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THE RESOURCES OF ECONOMICS

Making the 1973 Oil Crisis

Timothy Mitchell

The 1973–1974 oil crisis has been called a textbook case of the law of supply and demand. This article examines the work that had to be done to make such a description viable. The work included bringing together a series of conflicts into a single field of political concern known as the ‘energy crisis’. It also included forms of confrontation and acts of sabotage in the Middle East that made it possible to transform the networks that transported oil supplies into a political instrument. This instrument served a dual purpose: redirecting the flow of profits from oil, and attempting to settle the Palestine question. Parties to the crisis used market devices in an attempt to frame its causes and possible solutions.

However, the events of 1973–1974 exceeded the attempts to contain them as a matter of market forces. The question of supply opened up new fields of doubt about the possible limits to reserves of oil; the increasing difficulty of forecasting future demand and prices opened up new ways of mapping the future; and the inability to prevent catastrophic oil spills helped trigger the emergence of new matters of concern, in particular the preservation of the environment. Yet the events of 1973–1974 also triggered the unraveling of Keynesian economics, attacked by market technologies developed from the mid-1970s.

KEYWORDS: oil; energy crisis; environment; economics

Recent research on economic markets and the role of specialist economic knowledge in framing market exchanges, in particular in the work of Michel Callon, represents an important extension of the field of the social study of science (Callon 1998; Mackenzie *et al.* 2007). This research has also provided a means to extend the methods of science and technology studies to the study of places outside the West, since one of the leading forms of scientific experiment carried out in countries of the global south in recent decades has been the attempt to reorganize local material and political worlds according to the laws of the market (Mitchell 2002, 2005, 2007; Elyachar 2005). Earlier work on neoliberal market projects was able to draw on traditions in postcolonial and postmarxist theory that shared with science and technology studies (STS) a suspicion of grand narratives of enlightenment and development and a skepticism towards accounts that attributed the spread of market technologies to the unfolding of large-scale historical forces. The methods of STS helped bring to this work a concern with the particular sites of economic experiment, an attention to the way the properties of goods and commodities contributed to unexpected outcomes, and an interest in the innovative technologies and calculative techniques out of which market experiments are built.

This research has also faced the challenge, often encountered in STS, of moving from the study of particular experimental sites to examine the ways different sites are linked together, to explore the forms of interconnection and long-distance relationship that enable certain ideas, forces, or movements to present themselves as something global or possessing a translocal logic or power, and to ask what enables local challenges to these relationships to succeed in disrupting them.

Studying the political economy of oil provides an opportunity to explore these problems. Elsewhere I have examined the transition from coal to oil in the first two-thirds of the twentieth century, asking why energy networks based on coal gave those employed to produce and distribute the energy an unprecedented power to disrupt them, while oil-based networks, especially those constructed in the Middle East, did not, with important consequences for the fate of democratic politics in both the Middle East and the West (Mitchell 2009). The answer explores not just the different methods with which coal and oil are brought out of the ground, moved from place to place, processed, and consumed, and the different scales of the networks linking these processes together, but also the related networks, of international finance, for example, of technical knowledge, and of economic theory that different forms of energy depended upon and made possible.

The present article turns to another moment of transition in the history of petroleum, the 1973–1974 oil crisis. This event is thought to mark a turning point in the history of oil markets, as the cartel of major Western oil companies lost its power and the new forces of OPEC and the Arab oil weapon were brought into play. It also appears to mark a transition in other aspects of the arrangements that shaped the political economy of oil, including the relationship between the US dollar and flows of oil, forms of political mobilization in the main oil producing countries, orientations towards a future of economic growth, and the deployment of Keynesian economic knowledge. This article explores how these changes were interconnected, and the work that was done to frame them as ‘the oil crisis’.

Simple Supply and Demand

The 1973–1974 oil crisis gave many people in the countries of the north their most memorable encounter with the laws of the market. Middle class citizens faced the unfamiliar experience of the shortage of what had always been plentiful, long queues in competition with other consumers, anxiety over the future availability of an essential commodity, and prices that increased almost by the day. On 17 October 1973, six producer countries of the Middle East, led by Saudi Arabia, had announced a five percent cut in the supply of oil. They promised a further five percent reduction every month, until the United States stopped obstructing a comprehensive settlement of the Israel–Palestine conflict. With each reported cut, the price of gasoline rose. The experience offered entire populations of the West an unwelcome object lesson in the principles of neoclassical economics.

The object lesson made its way into the lectures and textbooks of economists, to be repeated as a widely familiar example illustrating the simple model of supply and demand. Decades later, the oil crisis was still a favorite tool for reaffirming a straightforward point about markets. Deirdre McCloskey used it to respond to a wide ranging criticism of neo-classical theory published in 2002 in the *Post-Autistics Economics Review*, a discussion forum for heterodox economists. Since the assumptions of standard microeconomics

'contradict almost everything that we observe around us', Bernard Guerrien (2002) had written, 'it is increasingly impossible to discuss real-world economic questions with microeconomists – and with almost all neoclassical theorists. They are trapped in their system, and don't in fact care about the outside world any more'. McCloskey (2002) defended neoclassical price theory with a single example: 'When OPEC (viz., Saudi Arabia) cut the supply of oil in 1973, didn't the relative price of oil rise, just as a simple supply-and-demand model would suggest?' Good economics textbooks are full of real-world examples like this, McCloskey said, demonstrating that such models 'can be made as quantitatively serious as you want. They are real scientific ideas'.

It is interesting that the most readily available evidence that economists were not trapped in their system and were indeed concerned about 'the outside world' was the 1973 oil crisis, an event that caught economists by surprise. But Guerrien's claim that economists are trapped in their system misses the mark. Neoclassical price theorists care about the world in a different way. They do not want to alter their system to make it like the real world; they want to alter the real world to make it perform according to their system. In the 1973–1974 oil crisis, the law of supply and demand was not a fiction, but rather a tool. It was a piece of equipment that a variety of agents were using. If they could succeed in making an event that was assembled and performed in such a way that the laws of economics might operate, various parties would achieve their goals.

There are several problems that a critic of neo-classical theory could raise with the use of the 1973 oil crisis to illustrate the supply and demand model. I will discuss these problems briefly, although they are not my main concern. First, it is difficult to know how much of the increase in the price of oil in the winter of 1973–1974 was associated with a cut in supply, or even by how much the supply was cut. While Saudi Arabia and Kuwait reduced their exports of oil, other Middle Eastern producers, led by Iran, increased production. Since none of these countries provided information on how much oil they were producing, it was impossible to know how far the total world supply was reduced (Stork 1975, p. 230; Rand 1975, pp. 317–318, 328–330).

Second, since interruptions in supply of oil from one source could be made up from another, the embargo against the United States 'never happened' (Adelman 2004, pp. 16–21). Other factors contributed to the sharp increase in oil prices. In the US Congress, a hard-line faction of the Democratic Party, opposed to a Middle East peace settlement, introduced emergency legislation requiring the government to prepare mechanisms for fuel rationing and a program to reduce the country's oil consumption (Morgan 1973). Commercial users of petroleum products and individual motorists began to panic, unnerved by public discussions of the 'oil weapon' the Arabs had unleashed against the West. Uncertain about the supply and about the future intentions of suppliers, users purchased more petroleum than they needed. Governments worsened the problem by mismanaging the crisis, adopting emergency measures that impeded the distribution of oil and made the shortages more severe (Yergin 1991, p. 617). Public debate contributed to the sense of threat, linking the oil embargo to a wider 'energy crisis', a problem of 'limits to growth', and the vulnerability of the environment, an increasingly important object of widespread political concern.

A further problem with making oil conform to the model of supply and demand relates to a peculiar feature of oil. Since most users cannot easily switch to alternative sources of energy, it is said to have a very low elasticity of demand. So even small shortages can lead to large price increases. In many circumstances, however, oil enjoys

a reverse elasticity of demand. As the price goes up, people buy more of it. Changes in annual world demand for oil are connected to changes in energy infrastructure, in industrial and social structure, in income growth, in excise taxes, and other factors. Demand for oil is usually unlinked to its price. The exception to this pattern is when very large increases in price occur in a very short period. The 1973–1974 oil crisis would appear to be an example of such an exception. If so, then the simple supply and demand model that this event is used to illustrate is the model of an exceptional event (Mabro 1992). The question then arises as to the relation of the economists' model to the making of this exceptional episode.

In order for these flows of oil, military actions, industry rumors, supply figures, political calculations, and consumer reactions to come together as a textbook case of the laws of economics, a new socio-technical world had to be assembled to hold them together. Periods of crisis provide useful occasions for studying how such worlds are assembled and rearranged. The declaration of a crisis often marks an attempt to introduce new forces or to identify threats against which decisive action must be taken. It also requires defining the object or assemblage under threat. As Latour points out, the forces introduced, the threats identified, and the assemblages defined may all escape the control of those attempting to mobilize or master them.

Three matters of concern emerged and intersected in the early 1970s: the problem of energy as an interconnected and vulnerable system, especially as seen from the United States; the production and distribution of oil from the Middle East, as a flow of energy that a single set of actors could coordinate, and even turn into an instrument with which to work towards other political goals; and the emergence of the environment as a rival to 'the economy' as a central object of politics, defined not by the limitless expansion of a country's GDP but by physical limits to growth.

How Energy Became a System

The magazine *Science Journal* devoted its edition of October 1967 to a special issue examining the new field of technological forecasting. Alongside articles on science, automation, communication, space, and other topics, the issue included an essay on energy. Written by the director of the science and technology division of the US Institute for Defense Analyses, the article opened by declaring that 'energy is so ubiquitous that it is taken for granted' (Cambel 1967, p. 57). While noting problems like air pollution caused by automobiles and economic blight in the coal fields, there was no suggestion of a system under threat or an impending crisis.

The term 'energy crisis' first appeared in American political debate three years later, in the summer of 1970. The ensuing events are now remembered as a problem involving the availability and control of Middle Eastern oil. Yet when the crisis was first reported in the American press, the situation was defined with little reference to the Middle East, or even to oil. As the work of declaring a crisis began, it was far from clear what the nature of the threat was, or even the object being threatened.

The announcement of the new threat came on 10 August 1970, when John Nassikas, the head of the Federal Power Commission, gave a speech at the National Press Club on 'The National Energy Crisis' (Halloran 1970; Harwood 1970). For the second summer in succession, New York and other large cities were suffering shortages of electrical power. Nassikas said that while the problems were partly caused by delays in

installing power generating and transmission facilities, deficiencies in fuel supplies were the main factor in what he called 'our developing energy crisis'. He listed a variety of causes for the shortages, and warned that they might recur in the winter, in particular shortages of natural gas for industry. Fuel might have to be rationed and manufacturing plants closed. The ultimate solution to the energy crisis lay in the development of nuclear power, he argued, but in the meantime the main remedy was deregulation, including the reform of antitrust laws to allow the power industry to adopt 'economies of large scale operation'. The oil companies were campaigning to have the government control of gas prices removed. Accepting uncorroborated company figures about shortages, Nassikas went on to allow unprecedented increases in the price of natural gas (Anderson 1971a, 1971b; General Accounting Office, quoted in *Time* 1974; Sherill 1972; Stork 1975, pp. 125–131).

There had been earlier crises in the distribution of fuels, access to and mining of raw materials, and the generation of electric power. But this was the first time the problem had been described as an 'energy' crisis. There was a wide variety of industries, materials, transmission systems, and forms of energy involved in the production and distribution of power: coal and the miners and mining companies that produced it, the railroads that transported it, oil and natural gas fields, pipeline companies, gas stations, public utilities, electrical generating and transmission equipment and its manufacturers, construction firms building nuclear power plants, uranium mining companies, owners of oil tankers, and small and large oil companies. Each of these facilities, networks, or materials faced particular problems at different times: wildcat strikes in the coal industry, technical setbacks in the operation of nuclear power plants, a shortage of oil tankers following the closing of the Suez Canal, delays in the construction of electrical power stations due to the need for lower sulfur fuels, the development of 'community organizing' as a new set of techniques enabling neighborhood groups to challenge the damage done by utility companies, and so on. In the summer of 1970, all these issues were linked together as aspects of a single 'energy crisis'.

The responsibility for different forms of fuel and power was spread across various parts of the US government. In June 1973, after Congress had repeatedly rejected his requests to create a Department of Energy and National Resources, Nixon set up a National Energy Office in the White House. Consolidating the different concerns over fuel and power in a single agency enabled the emergence of a new field of scholarship concerned with energy and energy policy. Before the early 1970s, most research on these topics in history, economics, and policy making focused on a single fuel. After the early 1970s, scholarly interest proliferated in the question of energy as a singular topic of concern (Vieter 1984, pp. 1–2).

The process of turning energy into a single field of government action, academic research, and site of crisis followed changes in the control of fuels and the ways they were produced. Companies that specialized in the production of a particular fuel or resource were merging with or being taken over by other industries (Stork 1975, pp. 121–125). The US coal industry, for example, had been transformed in the 1960s from a group of cartelized coal companies into divisions of larger industries that used coal or produced or distributed other fuels. Many were acquired by oil companies, or 'captured' by steel companies, railroads, and utilities. Other coal companies themselves diversified into oil, natural gas, tar sands, and oil shale (Cleaver 1992, pp. 169–183). Oil companies and mining companies were also entering the nuclear power industry, in particular the

mining of uranium. By 1970, oil companies controlled 40 percent of US uranium reserves (Stork 1975, p. 122). Officials in the Department of the Interior accused them of buying up leases on federal lands for uranium mining, and then sitting on the leases to drive up prices and produce the 'energy crisis' (Ridgeway 1971, p. 7). These changes contributed to the transformation of power generation and resource extraction into a single field of 'energy', and to the battles over the question of an energy crisis.

Making Oil into a Political Instrument

Before it became part of an energy crisis, oil was a fluid that oil workers in production fields in different parts of the world recovered from beneath the ground, stored in tanks, processed in treatment plants, pumped into pipelines, loaded onto tankers, and transported across oceans. For reasons explored elsewhere, the drilling rigs, pumps, treatment plants, pipelines, and shipping networks of the oil industry were not as vulnerable to stoppages or sabotage as the carbon energy networks of the coal age (Mitchell 2009). Nevertheless, as the Middle East began to replace the United States as the world's most abundant oil region, the possibilities for local disruption increased, and efforts emerged to transform local disruptions into something larger: the supply of oil as an instrument that could be used for other political purposes. Constructing this instrument is usually described in terms of the emergence of a new political consciousness: the growth of a more radical, more intransigent Arab nationalism. Equally important, however, were the practical forms of recalcitrance: the re-routing of oil supplies and the acts of sabotage that made possible the first sustained challenge to the way Western oil companies managed the flow of oil.

Since the 1930s, world oil prices had been managed by a system of government production quotas and import controls in the United States, and by a cartel agreement made between the seven major international oil corporations in 1929. This system for limiting global oil supplies allowed domestic US production to continue expanding despite the availability of cheaper oil in the Middle East. As a result, American oil reserves were exhausted more quickly than those of other regions. By 1971 US production started to decline, which meant that the US no longer had the surplus capacity required to regulate prices.

To reach refineries and markets in Europe, where most of it was consumed, oil from the Middle East was carried in pipelines running from Iraq and the Gulf to the Mediterranean, and in oil tankers along another narrow conduit, the Suez Canal. These conduits and the points where they branched, narrowed, or terminated were among the most significant parts of the energy system. Their control was a leading concern of the handful of transnational oil companies that until the 1970s still dominated the production of oil in the Middle East. This control was not simply a question of keeping the conduits open. The oil majors also sought the power to limit the flow of oil, in order to deal with the persistent threat of oversupply and thus declining prices and lower profits. They tried to limit the development of independent conduits outside their control, which would undermine their agreements on production quotas and price fixing. And they needed to maintain a grid of alternative supply routes and sources, which would function like an electrical grid, so that particular production sites or transmission routes could be shut down or bypassed if they were disrupted or subject to disputes.

Until the late 1960s, this management of oil flows remained largely intact, surviving a series of crises in the 1950s and early 1960s. It even survived the Soviet threat. This was not the imaginary threat discussed in public, namely that the Soviet Union might try to seize the oil fields of the Middle East. It was the more serious concern that the USSR might find a way to connect its Caspian oil fields and the extensive new fields of the Volga region and Western Siberia to customers in Western Europe, thereby subjecting the multinational oil companies to the threat of price competition. In the 1950s, after recovering from the wartime destruction of the Caspian fields, the Soviet Union began trying to export oil to Europe. The multinationals blocked these sales, relying on their control of distribution channels and on the US government, which pressured NATO members not to allow Soviet oil into Western Europe (Odell 1979, pp. 48–71).

From the late 1960s, the situation began to change. In the June 1967 Arab–Israeli war, the Iraq–Syria pipeline was cut, the Suez Canal was blocked to shipping, oil workers in Bahrain shut down two refineries, and a general strike by oil workers in Libya stopped exports from Tripoli. The Arab states imposed an embargo on oil supplies to the US and certain other states. Iraq proposed that the embargo be extended for three months from 1 September, on the grounds that only by restricting supplies during winter would the embargo have an effect, and also called for the nationalization of local oil production companies. However, Saudi Arabia succeeded in getting the embargo lifted, while the Libyan government ended the oil strike and imprisoned its leaders (Wright 1982, p. 103; Daoudi & Dajani 1984, pp. 71–72, 80).

In May 1969, a Palestinian guerilla group blew a hole in the Tapline, the pipeline that carried oil from Saudi Arabia to the Mediterranean, where it passed through a part of Syria now occupied by Israel. Although such acts of sabotage were normally repaired within a few hours, Israel refused to allow Aramco to repair the pipe unless it agreed to pay Israel a fee for protecting it. The dispute kept the pipeline closed for four months (Feron 1969, p. 7; *Washington Post* 1969, p. A26). Meanwhile, the failure to reopen another major route after the war, the Suez Canal, enabled Israel itself to become an oil conduit. The Israeli government collaborated with Iran to build a pipeline from Eilat to Ashkelon, financed in secret by West Germany. The pipeline carried Iranian oil from the Red Sea to the Mediterranean, enabling Iran to loosen the control of the major oil companies over its oil industry. It also enabled Israel to export oil from the Egyptian field of Abu Rudais in Sinai, which its forces had seized in 1967 (Bialer 2007). Both as a producer and a pipeline route, Israel was able to benefit from its policy of a permanent occupation of Egyptian territory and thus keeping the Suez Canal closed. The closing of the Canal also hastened another weakening in the control of the oil majors over supply routes. Western Europe began to obtain significant supplies of oil from the Soviet Union, evading the embargo the transnational companies had tried to enforce since World War II.

These disruptions and alterations to the flow of Middle Eastern oil had further effects. Within three years, the ability of Western oil companies to control the flow and thus the price of oil from the Middle East, and hence around the world, had been destroyed.

On 1 September 1969, a group of army officers seized control in Libya and removed the monarchy from power. They released from prison the 36-year-old leader of the 1967 strike, Mahmud Sulaiman al-Maghribi, and appointed him initially as prime minister and the following April as head of a team to renegotiate the terms of the country's contracts with foreign oil companies (Stork 1975, pp. 153–157). Talks with Exxon and Occidental made no headway. Then, on 3 May, a bulldozer laying telephone cable in southern Syria

near the Jordanian border cut the Tapline. The Syrians called it an accident, the Saudis called it 'planned sabotage' (Parra 2004, p. 122). Damascus refused to allow the pipe to be repaired, and used the interruption in supplies to negotiate higher transit fees. The line remained closed for nine months (Stevens 2000). Two weeks after the pipeline was ruptured, the Syrian oil minister met with his Libyan and Algerian counterparts in Algiers (Algeria was demanding a revision of its oil agreement with France), and agreed to 'set a limit to the lengthy and fruitless negotiations' with the oil companies and implement their demands for a higher share of the oil income by unilateral action if necessary (*Middle East Journal* 1970, p. 500). With 500,000 barrels a day of Saudi supplies to Europe cut off, Libya was able to pressure Occidental Petroleum, a relatively small California-based company with no alternative sources of oil, to agree to new terms, breaking the united front among oil companies.

The Organization of Petroleum Exporting Countries (OPEC), set up in 1960 in an attempt to imitate the arrangement among US states for restricting production, was now in a position to challenge the control of oil production and pricing by the major US and European companies (Parra 2004, p. 91). New agreements with the oil companies were signed in February 1971, increasing both the price of oil and OPEC's share of the income.

The Energy Crisis Becomes an Oil Crisis

The benefits producer states gained from the oil price increase of 1971 were quickly eroded by the devaluation of the dollar. Iraq announced its nationalization of the British-controlled Iraq Petroleum Company in 1972. Saudi Arabia told oil companies to accept gradual transfer of ownership of local production companies to the government, or face the same fate as the Iraq Petroleum Company. As a result, after only two years the oil majors were forced to renegotiate the 1971 agreement. When the companies refused to compromise, perhaps looking to provoke a crisis, six Gulf producers announced a unilateral 70 percent increase in the posted price of oil. The announcement was made on 16 October 1973, 10 days after the start of the Arab-Israeli war, and the day before the decision to cut back supplies.

While the energy crisis in the US was first discussed as a complex interaction of developments involving different natural resources and modes of generating power, there suddenly emerged at its core the question of an 'oil crisis'. The crisis was declared by James Akins, director of the Office of Fuels and Energy in the Department of State, in an article in *Foreign Affairs* in April 1973 entitled 'The Oil Crisis: This Time the Wolf is Here'. Akins (1973) argued that the repeated warnings by the Arab States of an oil boycott of the US now represented a real threat. Since OPEC had successfully negotiated higher revenues, Iraq had nationalized its oil production, and other states were threatening the same, large increases in the price of oil were inevitable. The task was to arrange for this historically unprecedented flow of capital to the Persian Gulf to be recycled into investments in the United States.

Critics responded that there was a surplus of oil and that the State Department and the oil companies were colluding with the producer states to jointly benefit from a large increase in the price. 'The world "energy crisis" or "energy shortage", is a fiction', argued the MIT oil economist Maurice Adelman. 'But belief in the fiction is a fact. It makes people accept higher oil prices as imposed by nature, when they are really fixed by collusion' (Adelman 1972–1973, p. 73; see also Oppenheim 1976–1977).

The Palestine Equation

The October 1973 crisis was triggered by the Arab states' announcement that the availability of oil would be linked to progress in settling the Arab–Israeli conflict. The price of oil, therefore, could not be a question simply of demand and supply, for the demand for oil was now joined to another demand: that the US should end its opposition to a settlement of the conflict. The United States had refused to support Egypt's 1971 peace proposal, when Anwar Sadat abandoned the principle that Israel should agree to a comprehensive settlement of the Palestine question and agreed to negotiate an interim bilateral arrangement. Egypt's decision in July 1972 to expel Soviet military advisers helping to operate its air defense systems in expectation of improved relations with Washington produced no American response (Parker 2001, pp. 17–78). Leonid Brezhnev, the Soviet leader, met with Nixon in June 1973 and proposed a joint statement on the principles of a peace settlement, which Nixon rejected (Kissinger 1973). The US also rejected Saudi requests throughout the spring and summer of 1973 to back a settlement based on UN Resolution 242 (Vassiliev 2000, p. 391; Neff 1997).

The Arab decision to attack the Israeli forces occupying parts of Egypt and Syria on 6 October 1973 was a response to this impasse. Ten days later, as the fighting continued, Sadat repeated his proposal for a separate Egyptian–Israeli peace settlement, and the following day four foreign ministers representing 18 Arab countries met with President Nixon to present a wider plan for peace (Hirst 1973; Morris Jr 1973; Binder 1973). The Nixon administration refused to support either proposal. Meanwhile, to reduce pressure on Israel to negotiate, Washington organized a secret airlift to supply Israel with additional aircraft, tanks, artillery and ammunition. To keep the airlift secret, the new Lockheed C-5A transport aircraft carrying this equipment were supposed to land in Israel at night. But strong crosswinds in the Azores, where they stopped to refuel, delayed their arrival until daylight, making public the airlift and thus the US rejection of peace negotiations (Schlesinger 2001, pp. 153–160). The oil embargo, announced on 19 October, connected the availability of oil to the unwillingness of the United States to support negotiations that would address the question of Palestine.

Western commentators linked the decision taken by the Arab states on 17 October to cut the supply of oil with the decision taken the previous day to raise prices by 70 percent. In fact they tended to collapse the two decisions and portray them as a single event, much as they are linked by the model of supply and demand. For the actors involved, however, the coincidence was accidental. The first decision was the culmination of a series of unsuccessful negotiations between OPEC and the oil companies over the price of oil. The reduction in supply announced the following day was a response to the decision of the US to take Israel's side in the October War and block their attempt to force Israel to accept a peace settlement based on relinquishing the occupied territories. The embargo 'had nothing to do with wanting to increase the price of oil', according to the Secretary of OPEC, Ali Atiga. The aim was simply to draw the attention of the public in the West to the unresolved question of Palestine (Sampson 1975, p. 265).

Accounts of the embargo seldom mention what its purpose was. Daniel Yergin, for example, writes that 'the Arab oil ministers agreed to an embargo, cutting production 5 percent from the September level, and to keep cutting by 5 percent in each succeeding month until their objectives were met' (Yergin 1991, p. 607). Nowhere does he discuss those objectives. The Arab producer states were trying to create a linkage, to set up an

equation between the price of oil and the policy of the United States regarding the Palestine question. Historians of the event leave the linkage broken. The general public was in the same position, too busy waiting in line for gasoline, thinking only of the laws of the market. Meanwhile, opponents of peace negotiations in the US Congress, led by Senator Henry Jackson, were organizing rationing schemes and other devices that would enable the laws of the market to operate.

The Oil Companies Frame the Environment

The Nixon administration's politics of energy was simultaneously a politics of the environment. Nixon's 1973 State of Union Address, issued as a series of written statements over several weeks rather than as a single oral address, included as its first substantive message a 'State of the Union Message to the Congress on Natural Resources and the Environment' (Nixon 1973). We have learned, he said, that 'natural resources are fragile and finite, and that many have been seriously damaged or despoiled. When we came to office in 1969, we tackled this problem with all the power at our command. Now there is encouraging evidence that the United States has moved away from the environmental crisis that could have been and toward a new era of restoration and renewal'. These themes were continually linked: energy as the crisis approaching, the environment as the crisis that could have been.

During Nixon's first days in office, on 28 January 1969, a blowout in an underwater oil well that Union Oil was drilling in the sea six miles off the coast of Santa Barbara, California, caused partly by the use of weak pipe casings, led to ruptures of the sea floor that allowed 200,000 gallons of oil to escape to the surface and took eleven days to seal (Clarke & Hemphill 2002). The disaster enabled environmentalists to focus attention on the threat posed by the expansion of oil production into offshore drilling, as well as the proposed development of oil production on the North Slope in Alaska and the construction of a trans-Alaska pipeline. Later that year, David Brower, forced out of his post as executive director of the Sierra Club after his political campaigns lost the club its charitable status, founded Friends of the Earth, 'a global, media-savvy, politically muscular activist group' that created franchises in other parts of the industrialized west and became the first international environmental organization (Coyle 1995). The pressure that this and similar groups began to exert on issues such as oil drilling, nuclear power, emissions from coal-fired electricity generation, and the Alaska pipeline became a significant challenge to many different parts of the fuel and power industries.

For the oil industry, the question of 'energy' became a way to address this challenge. On the one hand, the need to conserve fossil fuels as a scarce and depletable source of energy provided a justification for higher oil prices. On the other hand, the environmental movement could be encouraged to focus on the more serious threat represented by the nuclear power industry. Most economists saw the development of nuclear power as the solution to the problem of high energy costs and the eventual exhaustion of fossil fuels (Solow 1974). This was also the solution to the energy crisis proposed by the Nixon administration. In the 1950s John Von Neumann had famously written that with the development of nuclear fusion, in 'a few decades hence energy may be free – just like the unmetered air – with coal and oil used mainly as raw materials for organic chemical synthesis, to which, as experience has shown, their properties are best suited' (Von Neumann 1986[1955], p. 120). By the 1970s the cost estimates were less optimistic, but

there was still the risk that the vast funds that the government was committing to the development of the new fast breeder reactors would produce energy at a price that would threaten the high prices now enjoyed by the oil industry. The environmental movement could help reduce this threat to oil. By insisting that nuclear power generation be forced to take account of the risks of accidents and the costs of disposing of spent fuel, environmental campaigns helped make nuclear energy less affordable and thus less likely to become a lower-priced alternative to fossil fuels.

The Neoliberals Defeat the Keynesians

The framing of the 1973–1974 oil crisis in terms of the law of supply and demand was a particular intervention in a contest over calculations. The American economics profession in fact went further, in an effort to defeat the threat represented by these rival calculations. They developed a new field of study – resource economics.

Prior to the oil crisis, the question of oil was not a concern of theoretical economists. From Paul Frankel's *Essentials of Petroleum* (1946), research on the economics of oil placed the subject within the framework of industrial economics, concerned with the behavior of firms, vertical integration and industrial structure, transfer prices and tax policy, and the underlying issue of the relationship between industry and government. The most influential work was by a woman economist, Edith Penrose (1968). After Adelman (1972), research of this sort all but ceased (Mabro 1992, pp. 4–6).

The shift in concern was marked by the 1973 Richard T. Ely Lecture, the annual distinguished lecture of the American Economic Association, delivered by Robert Solow. Published as an article the following year, Solow's (1974) work helped to shape a new field of theory concerned with the economics of exhaustible resources. Entitling his lecture 'The Economics of Resources or the Resources of Economics', Solow aimed to draw together theoretical resources within economics to address the sudden political concern with the proper pricing and future exhaustion of mineral resources. He aimed to counter the argument for government regulation of energy consumption, by showing that there existed a market-based method to manage the optimum rate of extraction of mineral resources.

Solow began by confirming 'that economic theorists read the newspapers'. Having read a variety of recent reports about the advancing scarcity of minerals, and 'having, like everyone else, been suckered into reading *The Limits to Growth*', he decided to see what economics might have to say about the problems connected with exhaustible resources. He found that the literature was not very large. While he was drafting his own paper, however, 'just about then it seemed that every time the mail came it contained another paper by another economic theorist on the economics of exhaustible resources. It was a little like trotting down to the sea, minding your own business like any nice independent rat, and then looking around and suddenly discovering that you're a lemming' (Solow 1974, pp. 1–2).

Solow recovered the argument of a forgotten article by Harold Hotelling (1931) on 'The Economics of Exhaustible Resources'. Hotelling was writing at a time of increased demands for the public regulation of the depletion of natural resources, in particular the cutting of forests and drilling of oil wells, and of wildly erratic swings in the price of petroleum. Against the demands for conservation and regulation, he argued that in a competitive market there was an equilibrium price path, in which the price of oil rises at

the rate of interest. The optimum rate of extraction is one that produces this price path. As Hotelling's article went to press, oil prospectors in East Texas drilled what turned out to be the largest oil field yet discovered. The oil that gushed from the East Texas wells caused the price of oil to collapse. In August 1931, four months after Hotelling's article appeared, the governors of Oklahoma and Texas declared martial law and sent the National Guard to occupy the oil fields and shut down the new oil wells, as a means of increasing the price (*Wall Street Journal* 1931). Hotelling's equilibrium analysis was ignored. The year after it was published the US introduced the system of production quotas and price regulation governed by the Texas Railroad Commission.

Four decades later, Solow recovered Hotelling's work. With military rule of the oil fields now displaced to the Middle East and the regulatory authority of the Texas Railroad Commission devolved onto the opaque and intermittent powers of OPEC, a market-based model for the regulation of natural resource extraction could be once again proposed. Solow's work was followed by a stream of articles and PhD dissertations on the subject of exhaustible resources, including influential pieces by scholars such as Joseph Stiglitz (1976) and a classic text by Partha Dasgupta and Geoffrey Heal (1979), *Economic Theory and Exhaustible Resources*. As Mabro points out, this work contributed little to the explanation of how oil prices were actually produced. Solow acknowledged this in his original article. He had not written it, he claimed, 'with current problems in mind. After all, nothing I have been able to say takes account of the international oil cartel, the political and economic ambitions of Middle Eastern potentates, the speeds of adjustment to surprises in the supply of oil, or the doings of our own friendly oligopolists' (Solow 1974, p. 13).

Part of the problem, Mabro suggests, is that this body of theory only concerns those occasional moments when people think oil is running out – as happened in the 1920s, and again in the 1970s. Most of the time, oil is perceived as being plentiful. In the end, 'the economic study of petroleum has not benefited very much ... [from this work]. The economic theory of exhaustible resources has' (Mabro 1992, p. 4). The honesty about what is excluded from the model reflects its purposes. The model is a tool, not for understanding the oil industry but for maintaining the viability of a form of knowledge that depends on the possibility of limitless growth.

Within that field of expertise, the usefulness of resource economics was its contribution to defeating Keynesian economics, by undermining arguments for government regulation and proposing a neoliberal alternative: that the problem of the putative exhaustion of oil reserves can be overcome by market arrangements. This was not an argument for abstract forces of the market: it was for the deployment of a political technology, for that is what the neoliberal market projects offered (Mitchell 2005).

This technology was developed in relation to oil in two forms. In the late 1970s, an oil futures market was established at the New York Mercantile Exchange. Solow's arguments were developed as a set of tools for predicting the future movement of oil prices. In the 1980s, neoliberal think tanks began promoting another set of tools: carbon trading (Lohmann 2006). To limit government regulation of increased burning of fossil fuels, and reduce costs of such regulation to corporate profits, a variety of schemes were devised whereby reductions in pollution in the West could be traded against much cheaper putative reductions in the global south.

Conclusion

Recent work using the methods of science and technology studies to examine economic markets as socio-technical machineries has explored the ways in which the calculative devices of economic theory are deployed to format and perform the operation of markets. What happens when one extends this work to think about something as large as the 1973–1974 oil crisis?

This article began by considering the argument that the events of 1973–1974 represent a textbook case of the law of supply and demand. Rather than rejecting this account as too narrow an explanation of what happened, it explored the work that had to be done to make such an explanation viable. The work involved bringing together a series of conflicts and transformations in the control of raw materials, the generation of power, the regulation of corporate profit, and so on, into a single field of political concern and government intervention in the United States, to be known as the ‘energy crisis’. It also involved a series of strikes, acts of sabotage, political rivalries, and confrontations in the Middle East that made it possible to transform the networks that moved oil supplies from the major producing regions to sites of consumption in Western Europe into a political instrument. This instrument, in turn, was fashioned to serve a dual purpose; one concerned with redirecting the flow of profits from oil, the other with the settlement of the Palestine question. The efforts to prevent a settlement of the Palestine question made particular use of market mechanisms, relying on arguments about supply and demand and devices for rationing consumption in an attempt to frame the probable causes and possible solutions to the crisis.

In several ways, however, the events of 1973–1974 exceeded and overflowed the attempts to contain them as a matter of market forces. The question of supply opened up new fields of doubt about the possible limits to reserves of oil; the increasing difficulty of forecasting future demand and prices opened up new ways of mapping the future; and the inability to prevent catastrophic oil spills helped trigger the emergence of new matters of concern, in particular the preservation of the environment. Yet the events of 1973–1974 also helped trigger the unraveling of Keynesian economics, attacked by market technologies developed from the mid-1970s in revitalized neo-liberal think tanks – many of them funded, as it happens, by the private fortunes of American oil families, swollen by windfall profits from the 1973–1974 oil crisis.

REFERENCES

- ADELMAN, M. A. (1972) *The World Petroleum Market*, Johns Hopkins University Press, Baltimore, MD.
- ADELMAN, M. A. (1972) ‘Is the oil shortage real?’, *Foreign Policy*, vol. 9, pp. 69–107.
- ADELMAN, M. A. (2004) ‘The real oil problem’, *Regulation*, vol. 27, no. 1, pp. 16–21.
- AKINS, J. E. (1973) ‘The oil crisis: this time the wolf is here’, *Foreign Affairs*, vol. 51, no. 3, pp. 462–490.
- ANDERSON, J. (1971a) ‘FPC Chief and natural-gas rate rise’, *The Washington Post*, 14 Jun., p. B11.
- ANDERSON, J. (1971b) ‘FPC Staff disputed industry data’, *The Washington Post*, 15 Jun., p. B13.
- BIALER, U. (2007) ‘Fuel bridge across the Middle East’, *Israel Studies*, vol. 12, no. 3, pp. 29–67.
- BINDER, D. (1973) ‘4 Arab foreign ministers offer peace plan to Nixon’, *The New York Times*, 18 Oct., p. 97.

- CALLON, M. (1998) *The Laws of the Markets*, Blackwell Publishers/Sociological Review, Oxford.
- CALLON, M. (2007) 'What does it mean to say that economics is performative?', in *Do Economists Make Markets? On the Performativity of Economics*, eds D. MacKenzie, F. Muniesa & L. Sui, Princeton University Press, Princeton, NJ, pp. 311–357.
- CAMBEL, A. B. (1967) 'Energy', *Science Journal*, vol. 3, no. 10, pp. 57–62.
- CLARKE, K.C. & HEMPILL, J.J. (2002) 'The Santa Barbara oil spill, a retrospective', in *Yearbook of the Association of Pacific Coast Geographers*, vol. 64, ed. D. Danta, University of Hawai'i Press, Honolulu.
- CLEAVER, W. (1992) 'Wildcats in the Appalachian coal fields', in *Midnight Notes, Midnight Oil: Work, Energy, War 1972–1992*, ed. T. M. N. Collective, Autonomedia, Brooklyn, NY, pp. 169–183.
- COYLE, D. (1995) 'The high cost of being David Brower', *Outside Magazine*, Dec., [Online] Available at: http://outside.away.com/outside/magazine/1295/12f_high.html (accessed 30 March 2010).
- DAOUDI, M. S. & DAJANI, M. S. (1984) 'The 1967 oil embargo revisited', *Journal of Palestine Studies*, vol. 13, no. 2, pp. 65–90.
- DASGUPTA, P. & HEAL, G. (1979) *Economic Theory and Exhaustible Resources*, Cambridge University Press, Cambridge.
- ELYACHAR, J. (2005) *Markets of Dispossession: NGOs, Economic Development, and the State in Cairo*, Duke University Press, Durham, NC.
- FERON, J. (1969) 'Israel in accord with Aramco on repair of damaged tapline', *The New York Times*, 11 Jul., p. 7.
- FRANKEL, P. H. (1946) *Essentials of Petroleum*, Chapman & Hall, London.
- GUERRIEN, B. (2002) 'Is there anything worth keeping in standard microeconomics?', *Post-Autistic Economics Review*, vol. 12, article 1, [Online] Available at: <http://www.paecon.net/PAERreview/index.htm>
- HALLORAN, R. (1970) 'F.P.C.'s head warns power shortages are possible next winter', *The New York Times*, 11 Aug., p. 20.
- HARWOOD, R. (1970) 'Fuel-short U.S. may face plant closings, rationing', *The Washington Post*, 17 Aug., p. A1.
- HIRST, D. (1973) 'Arabs acclaim Sadat peace plan as a major breakthrough', *The Guardian*, 18 Oct., p. 2.
- HOTELLING, H. (1931) 'The economics of exhaustible resources', *Journal of Political Economy*, vol. 39, no. 2, pp. 137–175.
- KISSINGER, H. (1973) 'Memorandum for the President's files, President's meeting with General Secretary Leonid Brezhnev on Saturday, June 23, 1973', San Clemente, California. HAKO, box 75, 1973 Memcons, [Online] Available at: <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB98/index.htm> (accessed 30 March 2010).
- LOHMANN, L. (2006) 'Carbon trading: a critical conversation on climate change, privatisation and power', *Development Dialogue*, no. 48, Special Issue, [Online] Available at: <http://www.dhf.uu.se/Publications/dd.html>
- MABRO, R. (1992) 'OPEC and the price of oil', *The Energy Journal*, vol. 13, no. 2, pp. 1–17.
- MACKENZIE, D., MUNIESA, F. & SUI, L. (EDS) (2007) *Do Economists Make Markets?: On the Performativity of Economics*, Princeton University Press, Princeton, NJ.
- MCCLOSKEY, D. (2002) 'Yes, there is something worth keeping in microeconomics', *Post-Autistic Economics Review*, vol. 15, article 1, [Online] Available at: <http://www.paecon.net/PAERreview/index.htm>

- MIDDLE EAST JOURNAL (1970) 'Chronology May 16, 1970 – August 15, 1970', vol. 24, no. 4, pp. 493–517.
- MITCHELL, T. (2002) *Rule of Experts: Egypt, Techno-Politics, Modernity*, University of California Press, Berkeley.
- MITCHELL, T. (2005) 'The work of economics: how a discipline makes its world', *European Journal of Sociology*, vol. 45, no. 2, pp. 297–320.
- MITCHELL, T. (2007) 'The properties of markets', in *Do Economists Make Markets?: On the Performativity of Economics*, eds D. MacKenzie, F. Muniesa & L. Sui, Princeton University Press, Princeton, NJ, pp. 244–275.
- MITCHELL, T. (2009) 'Carbon democracy', *Economy and Society*, vol. 38, no. 3, pp. 399–432.
- MORGAN, D. (1973) 'Legislation proposed by Jackson to offset possible oil losses', *The Washington Post*, 18 Oct., p. A6.
- MORRIS JR., J. A. (1973) 'Egypt ready to join worldwide peace efforts', *Los Angeles Times*, 18 Oct., p. 1A.
- NEFF, D. (1997) 'Nixon administration ignores Saudi warnings, bringing on oil boycott', *Washington Report on Middle East Affairs*, Oct./Nov., pp. 70–72.
- NIXON, R. (1973) 'State of the Union message to the Congress on natural resources and the environment, February 15', *The American Presidency Project*, [Online] Available at: <http://www.presidency.ucsb.edu/ws/?pid=4102>.
- ODELL, P. R. (1979) *Oil and World Power*, Penguin, Harmondsworth.
- OPPENHEIM, V. H. (1976) 'The past: we pushed them', *Foreign Policy*, vol. 25, pp. 24–57.
- PARKER, R. B. (2001) *The October War: A Retrospective*, University Press of Florida, Gainesville, FL.
- PARRA, F. (2004) *Oil Politics: A Modern History of Petroleum*, I.B. Tauris, London.
- PENROSE, E. (1968) *The Large International Firm in Developing Countries: The International Petroleum Industry*, Allen & Unwin, London.
- RAND, C. T. (1975) *Making Democracy Safe for Oil: Oilmen and the Islamic East*, Little, Brown, Boston, MA.
- RIDGEWAY, J. (1971) 'Who owns America?', *The New York Times: Book Review*, 24 Oct., p. 7.
- SAMPSON, A. (1975) *The Seven Sisters: The Great Oil Companies and the World they Made*, Hodder and Stoughton, London.
- SCHLESINGER, J. (2001) 'The airlift', in *The October War: A Retrospective*, ed. R. B. Parker, University Press of Florida, Gainesville, FL, pp. 153–160.
- SCIENCE JOURNAL (1967) Special issue on 'Forecasting the Future', vol. 3, no. 10.
- SHERILL, R. (1972) 'Nassikas sets your gas bills', *The Nation*, 17 Jan., pp. 73–79.
- SOLOW, R. M. (1974) 'The economics of resources or the resources of economics', *American Economic Review*, vol. 64, no. 2, pp. 1–14.
- STEVENS, P. (2000) 'Pipelines or pipe dreams? Lessons from the history of Arab transit pipelines', *The Middle East Journal*, vol. 54, no. 2, pp. 224–241.
- STIGLITZ, J. (1976) 'Monopoly and the rate of extraction of exhaustible resources', *American Economic Review*, vol. 66, no. 4, pp. 655–661.
- STORK, J. (1975) *Middle East Oil and the Energy Crisis*, Monthly Review Press, New York.
- TIME (1974) 'Fattening gas prices', 30 Sep., [Online] Available at: <http://www.time.com/time/magazine/article/0,9171,908822,00.html> (accessed 30 March 2010).
- VASSILIEV, A. (2000) *The History of Saudi Arabia*, New York University, New York.
- VIETOR, R. H. K. (1984) *Energy Policy in America Since 1945: A Study of Business-Government Relations*, Cambridge University Press, Cambridge.

- VON NEUMANN, J. (1986[1955]) 'John von Neumann on technological prospects and global limits', *Population and Development Review*, vol. 12, no. 1, pp. 117–126.
- WALL STREET JOURNAL (1931) 'Military rule in Texas may boost oil', 18 Aug., p. 1
- WASHINGTON POST (1969) 'Israeli jets strike military targets in Egypt and Jordan', 17 Sep., p. A26.
- WRIGHT, R. (1982) *A Modern History of Libya*, The Johns Hopkins University Press, Baltimore, MD.
- YERGIN, D. (1991) *The Prize: The Epic Quest for Oil, Money, and Power*, Simon and Schuster, New York.

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