From Russia with Code

Published by Duke University Press

From Russia with Code: Programming Migrations in Post-Soviet Times.

For additional information about this book
https://muse.jhu.edu/book/70046

For content related to this chapter
https://muse.jhu.edu/related_content?type=book&id=2537296
In 2014, Estonia published its “Vision of Estonian Information Society in 2020,” which begins as follows:

In the spring of 2020 the Estonian President will give an interview to the New York Times, citing his reasons why he is proud of Estonia’s acumen in developing e-solutions that instill democratic principles to a society that has undergone fundamental technological transformation. The President will recognize the fact that the transition has not been easy for Estonia—following the realization that unmoderated anonymous internet comments, for instance, proved to be a vehicle that was ill-suited for democracy building. (Estonian Association of Information Technology and Telecommunications 2014)

This paragraph is a crude expression of the argument for Estonia’s ICT agenda, using popular media discourse: the idea of technology transforming society, the belief in democratic values that can be fostered by technology, and the justification of the idea by the claim that it should be accepted by the international community; hence, the interview in the New York Times—a big geopolitical player—lending credence to the political and economic line that Estonia has chosen.

Since gaining its independence from the Soviet Union in 1991, Estonia has rebranded itself into e-Estonia. The country’s official website—E-Estonia.com—justifies the “e-” prefix by presenting the new Estonia as a digital society with technologically advanced infrastructure, welcoming entrepreneurs and business from all over the world, while proudly boasting efficient government and forward-thinking education. According to the website, Estonians vote in elections from the comfort of their living rooms, file their income tax in just five minutes, and can sign a legally binding contract over the internet via their
mobile phones. The country has an “unprecedented level of transparency and accessibility in government,” safe exchange of private, governmental, and corporate data, and “a healthier, better educated population with easy access to social services” (Ministry of Economic Affairs 2015). The internet is presented as a human right of every Estonian in an ultimate “wired” nation and digital society characterized by “transparency, efficiency, and cyber-security.”

The dramatic transformation of Estonia since the collapse of the Soviet Union is presented as an illustration of how information technology can enable a country, however small, to quickly catch up in the global “race.” Talking about the success of Estonia, President Toomas Hendrik Ilves said: “What made this little former Soviet republic, poor, [in] many ways backwards 25 years ago, an IT power house that everyone sort of [wonders] . . . ‘What are you doing?’ It’s because technology develops so rapidly” (vpro Backlight 2015, 44:57–45:19). However, the emergence of the e-Estonia “brand” is not just a matter of aggressive digital infrastructure development and the skillful deployment of “cyber talk” in building a place for itself within the geopolitical landscape.

In April 2007, the Estonian government infuriated its Russian ethnic minority by relocating the Soviet war memorial—the Bronze Soldier Monument and the bodies of twelve Red Army soldiers—from Tõnismägi Square in central Tallinn to a military cemetery on the outskirts of the city. The Bronze Soldier Monument is a Soviet World War II memorial symbolizing the Soviet victory over Nazi Germany in 1945 and, thus, the “liberation” of Estonia. However, ethnic Estonians saw it differently, as a symbol of “Soviet occupation,” and wanted it removed from Tallinn’s city center. This led to mass protests and riots on an unprecedented scale that lasted for two nights, during which one ethnic Russian was killed.

Soon after, a series of cyberattacks (denial-of-service [DoS] attacks) shut down the government website as well as those of banks and financial services—attacks that the media and the government attributed to Russia. This event—which became known as the Bronze Night—was represented by Estonian state officials as an attack perpetrated by Russia and a fifth column of disloyal Russians living in Estonia. However, Estonia’s political and military elites also successfully reframed the cyberattacks as the world’s first case of cyberwar: warfare waged by one state against another in cyberspace (Kaiser 2012). Seeing this as a great and continuing threat to its security, the Estonian government took measures: First, NATO founded a cyberwarfare think tank in Estonia, to learn from the Bronze Night experience. Second,
the Estonian government set up the Cyber Defence League, a network of one hundred volunteers from the cyber sector who formed a kind of territorial army ready for future strife, becoming “a unit of IT people from banks, software companies who in their spare time for one day a week are work[ing] on cyber issues” (Kingsley 2012).

Riots in the streets of Tallinn were organized against the governmental relocation action by Russian-speaking people who were born and raised in Estonia. The subsequent shutdown of websites due to malware, though attributed by some to Russia, cannot actually be attributed to the physical territory from which it came. These two events—the removal of the war memorial and the subsequent riots—were, through discursive manipulation, molded into a geopolitical landscape wherein Estonia became a cyberfrontier: a new imaginary space that became thinkable as events happening in cyberspace were interpreted using conventional geographic or, as in this case, geopolitical reference points. Furthermore, the digital is easily manipulated as it is both highly powerful in today’s political discourse and at the same time not easily detectable within physical space. By virtue of these characteristics, the attacks in cyberspace and “the other” (Russia) could be blended into one discursive realm while simultaneously positioning Estonia as an imaginary new cyberfrontier.

Since then Estonia has launched a number of e-related projects, which have resonated throughout global media, such as “Programming Tigers,” an initiative launched in 2012 to teach children to code beginning in the first grade. Then, in 2014, media outlets again gave wide coverage to the story of Estonia’s move to the Cloud—a plan to store all state and governmental data in the Cloud, using the servers of friendly countries, in response to the ongoing threats and need to protect itself from further cyberattacks. Once again, Russia was the implicit referent for transforming Estonia into e-Estonia.

**E-ESTONIA’S MISSING LEGACY**

Geographically located in the west of the USSR, Soviet Estonia was—in administrative division and popular perception—put together with Lithuania and Latvia under the umbrella term of the Baltic countries (or Pribaltika), although culturally and ethnically Estonia is more related to Finland. Estonian language, along with Finnish and Karelian, belongs to the Finnic branch, whereas both Lithuanian and Latvian are Baltic languages. During my field trip, a number of officials, ethnic Estonians, talked about perceived
kinship between Estonia and Finland. And a significant immigration and emigration movement takes place between these two countries (see the census on Stat.ee).

Estonia, along with the Baltic countries, was on the frontier between the West and the Soviet Union. In the popular imagination of the Soviet people, Estonia’s lifestyle, beliefs, and traditions were closer to the perceived West rather than the Soviet Union, in general, and the Russian Soviet Federative Socialist Republic (RSFSR), in particular. Pribaltika was seen to be different from RSFSR as it was more “European”: the streets looked different, cafés were existent and open, people were said to be more polite. The perceived divide in popular imagination between Soviet Pribaltika and, say, RSFSR grew wider as the empty shelves of the late Soviet-era food shops (with the exception of Moscow and Leningrad) were countered with relative abundance on the shelves of Estonian stores.

Soviet Estonia, along with the rest of Pribaltika, was used as a testing ground for many high-technology enterprises and projects. Despite the fact that Estonia uses the idea of “zero legacy” both in IT and software education, there is, in fact, a Soviet Estonian background to contemporary developments; one may say that the very notion of “zero legacy” is a discursive tool used to erase Soviet history. Back in 1960, the Institute of Cybernetics of Tallinn Technical University was founded mostly due to the initiative of Nikolai Alumae, who needed computers for his research on the dynamics of thin shells (submarine hulls). Early computing in Estonia was very much defined by its Soviet military origins. The Institute of Cybernetics became a leading research center in computer science and computer applications in the Soviet Baltic region. Then, due to its proximity to the West, and the 1965 launch of the Helsinki–Tallinn ferry, Estonia became a place where Western and Eastern computer scientists held numerous meetings and conferences (Tyugu 2009, 31–33).

In 1958, when Nikita Khrushchev realized that the USSR needed more computer engineers and mathematicians with computing skills for work in the defense and space industries, several hundred young scientists were sent for reeducation to the Leningrad Technical University and Moscow Institute of Energy. Among these graduates were ten Estonians who, after their training, returned to their home country. One of these was Professor Ülo Kaasik, who introduced computer science education at the University of Tartu (Tyugu 2009, 29–30). In 1961, Kaasik together with Olaf Prinits (a mathematics professor also at the University of Tartu) started the first high school programming classes, in what is today the Hugo Treffner Gymnasium. Because the high schools did not have computers at the time, the pro-
Programming classes were held at the University of Tartu’s computing center. That same year, the ninth-grade student Anne Villems—now a lecturer at the Institute of Computer Science at the University of Tartu—became one of the first students to study programming at high school.

What is perhaps even more striking is that in 1965 a small school in Nõo, in southern Estonia, became the first school in the Soviet Union to have its own computing center. When the University of Tartu received a new Ural-4 computing system, they could no longer keep their old Ural-1, as it occupied too much space, and so they transferred it to the school in Nõo. As Villems recalls: “How they received the permission in Soviet time[s] to open a countryside secondary school with a computing center—I have no idea. Who organized it? Using which kind of lines?—I have no idea, but it was done, and it created the unique, only secondary school with a computing center in the Soviet Union!”

Following the 1985 Soviet educational reform that introduced informatics in secondary and vocational school, Soviet Estonia initiated the production of its own computers: the Juku, Tartu, and Entel. Although the number of computers produced and delivered to schools was much lower than planned, “the number of students who got their first computing experience with Juku was in the tens of thousands—much more, much earlier and more frequently than would have been possible otherwise” (Kanger 2013, 107).

CYBERSECURITY: BETWEEN REAL THREAT AND NATION BRANDING

Since the collapse of the Soviet Union, Estonia has been the subject of many scholarly studies on nation and state building and identity formation (Kuus 2002, 2003, 2012; Noreen and Sjöstedt 2004; Smith et al. 1998; Viktorova 2006–7). Figuring even more predominantly than the eastward expansion of the European Union (EU), Estonia’s state sovereignty and national identity was seen in terms of its security. Some studies focused on the transformation of “threat” and its role in international integration, emphasizing that in the political discourse of the early 1990s, Estonia was pushed toward the West by the threat it faced from the “imperial ambitions of Russia” to the east. However, in the late 1990s, Estonia’s international integration (its prospective EU and NATO membership) was viewed as being determined by its cultural values and the need to foster and protect Estonia’s unique culture (Kuus 2003). In addition, other possible scenarios were developed in the early 1990s whereby Estonia could function as a “neutral meeting point” “a gateway between the West and Russia.” In the end, however, the government’s active pursuit of NATO membership in the late 1990s put Estonia into a binary framework.
wherein “Estonia either integrates with the EU and NATO or falls back into the Russian sphere of influence” (Kuus 2003, 579).

A recursive feature in Estonia’s political discourse is that the country sits on the frontier between the West and Russia. Samuel P. Huntington’s 1999 *The Clash of Civilizations and the Remaking of World Order* was translated into Estonian, with a foreword by the now president of the Republic of Estonia, Toomas Hendrik Ilves. The main thesis of the book—being that the border between the Western and Orthodox worlds ran exactly along Estonia’s Narva River—was accepted in Estonia’s academic and policy circles (Kuus 2012). Hailed as “common-sense, self-evident and rigorously scientific” (Saar 1998), Huntington’s argument was regularly used in political discourse, which it fit like a glove. Frontier discourse and security concerns continue to be central to Estonia’s eternal anxiety and to the discourse of its political elite.

The Tiger Leap Foundation (Tiigrihüppe) was founded in 1997, borrowing its name from the Four Asian Tigers (Hong Kong, Singapore, South Korea, and Taiwan) that were then developing by leaps and bounds. The Tiger Leap Foundation was intended to help Estonia demonstrate the same kind of potential. Born in the minds of Toomas Hendrik Ilves and Jaak Aaviksoo, the minister of education at the time, the foundation was to aggressively invest in the development and expansion of computer and network infrastructures in Estonia, particularly in the education sector, bringing the internet into all classrooms and providing teacher training.

Explaining their decision to invest in the digital infrastructure, some Estonian politicians at the time said they were afraid that “Russian armies might take down the TV tower, the central radio station, or newspaper press.” The internet, however, would still work, making politicians realize that “this would be a great way of keeping in touch with the world in case of emergency” (Kingsley 2012). As Linnar Viik, the man behind Estonia’s internet success, put it: “It seemed then that, had someone attacked us or violated our human rights, then more than NATO tanks or McDonald’s investment, Estonian independence would be better guaranteed by transparency and presence in the international media” (EUbusiness 2004).

*Estonia—A Startup Country* was posted in June 2015. The video was produced by VPRO, a Dutch public broadcaster, as part of their *Backlight* series that featured current affairs and, according to their website, “balances on the edge of cinematography and journalism,” focusing “on our real [globalized] world in which economies, societies, and cultures seek a new equilibrium” (CosmoLearning 2016). The video features some of Estonia’s major political and business figures, including long sections of interviews with President
Toomas Hendrik Ilves. Entirely in English, the video is clearly aimed at audiences outside Estonia. It covers important milestones on Estonia’s way to becoming a “cyber secure country” and the “digital frontier,” and reminds viewers of the success of Skype and TransferWise and of the recently launched project of e-residency and Cloud technologies.

After mentioning that “a great neighbor [Russia] is never far behind” (32:11), the video discusses the events of the Bronze Night. The presenter is quite neutral, but the speaker, Edward Lucas, apparently choosing to present a “Western” point of view on the issue, is not. Lucas is a British journalist and the author of *The New Cold War: Putin’s Russia and the Threat to the West* (2008; revised 2014) and *Deception: The Untold Story of East-West Espionage Today* (2012). A strong supporter of Cold War ideology, he is also the first e-resident of Estonia—a status specially granted to him by President Ilves for his friendship and loyalty to the state. When talking about the Bronze Soldier Monument, Lucas unequivocally comments that:

Well, Estonia was occupied by the Soviet Union in 1940, and the Russian troops didn’t leave until 1994, and so for every Estonian this is the geopolitical fact number one, that they have a neighbor who doesn’t really recognize their independence, or doesn’t respect their sovereignty, and menacing them with propaganda and subversion, and all sorts of other things. (32:41–33:01)

The conversation then moves to the subsequent DoS attacks and immediately on to the Cyber Defence League: “a network of hackers and IT specialists who act as a voluntary cyber army” (36:24) and who are meant to protect the country from cyberattacks. (Other media call them the “ponytail army.”) The video shows young people (mostly men) coming to an event that resembles a convention, where two girls give them a T-shirt and ask them to step aside so that they can take a picture of them. These images were taken at the Cyber Olympiads organized at the Tallinn University of Technology, where they train and select volunteers “for the virtual front line,” “the new soldiers of the front who will defend the country in case of a future cyber attack” (36:15–38:39).

**DESIGNING E-ESTONIA**

In the globalized world, countries are increasingly competing to be different. The global business of nation branding took off right after the end of the Cold War, with the idea that while people used to believe that nationalism formed the spirit of capitalism, it now seems that capitalism forms the spirit
of nationalism. The assumption of nation branding is that nations must embrace the capitalist principles of competitiveness, growth, and profit in order to survive and thrive and provide the social consciousness that gives rise to conditions of belief and belonging (Aronczyk 2013, 128).

From Germany and Sweden to Botswana, Uganda, and Georgia, many countries have in fact used the services of consulting firms to build their “national brands” (Aronczyk 2013; Jansen 2008; Smith et al. 1998). Estonia joined this trend in 2001 when it hired Interbrand, a British consulting agency. Estonia’s main incentive for brand building was its aspiration to receive EU membership and join NATO—both goals were achieved in 2004. Interbrand needed to help Estonia convey to the world its legitimacy as a European nation and its openness to world capital. To do so, one of the firm’s objectives was “to help Estonia overcome the ‘accident of history’ that had placed the country in the East rather than the West in the minds of its interlocutors” (Aronczyk 2013, 140). “Putting Estonia on the map,” as Interbrand articulated it, was a delicate exercise in spatial manipulation. It meant conceptually annexing the country to Scandinavia, Denmark, and Finland, while severing it from any connection to its Russian past (142). Even more complicated was the attempt to simultaneously place Estonia on the European side of the new cyberfrontier while also presenting it as friendly (and cybersafe) to any kind of businessperson and capital from any part of the globe, including Russia.

Carefully staged, E-Estonia.com features a video about education as a platform to prepare “digital citizens.” The notion of “digital society” is still quite new for both Estonians and non-Estonians alike, and can gain meaning only by being linked to related (if equally hazy) concepts like “digital citizens.” But digital citizens need to be educated and cultivated and so the website shows images and a video of very small children playing and learning with a tablet PC. How playing on a tablet translates into becoming a digital citizen or what that has to do with programming is not the question here. What matters is the staging of a “digital educational” setting to convey the idea that digital citizens are being produced, which in turn supports the broader nation-branding project. Although branded as “digital,” e-Estonia still consists of people, and a country can be branded as “digital” only when its people in some way differ from those that are from “nondigital” countries. Images of small children give an idea of vitality and future-oriented thinking; add a computer to that scene and words like “tech-savvy, forward-thinking, advanced” might come to mind.
For former Soviet republics, to set themselves aside from the solidly forged Soviet identity and carve their own brand in the new geopolitical landscape was not so much a choice of cultural identity but a call urged by socioeconomic necessity (for another example of nation branding, see Kontareva, this volume). For Estonia, a small country of one million people, with the history of tensions and an uneasy relationship with Soviet authorities, situated on the then border between the EU and Russia, nation branding became the key mechanism of building the digital nation of e-Estonia.

MARKETING PROGRAMMING KIDS

Currently, Estonia's biggest challenge is skilled human resources. As the National ICT Policy Adviser Siim Sikkut states: “the country has more ideas and potential than people to carry them out.” Since 1990, the population of Estonia has been on a low downward trend, losing about 15 percent of its population (about 230,000 people). In 2013, both natural increase and net migration were negative (-1,740 and -2,614, respectively) (Statistics of Estonia 2014). Though other European countries also have a negative birthrate, Estonia lacks immigration to compensate for it.

However, according to the “Information and Communication Technology Sector’s Vision of Estonian Information Society in 2020”—produced in 2014 by the Estonian Association of Information Technology and Telecommunications—the ICT sector is expected to account for at least 15 percent of Estonian GDP by 2020, doubling its 2013 levels. The Ministry of Economic Affairs and Communications’ “Digital Agenda 2020 for Estonia” forecasts the same figures. The Estonian government seeks to achieve these goals through the policies set forth in the “Estonian Lifelong Learning Strategy 2020,” and by generally promoting careers and training in ICT while raising the quality of higher education in that field. Students, however, do not seem to be heeding the call. According to 2012 data provided by the Ministry of Education and Research, only about 20 percent of university students chose training in technology and the exact sciences, whereas 33 percent go into the social sciences, business, and law, and 13 percent into the humanities. However, between 2007 and 2012 the total number of students receiving ICT-related degrees did indeed increase by about 31 percent (from 2,992 to 3,852), but many students still drop out before graduation. Between 2008 and 2011 only about 12 percent of registered students graduated in those fields (Kori et al. 2014, 1477).
Moreover, many IT specialists go abroad, and several Estonian companies work for other countries, such as Norway or Iceland where operating costs are higher. This creates a tension between the government’s policies and the companies’ strategic planning. Estonian companies seek to develop a global presence, opening offices wherever they can, but this effectively reduces their investment at home—exactly the kind of investment the government needs to support its much-hyped development of the ICT sphere. Filipp Seljanko, senior program manager at Skype-Microsoft, explains:

When you build your politics on the IT sphere, you have to realize that it is not a self-sufficient sphere. Of course investing into your own production is more demanding, that’s why often they choose the easiest way. Take Nokia. When Microsoft decided to fire twelve thousand employees out of thirty-five thousand, it was a huge blow to the market of the country. . . . Of course politicians would always root for ICT because they are politicians, but they can’t predict what will be in the economy of the country in twenty or even ten years.

The government is employing “pyramid logic”: in order to have a certain percentage of people entering the field, it seeks to expand the base of the pyramid starting with primary school education. Discussing the Programming Tigers project, Siim Sikkut explains: “That’s why we would like to acquaint them with technology, to hook them early on, because then we have a pyramid working for us, then we have more potential people coming to study ICT, and graduate as specialists as well.”

At the same time, ICT skills and programming in schools also become a type of neoliberal political tool. Currently, Estonia is one of the few countries that has such a large number of schools for such a small population: many schools are located in the countryside and others have few students. So in this situation where half of the schools could conceivably be closed due to insufficient student enrollment, programming classes are seen as the way to increase a school’s competitiveness and attract students. Estonia being a small country, parents sometimes have the choice of where to enroll their children, for example, in Tallinn or in a smaller place. Ave Lauringson, ICT skills coordinator in the Ministry of Economic Affairs and Communications, provides an example of a small school in a small town called Konguta, where the teaching staff was eager to take part in Programming Tigers and attended all teacher training courses. The result was that before the school added coding to its curriculum, perhaps six or seven new students would join the first-grade class, but the year after it was added seventeen new students applied.
The dynamics of differing views on the initiative are captured in an interview with the IT industry representative Filipp Seljanko, senior program manager at Skype-Microsoft. His idea is that while looking at ICT in Estonia, it is important to understand how political the initiatives are:

Now we are told we need to invest into IT education, but this is just because a person who is in power . . . I’m talking about both the leader of the country, leader of the company, now believes in IT education. But this all can change. From outside it might seem that there is some program and strategy, but this all depends on individuals and it can all change very quickly. . . . To focus the whole economy on ICT just because this is something that they think they have been good at is not a good enough reason.3

Some teachers also admit that the ICT focus is a decision made by the people currently in power and that things can change when new people take the reins. That’s why, as one of them said, “though I find technology exciting, I do with the students only exciting things connected with technology but [I’m] definitely not going to do any dramatic overhaul of the lesson plans, because in [the] next couple of years the curriculum can change [again].”

Just as has often been the case in other countries, technology education can be used as a crutch for problems such as teacher shortage, poor test results, and lack of enthusiasm on the part of students. Teachers, realizing that there would be job cuts as the number of students declined, thought that colleagues with fewer hours, like art or music teachers, would better secure their jobs by taking on ICT, with the resultant perception that, “we can’t expect so much quality out of that.” Moreover, as one of the teachers admits, there is lobbying both from the IT industry and from the government to introduce more ICT into the curriculum at the expense of other subjects, and some teachers have been complaining that the curriculum has been dumbed down.

In 2012, Estonia entered the spotlight when English-speaking media started flashing headlines such as “Guess Who’s Winning the Brain Race with 100% of First Graders Learning to Code?” (O’Dell 2012), “Estonia Reprograms First Graders as Web Coders” (Finley 2012), and “Why Estonia Has Started Teaching Its First-Graders to Code” (Olson 2012). However, people in Estonia admit that the reputation is a bit unearned, as the Programming Tigers project was conceived as a pilot project and not as a mandatory part of the curriculum. Still, despite the fact that the pilot program was never available outside of a few schools, it provides very powerful rhetoric and imagery that continues to be used in media and government discourse.
While Programming Tigers is the most visible, it is only one of many IT-related initiatives in Estonian schools. Although various initiatives to teach programming to young children exist in other parts of the world, Estonia received most of the attention. This is due in part to the country’s nation-branding efforts and its global promotion of good practices, which had already placed Estonia on the global map of digital innovations through e-voting, Skype, and other ICT innovations. However, it is also because, as Ave Lauringson, the cofounder of Programming Tigers, admits, Estonia took a very clever lead by saying it would teach first-graders to code—not intending to awaken worldwide interest but simply to announce the start of its pilot project—a lead that would definitely grab attention. Right after that, the Programming Tigers started getting emails and phone calls from across the globe, and the BBC set off to Estonia to make a video about “first-graders coding.” A few days later, when they performed a Google Analytics analysis of their website, only Greenland, China, and some parts of Africa did not have a connection to the site; the rest of the map was green.

A TV crew in Gustaf Adolf Gymnasium in Tallinn, while making a video for a news piece on “first-graders coding,” kept saying: “Show us the kids! No, no, we want much smaller students, even if they don’t do anything behind the screens.” The hyped-up media idea of “first-graders coding” and programming being the second literacy is something that travels extremely well in the world of political and state discourse—likely also supported by the media as it feeds into sweeping expectations that ICT will bring paradigm-shifting changes in everything, including education.

The idea that children should and are able to learn how to program a computer is by no means a new one. In the United States starting in the late 1960s, thanks to Seymour Papert, what was originally part of an instrumental application to teach mathematics (and part of a state-sponsored project with the Naval Ministry to develop the new LOGO programming language) was pushed beyond its original parameters, making LOGO a tool that would improve the way children think and solve problems (Papert 1980). Papert talked about “epistemological perestroika” and “megachange” in education, arguing that technological revolution required a revision of the definition of the human being, and that the new programming language LOGO could help children learn and relate to real life. In the Soviet Union, Andrey Ershov (1981a), who was head of the programming group in Novosibirsk Akademgorodok and an active proponent of school computer education, summarized his vision in the lecture entitled “Programming, the Second
Literacy,” arguing that learning how to program is not only a necessity but a virtue that would help overcome the threat of modern society’s “escapism and passivity.” In his opinion, children should learn how to program in order to become active participants of the new era of technological revolution, computerization, and automation (Ershov 1981b). In France, Jean-Jacques Servan-Schreiber viewed a computer not as an instrument but as a way to multiply the capacity of each person to develop, to learn, and to create; therefore, he saw it as the main element in developing what he called la resource humaine, and established a special institution, CMII (Centre mondiale informatique), to realize these goals. Servan-Schreiber believed that computer literacy would help develop the mind of the French citizen, which would, in turn, help that person realize their potential and increase their skills, thereby increasing their opportunity to have a job in and contribute to tomorrow’s society.

What unites these initiatives that aspire to use technology (and today’s IT) in education and to suggest new education initiatives and reforms in curricula is that they employ ambitious grand-scale goals that are phrased in public discourse using rather abstract yet emotional, moving, and hence often manipulative language and images. They do this in service of a call to change the individual, who or which is often not seen as a human being but as a citizen, a unit with the potential to be employed, pay taxes, guarantee the security and well-being of the state—or, in an even more abstract sense, is seen as a “new man” that contributes to the new life of the country (Tatarchenko, this volume). Moreover, the idea of a metaphoric race between countries toward some digital future is continuously employed or implied through phrases such as being “in the vanguard of the digital economy” (Osborne 2013) or catching up to other countries that have outpaced them.

An important thing to note about the concept of “coding” or “programming,” as it is used in education and political or economic discourse, is that although most people would agree that coding relates to our everyday life—as all the technologies we use today are programmable—it remains something that is hidden and can be visualized only on the computer screen. Therefore, by virtue of being both fundamental to the functioning of technologies and hidden from public view, it becomes the easiest concept to manipulate and a very powerful tool in developing technocratic discourse. Moreover, unlike similar projects in the past, today’s IT technologies—in particular the internet—allow information to spread almost instantaneously, resulting in an information overload and hype that travels so fast it is almost impossible to identify the actual information, backed up by sources.
Estonia metamorphosing into e-Estonia is a story of a country reimagining itself while also advantageously turning unpredictable events into powerful chapters in a narrative of transformation. Since gaining independence in 1991, Estonia has prioritized the development of its digital infrastructure, simultaneously aiming to be more independent from and secure against Russia, while moving closer to its Scandinavian neighbors. The events of the Bronze Night revealed certain tensions within the country; tensions that did not fit the image that Estonia had hoped to promote. Still, the country managed to turn the cyberattacks to its own advantage, playing down the ethnic tensions within its population while focusing on its ability to successfully defend itself against such attacks. It then mobilized that (real or perceived) success to brand itself (despite its diminutive size) as a global resource: a cyber expert to the rest of the world.

The idea (or perhaps the “meme”) of “first-graders coding” became a crucial element in Estonia’s nation-branding strategy, as it not only supported the country’s claim to digital excellence but also helped its citizens relate to and adopt the new image of their country as e-Estonia, doing so even against substantial evidence that undermined this image or vision: high levels of emigration, young people’s low interest in university-level ICT training, and their alarming tendency to drop out of those programs. Images of smiling children playing with keyboards and the real or imaginary success of the Programming Tigers and Tiger Leap Foundation have been thus mobilized to articulate a future kind of citizenship and sociopolitical sphere while deflecting attention away from Estonia’s present difficulties.

NOTES

1. Unless otherwise noted, the interviews were conducted in English.
2. The interview was conducted in Russian and translated from Russian into English by the author.
3. The interview was conducted in Russian and translated from Russian into English by the author.

REFERENCES


