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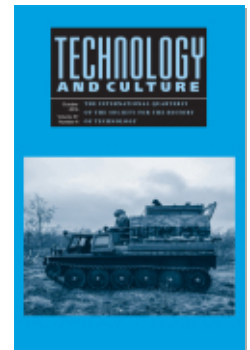
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How to Write an Urban History of STM on the “Periphery”

OLIVER HOCHADEL and AGUSTÍ NIETO-GALAN

ABSTRACT: Within the STEP research agenda there has never been an explicit focus on the city as a central place for knowledge production. Scholars of the urban history of science tend to concentrate on the metropolis and have not looked in any systematic way at the scientific culture in “peripheral” urban contexts. To fill this gap, this essay proposes to focus on: (1) the role of science, technology and medicine in everyday life and the experiences of the citizens; (2) the plurality of the often conflicting notions of urban modernity; (3) the complex networks of interurban connections between the “peripheries.”

This essay intends to point out a blind spot situated at the intersection of two burgeoning historiographies: the urban history of science, technology, and medicine (STM) and STEP (Science and Technology on the European Periphery).¹ At the crossroads of these two lines of research lies the urban history of STM on the periphery. How might we connect these two approaches? And what, if anything, might we gain from looking at the STM culture of cities considered as “peripheral”? Our focus will be on the

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1. Following John V. Pickstone, *Ways of Knowing*, we use the term *science* (*scientific*) understood in its broadest sense, including technology and medicine or the term STM.

last decades of the nineteenth and the first decades of the twentieth centuries, namely, Europe's "age of great cities."

Cities on the Periphery

For historians of science such as ourselves, the topic of STM and the city has been an important issue for many years, particularly since the turn of the millennium. One major thesis states that the urban space is always a creator, incubator, and facilitator of knowledge production and circulation but also an entity substantially transformed by these practices.² In the history of technology the urban space has received a lot of scholarly attention for at least as long. Joel A. Tarr and others developed the key concept of the "networked city."³ In this literature modern cities are described as complex constructs of technical infrastructures such as communication, energy supply, industries, and transportation systems. More recently, Mikael Hård and Thomas Misa pointed to the tension between homogenization (one model for all) and cultural differentiation between cities, which is of particular relevance for the STEP agenda.⁴

Notwithstanding a number of exceptions, there is a certain tendency in the history of STM to focus on the metropolis. When Miriam Levin speaks of "The city as a museum of technology," she refers to Paris. The five case studies in the edited volume *Urban Modernity* (2010) are constructed comparatively: how did urban infrastructures such as museums but also sewage systems evolve in Paris, London, Berlin, Chicago, and Tokyo?⁵

Smaller cities, "second" cities, "emerging cities," or cities on the periphery—whatever we would like to call them—certainly have received less attention.⁶ This holds true also with respect to the second historiographical axis of this article: STEP. In the past two decades there has never been an explicit focus on the city as a key site for the implementation, uses, and appropriation of technology in the STEP agenda. In order to do so, one would have to clarify or rather problematize the meaning of "second cities" and similar labels. One major insight of STEP has been to question the notion of periphery, to de-essentialize and historicize it. Terms such as "peripheral," "second," or "provincial" are often actors' categories and thus rhetorical devices. They change significantly over time and are therefore in

2. Sven Dierig, Jens Lachmund, and Andrew Mendelsohn, "Introduction."

3. Gabriel Dupuy and Joel A. Tarr, *Technology and the Rise of the Networked City*. Tarr is also the co-editor of three special issues on the history of technology in urban space in the *Journal of Urban History*: 5, no. 3 (1979); 14, no. 1 (1987); and 30, no. 5 (2004). In *Technology and Culture*, articles taking such an urban focus are rather rare; for a valuable exception see Noyan Dinçkal, "Reluctant Modernization."

4. Mikael Hård and Thomas J. Misa, *The Urban Machine* and *Urban Machinery*.

5. Miriam R. Levin et al., *Urban Modernity*.

6. For this concept see Heidi Hein-Kircher and Eszter Gantner, "Emerging Cities."

need of permanent reflection. Overemphasizing the differences between the metropolis and the periphery incurs the risk of reifying them.

Therefore, many urban historians prefer to talk about “urban space” instead of cities or metropolis, suggesting that the underlying processes are of the same nature.⁷ Other urban scholars have developed comparative typologies of different urban scales, from capital cities to second cities and metropolises, useful conceptual tools for both historians of technology and scholars of STEP.⁸

In light of this reminder of the constant need for contextualization with respect to what “periphery” actually stands for, the question remains the same. What may we gain from studying the STM culture of “second” cities? Do such studies only add local data and contingencies to well-known features of metropolitan STM? This is a central STEP question: What can we only learn by studying the periphery?⁹

In the remainder of this article, we will suggest three research agendas that might provide answers. By studying “second cities,” specific spaces and urban cultures may come to light that are not simply copies of metropolitan ones. They have their own characteristics and complement existing scholarship on the metropolis. The three approaches are (1) everyday life, (2) comparing modernities, and (3) interurban connections.

STM in Everyday Life

Despite the increased interest in the urban history of STM, much of this scholarship focuses on the elites of a given city: on leading scientists and engineers but also on town planners, architects, organizers of exhibitions, promoters of public health services—in short: experts of all sorts. Railways, tramways, electric lighting, sewage systems, power stations, and public health campaigns established new modes of expertise and public trust and shaped everyday life in the city. Thus, historians become more and more interested in how ordinary citizens experienced changes in their urban habitat. This approach matches the interest of urban historians with respect to the spatial and experiential aspects of life in the city.¹⁰ All these urban actors, experts and nonexperts, were involved in the struggle for authority and legitimation. In these conflicts citizens appropriated the STM culture in complex and varied ways, more or less explicitly, as a strategy or simply as a tactic—in Michel de Certeau’s terms—to resist the cultural hegemony of the elites.¹¹

The diversity of publics of STM needs to be acknowledged and their

7. David Harvey, “Cities or Urbanization?”

8. S. G. Checkland, “An Urban History Horoscope.” See also Blair A. Ruble, *Second Metropolis*, and Shane Ewen, *What Is Urban History?*

9. Kostas Gavroglu et al., “Science and Technology”; Faidra Papanelopoulou, Agustí Nieto-Galan, and Enrique Perdiguer, “Conclusion.”

10. Ewen, *What Is Urban History?* 2.

11. Michel de Certeau, *Practice of Everyday Life*.

experiences reconstructed, going beyond George Simmel's "metropolitan man" as a standard actor of a new urban modernity. To quote some examples from our book on Barcelona: the introduction of radio and its technical appropriation by aficionados, the "mechanization of leisure" through the spread of amusement parks offering thrilling rides, and the promotion of electrical appliances in the domestic space geared at housewives.¹² One might also think of avid readers of popular science magazines, curious visitors to museums of technology, self-declared inventors, reticent patients of tuberculosis dispensaries, and dedicated amateur astronomers transforming the city around 1900 into a vast space of cultural appropriation. This variety of publics often questioned authorities, came up with their own idiosyncratic uses, built their own machines, or preferred heterodox medical treatments.

This approach might also be applied to the metropolis, but peripheral urban contexts offer specific advantages. It is precisely the scarcity of famous scientists, engineers, and physicians that enables historians to probe deeper into the STM culture of a "peripheral" city in order to analyze the production, communication, and appropriation of knowledge, its connection to the urban fabric, and the everyday life of its inhabitants around 1900. This kind of urban space is characterized by rather fragile institutions and a limited degree of professionalization, blurred boundaries between expert and amateur knowledge, informal routes of learning, as well as a large amount of still-unexplored local sources.

In this attempt to explore the everyday life of STM, historians of technology have likewise provided useful reconceptualizations. In the last two decades David Edgerton and others have critically observed that concepts such as "invention" and "innovation" have generated much more scholarly interest than the term "use."¹³ We also need to consider that users, beyond their traditional image as passive consumers, may act as a guide or stimulus for the invention itself.¹⁴ It is a well-established idea that the "modern" city around 1900 served as some kind of enormous laboratory. Therefore it seems imperative to apply the concept of the active user to the urban history of STM.

Comparing Modernities

Comparison is one of the major tools in urban history and the history of STM.¹⁵ It has also been instrumental in STEP historiography from the

12. Oliver Hochadel and Agustí Nieto-Galan, *Barcelona*.

13. David Edgerton, "From Innovation to Use"; Nelly Oudshoorn and Trevor Pinch, *How Users Matter*. See, for instance, the different approaches to the history of urban electrification from Thomas Hughes, *Networks of Power*, to David E. Nye, *Electrifying America*, and Graeme Gooday, *Domesticating Electricity*.

14. David Edgerton, *Shock of the Old*; Eric von Hippel, *Democratizing Innovation*.

15. Lewis Pyenson, "Comparative History."

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very beginning although mainly at a national level.¹⁶ Urban historians extensively compare networks, institutions, and actors.¹⁷ Yet there are, in fact, very few studies comparing the STM culture of urban peripheries. Thus the question of what should be compared has not been sufficiently addressed. Following the literature on history of technology cited above, the focus might be on the “networked city” and the comparison of how specific urban, technology-based infrastructures emerged in the late nineteenth and early twentieth centuries. One may also put the emphasis on how technological systems impacted the natural environment of cities, following the lead of Joel Tarr.¹⁸ Yet we would like to suggest a different way to highlight the historiographical potential of the periphery.

Around 1900, people living in “emerging” cities, regardless of whether they were scientists or engineers, office clerks or workers, were very much aware that they did not live in a metropolis. The inhabitants of Athens, Barcelona, Cracow, or Dublin felt that they had to “catch up” with London and Paris or, less frequently, Berlin and Vienna. This “yearning for metropolitanism” was both a rhetorical exercise and a practical struggle.¹⁹ The keywords were often interchangeable: “modernity,” “progress,” or simply “Europe.” “In the late nineteenth century, ‘Europe’ meant elegant boulevards, fashionable urban culture, electric lighting, running water and effective sewers.”²⁰ The “myth of European civilization” was intrinsically connected with the feats of “rational” city planning.

Many of these “peripheral” cities tried to present themselves as “progressive,” that is to say, as promoting science, technology, and medicine (hygiene). More empirical work is needed in this respect, but it seems clear that the reasons for this self-fashioning varied widely. Lisbon tried to snatch the title “scientific capital of Portugal” from the old university town of Coimbra, Dublin wanted to assert itself as the second city of science of the British Empire, Glasgow aspired to be a “laboratory,” a world center of engineering, and Athens intended to reinstate its ancient glories in learning.²¹ The meaning of modernity was highly context-dependent. Historians of technology Mikael Hård and Marcus Stippak point out that different social groups constructed diverging images of the city, in which “modernity” as a universal concept became complex, varied, and never homogeneous.²² Urban historians argue in a similar vein. Urban spaces

16. Papanelopoulou, Nieto-Galan, Perdiguero, *Popularizing Science*. See also *Nation, Science, Identities*.

17. Charles Tilly, “What Good Is Urban History?”

18. For example, see Joel A. Tarr, “The City as an Artifact of Technology and the Environment.”

19. Jack Morrell, “Wissenschaft in Worstedopolis,” 3.

20. Nathaniel Wood, “Not Just the National,” 267.

21. These are examples from our forthcoming book, *Urban Histories of Science*.

22. Mikael Hård and Marcus Stippak, “Discourses on the Modern City and Urban Technology,” 44. See also David Harvey, *Paris*.

were not monolithic, far from it. How much an “emerging city” was to emulate the metropolis—and which one?—was much debated.²³ The potential of a comparative approach lies in teasing out the differences between these modernities.²⁴

In order to reconstruct the STM culture of a fin-de-siècle city, one source is of particular importance: the daily press. The number of newspapers skyrocketed at the end of the nineteenth century. Apart from sheer quantity, this mass medium represented an enormous political and ideological spectrum.²⁵ This enables the historian to glean very different—if not opposing—images, notions, and uses of STM from the pages of the press.²⁶ And due to the ubiquity of this medium, it allows for interurban comparisons.²⁷

And to add one more item to the agenda of comparing modernities: STM practices are often closely linked to identity politics, in particular where the modern nation-state, in our time frame, takes shape. In the early twentieth century, cities such as Barcelona, Belgrade, Bucharest, Budapest, Dublin, and Helsinki were—mutatis mutandis—capitals of “emerging” nations. Therefore they may constitute an excellent sample for comparison. What role did natural history, public health, new building techniques, electrification, feats of engineering such as huge canals or iron bridges (e.g., across the Danube), and other practices of STM play in the construction of national identity in Catalonia, Ireland, Hungary, Romania, Serbia, and Finland?

Interurban Connections

Yet caution is called for in order not to overemphasize the role of STM as a handmaiden “in the service” of nationalism. The connections between urban spaces in different countries need to be taken into account as well. As historians of technology put it, “Europe’s cities were tied together by border-spanning rivers, railways, and motorways, as well as broadcasting and communication networks” long before the process of political integration started after 1945.²⁸ And urban historians have identified a transnational municipal movement dating back to the mid-nineteenth century, “the sharing of best practices across national boundaries.”²⁹

23. Nathaniel Wood, “The ‘Polish Mecca.’”

24. Hochadel and Nieto-Galan, *Urban Histories of Science*.

25. For an exemplary use of the press in order to tease out different notions of progress, see Stephen Jacobson, “Interpreting Municipal Celebrations of Nation and Empire.”

26. For two excellent examples, see Matiana González-Silva and Néstor Herrán, “Ideology, Elitism”; and Simões et al., “Halley Turns Republican.”

27. For a first overview, see Faidra Papanelopoulou and Peter C. Kjærgaard, “Making the Paper.”

28. Hård and Misa, “Modernizing European Cities,” 3.

29. Pierre-Yves Saunier and Shane Ewen, *Another Global City*.

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Nathaniel Wood has coined the term “interurban matrix” and also speaks of “interurban identities.”³⁰ In this case too, newspapers were crucial: “The mass circulation press was a major vehicle in fostering and developing a shared sense of modern, urban identity among its readers.”³¹ “Emerging” cities were keen to imitate the scientific culture of the metropolis. Yet one may argue that they were—mediated by newspapers—also active agents for the circulation of news and innovations in STM on a European or even a global level.

What kind of contacts and exchanges in STM took place, for example, between Mediterranean and eastern European cities? So far the focus has been almost exclusively on the relationship between metropolis and periphery. There are virtually no studies on the connections between peripheral cities, the exchange of knowledge and expertise, and the formation of networks and collaborations. All we can provide at this stage are three examples of ongoing investigations. (1) Emilia Karppinen looks at the Villa Hvitträsk, an architectural bureau just outside Helsinki. Between 1910 and 1915 this bureau devised plans for several capitals such as Helsinki, Tallinn, and Canberra. Karppinen shows that the network of the Villa Hvitträsk was not only a transnational one but also a “transprofessional” one, crossing disciplinary boundaries.³² (2) Lucila Mallart reconstructs the “networking” of the Catalan architect, politician, city planner, and art historian Josep Puig i Cadafalch (1867–1956) in eastern Europe in the 1920s and 1930s, in particular in Romania, Greece, and Serbia. Mallart asks what role the cities played in these shared transnational geographies and in the nationalist projects of Puig i Cadafalch and his east European interlocutors.³³ (3) Peripheral—or emerging—cities understood that the experience of similar cities was much more helpful in solving their concrete problems than much of the metropolitan model. A good example is the work of the Hungarian architect and sculptor Géza Maróti (1875–1941) in Budapest, Milan, Turin, Detroit, and Mexico City. As Eszter Gantner shows, Maróti knew how to work with limited resources, but at the same time he was able to fulfill certain political and cultural expectations of the local elites.³⁴

Going by these three examples, architecture and town planning seem to be particularly relevant topics in these interurban networks. “Traveling”

30. Nathaniel Wood, “Urban Self-identification in East Central Europe”; Nathaniel Wood, *Becoming Metropolitan*.

31. Wood, “Urban Self-identification in East Central Europe,” 11.

32. The title of Emilia Karppinen’s Ph.D. thesis is “Town Planning as a Profession of Finnish Architects: Collaboration across the National and Professional Borders in the Early Twentieth Century Villa Hvitträsk,” University of Turku, in progress.

33. The title of Lucila Mallart’s Ph.D. thesis is “Josep Puig i Cadafalch and the Construction of a Catalan National Imagination (1880–1950),” University of Nottingham, 2016.

34. See her forthcoming book, *Logos, Industrial Palace and Urania: The Urban Forms of Knowledge in Central Europe, 1867–1914* (working title).

models for public health systems and specific objects of urban technologies such as the design of manhole covers and its spread might be other candidates. Future research should try and unveil the directions and channels through which knowledge was created and disseminated in these interurban networks. This is a history of exchanges and interconnections between “emerging” cities, industries, and ports, in which international conferences, research trips, lectures, private visits, and correspondence would have to be investigated.³⁵ The aim would be to render these transnational communities visible again, not least by bringing their practices and networks back to a tangible space: the city.³⁶

Conclusion

In order to sketch the potential of studying the STM culture of “peripheral” or “emerging” cities for this article, we have reviewed the existing historiography of STEP and of the history of technology. In the search for helpful concepts, we also turned to urban history. Every approach has its own merits, yet we believe they could be enhanced if brought together. As this admittedly brief and sketchy juxtaposition has shown, the different approaches converge in a number of ways. Experience, everyday life, uses, and appropriations have become central in these three lines of research. What is more, they all question categories such as “periphery,” “metropolis,” and “modernity.” Their use requires constant reflection, historicization, and qualification. The confluence of these three historiographies may be exploited in a fruitful way by pursuing the three research agendas we sketched: the focus on STM in everyday life, that is, the uses of (urban) technologies and the experiences they entail; the plurality of modernities and the ideological confrontation and contrary concepts of the urban space and its political order; and the interurban connections, which on the one hand are still largely unexplored but promise, on the other hand, to undermine the above-mentioned categories, in particular the juxtaposition of periphery and center. Yet clearly this three-part agenda is far from complete, and surely there are more. Nevertheless, we believe that its pursuit could help substantially enrich the different historiographies involved. We are convinced that focusing on the urban history of STM on the “periphery” could invigorate not only the STEP research program but also the history of technology as well as urban history, providing them with a host of promising new case studies and intriguing questions.

35. For the role of urban ports as crucial nodes in transnational networks, see Carola Hein, *Port Cities*. Also see Nicolas Kenny and Rebecca Madgin, *Comparative and Transnational Approaches*.

36. We thank Lucila Mallart for sharing these ideas with us.

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