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L'Europe en transitions, Énergie, mobilité, communication, XIX^e – XX^e siècles (Yves Bouvier & Léonard Laborie (eds.), 2016)

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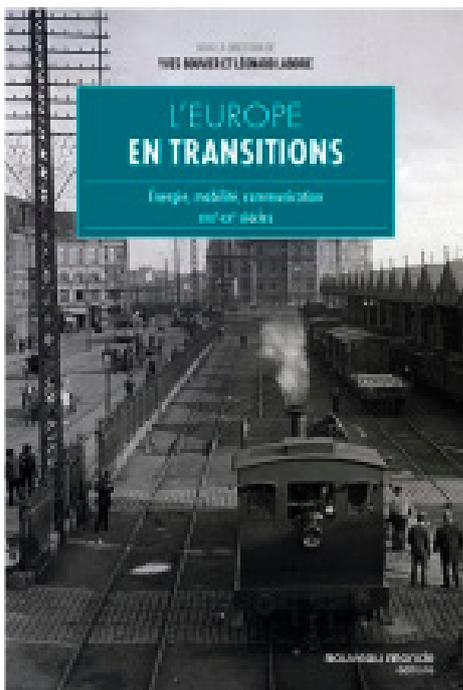
Yves Bouvier & Léonard Laborie (eds.), *L'Europe en transitions, Énergie, mobilité, communication, XIX^e – XX^e siècles* (Paris : Nouveau monde éditions, 2016)

Abstract

Exploring the notion of an energy transition by way of specific energy calls for reconsidering the history of each energy individually, with gas being no exception over the long term. Three sequences have been observed since the early 19th C., which can be represented by three colors: black gas (or manufactured gas), blue gas (or natural gas), and green gas (or biogas). Each one demonstrates the instability of techniques, internal evolutions, and their integration within economic and social contexts, which were themselves in transition. Is it most appropriate to speak of a transition, a turning point, or a change?

Plan of the article

- Long-term technical changes in various fields
- Transition as a historical concept
- Genealogy of technological change's and territorial resources' thought and management



1 This book deals with the material transitions in the fields of energy (wood, coal, oil, renewable energies, electricity), mobility (maritime transport, ports, motorways) and communication (digital networks) in Europe since the 19th century. It is the result of the work carried out under the French “Writing a New History of Europe” programme, which aims to trace the history of this economic, political and material space through the prism of technology. The objective of its authors is to shed light on European innovation policies in response to the economic and environmental challenges posed by these three sectors to the European institutions.

LONG-TERM TECHNICAL CHANGES IN VARIOUS FIELDS

2 The book is very rich in all the themes addressed and opens up interesting avenues for historiographical reflection.

3 Reynald Abad studies how administrators, businessmen, engineers and scientists constructed and perceived a “wood crisis” in 18th century France, as well as ways of responding to it. The establishment of administrative expertise and the publication of economic discourses feed into the construction of a global thinking on the structural balance between uses and resources

of heat at the national level as well as the perception of a “wood crisis”. Public authorities put in place binding and then incentive measures to guide wood production and consumption towards a new balance.

4 Charles-François Mathis in turn examines future projections on national energy balances, but he changes century and field of study. He analyses the ways out of coal dependency in England in scientific discourses and novels of anticipation between 1865 and 1914. He distinguishes two main types of discourse which, despite their antagonism, advocate a better use of resources and the use of new sources of energy: the first, which is in the majority, expresses a technophile liberalism, while the second reflects a form of anti-modernism.

5 Bruno Marnot analyses the transition from “traditional” port systems to “industrial” port systems from 1850 to 1900 in the world. He mobilizes the notion of technological system to study the factors and characteristics of these changes. The global economy of the 19th century is an essential factor for transformations in these interfaces between seas and continents. The constant changes during this period meet the requirements of an increase in freight capacity, fluidity, economies of scale, and lead to the spread of ports in the form of artificial structures, the generalisation of motorised engines and the standardisation of equipment.

6 Alain Beltran examines the substitution of electric lighting for gas lighting in Europe at the end of the 19th century. Beltran considers this change as an archetype of energy transition, which is embedded in the second industrial revolution. The author highlights the slowness of this change, the logic of competition and complementarity, the differences that exist according to the territories and their political organizations, and resources. This technical change is associated with new values associated with the moving ideal of modernity.

7 Géraldine Barron studies the replacement of sails by steam engines in the 19th century in the

naval equipment of industrialising nations, particularly in France and the United Kingdom. The case study highlights the progressive and contrasting nature of this change, which is described as a “maritime transition”. However profound it may have been, since it saw the affirmation of hegemonic steam navigation in the military and merchant navies, it lasted a century and experienced periods of open possibilities, as evidenced by the terminological uncertainties and the many technical “hybridizations”. The author highlights the complexity of the process and its international nature.

8 Matthieu Flonneau analyses the “motorway transition” in France in the 20th century. He focuses on the inter-war period when the motorway moved from an uncertain and marginal position to a dominant position in speeches and public policies. The author thus intends to nuance the reading of a history of the motorway where “technocrats” and companies have imposed a new road regime based on the motorway. On the contrary, he underlines the non-linear and progressive nature of the process, which is characterized by hesitations, where additions of technical regimes are observed more than substitutions.

9 Yves Bouvier traces the “trajectory of renewable energies in the Community institutions resulting from the Treaties of Paris and Rome” from 1955 to 2008. While renewable energies were relegated to non-European areas and studied as part of dynamic but fragmented research, they were taken into account in European research policy in the 1970s, which declined in the following decade. The establishment of a European market and the liberalisation of all economic sectors, as well as the rise of environmental issues, put renewable energies at the heart of a Europe's energy union at the end of the 1990s.

10 Valérie Schaffer and Benjamin G. Thierry study the transformations of digital networks in Europe from the 1960s to the 1990s. During this “European transition of digital networks”, a set of closed, centralised digital networks intended for a professional audience is being replaced by the

web, an open network resulting from the convergence between IT and telecommunications, intended for the general public. The authors highlight the complexity of the transition, ecumenism, cohabitation and the progressive integration of different technical solutions during this transitional phase.

Pascal Griset uses a systemic approach to describe “informational transitions”, i.e. the “process of creating and renewing information and communication technologies” (p. 314). He gives a place back to the figure of the innovator that historical practices have set aside since the 1970s, in order to bestow upon European citizens the power to take, as individuals, a place in the history of these technologies, and to enable Europe to regain technical and economic leadership.

TRANSITION AS A HISTORICAL CONCEPT

In terms of theoretical contributions, the questions about the notion of transition in history can be first considered. The authors of the introduction stress the scarcity of historiographical works treating this notion. Little questioned as such, it was addressed in some books that dealt with energy transitions in history and was not applied to mobility and communication techniques¹. Thus, the authors of the book find in it

¹ The notion of energy transition had been the subject of some historical work. The authors cite the articles published in the *Journal of environmental innovation & societal transitions* on the subject as well as, for the French sphere, the book *La transition énergétique, un concept historique?* edited by Pierre Lamard and Nicolas Stoskopf (2018).

See also: Astrid Kander, Paolo Malanima and Paul Warde, “Energy transitions in Europe, 1600–2000”, *Papers in innovation studies* (Lund: Lund University, CIRCLE, 2008). Vaclav Smil, *Energy transitions, history, requirements prospects* (Santa-Barbara: Praeger, 2010). Roger Fouquet, “The slow search for solutions: Lessons from historical energy transitions by sector and service”, *Energy Policy*, vol. 38, n° 11, 2010, 6586–6596. Yves Bouvier, “Les transitions énergétiques dans l'histoire, entre succession des techniques et sédimentation des enjeux”, in Yves Bouvier (dir.), *Les défis énergétiques du XXI^e siècle. Transition, concurrence et efficacité du point de vue des sciences humaines* (Brussels, P.I.E. Peter Lang, 2012), 23–36. Since then, historical work on the energy transition has increased. For example: International symposium on transitions in the history of energy in Milan (Dec.

a relevant conceptual framework to the study of technological change over time while protecting themselves from a teleological and linear conception of the history of techniques². In this way, they intend to enrich a conceptual apparatus that has become classic in the history of technology, and in particular the notions of revolution and innovation. This work is therefore an extension of a history of technology that places Schumpeterian innovation at the heart of its analysis, considering it as a determining factor in the history of technology in industrialized countries since the 19th century.³

- 13 Through this notion, the authors highlight the superposition of periods, during which different factors operate in a complex way. Various techniques coexist, whether competing, complementary or simply juxtaposed. Some uses are prolonged and modified while others appear, “hybridizations” emerge and persist, and this without there being a clear break between the adoption of one and the abandonment of the other. Several contributions demonstrate this well: in the shipbuilding sector, the steam engine was introduced very gradually and in a contrasting way depending on the sectors of activity concerned, from the military navy to fishing (G. Barron); in lighting techniques, electricity became dominant after a long period of competition at the turn of the 20th century (A. Beltran);

2017). Peter G. J. Pearson, “Past, present and prospective energy transitions: an invitation to historians”, *Journal of energy history*, n°1, 04/12/2018. Charles-François Mathis and Geneviève Massard-Guilbaud (dir.), *Sous le soleil. Systèmes et transitions énergétiques du Moyen Âge à nos jours* (Paris : Éditions de la Sorbonne, 2019).

² This risk was highlighted by Jean-Baptiste Fressoz in “Pour une histoire désorientée de l'énergie”, *Entropia*, n°15, autumn 2013, 173-187.

³ Without mentioning a very rich literature on each of these subjects, it should be recalled that the classical long-term narratives of the history of technology have placed energy uses at the centre of the socio-technical transformations that have taken place in the contemporary period. See for example: Lewis Mumford, *Technics and civilization* (New York: Harcourt, Brace and Co.; London: George Routledge & Sons, 1934). Maurice Daumas, *Histoire générale des techniques* (Paris : Presses universitaires de France, 1962-1978). Bertrand Gille, *Histoire des techniques : technique et civilisation, technique et science* (Paris : Gallimard, 1978).

digital networks emerge as multiple heterogeneous and closed networks that integrated very gradually into an open network of networks until the hegemony of the web (V. Schaffer and B. G. Thierry).

Bouvier pays particular attention to defining the notion of transition in order to refine the historical analysis of technological change. He gives it several degrees of precision: in the narrowest sense, transition implies not only a substitution of energy sources (in this case, renewable) for others (here, fossil fuels), but also long-term projections and policies that voluntarily guide energy shifts, and finally, “profound changes in energy consumption patterns”. From this point of view, there has been no “energy transition” in the field of renewable energies, even since the 1980s. If such an energy transition has taken place, it is the one that resulted from the French nuclear programme and led to the substitution of the atom for fossil fuels in the years 1970-1980⁴. However, a looser energy transition has been observed since the 1980s: “a smooth change in production methods through the introduction of new technologies, certainly challenging monopolistic structures and the centralized production model, but without revolutionizing industrial players or disrupting technology for users” (p. 269). Finally, since the 1950s, the European institutions have promoted the energy transition in the broadest sense of reducing hydrocarbon consumption.

However, it is regrettable that the notion of transition did not demonstrate a more in-depth theoretical perspective. Following Bouvier's classification effort, we can distinguish two main ways of approaching the transition that make it possible to refine the historiographical significance of the various contributions. The transition is both a historiographic tool and object.

⁴ Bouvier thus takes up a proposal developed in the article “Les transitions énergétiques dans l'histoire, entre succession des techniques et sédimentation des enjeux”, in Yves Bouvier (dir.), *Les défis énergétiques du XXI^e siècle. Transition, concurrence et efficacité du point de vue des sciences humaine* (Brussels, P.I.E. Peter Lang, 2012), 23-36.

16 As a tool, it allows to study and model long-term technical changes, which is the case in the majority of contributions. We could then distinguish three types of transition:

1. the substitution on a global scale and in the long term of one technology or resource for another, or their adoption (Barron, Marnot, Beltran, Schafer & Thierry, Griset),
2. the substitution on a global scale and in the long term of one technology or resource for another, or their adoption, voluntarily oriented by actors (political and industrial), involving a vision of the future (Bouvier, for nuclear energy and for renewable energies since the 1990s),
3. a policy aiming to guide global change, whether or not it has been followed by effective change (“failed” transitions: Abad, Bouvier for renewable energies over the period 1970-1980).

17 As an object, the transition is analysed in three contributions, which question how actors thought about technical change at a global level to meet future objectives. They then look back in the past for what could be similar to a political thought and project similar to the current energy transition project. Three contributions fit into this category (Abad, Mathis, Bouvier)⁵.

⁵ Abad describes as a transition his object, namely the “objective or subjective appreciation that contemporaries may have of the energetic balance of the kingdom”. For Mathis, it is a question of looking for “ways to reduce the place of coal in Victorian and Edwardian societies through the development of new energy systems or the use of other sources” (p. 88-89). For Bouvier, the “energy transition” can be understood in a more or less loose sense and he identifies in this respect several types of energy transitions in the Community Europe since 1955. In the loosest sense, it is a limitation of the consumption of one energy source, which may result from lower consumption or substitution by another energy source. A more precise meaning also includes political will and measures in the direction of this limitation, which imply a global and future vision of energy on the part of these actors. An even more restricted meaning implies “profound changes” in energy consumption patterns, i.e., for the 1955-2008 period in Europe, a transformation of actors and energy uses. In this sense, there has been no energy transition to renewable energies since the 1950s.

In its most open sense (type (1)), the transition would have merited a more in-depth reflection on its articulation with the classical conceptual tooling of the history of technology. If it is simply a change in technical practices over time, one may wonder what distinguishes it from innovation, since this notion is itself widely used without being defined other than as “the ability to produce and consume something new” (Bouvier & Laborie, p. 10). Similarly, if some authors oppose the revolution by its progressive (or even “soft”) aspect⁶, they envisage that a transition may involve revolutions and vice versa⁷. In this case, what is its real contribution to the historical analysis of technological change, which, after all, already considered the superposition of techniques, the need for long time, and the complexity of a set of parameters (technical, economic, political, social, cultural)?

The authors of the introduction consider their work as part of the search for tools to support European research and innovation policy. The ideological dimension of the “revolution” having been stressed and fostering caution in its use, one might have expected greater precautions with regard to the transition, whose political significance is also recognized. Such a step back ensures a reflexive approach and makes it possible not to naturalize categories and concepts. Thinking about technological change through Schumpeterian innovation, for example, guides the analysis in the context of the production/consumption or producer/user relationship. Can't we think of technological change, outside these categories?

GENEALOGY OF TECHNOLOGICAL CHANGE'S AND TERRITORIAL RESOURCES' THOUGHT AND MANAGEMENT

Beyond the notion of transition, the contributions of this book concern the construction and the performative dimension of global, economic

⁶ Bouvier & Laborie, p. 18 ; Beltran, p. 169 ; p. 189. Barron, p. 134-135. Barron prefers the term “maritime transition” to that of “maritime revolution”, commonly used by contemporaries of change who were experiencing a deep change (p. 130-135).

⁷ Bouvier & Laborie, p. 18.

and prospective thinking, which is applied in the three sectors studied, and especially energy.

21 Abad and Mathis show the construction, at the dawn of industrialization, of a global economic thinking based on new administrative and management practices. They show that the notion of energy balance and scarcity, as well as future projections, are precocious, as are the measures taken by public and private actors to guide change towards new balances. The moral aspect of these visions is also remarkable: the “good user” and the “bad user” of wood, the responsibility towards future generations, the values associated with the idea of civilisation, which Beltran also evokes about lighting at the turn of the 20th century. This is in line with the observation made by Bonneuil and Fressoz (2013): the environmental imbalances generated by the development of industrial civilization have been created with full knowledge of the facts and this awareness has not been sufficient to stop the process⁸.

22 The history of renewable energies in the European institutions over the period 1955–2008 is a good example of the discursive, material, economic and political construction of Europe. It shows how, after the failure of a Community construction by a common energy policy, the market, and in particular the energy market, was the key factor to make Europe an integrated area. Despite the ambitions announced in the introduction, it should be noted that this article is

the only one to question the construction of the European space based on its physical infrastructures.

Another striking feature highlighted by some 23 contributions is the performativity of discourses on land use planning and the resource making of territory. Abad shows the constitution of wood as an energy resource, or more precisely as a raw material for the production of heat and power, based on administrative expertise and a new accounting way of managing resources on a kingdom scale. This resource construction is accompanied by public takeover and management. Flonneau shows how the rhetoric about the need for highways in France in the inter-war period preceded the hegemony of this type of infrastructure in the post-war “road regime”.

Finally, the history of renewable energy in Europe 24 since 1955 is instructive for understanding current energy policies. Bouvier shows that if renewable energies have taken a timidly increasing place in European energy balances since the 1990s, it took place within the framework of a liberalization of the energy market, where the actors of change remain the dominant actors of the energy sector. From this point of view, there is no major change in production and consumption patterns. This leads to a certain scepticism about the possibility of a sufficiently rapid change to address the major energy problems currently facing us (and, first and foremost, global warming)⁹.

⁸ Christophe Bonneuil and Jean-Baptiste Fressoz, *L'événement anthropocène. La terre, l'histoire et nous* (Paris: Le Seuil, 2013).

⁹ In another article on the energy transition, Bouvier shows an essential difference between the energy transition advocated by current policies, and the one led by the French government during the nuclear programme: it would be a transition “from the bottom” instead of a transition “from the top”. Yves Bouvier, “L'horizon nucléaire en France, transition énergétique ou énergie de transition?”.

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