts of physical labour requiring endurance, patience, and timely and regular actions. However, donors do not act, in Waldby and Cooper's terms, as 'enterpreneurs of self', because they are constrained by lack of information and do not freely choose this type of labour; and the clinic did not treat egg donors as business partners in a usual sense of the word.

Egg Donation Versus Egg Selling

My fieldwork made clear the financial motives of women coming to the clinic to donate gametes. Financial motives were articulated as well by donors in some other Eastern and Southern European countries, for example, Ukraine and Greece, where a survey (Pennings et al. 2014: 1081) registered the highest percentage of women indicating 'pure financial reasons' for donation (28.3%, and 39.5% respectively). The same was true for the Romanian oocyte market when it was analysed by Michal Nahman (2008). 'To call the women I interviewed donors would be a great misnomer', said Nahman, based on the study of egg donors in a Bucharest fertility clinic. 'They are explicitly there to sell their ova for a specified sum of money' (Nahman 2008: 68). Romanian donors, she writes, earn by one cycle of donation several times their monthly wages and spend it to renovate their house, pay rent, buy clothes, and raise kids. Waldby and Cooper highlight the economic vulnerability of Eastern European women facing employment problems. Many of them have official jobs in the public or private sectors and engage in 'second, undocu-

mented jobs, paid in cash, outside taxation systems' (Waldby and Cooper 2014: 75).

In the most apparent way, human eggs are exchanged as commodities on the US market. Waldby and Cooper make a truly insightful comparison of the European and American oocyte markets. Referring to Almeling's study in California (Almeling 2007), they note that oocyte vending there is based on private contract relations between agencies and donors protected by tort law, with no state intervention whatsoever. Therefore, 'the US market tends toward ever more expensive niches' (Waldby and Cooper 2014: 74), following the clients' demand for donors with particular health parameters, phenotypes, and education. In essence, the California oocyte market regulates itself; patients order particular types of donors, and these donors, in turn, are offered compensation proportionate to their scarcity. In this way, if patients seek such rare donors as Ivy League students, the fees for their services may skyrocket.

European countries have a different structure of donor recruitment. On one hand, Northern European patients create a demand for fair-skinned donors, which is one of the reasons why they prefer Eastern Europeans to all others (see Waldby and Cooper 2014: 65). On the other, European patients do not choose their donors in the same way as Californian ones. They do not put forward selective requirements such as an Ivy League education, high SAT scores, exceptional beauty, athletic and musical talents, or large quantities of oocytes given in previous programmes (Almeling 2007). Moreover, the limitations on donor compensation established by the European Union Tissues and Cells Directive (Directive 2004/23/EC) do not give the European oocyte market room for unlimited increase in compensation to donors. Unlike in California, European clinics do not headhunt for rare donors. Of all women who took part in the pan-European survey, 47.8% donated eggs to family members and friends (people with whom they had some type of established relationship), which comprised the category of so-called 'pure altruism' (Pennings et al. 2014: 1081). In the Pennings et al. study, France and Belgium were classified as among the most altruistic countries, because most interviewed donors there came to the clinic either as family members or friends of a patient (76.7% and 73.8% respectively) (Pennings et al. 2014: 1081). In both situations, using the Mauss–Bourdieu

gift exchange scheme, the donors had symbolic/non-material/long-term interests in giving away their eggs.

Some European patients engage in donation in exchange for reproductive services provided to them by the clinic. In this non-commercial alliance, patients donate eggs and as a result get other kinds of fertility treatment[9] either for free or with a discount. These programmes are called 'egg sharing' and constitute a considerable share of donation programmes in Great Britain, where 47.3% of women interviewed indicated 'altruism and own treatment' and 20% 'pure own treatment' as reasons for donation (Pennings et al. 2014: 1081).

Some European clinics, such as those in Southern (Spain, Cyprus) and Eastern (Czech Republic, Romania, Ukraine, Russia) Europe, hire donors in a manner similar to the Californian open market. In these countries, most donation procedures are done anonymously, and fees offered to donors 'take on the liquidity and depersonalizing action that is a feature of monetization' (Waldby and Cooper 2014: 71). In Spain, as Waldby and Cooper comment, the most common types of donors are students who need money to pay off living expenses and tuition fees, and Latin American and Eastern European migrants working in agriculture or domestic services (Waldby and Cooper 2014: 71). However, one important difference between the European egg-selling model and the California gamete market is that countries who are members of the European Union still have a ceiling on the fees they can offer. Even Spanish and Czech clinics, which feature both high fees and an anonymised donation procedure, cannot hunt for donors with rare and precious characteristics, such as those of catwalk models or Oxford students. Rather, they content themselves with those donors who are attracted to the allowed sums of money. The clinics deal with women who agree to donation for a set sum and then customise them to the needs of the clients. The compensation ceiling prescribed by the EU regulations hinders open competition and free price formation on the European market. Conversely, in the US, payments to egg donors are not capped, while the ASRM permits compensation up to $10,000 (ASRM 2007: 308).

The structure of the Russian oocyte market takes an intermediate position between the unregulated Californian oocyte market and the state-controlled markets in Spain, Greece, and the Czech Republic. On one

hand, Russian legislation does not limit compensation to donors. Technically, the money offered to donors may skyrocket without violating state regulations. This allows us to think of egg selling as the best model to describe these practises in the Russian context. Moreover, in Russia ova exchange is anonymous both for the patient and for the child in around 90% of cases (Pennings et al. 2014: 1081), which is a factor in the commodification of oocytes. Unlike in gift relations, where eggs keep their unique, individual character, eggs in Russia are traded as commodities with equivalent value on the market and lose a personal status.

On the other hand, the compensation practises at private Moscow clinics such as clinic N. are more similar to those of Romania or Spain, rather than California. The compensation paid to donors in Russia is relatively flat, and comprises 35–80,000 roubles, with Moscow clinics suggesting higher sums (up to 80,000 r.) than small cities (35–50,000 r.). Apart from private internet advertisements, where donors and patients find each other by bypassing medical institutions and can ask or suggest disproportionate sums of money for such qualities of donors as good health or appearance, it is private clinics that set the compensation and the compensation they set is the same for *all* donors, regardless of exceptional education, special talents, ethnic background, or appearance. Some Russian clinics link payments to the number of oocytes retrieved during the harvest, but not to the scarcity of donor type. As a result, one would not find among donors catwalk models or students of top-tier schools. Rather, similar to Romania, Ukraine, Spain, or the Czech Republic, egg selling in Russia attracts particular kinds of women—those with low earning power, students, women from rural areas—in general, those who choose 'reproductive labour' from among (or together with) other employment opportunities in the labour market.

Conclusion

The trope of egg donation that conceptualises eggs as gifts and uses bioethics as a form of regulation of clinic–donor relations seems to reflect an important cultural idea: 'The biological should not be waged' (Waldby and Cooper 2014: 8). The language of gift is used to get the fertility

treatment machine going but preclude the possibility of turning human biological materials into commodities. As Kopytoff (1988) noted, Western sensibilities rejected the idea of commodification of human organs and cells, considering them to be singular, unique, personal objects. Bioethics as a framework for regulating egg donation was based on this very opposition to the commodification of the body (Kopytoff 1988: 14).

Bioethics conceptualised donors ideally, as people not interested in money. This is an essentially uneconomic portrayal of donors' behaviour. This model best describes unpaid donation that takes place between friends and relatives, as well as between patients who give away their spare eggs in exchange for other reproductive services in such countries as Belgium, France, and the UK. However, as evidence from the UK suggests, the gift-giving model generates long queues of patients and is never able to 'generate a surplus' of eggs (Waldby and Cooper 2014: 55). What we see in vast parts of Eastern and Southern Europe and Russia, meanwhile, is active commodification of female gametes. European ova markets, therefore, develop because of differences in income between various populations of women (including national differences) (Waldby and Cooper 2014: 74). These differences make compensations especially attractive to poor women who are donating to earn money for basic living necessities. In this context, the doctrine of voluntary informed consent does not serve to protect donors against abuse.

If the gift-giving model fails to protect donors, then recognising donation as labour might entitle them to labour protections that accompany other types of paid labour. Moreover, using economic language in talking about ova exchange might change public perspectives on these activities and open up possibilities for public discussions of such questions as fair donor compensation, protection of donors' health, and investment in long-term research on hormonal stimulation. What is important to stress, however, is that the Waldby and Cooper notion of 'enterpreneurs of self' when talking about Russian egg donors seems to me overly optimistic. In Soviet and post-Soviet Russia, where a paternalistic tradition of doctor–patient communication was and still remains strong, medical professionals are the ones who often make decisions both for donors and patients. Clinical staff is reluctant to give up power and decision-making capacity to the other players in the market—patients and donors—so they

establish their own values that guide donation practises. Informing a patient and a donor of what are considered minor details is sometimes done, but often it is ignored. The end goal—facilitating a pregnancy, as well as maternal health and the health of IVF-conceived children—are of importance, while the means by which they are achieved are often left ethically unexamined. The lack of comprehensive information and the power to make decisions in a clinical setting does not allow a donor to feel she is a free entrepreneur who acts on par with clinical managers.

In this setting it is private fertility clinics and their staff that actually came to regulate egg donation and circulation. Against the background of ambiguous state regulation in the field of reproductive medicine in post-Soviet Russia and a tradition of medical paternalism, private actors took it upon themselves to shape the ova exchange practises as trade in commodities, to set compensation standards, and to anonymise relations between donors, patients, and eggs. The order thus created collects and distributes valuable ova and allows multiple parties to benefit from these resource flows. At the same time, this order capitalises on the dire conditions that egg donors find themselves in and derives profits from economic disadvantage.

Notes

1. Hereafter I use the words eggs, oocytes, ova, female reproductive cells, and gametes interchangeably.
2. Consider, for example, Directive 2004/23/EC of the European Union and of the Council of 31 March 2004 on setting standards of quality and safety for the donation, procurement, testing, processing, preservation, storage, and distribution of human tissues and cells.

   > (18) As a matter of principle, tissue and cell application programmes should be founded on the philosophy of *voluntary and unpaid donation*, anonymity of both donor and recipient, *altruism* of the donor and *solidarity* between donor and recipient. [italics added]

3. Consider the recommendations of the European Society of Human Reproduction and Embryology (2002):

   > III. Gamete and embryo donation

> In principle there should be *no payment* for the donation of biological material. The intrinsic value of a *gift*, a way of showing *solidarity* is higher than the positive utilitarian consequences of paying and obtaining more material. This does not exclude reasonable compensation for the effort of the donor. (ESHRE 2002: 1408) [italics added]

4. See Kurlenkova (2014).
5. Article 55, Federal Law of the Russian Federation No. 323-FZ of 21.11.2011 "On the fundamentals of health protection of citizens in the Russian Federation" (edition as of 26 April 2016).
6. PGD is aimed at revealing genetic mutations in the embryo stage, while amniocentesis reveals them in an already-developing fetus.
7. Today RUnet is full of commercials asking for young, healthy, often 'Slavic-looking' egg donors placed by clinics and donor agencies. Some of them are written on public forums and social media directly by donors and patients who want to find each other by bypassing institutions. Russian social networks, such as vkontakte.com, has special interest groups (such as https://vk.com/donori_oocitov and https://vk.com/eko-plod, which has 4–8000 subscribers), where any registered user can suggest herself as an egg donor or, in case of agencies and private patients, list their requirements for potential donors. Some donor profiles have real photos and names, others use nicknames and fake pictures.
8. Date of access: 6.06.2014.
9. These may be women with blocked fallopian tubes or polycystic ovaries; lesbians and single women; and women having infertile partners (URL: http://www.eggsharing.com/eggsharer_elibility.html).

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8

Innovating Health-Care Governance in Ukraine: Formal and Informal Practises

Tetiana Stepurko and Paolo Carlo Belli

Introduction

Ukraine currently faces immense challenges in health care. In 1970 and 2010, life expectancy at birth remained the same—70 years, and in 2014 it was 71.19 years (66.25 for men and 76.37 for women), approximately six years lower than the World Health Organisation (WHO) European region average, which includes not only rich Western countries but also the Central Asian republics of the former Soviet Union (World Bank 2017; WHO 2013). The lowest life expectancy for Ukraine was registered in 1995—66.89. Since then, life expectancy has increased, but the lack of essential improvement of life expectancy at birth reflects a worsening of adult health. According to WHO data, between 1990 and 2015

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infant mortality rate decreased from 15.8 to 7.7 and under-5 mortality from 18.5 to 9 per 1000 live births (WHO 2016). It is suggested that achieving Millennium Development Goals (i.e. to improve maternal health: the maternal mortality rate in Ukraine has decreased from 24.7 in 2000 to 15.2 deaths per 100,000 live births) has been possible only thanks to complex international technical support, including Swiss, American, and Canadian projects (Lekhan et al. 2015). Against this background of complicated health situation in the country, this chapter explores how health-care facilities actually operate amidst the uncertainties of post-communist transformations. We demonstrate a dense net of long-entrenched informal practises that defines governance on the level of health-care facility, explore its interactions with changing formal policies and rules, and reflect on the implications of this for improving health and health care in Ukraine.

The major challenge for health in Ukraine is the hybrid epidemiological country profile: Most people are dying from a non-communicable disease (NCD), but infectious diseases are still not managed well either. First, child immunisation levels for vaccine-preventable diseases have been falling since 2000: For example, measles immunisation coverage decreased from 99 to 56 per cent from 2000 to 2014 (World Bank 2017). A threat to the overall national security system has occurred with the polio outbreak (Toole 2016). The problematic supply of vaccines, public mistrust of immunisation, and a high level of corruption are underlined by Holt (2013) as the reasons for the low immunisation rate in Ukraine. Second, the leading causes of mortality and morbidity are NCDs, among them cardiovascular diseases and cancer that affect people at a relatively young age, with a significant impact on the economy and on labour productivity (WHO 2016).

All of these dramatically low health indicators in one of the European countries are produced by the health-care system, which has not yet been reformed to respond to these challenges. The health service delivery system in place is still the one inherited from the Soviet Union, publicly financed and owned, hospital-centred, with extremely fragmented governance, and with services focused on individual acute treatment and minimal prevention. The system has continually proven ineffective in reducing the overwhelming burden of NCDs, and yet there have been no systematic attempts at restructuring it.

The Ukrainian system of health-care services provision is characterised by a large hospital infrastructure and a minor role of primary health-care services. Although one of the objectives of the health-care reform plan of 2011 underlined the introduction of primary health-care services with a strong general practitioner role (Ministry of Health of Ukraine 2011), pilot projects have not reached the other 20 regions. Primary health care is fragmented between urban and rural polyclinics, women's consultation clinics, poorly equipped rural physicians' ambulatories, polyclinic units in urban hospitals, and outpatient departments in rural hospitals. While formal referral is obligatory in principle, primary care physicians do not have any incentives for strengthening referral practise and do not face any punishment for misusing the referral system. Thus, they are consulted only for minor complaints. In addition to the stagnant development of primary care, the reduction of hospital capacity also remains far behind that of its Western neighbours: There are 9.0 hospital beds per 1000 population in Ukraine in contrast to 6.5 in Poland, 6.2 in Moldova, and 6.1 in Romania (WHO 2016). The situation is worsening in recent years due to the armed conflict in Eastern Ukraine, which requires budget funds and a military health-care workforce and brings overall instability in the country.

Considering these trends, it is not surprising that the level of satisfaction with the Ukrainian health-care system is one of the lowest in the world: Ukraine together with Brazil and Russia show one of the lowest levels of satisfaction. In 2007, 2 out of 10 people and in 2014 almost 3 out of 10 reported satisfaction with the Ukraine health-care system (OECD 2015). Although there is quite some variation, on average across OECD countries, 71% of people reported being satisfied with their health-care system in 2014 (OECD 2015: 170). In Ukraine, a substantial part of the population experiences a catastrophic rise in expenditure on health care, and out-of-pocket payments increased from 24.5% in 1995 to 46.2% of total health expenditures in 2014 (World Bank 2017).

To turn these trends in the other direction and to improve health care in Ukraine, international organisations such as the World Bank, United Nations (UN) organisations, and Swiss Development and Cooperation Office in Ukraine, as well as voices in the Ukraine, call for innovating the governance of Ukraine. New governments as well as mature civil society

after the Orange Revolution in 2004 and the Revolution of Dignity in 2013–14 are aimed at fostering a process that would lead to improved access to and quality of public services, including more accountable practises (e.g. an e-procurement system), decentralisation, empowering communities, and sharing the resources and responsibilities with bottom-up initiatives. In this chapter we explore how such innovations in governance in Ukrainian health care relate to existing routine practises.

In most Western countries governance refers to 'a condition of ordered rules', 'the manner, method or system by which a particular society is governed' that at the same time are 'supplanting the commonplace of "government"' (Rhodes 1996: 652). In the last decades, the notion of governance has been broadened to include processes of deliberation with many relevant actors in different domains of society, to enable these networks to influence processes on a central level of government, but the meaning of governance is still much discussed. It is interesting to note that some post-Soviet countries do not have a proper translation of that concept of governance into the local languages. For instance, in the Ukrainian language, governance is usually translated as *vriaduvannia* that, from *uriad* (government). The meaning of these concepts refers mostly to the area of public administration and does not reflect meanings of governance such as all-stakeholders inclusiveness. But how to go about reforms in governance in Ukraine, one of the post-Soviet settings where the modern meaning of governance is not even translatable into the local language?

This chapter explores how the health-care system in Ukraine is governed currently and where innovations in governance are being introduced. To that purpose, we focus on how health-care services are governed on the level of health-care facilities, and how health-care administrators, policy makers, and medical personnel deal with issues such as priority setting, human resource management, and performance assessment. Through exploring experiences of health-care workers and managers 'on street level', we gain insight into how health-care practises are actually run, how decisions are made, and how formal policies are related to everyday practises. In our study, we will explore the operation of a facility in the context of national challenges and changing policies: Do the facility and its personnel have a destination point, an aim, and priorities? Is

the team aware of these, and do they act in accordance with the aim? We study how the de facto dimension (practises) of governance is related to national policies, regulations, and formal rules, the so-called *de jure* dimension of governance. In other words, how are formal policies on a national level related to (informal) practises, and in the case of discrepancies, how are they to be interpreted?

In what follows, we first describe the profile of the Ukrainian health-care system, its achievements and gaps. Then we introduce theoretical considerations and the methodology of our study. Next we present our analysis, and in the conclusion we return to the question of which innovations in Ukrainian health care are introduced or should be introduced to improve the health of the population.

Ukrainian Health Care: Mise en Place?

Similarly to what occurred in many other post-socialist countries, the Ukrainian health-care system announced some big transformations after its independence in 1991. Like Poland, Hungary, Lithuania, Moldova, Romania, and Bulgaria, Ukraine introduced the idea of social health insurance, but unlike in Poland and some other countries, in Ukraine this discussion on social health insurance did not result in policy and implementation. In fact, Ukraine has not switched from the system of central planning and free-of-charge health care to a decentralised system with a purchasing (insurance) agency, benefit package, and purchaser–provider split (Rechel and McKee 2009; Danyliv et al. 2012; Lekhan et al. 2015).

The stagnation of transformations in health care in Ukraine can be understood as the result of the country's political instability: Ukraine has experienced numerous ministers of health during two-and-a-half decades of independence (about 21 appointments with an average length of 1–1.5 years), and not one of them used the opportunity to develop sustainable policies. Interestingly, the Ukrainian 'mise en place' (in this context 'mise en place' it can be understood as a "philosophy" and "system", policy and performance, state of affairs) might be seen now in a somewhat benign light as 'no mistake' has been made, again compared to

Poland or Bulgaria, which nowadays are in the process of extensive political discussions on returning to a tax-based system, because the social health insurance system involves an essential part of tax-based revenues for the financial protection of a number of groups in the population (Rynek Zdrowia 2016).

The stagnation in transforming the model of health financing has a huge impact. The old central system of free health care is no longer functioning well, because public facilities are chronically underfunded (fiscal capacities have decreased since the Soviet Union's collapse but infrastructure has remained the same). As a consequence, the burden of health-care service financing has been shifted to patients and their families. About 18% of health-care users have to borrow money or sell assets to be able to buy good health care, and about 60% of Ukrainian respondents report forgoing health-care services for financial reasons (Tambor et al. 2014). Despite free-of-charge service policies (guarantees declared by the Constitution of Ukraine, which is a continuation of the old system tradition), health-care users and their families experience widespread quasi-formal and informal patient payments because of providers' requests or because patients feel obliged to pay. In fact, only about two-fifths of outpatients and a quarter of inpatients are able to access the services without payment (Stepurko et al. 2015). This situation worsened even more, when government expenditures decreased from 56.6% in 2010 to 50.8% in 2014 of total health expenditures (46.7 billion Ukrainian hryvnia (UAH), with a consequent growth of private health expenditures, comprising mostly out-of-pocket payments (World Bank 2017). At the same time, high private expenditures are not recognised as essentially problematic by policy makers and health-care professionals in Ukraine (Gryga et al. 2010). In this situation, Ukraine has one of the lowest rates of outpatient service consumption in Central and Eastern Europe to be suggested by survey data (Stepurko et al. 2016).

The health-care sector is not an exceptional sector of the economy of Ukraine, which shows poor performance in terms of health of the population. In general, the country is characterised by a high rate of corruption, a low rate of political stability, and a very moderate level of economic development (Worldwide Governance Indicators 2014). During socio-political changes in the 1990s, a rise in self-help coping strategies was seen

as a response to the distrust and scepticism toward public institutions. For example, during the armed conflict in Eastern Ukraine that began in 2014, as well as during Euromaidan, people were giving charity cash and in-kind donations (food, clothes, blankets) to support military, medical, and other service providers (Stepurko et al. 2014). Quantitatively in 2015, four Ukrainians out of five thought the state was not acting in their interest, and the same share of respondents found important those who are in need, i.e. cancer patients or military members (Polese and Stepurko 2016). In case of sickness, patients prefer to resort to self-treatment or alternative (folk) medicine, which also suggests barriers to health-care services, either financial or ethical ones, such as lack of trust in the health-care system or in health-care professionals (Balabanova et al. 2004; Health Index.Ukraine 2016). The distrust of patients in Ukrainian health care may be justified. Luck, Peabody, DeMaria, Alvarado, and Menon (2014) studied the quality of care for heart failure and chronic obstructive pulmonary disease and demonstrated that the quality of care for common NCDs is poor at all levels of health-care service provision and nationwide. Also, Peabody, Luck, DeMaria, and Menon (2014) found that a higher quality of care is provided by younger, female physicians as well as by those who had been recently trained in chronic disease or health behaviours. However, health-care providers have critical working conditions: Their salary is lower than the industrial average, facilities and equipment are outdated, and goods for medical assistance are often absent.

It is not surprising that since 2010, health-care system reform continues to be declared one of the governmental priorities, but only after Euromaidan did the changes come intensively, though not systematically, in the system of public service provision. The Revolution of Dignity (or Euromaidan) demanded European integration from the President and government of Ukraine, but deeper values were highlighted: human rights, justice, and prosperity (Sviatnenko and Vinogradov 2014). Hence, civil society initiatives such as non-governmental organisations aimed at support of military members and their families with regard to the armed conflict in Eastern Ukraine and involvement of activists in the governmental and regional bodies decision making have become a stronger push-factor for improving the responsiveness of the system to patients' needs. Forced to by various pressures, the government took several deci-

sions such as opening intensive care units for visitors (Ukraine Crisis Media Centre 2016) and shifting the pharmaceutical procurement function to international organisations (UNDP 2015). While the 'open intensive care unit' initiative has been successfully implemented, mostly by parents and relatives of patients who had painful experiences related to the intensive care unit, procurement conducted by international organisations is seen as one of the most important steps in combating corruption in health care. Considering the specific context of the Ukrainian health-care system and the stagnation of reforms in the pre-Maidan time, we question how health-care facilities ensure service provision. In the next section we explain how we have studied this.

Studying Health-Care Governance in Ukraine

In health care, the notion of governance refers to various themes such as the style of policy making and decision making, priority setting, key stakeholder collaboration, sector regulations, general and organisational leadership, and capacities for change as a response to the emerging challenges and needs, which provide an adequate environment for professional growth and ensure funding of the services and availability of reliable information for monitoring and audit (Alexander et al. 2003; Friszbein et al. 2011; Kickbusch and Gleicher 2012; Mikkelsen-Lopez et al. 2011; Roiseland 2011). Usually, evaluations of governance rely on analysis of the policies available: when, for example, response to NCDs is seen in the availability of national policies on reduction of alcohol or tobacco consumption, policy to promote physical activity, and other actions (for example, WHO 2004). Kaufmann and Kraay (2008) argue that evaluation of the de facto dimension of governance entails more. It should be supplemented by studying policies and rules that:

> […] codify details of the constitutional, legal, or regulatory environment; the existence or absence of specific agencies, such as anticorruption commissions or independent auditors; and so forth—components intended to provide the key de jure foundations of governance. On-the-ground measures assess de facto governance outcomes that result from the application of these rules. (p. 2)

While assessing the *de jure* dimension of governance relies on documents and experts' views, assessing the de facto layer of governance is not possible without the views of survey respondents. The de facto dimension is also associated with outcome-based measures and *de jure* with rule-based indicators, but the boundaries between rules and practises are blurred (Kaufmann and Kraay 2008). To study the de facto governance of health care facilities, we take a bottom-up approach.

To get in-depth insight into the way a health-care facility is run *in practise*, we have taken a qualitative approach. To get insight on everyday practises in health-care facilities, we conducted structured interviews with open and closed questions. The open questions enable us to get in touch with the personal stories of the interviewees, while the closed questions helped to evaluate specific practises. The study was performed in the summer and autumn of 2012 in five regions (*oblast-s*) of Ukraine: Central Ukraine is represented by Kyiv, the capital (where the research instrument was pretested), by the Vinnitsa and Poltava oblasts; Western Ukraine is represented by Lviv oblast and Eastern Ukraine is represented by Lugansk oblast. The regions were selected based on (a) the availability of reliable contact points (to assure data quality and reliability in terms of the potentially sensitive topic); and (b) representation of different socio-cultural areas of Ukraine and of regional particularities of health care (for example, having had the status of pilot oblast in the health-care reform of 2011). We identified three groups of respondents who would be able to provide us with stories about the practises of health-care facilities: health-care providers (82 interviews with medical doctors, nurses, chief nurses); administrators of health-care facilities (25 interviews with heads of facility departments and chief doctors, as well as deputies of chief doctors); and regional policy makers (11 interviews with *oblast* and *raion* administrative area representatives of health-care departments). Interviewees with more than two years' work experience were selected via snowball and convenience sampling. The interviews focused on such themes as human resources; planning, budgeting, and financing; medical information; and procurement. In 2014 in Vinnytsia, we conducted 14 additional interviews with medical doctors on getting a job positions after graduation from medical university, for even more insight into informal practises and experiences.

Taking into account the strong top-down culture at the health-care facilities, we find it extremely important to note that individuals participated in the study on a voluntary basis. However, most interviewees checked whether we had the permission of the chief doctor of the facility and that the conversation would not cause any misunderstanding with the facility administration later. We provided a small cash compensation for virtually all medical staff and facility administrators for their time. Representatives of health-care departments of the regional administrations did not receive a cash compensation for participation in the study due to national anti-corruption policies. Confidentiality was assured to all respondents.

Governance of Priorities

De jure, formal policies and priorities for health care were defined by the Presidential Program of Economic Reforms for 2010–2014 (2010) and underlined such goals as improving of health-care service quality, increasing access to services, and strengthening financing mechanisms. In our study, we asked interviewees whether they were aware of these political priorities and had specific knowledge about them. Most indeed knew about these policies, and referred to 'reform', 'reforming emergency care', 'reforming primary care', 'decreasing number of facilities', and less often 'to decrease maternal and infant mortality', 'to attain early diagnosis of cancer', 'to implement successfully health-care reform and make it profitable for the state, to gradually move to an insurance system', or 'to shift to family doctors and to "destroy" paediatrics'. These aspects of the policies have been widely discussed by medical doctors, media, and patients.

The analysis of the interviews also demonstrates that national policies do not have a substantial societal life and exist mostly in documents: These national policies are rarely supported by financial flows or communications with local practises. In that context, health-care administrators or chief doctors who need to develop strategic and financial plans for the facilities feel that they lack structural opportunities to create a vision of the facility and to find financial support for it:

> We have a plan for five years called 'Plan of Modernisation of Health-care Facilities'. We submitted it for approval together with budget estimates for the period until 2010, then until 2013, and now by 2015. I would not perceive it seriously, only if I had lived in some other country. These plans are phantoms. I have never seen a long-term plan that was actually implemented. For its implementation it should be well justified, and it should be feasible in all respects, and we still do not have the authority to approve the financial decisions. So what is the purpose to waste time? For example, I have some ideas and plans for modernisation, but who approves them? They [the regional financial department] need a totally different kind of budget. (chief doctor)

In general, heads of health-care facilities discuss the priorities, and this discussion is linked to developing estimates of expenditures (*koshtorys*) for the next period. Indeed, the major objective for most chief doctors is to assure availability of funds for covering 'obligatory and protected expenses' in line-item budgets, e.g. salaries of the staff: 'We receive funds only within the amounts required for the "protected items costs"—in short, to survive. Simply, we are provided with some funds in the amounts sufficient to ensure that we have not perished' (chief doctor). Hence, strategic sessions that define priorities for the next periods are not typical practise in Ukrainian health-care facilities.

The sceptical attitude of chief doctors to strategic planning implies that health- care personnel also do not know how to use goals and priorities as guidelines in their professional life: 'I am not involved. We are informed about what kind of plans the hospital has. The most important thing is that we as a department regularly, on a monthly basis, bring cash to the chief doctor. Each department makes its money.' Some chief doctors confess that the renovation of the facility is possible only thanks to 'charity contributions': 'We have long been deprived from capital allocation, it is very rare. We spend your money only on protected items: salaries, utilities. Renovations are fully financed by charity donations.' In a similar way, health personnel feel not able to translate policies for quality of care into everyday practise. While on a national policy level, proper reporting on the execution of formal requirements (e.g. medical information forms and attestation plans on paper) is considered very important

and is strongly controlled by an associated punishment for underperformance, medical doctors do not make it a priority: 'It is difficult to organise the collection of medical information. Physicians do not want to file reports on time because it is not a priority for them. So we scream at them and organise them to get these reports from them. It is our priority and we have a very tough time.' Earning additional to salary income is also a difficult issue. Relatively autonomous, creative medical doctors can find opportunities for profitable activities, and this income can be invested in obtaining a good job position as a private specialist in a department or hospital with a good reputation, in improving professionals skills and knowledge outside the formal curriculum, or by sharing funds with the department and hospital administration (for light bulbs, disinfectant supplies, renovation of the building, etc.): 'Assessment is carried out mainly in some problematic situations. In other cases, the main informal indicator [of our job performance] is the "gratitude" of our patients.'

From the stories, it becomes clear that health personnel find it important to build a reliable network, or 'safety kit', in these unregulated situations through loyalty to the administration and respect for those who are in power, also not criticising personalities and their decisions:

> Good working conditions in our context are for example the possibility to stay in the office after working hours, availability of good equipment, and a loyal and understanding chief. Being loyal is to not control the staff too tightly. There are many schemes. Have you heard about 'schemes'? They are based on personal, usually financial, connections. For example, I do not demand much from doctors if they earn something. Yes, we have donations, but this is normal. We do not have things like 'I am your boss and you owed me something.' (head of department)

The managerial culture of health facilities bears many characteristics that are inherited from the totalitarian tradition. In particular, in order to fulfil the requirements of the formal system, health-care facilities have meetings of all facility staff from one to three times per year. Formally, their purpose is to reach consensus on the strategic plan for the next year. However, the majority of the respondents confirm one-sided communication (top-

down): Health-care administration does not have a 'real interest' in obtaining feedback from health-care professionals regarding strategic decisions:

> The chief doctor invites us for the meeting and asks us to work harder. He said that our hospital is threatened by cuts, so to save our jobs we need to show that our hospital is working well. At the last one, the head decided to raise funds [from staff] to pay for the repair of one of the departments. (medical doctor)

Staff facility meetings on routine administrative issues—procurement of new furniture, equipment, creating new job positions, and revenue collection from the physicians for the needs of the facility—are conducted in the same manner. Even important decisions on such major changes as restructuring the facility and establishing new departments demonstrate top-down management: 'I do not know, the head of the department communicates with the chief doctor, we are not involved in the discussion', or 'Meetings are formal and useless. Issues discussed on a personal, private level, and these discussions have no consequences.'

A key issue in decision-making processes is the informal economy that extracts payments from the patients, and these payments find their way upward following an administrative path—from the physician to the head of department to the chief doctor and further. In this system, health-care professionals must learn how to survive—and in some cases, blossom—outside the rules. Public financing and budgetary rules can be very strict, but in current health care they do not cover the majority of costs, which leads to doubtful use of funds: 'Opinion of the staff is not considered at all. The chief doctor cares about money—all depends on how much cash he has.'

The interviews show that national health care does not respond to the financial, informational, and personnel needs of the main actors in health care who maintain specific health-care facilities and thus suffer from lack of trust. In that context, health facilities have to survive on their own, and, also influenced by the old Soviet culture, the chief doctor's personal values and professional characteristics predispose to a large extent the actual practises at the facility to reflecting them. There is no mechanism to reward managers who improve their hospitals and quality of services

nor to penalise those who are leading their hospitals into a worse and worse state: 'Of course, the chief doctor can say to any head of department that "this person now works at your department". The head of the department usually accepts this, because he does not have any choice'; 'We sometimes are paid bonuses, but practically there is nothing … no stimulation of work at all. Everyone survives as he can.' As a result, it appears that the individual health-care facility is not linked to the broader system and national policies and lacks a destination point: Without awareness of and adherence to either national or regional collective goals, facilities are ruled by other, more local and personal priorities.

Governance of Human Resources

The system of health-care service provision in Ukraine has many rules. The old Soviet Order #33, which dictated the number of personnel in health facilities, has been mentioned the most often as the barrier to having a better number of staff and job positions and the efficient use of financial resources. This order was abolished in 2016, but new guidelines or temporary policies have not been offered, bringing uncertainty to health-care governance. Still, health-care facilities usually have determined the number of medical doctors, and if they find it necessary to increase or decrease the number of medical doctors, nurses, or midwives on the staff in relation to patient flows, they have difficulty doing so. However, there are other areas that lack any regulations at all: There are, for example, no procedures for hiring medical staff and for competitive selection of candidates for a vacancy, which reproduces the traditional, non-meritocratic culture in health care. Not knowledge and skills, but personal connections and tradition are crucial when hiring new people. Not surprisingly, when we asked medical doctors about typical procedures for selecting candidates in case of a vacancy, they looked confused.

The structure for human resource management is a hybrid one, the heritage of the Soviet Union but attuned to Ukrainian reality. In the Soviet system, formal procedures of *napravlennia* (referral) and *rozpodil* (number of interns, graduates who are assigned to a certain health-care facility as directed by the state) are expected to ensure the fit between

specialised staff and system needs. For many medical doctors who began working in rural area or in towns, *napravlennia* has been their only experience of getting a job. However, in Ukraine the system of referrals is driven by the preferences and available resources of the graduates and their families. As one respondent has said, the vacancies 'are sold as lots at the auction', and where broker services are employed (not every family has reliable enough connections for agreeing informally) the broker's price is 'stratospheric'. The functioning of the far-from-transparent routines in which the competencies and talents of the graduates are not considered is illustrated by the story of an interviewee:

> My wife was pregnant, and I was expected to move to another city. There were no open places [at the facility I planned to work at] until the moment I brought an envelope. (anaesthetist)
>
> In Soviet times, it was extremely difficult: referral could be assigned everywhere. If there was not your own family member and uncle who could resolve the issue, internship in the city was as realistic as science fiction. (surgeon)

These arrangements have become especially widespread after the end of the Soviet Union and correspond to the weakening of control and sanctions systems. Therefore, medical students 'with special circumstances' (e.g. pregnancy, being the only breadwinner in the family, etc.) are no longer guaranteed the benefits that are indeed assigned by the legislation, whereas more privileges are given to interns who are resourceful financially or socially.

Furthermore, when a health-care professional with substantial clinical experience plans to change job position, there are a number of barriers to be considered: Information concerning vacancies has become a 'trade secret', because such information is a resource of the administrators. Many interviewees suggest that a major bottleneck in the field of employment is the lack of open and accessible information on vacancies:

> In our facility we do not have vacant job positions, but from time to time new staff appear […] nobody informs others how they have got that position but I am sure they are employed with a reason behind it […] My son had to move to Zhytomyr because we could not find any vacant position

> in Lviv as here the competition among physicians is extremely high. (inpatient physician)

Still, some regions try to develop their own approach. In Vinnytsa, information about a vacancy is published in the newspaper and on a webpage. Applicants' documents (bids) are collected at the city health department, and a committee of professors and chief doctors (about 15 committee members) interviews each applicant. While chief doctors and administration representatives find this 'open competition' a fair and transparent procedure, from the side of 'clients', we notice a very sceptical perception of this innovation. Physicians who work in Vinnytsa's healthcare facilities say that the open competition procedure has inherited earlier practises, including bribery and involvement of personal connections in negotiating on pre-agreements with the chief doctor:

> A webpage of the *miskrada* [city council] offers application forms, and then we wait for the competition. We present a CV, diploma, the supplement, the certificate of internship. I personally paid the chief doctor, but personal connections and communication skills are also important. Social connections play an essential role in our city—without such connections it is impossible to live. All arrangements involve personal connections and agreements. I have a family whose members are all physicians, and we do not know anyone who applied for a job without a personal connection, but in the Soviet Union it was not so deep-rooted. (physician, inpatient facility)

While these new procedures are not functioning as expected yet, these initiatives could be seen as the germ of new human resource policies that have the potential for helping to select the best applicants for a job from a meritocratic perspective and to align with anti-corruption measures.

Governance of Professional Performance

To evaluate professional performance in Ukrainian health care, job descriptions and norms for good performance are required. In this field, we also see a big gap between policy and practise: 'Yes, formally we have the norm, but in practise…'. All physicians and nurses inform new

employees that documents that regulate their work performance are available to them, and they also refer to national legislation and local regional instructions. A *posadova instruktsiia* (job description) as well as contract are the most often mentioned documents that contain information about employee duties. Interviewees even say that they are used during the work process: 'Yes, we use these documents on a daily basis', 'Documents have been used for accreditation', 'monthly instructional advice', 'seminars on medical documentation'. However, interviewees share another story as well: 'Only experience can bring you real understanding of what kind of duties you have', 'The document should be developed as it is not in fact correct at this moment', 'It is useful only while the chief hires you, to have an idea about the job.'

To understand the mechanisms for evaluating job performance, we also discussed dealing with patients' complaints, because these complaints can be considered a source of professional learning. While one would expect, considering the low level of satisfaction with the health-care system, that health facilities handle a large number of patient complaints, this is not the case. Health-care administrators could recall only some (up to 10) 'serious' complaints per year. Recipients of the complaints vary: It can be the chief doctor, the regional health-care department, or other professional and consumer rights bodies. There are no standard procedures for patients to complain nor any for health-care service providers to deal with complaints. Similarly to job descriptions, medical doctors point to formalities: 'Sure, administration should have the document which regulates this as no one starts doing anything in this system without the document.' However, the meaning of a complaint for an individual health-care provider is a *terra incognita* and the consequences for him or her depend on the chief doctor's decisions. Interviewees experience this procedure as non-transparent and arbitrary:

> If a patient complains about a physician, it is like a red flag for the chief doctor. The physician is guaranteed to be in a bad situation. At least, the chief doctor will humble you, and no one will check whether this complaint has to do with the reality, whether something has really happened. Here any patient has more rights than a doctor. (inpatient physician)

> We can get very unfair complaints from patients that are not checked. The consequences for doctors can be various, from a reprimand to full dismissal
>
> […] yes, it happens rarely, but we had such cases. (head of department)

Most of the medical doctors and nurses we spoke with feel rather unprotected in this area.

Sometimes facility managers are rather creative in assessing professional performance. A hospital manager told us how staff recertification was introduced as a tool for sanctions for bad performance:

> One physician had a conflict with the patient. We assumed that the doctor violated ethics and did not show relevant qualifications, so we sent him for recertification in the area. And if his category is not confirmed, he will lose a part of his wage. They [the state attestation committee] understand that if we send someone for recertification without a good recommendation then there are reasons behind it. We cannot reduce his salary directly […] rewards are not seen as a tool to influence salary because we cannot cancel premiums for continuity of employment. We may forbid a person from having two positions at the facility […] the only way to influence the situation is to challenge a category if he makes a mistake in professional work, and if you do not like something that is not comfortable for you, it is impossible to do anything. (head of department, outpatient facility)

In our study, no one has mentioned annual face-to-face evaluation meetings with their supervisors aiming both to assess the performance of employee and to reveal any personal barriers to higher efficiency and to discuss professional goals of the doctor in the context of organisational goals.

Governance of Technical Innovations

When it comes to innovations in public management in the health-care sector, medical doctors and administrators almost automatically refer to expensive technologies and equipment. However, the level of financing of Ukrainian health-care facilities does not provide them opportunities to

improve equipment and technologies regularly. Still, international technical assistance projects, private–public partnerships, and charitable funds support new technologies in health care. At the same time, in these limited-resource settings, chief doctors describe cases of equipment waste. A charity organisation collected funds and supplied a new and 'smart' type of mammograph to one of the facilities, but the equipment stayed untouched for years, because the medical doctors did not know how to work with it. When finally the hospital administration invited a German consultant to install the mammograph and to provide the staff with the necessary skills and knowledge, it appeared that the mammograph could not be used at the facility 'because it does not have the functions needed'.

Notwithstanding these experiences, modern equipment plays an important role in generating additional revenues from patients in a situation where, according to many physicians' responses, 'Salaries are too low to take it seriously.' Apart from the fact that physicians consider modern equipment a priority in their professional growth, new technologies are considered part of so-called 'good working conditions' and stimulate loyalty to the head of the facility. Not surprisingly, health-care professionals indicate equipment procurement as the most discussed issue at meetings. It is interesting to note that while doctors find modern technology quite important, they rarely have stationery or office equipment (e.g. printers, scanners, and copying machines) that facilitate day-to-day routine work, including communication with colleagues and patients. While sometimes tertiary and secondary level facilities in Ukraine lack good equipment, primary care personnel may have access to expensive and unique technologies because of subsidies outside the health system. However, even when equipment is bought, it has a high likelihood of being damaged by inappropriate use: cheap consumables, lack of awareness of the staff of the equipment use, and Soviet sanitary epidemiological norms:

> Inspectors told us that under current law we have to wash the new chrome operating tables with a mixture of synthetic detergent and ammonium perhydrol. We did so, but the tables were damaged and hydraulics work no longer. (chief doctor)

Formal and Informal Practises in Ukrainian Health-Care Governance

In the literature on Ukrainian health care, it is argued that the sector has a large infrastructure, chronic underfunding, weak primary health-care services, and challenging health indicators. Health-care policies are in a state of stagnation, with huge consequences for the health of the Ukrainian people. Reforms are urgent but are just beginning to be introduced. Against this background, we explored how, in that context of stagnation, Ukrainian health-care facilities are operating in practise. Our study showed three things. First, health-care facilities and their staff clearly refer to national priorities stated in the national programmes; however facility-level goals and priorities are not communicated with the personnel because of strong vertical top-down administrative processes and a culture that is one of survival more than organisational development. Second, human resource practises are not meritocratic, and relevant criteria for selection of personnel such as knowledge and professional skills (including communication) are not operative in selection procedures. Because transparent procedures are not available, employee physicians find themselves in a vulnerable position in relation to the powerful chief doctor. Third, innovations in health-care governance are associated with modern technologies, because these technologies embody a clearly visible part of service development and may help to attract patients and funding. Organisational innovations are often neglected.

The results of the study suggest that two dimensions of the health system—*de jure* and de facto—have a complicated relationship. If the state is weak and not able to generate funds for public services, then the gaps in the budgets of established service providers are covered by donations of other parties to the facility, or by informal sources, or by a specific private–public partnership. To maintain itself amidst funding uncertainties, a health-care facility often relies on often not very transparent flows of money. Also, when there is no structural policy for human resources, i.e. for announcing vacancies and selecting candidates, a variety of routines flourish that rely mostly on personal, social, and financial capital rather than merit criteria. In mediating the tensions and negotiating the spaces between the *de jure* and the de facto dimension, the chief

doctors play an impressive role, which involves their networks, communicative and negotiating skills, understanding of the functioning of the health-care system in Ukraine and in other countries, and an active position in their communities. In fact, chief doctors in secondary and tertiary level facilities also hold the seats of deputies in regional (*oblast* or *raion*) governmental councils. The social capital and power position of chief doctors ensures facilities adequate resources in the situations when the facilities are left to survive mostly on their own. In line with this, the quality of the chief doctor and the system that person establishes in the hospital are de facto the most important determinants of the quality of public management at the facility, although it is power without accountability.

The stories of interviewees suggest that the path of development of the health facilities and the governance of priorities, human resources, performance, and technologies is not guided by formal national policies but by 'multiple moralities' (Wanner 2005). Morality, ethics, and values are interwoven in the general socio-cultural pattern of the society and the nature of public service governance. Post-Soviet countries have been confronted with economic, political, and regulatory challenges during the transition period, and economic hardship has led to new moral and behavioural patterns. For instance, with the end of the Soviet Union, the income of such professionals as teachers, physicians, and judges has decreased drastically and is lower than the average in industry. What kind of behavioural pattern would be expected from the breadwinners if their salary does not allow buying shoes for the children or even covering the family food budget? In the 1990s, numerous often informal strategies of raising additional income within the professions have been invented: private lessons for teachers, private practise in the public hospitals for medical doctors, and others. Those who could not resort to these strategies must change their profession and start a new professional life without the distortion of personal ethics, for example in the business or pharmaceutical sector. Hence, new moral principles associated with professional activities have been introduced: What is seen as good in one circumstance might be bad in another situation (for example, taking bribes [envelope payment] is bad, but if it is a low-paid medical doctor and the payment is presented as gratitude, then it is not bad). Also, the

issue of survival is present in the 'multiple moralities', meaning that individual welfare has become more important and realistic to achieve in contrast to social welfare. Flourishing of individual welfare is connected also with receiving informal payments, using personal connections, and exchanging favours (Morris and Polese 2014), which distorts the quality of governance of public services (seen as a part of the social welfare society).

Behaviour that previously was considered 'wrong' has become acceptable social practise and firmly rooted. Thus, the 'do-it-yourself approach' used by both consumers and providers to ensure a reliable supply of essential services in an informal manner (when the government fails to assure such supply) has not been limited by the overall negative assessment of such an approach. Practically, from the providers' point of view, 'using public office for private purpose' is seen as the only option to survive and at the same time users can still fulfil their needs for public services even when the state fails to do this. Ukraine demonstrates de facto privatisation of health-care services. Physicians get major income from 'individual patients' (Stepurko et al. 2013), and additional hospital budgets are generated from doctors' informal income in a post-Soviet type of public–private, which is not so much a partnership as a forced union. As Polese et al. (2017) underline that in the situation when the state is not involved, it may still try to get there as well as sufficient for the state measures are perceived by the people as weak participation and thus, consumers are pushed to take care of things by themselves.

That this solution to an absent or stagnated state will improve population health in the longer run is doubtful. The informal governance mechanisms that proved to be barely penetrable to formal regulation have allowed health-care facilities to survive through societal turmoil, disorientation, and multiple uncertainties. But simultaneously through relying on extraction of funds from patients and not transparent human recourses policies these mechanisms threaten accessibility and responsiveness of healthcare provision. To be successful any reform in health-care governance will need to acknowledge and engage with this dense net of informal practises and the insecure leaps of faith that are required from both medical professionals as well as patients.

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9

Radiation Science After the Cold War. The Politics of Measurement, Risk, and Compensation in Kazakhstan

Susanne Bauer

'Vzryvaiut' ('They are blasting again'). It was often just one word by which people in the city of Semipalatinsk casually noticed that kitchen cupboards were trembling. As my interlocutors further recall, they had been accustomed to the occasional earthquake-like grumbling from the 'polygon', the Semipalatinsk test site, where underground nuclear tests were conducted until 1989. This was felt even about 200 km away from the test epicentres in Semipalatinsk city, with its population of more than 300,000 in the 1980s. People living closer to the site in the nearby steppe villages had witnessed these events. Collective farm workers reported decades after atmospheric testing that they had seen the mushroom clouds and diseased sheep during the 1950s when nuclear tests were conducted above ground—at the time, the military had ordered them to never, ever talk about what they saw. While nuclear testing was done under secrecy, people were aware that there was some 'polygon', an experimental site, and that there were blasts. More details about exposure in adjacent areas only reached a broader public during the late 1980s after the 'glasnost'

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reforms and the formation of antinuclear movements. Substantial areas in the northeastern parts of the former Soviet Republic of Kazakhstan were affected by nuclear fallout from atmospheric testing (Balmukhanov et al. 2002). Between the 1950s and 1989, nuclear weapons testing was conducted and scientifically monitored by scientists and engineers in the atomic city of Kurchatov (also known as 'Semipalatinsk-21') located on the Semipalatinsk test site. The test site comprised an area of about 19,000 km^2. The atomic science city had a changing population that reached more than 20,000 and, like other closed science cities in the Soviet Union, was known for providing good living standards. Most nuclear scientists and engineers stayed for a few years before moving back to Moscow; other scientific employees working in research institutes in Semipalatinsk travelled back and forth between Semipalatinsk city and the Kurchatov research centres for duty work. Physicists recall this as quite routine despite demanding night shifts; at the time, they saw this as necessary peacekeeping in the age of the Cold War. This first Soviet nuclear test site, founded in 1947, was officially closed in 1991 by the government of the Republic of Kazakhstan.

Between 1949 and 1989, extensive atmospheric and underground nuclear testing was carried out on the Semipalatinsk nuclear test site in the steppe region of northeast Kazakhstan, less than 200 km from the city of Semipalatinsk (later renamed Semei). The test site had been constructed in 1947 and, during Stalinist times, the first nuclear test device was exploded there on August 29, 1949, at the order of General Lavrentyi Beria (Gordin 2010). The weather conditions led to the formation of a radioactive cloud that moved to the east and north after the nuclear test, resulting in fallout deposition over areas in Kazakhstan and the Altai region. This was but the first atmospheric nuclear explosion; more than 110 above ground followed until a preliminary moratorium in 1963. Underground testing was continued until 1989, with some of these below-surface nuclear tests resulting in leakage of radioactive gases. Reports by the Ministry of Atomic Energy and Ministry of Defence of the Russian Federation listed 456 explosions at the Semipalatinsk test site (Mikhailov 1996). Similarly to the American nuclear tests on the Nevada test site and in the Pacific, nuclear tests were largely part of a military programme. Official documents also report about 40 experimental 'peaceful' nuclear

tests that were framed as civil engineering projects, aimed at excavation for mining purposes and manipulation of river flows (Mikhailov 1996).

The legacies of the nuclear testing remained after the official closure of the test site in 1991. The economic crisis after the breakdown of the Soviet administration and its public health system particularly affected people in rural areas. Soviet institutions and collective farms closed, and people fully resorted to livestock smallholdings and informal economies. During the economic crisis with multiple currency reforms, salaries were delayed for months, and informal economies emerged not only in rural areas but also in post-Soviet urban centres.

Nuclear testing has altered the lives of communities in the surrounding areas. It was concerns voiced by public health staff that led to the first investigations and follow-up, which began as early as the late 1950s. But the research on environmental and health effects in the area remained classified for decades. After the secrecy surrounding the radiation situation, what occurred in the early 1990s was often called an 'information boom'. While awareness of radiation issues increased, communities close to or on the test site were left on their own to cope with the fallout legacies in an economically precarious situation. Adjoining communities deal with and inhabit nuclear ecologies on a daily basis and some reimagine their biologies as adapted or even immune to radiation (Stawkowski 2016).

Biomedical research on radiation consequences entered the area with temporary research projects and state-funded national compensation programmes organised mass screening examinations. Yet at the same time, as in other post-Soviet countries, officials coined the concept of 'radiophobia', which further stigmatised already marginalised people and concerns about fallout exposure. During the post-Soviet years, the scientific assessment became increasingly co-shaped by Western actors, institutions, international agencies, and conversion programs, blending into local research and medical affairs (Bauer et al. 2017). With the science of fallout effects new actors, methods, and a new globalised mode of doing research entered the stage.

Anna Tsing (2005) has proposed the notion of friction to describe the encounters of economies, logics, and agendas in places where mutual understanding is not taken for granted. In Semipalatinsk, frictions

occurred not only between the Western and Soviet traditions of doing science, but also between institutions, the state, non-governmental organisations (NGOs), and between disciplines, as physicists, dosimetrists, physicians, epidemiologists, and sociologists were involved in the risk assessments. Nuclear science had made nuclear weapons possible in the first place, but science was also urgently needed in the assessment of the radiological situation. Often science is defined or defines itself by separating the scientific from the political. But, I will argue, the very scientific practises, methods and results do have politics, both in knowledge generation itself as well as in its consequences for everyday lives. What does it mean to do radiation risk research on the ruins of Cold War nuclear testing at a place like Semipalatinsk? This chapter explores routes taken by biomedical researchers and officials responsible for compensation programmes to navigate multiple uncertainties of fallout exposure among local communities on and around Semipalatinsk test site. It highlights implications of these choices for wellbeing of local communities and distribution of benefits associated with fallout science among actors involved.

As Olga Kuchinskaya (2013) has noted, radiation is 'twice invisible', both physically and in terms of the often black-boxed assessment techniques. In order to open up these invisibilities, I describe selected practises of risk assessment and provide examples of frictions that emerge when risk assessment frameworks are revised and innovated. I open up technical processes of knowledge production in order to better understand the tensions and 'regimes of imperceptibility' (Murphy 2006) that govern the efforts to document fallout effects on health. The material I draw on is based on document analysis and published literature and on observations as a researcher in radiation epidemiology projects between 1997 and 2002 and further research stays and exchanges between 2009 and 2013. In what follows, I describe the ways in which global expertise entered Semipalatinsk studies during the 'transition period'.[1] I then examine how scientific innovation has become entangled in local compensation matters in unexpected ways. As a whole, the chapter contributes to the understanding of how science, technology, and medicine are implicated in and produce politics, at times in unexpected ways.

The Soviet Nuclear Programme and the Quest for Global Nuclear Expertise

Cold War nuclear programmes profoundly altered lives and environments in several regions of the former Soviet Union. Beyond the better-known Chernobyl accident or the decades of plutonium production in Southern Urals nuclear facilities, the Semipalatinsk nuclear test site was one of the areas with substantial radiation legacies at the end of the Cold War. These nuclear geographies exhibit a striking symmetry on both sides of the Iron Curtain. For most of the sites in the closed worlds of the USSR, one can find a counterpart in the United States: The Nevada test site and the Semipalatinsk test site, and the Hanford plutonium production site in Richland, Washington, and the Mayak plant in Ozyorsk in the Southern Urals, were twin nuclear sites, indeed (Brown 2013). The Soviet atomic programme had placed nuclear test sites in remote steppe lands of Central Asia and later also Novaya Zemlya in the Arctic Ocean, turning these regions into the nuclear backyard of the USSR. Key sites related to the atomic programme and military research were built in closed cities in Central Asia, including the Semipalatinsk test site and the closed science city of Kurchatov, named for the Soviet atomic scientist. Vast areas in Central Asia were shaped by other large-scale technology projects, including the diversion of rivers and creation of a settler workforce for projects of greening the steppe and turning the steppe areas into agricultural lands.

In the midst and as part of tremendous societal change, the Soviet nuclear test site was closed in 1991 and the social movement 'Nevada–Semipalatinsk' that had protested against nuclear testing was met with recognition by the new Republic of Kazakhstan. With the closing of the test site, most Russian scientists moved to the Russian Federation and the technical archives and data were transferred to a military archive in Sergiev-Posad, near Moscow. The science city of Kurchatov lost most of its population: When I visited for the first time in 1998, nearly-abandoned science buildings and empty department stores bore witness to its better past. The facilities, including nuclear research reactors, became Kazakhstan's National Nuclear Center now being in charge of radiation

monitoring on the test site. With a few exceptions within the test site, large areas have never been fenced; locals often crossed the open steppe lands. Moreover, with economic disruption, collecting remaining metal items that could be sold for recycling became a significant source of income.

After the dissolution of the USSR, the former Soviet republic of Kazakhstan became an independent member in the United Nations and its organisations. Because much of the scientific infrastructure and archives had been moved to the Russian Federation, the government of Kazakhstan called for international assistance in dealing with the nuclear legacies and taking safety measures (UN 1998). The International Agency for Atomic Energy (IAEA) and the World Health Organization (WHO) held missions to the Semipalatinsk test site during the 1990s to assess the radiological situation (IAEA 1998). By inviting international researchers to the site, the new independent state of Kazakhstan complemented the agenda of post-Soviet independence.

Efforts to assess the radiological situation included risk assessment of the present and the documentation of the past health consequences of fallout. The scientific means to investigate the effects on public health were epidemiological studies. Public health science attained an important function here in providing statistics on the extent of effects and the number of people at risk or suffering from the long-term consequences of fallout. After the call for assistance from the government of Kazakhstan and the adoption of UN resolutions, international agencies together with local health researchers began to undertake epidemiological studies. Their goal was to provide and clarify findings that could then be used in the policy processes that guide the allocation of resources to these populations. Public health knowledge is thus deeply intertwined with policy processes. Scientific risk assessment has taken on a key role in generating knowledge that informs these processes. In the contestations over sparse resources, international agencies and also increasingly the national institutions demanded proof of the effects of fallout before considering policy responses. Even if risk researchers at Semipalatinsk often insisted on having nothing to do and say on politics, they were entangled in politics from the beginning, both in the institutional collaborations as well as with the many stakes in these studies and in the decisions they were to

take in the process of knowledge production: What counts as knowledge, and to what extent can there be a scientific consensus? What other connections and relations come into play in the transnational collaborations?

The initial rationale of Western funding was to gain insight into the radiological situation in known exposure areas including Chernobyl, Southern Urals and later also Semipalatinsk as well as to gain knowledge and secure monitoring of potential future radiation risks as a contribution to meet concerns over transboundary security. Western health scientists entered the scene a few years after radiological safety measures by nuclear scientists coordinated by IAEA but also by the US DOE (Department of Energy) to secure the shafts on the test site and to irreversibly prevent its future military use for nuclear testing. A further goal was to support the conversion of former military institutions and their researchers to non-military activities, supplementing the conversion and nuclear disarmament agreements negotiated in the late 1980s. International health projects in the late 1990s began with the goals of gathering existing data and embarking on a collaborative analysis with institutions in Kazakhstan (Bauer et al. 2013). At stake for Kazakhstan scientists and local communities was not only the scientific issue of a consensus on the deposition rates and their representation on fallout maps and health data charts, but also entitlement to compensation that would result from these representations. How did the entry of Western researchers committed to studying health issues take place and what approaches did they bring? In order to understand encounters and agendas, one needs to look more closely into knowledge and data practises in radiation epidemiology.

‘Learning from the Soviet Radiation Experience’. Aligning Methodology and Human Tragedy

Cold War institutions and radiation science have played a key role not only in conducting nuclear tests, but paradoxically also in assessing the very consequences of nuclear fallout. The term ‘biomedicine’ itself devel-

oped from the research on the effects of radiation on life in the context of large-scale research infrastructure building in the nuclear programme and in information technologies that became part of state-funded large-scale research endeavours during the Cold War (Keating and Cambrosio 2003). Like in the US, on the Soviet side of Cold War science, there had been a busy field of radiation research alongside the nuclear race. In Semipalatinsk, a radiation oncology clinic, the Dispensary No. 4, camouflaged as a 'brucellosis hospital', began its research into health effects in 1959 (Bauer 2006). The Dispensary No. 4 diagnosed and treated cancer; staff annually examined groups of people exposed to fallout in the settlements, continually following up on them in collaboration with the public health services. Much of this research conducted in cancer epidemiology adhered to the Soviet tradition of epidemiology. While there was exchange between both sides of the Cold War through UN platforms and institutions such as WHO, public health research developed in different directions on both sides of the Iron Curtain. The introduction of analytic techniques that had developed in Western 'risk factor epidemiology' in particular did not fit with the research previously conducted in the USSR.

In order to confirm that there was a radiation issue, Western public health researchers and international agencies demanded formats of proof according to the globally standardized study designs of analytical epidemiology. Local researchers were aware of the stakes for mitigation of the fallout consequences and also the needs of the affected rural communities. Some of them formed and aligned with NGOs to voice their concerns. While the generation of medical scientists trained during Soviet times held on to the research traditions at many medical schools in the Russian Federation and Kazakhstan, younger researchers were eager to embark on the new opportunities. The new collaborative projects faced the need to translate and reevaluate the already existing data with Western methods to secure their credibility and to match their proposals to the demands of funding agencies under new conditions.

Key to the requirement to do a state-of-the-art epidemiological study with an analytic design is the proof of a statistical association between radiation and health effects. To comply with the standards of epidemiological science and prove that the factor of interest is truly associated with the exposure, dose estimates at individual levels were needed. This is a

routine methodological requirement of proof as established in Western epidemiology. In contrast, many epidemiological studies in the Soviet Union operated with area-based group estimates, which in the evidence hierarchies of epidemiology qualified as hypothesis-generating but not testing and thus not sufficiently proving an effect. Also, most metrics (post-)Soviet scientists used were different: for example, it was common to descriptively study the distribution and proportions of cancers and different causes of death and track the changes in this 'structure' of mortality and its changes over time; this was a different way of comprehending disease patterns and their changes over time. Contrary to Western formats, this was often done in absolute numbers (giving proportions) without age standardisation. Many of the results of Soviet risk assessments were thus not compatible with the standard study designs used by Western epidemiologists. Thus, most of the collaborative projects were translation efforts accompanied by debates over the choice of metrics, standardisation procedures, and study designs, including pertinent computer software.

The agendas Western researchers travelled with were yet different. What drew scientists from leading biomedical research centres to sites such as Semipalatinsk was what they called the 'unique opportunities' to learn from the Soviet radiation experience and the 'unique exposures of some of these populations', as researchers stressed in funding proposals and review articles (e.g. Burkart 1996). Scientists were interested in these different kinds of exposures that could then be aligned with the existing studies in radiation risk science, first and foremost with studies of atomic bomb survivors in Hiroshima and Nagasaki. This study conducted first by the US and then jointly by the US and Japan in the aftermath of the atomic bombing of Hiroshima and Nagasaki was the largest study on radiation effects on humans at the time (Lindee 1994). Its continued credibility—even reaching the status of being labelled the 'gold standard'—is in its long span of follow-up and also a result of several decades of stabilisation work. The atomic bomb survivors study still is the core source of information for the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), established in 1955, which regularly compiles, updates and synthesises the study results. Decisions about which studies to include are justified through methods

requirements. Risk estimates calculated from the Soviet studies would be quantitatively compared to findings in the follow-up of the A-bomb survivors of Hiroshima and Nagasaki and cohorts of environmentally, occupationally, and medically exposed groups under epidemiological monitoring, for example, nuclear workers.

Because global radiation dose limits were based on extrapolations from the high external dose studies of Hiroshima and Nagasaki, European Union and US researchers hoped that the studies of Soviet nuclear legacies would add empirical observations at different doses and radiation qualities. In this way, like the studies in Japan, epidemiological work would transform the 'Soviet radiation experience' into a universalised resource to inform science-based knowledge of radiation. Semipalatinsk was seen as 'high risk–high potential' project for radiation biologists to secure more data relevant to debates they were involved in at home. As an example of how this translates into 'homeland matters' elsewhere, it was argued that 'findings are relevant to the current debate over how to protect people from chronic low-dose radiation near some of the DOE sites that represent the U.S.'s nuclear legacy' (Stone 2002).

The objective of deriving risk estimates from exposed populations led to specific prioritisation in the joint projects. As a first step, researchers began compiling an inventory of exposure and health data, the kinds of data needed for radiation epidemiology. Exposure data, that is, dosimetry, had formed as its own subfield within 'radiation protection research' and 'health physics', measuring and monitoring radiation doses following regulatory dose limits for an annual level or lifetime exposure. In epidemiological studies, however, this information is used to test and estimate the association between the 'exposure' and the 'disease' outcome. Thus, data are translated from individuals to the population level. These calculations are done within a 'model-and-test system' that is constructed from the exposure and health data. This system consists of the empirical data (a file retrieved from the project database) and statistical modelling and analysis programmes. Compiling data and securing completeness of exposure and health records in a database is fundamental in creating the model-and-test system for the Semipalatinsk case. 'Exposure' denotes the radiation dose accumulated over time and 'disease' is the rate of cancer in exposed population groups. By entering these data into specialised

computations (logistic regression models), epidemiologists derive risk estimates. As a rule, these metrics, which in radiation epidemiology measure 'excess relative risks', are compared to findings from studies of other radiation exposures, such as studies of atomic bomb survivors, radiation therapy patients, and nuclear workers. In this way, the Semipalatinsk data would be compared with risk estimates in atomic bomb survivors followed up by the Life Span Study (LSS). Risk estimates derived from the populations under study would in the long-term become part of radiation risk knowledge collected by UNSCEAR and by national boards that oversee standardisation of research methods and lab techniques.

While associations between radiation and cancer are in principle undisputed, there is controversy with respect to the strength of their association and to the low dose risks and effects other than cancer. In contrast, cardiovascular health effects have been shown in the follow-up studies in the Japanese atomic bomb survivors only recently. Moreover, the shapes of dose–response curves of for instance radiation-related cancer are always also political, as they matter again in everyday lives, by categorising an individual's health and exposure status in relation to a population or subpopulation. These have been controversial in the lower dose, and therefore researchers were always eager to test empirically whether a threshold for adverse effects existed and if so, the shape of the dose–response curve. The political dimensions of such abstractions can be traced deep into the very scientific debates themselves. Historian of science Robert Proctor has pointed to the different versions for the low-dose range as the politics of dose–response curves, distinguishing an 'environmental/bureaucratic' shape (linear, no threshold), an 'industrial/apologetic' shape (linear with threshold), a 'hormetic' shape (beneficial at low doses), and an 'environmental activist' (supralinear) shape of this curve (Proctor 1995: 162).

In sum, to derive empirical dose–response data from Semipalatinsk follow-up, Western researchers emphasised gleaning individualised dose estimates. Epidemiologists collaborated with dosimetrists to secure individualized data that they could use in their calculations. Sometimes, studies would have to wait for intercomparisons, because only a validated and generally accepted dosimetry system would be the basis for the recognition of epidemiological findings. Many dose reconstruction tech-

niques relied on environmental samples and thus area-based group estimates and did not give data on the individual exposure. It was because of this methodological aspect that epidemiologists placed the new developments in biodosimetry as an innovative method for the reconstruction of individual doses high on their agendas.

Technological Innovation in the Model-and-Test System: Biological Dosimetry

To improve the database for purposes of risk assessment, new dosimetric techniques moved to centre stage in the efforts to generate knowledge that would meet international standards. This was a process that did not occur without generating friction. To further zoom into and locate the politics of scientific practises and innovations in radiation risk assessment, I focus on one example: a molecular biodosimetry technique introduced to reconstruct radiation doses due to fallout. Let's take a closer look at the cytogenetic method 'fluorescence in situ hybridization' (FISH), a spin-off technique of genomics that was applied in Semipalatinsk to examine radiation-induced chromosome alterations (Stephan et al. 2001; Salomaa et al. 2002; Bersimbaev et al. 2002). FISH enables colourful visual display of chromosomes and translocations of parts on the screen of a microscope. The method is also called chromosome painting, because the fluorescence marking is a technique to make visible translocations of chromosome parts during cell division. From the number and kinds of translocations, researchers calculate the radiation dose of the cells examined by comparing the results with a calibration curve. To estimate the dose based on the translocation counts, each laboratory initially developed its own, lab-specific calibration curve for dose dependence, using irradiated cells with a defined dose. Yet the stability of translocations over time, together with other methodological issues, still needed to be evaluated and the results validated against other techniques of dose reconstruction.

Studies of chromosome damage in human blood cells as such were not new but drew on established methods of conventional cytogenetics known as karyotyping (Chadarevian 2014). The technique was also used

in Soviet post-Lysenko biology, for instance at the Institute of Medical Genetics at the Soviet Academy of Medical Science (Bauer 2014).[2] Regarding Semipalatinsk studies, Soviet medical scientists had achieved that the Soviet Ministry of Health issued a study on fallout exposures in 1989 (Balmukhanov et al. 2002), including cytogenetic analysis of human blood samples, collected from three groups: people living in settlements close to the test site, students at the Medical College who had recently moved to the area, and students and faculty born in Semipalatinsk city. The samples were shipped to the Institute of Medical Radiology, Obninsk, near Moscow, for cytogenetic analysis, which confirmed increased frequencies of chromosome aberrations for students from settlements near the test site (Sevan'kaev et al. 1995). Differently from the measurement of dose pursued by the international projects, local scientists used chromosome alterations as a means of documenting the *effect* of exposure, much in line with other clinical effects. They compared rates in the exposed areas adjacent to the test site with areas outside known fallout trajectories (Shevchenko et al. 1995; Rozenson et al. 1996):

> In residents exposed to 80cSv chromosomal aberrations were encountered in 73.7% of the investigated persons. The percentage of aberrant cells per individual ranged from 2 to 7%. In this exposed group, too, the frequency of chromosomal aberration, percentage of aberrant cells per individual, number of pair fragments and dicentrics were significantly higher as compared to the control. (Rozenson et al. 1996: 139–140)

Documentation of radiation effects by examining chromosome aberrations was also carried out by the Almaty-based Republican Research Center for Maternal and Children's Health Protection, which usually examined chromosome aberrations in prenatal diagnosis (Sviatova et al. 2001, 2002). Others, including Russian scientist Yuryi Dubrova, conducted studies on genetic alterations over several generations among exposed families both in Chernobyl and Semipalatinsk, documenting transgenerational effects of radiation exposure (Dubrova et al. 2002).

Similarly, the goal of the biodosimetrists working for epidemiological risk assessment projects was to establish a system that measured molecular markers in human blood cells and to use this not as an effect but

rather as a marker to quantify radiation dose at the individual level. This would then be the exposure data tested for an association with disease:

> Assuming translocation stability in peripheral blood lymphocytes over several decades, these findings suggest that on average, the magnitude of exposure of this cohort in the Semipalatinsk area has been considerably smaller than that reported in the literature. Previously reported doses of the order of 1–4.5 Gy (mean 2.9 Gy in the P(0) generation) cannot be confirmed by the present data. (Salomaa et al. 2002: 591)

The findings summarised here question the dose estimates in previous reports based on a new technique, while also stating the assumptions of this claim that there is a stability of translocations over decades. In these settings, the human body is rendered not only as 'at risk' due to fallout, but as a dosimetric memory in which radiation inscribes itself, similar to the dosimeter device carried by nuclear workers. With biodosimetry, chromosome aberrations have become a marker in a person's cells that would be recognised as sufficient proof. The difference between the two approaches—clinical marker versus dose estimation—seems perhaps a technical detail, but this small shift is relating fallout matters in a very different way. While the former examines potential health effects, the latter, at least as a first step, questions the reality of exposure and puts to test whether there will indeed be a health effect that can be causally linked to the exposure.

While acknowledging the uncertainties in the method for determining radiation doses obtained decades ago, Western researchers considered a classic marker, dicentrics (one type of chromosome aberrations), suitable for detecting 'hallmarks of exposure to ionizing radiation' (Testa et al. 2001) and thus used it in the validation studies. The EU-funded project stated its objective in terms of 'verify(ing) the hypothesis of existing contamination' (Testa et al. 2001). In some of these documents, it becomes clear that at the core of the concern was the credibility of the Western scientists to their own research communities. At stake were different things for an international scientific project and for the research subjects under study who needed support from the public health infrastructure.

Cytogenetics used for biodosimetry also faced many practical problems, such as the transportation of blood samples, storage, and road conditions during cold winters and hot summers. Samples needed to get to the laboratory from remote areas within one or two days to start preparation for chromosome analysis. FISH reagents were costly, and therefore the method was not applicable to large-scale population studies. Instead, they were framed as a validation tool for dose estimates calculated by other methods. However, the techniques were also sensitive to small variations in chemicals and procedures, and findings were hardly comparable between different labs. Despite the standardisation and increasing automation of counting in the analyses, qualitative assessments remained important for the study of chromosome aberrations, for example when it came to particularly damaged singular cells ('rogue cells') that were difficult to standardise for population-level studies yet still interpreted in clinical contexts as likely signs of radiation damage. Thus, careful cytogenetic work does not always lend itself easily to developing a method that can be a tool readily applied in a standardised and robust way. The assessment and interpretation requires experience and practical knowledge, rather than just formalising single markers into a dosimeter technology that can simply be read and prove a dose and thereby entitlement to compensation.

The study of cell damage and environmentally induced chromosomal alteration has come to be rather troubling in terms of how this becomes relevant to the local communities and how they might influence government funding policies. Even though the advent of new biodosimetry techniques promised a clarification of the situation, the actual use of the technology also produced new technical questions to be resolved to the end of making the model-and-test system work. Thus, Semipalatinsk became also a test site, an experimental system, for the development of new dosimetry techniques. As often in experimental systems, emerging results added more questions than answers: Is the measurement system sensitive and able to detect exposure-related chromosomal alterations if they are there? How can the effects of time in the system be validated and estimated? Conventional cytogenetic counts of chromosomal change work well only shortly after the exposure. The refinement of the dosimetry data in the model-and-test system aimed at providing a means to

detect chromosome damage years after the exposure took place. This was part of optimising and enhancing the experimental model-and-test system, because much of these data were already collected and then compiled for evaluation.

The (Uneven) Circulation of Knowledge and Benefits. How Science Is Political

Dosimetry research circulated the samples from Semipalatinsk beyond the former Soviet research labs in Almaty, Moscow, Obninsk, and Minsk. Making their way into Western radiobiology labs—to Italy, Helsinki, Munich, and Oak Ridge, as well as to Hiroshima in Japan, blood samples travelled routes to places that were inaccessible to their donors from the Kazakhstan villages. To the local communities, the transnational journeys of biological materials were both hope and threat, as the outcome in terms of recognition of exposure were beyond their influence. Due to the inconclusive results of biodosimetric studies, meetings called by the WHO stressed the need for further methods standardisation in order to 'solve' the dosimetry issue:

> Previous publications cited external doses of more than 2 Gy to residents of Dolon while an expert group assembled by the WHO in 1997 estimated that external doses were likely to have been less than 0.5 Gy. […] External dose estimates from calculations based on sparse physical measurements and bio-dosimetric estimates based on chromosome abnormalities and electron paramagnetic resonance from a relatively small sample of teeth do not agree well. The physical dose estimates are generally higher than the biodosimetric estimates (1 Gy or more compared to 0.5 Gy or less). (Simon et al. 2003: 718)

Biodosimetric studies, after a few years of laboratory intercomparisons and measurements, indicated lower doses than those dose estimates resulting from physical methods to calculate deposition. For the people living close to the test site, the stakes in this were high, and international assessments concluded that cumulative exposure were much lower than Kazakhstan scientists had calculated.

In a review of the state of the art in biodosimetry, radiation biologist Léonard and colleagues summarised:

> Biological dosimetry has serious limitations exactly for situations where the need for information is most urgent. It renders its most useful results when an individual has been exposed to a rather homogeneous high-level radiation over a short time interval, i.e. accidents at high-intensity radiation devices. (Léonard et al. 2005: 448)

Innovations in biodosimetry could not solve the exposure data problem, nor what was at stake locally—rather they brought new uncertainty, methodologically and in terms of benefits. For a few years, though, the former Soviet nuclear polygon operated a test site for biological dosimetry to test and prove its usefulness for risk assessment. Rather than settling the tensions and contentions about the degree of exposure, as had been hoped for, it was the fallout that became a testing ground for new molecular tools that would determine individual radiation dose.

The 'Law on the Social Protection of Citizens Exposed due to Nuclear Tests at the Semipalatinsk Nuclear Test Site' of the Republic of Kazakhstan had been adopted in 1992. However, for economic reasons, it was not implemented but put on hold for several years. The law foresaw that people living during the atmospheric nuclear testing in different areas of the Semipalatinsk region were entitled to one-time payments and a number of 'lgoty' (reduced prices for gas and electricity, free health care and other public services). These payments and entitlements depended on degree of exposure, based on geographic, district-based dose estimates and age at exposure and confirmed residency during the time of atmospheric nuclear testing. The implementation of this had been postponed several times, and the claims that could be made based on dose certificates were perceived as minor if not symbolic. Yet, they did make a difference and did matter to a considerable part of the population, depending also on their exposure category.

Resources of the national programme trickled down only slowly to the exposed rural areas where the support was most needed. If international results found that exposures were in the range of permissible doses in other countries, this would interfere with the local assessments in the

Kazakhstan law on compensation. In fact, a certified radiation dose was a socially significant number for affected people, because they were able to claim benefits according to the corresponding group in the compensation programme. In this way research, even conducted as basic science or methodological validation, comes to impact everyday lives—at times despite other intentions.

While the study of biomarkers of exposure followed the demands of epidemiologists, chromosome painting challenged the conceptual frameworks of compensation policies: 'It is anticipated that the addition of molecular parameters to the population-based studies will allow determination of real rather than calculated risks' (Akleyev 2000). Thus the calculated risks and their safety margins (which were more expensive to governments) would be replaced by 'real' risks—and what is considered real is the trace detectable in the body in terms of chromosome damage. Biodosimetric results were envisioned to distinguish, through 'the study of mechanisms and biomarkers of radiation-induced alterations', between the 'notion of an exposed versus an affected individual' (Akleyev 2000). A new kind of boundary is being drawn here: The 'exposed individual' would no longer be entitled to compensation or 'lgoty', which would be restricted to the 'affected individual' diagnosed with a disease from a specific list of diagnosis recognised to be associated with radiation. As a DOE representative stressed, this was 'of immense social and economic significance' (Neta 2000) for the regions and governments. Here an economic consideration joins the epidemiological quest for individual doses. What is at stake here is resources and, linked to this, different modes of allocating compensation: compensation for exposure (as in some instances in the former Soviet Union with one-time payments) versus compensation for disease (as in the US Radiation Exposure Compensation Act). Some regulations even demand proof of causation and apply individually computed causation probabilities (for example the recognition of occupational diseases, as practised in Germany). In sum, compensating for exposure reflects a state-benefit environmental justice model, while compensating for disease is a more insurance-based model. The models distribute the burden of proof differently between the state institutions responsible for the exposure on one hand and the individuals at risk of exposure-related disease on the other. One of my interlocutors, a scientist

working in Kazakhstan, stressed that each time the dose estimates are lowered, problems mount for those exposed. In this specific situation, biodosimetry results came to perform to divert responsibility away from the state and normalise the fallout issue.

Western science designed the health studies in a way that used the data retrospectively, mining the Soviet radiation experience in a type of extractive mode, this time knowledge extraction. Even when it is not a retrospective but prospective health study among people who are now alive, the benefits of analytical epidemiology will have little to return to those who underwent, and suffered from the consequences of, radiation exposure. If there are benefits, they are delocalised and will rather travel to countries affluent enough to iteratively adapt their radiation protection standards with new findings that come from the analysis of the 'Semipalatinsk radiation experience'. It is an alignment of optimising radiation protection that goes together with knowledge moved away from exposed communities and taken to global platforms of radiation knowledge. Some researchers see these data extractions as 'scientists' duty to study exposed populations', others as problematic endeavours that lack reciprocity. At the same time, radiation protection knowledge builds on deriving knowledge from exposed and disadvantaged populations that is used to optimise the lives of others, which raises issues of the distribution of benefits.

Adriana Petryna (2006) has analysed the Chernobyl compensation system of post-Soviet Ukraine as a specific type of relation between people affected by radiation and the state. In this mode of 'biological citizenship', as she termed it, people used their exposed biologies to claim their rights from the state. The schemes of compensation by 'lgoty' (benefits and price reductions) in Kazakhstan were similar to those in some other post-Soviet countries. Yet it was only after building the new capital of Astana on the former city of Tselinograd that the inflow of capital from the state's oil adventures a decade after closing the test site began trickling down to the exposed regions. In Kazakhstan, the law on compensation became fully effective only after pipelines to Russia and China secured the export of oil. Oil fields under development brought a continuous influx of international capital as well as money to national oil companies and shares in the oil consortia. After all, it was also money of a 'petrostate'

(Goldman 2010) used to establish some basic infrastructure of medical screening and rehabilitation programmes for the exposed populations. But there are also other things already emerging at the same time: the beginning of a new nuclear programme. Not long after closing the Semipalatinsk nuclear test, Kazakhstan embarked on a different nuclear endeavour, large-scale uranium mining. By 2009, the Republic of Kazakhstan was the world leader in uranium export.

The national compensation programme in Kazakhstan was similar to the benefits in other Soviet and post-Soviet rehabilitation programmes. Its risk zonings were connected to available data compiled with a view toward mitigating the radiological situation. The law was developed at a specific window of opportunity when a new state and its government were willing to break with this part of the Soviet past and new nation building included recognition of victims of the past. In contrast, international research projects brought with them a different frame of reference and set of practises, which led to efforts to build model-and-test systems rooted in the tradition from which they came. Compensation as a mode of mitigation has been more common in post-Soviet than in Western countries. Western countries tend to regulate similar issues in different, perhaps less direct ways, some through insurance systems rather than direct compensation payments and general price reductions. What Petryna called biological citizenship may be characterised as a (post-)Soviet version of attempts to address past injustice. The ways in which compensations operate also depend on their distribution and accessibility. Possibilities to claim benefits are much more limited for those who live more remotely, with transportation to the state institutions from the steppe being expensive.

The very practise of science does have politics and an impact on these debates, when researchers design exposure registries, decide cutpoints for exposure status, introduce dosimetry techniques, assess risks of population groups, and determine inclusion or exclusions in health studies; the study results based on these decisions will be used to inform and be translated into policies and public health planning. That there is myriad of small decisions to be taken in risk assessment in modelling in science becomes visible when the distributed scientific processes are more closely examined.

Engaging in scientific knowledge production, willingly or not, is a relational practise that has consequences in the politics of everyday life.

Conclusion

Scientific endeavours conducted during the early post-Soviet years have transferred Western scientists, their methods, and their agendas to the fallout areas of Kazakhstan. In parallel, they brought human blood and environmental samples from the fallout area to Western nuclear laboratories. Those travels did not take place without friction with the ways in which fallout matters had come to be addressed in the local compensation programmes. First, the intervention by Western scientists produced a version of documentation that translated 'the Soviet radiation experience' into a generalised model-and-test system of radiation knowledge. Second, these kinds of projects intervened in previous assessments in ways that called into question local assessments and measures. Third, local researchers, it seemed, had to take sides or, more often, become experts in performing in and for both science systems, while navigating different science policies, funding schemes, and bureaucracies. Although a few scientists from Kazakhstan managed to embark on international careers, the benefits from such research did not travel in both directions in the same way. Benefits from fallout science moved mainly in one direction: to be translated into a knowledge repository that informs global radiation protection guidelines. These are of use in a more abstract sense to more affluent countries, but leave affected communities, from which the knowledge is derived, largely without direct benefits. In contrast to the era of nuclear tests in Semipalatinsk, there is no longer the grumbling of underground nuclear tests today, but there are still-lingering nuclear legacies. Even the science of damage evaluation can come as an aftershock rather than as mitigation to the precarious situation in the affected communities. Analysing these frictions and unevenly distributed benefits helps us understand how the Cold War has undergirded our knowledge of radiation protection. Understanding the infrastructures and politics of risk assessment may provide tools to make a difference with respect to mitigating global health disparities.

Notes

1. The terms 'transition' and 'transitology' in post-Soviet studies beg the question of from where to where this transition was supposed to take place. Post-Soviet transition processes have been said to have moved from state to corporate realms at first and recently back to the state (Goldman 2010) in the Russian Federation and in Kazakhstan.
2. During the Cold War fallout debates, both Western and Soviet radiation biologists and geneticists measured mutation rates in human cells irradiated in the laboratory at defined doses (Luchnik and Sevankaev 1976; Sevan'kaev et al. 1995). With regard to chromosomal damage, Soviet medical geneticists and radiation biologists also wrote about the dangers of radiation and nuclear war (Bochkov 1966, 1983). In the 1970s, cytogenetic techniques to detect chromosomal alterations (e.g. by karyotyping) became widely used in prenatal diagnosis.

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Epilogue

This book has explored the idea that the domain of health in post-Soviet settings is imbued with uncertainties. These uncertainties emerge not only because new health technologies and health practices, by definition, introduce major or minor 'new' elements and initiate discontinuities in existing routines. Uncertainties are also linked to rapid societal transformations and struggles for new balances between state, market, and civil society that followed the rapid demise of the Soviet regime, as well as to instabilities in governance arrangements and exclusionary decision-making. Both the

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specific Soviet history and the rapid changes have led to a multiplication of uncertainties in the settings on which this book focuses. This book, first, has aimed to provide insight into how actors in post-Soviet landscapes navigate, negotiate, and mediate the multiple uncertainties and tensions they are confronted with. The book also has sought to inspire new ways of thinking about choices that may be made in conditions of shifting rules and destabilising governance arrangements, and the consequences of such choices, first of all, for people's health. In this epilogue, first, we sketch how the different chapters contribute to the aims of the book. Next, we raise the questions about how these chapters feed back into the fields of Science and Technology Studies (STS) and studies of post-socialism concerned with informality, fields that we introduced in Chap. 1 and that proved heuristically fruitful for exploring how uncertainties in post-Soviet health care, public health, and research and development are dealt with in practice. We conclude by proposing a further research agenda for studying health, technologies, and politics in post-Soviet settings.

Navigating Multiple Uncertainties

The historical study by Pavel Vasilyev enabled observing continuities in the domain of health that span both the Soviet and the post-Soviet periods. Vasilyev showed how soon after the Revolution of 1917, in the situation of major political uncertainties and hostility to private initiatives, a window of opportunity was opened for organising the private provision of health care. Private practice responded to unmet health needs of local populations, but it fitted uneasily within the socialist aspirations for universally available and free health care. Therefore, medical entrepreneurs carefully manoeuvred to demonstrate that their practices were actually in line with the aims of the new government. Such manoeuvres included making pledges to admit certain numbers of people for free or at a discount, presenting the motivation for opening a private practice as assisting the reorganised health-care system in responding to health problems, and using language that demonstrated loyalty to the new government. However, medical entrepreneurs still faced random inspections, conflicting demands by various authorities, and unclear rules that they nonetheless were obliged to follow. These uncertainties prevented sustainable improvements in

health-care provision: Facing multiple risks, medical entrepreneurs focused on short-term initiatives and were unable to systematically contribute to improving health-care system, which experienced serious problems at the time. The further chapters, in one way or another, suggest that notwithstanding the breakdown of the Soviet regime and the dramatic political changes, some of the uncertainties of the early Soviet time and ways of navigating them can still be discerned in post-Soviet settings.

Chapter 3 by Olga Zvonareva explored how actors involved in contemporary Russian pharmaceutical innovations deal with uncertainties associated with the state efforts to boost local drug research and development. Ambitious policies and promises must be realised by such actors on the ground as academics and industrialists, who struggle with the rapid legislative change and pressing demands to deliver results. Focusing on complying with the new rules and trying to satisfy conditions for receiving state support, actors pay less attention to linking technoscientific developments with actual health needs. Their modes of navigating uncertainties allow them to survive in the rapidly shifting environment and continue their work but simultaneously may divorce drug development from public health and well-being. Evgeniya Popova showed in Chap. 4 how the medical devices industry in Russia after 1990, when the military industrial context was declining, similarly has had to attune itself to rather unpredictable national innovation policies. While the need for Russian-made medical devices is underscored, national policies with respect to the conditions for state support, the organisation and functioning of local and national markets, and the relationship to international markets are rather ambiguous. Although the biographical interviews show that developers of medical devices deal differently with this situation, varying from rather adaptive to more confrontational entrepreneurial strategies, all consider national innovation policies to be risky. Their focus on innovation and development is therefore half-hearted, because the entrepreneurs also must ensure, before anything else, the survival of their company, since this is the basis of their income. National policies that intend to support entrepreneurs create existential uncertainties and hamper creativity and entrepreneurial spirit.

In Chap. 5 Alena Kamenshchikova analysed the uncertainties stemming from the mismatch between, on the one hand, medico-economic standards (MES) for diagnosis and treatment that were introduced in

Russian health care as legal obligations to ensure quality and access and, on the other hand, everyday medical realities. MES may prescribe certain diagnostic procedures or specific medication for patients while a health-care organisation lacks the financial resources to actually provide this care. Such situations create tensions between patients' expectations and doctors' options. At the same time, being economic tools aimed to control costs of care, MES sometimes dictate certain therapeutic interventions for a specific diagnosis that medical professionals consider risky or even harmful to their patients. Physicians find ways, often informal ones, to deal with the demands of MES, the realities of their practice, and the expectations of their patients, thereby continuously risking being legally sanctioned or providing inadequate medical help or becoming an object of complaints. Navigating these tensions may cost a great deal of time and energy and place strain on hospitals and professionals.

Beginning the second part of the book, Chap. 6 by Ekaterina Borozdina showed how post-Soviet processes of liberalisation and marketisation in Russian health care allowed for creating a space for developing new anti-medicalising midwifery practices under the organisational umbrella of maternity hospitals. While an independent midwifery practice in the post-Soviet era, as in Soviet times, does not exist, and it is forbidden for midwives to supervise births independently, the new initiatives of midwives resonate with the preferences of some Russian women. To perform new demedicalised birth practices and to create a new market for 'natural birth', midwives continually negotiate professional space with medical doctors. However, these new midwifery practices are also precarious: Because they lack legal status, midwives depend on the goodwill of hospital doctors and must engage in day-to-day informal negotiations to reaffirm their informal professional space and to control the market of 'natural birth'. Lack of formal institutionalisation creates new risks for midwives, including that their professional space and accomplishments could be appropriated by more powerful medical professionals. For women giving birth, the informal status of demedicalised midwifery practices implies that they are accessible to a few women who can afford them, while others have little choice with regard to how their child is born.

Chapter 7 by Alexandra Kurlenkova explored egg donation in Russia. Kurlenkova shows that marketisation of health care after the 1990s not only allowed the emergence of a professional niche for 'natural birth' but

also facilitated the establishment of private infertility clinics. However, while childbirth practices are heavily regulated and midwives establish their professional space by informally working around these regulations, private infertility clinics operate in a policy vacuum. Egg donation, including its financial and ethical aspects, is barely regulated, which has stimulated emergence of trade-like practices with ova in the domain of infertility treatment that are largely driven by those who manage private clinics. Private actors, structuring practices of egg donation to their advantage, mobilise economically disadvantaged women as egg 'donors' whose labour is precarious, unprotected, and not recognised. With public deliberation and discussion of these practices lacking, it is the individuals operating private clinics who continue to define how egg donation is performed.

In Chap. 8, Tetiana Stepurko and Paolo Carlo Bell analysed how Ukrainian health-care facilities have been operating under the conditions of post-Soviet transformations. Health care in post-Soviet settings has a long-standing tradition of informality: In the Soviet era, physicians and patients operated partly under the radar of the official rules and regulations, and these informalities were solidified in Ukraine in the processes of marketisation after independence. To survive post-Soviet uncertainties, including lack of resources, health-care facilities have relied heavily on informal governance mechanisms, with chief doctors concentrating an enormous amount of power in their hands. Any endeavour to improve the transparency, accessibility, and responsiveness of health care requires trust in the policy reforms, while lack of trust in governance institutions appears to be the status quo. In this context, health-care professionals and managers must navigate both formal policy reforms and informal practices. It becomes clear that 'implementing formal policy' is a complex endeavour: It requires developing trust in formal governance through tentatively trying out new behaviours, piecemeal engineering, and small experiments.

In the final chapter (Chap. 9), Susanne Bauer explored the uncertainties surrounding radiation exposure assessment in Kazakhstan. Her analysis showed that the uncertainties about the radiation damage experienced by local communities are navigated by developing specific metrics that draw on the approaches of Western researchers and ignore the experiences of (post-)Soviet epidemiologists. This, in turn, affects the uncertainties of

compensation programmes for local communities by limiting opportunities to remedy environmental injustices experienced by members of these communities. In developing measurements as well as compensation programmes, the global sciences and their technologies have the major say, while the opportunities for local communities—who contribute to the sciences by providing data and samples—to bring forward their perspectives and experiences are limited. Specific global scientific repertoires of evidence dominate the local repertoire of suffering and result in unequal distribution of risks and benefits between global and local actors. In this sense, collaboration with the international scientific community and its metrics appears to be risky for local communities.

The chapters in this book show that post-Soviet settings, in a way that continues Soviet conditions (the chapter by Vasilyev), are characterised by multiple uncertainties. Some chapters (Kurlenkova) show how marketisation and lack of formal policy and guidance for health care have created spaces for introducing new technologies and establishing new health-care practices aimed at well-off patients. However, the uncertain policy–practice relationships make it difficult for many health professionals and developers to anticipate and to attune themselves to relevant developments in the environment in the longer run. Other studies (Kamenshchikova and Borozdina) demonstrate that formal policies are too strict, curtailing health practices in a way that forces professionals to deviate from what formally counts as quality care to be responsive to patients. Studies on development of new drugs (Zvonareva) and new medical devices (Popova) demonstrate that while national policies aim to stimulate innovations in these fields and make big promises about the improvements in public health that will be realised, these policies have ambiguous impacts on entrepreneurs, simultaneously mobilising and hampering them. As a consequence, national political promises about improving the health of the population may contribute more to national imaginaries of a powerful state than to public health. The continuous change following the breakdown of the Soviet Union, the rapid onset of marketisation and liberalisation, and the rise of new institutions have created uncertain political cultures of health in post-Soviet settings. We learn from the cases of Ukraine (Stepurko and Bell) and Kazakhstan (Bauer) that international actors that introduce new technologies of

public accountability to create transparency and objectivity in governance decisions may complicate this picture even more, as this interference also brings about new uncertainties for local actors without adequately addressing existing ones.

The chapters in this volume suggest that, as in the Soviet era, in the post-Soviet health domain, informal networks, relationships, and practices play a major role, because they are felt to be rather predictable and trustworthy, whereas formal policies are often perceived as risky. Moreover, and as a consequence of these informalities, the multiple uncertainties that were discussed in the chapters, the modes of navigating them, and the costs thereof are seldom publicly discussed or reflected upon. Phenomena such as the lack of access to 'natural birth', the exploitation of women as egg donors, the mismatch between standards and quality of care, the lack of daring entrepreneurial strategies in the field of medical devices and drugs, the exclusion of local knowledge in radiation research, and the lack of trust in formal procedures are rarely a subject of public debate. In Western liberal democracies, processes of public reflection tend to be considered a source of public learning that helps to mediate uncertainties through informing both policies and practices about how to be attuned to each other. Public spaces for public articulations are developed and mostly considered safe. In post-Soviet settings, where public spaces for deliberations are experienced as fragile and unsafe, these types of public reflection are risky because they might damage informal networks and informal practices that blossom under the radar and as such are functional for health care, public health, and research and development in the health domain. This raises the question of how the observations and analyses in this book relate to the fields of STS and studies of post-socialism that focus on informalities.

Democratising Health Through Informal Practices

In the introduction, we have argued that this book draws from and aims to contribute to two research fields, STS and studies of post-socialism that focus on informality. The different chapters suggest that insights

from these fields can be fruitfully combined in exploring health, technologies, and politics in post-Soviet settings.

On the basis of empirical and conceptual analyses of the interactions between science and technology and politics and society, different approaches within STS have contributed to the idea that science, technology, and politics are co-produced and entangled. Every chapter in this book testifies to that insight: The particular characteristics of demedicalising birth practices, drug development, MES, or radiation science cannot be understood without taking into account the entanglements between health technologies and the specificities of the political landscapes. In the field of STS, this observation is connected to the idea that these entanglements should be made public to enable public deliberation of their dynamics. In other words, science and technology should not remain in the domain of experts but should be democratised. Patients, citizens, and various users of technologies should be engaged in scientific and technological developments and design in an early phase, so that their voices can be heard and their perspectives can help to co-create science and technology and make it more publicly legitimate (Irwin 1995; Wynne 2006). This idea has been investigated with respect to new, controversial technologies such as genomics (De Vries and Horstman 2008), regenerative medicine (Gardner et al. 2017), and e-health (Oudshoorn 2008) but also with respect to more mundane day-to-day health practices (Pols 2014; Seeber et al. 2015). One of the lessons of STS is that science and technology needs to become more participatory and in this sense more public (Irwin 2016; Leach et al. 2005). In practice, in many countries, especially but not exclusively in Europe, one can observe heterogeneous initiatives that reflect these ideas about 'democratising science and technology' that vary from institutionalised engagement of patients and their organisations in health-care provision to consensus conferences, citizen panels, and artistic experiments (Hagendijk et al. 2005; Hagendijk and Irwin 2006).

Proposals to democratise science and technology and to engage diverse publics in co-creating new socio-technological practices tend to assume well-established institutions of constitutional liberal democracy, characterised by separation of powers, free press, and safe public spaces for

articulating, debating, and contesting ideas. Such STS authors as Callon et al. (2009) and Jasanoff (2005) explicitly situate their accounts of science and democracy in liberal democracies. Although public trust in political institutions in Western democracies appears to be declining and the gap between formal political institutions and citizens is growing, many people still trust the institutions of democracy and the rule of law to the extent that even vulnerable citizens or patients are often eager to speak publicly and to share experiences. Importantly, the culture of public deliberation and reflection also enables critically discussing democratic practices themselves: Debates about the 'crisis of democracy' and 'the rise of populism' demonstrate the development of public spaces to discuss the (un)making of publics also with respect to democratic politics itself. However, recently STS scholars such as Voß and Amelung (2016) have critically studied the performativity of participatory technologies to 'democratise science and technology'. Shapin and Schaffer have shown that scientific methodologies such as the experiment are no neutral techniques to represent reality but techniques to produce specific representations of reality (Shapin and Schaffer 2011). In a similar way, the work of Voß and Amelung makes clear that technologies of democracy are not neutral tools to represent citizens but techniques that affect and produce specific voices. In other words, methods of democratising health technologies and practices should also be an object of study.

Studies of post-socialism focusing on informality depart from a vantage point different from that of STS scholars. The field has demonstrated the specificity of post-socialist relationships between formal state policies and various publics, and thus also between publics and science and technology. Informality studies show that diverse and heterogeneous informal socio-economic–political practices are central to the livelihoods of people and organisations in post-socialist societies (Harboe 2015). In this field, strict distinctions between formal and informal, legal and illegal, public and private are challenged and mixed practices where informality complements and sometimes replaces formal arrangements are made visible. Post-socialist informal practices may be and actually have been perceived by international organisations, for example, as corruption and something to be eliminated. At the same time, informality can be viewed as an

instrument created and used by citizens to contest and restructure formal state-defined processes and to cope with inadequacies of welfare provision, including in the domain of health (Polese and Morris 2014). Informal practices may enable diverse actors to pursue their goals and to act upon their ideas in situations when their perspectives cannot be voiced in public spaces because voicing can be risky. For example, informal payments in health care that, on the one hand, are associated with corruption and considered a threat to public institutions and democracy, may also be viewed as a way of (re)distributing scarce resources and an expression of social ties that keep health-care provision going where state support is insufficient and formal arrangements are perceived as inadequate. But discussing the issue of informal payments in public spaces may lead to the state creating new obstacles for informal practices without correcting the inadequacies that have facilitated proliferation of informal practices in the first place. While not idealising informal practices as such, scholars in informality studies draw attention to the often unacknowledged hidden moralities and hidden powers of citizens in settings with histories and legacies different from established Western liberal democracies. Informality studies show that in post-Soviet settings, where the STS adagio 'democratisation of science and technologies' may have different meanings than in Western liberal democracies, one can find reflections and voices that co-shape health technologies and practices specifically in informal spheres. Insights from studies of informality enable exploring the power of heterogeneous actors that is articulated by informal practices that tend to be invisible otherwise. In this way, studies of post-socialism exploring informality underline the insight of political anthropology that practices of democracy, cultures of voice, and reproduction of trust can be also found in sites and in rituals other than Western technologies of democratic participation.

In this book, both strands of scholarship, STS and studies of post-socialism concerned with informality, have helped to explore health, technologies, and politics in post-Soviet settings. STS provided a lens to discern and take into account co-production of science, technology, and society, while informality studies helped to illuminate post-Soviet dynamics of

how this co-production is shaped. The different chapters highlighted how in the health domain, participation and negotiation take place in informal, indirect, and covert ways. This work points to the multiplicity of forms in which various actors exercise their agency, contest existing structures, and contribute to shaping health, technologies, and politics.

Navigating Uncertainties and Beyond

This book has demonstrated entanglements of health, technologies, and politics shaped by interactions between formal and informal practices in post-Soviet settings. It showed the multiplication of uncertainties that actors are confronted with in post-Soviet settings, various modes of navigating these uncertainties in health care, public health, and research and development, and the implications of chosen navigation routes. However, because health care and health technologies practices in these locations remain understudied, we end this book with some pressing research questions. First, more research is necessary to explore modes of public participation in science, technology, and health outside of visible and mostly formal spaces and processes. Post-Soviet locations provide a fruitful environment for such endeavours because of their rich repertoires of informal and hidden forms of bottom-up contestation, and initiatives by citizens. In-depth study of these repertoires can provide fresh perspectives on possibilities of public participation globally. Second, more studies are needed to explore the meaning of democratisation of science and technology more generally in diverse settings. What can such democratisation mean and entail outside Western liberal democracies, and what can be the roles of informal cultures of health, technologies, and politics in it? Finally, more research is crucial for understanding the skills and agency of people under conditions of uncertainty and transformations. Understanding how resilience is developed under hostile conditions is an important resource for improving and ensuring the well-being of various societies.

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[1] Note: Page numbers followed by 'n' refers to notes.

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