

A long time ago, the citizens of a far-away land were consumed by an unprecedented euphoria. They were in possession of a newly discovered resource, which promised to “enlighten the entire land,” turning “totally impoverished villages [into] the richest and most intelligent villages in the country.” Bedazzled by these possibilities, entrepreneurs, politicians, and both local and foreign investors, all cooperated in the development of this revolutionary technology, promising that they would soon surpass their primary competitors in the valleys of California. The region, which had until then been considered slightly backwards and underdeveloped, was going to become the center of a new high-tech world.

This story refers, naturally, to Galicia, a province of the former Austrian-Hungarian empire, located on the border of present-day Poland and the Ukraine. By the turn of the twentieth century, Galicia had become the world’s third largest oil producer. Oil—the magical resource of that period—created near-boundless optimism, as Galician businessmen and politicians called nearly all oil-related infrastructure projects tools of “enlightenment” and “progress.” A century later, in the age of fossil-fueled climate change, this attitude appears naïve and almost unbelievable. In the age of the Anthropocene it has become clear that oil can just as easily fuel the repressive Saudi Arabian regime, as it can the Norwegian welfare state; oil produces political and environmental

disaster as easily as it produces wealth and prosperity. The Galicians, too, soon discovered that oil wells polluted nearby rivers, poisoning fields and fish farms hundreds of kilometers downstream. Poor regulation and intense competition between small producers led to overproduction, and by the 1920s oil production in Galicia had effectively ceased. There was simply no more oil to extract. Visions of unwavering progress, which were tied to dreams of Galician glory, as historian Alison Frank has argued, blinded Galician developers and statesmen to the social and environmental consequences of unbridled oil extraction, leading to the construction of unsustainable infrastructure. Oil did not bring democracy or wealth to Galicia, but the political language and choices that shaped the oil industry did have other, tragic consequences (165).

The Internet is not a natural resource, but it is an infrastructure, which in Estonia—perhaps more than anywhere else in the world—has become the object of similarly effusive enthusiasm as Galician oil did a century ago. Over the past twenty years, the Estonian state has funded a number of initiatives designed to simplify access to the Internet, stimulate private investment in the digital world, and network and digitize as many public services as possible. Beginning with the “Tiger’s Leap” program in 1996, which expanded digital infrastructure, provided schools and libraries with computers, and funded computer literacy education, the “e-state” has been a central priority for public investment. This has meant both increased access—by funding public WiFi hotspots in metropolitan centers, for example—but also the creation of wired public services. In 2000, the meetings of the cabinet were made wholly digital. One year later, the government launched an online public consultation platform, called “Today I decide,” which was meant to enable citizens to propose new legislation and comment on existing initiatives. Estonia was a pioneer of online voting, launching it at local

elections in 2005 and at national elections in 2007. Digital infrastructure such as X-Road, brings together a variety of state registries and documents, allowing for decentralized data exchange between various agencies. Patients collect their medications using digital prescriptions and parents can check on their children's grades using a public information system called "e-school." Taxes are reported and filed online. From 2015, it has become possible to apply for "e-residency" in Estonia, allowing foreign nationals to take advantage of Estonia's e-infrastructure, from digital identification to banking services.

Crucially, like Galician oil, this giant public infrastructure project has become inextricable from the idea of the Estonian nation. The e-state has become—or rather, has been very consciously designed—as a symbol of the modernity, innovativeness, transparency, and democratic good will of the Estonian nation. Through speeches, media coverage, public debates, but also through the very design of the applications that make up the Estonian e-state, Internet infrastructure has been constructed as an object of patriotic fervor. The president speaks of the "Estonian e-lifestyle," cultural critics talk about how e-residency can reshape Estonian cultural heritage, and journalists invoke Estonians as "people known for their infotechnological accomplishments (166)." This rhetoric has been internationally successful, as evidenced by headlines such as "The Way to Estonia: How to Reach Digital Nirvana?" which appeared in *Foreign Affairs*, as well as in other publications (167). When you talk about the e-state, you talk about the future of Estonia.

Yet the kind of values that are being enacted through digital public infrastructure are not neutral. They reflect political choices about the nature of democracy, the relationship of the public to the private sector, the presumed qualities of a good citizen, and assumptions about what issues are subject to legitimate political debate, and what issues

are determined by the inevitable march of digital progress. While the first e-state initiatives in Estonia were designed to democratize access to the Internet, and to improve democratic deliberation, we should feel extremely troubled by the politics that are embodied in the e-state today.

These values are justified, on the one hand, by an appeal to patriotism: if you don't support digital development then you are un-Estonian, and conversely, if you let the logic of digital innovation play out, then every Estonian will benefit. On the other hand, the specific form of the e-state is justified by a kind of technological determinism. It is in the nature of the Internet, the argument goes, to lead towards increasing efficiency and deregulation. "Information wants to be free," the famous dictum of Stewart Brand, is often evoked to describe the Internet as having a particular character that no amount of state regulation can sway. Estonian legislators and regulators do their best to step out of the way of Silicon Valley, saying that "the sharing economy is here to stay," or "legislators fear digital innovation," thus placing the shape of digital infrastructure outside of public debate, and solely within the competence of tech companies (168). Such claims assume that the Internet has an unwavering internal logic, and that we are simply supposed to sideline traditional governments and observe as digital innovation delivers increasing freedom—whether by removing licensing restrictions for companies like Uber, or by doing away with geoblocking when it comes to distributing films and television online.

Both of these assumptions are wrong. First, the shape of the digital world to come is in no way determined by the "nature of the Internet." This deterministic argument is old. From the 1980s onwards, as Paul N. Edwards has argued, web activists have claimed that the very architecture of the Internet—the use of technical standards that promoted decentralization and flexibility, such as packet switching or the TCP/IP communication protocol developed within

ARPANET, the Internet's direct predecessor—led to its victory over competing networking systems. Activists claim that the Internet's libertarian architecture provided greater freedom of communication, leading to greater innovation, less government constraints, and ultimately, market dominance. Yet many features that are now considered a foundational part of the “unregulated” Internet, such as Usenet message boards or e-mail, were developed and, for a long time, used primarily outside the TCP/IP systems, within networks that proponents of the Internet considered bureaucratic and overly rigid. It was contingency, not inevitability that TCP/IP happened to be the communication protocol used to link networks such as BITNET (which in the early 1990s carried most e-mail) and UUCP (which was used for most Usenet communication) (169). Let us also remember that ARPANET did not develop anarchically within an unregulated market, but at universities funded by the US Department of Defense, in the midst of the Cold War. In other words, the foundation of the Internet was laid within a command economy, responding to very specific military and research demands. The history of the Internet itself shows that there is no logic inherent in the architecture that inevitably leads towards freer communication and greater innovation. The Internet, like other kinds of infrastructure, responds to regulation, user demand, historical context, and many other factors.

The second claim of digital nationmakers—that developing the e-state will result in greater freedom and prosperity for all—is also incorrect. The kind of digital infrastructure envisioned by champions of the Estonian e-state does not benefit everyone equally, but is in fact highly political: it redistributes power in society, embodies specific values, and creates new norms of good behavior. If the first applications of the e-state in Estonia (the “Today I Decide” portal, and various forms of e-voting) attempted to increase public participation in governance, then in recent years, emphasis has shifted

towards applications that treat citizens as customers. These ideas and apps tend to treat citizens as consumers, whose relationship to the state is individual, rather than collective. The development process of new public apps and the apps themselves allow for little user input in decisions over the kinds of services that the e-state should provide. They provide few means for collective deliberation, and systematically empower cosmopolitan capital-owners and high-skilled specialists over people without highly competitive skills, who could nevertheless benefit immensely from a developed digital infrastructure.

Some visionaries suggest literally replacing debate with algorithmic decision-making, assuming that uncertainty and ambiguity in the political process are inherently problematic, rather than the very basis of moral decision-making. Sten Tamkivi, a former executive of Skype, once suggested adopting laws written not in English or Estonian, but as “computer code that outputs the correct answer of the meaning of the law in question (170).” His example—legislating code that would calculate VAT, where you could then simply substitute the new tax rate if parliament decided to change it—sounds innovative enough, but once extrapolated to more complex issues, this proposal begins to feel quite dystopian. How would one write an algorithm to decide whether someone's public statements constitute hate speech? Or whether the emotional state of a criminal during the moment of the crime could constitute mitigating circumstances? This is precisely the reason why laws contain deliberate ambiguities, referring to the standards of “reasonable people” or “common decency,” the definitions of which legal scholars have debated for centuries. The values of people and societies change over time, and so the interpretation of laws requires both specificity and flexibility to allow room for debate, during which the content of those laws is rearticulated. Here, a digital solution again aims for efficiency, and misses the element of social

deliberation built into the legal system. It may well be that digital platforms could be designed that allow for this sort of deliberation, but these can only appear once the ethos of efficiency-at-all-costs has been dropped, and more social groups participate in designing digital systems.

Finally, many e-state platforms are political in a very basic way, by empowering one section of the population over others. Take, for instance, the Estonian e-residency project. This is an initiative, still in development, which allows foreign nationals to become virtual residents in Estonia, giving them access to the country's digital infrastructure. E-residents acquire Estonian e-ID cards, which allow them to identify themselves online, use e-banking systems, establish a company in Estonia, administer it at a distance, and, if they owe taxes to Estonia, report those online as well. The developers envision e-residency as a sort of public "app store" where developers can come up with new uses for the digital infrastructure Estonia provides to the world, where the only limits are "the imagination, and communication between visionaries and coders," as one project developer put it (171). Again, digital gurus emphasize, the key is for legislators and bureaucrats to step out of the way and let innovation run its course.

E-residency artfully combines highly patriotic language with an appearance of depoliticized innovation, while actually advancing a very specific kind of politics. The project is marketed as the next step in Estonian nationhood: Taavi Kotka, the government official in charge of the project, consistently describes it as a form of making Estonia larger, harking back to nineteenth century national romanticism and to calls of being "large in spirit, if we cannot be large in numbers." Invoking a world where Haruki Murakami, Elon Musk, and Quentin Tarantino could be Estonian e-residents (172), Kotka dreams of a world where they would "write greetings on the Facebook wall of the Estonian president on

Independence day" and "feel [...] as if Estonia was a little bit [their] country as well (173). By encouraging start-ups and other innovators to move to Estonia, e-residency would increase national wealth, prop up the social benefits system, and improve life for everyone. At the same time, the project, despite being conceived and managed by the Ministry of Communications and Economic Affairs, is presented as apolitical. One developer, describing the obstacles facing digital service development, spent considerable time describing the state of the Estonian IT-market, ways of attracting talented coders and facilitating communications between visionaries and software developers, the importance of sharing public data, and other engineering-related issues. Digital infrastructure, in his presentation, was constrained only by issues of knowledge and engineering, never by politics (174).

Yet consider this: it would be easy to imagine an app in the e-residency app store that would allow people in war-torn countries to apply for asylum online. The only physical requirement for acquiring e-residency in Estonia is an e-ID-card, which will soon be able to be acquired via third-party providers almost anywhere in the world. What if, instead of having to undertake an extremely dangerous voyage across the Mediterranean, refugees could simply fill out the necessary background checks using their smartphones, conduct an evaluation interview using Skype, and then simply take the next flight out to Estonia? This would require some changes in legislation, but nothing qualitatively different from removing the requirement that board members of a company be physically present at general meetings, a legislative change introduced to facilitate e-residency, currently being debated in parliament. The need to be physically present in the country where one is applying for asylum is precisely the sort of obstacle that the digital age is supposed to remove. The only problem is that in the current political climate, it is also completely unfeasible. The kind of e-residents empowered

by such a program are not the kind of e-residents Estonia wants—in a time when the relocation of even five hundred refugees from other EU member states is facing stiff opposition from the public, the chances of this type of project even being considered are next to nothing. The project, it turns out, is not so divorced from politics after all.

Indeed, the e-residency project is clearly designed for a very specific type of person: the cosmopolitan, highly educated specialist or investor looking to start a company in Estonia. Arguments that highlight e-residents' ability to vote virtually at shareholders' meetings, to take advantage of Estonia's streamlined regulatory system, or register companies in minutes mean little for people working for wages, or for people who have trouble asserting the rights they are entitled to under regular, analogue residency. One might reasonably ask, whether using public power to further increase the mobility of capital at a time when rising xenophobia, the rise of xenophobic politics, and legal changes designed to "protect the borders" of countries from refugees is drastically limiting the mobility of people. One might also ask, whether devoting scarce public resources to a project such as e-residency is the most equitable way of constructing digital infrastructure. Would this energy not be better spent developing online language tests for the roughly six percent of the Estonian population who *are already* residents in Estonia, but do not have citizenship largely because they fail the language test? Shouldn't the priority of the state in digital infrastructure development be guaranteeing the fundamental rights of existing residents, rather than creating new rights for a new community of digital residents? These questions are inherently political—they are collective questions about how a society should be defined and governed—but the patriotic, yet apolitical framing of the e-residency project obscures them from the public, and leaves them to the decisions of engineers and state officials. Like roads, gas lines, oil wells,

and other physical infrastructure, digital infrastructure is a symbolic and political project as much as it is a technological one. The emergence of petroleum infrastructure in Galicia a century ago empowered fossil fuel experts to make decisions not only over the construction of wells, but also over legislating land and mineral rights, the degree to which foreign entrepreneurs could access the Galician market, and other issues which had widespread impact on Austrian-Hungarian politics. Oil shaped the development of Polish and Ukrainian nationalism, as it was mostly Ukrainian workers who laid claim to the prosperity generated by oil located on land mostly owned by Poles. Petroleum empowered some peasants who went to work at wells and later returned to their lands with new capital; however it impoverished others, who suffered the consequences of environmental degradation for which the government, committed to unregulated drilling, took no responsibility. The decisions leading to such outcomes were not inevitable, inherent in the logic of oil production—developers and statesmen in Texas, California, or Baku, for example, made different decisions.

Similarly, tech experts today argue for a deregulated, commercially oriented, consumerist public digital infrastructure, as if it was an inevitability and the logical consequence of sober engineering rationality. Politics, these experts argue, are an obstacle to innovation, while code can provide a solution to many economic and social problems. Moreover, in the case of Estonia, code and digital infrastructure have literally been turned into national symbols, embodying the values of the small but progressive tech-savvy country. While experts and officials adopt what the historian Ken Alder has called "a technocratic pose," placing themselves above petty politics and into the realm of national values and neutral expertise, the political nature of digital infrastructure is becoming clearer by the day (175). Projects which emphasize political community building and public deliberation are

receding, in favor of applications which focus on the benefits for commerce, and present the public with take-it-or-leave-it prefabricated environments, rather than enabling the public to decide what kind of digital platforms it needs. This is not a politics for the twenty-first century, it is a reduction of political deliberation to consumer choice and a constriction of democratic space. True democracy in the digital age means abandoning the rhetoric of “inevitable progress” and looking at the construction of digital infrastructure as a political act; one where all citizens, not just tech entrepreneurs and engineers, can and should participate.

Aro Velmet

In his analysis of the social production of nature, Neil Smith draws our attention to the shift from the *formal* to the *real* subsumption of nature (176). For Marx, *formal* subsumption of labor described the process through which capital extracted surplus value from the process of production, but left the process itself largely intact. Labor was *really* subsumed when the relations of production, and the role of labor in them, were themselves reorganized in light of capital accumulation (177). These two distinctions are both historical and conceptual moments of subsumption. Real subsumption follows formal subsumption; this continuity, however, is not a linear intensification of existing relationships, but is rather constituted by a qualitative rupture.

Applying this conceptual framework to nature, we might conceive nature-as-resource in terms of formal subsumption, and nature-as-environment in terms of real subsumption. Or, put differently, the industrial processes of extraction and mining contrast with post-industrial processes of environmental care, including the cultivation of humans’ inner environments (creativity, flexibility, entrepreneurialism, etc.). The fact of conservation and care—and the post-industrial moment in general—being conceived predominantly as alternatives to the extractive processes of industrial capitalism dovetails with questions being ignored about the ways in which the cultivation of (human) nature can come to be socially useful and economically valorized. The challenge then, is to apprehend how ostensible politico-economic

159. HELCOM, Baltic Marine Environment protection Commission, "Baltic Sea Environment Proceedings No 103 A. Assessment of Coastal Fish in the Baltic Sea," (HELCOM, 2006).

160. Nancy Couling, "The Role of Ocean Space in Contemporary Urbanization," (EPFL, 2015), 53.

161. HELCOM, "Red List of Baltic Sea species in danger of becoming extinct," Baltic Sea Environmental Proceedings, no. 140 (2013), <http://helcom.fi/Lists/Publications/BSE140.pdf>. Fishing has also become highly industrialized, resulting in overfishing and the placement of thirty-one species on the red list of threatened fish and lamprey.

162. Stankiewicz, Backer and Vlasov, "Maritime Activities in the Baltic Sea—An Integrated Thematic Assessment on Maritime Activities and Response to Pollution at Sea in the Baltic Sea Region."

163. Eutrophication is an excessive amount of nutrients in a body of water, mostly due to run-off from the land where fertilizers have been used.

164. WWF, "Future Trends in the Baltic Sea," WWF Baltic Ecoregion Programme (WWF, 2010), <http://wwf.panda.org/>.

XXIII. NETWORKING THE NATION: THE POLITICS OF DIGITAL INFRASTRUCTURE IN ESTONIA AND THE WORLD

165. Alison Fleig Frank, *Oil Empire: Visions of Progress in Austrian Galicia* (Cambridge, Harvard University Press, 2005); Alison Fleig Frank, "Environmental, Economic, and Moral Dimensions of Sustainability in the Petroleum Industry in Austrian Galicia," *Modern Intellectual History* 8, no. 1 (2011): 171-191.

166. "Ilves: Eesti konkurentsieelis maailmas on meie e-riik," *Postimees*, February 2, 2012, <http://postimees.ee>; Ülo Pikkov, "E-residentsus ja Eesti virtuaalne kultuuriruum," *Sirp*, January 16, 2015; Kaisa Masso, "Meil on elu keset metsa," *Müürileht*, January 21, 2016, <http://muurileht.ee/>.

167. Bhaskar Chakravorti, Christopher Tunnard, and Ravi Shankar C, "The Way to Estonia," *Foreign Affairs*, March 3, 2015, <http://foreignaffairs.com>.

168. "Andrus Ansip: Jagamismajandus on tulnud et jääda," *ERR Uudised*, February 25, 2016, <http://err.ee>; Kaja Kallas, "Can we make room for digital innovation," *Kaja Kallase Blogi*, <http://kajakallas.ee/in-english/can-we-make-room-for-digital-innovation/>.

169. Paul N. Edwards, "Some Say the Internet Should Never Have Happened," in *Media, Technology, and Society: Theories of Media Evolution*, ed. W.R. Neuman (Ann Arbor, University of Michigan Press, 2010), 141-160.

170. Sten Tamkivi, "101 ideed," *Müürileht*, March, 2015, <http://muurileht.ee/>.

171. Kaspar Korjus, presentation at the Civil Society e-Day, Tallinn, Estonia, December 7, 2015.

172.



President Barack Obama's electronic identity card of the Republic of Estonia. Sander Retel, 2014. During his day in Tallinn, the US President Barak Obama repeatedly asked about Estonia's e-state. Not surprisingly, just before the end of his official visit, local counterpart Toomas Hendrik Ilves slipped him an Estonian identity card complete with his name and photograph." Photo: The ID-Card that Ilves gave Obama," *Postimees*, September 5, 2014. September 5, 2014.

173. Taavi Kotka, "Kui seda ei tee Eesti, siis teeb seda keegi teine," *Memokraat*, October 13, 2014, <http://memokraat.ee>.

174. Janek Rozov, MKM presentation at the Civil Society e-Day, Tallinn, Estonia, December 7, 2015.

175. Ken Alder, *Engineering the Revolution: Arms and Enlightenment in France, 1763-1815* (Princeton: Princeton University Press, 2014).

XXIV. FROM MINING TO DATA MINING

176. Neil Smith, "Nature as Accumulation Strategy," *Socialist Register*, no. 43 (2009): 16-36.

181. Evgeny Morozov, *To Save Everything, Click Here: The Folly of Technological Solutionism* (New York: Public Affairs, 2013).

182. Juhan Aare, during the seminar *The Phosphorite Debate*, February 21 2016.

183. I would like to thank Ingrid Ruudi for this observation. See also Ingrid Ruudi, "Visions for a New Society," in *Unbuilt. Visions for a New Society 1986-1994*, ed. Ingrid Ruudi (Tallinn: Estonian Museum of Architecture, 2015), 20-32.

184. Translated in Tiiu Jaago, "Migration: Stereotypes and Experience From a Folkloristic Viewpoint," in *Migration and Narration*, eds. Mara Zirnite and Ieva Garda-Rozenberga (Riga: National Oral History Archive, 2010), 77.

185. Mati Unt, *The Autumn Ball. Scenes of City Life* (Tallinn: Periodika, 1985), 85-91.

186. Several of the architects of the Tallinn Ten group, who protested in the 1980s against the strictures of industrialized architecture, embarked in the 1990s on the dual career of spiritual gurus, and designers of corporate skyscrapers. See: Andres Kurg, "Architects of the Tallinn School and the Critique of Soviet Modernism in Estonia," *The Journal of Architecture* 14, no. 1 (2009): 85-108; Ingrid Ruudi, "Naissaar: Extraterritorial Zone of The Transitional Era," *Kunstiteaduslikke uurimusi/Studies in Art and Architecture* 26, no. 1 (forthcoming, 2017).

187. For example Leonhard Lapin in 2012. See: Anon, "Leonhard Lapin: Mustamäe tuleks ohku lasta," *Delfi* (October 22, 2012), <http://www.delfi.ee/news/paevauudised/estoni/leonhard-lapin-mustamae-tuleks-ohku-lasta?id=65146196>.

188. For example the LIFT11 series of spatial interventions in 2011, urban walks organized by the group Linnalabor since the same year, or the collective walk in Lasnamäe and Maardu, organised in 2015 as a collaboration between the Italian collective Stalker and architecture faculties at the Estonian Academy of Arts in Tallinn, Aalto University in Finland, KTH in Stockholm, and the Oxford School of Architecture.

189. Anna-Liisa Unt, Penny Travlou and Simon Bell, "Blank Space: Exploring the Sublime Qualities of Urban Wilderness at the Former Fishing Harbour in Tallinn, Estonia," *Landscape Research* 39, no. 3 (2013): 278.

177. Karl Marx, *Capital, Volume I* (London: Penguin Books, 1990), 1019-1038.

178. Anto Raukas, during *The Phosphorite Debate*, The Estonian Centre for Architecture, Tallinn, February 20, 2016.

179. Mary Douglas, *Purity and Danger: An Analysis of Concepts of Pollution and Taboo* (London: Routledge, 1966).

180. Raukas, during *The Phosphorite Debate*.