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Machineries of Oil: An Infrastructural History of BP in Iran (Katayoun Shafiee, 2018)

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Résumé

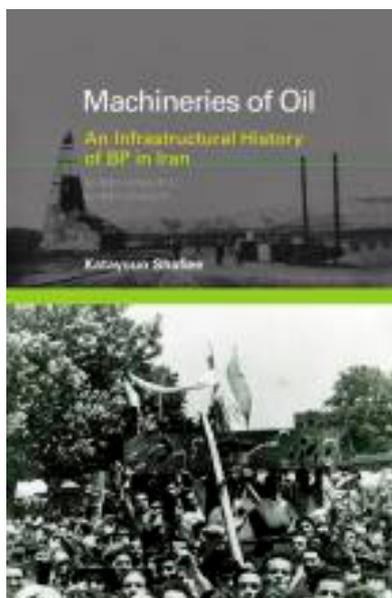
L'ouvrage de Katayoun Shafiee se penche sur l'histoire de British Petroleum (BP) en Iran, de 1901 à 1954. Le livre montre comment la multinationale a développé toute une série de pratiques visant à déplacer les revendications politiques égalitaires des travailleurs du pétrole vers des calculs techno-économiques. Ces calculs sont parties prenantes de la constitution d'un vaste réseau d'alliés (des autres majors pétrolières aux gouvernements occidentaux). Ils participent ainsi de la transformation de la politique au Moyen-Orient, et de la formation du régime énergétique de notre monde.

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Plan de l'article

- Concessions and geological reports as “political weapons”
- Dividing profits, dividing labor
- Nationalization, backlash, and strategies of “masterly inactivity”
- Social technologies and the shuttering of political alternatives



1 From time to time, in the academic world, a researcher strikes oil and opens a new field for exploration. Timothy Mitchell's book *Carbon Democracy: Political Power in the Age of Oil*¹ certainly belongs to this category. By showing energy's centrality in shaping political and economic forces, and how oil in particular helped create a world order dependent on an undemocratic Middle East, he has paved the way for many scholars interested in revisionist accounts of energy history. Among these, Katayoun Shafiee follows this path with her first monograph entitled *Machineries of Oil: An Infrastructural History of BP in Iran*² which examines the history of the Anglo-Persian Oil Company's³ activities in Iran through a socio-technical lens, studying in detail the organizational practices that allowed the British company to keep a monopoly on the extraction of Iranian oil until its nationalization in 1951. These organizational practices and artefacts, such as mathematical formulas, concession terms, and international law, were used by AIOC to transform social and political

claims, such as demands for higher wages or increased Iranian participation in the company, into technoeconomic calculations, argues Shafiee. Therefore, the book's main ambition is to delve into these machineries of oil through six different case studies, each forming one chapter, in order to show how Pandora's boxes get transformed into black boxes.

Mitchell's influence over Shafiee's work is not fortuitous since the former supervised the latter's PhD thesis⁴ at New York University's departments of History and Middle Eastern and Islamic Studies; since then, Shafiee has held positions at the National University of Singapore, at University College London and at the University of Warwick, where she is now assistant professor. In fact, following one of the key points made in *Carbon Democracy*, Shafiee opens her book by inviting us to see oil as more than just an economic resource, traditionally viewed in academic discourse through the rentier state⁵ and the resource curse lens, since this narrow conception of oil ignores its materiality and how, "for oil to be transformed into profits, it must rely on a set of technical arrangements, human forces, political powers, distribution systems, forms of expertise, and coercive mechanisms."⁶ However, seriously considering oil's materiality contrasts with most histories of oil and of AIOC, whose existence is usually explained solely by the Royal Navy's switch from coal to oil in 1912; additionally, these accounts treat states and transnational corporations as separate entities, seeing AIOC and the Iranian state as distinct. But these narratives are insufficient, according to Shafiee. Indeed, other motives can explain AIOC's foundation in 1908, one being a constraint on global oil supply to ensure high profits for transnational

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¹ Timothy Mitchell, *Carbon Democracy: Political Power in the Age of Oil* (London: Verso, 2011).

² Katayoun Shafiee, *Machineries of Oil: An Infrastructural History of BP in Iran* (Cambridge, MA: MIT Press, 2018).

³ First known as Anglo-Persian Oil Company (APOC), then Anglo-Iranian Oil Company (AIOC), and today known as British Petroleum (BP). Following Shafiee, we will unilaterally use the acronym AIOC to refer to this firm throughout the text for simplification.

⁴ Katayoun Shafiee, *Cracking Petroleum with Politics: Anglo-Persian Oil and the Socio-Technical Transformation of Iran, 1901-1954* (New York, NY: New York University, 2010).

⁵ The author points out that the rentier state concept was first formulated in relation to Iranian economic history. See Hossen Mahdavy, "The Pattern and Problems of Economic Development in Rentier States: The Case of Iran," in Michael A. Cook (ed.), *Studies in the Economic History of the Middle East* (Oxford: Oxford University Press, 1970), 428-467.

⁶ Shafiee, *Machineries of Oil*, 8.

oil corporations, another being the undermining of Iranian⁷ state sovereignty. Furthermore, the dividing line between private actors and states is often quite fuzzy, since they are deeply linked through complex energy networks and infrastructure and are therefore co-constructed.

- 3 To differentiate her work from the traditional historiography on Iran's oil industry, the author uses a sociotechnical analytical framework, stemming among others from Michel Callon's work and the actor-network theory (ANT)⁸ widely used in the emerging research field of science and technology studies (STS). A sociotechnical approach is useful, in this particular instance, since it encompasses not only human but also non-human actors such as oil, organizational techniques or royalty calculations, to understand how these actors form a network to reach certain objectives and shut down political possibilities. Even if the sociotechnical framework

usually goes hand in hand with ethnographical work, Shafiee applies it with great skill to an historical approach based on archival work conducted in Iran, in the United Kingdom and in the United States. The resulting book is built around six different sociotechnical artifacts involving AIOC and presented chronologically, from 1901 to 1954.

CONCESSIONS AND GEOLOGICAL REPORTS AS "POLITICAL WEAPONS"

- 4 In 1901, the Iranian government grants a 60-year concession to William Knox D'Arcy for wide access to its petroleum resources. This is not the first fossil-fuel related concession on Iranian territory, however, since access to coal was granted to the British Baron von Reuter in 1872. And, indeed, coal will remain the dominant fossil-fuel consumed globally over oil in relative and absolute terms until 1965 (see fig. 1 and fig. 2).⁹

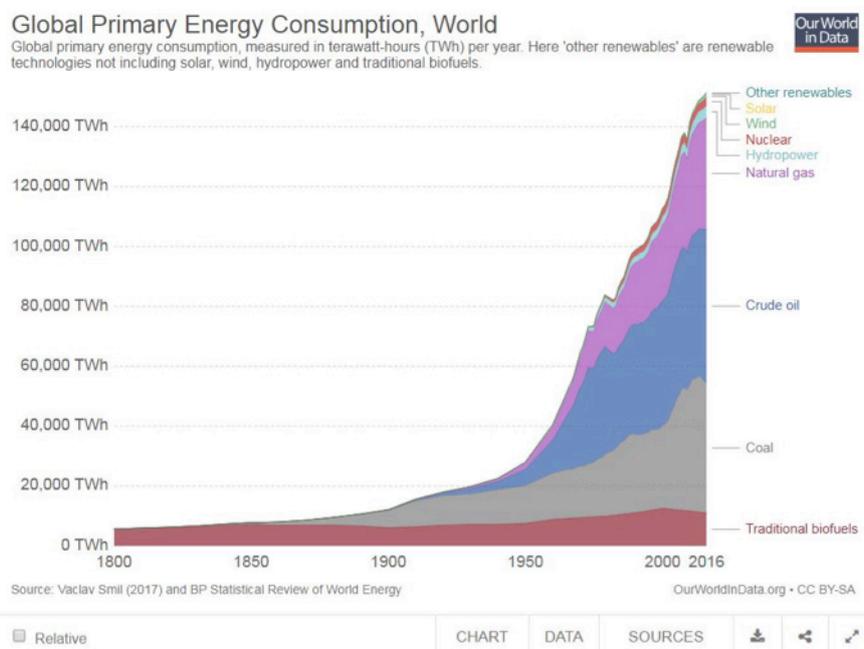


Figure 1: Global primary energy consumption in absolute terms since 1800. Free of copyright restrictions (Creative Commons)

⁷ Iran was known globally as Persia until 1935, but we will use the former for clarity.

⁸ See, for example: Michel Callon, "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Briec Bay," in John Law (ed.), *Power, Action and Belief: A New Sociology of Knowledge?* (London: Routledge, 1986), 196-223. Callon himself sat on her PhD dissertation committee.

⁹ Hannah Ritchie and Max Roser, "Energy Production & Changing Energy Sources." OurWorldInData.org (2018). Retrieved from: <https://ourworldindata.org/energy-production-and-changing-energy-sources>. Data from: Vaclav Smil, *Energy Transitions: Global and National Perspectives* (Santa Barbara, CA: Praeger, 2017). Charts are free of copyright restrictions (Creative Commons).

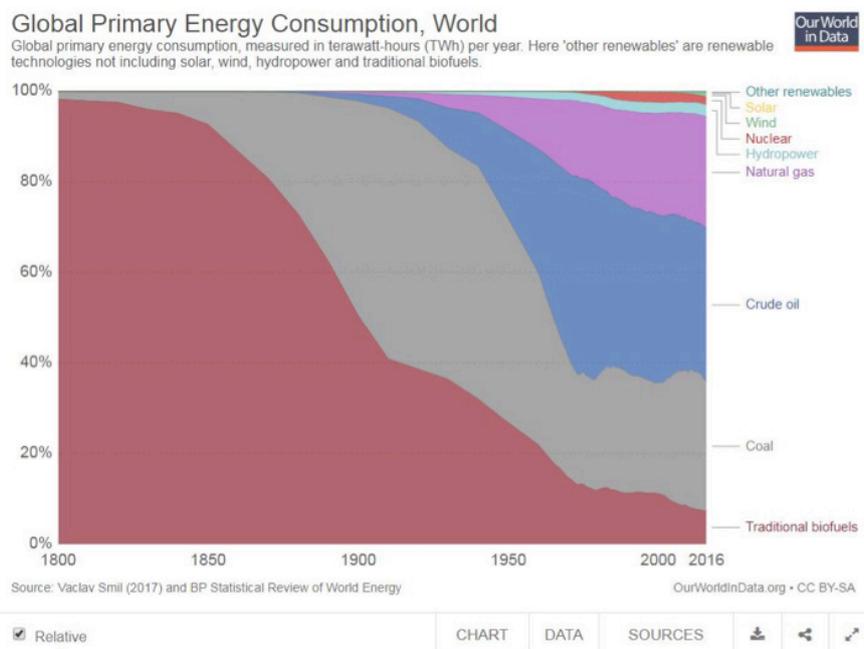


Figure 2: Global primary energy consumption in relative terms since 1800. Free of copyright restrictions (Creative Commons).

5 So, one may ask, why were D'Arcy and the British interested in Iranian oilfields when oil consumption was still very much in its infancy? Traditional accounts portray the adventures of transnational oil corporations in the Middle East as a race to discover and exploit new oilfields. But, following a point made in *Carbon Democracy*,¹⁰ Shafiee instead shows how the concession's Article 6 prevented Russia from building a pipeline on Iranian territory, illustrating a persistent cartel strategy adopted by the oil majors throughout the 20th century consisting of curbing oil production to restrict competition and maintain high prices, thus ensuring high profit margins.

6 The concession did not clearly address the matter of property rights, which AIOC and the British government, majority shareholder from 1914 to save the firm from bankruptcy, used to their advantage. To address land and property claims made by local actors, such as the Bakhtiyari khans, AIOC chose to deal with them directly, in effect bypassing the central government's jurisdiction and weakening its reach, at

least until Reza Pahlavi's accession to power through a British-sponsored coup in 1921, after which he eliminated these middle groups and allowed AIOC to repatriate all the Bakhtiyari's shares and dividends. Shafiee thus illustrates how the concession, a seemingly neutral legal text, was in effect a technology of power and control that "did the physical work of building the machinery in and through which more democratic forms of oil production and politics were shut down and other arrangements left open."¹¹

Another interesting document examined by Shafiee is a geological report written by Hugo de Böckh in 1924 for AIOC.¹² He and others before him had pointed out how Iran's oil reserves were calculable and limited; for example, the Masjid Suleiman oilfield was estimated in 1929 to go dry by the 1950s. This information, however, was seen as highly sensitive by AIOC, which was keen to manufacture a sense of uncertainty around known reserves to reassure investors¹³ and keep

¹⁰ "The main feature of Middle Eastern oil throughout the twentieth century was that there was always too much of it" (Timothy Mitchell, *Carbon Democracy: Political Power in the Age of Oil*, 43).

¹¹ Shafiee, *Machineries of Oil*, 55 and 90 where she speaks of this concessions as "political weapons" (90).

¹² Hugo de Böckh, *Preliminary Report on the Principal Results of My Journey to Persia*, 1-93. BP archives 70501, 1924.

¹³ William Fraser, deputy chairman of AIOC, indicates that estimates of oil reserves "should never be circulated to the Board or shareholders." Shafiee, *Machineries of Oil*, 75.



Figure 3: Iranian workers building a pipeline leading to the Abadan refinery, 1908. Retrieved from <http://www.iichs.org/srcfiles/printmag.asp?id=180>. Free of copyright restrictions (in the public domain).

the Iranian government from asking questions about royalties, production rates and concession terms. To achieve this, AIOC removed all geological conclusions, including maps, from de Böckh's report and recalled the 72 copies sent before these revisions: the second edition of the report delivered to the Iranian government is thus bare of technical details and made useless. Yet, this interesting point needs to be nuanced: Shafiee takes the calculations coming from AIOC at face value, while we must acknowledge that oil reserves are socially¹⁴ and economically¹⁵ constructed. Nevertheless, her wider argument stands. While AIOC was building technical expertise about oil reserves in Iran to serve its economic interests, the British company was at the same time constructing ignorance about the resource to the Iranian government. Oil production sites, she argues, served as laboratories where petroleum knowledge was formed *in situ*, since the particular type of oil found in Iran was peculiar due to its high viscosity, pressure

and sulfur content. But “unknowability”¹⁶ about oil was also produced in these laboratories, in effect black-boxing geological reserves, maps¹⁷ and estimates whose knowability would have hurt AIOC's business interests. As ever, the technical and social worlds merge, forming a “seamless cloth.”¹⁸

Despite these attempts to stifle debate, the 1901 concession, which was extremely favorable to AIOC, was the subject of growing discontent during the 1920s and the 1930s in Iran. The lack of local employment and both technical and accounting information made available to the government, the low production rates resulting from cartel practices, as well as the meager royalties, equivalent to 16% of AIOC's annual net profits, led to the concession's cancellation in 1932. The dispute opposing the oil firm and its majority shareholder — the British government — to the Iranian government was taken to the League of Nations and, as Shafiee

¹⁴ Gary Bowden, “The Social Construction of Validity in Estimates of US Crude Oil Reserves,” *Social Studies of Science*, vol. 15, n°2, 1985.

¹⁵ Gordon C. Watkins, “Oil scarcity: What have the past three decades revealed?,” *Energy Policy*, vol. 34, n°5, 2006.

¹⁶ This is the term the author uses. See: Shafiee, *Machineries of Oil*, 71.

¹⁷ Unfortunately, few maps and images in general are presented in the book.

¹⁸ Bruno Latour, *Politics of Nature: How to Bring the Sciences into Democracy* (Cambridge, MA: MIT Press, 2004), 12.

shows, transformed international law by introducing such concepts as national sovereignty over natural resources and, conversely, the right of governments to represent and defend private firms on the international scene. The long arm of petroleum and the centrality of energy systems thus shaped international laws and institutions, as the subsequent nationalization of Iran's oil industry in 1951 under Mohammad Mosaddegh would again demonstrate.

DIVIDING PROFITS, DIVIDING LABOR

9 Negotiating a new concession meant coming up with more generous royalties for Iran without frustrating AIOC shareholders, all the while limiting annual oil output despite calls from Tehran to step up production. Two mathematical formulas were concocted by AIOC's accountants to calculate royalties based on profits and production rates: however, both formulas led to royalties fixed at about 20% of AIOC profits. These gave the illusion of choice: an illusion since key variables, such as production volumes, remained identical in both formulas. As Shafiee underlines, "each proposed scheme corresponded to a particular arrangement, with the ultimate aim of narrowing the field of dispute by removing the possibility that the government would demand access to company accounts and an increase in production and profits."¹⁹ Mathematical formulas transformed political claims, such as increasing oil output and royalties accordingly, into purely technical calculations. In the end, a new concession was adopted in 1933, addressing royalties but also demands for increased Iranian participation in the labor force, both in non-technical and technical roles. Article 16 (III) of this new concession stipulated that the share of non-Iranian AIOC employees had to be gradually reduced while the share of employed Iranian nationals had to increase concomitantly. However, well aware of the imminent threats facing its operations in the region, notably unionization and nationalization, the British oil major had to ensure social and labor division through a set of social technologies.

This division of labor on racial terms, a classic 10 strategy used in a similar context by Aramco in Saudi Arabia,²⁰ resulted in high inequalities in pay as well as in working and living conditions between employees of the same firm. British nationals occupied most technical and managerial roles, while Iranians were left to more basic tasks, a differentiation ingrained in the 1901 concession's Article 12. Indian "coolies" were also crucial to AIOC's operations in Iran after the First World War, forming almost a quarter of its workforce in 1921. Many social technologies were employed by the company to ensure discipline amongst its workers, according to Shafiee. English proficiency was necessary to work in its higher divisions, and this imperative was used by the firm as a tool of distinction between different classes of workers in order to weaken Iranian participation in decision-making. Housing, for example near the Abadan oilfield, was highly discriminatory: Europeans inhabited bungalows in a dedicated section of town, while the locals lived in deprived shantytowns. "Never in the whole of my experience indeed in any other country which I have had the privilege of visiting, did I see so close together such extremes in Housing Accommodation"²¹ remarked a British parliamentary delegate in 1946.

Without surprise, this led to multiple strikes, 11 encouraged by the rise of the Iranian Communist Party that was to become known as the Tudeh in 1941. In May 1929, a strike in Abadan lasted six days, and had mixed results. On one hand, it did not have much success in disrupting regional and global oil flows, only managing a suspension of geological surveys for a few days. This relative failure can be explained by one of the crucial points made by Timothy Mitchell in *Carbon Democracy*: contrarily to a coal-centered energy system, in which workers have more leverage in labor disputes since they are more important to the extractive process and also because coal is more expensive to import from distant locations, an oil-centered energy system is synonym

²⁰ Robert Vitalis, *America's Kingdom: Mythmaking on the Saudi Oil Frontier* (Stanford, CA: Stanford University Press, 2006).

²¹ Cited in Shafiee, *Machineries of Oil*, 141.

¹⁹ Shafiee, *Machineries of Oil*, 107.



Figure 4: Indian soldier guarding an AIOC refinery, 1941. Retrieved from http://media.iwm.org.uk/ciim5/293/637/large_000000.jpg. Free of copyright restrictions (in the public domain).

with more networked energy routes and thus less political clout for workers.²² Yet, on the other hand, the strike led to improved working conditions for Iranian workers, partly thanks to increased pressure on AIOC coming from Reza Shah's administration.

- 12 The British firm was thus in an uncomfortable position: improving living standards for its employees was inescapable, although ceding ground would eventually lead to more power for labor movements supporting nationalization of the Iranian oil industry. This impasse is reflected in the company's forced efforts to form local technicians, setting up the Abadan Technical Institute in 1938 but ultimately promoting trade training over university training, the latter generating highly-educated workers suspected of being trouble-makers. AIOC, thanks to its experience in administering oil workers in the Middle East, even held a meeting in London with most oil majors operating in the region to share information on commendable administration practices, showing how transnational oil corporations

collaborated not only on production and prices but also on industrial relations. Nevertheless, additional strikes in 1945 and 1946 guided by the Tudeh party and rising trade unions led to a new labor law introducing a 48-hour work week and establishing a National Ministry of Labor with local branches in oil-producing regions across the country.

NATIONALIZATION, BACKLASH, AND STRATEGIES OF "MASTERLY INACTIVITY"

The social technologies and administrative techniques employed by AIOC couldn't completely hide the fact that royalties paid to the Iranian government, despite the renegotiated concession in 1933, were still mediocre, as were the working and living conditions of the workers employed in the petroleum sector. Finally, in March 1951, after one more strike, the oil industry's nationalization was voted by the Majlis, the Iranian parliament: the 1933 concession was then cancelled, AIOC oil-related property expropriated and the British firm replaced by the new National Iranian Oil Company (NIOC). This drastic measure was instantaneously contested by the British government, arguing that it violated international law. Internationalizing this dispute by bringing it to the newly established International Court of Justice (ICJ) was a way for the United Kingdom to mobilize allies, mostly the United States, and for Iran to make the case for national sovereignty over oil in international legal terms.

To retaliate against nationalization, AIOC and the British government, working hand in hand, imposed multiple economic sanctions, freezing Iran's sterling balances in London, stopping Iran from converting sterling into dollars and suspending exports of commodities like steel and sugar. An oil boycott was also enforced: AIOC stopped paying royalties altogether, including advances and past dues, barred its British technicians from working on oil sites and prevented companies from loading oil at the Abadan refinery. American oil majors diligently followed suit, since global demand for oil was met by increased production, with major oilfields being put on stream in the Middle East such as Ghawar in

²² See Mitchell, *Carbon Democracy*, 13-42.

Saudi Arabia, discovered in 1948: in other words, there was no need to bring the oil coming from Iran's newly nationalized industry to markets immediately since doing so would have depreciated oil prices and contradicted the cartel's main tried and tested objective of maintaining high oil prices.

- 15 This alignment of British and American interests, both public and private, shows how oil has been central in shaping a Western world whose growth was and still is dependent on the undemocratic forms of politics brought about by oil in the Middle East. Nationalization was then simply unacceptable for the British and the Americans.²³ Multiple strategies of “masterly inactivity”²⁴ were devised to delay and block this new dangerous political path, not only for Iran but for other countries tempted by an anti-liberal measure in a post-Second World War context haunted by the specter of communism. As mentioned earlier, the first strategy was to internationalize the dispute by bringing it to the ICJ. In the end, the court concluded in July 1952 that it lacked jurisdiction to render a definitive verdict, in effect ruling in favor of Iran and of national sovereignty and setting an international legal precedent in the process. The second consisted in implicating the young International Bank for Reconstruction and Development (IBRD), now known as the World Bank, which offered to manage Iran's oil supply chain until a compromise was found, but Mossadegh refused, arguing that the IBRD “failed to grasp the dimensions of Iranian nationalism”²⁵ and that it mostly served British and American interests. The third, planned since 1951, resulted in Mossadegh's overthrow in August 1953 under Operation Ajax arranged by the CIA with MI6's assistance.

²³ To that effect, we must remember George Bush's words in 1992, at the first Earth Summit: “The American way of life is not up for negotiation.” Cited in: “A greener Bush,” *The Economist*, 13/02/2003. Retrieved from: <https://www.economist.com/leaders/2003/02/13/a-greener-bush>

²⁴ Roger Louis, cited in: Shafiee, *Machineries of Oil*, 208.

²⁵ Amy L. S. Staples, cited in: Shafiee, *Machineries of Oil*, 211.

AIOC was reinstated as the British Petroleum Company in 1954, but was no more on its own to exploit Iran's oilfields, since a consortium arrangement allowed US majors, Shell and the Compagnie française des pétroles²⁶ to gain access to this market. The outcome left full rights to the oil majors over oil output and prices, Iran gaining a legal title to its oil and a 50-50 distribution of net production profits. Once again, for Shafiee, the transnational oil corporations came out as the real winners of this consortium arrangement: it helped them secure lasting control over Iranian oil supply and allowed them to circumvent political alternatives opened by workers and public opinion after a lengthy struggle. This closure proved crucial in the post-Second World War world order, centered around an oil-based energy system.

SOCIAL TECHNOLOGIES AND THE SHUTTERING OF POLITICAL ALTERNATIVES

By offering a detailed and erudite account of how a transnational oil corporation evolved in the first half of the 20th Century, Katayoun Shafiee's history of British Petroleum's ancestor from the 1901 concession to the consortium arrangement of 1954 is compelling under various angles. It clearly demonstrates how an oil-based energy system was deliberately constructed, highlighted by Winston Churchill's decision for the Royal Navy to turn to oil instead of coal in 1912; this reminds us how so-called energy transitions are complex, gradual,²⁷ and result from political and economic decisions.²⁸ Replacing coal, whose materiality enabled more democratic forms of politics, with oil allowed the West to neutralize egalitarian demands at home through control of the Middle East's enormous oil reserves. The insider look at the numerous cartel practices

²⁶ Now known as Total.

²⁷ Vaclav Smil, “Examining energy transitions: A dozen insights based on performance,” *Energy Research & Social Science*, vol. 22, 2016.

²⁸ Jean-Baptiste Fressoz, “Pour une histoire désorientée de l'énergie,” in Daniel Thévenot (dir.), *25^e journées scientifiques de l'environnement – L'économie verte en question* (Créteil : JSE, 2014). Retrieved from: <https://hal.archives-ouvertes.fr/hal-00956441>

adopted by the oil majors, from manipulating oil output and prices to cooperating on the management of labor dissent and unionization, is also extremely insightful. Another important side story in *Machineries of Oil* is the fading influence of the United Kingdom and its replacement by the United States as global superpower; also worth mentioning is how public and private interests, often portrayed as separate, merged, most famously to overthrow Mossadegh in 1953. This tragic event reminds us just how oil, and energy, are crucial. Finally, in what is Shafiee's main focus throughout the book, she shows how social technologies and organizational practices were mobilized by AIOC to discipline its workers and shut down political alternatives, such as nationalization and unionization. The 1901 and 1933 concessions, mathematical formulas to calculate royalties and output, housing, international law and the division of labor on racial terms were all employed by the British firm to transform political claims into technical calculations as to render its decisions as objective and scientific, black-boxing egalitarian demands in the process.

18 *Machineries of Oil* is a great read for scholars interested in Iranian and Middle Eastern history, but also in global history, since it offers great insight into the interactions between Western and Middle Eastern states throughout the first half of the 20th Century. Business historians will also find great material in the book, above all a precise account and description of the oil major's monopolistic practices. Historians of technology, however, might feel puzzled by the extremely elastic use of the concept of technology: for the author, "sanctions and a boycott, 50-50 profit-sharing, the APQ [*Aggregate Programmed Quantity*], the racial-technical organization of labor, and legal-economic metrology"²⁹ as well as concession terms³⁰ or housing³¹ are all considered technologies. This wide use of the term, close to Foucault's,³² is somewhat

disconcerting and doesn't allow for clear analysis: what is and is not considered as technology by the author is not specified. Likewise, although the title promises an infrastructural history of AIOC, very little is said of pipelines,³³ not to mention roads, telecommunication networks, railways or shipping routes. Infrastructure, then, as technology, is used very liberally, which can disconcert the reader.

Despite these details, *Machineries of Oil* nar- 19
rates a crucial episode in energy and global history, supported by great archives coupled with an interesting socio-technical analysis of past events inspired by the ANT. It links with great dexterity the materiality of oil, state formation, technical expertise, imperialism, and labor politics. As the oilfields in Khuzistan are about to be depleted, one wonders what will happen to this well-oiled machine when nothing will be left to fuel it.

²⁹ Shafiee, *Machineries of Oil*, 236.

³⁰ *Ibid.*, 53.

³¹ *Ibid.*, 122.

³² Michel Foucault, *Surveiller et punir: Naissance de la prison* (Paris : Gallimard, 1975). See also: Michael C. Behrent,

"Foucault and Technology," *History and Technology*, vol. 29, n°1, 2013.

³³ See for example: Christopher F. Jones, *Routes of Power: Energy and Modern America* (Cambridge, MA: MIT Press, 2016).

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