

HYDROELECTRICITY, POWER AND DEMOCRACY¹: QUÉBEC AND HYDRO-QUÉBEC IN COMPARISON

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This article does not seek to test a hypothesis by providing empirical facts and statistics supporting a specific interpretation, but rather to propose a global understanding of hydroelectricity within the dynamics of power relations in human societies, using the specific case of Hydro-Québec. Indeed, while the famous company has been labelled a “state within a state” – its bureaucratic apparatus often going counter to popular will in a monopolistic and bureaucratic fashion – Hydro-Québec can also be studied from the perspective of the history of democracy. Since its creation, the public utility has been closed and authoritarian ; yet to focus solely on the analysis of its conflicts with various pressure groups (environmental associations, First Nations communities, consumer protection groups) would be to miss an occasion to reflect upon the subtle links that link it to the public life of the province. Therefore, this essay attempts to analyze the impact of hydroelectricity on electoral processes and, incidentally, on the mode of production of economic development.

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1. I wish to thank Stéphane Savard and the peer reviewers of *Globe* magazine for their comments on the preliminary version of this text. This paper was translated by Nadia Hausfather and Jean-Philippe Warren.

This approach is not new. For many years, studies have explored the impact of natural resources on the development of nations rich in basic materials. While common sense would predict a positive correlation between the significant presence of raw materials and the economic prosperity of a country, studies of rentier states² tend to demonstrate that, on the contrary, the wealth drawn from the exploitation of natural resources is a “curse”. For example, the case of Congo, rotting away in its chronic under-development, should give pause those who believe that economic expansion is determined by the presence of gas, forests or minerals.

Among natural resources, oil is clearly in a league by itself. Certain Arab countries, as well as countries beyond the Middle East – in Asia, Africa and the Americas – have a difficult time growing economically despite their massive extraction of black gold³. While notable exceptions may render this general thesis more complex (Norway or Great Britain could hardly be compared to Nigeria), according to various researchers, oil does, in fact, undermine democracy. “The oil-impedes-democracy claim is both valid and statistically robust ; in other words, oil does hurt democracy⁴”. Algeria, Saudi Arabia, Congo, Venezuela, Russia, Iran and Mexico, which differ in geography, population, language, religion, quality of life and political regime (from right-wing dictatorship to left-wing authoritarianism, and from Islamic theocracy to left-wing democratic socialism), all face serious political and economic problems. Even regions located within developed and democratic nations do not appear to be protected from the perverse effects of oil, as illustrated by American cases such as Texas, Louisiana and Alaska. In Canada, in the province of Alberta, one party has dominated for ages : the Progressive Conservative Association of Alberta has maintained power there without interruption since 1971. Comparing the lot of oil producing states to that of King Midas (who, according to legend, transformed everything he

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2. See the definition of rentier state by Hazem BEBLAWI, “The Rentier State in the Arab World”, Giacomo LUCIANI (ed.), *The Arab State* (Berkeley, University of California Press, 1990) : 87-8.

3. Olle TÖRNQUIST, “Rent Capitalism, State, and Democracy: A Theoretical Proposition”, Arief BUDIMAN (ed.), *State and Civil Society in Indonesia* (Melbourn, Monash Papers on Southeast Asia, 22, 1990) : 29-49 ; Douglas A. YATES, *The Rentier State in Africa : Oil Rent Dependency and Neocolonialism in the Republic of Gabon* (Trenton, Africa World Press, 1996) ; Terry Lynn KARL, *The Paradox of Plenty : Oil Booms and Petro-States* (Berkeley, University of California Press, 1997) and John CLARK, “Petro-Politics in Congo”, *Journal of Democracy*, 8, 3 (1997) : 62-76.

4. Michael Lewin ROSS, “Does Oil Hinder Democracy?”, *World Politics*, 53, 3 (April 2001) : 356. Other authors have attempted to provide criticisms and nuances to Ross’ thesis. Read Michael HERB, “No Representation Without Taxation ? Rents, Development, and Democracy”, *Comparative Politics*, 37, 3 (April 2005) : 297-316.

touched to gold), Michael L. Ross concludes that oil can be a paradoxical cause of political quagmire and economic impoverishment.

Looking to understand what halts industrialization and provokes internal crises – even civil wars⁵ – in states well-endowed with raw materials (including, primarily, oil), scholars identify five factors. First, since basic materials are quite sought-after by other nations, it is possible to get rich quickly without worrying about supporting secondary industries. Natural resources function in this way like rent : they fill the coffers of the owners (private or public companies) without any real effort on the part of the beneficiaries. Second, rentier states have little or no need to tax their citizens, which thus exempts them from accountability and the need to seek approval from taxpayers. Third, these states have the financial capacity to repress opposition through the systematic imprisonment of their opponents, as well as by granting generous gifts to cronies, notably through patronage politics. Fourth, rents modify the stratification of social groups by blocking the formation of a middle class, since jobs remain concentrated in the primary and secondary, rather than tertiary sectors. Fifth, rentier states fuel political divisions and predatory ambitions, and their wealth is soon monopolized by international corporations that profitably plunder distant, inaccessible lands⁶.

These same factors can be applied to the hydroelectric industry with interesting results. During the Quiet Revolution, wasn't the idea of hydroelectricity as "black gold" promoted by francophone elites ? The hydroelectric industry seemed to provide the same advantages as oil did in Algeria and, in the short-term, it allowed for full employment, the rapid progress of local industry and political stability. The Shah of Iran promised the dawn of a great civilization ; the Venezuelan president, Carlos Andrés Pérez, announced *La Gran Venezuela* ; and in Québec, "the team of thunder" campaigned under the slogan "Masters in our own house". René Lévesque declared that Québec should try to imitate the Arabs and increase its wealth

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5. Michael L. ROSS, "The political Economy of the Resource Curse", *World Politics*, 51 (January 1999) ; Richard M. AUTY, *Sustaining Development in Mineral Economies: The Resource Curse Thesis* (London, Routledge, 1993) ; Richard M. AUTY, *Resource Abundance and Economic Development* (Oxford, Oxford University Press, 2001) and Indra DE SOYSA, "The Resource Curse : Are Civil Wars Driven by Rapacity or Paucity", Émats BERDAL and David M. MALONE (eds.), *Greed and Grievance: Economic Agendas in Civil Wars* (Boulder, Lynn Rienner, 2000).

6. Terry Lynn KARL, "The Perils of the Petro-State: Reflections on the Paradox of Plenty", *Journal of International Affairs*, 53, 1 (Fall 1999) : 31-48 and Lisa ANDERSON, "The State in the Middle East and North Africa", *Comparative Politics*, 20 (October 1987) : 1-18.

through the control of the province's natural resources⁷. Newly elected Premier Robert Bourassa presented James Bay as a "Klondike rich in white coal" and, in the 1980s, he thought Québec could become "the Alberta of the East"⁸. Again, in 2009, during the launch of the La Romaine River dam project, Premier Jean Charest argued in a passionate speech that "Québec will be built on its blue gold"⁹.

It is clear today that the economic trajectories and policies of Québec and those of the oil states have been radically different throughout the last half-century. The major producer countries experienced a series of profound crises, as if oil was bound to overshadow the economy and public life. OPEC members saw their living standards stagnate or decline, and other countries, like Nigeria, were affected by growing social inequalities and general impoverishment. In comparison, Québec is doing quite well. Economic development has allowed the province to gradually catch up to OECD countries. Québec has also made commendable efforts over the past fifty years to clean up the political climate, combat corruption, encourage social criticism and permit the expression of popular will. Nothing of the sort can be seen in Russia, for example, nor in other former Soviet republics (see Turkmenistan), where political repression, electoral corruption, media censorship, civil wars (Chechnya), international conflicts (Georgia) and the harassment of protest groups (phenomena that can be linked to some degree to the windfall caused by the oil boom¹⁰) continue to make headlines.

Is it possible that hydroelectric basins are less likely to provoke oppression and mismanagement than gas reservoirs? Is it possible that an economy based on the oil "staple" creates a political system different from one based on the hydroelectric "staple"¹¹? It is tempting to hypothesize that the digging of oil wells and the harnessing of rivers have specific impacts on the economic and democratic development of human societies. To better understand the plausibility of these unique dynamics, this paper proposes to

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7. René LÉVESQUE, "Pas plus bêtes que les Arabes", *Cité libre*, 17 (May 1960) : 17-18.

8. Quoted by Stéphane SAVARD, "Retour sur un 'projet du siècle'. Hydro-Québec comme vecteur des représentations symboliques et identitaires du Québec, 1944 à 2005" (PhD Thesis (History), Université Laval, 2010), 203.

9. Denis LESSARD, "Hydroélectricité: Québec appuie sur l'accélérateur", *La Presse*, May 25, 2009.

10. Daniel TREISMAN, "Rethinking Russia? Is Russia Cursed by Oil", *Journal of International Affairs*, 63, 2 (Spring-Summer 2010) : 85-102.

11. The concept of "staple economy" (an "economy based on raw materials") was formulated for the first time in Canada by Harold Innis. According to Innis, Canada was defined economically, geographically and politically by the exploitation of certain natural resources (notably, fur, cod, wood, wheat, mines, oil) destined to its successive metropolises.

examine in a general and speculative way some of the traits that seem to distinguish the hydroelectric industry from the oil industry and, more specifically, the questions of rent, exports, infrastructure networks, projects and investments. For each of these five aspects, it is possible to draw a line separating the oil resource from the hydroelectric resource¹². First, hydroelectricity generates considerably less rent than oil. Second, it is not intended primarily for export. Third, its conditions for distribution lead to monopolies similar in their principle of efficiency to postal and telephone monopolies. Fourth, hydroelectricity brings to life grandiose projects and requires colossal social and financial resources, generally greater than those required for the exploitation of gas and oil. And it should not be forgotten that hydroelectricity has historically evoked more stimulating and inspiring images. For these reasons, it is preferable to define hydroelectricity as a “quasi staple¹³”.

SOME MAJOR DISTINCTIONS

Contrary to other Canadian provinces that depend on diverse sources of energy and technologies (hydroelectricity, coal, oil, natural gas, nuclear energy), Québec has made hydropower its almost unique source of electricity. In 1999, hydroelectricity accounted for 60 % of all electricity produced in Canada. At the provincial level, hydroelectricity accounted for 28 % of the electricity produced in Ontario ; 4 % in Alberta ; 9 % in Nova Scotia ; and 93 % in Québec¹⁴. On a global scale, Québec had become, despite its small size, the fifth largest world producer of hydroelectricity, after

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12. These factors largely overlap with those that informed the nationalization of electricity in the 1950s and 1960s around the world. However, the purpose of this article is not to explain the cycles of nationalization and de-nationalization. For a good summary of this complex issue, read William J. HAUSMAN, Peter HERTNER and Mira WILKINS, *Global Electrification. Multinational Enterprise and International Finance in the History of Light and Power, 1878-2007* (New York, Cambridge University Press, 2008). To shed light on the “domestication” of electricity from 1940 to 1980, the authors cite (pp. 23-24 and 258-260) the creation of natural monopolies, the importance of initial investments, the requirements of quality distribution (without interruption or failure), as well as the definition of electricity as a basic service associated with a vital sector of the economy. See also Alain BELTRAN, Christophe BOUNEAU, Yves BOUVIER, Denis VARASCHIN and Jean-Pierre WILLIOT (eds.), *État et énergie, XIX^e-XX^e siècle* (Paris, Édition du Comité pour l'histoire économique et financière de France, 2009); Alain BELTRAN, Martin CHICK and Pierre LANTHIER, “Nationalisations et dénationalisations de l'électricité”, *Annales historiques de l'électricité*, 1 (June 2003).

13. John H. DALES, *Hydroelectricity and Industrial Development, Québec 1898-1940* (Cambridge, Harvard University Press, 1957).

14. In 1999, 60 % of the production of electricity in Canada came from hydropower ; 19 % from coal ; 13 % from nuclear energy ; 7 % from gas ; and less than 1 % from other renewable energies. Marjorie Griffin COHEN, “From Public Good to Private Exploitation. GATS and the Restructuring of Canadian Utilities”, *Canadian-American Public Policy*, 48 (December 2001) : 29. In 1993, three provinces produced electricity thanks to nuclear generators : Québec (3 %), New Brunswick (35 %) and Ontario (52 %).

the United States (even though only 8 % of the total electricity there is generated by hydropower plants), Brazil, Russia and China. It is without a doubt because of the centrality of this resource in the national economy that political actors have had the tendency in the past to elevate it to the status of a “common good¹⁵”. For example, when the Department of Natural Resources was created in 1961, Premier Jean Lesage emphasized the unique place that electricity would play in the development of the province: “We consider it practically like a public service because it is the condition for our industrial growth due to its abundance in Québec and its low cost of exploitation¹⁶”.

Despite its central role in collective discourse, hydropower cannot be compared, in purely financial terms, to the oil “staple”. The clearest difference between hydroelectricity in Québec and the exploitation of gas and oil reserves elsewhere is the margin between hydroelectric rent and oil rent. With the relative transition from a Keynesian to a neoliberal model in the early 1990s, a transition that provoked full or partial privatization of certain public companies (Nova Scotia Power, Ontario Hydro) and a more pronounced openness to the American market¹⁷, the discourse around hydroelectric rent became more persistent. The construction of dams as an engine of the national economy gave way to the collection of rents, a turn that Mark Jaccard summarized in four words: “Managing instead of building¹⁸”. The idea that rents drawn from the exploitation of electric power should be used to subsidize key industries or mass consumption (through preferential tariffs or direct subsidies) had run its course. In conjunction with the global financialization of the economy, the time had come to use the money from hydroelectricity to reduce consumer and industry taxes, and to assist market liberalization. Thus, since 1995, under pressure from the government, the

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15. Dominique PERRON, *Le nouveau roman de l'énergie nationale. Analyse des discours promotionnels d'Hydro-Québec de 1964 à 1997* (Calgary, University of Calgary Press, 2006).

16. Quoted by Stéphane SAVARD, “Retour sur un ‘projet du siècle’. Hydro-Québec comme vecteur des représentations symboliques et identitaires du Québec, 1944 à 2005”, *op. cit.*, 173.

17. For an excellent overview of this transition, read Alexander John NETHERTON, “The Political Economy of Canadian Hydro-Electricity: Between Old ‘Provincial Hydros’ and Neoliberal Regional Energy Regimes”, *Canadian Political Science Review*, 1, 1 (June 2007): 107-124. See also Jamie SWIFT and Keith STEWART, *Hydro. The Decline and Fall of Ontario's Electric Empire* (Toronto, Between the Lines, 2004); Henry Vivian NELLES, “Hydro and After: The Canadian Experience with the Organization, Nationalization and Deregulation of Electric Utilities”, *Annales historiques de l'électricité*, 1 (June 2003): 117-132; Nicolas MARCEAU, “Dettes, équité et richesse au Québec: exporter notre électricité est-il souhaitable?” in Luc GODBOUT (ed.), *Agir maintenant pour le Québec de demain. Des réflexions pour passer des manifestes aux actes* (Québec, Presses de l'Université Laval, 2006), 147-160.

18. Mark JACCARD, Jonh NYBOER and Timo MAKINEN, “Managing Instead of Building: B.C. Hydro's Role in the 1990s”, *BC Studies*, 91-92 (Winter 1991): 98-226; Mark JACCARD, “Oscillating Currents: The Changing Rationale for Government Intervention in the Electricity Industry”, *Energy Policies*, 23, 7 (1995): 572-592.

profits of Hydro-Québec have increased from \$500 million to \$3 billion. Three-quarters of these profits go to the state, which amounted to a dividend of \$2.1 billion for the year 2009.

This sum may appear impressive. Yet it represents only 3 % of Québec's total revenue. By contrast, in 2006, revenues from oil and gas were around \$12 billion in Alberta, nearly a third of that province's revenues. Not to mention the case of Venezuela, where from 1972 to 1999 oil represented 61 % revenues, or those of Nigeria (71 %) and Kuwait (88 %)¹⁹. In other words, despite the discourse of those who blame the Québec government for transforming Hydro-Québec into its cash cow²⁰, hydroelectricity is far from representing the same scale of rent as oil does in other states.

The other obvious difference between hydroelectricity and oil is that the former is difficult to export and cannot be stored, whereas oil is easy to transport across the globe. Québec cannot sell its hydroelectricity to Saudi Arabia, but Saudi Arabia can sell its oil to Quebecers. It is therefore easier to pillage black gold for export to foreign markets, whereas "white gold²¹" must be used nearby. For reasons both practical and political, there are few exchanges of electricity between Canadian provinces, and they represent barely 8 % of total supply. Moreover, 90 % of these exchanges can be attributed to the exports from Labrador to Québec, resulting from the construction of the Churchill Falls generating station in the 1960s. International exchanges between Canada and the United States are not any more impressive. "Unlike the Canadian petroleum sector, Canadian electricity did not take an overall staple export structure. Total exports to the US were less than seven percent of total Canadian production, and US exports only reached a quarter of one percent of US production²²". New Brunswick's

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19. Michael HERB, "No Representation Without Taxation? Rents, Development, and Democracy", *op. cit.*, 299. There are multiple ways, all equally perilous and complex, to calculate a rent. The most common definition in economics is the Ricardian rent, which is the surplus attributable to a production factor above what is required for participation in the production process. To read more on this topic, see Mitchell ROTHMAN, "Measuring and Apportioning Rents from Hydroelectric Power Developments", *World Bank Discussion Paper*, 419 (Washington, The World Bank, 2000); Jean-Thomas BERNARD, Glenn E. BRIDGES and Anthony D. SCOTT, "An Evaluation of Potential Canadian Hydroelectric Rents", *Resources Paper*, 78; and Richard C. ZUKER and Glenn P. JENKINS, *Blue Gold: Hydroelectric Rent in Canada* (Ottawa, Supply and Services Canada, 1984).

20. Editorial of magazine *À Babord!*, "Hydro-Québec: les kilowatts et leurs profits", 14 (April-May 2006): 11.

21. Karl FROSCHAUER, *White Gold: Hydroelectric Power in Canada* (Vancouver, UBC Press, 1999), 224.

22. Alexander John NETHERTON, "The Political Economy of Canadian Hydro-Electricity: Between Old 'Provincial Hydros' and Neoliberal Regional Energy Regimes", *op. cit.*, 114 and Leonard WAVERMAN and Adonis YATCHEW, "Regulation of Electric Power in Canada", in Richard J. GILBERT and Edward P. KAHN (eds.), *International Comparisons of Electricity Regulation* (Cambridge, Cambridge University Press, 1996), 371.

network is weakly linked to that of Maine, and Ontario's with those of Michigan and New York. And the international network of Hydro-Québec, while more vast than that of any other Canadian province, is nonetheless limited and developed mostly to supply the State of New York when there are seasonal surpluses. Nevertheless, Canada and the United States have the most integrated electricity markets in the world²³, which makes it easier to understand how the nature of the commodity prevents electricity from being transported across great distances. Consequently, revenues from hydro-electricity are extracted at the production site. Only a small portion of the Canadian production of electricity is destined to the American market. For instance, even though Hydro-Québec exported 18.5 billion kWh to the United States in 2009, these exports represented only 10 % of the sales and 22 % of the company's net profit²⁴ – during which time 80 % of the oil produced in Alberta went south of the border.

There is no need to further insist on the fact that the distribution of oil can be entrusted to many companies which organize its transportation and sale, whereas electricity favours the creation of natural monopolies, since the possibilities of economies of scale incite the establishment of single distributors. It is no more logical to plant three rows of telephone poles along the roads than to install three high voltage lines next to one another. It follows that the state can more easily meddle in the hydroelectric economy in favour of the socioeconomically disadvantaged, and define the distribution, if not the production of electricity largely as a public service²⁵. Moreover, the downward pressure thus exerted on the price of the commodity incites more regulation and direct state control.

Electricity certainly represents one of the most important technological advances of the 20th century. Hydraulic turbines are, among the multiple ways of producing electricity, one of the most complex (alongside, of course, nuclear energy). The rhetoric produced by the leaders of Hydro-Québec in the 1960s was thus able to insert itself into the crucible of the

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23. Pierre-Olivier PINEAU, Anil HIRA and Karl FROSCHAUER, "Measuring International Electricity Integration: A Comparative Study of the Power Systems under the Nordic Council, Mercosur, and Nafta", *Energy Policies*, 32, 3 (2004), 1457-1475.

24. Hélène BARIL, "Hydro-Québec: 'On va livrer ce qui a été demandé'", *La Presse*, 8 avril 2010 and Marjorie Griffin COHEN, *From Public Good to Private Exploitation. GATS and the Restructuring of Canadian Utilities*, op. cit., 30-1.

25. Guillaume BOUVIER, "Enjeux géopolitiques autour de la distribution d'électricité en France", *Hérodote*, 3, 110 : 71-87 and H. William TIELEMAN, "The Political Economy of Nationalization: Social Credit and the Takeover of the British Columbia Electric Company" (Masters Thesis (Political Science), University of British Columbia, 1984).

techno-scientific ideology that prevailed across the West at the time²⁶. What the public utility has promised since its creation has been not just the mechanical exploitation of natural resources, but the exploitation of these resources by the most advanced scientific and technological methods. While Americans – the people perceived at that time as the most progressive on earth – projected sending a man to the Moon after having mobilized “the best and the brightest” of their citizens to develop the atomic bomb, Quebecers did not want to be left out. They also harboured a “project of the century”, a “Manhattan Project” that would show off their brilliance to the world. They who, according to the new technocrats who were mostly produced by the Faculty of Social Sciences of the Université Laval, had long lagged behind the other Western nations, had been engulfed in the “Grande noirceur” (Great Darkness), could immediately reach the atomic age. Daniel Johnson spoke of a Québec that had attained “the Space Age²⁷”. According to Pierre Nadeau, “in the 1960s, since the nationalization of electricity, Hydro-Québec has been, for us, a bit like NASA for the Americans²⁸”. The construction of the gigantic Manic dam was the equivalent of sending rockets into orbit around the Earth.

The technology necessary for extracting oil seems, by comparison, less capable of capturing the imagination. Certainly, it mobilizes more people. Around 7 % of Alberta’s total labor force is employed by the oil and gas industry²⁹; Hydro-Québec employs 2 % of Québec’s workers, the number of its employees having decreased over the last 15 years to reach about 23 000 today³⁰. Nor does the knowledge required to exploit underground oil fields really capture the imagination. In the 1960s, hydro-electric dams were compared to nothing less than “pyramids,” “cathedrals,” “fortresses” and “citadels”. They were “almost universally acclaimed among the most benign and heroic technological achievements that humanity had ever conceived³¹”. These triumphs of the human hand and brain showed



26. Jürgen HABERMAS, *La technique et la science comme idéologie* (Paris, Gallimard, 1978).

27. Quoted by Stéphane SAVARD, “Retour sur un ‘projet du siècle’. Hydro-Québec comme vecteur des représentations symboliques et identitaires du Québec, 1944 à 2005”, *op. cit.*, 240.

28. *Ibid.*, 289.

29. Vincent FERRAO, “L’évolution récente de l’emploi par industrie”, *L’emploi et le revenu en perspective*, 7, 1 (January 2006), <http://www.statcan.gc.ca/pub/75-001-x/10106/9060-fra.htm> (accessed 27 June 2010).

30. Stéphane PAQUET, “L’embauche est repartie chez Hydro-Québec”, *La Presse*, March 8, 2008.

31. William CRONON, “Foreword. Why So Important a Story Is So Little Known”, in Karl Boyd BROOKS (ed.), *Public Power, Private Dams. The Hells Canyon High Dam Controversy* (Seattle, University of Washington Press, 2006), 9.

how “an enlightened government could benefit its citizens by harnessing nature’s gift to advance the goal of human progress³²”.

David E. Nye has documented how the “technological sublime” – this quasi-religious fascination with technical feats – significantly contributed to the electricity myth in the 20th century³³. To illustrate his thesis, Nye gives the example of the Hoover Dam, but he could just as easily have mentioned Manic 5, about which Jacques Godbout exclaimed: “Manic 5 is also the Mecca for French Canadians who like to line up in front of it, like Arabs in awe in front of the black stone³⁴”. Godbout was not alone in his enthusiasm about the monumental and sublime achievements of Québec engineers. “The technology will no doubt continue to evolve”, proclaimed in turn Daniel Johnson, speaking of Manic 5, “but this dam, with its vaults and buttresses that make it resemble a giant cathedral, will remain an imperishable monument to the ingenuity and dynamism of today’s Québec³⁵”. Such a discourse has never been so strongly expressed by oil tycoons.

Furthermore, building a hydroelectric dam is a titanic endeavour, requiring large amounts of capital, yielding benefits only many years down the road, often involving the relocation of entire villages and the flooding of thousands of square kilometres. In Québec, the “project of the century” in James Bay alone cost many billions of dollars (the cost of the first phase was \$13.7 billion) and led to the flooding of land and the diversion of rivers, causing conflicts with First Nations communities, along with instillation of extensive high-voltage power lines and the development of sophisticated distribution networks. From an ecological point of view, it can be said that oil and hydroelectricity are opposites. The production of the latter disrupts the environment in depth (poisoning reservoirs, destroying the ecosystem, channeling rivers), while its use is clean; whereas in the case of oil wells, the opposite is true: pumping oil is relatively harmless to the immediate environment (using the TPE or Ton Petroleum Equivalent), while fuel consumption is very polluting (mainly through greenhouse gas emissions in the atmosphere), not to mention the recurring breakdowns and accidents

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32. *Ibidem*.

33. David E. NYE, *American Technological Sublime* (Cambridge, The MIT Press, 1996).

34. Jacques GODBOUT, “Trois hommes, trois témoignages. 1 – Serge Godbout”, *Liberté*, 6, 5 (Septembre-October 1964): 345 and Stéphane SAVARD, “Quand l’histoire donne sens aux représentations symboliques: Hydro-Québec, Manic-5 et la société québécoise”, *Recherches sociographiques*, 50, 1 (2009): 67-97.

35. Daniel Johnson, quoted by Stéphane SAVARD, “Retour sur un ‘projet du siècle’: Hydro-Québec comme vecteur des représentations symboliques et identitaires du Québec, 1944 à 2005”, *op. cit.*, 242.

that occur during the extraction and distribution processes (spills from platforms, pipelines and oil tankers).

From another perspective, these economic, social and political conditions help explain why hydroelectricity, first developed by private “light, heat & power” companies³⁶ was soon taken over by provincial and municipal governments. The colossal investments it requires and the environmental impact on people and nature that it entails demand a commitment from the state. In addition, hydropower has developed alongside the consolidation of the welfare state in many places³⁷. Many Canadian provinces harbour solid crown corporations, such as BC Hydro, Saskatchewan Power, Manitoba Hydro, and NB Power. Even in the United States, the federal government has acted as a catalyst for hydroelectric expansion by providing the necessary capital and expertise for the most ambitious construction sites. For instance, the largest hydroelectric dam in the country (the fifth largest in the world), the Grand Coulee Dam, is administered by the United States Bureau of Reclamation. At the end of the 20th century, there were 2 300 hydroelectric plants in the United States, generating an output of 74 800 megawatts ; 44 % of this capacity was owned by the federal government, 21 % by public agencies (cities and districts supervised by the Federal Energy Regulatory Commission) and only 35 % by private companies.

In Québec, not only does Hydro-Québec have a virtually unchallenged monopoly on the production of electricity, but it is also significant that all the great leaders of the Quiet Revolution have their name associated with a hydroelectric project, from Jean Lesage to Robert Bourassa, not to mention René Lévesque and Daniel Johnson. Given their pharaonic scale and cost, the construction of dams has become an integral part of nation building in Québec. The fact that hydropower is seen as a “public service” and not just as a “staple” explains the numerous debates surrounding

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36. Read the work of Claude BELLAVANCE, “L’État, la ‘ houille blanche ‘ et le grand capital. L’aliénation des ressources hydrauliques du domaine public québécois au début du XX^e siècle”, *Revue d’histoire de l’Amérique française*, 51, 4 (Spring 1998): 487-520 ; “ Les origines économiques et techniques de la nationalisation de l’électricité au Québec”, *Annales historiques de l’électricité*, 1 (2003) : 37-52 and “Un long mouvement d’appropriation : de la première à la seconde nationalisation”, in Yves BÉLANGER and Robert COMEAU (eds.), *Hydro-Québec, autres temps, autres défis* (Montréal, Les Presses de l’Université du Québec, 1995), 71-78.

37. Alexander John NETHERTON, “From Rentiership to Continental Modernization : Shifting Policy Paradigms of State Intervention in Hydro Manitoba, 1922-1977” (PhD Thesis (Political Science), Ottawa, Université d’Ottawa, 1993).

its regulation and nationalization. There are few companies of which citizens could say, as in the case of Hydro-Québec : “We are Hydro-Québec”.

A “QUASI-STAPLE”

From the 19th century onward, a parallel can be drawn between the growth of the middle class, the rise of urban centres and the demand for everyday consumer goods. The average American has gradually amassed electrical gadgets used to cook, light up, grill, grind, freeze, thaw, iron, wash, dry, etc. Similarly, in Québec, the increasing demand for electricity has followed the growth of the gross domestic product and a rise in the standard of living. With the prosperity of the postwar period and well afterwards, washers, dryers, refrigerators, telephones, irons and other domestic appliances invaded French-Canadian homes³⁸. This prosperity, illustrated by a new middle-class residential consumption, has had an impact on civic life. Political scientists have long noted a complex and nuanced correlation between the level of economic development and the triumph of democratic ideas³⁹. While it is not true that higher demand for energy automatically translates into a higher standard of living or democratic breakthroughs (the United States consume on average twice as many gigajoules per capita than European countries, yet their quality of life and democratic vitality do not differ substantially from those of Europe⁴⁰), it is clear that underdeveloped countries without extensive electrical connections are less likely to be democratic than industrialized countries.

However, it would be short-sighted to relate the growth of electricity consumption to the progress of liberal ideas. Western countries are among those that consume the most electricity per capita but also those that consume the most oil. Meanwhile, Qatar, Kuwait and the United Arab Emirates are among the most eager consumers of oil and electricity. Other

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38. Jean-Jacques SIMARD, “Ce siècle où le Québec est venu au monde”, in Roch CÔTÉ (ed.), *Québec 2000* (Montréal, Fides, 1999), 17-77. Claude Bellavance noted how the income from retail sales replaced those from large industry since 1956. (Claude BELLAVANCE, “Un long mouvement d’appropriation de la première à la seconde nationalisation”, *op. cit.*, 76).

39. Seymour Martin LIPSET, “Some Social Requisites of Democracy: Economic Development and Political Legitimacy”, *American Political Science Review*, 53, 1 (March 1959): 69-105 and Ross E. BURKHART and Michael S. LEWIS-BECK, “Comparative Democracy: The Economic Development Thesis”, *American Political Science Review*, 88, 4 (December 1994): 903-910.

40. David E. NYE, “Path Insistence: Comparing European and American Attitudes Toward Energy”, *Journal of International Affairs*, 53, 1 (Fall 1999): 133.

factors come into play, which reveal the very nature of the hydroelectric “quasi-staple” as compared to the oil “staple”. Hydroelectric power is distinct from oil in many ways. The “rentier effect” does exist, but in a limited fashion. Economic rent associated with natural resources is low for hydropower as compared to oil and gas. Thirty years ago, oil provided approximately 85 % of the total Canadian economic rent, while a hydropower provided less than 15 %⁴¹, and the gap between these proportions has been maintained, if not increased, until today. In Québec, the provincial government must always rely on income from direct and indirect taxes rather than dividends from Hydro-Québec. Electricity cannot be exported like ore, gas or wood, and in order to be efficient it must be transported from the production site to the consumption site by monopolistic distribution companies. Capturing the imagination with its technological feats, the hydropower industry generally requires state support in order to embark on large projects such as James Bay or Manic 5. This support allows it to keep at bay the voracious ambitions of a few greedy speculators or of members of a “comprador elite”⁴².

However, while the list of factors distinguishing hydroelectricity from oil helps to understand why hydroelectricity does not fit the definition of “staple” as closely as oil does, it should not obscure the extent to which hydropower is still a basic resource. As such, it can play a similar political and economic role to oil, though on a smaller scale.

For the leaders of Hydro-Québec in the 1960s who adhered to Fordism, the creation of the public corporation would serve economic interests by harnessing a precious natural resource and putting it at the service of national development. By thus consecrating the era of managers, planning, major bureaucratic construction sites and high wages in exchange for the increased rationalization and professionalization of labour, these leaders sincerely believed that hydropower could be a powerful lever for economic development. Electricity produced in Québec and mainly used in Québec seemed to promote the local development of processing industries. The idea was that a secondary economy would spontaneously attach itself to



41. Jean-Thomas BERNARD, “Le financement de la Confédération : La rente des ressources naturelles”, *Analyse de politiques*, 8, 3 (1982) : 297 and Gleen E. BRIDGES and Jean-Thomas BERNARD, “Une évaluation de la rente potentielle des sites hydro-électriques au Canada”, *Revue d'économie industrielle*, 29, 1 (1984) : 1-17.

42. Wallace CLEMENT, “The Canadian Bourgeoisie. Merely Comprador”, in Craig HERON and John SAUL (eds.), *Imperialism. Nationalism and Canada* (Toronto/Kitchener, New Hogtown Press/Between the Lines, 1977), 71-84.

the primary economy of hydroelectricity. These predictions were partly confirmed. In the 1970s, the industrial sector accounted for a significant proportion of the total consumption of electricity in Québec, and this is still the case due to the presence of energy-consuming companies in the province. In 2007, the industrial sector still accounted for half of the total consumption of electricity in Québec. The melting and refining sectors, including smelters, accounted for more than a quarter of electricity consumption.

However, studies tend to show that the optimism of Hydro-Québec managers was exaggerated.

[...] building power plants and then promoting low-cost electricity to industrialists in different parts of the world has not proven to be a powerful catalyst for transforming the production of resource-based semi-processed goods into the manufacturing of finished goods. In fact, this strategy, in some instances, has merely accelerated staple production or, at best, contributed to the continuation of dependent industrial development⁴³.

Obviously, the dreams of the 1960s have not all materialized. Large hydropower projects have failed to magically transform a primary economy into secondary industrial development, except perhaps in an incidental fashion : Québec now manufactures 10 % of the world's aluminum and is home to many pulp and paper facilities, yet their products (pulp and paper, chemicals and metals) are still mainly intended for export.

Virtually no diversification in manufacturing use, except for food-and-beverage production, is reported by industrial firms [...]. Nevertheless, politicians and utility executives continued to overbuild in the expectation that provincial infrastructure was essential for future industries and for export to the US⁴⁴.

Take an example dating back to 1981, which clearly illustrates this aspect of the question. In the early 1980s, the Chicoutimi-Jonquière region had both the highest average salary in the manufacturing sector and the highest unemployment rate among Canadian cities with over 100 000 inhabitants. Hydroelectric rent from the Alcan facilities had a very positive impact on the salaries of company employees living in Chicoutimi-

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43. Karl FROSCHAUER, *White Gold : Hydroelectric Power in Canada* (Vancouver, UBC Press, 1999), 221.

44. *Ibid.*, 224.

Jonquière, yet this impact did not extend to potential workers in the area⁴⁵. This example shows that, just like oil, hydropower can increase the incomes of workers associated to its exploitation or immediate industrial use, yet does not necessarily benefit the entire regional economy.

In the 1960s, the desire to “catch up” to the West through the launching of electrical megaprojects was particularly strong in countries with dictatorships : Egypt, Algeria, Turkey, the Soviet Union and Romania. Even today, enormous dams are built in Ethiopia and China⁴⁶. These examples do not support the thesis of a political dynamic specific to hydropower. And in the Western world, public corporations such as Hydro-Québec (or in the United States, the Bureau of Reclamation, the Corps and the Tennessee Valley Authority) have been accused of obviating public debate and acting like closed, bounded, imperial and irresponsible institutions⁴⁷.

However, since it serves a local market, raises broader, more immediate and more visible issues, and requires state collaboration and support, it may seem that hydroelectricity leads more to a democratic politics than oil. It was the James Bay project, in the mid-1970s, that paved the way for an agreement with the First Nations peoples of the region (the James Bay and Northern Québec Agreement), which, though imperfect, was nonetheless a first in Canada. In the early 1990s, citizens of the village of Grondines succeeded, through political protests, in forcing the installation of a power line under the river rather than the construction of towers on the banks of the St. Lawrence. The recommendations of experts associated with public institutions (Régie de l'énergie, Bureau d'audiences publiques sur l'environnement) that were put in place to frame the decisions of the public utility on the one hand, and the protests of ordinary citizens, on the other hand, have succeeded in the past in changing the course of Hydro-Québec. These kinds of citizen mobilizations seem more common in the case of hydropower than in the case of oil, for the reasons mentioned above.

It therefore seems that, in a relative, nuanced and localized way, the hypothesis that hydroelectricity differs from oil and has a different impact on rentier states cannot be set aside. It should be further elaborated and tested through more empirical research. The perspective adopted in this

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45. Jean-Thomas BERNARD, “Le financement de la Confédération : La rente des ressources naturelles”, *op. cit.*, 298.

46. Dai QING and Lawrence R. SULLIVAN, “The Three Gorges Dam and China’s Energy Dilemma”, *Journal of International Affairs*, 53, 1 (Fall 1999) : 53-71.

47. Christine A. KLEIN, “On Dams and Democracy”, *Oregon Law Review*, 78, 3 (Winter 1999) : 1-63.

article is intended to encourage a critical analysis of the economic and political dynamics introduced by the exploitation of specific natural resources, by returning to Harold Innis' initial "staple theory" idea according to which national development is subtly influenced by the characteristics of the basic materials that each country counts on to progress and prosper. By applying this "Innisian" grid to hydropower, we hope to have convinced the reader that this resource may not be – at least not quite – a commodity like any other.

(translation : Nadia Hausfather)