



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

Edited by
Olga Zvonareva,
Evgeniya Popova,
Klasien Horstman



Health, Technologies, and Politics in Post-Soviet Settings

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Editors

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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!

Maastricht, The Netherlands
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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 health-care, 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 Vanhuyse 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 63.5¹ 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 Panicià 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 pre-eminent 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