

Europe's Infrastructure Transition is divided in three sections. The first, entitled, "Connection Europe," consists of two chapters, the first of which traces the construction of railways and telegraph networks as they were wended through national territories and across borders. These technologies triumphed over older means of transportation and communication because of their functionality, predictability, and reliability as well as their tendencies to condense time and space. Almost paradoxically, however, this progression toward regularity and spatio-temporal compression was less a smooth and teleological march toward trans-border networks than it was a rocky process characterized by constant tension between new systems, aimed at transcending boundaries and reflexively established borders meant to delimit.

The next chapter shows how energy infrastructure (including raw and refined material trade networks and passageways, and electricity grids) likewise promoted the integration of European trade networks with particular alacrity. In doing so, these systems fostered an interdependency that simultaneously forged deeper connection—as raw materials circulated with greater regularity and reached more distance locales—and exposed these same expanded networks of communication and transportation to new disruptions whose effects would reverberate far beyond an individual sector or trade route. Although coal, the feedstock of prewar industrialization, and petroleum, the fuel of postwar modernity, occupy central parts of the story, so also do natural gas and shale, as well as nuclear and hydroelectric plants. After all, the European energy landscape is mutable and diverse as its integration remains an unfinished project.

The second section of the volume, "Economy and War," departs from the earlier focus on more customary topics of the industrial transportation networks, and investigates the less tangible infrastructure that shaped everyday food, finance, and military logistical systems. Although a chapter on the reflexive impacts of wartime and peacetime innovation offers insights into the interplay between intended and unintended uses of infrastructure, this reader found the first two chapters of this section the most compelling. The first, "Networked Food Economy," opens in Rotterdam, the largest port in Europe. From there, the authors focus not on the masses of petroleum and finished goods that pass through its docks, but on the trans-oceanic trade in perishables. Even with the expansion of trade-networks in the decades leading up to the First World War, dependency on foreign supplies of food presented a severe vulnerability during times of political and economic turbulence. It was not until the postwar period that European governments concluded that they needed to diversify European diets first on a national production model and, only later in the 1980s, on the basis of transnational food supply chains. This latter development came at the notable expense of the Third World countries into whose markets surplus products were dumped, and whose own agricultural economies were most negatively affected. Integration in one bloc, in other words, has consequences even for those excluded.

The following chapter applies this same paradox to the entangled worlds of communication infrastructure and modern financial systems. By the beginning of the 20th century, one can already see the center of capital markets drifting from Europe to New York as financial technologies became more complex. This shifting balance and the reciprocal globalization of the western economic system, however, is an unsteady and sometimes destructive process. This point is most evident in the stock market crashes of 1929 and 2007, which initiated periods of economic recession that reverberated far beyond the point of origin in the US. Although technology plays a role in these types of economic crises, the authors are keen to point out that even financial technologies and networks are social creations. Their failures, therefore, must be understood not only in terms of trading and computer systems but also in terms of human actions, interactions, and reactions. Above all else, infrastructure is a means of mediating human relations to the world and each other.

From the earliest days of industrialization (and indeed well before), humanity has sought to overcome ecologically-imposed limitations by manipulating that same natural environment. Infrastructure provided a key way that humans could harness and repurpose nature, albeit sometimes by substituting human-made crises for those of the natural world. The final section of this book, "Networking Nature," fittingly brings the discussion of infrastructure back to these natural roots. As the authors contend, infrastructure was a critical means of integrating Europe through redefining the spatial relationship between human societies and their "natural" surroundings. Defining distances and boundaries were part and parcel to this process. This is clear in the numerous geodetic initiatives to define the administrative boundaries of regions, countries, continents, and empires. It is likewise evident in the late 20th century deployment of satellite imagery that reinterpreted European topography as something continental rather than local—or in terms of Cold War geopolitics, western rather than eastern. The malleability of these new conceptions of space come to the fore in a discussion of the European Green Belt Program and other environmental corridor initiatives to integrate European ecology in a way

that complements modern modes of living. These corridors of "green infrastructure," however, are as much human-built spaces as the man-made "urban forests and wetlands" that are now habitat to many species of plants and animals. Even so, and despite notable successes in creating sustainable corridors, the integrative potential of these ecological projects has frequently been restricted by national claims that have served to fracture rather than connect these environmental networks.

Just as the "natural," terrestrial world is part of—rather than external to—human-built infrastructure, so then are rivers, seas, and oceans. These are the domain of the seventh chapter. Water has traditionally resisted the types of fixed geopolitical borders applied to land. Therefore, water-based infrastructure tends to transcend these types of boundaries. Underwater telegraphic and telephonic cables link countries and continents. Shipping routes and lanes have regularized travel over international waters. Hydroelectric dams have been constructed since the late 19th century to harness water for national and international electrification. Managing major waterways almost always affects neighboring countries and peoples; unlike roads, railways, and other infrastructural networks whose flows can be controlled, waterways create an interdependence that stems borders, albeit not without contestation, from those seeking to construct and maintain them.

Similar claims can be made about the ecological infrastructure of the sky, the subject of the eighth chapter. Indeed, the opening of the skies transformed the human world in ways that system-builders of the nineteenth century could only have dreamed. Air transportation, as well as radio and satellite communication networks, have both reinforced national boundaries and enabled people and messages to pass through them at previously unfathomable speeds. Satellite images have shown the world a singular entity in whose fate all states and societies are invested. At the same time, smokestacks, pollutants, acid rain, and changing weather patterns have made the globality of industrial life and the European project disconcertingly immediate.

In *Europe's Infrastructure Transition*, Högselius, Kaijser, and van der Vleuten have done an impressive job tracing the symbiotic relations between transportation and communication systems, between system-building and border-building, and between technocracy and nature. The writing is highly readable and the arguments compelling. Its examples are well-chosen and indeed widen the scope of the usual core-Europe focus to include brief but telling examinations of the Finnish military networks in the Battle of Suomussalmi (194-196), the role of Estonian shale in the integrated Soviet electrical grid (78-9) and Estonian and Dutch contributions to European ecological zoning initiatives (258-267). This book will therefore likely appeal to academic and non-academic readers alike, and is quite suitable for collegiate classroom use.

That being said, I have a few minor critiques. In a sense, the book's subject matter is broad, if also logically coherent. Although this may be a strength of the volume as a whole, many of the organizations, agencies, individuals, and initiatives included appear only once or twice and then fall from the story, at times leaving the reader confused by details that are historically interesting but narratively distracting. In addition, I found myself wondering how a deeper examination of the petroleum networks that conveyed oil to and within Europe could have enriched the study. Given the national, international, and transnational dynamics of the messy system of oil flows, this would doubtlessly lead to some interesting insights into additional potential turning points in the infrastructural integration process. As in the case of the dot-com crash of 2001 as well as other financial-speculation panics discussed in the fourth chapter, the oil crises of 1973/4 and 1979 (only intermittently addressed in Chapter 2) were more the result of panicked reactions to the prospect of contractions in supply than of actual shortage. Examining these in greater detail could have opened the door to some interesting reflections on the relationship between financialization, petroleum flows, and the securities and vulnerabilities of coordinated European energy policies in a globalized world.

Those criticisms aside, this is a thoughtful, engaging, and important book. It is all the more so given the contemporary threats posed by global warming and transnational terrorism, as well as the looming Euro and refugee crises that are alternately straining the continent's transportation and communicative infrastructure, while calling into question the open borders once considered a hallmark of the European project. As the authors emphasize, infrastructural transformation and accommodation is no easy or straightforward process. Instead, it is characterized as much by border-building as system-building, by vulnerability as security. And it is governed not by technology and infrastructure but, rather, by the human societies and institutions that create and manipulate them.

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