Carbon Democracy

POLITICAL POWER IN THE AGE OF OIL

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Introduction

Fossil fuels helped create both the possibility of modern democracy and its limits. To understand the limits, this book begins by exploring what made the emergence of a certain kind of democratic politics possible, the kind I call carbon democracy. Before turning to the past, however, let me explain some of the contemporary limits I have in mind.

In the wake of the US invasion of Iraq in 2003, one of those limits was widely discussed. A distinctive feature of the Middle East, it has often been said, is its lack of democracy. For many who write about the region, this lack has something to do with oil. Countries that depend upon petroleum resources for a large part of their earnings from exports tend to be less democratic. The wave of uprisings that spread across the Arab world in 2011 appeared to confirm this relationship between large oil earnings and the difficulty of mounting claims to a more democratic and egalitarian life. By and large, the less oil a country produced, and the faster its production was declining, the more readily the struggles for democracy unfolded. Tunisia and Egypt, where the uprisings began, and Yemen, Bahrain and Syria, where they quickly spread, were among the region's smallest oil producers, and in all of them the production of oil was declining. Of the eight large producers in the Middle East, only in Libya, the smallest producer among them (and where production had also suffered a recent decline), did a similar political struggle gain momentum, although the conflict in the Libyan case was the quickest to collapse into violence and foreign intervention.[1]

Most of those who write about the question of the 'oil curse', as the problem is sometimes called, have little to say about the nature of oil and how it is produced, distributed and used. They discuss not the oil but the oil money – the income that accrues after the petroleum is converted into government revenue and private wealth. The reasons they offer for the anti-democratic properties

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1 In 2010, oil production for the first five countries ranged from 668,000 barrels per day (Egypt) to 44,000 bpd (Bahrain). The eight large producers (Algeria, Iran, Iraq, Kuwait, Libya, Saudi Arabia, and the United Arab Emirates, plus Qatar), produced from 10.51 million bpd (Saudi Arabia) to 1.79 million bpd (Libya); Qatar produced only 1.43 million bpd of oil, but had the largest production per capita, and in addition was the region's second-largest producer of natural gas. Oman (869,000 bpd, mild political protests in spring 2011) fell neatly between the two groups. The five countries of the region with minimal or zero oil production include four whose political dynamic is interconnected through the Palestine conflict more than oil politics (Israel/Palestine, Jordan and Lebanon) and one dependent on a different mineral export, the booming phosphate industry (Morocco). Figures are for crude oil and other liquids, from www.eia.gov.

of petroleum focus on this surplus revenue: it gives governments the resources to repress dissent, buy political support, or relieve pressures for a more equal sharing of prosperity, with public handouts and price subsidies. The explanations have nothing to do with the ways in which oil is extracted, processed, shipped and consumed, the powers of oil as a concentrated source of energy, or the apparatus that turns this fuel into forms of affluence and power. They treat the oil curse as an affliction only of the governments that depend on its income, not of the processes by which a wider world obtains the energy that drives its material and technical life.[2]

Ignoring the apparatus of oil production reflects an underlying conception of democracy. This is the conception shared by an American expert on democracy sent to southern Iraq, nine months after the US invasion of 2003, to discuss 'capacity building' with the members of a provincial council: 'Welcome to your new democracy', he said, as he began displaying PowerPoint slides of the administrative structure the Americans had designed. 'I have met you before. I have met you in Cambodia. I have met you in Russia. I have met you in Nigeria.' At which point, we are told, two members of the council walked out.[3] For an expert on democracy, democratic politics is fundamentally the same everywhere. It consists of a set of procedures and political forms that are to be reproduced in every successful instance of democratisation, in one variant or another, as though democracy occurs only as a carbon copy of itself. Democracy is based on a model, an original idea, that can be copied from one place to the next. If it fails, as it seems to in many oil states, the reason must be that some part of the model is missing or malfunctioning.

An idea is something that is somehow the same in different places – that can be repeated from one context to another, freeing itself from local histories, circumstances, and material arrangements, becoming abstract, a concept. An expert in democracy has to make democracy into an abstraction, something that moves easily from place to place, so that he can carry it in his suitcase, or his PowerPoint presentation, from Russia to Cambodia, from Nigeria to Iraq, showing people how it works.

Once one has made democracy into something that moves around the world as an idea, in order to move with it, one is committed to a particular

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2 An important exception to this tendency to ignore the materiality of oil in discussions of the rentier state is Fernando Coronil, *The Magical State: Nature, Money and Modernity in Venezuela*, Chicago: University of Chicago Press, 1997, where the problem is connected to a wider erasure of nature in understanding the formation of wealth. See also Michael Watts's discussion of the 'oil complex' and the 'governable spaces' it builds, drawing on pre-oil political structures, in 'Resource Curse? Governmentality, Oil and Power in the Niger Delta, Nigeria', *Geopolitics* 9, 2004: 50–80; and Robert Vitalis's examination of the labour regime and image-making that organised the production of oil in Saudi Arabia, in *America's Kingdom: Mythmaking on the Saudi Oil Frontier*, 2nd edn, London: Verso, 2009.

3 Rory Stewart, *Occupational Hazards: My Time Governing in Iraq*, London: Picador, 2006: 280.

way of explaining how the idea works, how people become democratic. If democracy is an idea, then countries become democratic by the idea getting into people's heads. The problem of democracy becomes a question of how to manufacture a new model of the citizen, one whose mind is committed to the idea of democracy.

A central theme in discussions of the contemporary Middle East in the United States has been the question of how to manufacture new kinds of citizen. In debates about the war in Iraq, economic reform, the future of Palestine, political Islam, obstacles to democratisation, the spread of anti-Americanism, and the 2011 uprisings, one finds a recurrent interest in the question of how to produce a new kind of political agent. How can one create subjects of power who are adequately equipped to impose limits on authority? How does one form a citizenry that refuses to authorise authoritarianism? What kinds of education, enlightenment, training or experience are required to engender forms of economy based on agents who act according to their rational self-interest rather than corruption or cronyism? What produces forms of politics based on mutual trust and respect for opponents rather than suspicion and repression? In short, these debates ask, how can people learn to recognise themselves and respond as subjects of new forms of power? What forms of power, conversely, can engineer the liberal or democratic political subject?

There has been plenty of criticism of the way these questions have been posed and answered, especially in the debates about democratisation, often faulting them for ignoring the so-called 'larger forces' at work. American writings on the problem of democracy in the Middle East typically have little to say about capitalist globalisation and the work being done to turn people into the docile workers and willing consumers required to solve economic crises in the West; about the forces of empire for whom democratisation schemes are a minor, diplomatic part of wider efforts to shore up a weakening hegemony; and about the tools of violence and repression that occupying powers and military regimes deploy. Such criticisms, however, overlook what is interesting in these debates: the notion that democracy is an engineering project, concerned with the manufacture of new political subjects and with subjecting people to new ways of being governed.

Take a recent example of research on democratisation in the Middle East, the Arab Barometer project. The project carried out opinion surveys in five Arab countries, in order to measure the presence of individual attitudes and orientations that might be conducive to the establishment of democracy. These orientations include 'political tolerance, respect for diversity, civic engagement, and interpersonal trust'.[4] The project was funded, initially, by the Middle East

4 Mark Tessler and Amaney Jamal, 'Political Attitude Research in the Arab World: Emerging Opportunities', *PS: Political Science and Politics* 39: 3, 2006: 433–7.

Partnership Initiative of the US Department of State and governed by a board that includes scholars from each of the countries whose political culture the project seeks to measure and record. The Arab Barometer project forms part of a wider initiative called the Global Barometer, which carries out similar research in Africa, Latin America and other regions. The Arab version, along with a number of similar surveys of the region, has published results of opinion surveys that claimed to put in question many of the prevailing assumptions in official circles in the United States about political attitudes in the Arab world.

Whatever the usefulness of showing us some of the limits of official discourse, the project seems at first sight to suffer from a weakness that affects much of the research on questions of democratisation and civil society. It appears to be looking for what one might call 'democracy without democratization'.[5] The premise of the project is that 'successful democratization requires a citizenry that values democracy and possesses the elements of a democratic political culture'.[6] Yet there is no reliable evidence, as far as I am aware, that the presence of a civic culture – attitudes of trust, tolerance, mutual respect and other liberal virtues – facilitates the emergence of democracy. There is, in fact, no shortage of historical evidence to suggest the opposite. One can find repeated examples in the history of democratic struggles in the West of tolerant, educated, liberal political classes who were opponents of democratisation, fighting to prevent the extension of effective political rights to those who did not own property, to religious and racial minorities, to women, and to colonial subjects. In many cases, the civic virtues that dominant political classes possessed provided the grounds on which to oppose democratisation. Their own civility and reasonableness, they often claimed, qualified them to act as spokespersons for the interests of those who were not yet ready to speak for themselves. Once democratic rights have been achieved, their exercise may encourage the development of virtuous civic attitudes, at least among members of the expanded political class – virtues whose inculcation and practice become a mode through which people subject themselves to democratic authority. Democratisation, on the other hand, has often been a battle against those attitudes. It has required a more intransigent set of engagements and practices.[7]

This book is concerned with those more intransigent engagements, and with the ways in which carbon energy helped manufacture forms of agency capable of effective intransigence.

I began writing the book because I wanted a better understanding of the relations between democracy and oil. Initially, like everyone else, I thought of oil as

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5 Ghassan Salamé, ed., *Democracy Without Democrats*, London: I. B. Tauris, 1994.

6 Tessler and Jamal, 'Political Attitude Research'.

7 See Bruno Latour, *Politics of Nature: How to Bring the Sciences into Democracy*, Cambridge, MA: Harvard University Press, 2004; and Lisa Disch 'Representation as "Spokespersonship": Bruno Latour's Political Theory', *Parallax* 14: 3, 2008: 88–100.

one thing and democracy as another, and wanted to make better sense of why one seemed to be bad for the other. But after following the way the oil industry was built in the Middle East, as I traced the ways in which people had explored for oil, built pipelines and terminals, transformed the petroleum into forms of heat energy and transportation, converted the income from those processes into profits, and sought ways to circulate and govern those flows of money, it became increasingly clear that carbon energy and modern democratic politics were tied intricately together. Rather than a study of democracy and oil, it became a book about democracy *as* oil – as a form of politics whose mechanisms on multiple levels involve the processes of producing and using carbon energy.

When studies of oil and democracy confine their attention to the problem of oil money – the income from oil and its corrupting powers – rather than starting with the process through which oil is produced and distributed, they are unconsciously imitating the way energy networks were first built. In 1914, when Royal Dutch/Shell began producing oil in Venezuela, the country's dictator, General Gómez, asked the company to build its refinery offshore, on the Dutch island of Curaçao. He wanted the money from oil, but did not want the large concentration of workers and accompanying labour demands that a refinery would bring.[8] A decade later, when the company now known as BP began building an oil industry in Iraq, it planned a pipeline to carry the oil across neighbouring countries to the Mediterranean, from where most of the oil would be shipped to refineries in Europe, stretching out the thin line of oil production over an even greater distance. When a nationalist government later requested that BP build a modern refinery in Iraq, the company vigorously opposed the demand. In other words, if oil appears to affect the producer states largely after its transformation into flows of money, that appearance reflects the building of pipelines, the placing of refineries, the negotiation of royalties, and other arrangements that from the start, in their effort to evade the demands of an organised labour force, were concerned with questions of carbon democracy. The transformation of oil into large and unaccountable government incomes is not a cause of the problem of democracy and oil, but the outcome of particular ways of engineering political relations out of flows of energy.

Failing to follow the production and circulation of oil itself, accounts of the oil curse diagnose it as a malady located within only one set of nodes of the networks through which oil flows and is converted into energy, profits and political power – in the decision-making organs of the individual producer states. This diagnosis involves isolating the symptoms found in producer states that are not found in non-oil states. But what if democracies are not carbon copies, but carbon-based? What if they are tied in specific ways to the history of

8 Coronil, *Magical State*: 107.

carbon fuels? Can we follow the carbon itself, the oil, so as to connect the problem afflicting oil-producing states to other limits of carbon democracy?

The leading industrialised countries are also oil states. Without the energy they derive from oil their current forms of political and economic life would not exist. Their citizens have developed ways of eating, travelling, housing themselves and consuming other goods and services that require very large amounts of energy from oil and other fossil fuels. These ways of life are not sustainable, and they now face the twin crises that will end them.

First, new discoveries of oil are unable to keep pace with the exhaustion of existing supplies. Although estimating reserves of fossil fuels is a politico-technical process involving rival methods of calculation, it appears that we are about to enter an era of declining supplies.[9] The earth's stores of fossil fuels will not be exhausted. As coal and oil become more scarce and the difficulty in extracting them increases, the cost and the expenditure of energy their extraction requires will bring the era of fossil fuels to an end, with consequences that we cannot know.[10] The earth's stock of this 'capital bequeathed to mankind by other living beings', as Jean-Paul Sartre once described it, will be consumed in a remarkably short period.[11] In the case of oil, the fossil fuel that was the easiest to extract but has now become the most difficult to increase in supply, more than half the total consumed in the 150 years between the 1860s, when the modern petroleum industry began, and 2010 was burned in the three decades after 1980.[12] From the perspective of human history, the era of fossil fuels now appears as a brief interlude.

The second crisis is that, in using up these sources of energy, humankind has been 'unwittingly conducting a vast geophysical experiment', as the US President's Science Advisory Committee warned almost half a century ago, in 1965. By burning within a few generations the fossil fuels that had accumulated in the earth over the previous 500 million years, humanity was injecting carbon dioxide into the atmosphere that by the year 2000 was expected to increase the concentration of atmospheric CO_2 by 25 per cent. 'This may be sufficient to produce measurable and perhaps marked changes in climate', the 1965 report had warned, adding that

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9 See Conclusion.

10 Vaclav Smil, *Energy in Nature and Society: General Energetics of Complex Systems*, Cambridge, MA: MIT Press, 2008: 204. On the increasing quantity of energy required to produce fossil energy as supplies become more difficult to extract, a problem known as declining EROI (energy return on energy invested), see ibid.: 275–80.

11 Jean-Paul Sartre, *Critique of Dialectical Reason*, vol. 1, *Theory of Practical Ensembles*, London: Verso, 1977: 154.

12 Until recently it was assumed that coal reserves would long outlast oil, with plentiful supplies for hundreds of years. Recent studies suggest that estimates of coal reserves are even less reliable than those for oil, that production in the US – the country with the largest reserves – has already peaked and begun to decline, and that global production may peak as early as 2025. Werner Zittel and Jörg Schindler, 'Coal: Resources and Future Production', EWG Paper no. 1/01, 10 July 2007, available at www.energywatchgroup.org.

these changes could be 'deleterious from the point of view of human beings'.[13] The experiment proceeded more rapidly than expected. Levels of carbon dioxide in the atmosphere have now increased by 40 per cent since the start of the industrial age, with half that increase happening since the late 1970s. The consequent changes in the earth's climate threaten to become not just deleterious from the human point of view, but catastrophic on a planetary scale.[14] A larger limit that oil represents for democracy is that the political machinery that emerged to govern the age of fossil fuels, partly as a product of those forms of energy, may be incapable of addressing the events that will end it.[15]

Following the carbon does not mean replacing the idealist schemes of the democracy experts with a materialist account, or tracing political outcomes back to the forms of energy that determine them – as though the powers of carbon were transmitted unchanged from the oil well or coalface to the hands of those who control the state. The carbon itself must be transformed, beginning with the work done by those who bring it out of the ground. The transformations involve establishing connections and building alliances – connections and alliances that do not respect any divide between material and ideal, economic and political, natural and social, human and nonhuman, or violence and representation. The connections make it possible to translate one form of power into another. Understanding the interconnections between using fossil fuels and making democratic claims requires tracing how these connections are built, the vulnerabilities and opportunities they create, and the narrow points of passage where control is particularly effective.[16]

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13 R. Revelle, W. Broecker, H. Craig, C. D. Keeling and J. Smagorinsky, 'Atmospheric Carbon Dioxide', in *Restoring the Quality of Our Environment: Report of the Environmental Pollution Panel*, Washington: White House, President's Science Advisory Committee, November 1965: 126–7.

14 Intergovernmental Panel on Climate Change, *Fourth Assessment Report*, 2007, available at www.ipcc.ch. Research by James Hansen and his colleagues on paleoclimate data suggests that feedback loops in the melting of ice can cause a rapid acceleration in the loss of ice cover, forcing much more extreme climate change with potentially cataclysmic consequences. These findings make even the dire warnings from the IPCC look absurdly optimistic. James Hansen, Makiko Sato, Pushker Kharecha, Gary Russell, David W. Lea and Mark Siddall, 'Climate Change and Trace Gases', *Philosophical Transactions of the Royal Society A*, vol. 365, 2007: 1,925–54.

15 Elmer Altvater offers a lucid account of these twin threats, and goes on to suggest that they represent the end of a period of 'congruence' between the logics of capitalism and the physical properties of fossil energy ('The Social and Natural Environment of Fossil Capitalism,' *Socialist Register* 43, 2007: 37–59). In the chapters that follow I offer a different account of those properties – the transportability of oil, for example, is very different from that of coal – which is difficult to fit with the idea of capitalism as a historical process with a set of unchanging 'logics'.

16 Gavin Bridge directs attention away from the exclusive focus on producer states and the resource curse, to look at the diverse network of firms involved in oil, from production, refining and distribution, to those now involved in the capture and storage of carbon and the trading of carbon credits, each of which may be governed by a different political regime. 'Global Production Networks and the Extractive Sector: Governing Resource-Based Development', *Journal of Economic Geography* 8, 2008: 389–419. On the sociology of translation, and 'obligatory passage points', see Michel Callon, 'Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay', in John Law, ed., *Power, Action and Belief: A New Sociology of Knowledge?*, London: Routledge, 1986.

Political possibilities were opened up or narrowed down by different ways of organising the flow and concentration of energy, and these possibilities were enhanced or limited by arrangements of people, finance, expertise and violence that were assembled in relationship to the distribution and control of energy.

Like energy from fossil fuels, democratic politics is a recent phenomenon. The development of the two kinds of power has been interwoven from the start. This book traces the way they were co-assembled, starting in Chapter 1 with coal and the rise of mass politics in Europe and America in the late nineteenth and early twentieth centuries. It has long been understood that the rise of coal, made possible by the use of steam power to access seams of carbon deep underground, allowed the development of large-scale manufacturing and the modern city, and that out of mines, factories and modern urban life emerged the forces that struggled for democracy. But these forces have usually been thought of, one-sidedly, as 'social movements'. Gathering in workplaces, labour unions, and political clubs, it is said, people forged a political consciousness with which they fought for more egalitarian and democratic collective lives. The account is one-sided because it leaves out the equipment with which this political agency was assembled, and ignores the technical vulnerability to which oligarchic forms of rule were now exposed. As Chapter 1 shows, the socio-technical worlds built with the vast new energy from coal were vulnerable in a particular way, and it was the movement of concentrated stores of carbon energy that provided the means for assembling effective democratic claims.

Keeping in mind this new understanding of the relations between energy flows and the emergence of democracy, I turn in Chapter 2 to examine the beginnings of the oil industry in the Middle East. The standard history tells a story of heroic pioneers discovering oil in remote and difficult locations and of far-sighted statesmen on the eve of the First World War acting to secure this strategic prize. Having learned from the history of coal and democracy that the politics of energy involves acquiring the power to interrupt the flow of energy as much as securing its supply, I propose a different account. I explore how oil companies collaborated to delay the emergence of an oil industry in the Middle East, and politicians saw the control of oil overseas as a means of weakening democratic forces at home. From its beginnings, the history of Middle Eastern oil forms part of the making and unmaking of democratic politics.

The struggle against democracy helped trigger the First World War, out of which emerged the League of Nations and a new machinery to control the oil regions of the Middle East – the system of League of Nations Mandates. These events are usually described as a battle between the idealism of President Woodrow Wilson's 'Fourteen Points', championing the democratic principle of self-determination, and the self-interest of the European powers that took control of the main oil regions of the Middle East, in particular Iraq. Chapter

3 provides a different history, in which a wartime battle for a more democratic control of imperialism and the acquisition of raw materials, fought by the European left, was translated into an undemocratic machinery for producing 'the consent of the governed'. The most important site for producing this 'consent' to imperial rule was Iraq. In Chapter 4 I examine how political forces in Iraq and other parts of the Middle East responded, and the way in which control over the oil reserves of Iraq was forged. The subsequent construction of an oil industry in Iraq and neighbouring countries opened up new possibilities for organising democratic political claims. At the same time, the distribution and scale of the new energy flows made the advancing of those claims increasingly difficult.

The term 'democracy' can have two kinds of meaning. It can refer to ways of making effective claims for a more just and egalitarian common world. Or it can refer to a mode of governing populations that employs popular consent as a means of limiting claims for greater equality and justice by dividing up the common world. Such limits are formed by acknowledging certain areas as matters of public concern subject to popular decision while establishing other fields to be administered under alternative methods of control. For example, governmental practice can demarcate a private sphere governed by rules of property, a natural world governed by laws of nature, or markets governed by principles of economics. Democratic struggles become a battle over the distribution of issues, attempting to establish as matters of public concern questions that others claim as private (such as the level of wages paid by employers), as belonging to nature (such as the exhaustion of natural resources or the composition of gases in the atmosphere), or as ruled by laws of the market (such as financial speculation). In the mid-twentieth century, this 'logic of distribution' began to designate a large new field of government whose rules set limits to alternative political claims: the field that became known as 'the economy'.[17]

Chapter 5 traces the making of the economy as a new object of politics in the mid-twentieth century (most accounts mistakenly locate the emergence of the economy one or two centuries earlier). It also examines how the production of rapidly increasing quantities of low-cost carbon energy, in the form of oil, contributed to this new mode of political calculation and democratic rule. In contrast to the forms of material calculation characteristic of government in the age of coal, the new calculations made possible by the abundance of oil allowed ways of administering collective life based on the novel principle of unlimited economic growth. The management of economic growth provided new kinds of reason and modes of regulation to govern carbon democracy.

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17 Cf. Jacques Rancière, *Hatred of Democracy*, London: Verso, 2006, which discusses democratic struggles as a battle against a logic of distribution that designates some matters as public and others as private.

While the making of the economy provided ways of ordering material life at the level of the nation-state, it was unable to manage the forces that many people considered responsible for the crisis of democracy in the interwar period: the flows of private international capital whose speculative movement had caused the collapse of European financial and political systems. Here, too, oil appeared to provide an answer, underwriting the creation, after the Second World War, of a new method of controlling international capital. Alongside the making of the national economy, Chapter 5 traces the building of international financial mechanisms that were intended to curb the threat of speculation by private international banks – a threat to democratic politics that was to re-emerge on a new scale later in the twentieth century. Since the new machinery of control operated partly by governing flows of oil, and the Middle East was becoming the main source of the world's oil, organising the region under imperial control again became important for the possibility of democracy as a mode of government in the West. Postwar attempts to place Middle Eastern oil under a form of US-run 'international trusteeship' were blocked by the oil companies, to be replaced with the simpler framework of the 'Cold War'. The logic of distribution that designated certain areas as inappropriate arenas for advancing democratic claims incorporated the Middle East as just such an area.

My account of carbon democracy began by tracing a rather simple relationship between the vulnerabilities created by a dependence on coal and the ability to make effective egalitarian demands. By this point in the book, however, it has taken on multiple dimensions, reflecting the switch from coal to the increasing use of oil, the much more extended networks for producing and distributing energy, the new forms of collective life that abundant fossil fuels made possible, and the rapidly expanding circulations of goods and finance that were dependent upon the production of oil.

In Chapter 6 I return to Iraq and the wider Middle East, examining how domestic political struggles in the 1950s and 1960s were transformed into struggles with the oil companies over the control of oil. The history of the rise of OPEC is well known, along with the role of nationalist forces in driving the effort by the oil-producing states to assert control, first over the rate at which the production of oil by foreign companies was taxed, and then over the ownership and operation of those companies. From the perspective of carbon democracy, however, we need to emphasise new aspects of this story. The chapter traces the battle over oil at the level of refineries, pipelines and shipping routes, and of their sabotage; it explores how the purchase of high-tech weaponry by the oil states, beginning with Iran, could provide a uniquely tailored mechanism for recycling oil revenues, and how new doctrines of 'security' were packaged with arms sales; and it connects the question of oil in the Middle East to new methods of managing democratic political demands in the West. These developments led to the crisis of 1973–74, explored in Chapter 7. Misleadingly called

simply an 'oil crisis', the pivotal events of this period involved a transformation in modes of governing international finance, national economies and flows of energy, placing the weakened carbon democracy of the West into a new relationship with the oil states of the Middle East. The shift in US relations with oil-producing states also allowed political forces on the right, opposed to the management of 'the economy' as a democratic mode of governing collective life, to reintroduce and expand the laws of 'the market' as an alternative technology of rule, providing a more effective means of placing parts of the common world beyond the reach of democratic contestation.

Over the three decades that followed, from the 1979 Islamic Revolution in Iran to the Arab uprisings in the spring of 2011, two themes came to dominate discussions of oil and democracy in relation to the Middle East. One was the rise of Islamist political movements that appeared to many to present an obstacle to building more democratic forms of politics. The other was the growing level of military violence in which the oil states were involved – in particular the series of wars in the Gulf, culminating in the US invasion of Iraq in 2003. A popular study of this period described its dynamic as a conflict between the globalising powers of capital and the narrow forces of tribal and religious identity, or 'Jihad vs. McWorld'. Chapter 8 offers a different way of thinking about the relations between oil, so-called globalisation, and the powers of political Islam, using the concept of 'McJihad'.

In the concluding chapter, I return to some of the contemporary limits to carbon democracy: the ending of the era of abundant, low-cost carbon energy, as the difficulty of replacing depleted oil fields with new discoveries deepens, and as new discoveries become increasingly expensive and energy-intensive to exploit; and the accelerating threat of climate collapse, as existing forms of democratic government appear incapable of taking the precautions needed to protect the long-term future of the planet. I show how the technical uncertainty around these questions allows a certain form of reasoning – that of economic calculation – to occupy the space of democratic debate, and argue that the socio-technical understanding of carbon democracy pursued in this book offers a better way to overcome this obstacle to our shaping of collective futures.

CHAPTER 5

Fuel Economy

We are learning to think of democracy not in terms of the history of an idea or the emergence of a social movement, but as the assembling of machines. Those who assembled the supply of coal into an apparatus for democratising the industrialised world had tried to extend its mechanisms to govern relations with non-European regions. Following the crisis of the First World War, they proposed devices to govern the international flow of finance and redirect its profits to beneficial ends. The imperial powers, in uneasy alliance with local forces, managed to forge an alternative device, one that replaced democratic claims with the process of 'self-determination' and substituted for the democratic control of international capital the emergent apparatus of 'development'.

The difficulty in governing the movement of money continued to be an obstacle to the growth of more egalitarian and democratic politics, an obstacle increasingly connected with the flow of oil. A generation later, in the wake of the failure of democratic governments in Europe and a second global war, another effort was made to devise a method for managing the international flow of finance, the arrangement known as the Bretton Woods system. Its development coincided with new forms of democratic politics in industrialised countries, based on the management of what had recently come to be called 'the economy'. Both the international financial arrangement and the apparatus of 'the economy' were devices for governing democracies; both systems, as we will see, were constructed in ways that took advantage of the rapidly increasing use of non-renewable carbon energy, which with the shift to the age of oil continued its exponential rate of growth. In order to grasp the changing relation between carbon energy and democracy in the second half of the twentieth century, we must explore the place of oil in these two machineries of government.

OIL TO DRIVE THE MONEY LENDERS FROM THE TEMPLE

The collapse of democracy in Europe in the 1920s and 1930s, the rise of fascism and the slide towards another world war were understood to have been caused by the collapse of methods for maintaining the value of money. In central and eastern Europe, countries were forced to abandon the attempt to base the value of their currencies on reserves of gold. One by one their domestic financial systems collapsed, middle classes were pauperised, the poor endured widespread unemployment, and interwar democracy was destroyed. 'The breakdown of the

international gold standard', Karl Polanyi wrote in 1944, was 'the mechanism which railroaded Europe to its doom'.[1]

During the Second World War, Britain and the United States made plans to engineer a new mechanism for managing the international movement of money. At a meeting in July 1944 at the Mount Washington Hotel in Bretton Woods, a faded New Hampshire resort built in 1902 with the fortune of a Pennsylvania coal magnate, the forty-four Allied states reached agreement on a plan, setting up the International Monetary Fund and International Bank for Reconstruction and Development, today known as the World Bank. The Bretton Woods agreement abandoned a system that had been built on the wealth and technologies of coal and replaced it with one based on the movement of oil.

To prevent a repeat of the interwar financial catastrophe and another collapse of democracy, governments had to control those whose actions had caused it – the currency speculators. The discovery of the Witwatersrand goldfields in southern Africa in the 1880s (see Chapter 3), and the consolidation there of the British gold-mining monopolies and their racialised labour regime, had allowed the expansion of international trade regulated by reserves of gold. It also encouraged the growth of large private banks, which profited from speculation in the value of national currencies. The goal of the Bretton Woods reforms was to eliminate the power of the bankers to speculate. In his address at the closing of the Bretton Woods talks, the Secretary of the US Treasury, Henry Morgenthau, said that the purpose of the new monetary system was to 'limit the control which certain private bankers have in the past exercised over international finance' and drive 'the usurious money lenders from the temple of international finance'.[2] To curb large-scale speculative movements of capital, the value of currencies was to be tied not to reserves of gold but to the exchange of goods, whose value reflected human and material wealth. Declaring that no people or government 'will again tolerate prolonged or wide-spread unemployment', Morgenthau argued that with the new international financial machinery 'men and women everywhere can exchange freely, on a fair and stable basis, the goods which they produce through their labor'.

The new system managed to limit the destructive power of private currency speculators for about two decades. It achieved this, however, by connecting the value of currencies not to the general flow of goods produced by the labour of men and women, but principally to the movement of oil. The speculators were able to weaken the mechanism in the late 1960s thanks to stresses created by the

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1 Karl Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time*, New York: Farrar & Rinehart, 1944: 20.

2 'Address by the Honorable Henry Morgenthau, Jr., at the Closing Plenary Session' (22 July 1944), in Department of State, ed., *United Nations Monetary and Financial Conference: Bretton Woods, Final Act and Related Documents, New Hampshire, July 1 to July 22, 1944*, Washington DC: US Government Printing Office, 1944: 7–10, available at www.ena.lu.

movement of oil, and destroyed it in the 1980s when they devised new ways to speculate in currencies.[3]

Currency systems are always material as well as calculative devices, built out of technical processes. The gold standard, the previous mechanism, had been initially made possible by coal and steam power, in ways we will examine later. Gold reserves could no longer provide the instrument to secure international financial exchange, because the European allies had been forced to send all their gold bullion to America to pay for imports of coal, oil and other wartime supplies. By the end of the war the United States had accumulated 80 per cent of the world's gold reserves. At Bretton Woods, the United States agreed to fix the value of the dollar on the basis of this gold, at $35 per ounce. The other participating countries agreed that the dollar would be the only reserve currency convertible at a fixed rate to gold, and that the value of their own currencies would be tied to the dollar, and thus indirectly to the American gold monopoly. However, the circulation of dollars soon began to outpace American accumulations of gold, in part because the gold miners of South Africa could not increase their production of gold as fast as world trade, fuelled by the easier flow of oil, began to grow.[4] In practice, what sustained the value of the dollar was that countries had to use the American currency to purchase the essential materials that formed the bulk of international trade, above all oil.

In both value and volume, petroleum had become the largest commodity in world trade. In 1945 the United States produced two-thirds of the world's oil, and more than half of the remaining third was produced in Latin America and the Caribbean.[5] Under the arrangements that governed the international oil trade, the commodity was sold in the currency not of the country where it was produced, nor of the place where it was consumed, but of the international companies that controlled production. 'Sterling oil', as it was known (principally oil from Iran), was traded in British pounds, but the bulk of global sales were in 'dollar oil'. The rest of the world had to purchase the energy they required using American dollars. The value of the dollar as the basis of international finance depended on the flow of oil.

The place of oil in international finance escapes most standard accounts of the postwar financial system. Yet it was clearly understood in postwar planning documents.[6] John Maynard Keynes and Harry Dexter White, the

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3 Donald A. MacKenzie, *An Engine, Not a Camera: How Financial Models Shape Markets*, Cambridge, MA: MIT Press, 2006.

4 Barry Eichengreen, *Global Imbalances and the Lessons of Bretton Woods*, Cambridge, MA: MIT Press, 2007: 40–1.

5 Degolyer & MacNaughton, *Twentieth Century Petroleum Statistics*, Dallas: DeGolyer & MacNaughton, 2009.

6 See for example Cornelius J. Dwyer, 'Trade and Currency Barriers in the International Oil Trade', Walter J. Levy Papers, Box 22, Folder 4, Laramie, Wyoming: American Heritage Center, University of Wyoming, 1949. Dwyer was assistant chief, Petroleum Branch, Economic

architects of the Bretton Woods system, had argued for a third institution alongside the International Monetary Fund and the World Bank, to manage trade in oil and other essential raw materials.[7] Their proposals for rebuilding the international financial system after the war included schemes to create stockpiles of oil, rubber, sugar and other commodities to prevent shortages, gluts and price swings. Even those opposed to Keynes – in particular the nascent neoliberal movement, which objected to the government regulation of international banking – accepted the need to reduce financial speculation by tying the movement of money to trade in key commodities such as oil. Drawing on Benjamin Graham's proposal for 'a modern ever-normal granary', Friedrich Hayek, the intellectual leader of the movement, argued for an 'international commodity standard' to replace the gold standard, in which currency would be issued in exchange for 'a fixed combination of warehouse warrants for a number of storable raw commodities'.[8] Both sides of the debate about preventing the speculative destruction of currencies believed that postwar financial stability, and thus the future of democracy, depended on managing the storage and exchange of key commodities. Increasingly the movement of just one commodity, petroleum, provided the mechanism that stabilised, or threatened to disrupt, the democratic order.

The concern with oil was visible in the sequence of meetings that established the new arrangements. Between the talks at Bretton Woods in July 1944, which created the postwar financial regime, including the IMF and the World Bank, and those at Dumbarton Oaks in the autumn of the same year, where the allied powers formulated arrangements for a successor to the League of Nations, a third meeting was held: representatives of Britain and the United States met in Washington in early August to draw up a postwar petroleum order. The meeting finalised plans to establish a permanent body to be called

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Cooperation Administration (the US government agency that administered the Marshall Plan). The neglect of oil in standard histories of the international financial system can be seen, for example, in Barry Eichengreen, 'The British Economy Between the Wars', in Rodrick Floud and Paul Johnson, eds, *The Cambridge Economic History of Modern Britain*, Cambridge, UK: CUP, 2004, and *Globalizing Capital: A History of the International Monetary System*, 2nd edn, Princeton: Princeton University Press, 1996; and in Francis J. Gavin, *Gold, Dollars, and Power: The Politics of International Monetary Relations, 1958–1971*, Chapel Hill: University of North Carolina Press, 2004.

7 Harry Dexter White argued for an 'international essential raw material development corporation' whose function would be 'increasing the world supply of essential raw materials and assuring member countries of an adequate supply at reasonable prices'. Harry Dexter White, 'United Nations Stabilization Fund and a Bank for Reconstruction and Development of the United and Associated Nations', preliminary draft, March 1942, Chapter III: 30. Harry Dexter White Papers, 1920–55, Box 6, Folder 6, Public Policy Papers, Princeton: Seeley G. Mudd Manuscript Library.

8 F. A. Hayek, 'A Commodity Reserve Currency', *Economic Journal* 53: 210/211, 1943: 176–84; Benjamin Graham, *Storage and Stability: A Modern Ever-Normal Granary*, New York: McGraw-Hill Book Company, Inc., 1937.

the International Petroleum Council. Just as the IMF was intended to limit the chaos caused by the speculative dealings of international banks, the parallel organisation for petroleum was intended to limit the trouble caused by international oil companies – and to pre-empt the oil-producing countries, especially in the Middle East, from taking control of the oil themselves. In an echo of the mandates established under the League of Nations to obstruct the demand for political independence in the Arab world, the International Petroleum Council was envisaged as a form of 'trusteeship' to facilitate Anglo-American control of Middle Eastern oil.

A TRUSTEESHIP OF THE BIG POWERS

The major oil companies cooperated with the scheme for an international oil body as an alternative to Keynes's wider plans for the international control of commodities – plans that were to be discussed at the inaugural meeting of the United Nations in April 1945. The head of Shell's US subsidiary warned that if the companies failed to support the International Petroleum Council they risked a 'master agreement made in San Francisco that proposes to cover all sorts of commodities with all sorts of countries'. In the special oil agreement, he said, 'we have something we have had a hand in making'.[9] The impetus to create a new regime governing Middle Eastern oil also came from the weakened position of the American international oil companies in their main overseas region, Latin America. There was alarmist talk from oil executives about the depletion of US reserves and new military needs for petroleum, which helped them win subsidies from Washington for developing Middle East production. But the real problem they faced was to the south.

Immediately before the war, the 'rude expropriations' of American interests in Bolivia and Mexico, as the State Department's petroleum adviser put it, and the move towards state monopolies or much stiffer concession terms in the rest of Latin America, had made it more difficult for US firms to make large profits there.[10] Postwar profits would have to be obtained increasingly from the Middle East, where large undeveloped oil resources continued to pose a threat, but pressure for national control of oil resources seemed easier to prevent. US companies had acquired concessions there in the interwar years, but made little effort to develop them. With declining wartime need for oil from the Middle East, they were able to scale back their modest operations. In 1945 the Middle

9 Minutes of National Oil Policy Committee, 18–19 April 1945, cited in Stephen J. Randall, *United States Foreign Oil Policy, 1919–1948: For Profits and Security*, Montreal and Kingston: McGill-Queen's University Press, 1985: 206.

10 Herbert Feis, 'The Anglo-American Oil Agreement', *Yale Law Journal* 55: 5, 1946: 1,174–5; Michael B. Stoff, 'The Anglo-American Oil Agreement and the Wartime Search for Foreign Oil Policy', *Business History Review* 55: 1, Spring 1981: 59–74.

East produced only 7.5 per cent of the world's oil, two-thirds of which came from the British-controlled oilfields in Iran.[11]

In building oil industries in Venezuela, Mexico and other parts of Latin America, the oil companies had been obliged to deal with sovereign states, independent for more than a century and increasingly able to negotiate more equitable oil agreements. In the Middle East, sovereign states were still forming out of older local and imperial forms of rule. The oil companies could portray their role there as the 'development' of remote and backward peoples, and impose less equitable arrangements.

The State Department wanted to prevent the US oil companies from causing the same problems for themselves in the Middle East that they had created in Latin America. An international framework, in agreement with Britain, would give corporate oil operations the appearance of a trusteeship, the new term for the old idea of the mandate. A petroleum agreement could frame Anglo-US control of the oilfields of the Middle East as a means of making the oil available to every country that needed it, and present this 'equitable' management as a principle that disqualified the claims of producer countries to control their own oil. A report for the State Department by the Office of Strategic Services suggested, 'The principle of equitable distribution and exploitation overrides to some extent the sovereign rights of the oil producing countries and presupposes a kind of trusteeship of the big Powers over the world's oil resources.'[12]

Initially Washington intended to have a government agency play the role of trustee. In 1943, the US Petroleum Administration for War established a government oil company, the Petroleum Reserves Corporation, to assume control of the oil reserves of Saudi Arabia. It planned to take majority ownership of the California-Arabian Oil Company, the American joint venture that owned rights to the oil. Washington also extended wartime Lend Lease aid to Saudi Arabia (relieving US oil companies of the need to subsidise the rule of Ibn Saud), and drew up plans to construct a US government-owned pipeline to carry oil from the Saudi oilfields to the Mediterranean. By taking control of the oil of Saudi Arabia, the State Department hoped to do a better job than the oil companies in preventing nationalisation, in part by funnelling financial support to the region's ruling families to use for 'development'.[13] After the First World War, the British government had envisioned its mandate over Iraq as a scheme for the 'development' of the country's material resources, to create a new form of protectorate and encourage the oil companies to invest in the stability of imperial power. Washington's plans for trusteeship were a new version of imperial development.

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11 DeGolyer & MacNoughton, *Twentieth Century Petroleum Statistics*.

12 OSS, Research and Analysis Branch, 'Comments on a Foreign Petroleum Policy of the Unites States', cited in Randall, *United States Foreign Oil Policy*: 147.

13 Robert Vitalis, *America's Kingdom: Mythmaking on the Saudi Oil Frontier*, 2nd edn, London: Verso, 2009: 62–125.

The American owners of the Saudi rights, Standard Oil of California (later renamed Chevron) and Texaco (now merged with Chevron), blocked Washington's attempted takeover. To create the impression of an official American partnership with the Arab state, they changed the name of their joint venture from the California-Arabian to the Arabian-American Oil Company (Aramco). Rather than allowing the government to invest in the company, they raised the capital they needed for postwar expansion by arranging for the Standard Oil Companies of New Jersey and New York (now ExxonMobil) to buy a 40 per cent share in Aramco. They also defeated the pipeline plan, but then demanded government support for building themselves (see map overleaf).

Similar American plans for a 'trusteeship' over oil were unfolding in Iran, which Britain and Russia had occupied during the war. Attending a meeting with Churchill and Stalin in Tehran at the end of 1943, at which a tentative plan for creating the UN was agreed, President Roosevelt took up State Department ideas for framing the US role in postwar Iran as an international trusteeship. He described the team of fifty US administrative advisers already working in Iran as a 'clinic' that was 'demonstrating the practicability, and something of the form of the projected new "trusteeship"'.[14] Like the mandate for Iraq after the First World War, the trusteeship idea for Iran offered a way for the United States to challenge Britain's control of the oil, while pushing the American oil companies to take steps towards the country's broader 'development.' The State Department pressed the Standard Oil companies and another US firm to bid for oil concessions, but when American petroleum geologists failed to find good prospects in the south-east, and began surveying in the north near the border with the Soviet Union, Moscow responded by asserting its own claims to an oil concession in the north.

The reason why Middle Eastern oil should be placed under American control was sometimes hard to clarify. Herbert Feis, a former economic adviser at the State Department who had chaired its Committee on International Oil Policy in 1943, tried to explain to the public the need for the international oil agreement. 'Nations that lacked oil had to bargain or barter for it; they became dependent on the will and bounty of others', he wrote, adding with barely veiled sarcasm: 'the United States was unused to the idea'.[15] A senior economic policy-maker may have enjoyed pointing out, after leaving office, that for oil companies the principle of market exchange – bargaining for something and depending on this interaction with others – was an unfamiliar idea. The Cold War soon provided the oil companies with a way to deflect such cynicism.

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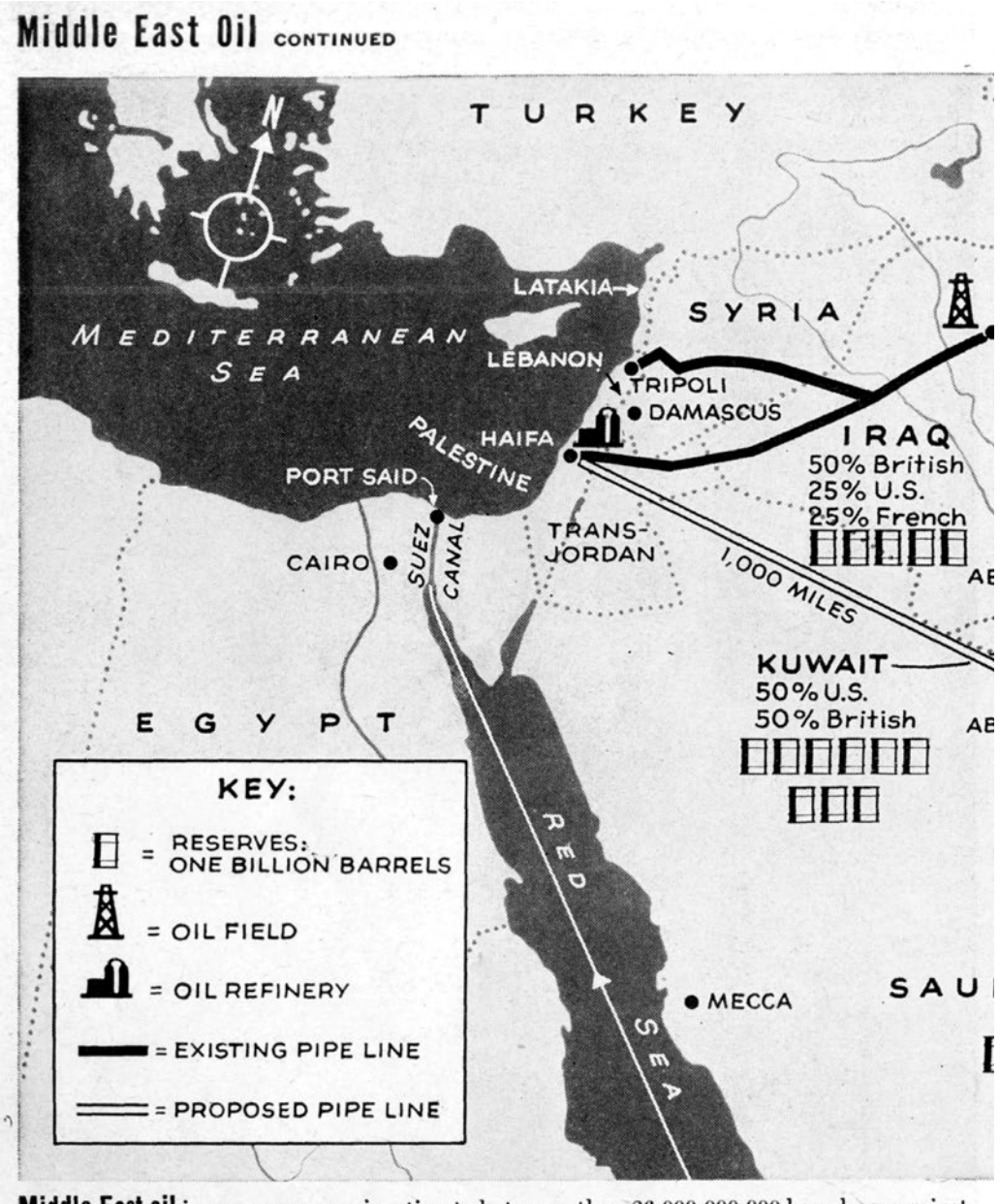
14 Arthur Millspaugh, *Americans in Persia*, Washington, DC: Brookings Institution Press, 1946: 8, cited in Simon Davis, '"A Projected New Trusteeship"? American Internationalism, British Imperialism, and the Reconstruction of Iran, 1938–1947', *Diplomacy & Statecraft* 17: 1, 2006: 31–72.

15 Feis, 'Anglo-American Oil Agreement': 1,174.



'Middle East oil: Trouble erupts as great powers jockey for the power that petroleum provides', *Life*, 11 June 1945

U.S., French and Dutch have interests there. U.S. operates Bahrein (*see pp. 32–33*), has inside track in Saudi Arabia (*pp. 34–37*) and shares the new Kuwait field with British. Only fields shown above are those explored and working (but nonproducing Qatar and Kuwait are shown because of importance). Proposed U.S. pipeline across Arabia is far shorter than water route.

The ambition of the State Department in establishing an oil agency to stand alongside the IMF and the World Bank, in the words of a departmental memo, was to create a 'worldwide system of actual administrative control of the world's petroleum resources'.[16] The Anglo-American Petroleum Agreement, drawn up in 1944 to provide the framework for the post-war petroleum order, called for 'the efficient and orderly development of the international petroleum trade', and said this required 'international agreement' among producing and consuming countries – a clear alternative to the unilateral actions of the Latin Americans. Article 1 of the agreement laid out the new formula for the defeat of any further efforts by producer countries to control their own oil: supplies of petroleum should be made available in international trade to all countries 'on a competitive and nondiscriminatory basis' and 'within the framework of applicable laws and concession contracts'; thereby, 'the interests of producing countries should be safeguarded with a view to their economic advancement'. In other words, the large oil companies would represent the interests of all countries in managing access to oil, on the basis of the existing system of concession agreements, while compensating producer countries by contributing to their development. To further these goals the agreement proposed the creation of a body called the International Petroleum Commission, to collect statistics and publish reports. Feis, the former economic adviser, dismissed the agreement as a proposal 'to create no more than a continually active conference room, attended by a staff of experts, and supplied with a multigraph machine'.[17] He was right, but failed to note that holding multilateral meetings and duplicating endless statistical reports would help make oil 'international', countering any claims that producer countries might make to treat the oil as a national resource.

FAILURE OF LONG-RANGE PLANS

The international petroleum agreement was never implemented. The rivalry between Britain and America over the control of oil was unresolved. The major oil companies forced the revision and weakening of the agreement, and domestic US oil companies blocked its ratification in the Senate. Meanwhile the plans for trusteeships over the oil of Iran and Saudi Arabia were dropped, and the United States found a simpler way to claim control of the region's oil, and thus secure the circulation of dollars.

The British had one main goal in the oil negotiations: to organise the production and flow of oil in a way that would rebuild the value of the pound sterling, as a second international reserve currency alongside the dollar. Britain wanted an agreement that would allow it to exclude American oil imports from

16 Randall, *United States Foreign Oil Policy*: 138.
17 Feis, 'Anglo-American Oil Agreement', 1,187.

British markets (the so-called sterling area, consisting of most countries of the British Empire, plus Iraq, Kuwait, and other Persian Gulf territories). It also hoped to strengthen the pound by increasing postwar British oil production in the Middle East. Since there was, as usual, more oil available than could be produced without lowering prices and reducing the large flows of company income on which the value of sterling increasingly depended, it also sought to limit any postwar expansion of US production in the Middle East.

Britain's attempt to defend the pound sterling as a rival international currency was a struggle over oilfields. When the heads of the Trans-Arabian Pipeline Company, the non-profit joint venture set up by the US oil companies to ship Saudi oil to Europe, were deciding the route for the pipeline, they initially planned to terminate it in Palestine, a state to which Britain, before the war, had promised independence by 1949. After the UN voted instead to partition Palestine into three states (one Arab, one Jewish, and an internationalised city of Jerusalem), but provided no way to carry out the break-up of the country or the eviction of the Arab population from the Jewish state, allowing the Zionist movement to seize most of it by force, the oil companies changed their minds. They briefly considered a southerly route terminating on the northern coast of the Sinai Peninsula, in Egypt. Egypt, however, remained within the British sphere of influence. That raised a further problem besides the question of the troubles in Palestine. Egypt was a member of the sterling area. In fact, Egypt and Iraq were the only non-Commonwealth members of this exchange mechanism.[18] The American oil companies wanted to use the route of the pipeline to undermine the sterling area. To assist with this financial engineering, they diverted the pipeline north into Syria and Lebanon. Meanwhile the British built a rival pipeline at the same time, to increase the flow of sterling oil from Iraq to the Mediterranean. But whereas the Americans built a thirty-inch line, the British line was half that size (carrying about one-third as much oil), 'the limitation of diameter to 16-inch being enforced by the inability of sterling-area manufacturers to produce larger pipe and the equal impossibility of obtaining dollars'.[19] The battle over the postwar international monetary system was being fought in pipeline routes and in rival diameters of pipe.

Oil was so large a component of its international trade that a 1955 report on the treatment of oil in Britain's trade accounts suggested that 'the international

18 For an explanation of the currency mechanism see Elliot Zupnick, 'The Sterling Area's Central Pooling System Re-Examined', *Quarterly Journal of Economics* 69: 1, February 1955: 71–84. Egypt agreed to leave the sterling area in July 1947, hoping to convert its sterling balances, accumulated in London during the Second World War, into dollars. Shortly after, however, Britain broke the terms of the agreement by suspending the convertibility of Egypt's sterling balances. Frederick Leith-Ross, 'Financial and Economic Developments in Egypt', *International Affairs* 28: 1, 1952: 29–37.

19 Stephen Longrigg, *Oil in the Middle East: Its Discovery and Development*, 3rd edn, London: OUP, 1968: 79–80.

ramifications of the oil industry (including its tanker operations) are so large and so complex as almost to constitute oil [as] a currency in itself'.[20] Europe and other regions had to accumulate dollars, hold them and then return them to the United States in payment for oil. Inflation in the United States slowly eroded the value of the dollar, so that when these countries purchased oil, the dollars they used were worth less than their value when they acquired them. These seigniorage privileges, as they are called, enabled Washington to extract a tax from every other country in the world, keeping its economy prosperous and thus its democracy popular.

In February 1945, on his way home from a second conference of the Big Three powers, at Yalta, President Roosevelt stopped in Egypt and held meetings with three regional monarchs – the rulers of Saudi Arabia, Egypt and Ethiopia. The meeting with Ibn Saud is taken to mark the sealing of a special relationship with Saudi Arabia, concerned with Middle Eastern oil. This was not the reaction of William Eddy, the agent in the Office of Strategic Services (a forerunner of the CIA) who helped arrange the meeting and went on to a career in the CIA under the cover of working as a political agent for Aramco. Six months later, a fellow US agent in the region was bemoaning to Eddy the failure of their hopes for 'a long range plan for Saudi Arabia' after 'we all worked like dogs on it in Washington' – a reference to their failure to win large-scale US support for the country.[21] The programme of Lend Lease aid enjoyed by Saudi Arabia and Iran during the war was cancelled, the Saudi request that America not support the Zionist programme for making Palestine into a Jewish state was ignored, and wartime plans for trusteeships and large-scale development programmes for Iran and Saudi Arabia were dropped.[22]

Later on, President Truman would refuse to extend a programme of Marshall Aid to the Middle East, offering instead the Point IV programme. America would not be able to share capital or material wealth with the world's 'underdeveloped areas', Truman explained, for those resources 'are limited'. As a consolation, Washington would offer them ideas. US businesses would be encouraged to share their 'imponderable resources in technical knowledge', which 'are constantly growing and', in contrast to material wealth, 'are inexhaustible'. Technical knowhow would enable countries to use their existing material resources to produce more food, clothing and mechanical power.[23] The idea of

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20 Steven Gary Galpern, *Money, Oil, and Empire in the Middle East: Sterling and Postwar Imperialism, 1944–1971*, Cambridge, UK: CUP, 2009: 15.

21 'Letter to Eddy from Paul H. Alling, Legation of the United States of America, Tangier, Morocco, August 9, 1945', William A. Eddy Papers, Box 8, Folder 6, Public Policy Papers, Department of Rare Books and Special Collections, Princeton University Library.

22 See Vitalis, *America's Kingdom*: 79–86; Simon Davis, '"Projected New Trusteeship"'.

23 Harry S. Truman, 'Inaugural Address', 20 January 1949, available at the American Presidency Project, www.presidency.ucsb.edu. Linda Wills Qaimmaqami argues that Truman's business-led model of development helped precipitate the nationalisation of oil in Iran: 'The Catalyst of Nationalization: Max Thornburg and the Failure of Private Sector Developmentalism in Iran, 1947–51', *Diplomatic History* 19: 1, 1995: 1–31.

development would play a subsidiary but important role in US relations with the non-West, but its role would be to manage the difference between extraordinary levels of affluence for some and modest levels of living for the vast majority of the world, rather than to offer effective means of addressing those differences.

Meanwhile, another way of managing relations with the non-West, including the oil states of the Middle East, was emerging. Following the Yalta talks, the US had begun planning to move armed forces rapidly from Europe to the Pacific theatre, and wanted arrangements for landing rights and refuelling in the Middle East. This concern, rather than cementing a new relationship over oil, was the main reason for Roosevelt's meeting with Ibn Saud. Unable to get further large-scale financial support from Washington, Aramco and Ibn Saud settled for the building of an airport at Dhahran, which was to serve as a US air base. By the time the funds for the base were approved, the war in the Pacific was over and the US Department of War had decided that the airfield was 'of doubtful military usefulness'. Aramco, however, realised that playing on fears of military vulnerability offered a method for securing continued subsidies from Washington.[24] With the abandoning of larger development plans, oil companies could now begin to recast their interests not as a 'trusteeship' over the world's oil but, in a parallel language, as necessary for securing 'strategic' concerns.

A larger opportunity soon emerged for creating a strategic frame in which to place American oil interests, and thus to organise postwar international finance. As the Second World War ended, the dispute with the USSR re-emerged over oil concessions in Iran, triggered by American oil prospecting near the Soviet border. Over the following months, the United States turned the dispute over Iranian oil into an international crisis. This gave American officials the opportunity to make Iran into a different kind of clinic – a place in which to incubate a new context to support American oil policy in the Middle East, and an expansion of American power more generally. At the height of the Iranian oil concession crisis, in February 1946, George Kennan dispatched the famous Long Telegram from Moscow, his 'psychological analysis' arguing that the Soviet Union acted not on the basis of rational calculation of its interests but through the complex psychology of a paranoid commitment to absolute power, and thus to filling 'every nook and cranny available to it in the basin of world power'. To counter this threat, Kennan argued, democratic states had to become, in effect, less democratic, and operate more like the state that was said to threaten them. This pervasive threat could not be effectively countered by 'the sporadic acts which represent the momentary whims of democratic opinion', but only by policies that were 'no less steady in their purpose, and no less variegated and resourceful in their application' than those of the paranoid Russian state. The threat required 'the adroit and vigilant application

24 Vitalis, *America's Kingdom*: 82.

of counter-force at a series of constantly shifting geographical and political points'. The feeble whimsy of democratic politics was to be replaced by an all-encompassing imperial vigilance. Democratic weakness was also to be countered at home, by taking incisive measures 'to solve internal problems of our own society, to improve self-confidence, discipline, morale and community spirit of our own people'.[25]

Opponents of this programme to transform American rivalry with the Soviet Union into a global political, cultural and psychological battle labelled it the 'Cold War' – the term that the neoliberal critic Walter Lippmann had borrowed from George Orwell's essay warning of the oligarchic and technocratic state that would emerge from a condition of permanent war.[26] The critics lost, the Cold War was constructed, and ordinary corporate ambition to control resources overseas, in the increasingly difficult context of postwar decolonisation and the assertion of national independence, could now be explained by invoking and elaborating this global 'context'. In the Middle East, devices like the mandate and the trusteeship, and grandiose plans for development, were no longer necessary. US officials and oil executives could explain why American oil companies needed to control production in the region by referring to its 'strategic importance' in a situation of permanent war, without mentioning corporate profits or the need to restrict the supply of oil from the Middle East. Academic analysis could then repeat the language of strategic necessity, helping to build the Cold War into a long-term device for managing American interests overseas, for organising financial flows through the control of oil, and for countering democratic threats to social discipline and community spirit at home. This way of talking about oil continues even today.

I concluded Chapter 1 with the Marshall Plan and the construction of the Cold War in Europe. After networks of coal production had enabled the assembling of forms of democratic agency that allowed the advancement of new claims for political justice, the Marshall Plan helped engineer a political and financial setup in Western Europe that was less vulnerable to such claims, by making Europe increasingly dependent on oil and the dollar. These arrangements were to be based on the development and control of Middle Eastern oil, and the trading of that oil in dollars. Thus the sites of democratic contestation and vulnerability were shifted to the Middle East.

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25 George Kennan, 'The Chargé in the Soviet Union to the Secretary of State', 22 February 1946, US Department of State, *Papers Relating to the Foreign Relations of the United States, 1946*, Washington DC: US Government Printing Office, 1946, 6: 696–709, and (revised and published under the pseudonym 'X'), 'The Sources of Soviet Conduct', *Foreign Affairs* 25: 4, 1947: 566–82, at 575, 576.

26 George Orwell, 'You and the Atomic Bomb' (1945), in Sonia Orwell and Ian Angus, eds, *The Collected Essays, Journalism and Letters of George Orwell*, New York: Harcourt, Brace & World, 1968; Walter Lippmann, *The Cold War: A Study in US Foreign Policy*, New York: Harper, 1947.

The Anglo-American Petroleum Agreement, envisioned as the basis for an international petroleum commission to operate alongside the Bretton Woods institutions, had attempted to extend this engineering of democratic politics by providing the Anglo-American control of Middle Eastern oil with a collective international framework. The 1945–46 crisis in Iran, emerging as the US tried to challenge Britain's dominant position in Middle Eastern oil and consolidate the dollar-oil mechanisms, allowed the extension of an alternative framework to govern the control of oil and the management of democracy: the Cold War.

Postwar democracy in the West appeared to depend upon creating a stable machinery of international finance, an order assembled with the help of oil wells, pipelines, tanker operations and the increasingly difficult control of oil workers. The fact that flows of oil were the basis for intersecting networks of global energy supply and global currency movements helped introduce a disjuncture that would become increasingly apparent by the end of the 1960s, leading to the energy, dollar and Middle East crises of 1967–74. The following chapter will consider those interlocking crises. Before that, let us explore a second dimension of postwar carbon democracy, a dimension that was also linked to oil and would also be transformed in the 1967–74 crises: the mid-twentieth century politics of 'the economy'.

THE CARBON ECONOMY

John Maynard Keynes, the economist who played a leading role in devising the postwar apparatus for tying the value of money to the movement of oil, helped formulate and describe another innovation of the mid-twentieth century: the modern apparatus of calculation and government that came to be called 'the economy'. A further set of connections between oil and mid-twentieth-century democratic politics concerns the role of economic expertise. Like twentieth-century democracy, twentieth-century economic expertise developed in a specific relationship to the hydrocarbon age.

Keynes's main contribution to the making of this object was to devise new ways of describing and managing the domestic circulation of money. In a memorable passage in *The General Theory*, his classic treatise of 1936, he explained the difference between the market devices of *laissez-faire* economics and the modern need for government to organise the circulation of money by picturing banknotes buried in disused coalmines:

> If the Treasury were to fill old bottles with bank notes, bury them at suitable depths in disused coal mines which are then filled up to the surface with town rubbish, and leave it to private enterprise on well-tried principles of *laissez-faire* to dig the notes up again . . . there need be no more unemployment and, with the help of the

> repercussions, the real income of the community, and its capital wealth also, would probably become a great deal greater than it actually is.[27]

British coal production peaked in 1913. By the time Keynes began writing *The General Theory*, twenty years later, the country's coal mines were being exhausted at an unprecedented rate. William Stanley Jevons, the author of an earlier revolution in British economic thinking, the mathematical calculation of individual utility of the 1870s, had published a book warning of the coming exhaustion of coal reserves. Keynes was reading that book as he published *The General Theory*, and gave a lecture on Jevons in 1936 to the Royal Statistical Society.[28] It is indicative of the transformation in economic thinking in which Keynes played a role that the exhaustion of coal reserves no longer appeared as a crisis. The management of coal reserves could now be replaced in the mind, and in the textbooks of economics, with reserves of currency. In the era that Keynes's thinking helped to define, the supply of carbon energy was no longer a practical limit to economic possibility. What mattered was the proper circulation of banknotes.

The shaping of Western democratic politics from the 1930s onwards was carried out in part through the application of new kinds of economic expertise: the development and deployment of Keynesian economic knowledge; its expansion into different areas of policy and debate, including colonial administration; its increasingly technical nature; and the efforts to claim an increasing variety of topics as subject to determination not by democratic debate but by economic planning and knowhow. The Keynesian and New Deal elaboration of economic knowledge was a response to the threat of populist politics, especially in the wake of the 1929 financial crisis and the labour militancy that accompanied it and that re-emerged a decade later. Economics provided a method of setting limits to democratic practice, and maintaining them.

The deployment of expertise requires, and encourages, the making of sociotechnical worlds that it can master. In this case, the world that had to be made was that of 'the economy'. This was an object that no economist or planner prior to the 1930s spoke of or knew to exist. Of course, the word 'economy' existed prior to the 1930s, but it referred to a process, not a thing. It meant government,

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27 John Maynard Keynes, *The General Theory of Employment, Interest, and Money*, London: Macmillan, 1936: 129.

28 William Stanley Jevons, *The Coal Question: An Inquiry Concerning the Progress of the Nation and the Probable Exhaustion of Our Coal-Mines*, London: Macmillan, 1865. Jevons's son, H. Stanley Jevons, returned to the question of the exhaustion of coal reserves in *The British Coal Trade*, London: E. P. Dutton, 1915. He revised his father's estimate of the date of the possible exhaustion of British coal mines from one hundred years to 'less than two hundred years' (756–7). John Maynard Keynes, 'William Stanley Jevons 1835–1882: A Centenary Allocation on his Life and Work as Economist and Statistician', *Journal of the Royal Statistical Society* 99: 3, 1936: 516–55. Lecture delivered on 21 April 1936. *The Coal Question* is quoted on p. 517.

or the proper management of people and resources, as in the phrase 'political economy'.[29] The economy would now become the central object of democratic politics in the West – a process that paralleled the emergence of 'development' outside the West. The economy became an object whose management was the central task of government, requiring the deployment of specialist knowledge.

CIVILISATION IS THE ECONOMY OF POWER

Most thinking about the relationship between economics and the economy continues to reflect the influence of the great Austrian-born social theorist Karl Polanyi. Polanyi argued that the economy emerged as an institutional sphere separate from the rest of society in the nineteenth century. Before this moment of separation, the economy was absorbed or embedded in wider social relations. It follows, he argued, that the formal rules of classical, Ricardian economics relate only to a particular historical period, when market exchanges ceased to be a minor aspect of broader social relations and became an apparently self-regulating system to which other social spheres were subordinated. Moreover, he argued, classical political economy helped to achieve this separation of the market system from society, in particular by formulating ways of treating land, labour and money as though they were merely commodities – a set of fictions that were essential to the formation of the economy as its own institutional sphere.[30] Treating money, in particular, as though it were a commodity, in which speculators could trade, Polanyi suggested, had later led to the collapse of European democracies.

The consensus that the economy became a distinct object of intellectual knowledge and government practice in the late eighteenth or the nineteenth century overlooks a surprising fact. No political economist of that period refers to an object called 'the economy'. In the sense of the term we now take for granted, referring to the self-contained structure or totality of relations of production, distribution and consumption of goods and services within a given geographical space, the idea of the economy emerged more than a century later, in the 1930s and 1940s. Both in academic writing and in popular expression, this meaning of the term came into common use only during the years around the Second World War.

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29 This and other sections of this chapter draw on Timothy Mitchell, 'Economists and the Economy in the Twentieth Century', in George Steinmetz, ed., *The Politics of Method in the Human Sciences: Positivism and Its Epistemological Others*, Durham, NC: Duke University Press, 2005: 126–41.

30 *In The Great Transformation* (1944), Polanyi describes the emergence of 'society' in the nineteenth century as a system of regulations and controls attempting to limit the spread of market relations. In later writings, he describes the latter as the emergence of 'the economy'. Karl Polanyi, Conrad M. Arensberg and Harry W. Pearson, *Trade and Market in the Early Empires: Economies in History and Theory*, Glencoe: Free Press, 1957.

From the works of Thomas Mun and William Petty in the seventeenth century to Adam Smith in the late eighteenth, political economy was not concerned with the structure of production or exchange within an economy. In *The Wealth of Nations*, Adam Smith never once refers to a structure or whole of this sort. When he uses the term 'economy', the word carries the older meaning of frugality or the prudent use of resources: 'Capital has been silently and gradually accumulated by the private frugality and good conduct of individuals . . . It is the highest impertinence and presumption . . . in kings and ministers, to pretend to watch over the oeconomy of private people.'[31] The objects of political economy were the proper husbanding and circulation of goods and the proper role of the sovereign in managing this circulation. An earlier tradition of writing on the economy or management of the large household or estate was extended to discussions of the management of the state, imagined as the household of the sovereign. The term 'economy' came to refer to this prudent administration or government of the community's affairs.[32] Political economy referred to the economy, or government, of the polity, not to the politics of an economy.

As countries moved from the agrarian world of the eighteenth century to an increasingly industrial and urban life in the nineteenth, the phrase 'political economy' continued to refer to the management or government of a polity, even as writers debated the need for new forms of government. The German-American journalist Friedrich List, whose *National System of Political Economy* (1856) is sometimes read as a precocious study of 'the national economy' in its twentieth-century sense, wrote in these terms. Popularising American arguments about the need for government policies to encourage and protect the development of industry, List contrasted 'the financial economy of the state', which referred 'to the collection, to the use, and the administration of the material means of a government', with 'the economy of the people', which referred to 'the institutions, the regulations, the laws, and the circumstances which govern the economical conditions of the citizens'. The term 'economy' denoted the forms of administration, regulation, law and social circumstance that defined the processes known as government.[33]

The book Keynes had been reading on the coal question, published by William Jevons in 1865, illustrates the meanings of economy before the twentieth-century invention of 'the economy', and their relation to the growth of coal and

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31 Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, London: Methuen, 1950 [1776]: 327–8.

32 Keith Tribe, *Land, Labour, and Economic Discourse*, London: Routledge & Kegan Paul, 1978: 80–109; Michel Foucault, *Security, Territory, Population: Lectures at the Collège de France 1977–1978*, London: Palgrave Macmillan, 2007.

33 Friedrich List, *Das Nationale System der Politischen Oekonomie*, Stuttgart and Tübingen: J. G. Cotta'scher Verlag, 1841. English translation, *National System of Political Economy*, transl. G. A. Matile, Philadelphia: J. B. Lippincott & Co., 1856: 281.

steam power. Jevons suggested that the economy or prudent management of resources applied especially to the resource that had made industrial civilisation possible. He contrasted the vast dissipation of force and matter that occurs in nature with the tiny fraction of power whose economy was the basis of civilisation. 'Material nature presents to us the aspect of one continuous waste of force and matter beyond our control', he wrote. 'The power we employ in the greatest engine is but an infinitesimal portion, withdrawn from the immeasurable expanse of natural forces.' However, he continued, 'while the sun annually showers down upon us about a thousand times as much heat-power as is contained in all the coal we raise annually, yet that thousandth part, being under perfect control, is a sufficient basis for all our economy and progress'. Quoting the German chemist Justus von Liebig, he described this efficient management and control of the power of fossil fuels as the basis of the work of civilisation. 'Civilization, says Baron Leibig, is *the economy of power*, and our power is coal. It is the very economy of the use of coal that makes our industry what it is; and the more we render it efficient and economical, the more will our industry thrive, and our works of civilization grow.'[34]

CALCULATION IN THE AGE OF COAL

Nineteenth-century writing about political economy reflects the world of coal mines and steam engines. The mines and the engines, however, did more than provide objects of reflection. They helped form a world of calculation, circulation and control of which the doctrines of political economy became a part. The gold standard provides a good example of this. As Britain's overseas empire grew, and with it the national debt that funded colonial wars, the country needed a system of money that could increase greatly in quantity and travel over large distances, yet retain its value. The solution was to introduce token money: coins whose value resided not in the metal itself, of which the actual worth was slightly less than the value the coin represented, but in stores of gold held by the government that issued them. Token coinage had to be too expensive to counterfeit, yet affordable enough to manufacture in large quantities. The development of coal-powered, steam-driven rolling mills and presses made it possible to solve this problem. In the Great Recoinage of 1816–17, which inaugurated the use of silver coins as token money, the eight coining presses at the Royal Mint in London produced up to 250,000 coins per day.[35] Steam-powered coinage allowed Britain gradually to implement the gold standard (the rest of

34 Jevons, *Coal Question*: 122, 125; emphasis in original.

35 Great Britain, Committee on the Royal Mint, Report from the Select Committee on the Royal Mint, London: HMSO, 1849: 74; Angela Redish, 'The Evolution of the Gold Standard in England', *Journal of Economic History* 50: 4: 789–805.

Europe followed only after 1870), which contributed to the dominant role of British finance in world trade. It also contributed to the development of new ways of knowing about questions of money and wealth. The coining and circulation of money on a large scale produced new problems, including inaccuracy in striking coins and coins losing weight through usage. The problems were the object of repeated investigation, including a Royal Commission of 1849, and of an innovative statistical study by Jevons, who organised a survey of the age and weight of coins held by banking houses from which he calculated the average rate of wear.[36] In other words, an industrial, coal-fired coinage system generated forms of circulation, storage, accounting and investigation, one of several such developments though which an empirical science of political economy could emerge.

Other forms of steam-powered machinery laid out other forms of circulation, calculation and control. During his stay in America in the 1820s, Friedrich List became briefly involved in coal mining in Pennsylvania, and joined a venture to build a rail line to carry coal to its consumers. On his return to Germany, he began to champion an expanded use of railways, not just as lines connecting two points, but as webs of commerce and communication that could engineer a common space of exchange. 'The needs of industry and communication', he wrote in 1836, 'will compel the railway systems of the larger Continental nations to form a net-like shape, concentrating on the main points in the interior and radiating from the centre to the frontiers'.[37]

Coal production itself generated a new space of calculation and debate. Jevons wrote his study of the rate of exhaustion of coal supplies to draw popular attention to the use of statistical methods, by showing how the new tools he had helped develop to analyse tables of statistical information could be applied to questions of the day.[38] He wanted to show that statistics could be used to measure a natural law, the Law of Social Growth. He took estimates of remaining supplies of coal in Britain published by the geologist Edward Hull and statistics from the Mining Record Office to estimate the annual rate at which British coal consumption was increasing. Hull had estimated that, at the current consumption rate of 72 million tons a year, the country's recoverable coal was sufficient to last more than a thousand years. While acknowledging that consumption had doubled over the last twenty years, and that if it continued to increase at the same rate supplies would be exhausted in only 172 years, Hull argued that

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36 See Sandra J. Peart, '"Facts Carefully Marshalled" in the Empirical Studies of William Stanley Jevons', *History of Political Economy* 33, 2001, annual supplement: 252–76.

37 List, 'Deutschlands Eisenbahnsystem in militärischen Beziehung' (1836), cited in Keith Tribe, *Strategies of Economic Order: German Economic Discourse, 1750–1950*, Cambridge, UK: CUP, 1995: 63; translation of the term netzartig ('net-like') modified.

38 Peart, '"Facts Carefully Marshalled"'; Margaret Schabas, 'The "Worldly Philosophy" of William Stanley Jevons', *Victorian Studies* 28: 1, 1984.

supplies from America and 'greater economy' in 'the getting and using of the mineral' would extend Britain's supply, and that one should not suppose 'that any part of the Creator's universe has been regulated on so short-sighted a plan, that it shall become disorganized because some of the elements necessary to its economy have failed'.[39]

Jevons set out to dispel these 'plausible fallacies' of the geologists. To understand and measure progress, he argued, what matters is not the absolute amount by which production of a good increases, which tells us nothing, but the rate – the increase relative to the increase in a previous period. If the amount of coal a country produces increases in one year by a million tons, but that increase is smaller than the increase in the preceding year, then although its total production has increased, the rate of increase has declined. 'In statistical matters', he explained, one must cultivate the habit of treating all quantities 'relatively to each other'. The rate of growth indicated not a fixed annual increase of consumption, but a geometric process of growth, in which the amount of each year's increase would be greater than the previous year. Describing the novel social experience that coal and steam power had created, the experience that today we would call 'exponential growth', in which practically infinite values are reached in finite time, Jevons showed how quickly even very large stores of coal might be depleted. Applying his methods to the consumption data of the Mining Record Office, Jevons arrived at a figure by logarithmic calculation of 3.5 per cent annual growth. At that rate, the supplies of coal identified by Hull would last not for a thousand years, but only for one hundred.[40]

Jevons then showed that problems would arise much sooner, perhaps within twenty or thirty years. It was erroneous to think that 'some day our coal seams will be found emptied to the bottom, and swept clean like a coal-cellar', or that the country's fires and furnaces would 'be suddenly extinguished, and cold and darkness will be left to reign over a depopulated country'. Long before that, the rising cost of coal as its recovery became more difficult would cause 'the climax of our growth' and 'the end of the present progressive condition of the kingdom'.

From these calculations he drew an immediate and practical conclusion. In the few remaining decades while the country's revenue was expanding and wealth accumulating, efforts had to be made 'to raise the character of the people'. Pointing out the undeniable fact that 'the whole structure of our wealth' was built upon 'a basis of ignorance and pauperism and vice', he argued for a reduction in the employment of children in manufacture and a general system of education to dispel 'the ignorance, improvidence, and brutish drunkenness of our lower working classes'. Instead of spending current material wealth on 'increased

39 Edward Hull, *The Coal-Fields of Great Britain*, 2nd edn, London: Edward Stanford, 1861: 236, 238–9, 243.

40 Jevons, *Coal Question*: 4, 170, 236–40.

luxury and ostentation and corruption', the country should spend it on creating 'the increased efficiency of labour in the next generation'. He concluded with the warning that 'we are now in the full morning of our national prosperity, and are approaching noon. Yet we have hardly begun to pay the moral and social debts to millions of our countrymen which we must pay before evening.'[41]

Three themes emerge from Jevons's writing on coal, which we will follow forward to understand what was different for the making of the economy under the subsequent dominance of oil. First, the supply of carbon energy, like the industrial circulation of coinage and the development of railway lines, formed a concentrated movement of materials that, as a process, was reported, measured, tracked across time and compiled into tables. As problems and disputes arose, methods of inspection and information-gathering increased. The Mines Inspection Act of 1850, for example, led to the appointment of government inspectors of coal mines, who in 1854 began to compile the system of Mining Records, making available the statistics on which Jevons based his work. Second, these statistics made possible the mathematical measurement of progress, rates of growth, and the depletion of resources. The questions of material limits, the exhaustion of nature and future decline became matters of increasing concern. Third, with the consequences of modern industrial and urban life, a parallel concern developed with the measurement and amelioration of the moral condition of the poor, and its relationship to the efficiency of labour.

Following Jevons, the development of social statistics took two different paths. One was research on the measurement of poverty, the living conditions of the poor, and industrial accidents. By the end of the nineteenth century, almost all industrialised states had bureaus of labour statistics, created in response to the economic crises of 1873–95 and to the growing political strength of labour organisations. The information they collected on the life of the working classes shaped the new measures of social welfare, such as retirement pensions and various forms of industrial and medical insurance, and helped to implement the new programmes. The wartime campaign to generalise these measures, as we saw in Chapter 3, led to the creation of the International Labour Office as part of the Treaty of the Versailles at the end of the First World War.

The second path was research on race development and eugenics. The work of Francis Galton on the statistical analysis of heredity, inspired by the evolutionary theory of his half-cousin Charles Darwin, first appeared in 1865, but was unable to win wider support until the 1890s. Towards the end of the century, governing classes in Europe and America became alarmed by evidence of what was considered the deterioration of racial quality, revealed in Britain by the difficulty of recruiting physically healthy soldiers for the South African war, and elsewhere by fears that the poor and the less physically fit were reproducing

41 Ibid.: v, xxiii–xxvi.

faster than the racially strong part of the population, leading to the risk of 'race suicide'.[42] Galton and his followers proposed controlled breeding to improve racial quality, and to counter the effects of the widening of voting rights. People are not 'of equal value, as social units', Galton warned, 'equally capable of voting, and the rest'.[43] To advance the study and improvement of racial quality, Galton developed new statistical methods. In fact, modern, mathematical statistics with its methods of correlation, regression and error analysis, was developed for the purpose of the eugenics movement.[44] The work was continued by Galton's student, Karl Pearson, whose drive to universalise mathematical statistics was particularly successful in its influence in economics in the early twentieth century, where Irving Fisher and others 'were soon refining the method of correlation to use it as a test of the quantity theory of money'.[45] The monetarists simplified their theories to fit the ultra-empiricism of statistical correlation, looking for a single indicator that could reveal the role of the money supply in determining economic cycles. By the 1920s American economists were 'correlating furiously and indiscriminately and with an inverse correlation between zeal and discretion', wrote Jacob Viner. 'As might have been anticipated in a world full of nonsense correlations, the results were grotesque.'[46]

NATURAL RESOURCES AND RACIAL VIGOUR

In the early decades of the twentieth century, a battle developed among economists, especially in the United States, that shaped the future of economic knowledge and its relation to nature and the material world. The battle was to have important consequences for the way questions of natural resources entered democratic debate. One side wanted economics to start from natural resources and flows of energy, the other to organise the discipline around the study of prices and flows of money. The battle was won by the second group, who created out of the measurement of money and prices a new object: the economy.

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42 G. R. Searle, *A New England? Peace and War 1886–1918*, Oxford: Clarendon Press, 2004: 375–6.

43 Theodore M. Porter, *The Rise of Statistical Thinking, 1820–1900*, Princeton: Princeton University Press, 1986: 130.

44 Donald Mackenzie, *Statistics in Britain, 1865–1930: The Social Construction of Scientific Knowledge*, Edinburgh: Edinburgh University Press, 1981; Porter, *The Rise of Statistical Thinking*: 129–46, 270–314; Alain Desrosières, 'Managing the Economy: The State, the Market, and Statistics', in Theodore Porter and Dorothy Ross, eds, *The Cambridge History of Science*, vol. 7: *Modern Social Sciences*, Cambridge, UK: CUP, 2003.

45 Porter, *Rise of Statistical Thinking*: 314.

46 Jacob Viner, 'The Present Status and Future Prospects of Quantitative Economics', *American Economic Review*, March 1928 (supplement), reprinted in J. Viner, *The Long View and the Short*, Glencoe: Free Press, 1958: 451, cited in Thomas M. Humphrey 'Empirical Tests of the Quantity Theory of Money in the United States, 1900–1930', *History of Political Economy* 5: 2, 1973: 307.

In the emergent profession of academic economics, many economists were concerned to measure the exhaustion of the earth. In the United States, leading economists like Richard T. Ely, a founder of the American Economics Association, and his student Thorstein Veblen, whose theory of capitalism as a system of 'sabotage' we encountered in Chapter 1, became preoccupied with questions of natural resources and their depletion, with excess or 'conspicuous' consumption, and with the dissipation and conservation of 'energy'. Economics, in their view, was to be a study not of the laws of markets but of material flows and resources.[47] These men lost the battle to shape the discipline they helped found to the rival forces of the price theorists, led by men like Irving Fisher. Economics became instead a science of money; its object was not the material forces and resources of nature and human labour, but a new space that was opened up between nature on one side and human society and culture on the other – the not-quite-natural, not-quite-social space that came to be called 'the economy'.

Many new devices and arrangements made it possible, during the first half of the twentieth century, to develop the forms of calculation and practices of representation that enabled people to talk about and manage the circulations of money that represented the 'national economy'. Rather than describe all the work that went into building it, we can illustrate some of the mundane and interconnected ways in which it came into being with the example of Irving Fisher – the man whom the *New Palgrave Dictionary of Economics* in 1987 called 'the greatest economist America has produced'.[48]

A disciple of the work of William Jevons, Fisher is remembered as the man who built the first working model of the economy. The model consisted of a tank of water fitted with cisterns, pipes, valves, levers and stoppers. He used this hydraulic-mechanical apparatus in his lectures at Yale as an experimental device to investigate how a shock to demand or supply in one of ten different commodities affected the overall level of water, or prices, in a general equilibrium system. A more practical example of the work of making the economy was Fisher's invention of the 'Index Visible', a device for managing information on small cards that is known today as the Rolodex, which he patented in 1913. He set up a company in his house in New Haven, the Index Number Institute,

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47 Veblen argued that business should be run by engineers rather than businessmen, for engineers understood material processes and were orientated towards the more efficient use of resources, whereas businessmen were concerned only with profits. In response to the great anthracite coal strike of 1902, a movement among engineers in the US wanted to take control of the 'economic', not just of the 'technical', efficiency of business, and called for an alliance between engineers and organised labour. Donald R. Stabile, 'Veblen and the Political Economy of the Engineer: The Radical Thinker and Engineering Leaders Came to Technocratic Ideas at the Same Time', *American Journal of Economics and Sociology* 45: 1, 1986: 41–52.

48 James Tobin, 'Irving Fisher (1867–1947)', in J. Eatwell, M. Milgate and P. Newman, eds, *The New Palgrave: A Dictionary of Economics*, vol. 2, London: Macmillan, 1987: 369–76.

where assistants working in the basement used the new equipment, along with the index formulas Fisher had devised, to calculate the first indices of commodity prices and the purchasing power of the dollar. The *New York Times* and other newspapers published his price indexes every week, together with a commentary by Fisher, enabling 7 million readers to follow and participate in the price movements that would come to be called the economy.

There were many other mechanisms for removing nature and material resources from economics and turning it into a science of prices – not as simple as the Rolodex, or as uncontroversial. For example, Fisher became a champion of eugenics. His mentor at Yale was William Graham Sumner, America's leading social Darwinist. In 1906, Fisher helped establish the Race Betterment Society, and in 1922 founded and became the first president of the American Eugenics Society. Racial improvement formed a logical part of his economic theory. Human labour was a form of wealth or capital stock. Like non-human capital, it was a resource that could be improved or left to degenerate. The progress of society depended on the decisions individuals took about whether to consume in the present or invest for the future. These decisions were affected by an individual's self-control, life expectancy, thrift and degree of foresight – something that inferior races, and degenerate members of a superior race, lacked.[49]

Appointed to President Theodore Roosevelt's National Conservation Committee, set up in 1908 to address growing concerns over the exhaustion of natural resources, Fisher produced a report arguing that the most important means of conserving nature was not for the government to regulate its exploitation, but to take measures to prevent 'racial degeneracy', since 'one of the first symptoms of racial degeneracy is decay of foresight', while 'the more vigorous and long-lived the race, the better utilization can it make of its natural resources'. Economics would withdraw from studying the capacities and resources of nature and attend instead to the capacities and resources of the human. Fisher advocated establishing a federal Department of Health as the main instrument of racial improvement, but economics too could work on the enhancement of human capabilities. It could extend individual powers of foresight by developing prosthetic devices like the Rolodex and the newspaper commodity price index, and subsequently by elaborating the entire machinery of calculation called the economy.[50]

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49 Mark Aldrich, 'Capital Theory and Racism: From Laissez-Faire to the Eugenics Movement in the Career of Irving Fisher', *Review of Radical Political Economics* 7: 3, 1975: 33–42.

50 After his stint on the National Conservation Committee, Fisher taught a new course at Yale on 'National Efficiency', which was described as a 'study of natural resources, racial vigor, and social institutions'. William J Barber, 'Irving Fisher of Yale', *American Journal of Economics and Sociology* 64: 1, 2005: 49.

MONEY ECONOMY

In the discipline of economics, the easiest place to trace the appearance of the idea that the economy exists as a general structure of economic relations would be in the publication of John Maynard Keynes's *General Theory of Employment, Interest and Money*, in 1936. Although tending to employ phrases like 'economic society' or 'the economic system as a whole', where today one would simply say 'the economy', the *General Theory* conventionally marks the origin of what would come to be called macro-economics.[51]

The economy was formed as a new object in the context of broader developments. Jan Tinbergen, a pioneer of the mathematical measurement of 'the economy', developed his first econometric model in response to a Dutch government request for policies to combat the depression.[52] Keynesian theory was also a response to the experience of mass unemployment and depression, and to the emergence of fascist, Soviet, New Deal and other general economic programmes that addressed not just individual human behaviour but the interaction of aggregate and structural factors such as employment, investment and money supply. Also important was the emergence after the First World War of the welfare and development programmes for European colonies (Keynes's first job was in the Revenue, Statistics and Commerce Department of the India Office), in response to the growing threats to colonial rule.

These broader events were not just the context for the emergence of a new conception of the economy. While the possibility of making the economy in the mid-twentieth century arose out of these events, economics was itself involved in the reconfiguring of social and technical worlds that gave rise to the economy, as we have seen with the work of Fisher. We can mention two larger aspects of this reconfiguration: new forms of circulation of money; and the weakening of European empires and other forms of imperial control, accompanied by the creation of 'national economies'.

The interwar period saw a significant alteration in the forms of circulation of money in countries such as Britain and the United States. The most dramatic change was the increase in the use of money – in particular paper money – for everyday transactions. Before the First World War, Keynes had remarked on how seldom people in Britain used token or paper money for financial transactions. He could think of only two purposes for which he himself regularly used money – to purchase railway tickets and pay his domestic servants.[53] Most everyday transactions were settled by running an account or writing a cheque. In the United

51 Michael Bernstein, *A Perilous Progress: Economics and Public Purpose in Twentieth-Century America*, Princeton: Princeton University Press, 2001; Philip Mirowski, *Machine Dreams: Economics Becomes a Cyborg Science*, Cambridge, UK: CUP, 2002.

52 Mary S. Morgan, *The History of Econometric Ideas*, Cambridge, UK: CUP, 1990: 102.

53 John Maynard Keynes, *Indian Currency and Finance*, London: Macmillan, 1913.

States, federal bank notes had been introduced by the National Currency Act of 1863, but their supply was limited. Their use remained unpopular, and they competed with a range of other regional bank notes and local scrips.[54] Again, local accounts and personal cheques were by far the most common ways to settle transactions. During the war the situation began to change, with the rapid increase in the printing of money, and the relaxation and later abandonment of the gold standard in most countries. The creation of the US Federal Reserve in 1913, and similar reforms in other countries, led to a standardisation of bank notes and the widespread and rapid acceptance of the use of paper money.

This transformation in the use and circulation of money illustrates how economic knowledge helped to form its new object. In the first place, economists developed new theories of money, entering into the political battles over questions of currency reform, the gold standard, and government control of exchange rates and money supply. Keynes's first published work, *Indian Currency and Finance* (1913), was a practical contribution to this politics, and was followed by the publication of *A Treatise on Money* (1930). In the United States, the conflict between Irving Fisher's quantity theory of money and the 'real bills' doctrine of J. Laurence Laughlin and his students shaped the creation of the Federal Reserve system.[55] The conceptions and calculative technologies provided by economists were built into the new financial institutions. In other words, economists developed practical tools for measuring and managing the value of money that became part of the novel day-to-day machinery of monetary circulation that was soon to be recognised as 'the economy'.

The next step was to begin to see this new mechanism of money circulation as a system in its own right, rather than just another 'market'. Following the publication of *A Treatise on Money* (1930), Keynes made a decisive break with the ideas of his predecessors at Cambridge, Marshall and Pigou, as well as with the work of Fisher and Frisch. Earlier theorists, he argued, had treated money as simply a neutral signifier of value, and thus saw no essential difference between a system of exchange using money and a barter system. In the earliest surviving drafts of *The General Theory*, which date from 1932–33, and in fragments of his Cambridge lecture notes from the same period, he discusses the differences between the 'real-exchange economy' or 'neutral' economy of classical economic theory, and the 'money economy' of the real world of the present.[56] These notes represent his first use of the concept of 'the economy' in its contemporary sense.

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54 Viviana A. Zelizer, *The Social Meaning of Money: Pin Money, Paychecks, Poor Relief and Other Currencies*, Princeton: Princeton University Press, 1997.

55 Perry Mehrling, 'Retrospectives: Economists and the Fed: Beginnings', *Journal of Economic Perspectives* 16: 4, Autumn 2002: 207–18.

56 John Maynard Keynes, *The Collected Writings of John Maynard Keynes*, ed. Donald Moggridge, London: Macmillan, 1971–89, vol. 13: 396–412, 420–1; vol. 29: 54–5; Robert Skidelsky, *John Maynard Keynes*, vol. 2: *The Economist as Saviour, 1920–1937*, London: Macmillan, 1992.

Keynes's breakthrough was to conceive of the new totality not as an aggregation of markets in different commodities, but as the circulation of money: the economy was the sum of all the moments at which money changed hands.

THE NATIONAL ECONOMY

A further step in the making of this economy was to construct mechanisms for measuring all the instances of spending and receiving money within a geographical space – the new national income accounts. Before the interwar period, attempts to calculate national wealth or 'national dividend' had come up against a series of insuperable obstacles. There was the problem of counting the 'same' goods or money twice. For example, commodities sold at wholesale could not be counted again, it was thought, when sold at retail. Income earned as a professional salary should not be included in national wealth a second time when paid as wages to the servants. And, as Alfred Marshall pointed out, there was the problem of accounting for all the waste that was incurred in the production of wealth – not only the depreciation of tools and machinery, but also the exhaustion of the country's natural resources.[57]

After the First World War, the Dawes Committee, set up to estimate Germany's 'capacity to pay' economic reparations, discovered the lack of not just reliable data concerning national income but of a manageable conception of what one was trying to count. In both Germany and the US there were extensive interwar efforts to remedy this problem.[58] It took two decades to solve it. The solution was not to count things more accurately, but to re-conceive the object being counted. No longer was the goal to count the nation's wealth or dividend, but rather its aggregate 'national income' – the sum of every instance of money changing hands. Each such instance represented income to the recipient, however productive or unproductive the activity and regardless of the waste incurred. The work of Keynes again played a critical role, and he and his students worked closely with the Treasury in London to design the methods of estimating national income.

In the United States, Simon Kuznets of the National Bureau of Economic Research systematised the new methods. In 1942 the US Department of Commerce began publishing national economic data, and in his 1944 budget speech President Roosevelt introduced the idea of 'gross national product'.[59]

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57 Alfred Marshall, *Principles of Economics*, 8th edn, London: Macmillan, 1920: 523.

58 J. Adam Tooze, 'Imagining National Economies: National and International Economic Statistics, 1900–1950', in Geoffrey Cubitt, ed., *Imagining Nations*, Manchester: Manchester University Press, 1998: 212–28. See also J. Adam Tooze, *Statistics and the German State, 1900–1945: The Making of Modern Economic Knowledge*, Cambridge, UK: CUP, 2001.

59 Daniel Bell, *The Coming of Post-Industrial Society: A Venture in Social Forecasting*, New York: Basic Books, 1976: 331–2.

Kuznets warned that 'a national total facilitates the ascription of independent significance to that vague entity called the national economy'.[60] The warning was of no use. The subsequent elaboration of the GNP of each economy made it possible to represent the size, structure and growth of this new totality. The making of the economy provided a new, everyday political language in which the nation-state could speak of itself and imagine its existence as something natural, spatially bounded and subject to political management.

The emergent national economy was dependent upon a 'nationalisation' of political and administrative power – the emergence of large-scale, techno-scientific governmental practices based upon the vastly expanded administrative machinery of post-1930s national governments. It also contributed to the making of these nationalised machineries of government, in which economics superseded law as the technical language of administrative power.[61]

For orthodox, pre-Keynesian economics, the sphere of economic behaviour was the individual market. This was the abstraction in terms of which the relations between costs, utilities and prices were to be analysed. When Keynes's *General Theory* replaced this abstraction, which had no geographical or political definition, with the 'economic system as a whole', it was a system defined by a set of geopolitical boundaries. The system was represented in terms of a series of aggregates (production, employment, investment and consumption) and synthetic averages (interest rate, price level, real wage, and so on), whose referent was the geographic space of the nation-state. This 'national' framing of the economy was not theorised, but introduced as a commonsense construct providing the boundaries within which the new averages and aggregates could be measured.[62] Subsequently, the division of economics into the separate fields of macro- and micro-economics inscribed this commonsensical reference to the nation-state in the structure of the discipline, where it remained unnoticed. Thinking of the national economy as simply 'the macro level' provided a substitute for a theoretical analysis of its geopolitical construction. In place of a study of the institutional forms of the state, economics reproduced this institutional structure within the structure of the discipline.

The forming of the economy in terms of the nation-state was related to the re-casting of the international order. The dissolution of the European and Japanese empires before and after the Second World War destroyed an older framing of political power in terms of position in an imperial order. Here too the economy provided a new way of organising geopolitical space. Previously

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60 Simon Kuznets, *National Income and Its Composition, 1919–1939*, Vol. 1, New York: National Bureau of Economic Research, 1941: xxvi.

61 Theodore J. Lowi, 'The State in Political Science: How We Become What We Study', *American Political Science Review* 86: 1, 1992: 1–7.

62 Hugo Radice, 'The National Economy: A Keynesian Myth?' *Capital and Class* 8: 1, 1984: 121.

it had made little sense to talk of, say, the British economy, so long as Britain's economic realm was thought to include India and its other colonies. More generally, a world that was pictured as consisting outside Europe of a series of extensive but discontinuous European and other empires could not easily be imagined to contain a large number of separate economies, each coinciding with a self-contained geographical space and consisting of the totality of economic relations within that space.

The collapse of empire and the growing hegemony of the United States created a new order, consolidated first by the League of Nations and then by the UN, the World Bank and the International Monetary Fund, in which the world was rendered in the form of separate nation-states, with each state marking the boundary of a distinct economy. Again, the new macro-economics took these imagined objects as its untheorised referents: international trade was measured in terms of aggregates (imports and exports of goods and capital) and averages (terms of trade, exchange rates) that were defined in terms of the transactions between national economies.[63] Economic expertise, institutionalised in the World Bank, the IMF and other new agencies, helped construct the new global political order through the publication of statistics and the proliferation of political programmes defining as their object these separate economies.

The framing of the Keynesian national economy was part of a programme to limit and reduce the operation of market competition, through increased management of finance, trade and migration, and above all through the prevention of a global market in labour. It can thus be seen as a successor to the colonial order – an earlier and much older system of limiting market forces by means of monopoly, managed trade, the control of labour, and political repression, which began to collapse in the interwar period. Seen in this light, the making of 'the economy' should be connected with a parallel development that also sought to frame politico-economic relations to exclude the operation of market competition: the development of the large corporation, including its largest and most powerful variant, the multinational oil corporation.

Joseph Schumpeter argued that economists had more justification than natural scientists for using mathematical models to describe the world they studied.[64] This was because the economic world, unlike the natural world, was actually constructed out of numerical phenomena – prices, measures of quantity, interest rates, and so on. He saw this as an argument for the further development of quantitative and formal methods of economic analysis. This affinity between the methods of economics and the make-up of the world it studied was certainly a strength, but it was a strength that had further consequences.

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63 Ibid.

64 Joseph Schumpeter, 'The Common Sense of Econometrics', *Econometrica* 1: 1, January 1933: 5.

It made it relatively easy for economic knowledge to become involved in the everyday making of the objects of economic analysis.[65] As a result, there could never be any simple divide between the models and representations developed by academic economics and the world it claimed to represent.

These transformations created in the twentieth century a political and material world densely imbued with the expertise, calculative techniques and conceptual machinery of modern economics. The so-called material world of governments, corporations, consumers and objects of consumption was arranged, managed, formatted and run with the help of economic expertise. The readiness with which it seemed that this world could be manipulated and modelled by economics reflected not simply that it was a naturally 'quantitative' world, as Schumpeter suggested. It reflected this imbrication of the concepts and calculations of economic science in the world it was studying.

FUEL MONEY

We can now connect the assembling of 'the economy' with the transition from a coal-based energy system to a predominantly oil-based one. The conception of the economy depended upon abundant and low-cost energy supplies, making postwar Keynesian economics a form of 'petroknowledge'.

The conceptualisation of the economy as a process of monetary circulation defined the main feature of the new object: it could expand without getting physically bigger. Older ways of thinking about wealth were based upon physical processes that suggested limits to growth: the expansion of cities and factories, the colonial enlargement of territory, the accumulation of gold reserves, the growth of population and absorption of migrants, the exploitation of new mineral reserves, the increase in the volume of trade in commodities. All these were spatial and material processes that had physical limits. By the 1930s, many of those limits seemed to be approaching: population growth in the West was levelling off, the colonial expansion of the United States and the European imperial powers had ended and was threatened with reversal, coal mines were being exhausted, and agriculture and industry faced gluts of overproduction. The economy, however, measured by the new calculative device of national income accounting, had no obvious limit. National income, later renamed the gross national product, was a measure not of the accumulation of wealth but of the speed and frequency with which paper money changed hands. It could grow without any problem of physical or territorial limits.

Oil contributed to the new conception of the economy as an object that could grow without limit in several ways. First, oil declined continuously in price. Adjusting for inflation, the price of a barrel of oil in 1970 was one-third of

65 Michel Callon, *The Laws of the Markets*, Oxford: Blackwell, 1998.

what it had sold for in 1920.[66] So although increasing quantities of energy were consumed, the cost of energy did not appear to represent a limit to economic growth. (In fact, economists explained the growth of their new object without reference to the consumption of ever-increasing quantities of physical energy, measuring only the input of capital and labour. This left an unexplained 'residual' growth, which for a long time they tried to attribute to factors outside their economic models that they called 'technology'.[67])

Second, thanks to its relative abundance and the ease of shipping it across oceans, oil could be treated as something inexhaustible. Its cost included no calculation for the exhaustion of reserves. The growth of the economy, measured in terms of GNP, had no need to account for the depletion of energy resources. The leading contributions to the academic formulation of the economy – Keynes's *General Theory*, Hicks's *Value and Capital*, Samuelson's *Foundations*, and the Arrow-Debreu model – paid no attention to the depletion of energy.[68] The economics of growth of the 1950s and 1960s could conceive of long-run growth as something unrestrained by the availability of energy.[69] Moreover, the costs of air pollution, environmental disaster, climate change and the other negative consequences of using fossil fuels were not deducted from the measurement of GNP. Since the measurement of the economy made no distinction between beneficial and harmful costs, the increased expenditure required to deal with the damage caused by fossil fuels appeared as an addition rather than an impediment to growth.[70] In all these ways, the availability and supply of oil contributed to the shaping of the economy and its growth as the new primary object of mid-twentieth-century politics.

The abundance of hydrocarbon energy contributed to the new forms of calculation in further ways, two of which were of particular significance. One was the industrialisation of agriculture. To earlier economic thought, land appeared as a primary source of wealth and as a limited resource, unable to

66 The price of oil fell from $31 a barrel in 1920 to $9 in 1970 (in 2006 prices). The average price per decade also declined, from $18 per barrel in the 1920s, to $15 per barrel in the 1930s and 1940s, $14 per barrel in the 1950s and $12 per barrel in the 1960s. *BP Statistical Review of World Energy 2007*, available at www.bp.com.

67 Dale W. Jorgenson, ed., *The Economics of Productivity*, Cheltenham: Edward Elgar, 2009. Robert U. Ayres and Benjamin Warr show that including a measure for energy, or rather exergy – energy when converted into useful work – provides a better accounting for all US growth since 1900. Ayres and Warr, 'Accounting for Growth: The Role Of Physical Work', *Structural Change and Economic Dynamics* 16: 2, 2005: 181–209.

68 Keynes, *General Theory*; John Hicks, *Value and Capital*, Oxford: OUP, 1939; Paul A. Samuelson, *Foundations of Economic Analysis*, Cambridge, MA: Harvard University Press, 1947; Kenneth J. Arrow and Gerard Debreu, 'Existence of an Equilibrium for a Competitive Economy', *Econometrica* 22: 3, 1954: 265–90.

69 Geoffrey M. Heal and Partha S. Dasgupta, *Economic Theory and Exhaustible Resources*, Cambridge, UK: CUP, 1979: 1.

70 Herman E. Daly, *Steady-State Economics: The Economics of Biophysical Equilibrium and Moral Growth*, San Francisco: W. H. Freeman, 1977.

increase at the rate of population growth and liable to degeneration and exhaustion. The introduction of synthetic fertilisers after the First World War, manufactured from natural gas, and of chemical herbicides and insecticides after the Second World War, appeared to remove these natural limits to growth. The other contribution was the rise of synthetic materials, manufactured with hydrocarbons, which appeared as a direct answer to resource depletion. In 1926, a meeting of the Institute of Politics in Williamstown, Massachusetts, brought together mining engineers, geologists and chemists to talk with political scientists about the threat of resource depletion. The mining engineers warned about the threat of exhaustion of key minerals; but the chemists disagreed, arguing that the new synthetic materials developed during the First World War would make it possible to create any resources that ran short by artificial means. 'The mining engineers argued that when present stocks of important materials are exhausted, our civilization will be profoundly dislocated', according to a report on the meeting. 'The experts in chemistry, on the other hand, were pervaded with a striking optimism.' Acknowledging the possibility of temporary shortages, 'they looked forward with assurance to replacing exhausted materials with others equally suited to human needs.' The difference of view extended to political issues. The mining engineers warned that 'the natural distribution of resources is distinctly unequal, so that a condition approaching monopoly exists in many essential resources', oil being the most obvious example. The chemists, on the other hand, 'felt that synthetic products would, in many cases, break up national monopolies, and restore a really competitive situation'.[71]

If oil played a key role in the making of 'the economy', it also shaped the project that would challenge it, and later provide a rival method of governing democratic politics: the 'market' of neoliberalism. A group of European intellectuals under the leadership of Friedrich Hayek launched the neoliberal movement at a colloquium in Paris, organised in August 1938, to discuss the work of Walter Lippmann criticising the New Deal, as a movement against this new object of planning, the economy, and against planning itself as a method of concentrating and deploying expert knowledge. Neoliberalism proposed an alternative ordering of knowledge, expertise and political technology – the political apparatus that it named 'the market'. This was not the market of David Ricardo or William Jevons, but a term that began to take on new meanings in the hands of the nascent neoliberal movement. Drawing on Lippmann's warnings in *The Phantom Public* and *The Good Society* about the dangers of public opinion and the need to expand the areas of concern that are reserved to the decisions of experts, neoliberalism was envisioned by

71 Henry M. Wriston, 'Institute of Politics', *American Political Science Review* 20: 4, 1926: 853–4.

Hayek and his collaborators as an alternative project to defeat the threat of the left and of populist democracy.

The development of neoliberalism was delayed by the war and the programmes of postwar reconstruction. Its political challenge to the Keynesian apparatus got gradually underway a decade later, in modest form, with the founding of a think tank in London in 1955 called the Institute of Economic Affairs. The launch was triggered by the first postwar crisis in the oil-currency system: Britain's attempt to preserve the sterling area as a mechanism of currency regulation, despite the loss of its control of the hub of that mechanism, the Anglo-Iranian Company's oilfields in Iran. The desperate measures with which London tried to retain the pound's value despite the loss of the oil wells through which its value had been manufactured provided the point of vulnerability where the neoliberal movement first began to construct an alternative to the economy.

Likewise in the US, the origins of the neoliberal movement were tied to the struggles over the postwar issues of oil and the regulation of international financial speculation. The State Department's plans for American oil policy in 1945 were blocked by the Petroleum Industry War Council, whose foreign policy committee was chaired by Albert Mattei, president of the Honolulu Oil Corporation. Mattei warned the officials attempting to create an international body to regulate postwar oil development, 'we are going to come in with constructive suggestions, and if you don't accept our suggestions we are going to tear your playhouse down'.[72] He went on to help kill the Anglo-US Petroleum Agreement. A powerful northern California Republican, Mattei was a founding board member in 1946 of the Foundation for Economic Education – the original inspiration for Hayek's Institute of Economic Affairs in London. One of its first publications was Henry Hazlitt's *Will Dollars Save the World?*, an attack on the Marshall Plan and the forms of state planning in Europe on which it was based, as well as the ideas about the dollar and other currencies that it reinforced. Hazlitt called for the US to go on the real, not just the formal gold standard, and for others to follow.[73]

The oil wells and pipelines of the Middle East, and the political arrangements that were built with them, helped make possible the assembling of the Keynesian economy and the forms of democracy in which it played a central part. Democratic politics developed, thanks to oil, with a peculiar orientation towards the future: the future was a limitless horizon of growth. This horizon was not some natural reflection of a time of plenty; it was the result of a particular way of organising expert knowledge and its objects, in terms of a novel world

72 Stephen J. Randall, *United States Foreign Oil Policy 1914–1948*, 2nd edn, Montreal and Kingston: McGill-Queen's University Press, 2005: 199–200.

73 Henry Hazlitt, *Will Dollars Save the World?* New York: Appleton-Century, 1947. His analysis of Europe began with an attack on allied control of the German economy, based on the arguments of the ordoliberal Wilhelm Röpke.

called 'the economy'. Innovations in methods of calculation, the use of money, the measurement of transactions and the compiling of national statistics made it possible to imagine the central object of politics as an object that could increase in size without any form of ultimate material constraint.

We have now expanded the meaning of the term 'carbon democracy'. At first it referred to the central place of coal in the rise of mass democracy, and then to the role of oil, with its different locations, properties and modes of control, in weakening the forms of democratic agency that a dependence on coal had enabled. Oil has now taken on a larger significance in our understanding of democracy. In the postwar period, democratic politics was transformed not only by the switch to oil, but by the development of two new methods of governing democracies, both made possible by the growing use of energy from oil. One of these was an arrangement for managing the value of money and limiting the power of financial speculation, which was said to have destroyed interwar democracy – a system built with the pipelines, oil agreements and oligarchies that organised the supply and pricing of oil. It was accompanied by the construction of the Cold War, which provided a framework for the policing of the postwar Middle East that replaced the need for mandates, trusteeships, development programmes and other scaffoldings for imperial power. The other new mode of governing democracies was the manufacture of 'the economy' – an object whose experts began to displace democratic debate and whose mechanisms set limits to egalitarian demands. In the years 1967–74, as we will see in Chapter 7, the relations among these disparate elements were all transformed, just as they are being transformed again today. To understand the so-called 'oil crisis' of that period, we must first understand how political forces in the Middle East brought the postwar petroleum order to an end.

CHAPTER 6

Sabotage

While operating as part of an international financial system, and as the energy that made it possible to imagine the limitless growth of 'the economy', oil was a fluid that petroleum 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. The drilling rigs, pumps, pipelines, refineries and distribution networks of the oil industry were not as vulnerable to stoppages or sabotage as the carbon energy networks of the coal age. Nevertheless, as the Middle East replaced Latin America as the world's second-most-productive oil region after the United States, the possibilities for local disruption increased.[1]

Governments eventually came to power in Iraq, Algeria, Syria and Libya that were independent of British and French political influence, while the two American client states, Iran and Saudi Arabia, began attempting to loosen foreign control of their oil. These changes allowed local disputes and disruptions to be built into something more effective. Interrupting or reducing the supply of oil could become an instrument to be used for larger political purposes, aimed at altering the control of oil or changing other aspects of the political order in the Middle East. The construction of this instrument is usually described in terms of the emergence of a new political consciousness: the growth of a more assertive Arab nationalism. Equally important, however, were the practical forms of recalcitrance: the rerouting of oil supplies, the building of new refineries, and the acts of sabotage that made possible the first sustained challenge to the way Western oil companies managed the flow of oil.

REVOLUTION IN IRAQ

During the 1960s, the oil-producing states of the Middle East sought a way to take national control of their oil reserves without suffering the fate of Iran a decade earlier. When the government of Muhammad Mossadegh nationalised the assets of the Anglo-Iranian Oil Company in 1951, Iran had taken over the production of oil but was unable to sell it. The British blockaded exports from the refinery at Abadan, persuading tanker fleets and major oil companies to

1 Oil production in the Middle East and North Africa surpassed that of Latin America and the Caribbean in 1953, and of the US ten years later. DeGoyer & MacNoughton, *Twentieth Century Petroleum Statistics*, Dallas: DeGolyer & MacNaughton, 2009.

refuse to handle the oil. Anglo-Iranian made up the lost supplies by doubling production in the neighbouring oilfields of Kuwait, which became the largest producer in the Middle East. Since oil formed a large part of Iran's export revenues, the blockade threw the country into economic crisis, leaving the government an easy target for the Anglo-American-organised military coup of August 1953. The coup removed Mossadegh's parliamentary-based government, restored and enhanced the oligarchic rule of the shah, and exposed the left to violent repression.

Iraq was the next focus of the struggle between the oil firms and the producer countries. Like Iran it had a large agrarian population, while its cities were growing with the migrant poor driven from the countryside by the concentration of land in the hands of large landowners whose control over rural life and livelihoods had been consolidated under the British. In the oilfields, the railway yards and the textile mills, the workforce had formed active trade unions. The leadership of these and other popular political forces came largely from the Communist Party of Iraq, the largest and best-organised party in the country. The left campaigned for jobs, housing and other improvements to collective welfare, for ending the private control of large estates that caused misery in the countryside, for democratic rights in place of political repression and for ending foreign control of the oil industry.[2]

As the control of oil became the focus of popular political forces, it led to their undoing. The power of sabotage – the capacity to block or slow the flow of oil, a capacity that had previously been monopolised largely by the international oil companies – would be organised not by the workers who operated the oil industry, but by the state. When nationalist army officers led by Abd al-Karim Qasim overthrew the British-backed monarchical government in 1958, they relied initially on the Communists for popular support while trying to unify the country around a campaign for the control of oil. For Qasim and his successors, taking state ownership of the country's petroleum resources would offer a way to finance social reforms while bypassing those modes of wealth-creation that make the well off vulnerable to egalitarian demands. Oil revenues would remove the need to create national wealth through a radical redistribution of land and a large increase in manufacturing.

In other parts of the world (in much of East and South Asia, for example), effective agrarian reform was a critical instrument for building more egalitarian and democratic ways of life. Limiting the size of farms to the area that a family could work on its own removed from the wealthy the option of earning

2 Hanna Batatu, *The Old Social Classes and the Revolutionary Movements of Iraq: A Study of Iraq's Old Landed and Commercial Classes and of its Communists, Ba'thists, and Free Officers*, Princeton: Princeton University Press, 1978: 764–865; Joe Stork, 'Oil and the Penetration of Capitalism in Iraq', in Petter Nore and Terisa Turner, eds, *Oil and Class Struggle*, London: Zed Press, 1980: 172–98.

large rentier incomes from land, obliging those seeking to accumulate wealth to build it through the development of manufacturing. Such a change has a double effect, creating more equality (and smaller, more productive farms) in the countryside, while making those with capital gradually vulnerable to the power of an industrial workforce. Democratisation has generally depended on engineering such forms of vulnerability. The vulnerability arises not because manufacturing allows workers to gather and share ideas, or form what is called a 'social movement', but because it can render the technical processes of producing concentrations of wealth dependent on the well-being of large numbers of people.

The new Iraqi government attempted a redistribution of large agrarian estates, but struggled to implement the programme in the face of landlord opposition and a succession of serious droughts. It set the upper limit on landholding at 250 hectares (over 600 acres) of irrigated land, and double that area of rain-fed land.[3] In East Asia, governments driven by the fear that peasants and their allies might try to emulate the Communist revolution in China carried out land reform programmes that set limits on owning irrigated land as low as three hectares. Retaining their large estates, those with capital in Iraq had no need to take the difficult path of earning wealth through manufacturing, and would later enjoy the opportunities in trade, contracting and other services required by a government steadily enriched by oil. While manufacturing depends on complex human–mechanical processes that are vulnerable to sabotage, giving large industrial workforces the ability to make effective political demands, national control of oil would place its revenues in the hands of the state, gradually strengthening the powers of government and reducing its initial dependence on popular forces.[4]

Among the four large oil-producing countries of the Middle East in that period – Iran, Iraq, Saudi Arabia and Kuwait – Iraq's situation was peculiar. It was the country where the companies that controlled the world's major oil regions least wanted to produce more of it. The industry was under the management of the Anglo-Iranian Oil Company, now renamed British Petroleum.

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3 Edith Penrose and E. F. Penrose, *Iraq: International Relations and National Development*, London: Ernest Benn, 1978: 240–8.

4 Studies of the impact of oil on democracy fail to consider these questions. Michael L. Ross, 'Does Oil Hinder Democracy?' *World Politics* 53: 3, April 2001: 325–61, for example, demonstrates a negative correlation between oil exports as a percentage of GDP and degree of democracy, as estimated in the Polity data set. The data are derived from an evaluation of the institutional procedures by which the candidate for chief executive is selected, elected and held accountable. The narrowness of this conception of democracy, the unreliability of its measurement, and the assumption that diverse institutional arrangements can be compared and ranked as embodying differing degrees of a universal principle of democracy, are among the many problems presented by the data. Ross is unable to establish reasons for the statistical relationship between oil exports and Polity data ranking, or to account for places, such as Venezuela and Indonesia, that experienced a different relationship between the development of oil and the emergence of more democratic forms of rule.

From the creation of the Iraqi oil industry in the 1920s, BP had sought to develop the country's oil more slowly than production in neighbouring countries. The company produced oil on behalf of a consortium, the Iraq Petroleum Company, in an arrangement similar to that in the neighbouring countries (including Iran after 1953). BP's partners in Iraq, however, included not only other members of the 'seven sisters', the cartel formed by BP, Shell and the five major US oil firms, but the French oil consortium Compagnie Française des Pétroles (known today as Total) and its ally Calouste Gulbenkian, the go-between who had built the consortium. Raising production in Iraq increased the market share of the French and Gulbenkian, whereas growth in the other three countries was shared only among the cartel.[5] As a result, oil production in Iraq grew at a much slower rate than among its neighbours.

BP delayed the completion of the pipeline to export the oil, deliberately drilled shallow wells to avoid discovering additional supplies, and plugged wildcat wells that yielded large finds to conceal their existence from the government. Although Iraq's reserves were comparable to those of the other three countries, its production in the 1950s and 1960s was kept at about half the level of the others, or less. BP and its partners used Iraq as the swing producer, with a large undeveloped capacity that was increased only to meet exceptional demand.[6]

Compared to Iran, where nationalisation had already been defeated, Iraq's position was even weaker. The bulk of its oil was exported by pipeline through Syria to the Mediterranean, so it did not control the point of shipment. It had a small refinery to process oil for domestic consumption, but the main refinery supplying regional markets was placed at the Mediterranean end of the pipeline, leaving Iraq no independent means of processing oil for export.

RELINQUISHMENT

When Qasim and his fellow army officers overthrew the British-backed monarchical government in 1958, they realised that these weaknesses would enable the major oil companies to defeat any attempt to nationalise the industry. Qasim's initial goal was to construct the equipment to overcome this vulnerability. He proposed that the Iraq Petroleum Company (IPC) lay a pipeline from the Mosul oilfields in the north to Basra in the south, and build a refinery there for export. The oil companies refused. They had no wish to give Iraq the ability to process

5 Independent companies had a token share in the Iran consortium, but in Iraq the CFP/Gulbenkian share was a much more significant 27.5 per cent. The operating companies in Kuwait and Saudi Arabia were not, strictly speaking, consortiums, but jointly owned subsidiaries of the parent companies.

6 *Twentieth Century Petroleum Statistics*; John Blair, *The Control of Oil*, New York: Pantheon Books, 1976: 81–5; Gregory Nowell, *Mercantile States and the World Oil Cartel, 1900–1939*, Ithaca: Cornell University Press, 1994: 270–5.

and export its own oil. Unknown to Qasim, moreover, there was already more than enough oil in the south. IPC estimated that the North Rumaila field near Basra might be the largest or second-largest oilfield in the world. In negotiations with the Iraqi government, however, BP kept this secret, noting that it would not be prudent at this stage 'to mention latent possibilities of greater Rumaila development'.[7]

The annual dividend BP paid its shareholders had grown from 16 pence per share in the early 1950s to 43 pence in 1954, or 43 per cent of the original value of each share. Given the postwar economic austerity in Britain and the demand of Iraq and other producer countries for a greater share of the income, the senior minister at the British Treasury had become embarrassed by the level of shareholder profits, and demanded in private that it be reduced. 'It is impossible to go on with these *stooges*', he wrote in an internal memo, threatening to publicly repudiate the directors of 'this unpatriotic organization'. BP refused to bend, pointing to the criterion that mattered most: its rival, Shell, paid higher returns. The 43 per cent return was soon surpassed; BP increased its dividend to 75 pence per share in the late 1950s, and to 117 pence in 1960.[8] Since increased production would lower prices and threaten this extraordinary rate of surplus income, BP was anxious not to see a new field like North Rumaila developed.

Unable to nationalise IPC, Iraq planned to develop a national oil industry alongside it. It proposed that the company relinquish part of the concession area, which covered almost the entire country. Under the original concession agreement of 1925, IPC had been required to relinquish all except about 0.5 per cent of the concession area within thirty-two months of starting exploration, but the consortium had forced the government to remove this provision from the revised agreement of 1931. BP and its partners now agreed to discuss giving up 50 per cent of the area – an offer later increased to 54 per cent – provided the area given up was expressed in square miles rather than as a percentage of the total (to make it more difficult for other countries to demand an equivalent deal).[9] The companies also insisted on deciding which areas to relinquish. Iraq was willing to let IPC keep all currently producing wells and areas with proven reserves, but wanted a say in which remaining areas were given up, so as to have

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7 United Kingdom, Foreign Office, 'Searight's Account of His Interview with the Prime Minister', 9 April 1959, FO 371/141062, and 'IPC Believes Rumaila Oilfield Has Huge Potential', 14 June 1961, FO 371/157725, National Archives of the UK: Public Record Office: Foreign Office: Political Departments: General Correspondence from 1906 to 1966, referred to in subsequent notes as FO 371, followed by the piece number. For a detailed history of the negotiations between IPC and the government of Iraq, see Samir Saul, 'Masterly Inactivity as Brinkmanship: The Iraq Petroleum Company's Route to Nationalization, 1958–1972', *International History Review* 29: 4, 2007: 746–92.

8 James Bamberg, *History of the British Petroleum Company*, vol. 3: *British Petroleum and Global Oil, 1950–1975: The Challenge of Nationalism*, Cambridge, UK: CUP, 2000: 131, 135.

9 'IPC Negotiations with Iraqi Government', 30 July 1959, FO 371/141068.

attractive prospects to offer other companies with which it might work. The Foreign Office in London feared that Iraq might respond by annexing Kuwait, previously a dependency of Basra province. By depriving BP of the Kuwaiti oilfields it had used to replace Iranian supplies when it imposed its embargo on Iran in 1951, Baghdad could make it harder for BP to impose an embargo on Iraq in the event of nationalisation.[10] To the disquiet of officials at the Foreign Office, who found Iraq's proposals on relinquishment 'not in fact unreasonable', the oil companies rejected them.[11]

A PREFERENCE FOR CRISIS

The oil companies preferred to provoke a crisis. As the Foreign Office noted, the IPC owners 'may prefer to have 75 per cent taken away from them than to surrender 54 per cent, in view of implications in other areas'.[12] Forcing Iraq to act unilaterally would give the impression that IPC had no say in the matter, and make it harder for other countries to request similar arrangements. More importantly, it would enable the IPC partners to threaten litigation against any company that agreed to work in the confiscated areas, as BP had done successfully in Iran in 1951. Unable to reach an agreement, in December 1960 Iraq passed Law 80, cancelling the 1931 concession agreement and expropriating 99.5 per cent of the concession area, leaving IPC its producing wells but not the fields it had refused to develop, including North Rumaila. Its remaining 0.5 per cent share corresponded to the area it would have been allowed to retain under the original 1925 concession. The oil companies resolved 'to wait out Qasim', in the words of the authorised history of BP, 'hoping for a change of government'.[13]

The US and Britain, it seems, had already decided to eliminate Qasim. The CIA's attempt to kill him in February 1960 failed, as had an effort to assassinate him the previous year, but he was removed from power and murdered in the military coup of February 1963.[14] The US supplied the new government with the names of more than a hundred leftists for its death squads to hunt down,

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10 'Nationalization of IPC', 1 April 1959, FO 371/141061.

11 'IPC: Points Causing Breakdown in IPC Meeting', 2 October 1959, FO 371/141069.

12 'IPC Relinquishment', June 1959, FO 371/141066.

13 Bamberg, *History of British Petroleum*, vol. 3: 167.

14 Penrose and Penrose, *Iraq*: 288; Thomas Powers, 'Inside the Department of Dirty Tricks: Part One, An Isolated Man', *Atlantic Monthly*, August 1979; Roger Morris, 'A Tyrant 40 Years in the Making', *New York Times*, 14 March 2003: A29; Malik Mufti, *Sovereign Creations: Pan-Arabism and Political Order in Syria and Iraq*, Ithaca: Cornell University Press, 1996: 143–4. Brandon Wolfe-Hunnicutt assesses the evidence from these sources and explains the shifting battle in the US government between those open to working with Qasim and those arguing for his elimination: 'The End of the Concessionary Regime: Oil and American Power in Iraq, 1958–1972', PhD thesis, Department of History, Stanford University, 2011: 26–90.

many of them prominent intellectuals, and Britain reported within a week that the 'winkling out' of the Communists was succeeding and 'the army has the situation under control'.[15] Large numbers of the leadership and rank-and-file of the country's popular political movement were killed, and thousands more imprisoned. James Akins, an American diplomat in Kuwait, from where the US was said to have liaised with the coup plotters, returned to Baghdad following the coup. 'We were very happy', he later recalled. 'They got rid of a lot of communists. A lot of them were executed, or shot. This was a great development.'[16] The military government requested that IPC turn over a disused pumping station to house political prisoners, asking the oil company 'to help equip the station and build it up into a concentration camp' capable of holding 1,200 political prisoners. IPC preferred not to become involved in the construction of a concentration camp – the term used by the government – but agreed to supply piped water to the desert prison.[17]

With Qasim out of the way and the left and the labour movement eliminated or 'under control', America and Britain were disappointed to discover that IPC was still uncooperative. The British embassy in Baghdad told London that 'the whole basis of the IPC concession here is out of date' and should be replaced with a partnership with an Iraqi state enterprise.[18] IPC, however, demanded that the new regime rescind the expropriation of its concession area. While continuing to pump the limited supplies of oil it wanted from Iraq, the consortium persuaded the US government to pressure independent oil companies not to take up any oil contracts offered by Iraq as long as the dispute over Law 80 was unresolved, and meanwhile delayed settling the dispute.[19]

The method of provoking a crisis and delaying its resolution was aided by a series of regional crises. In 1966, Syria tried to obtain higher transit fees from IPC for using the pipeline that carried Iraqi oil to the Mediterranean. Rather than pay the higher fees, IPC preferred to halt the pumping of oil through the pipeline. The closure lasted from November 1966 until the following March, and reduced

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15 'Assessment of Iraqi Regime', 14 February 1963, FO 371/170502. On the list of names, see Wolfe-Hunnicutt, 'The End of the Concessionary Regime': 84–6.

16 Frontline, 'The Survival of Saddam', Interviews: James Akins, at www.pbs.org/wgbh/pages/frontline/shows/saddam/interviews/akins.html. See also Douglas Little, 'Mission Impossible: The CIA and the Cult of Covert Action in the Middle East', *Diplomatic History* 28: 5, 2004: 663–701.

17 'IPC Considers Options', 12 September 1963, FO 371/170505.

18 'Assessment of the Iraqi Regime', 14 February 1963, FO 371/170502.

19 'US Government Concerned About the Non-Cooperative Position Seemingly Adopted by IPC', 15 May 1963, FO 371/170504; see also FO 371/175777 and FO 371/17578. After Iraq asked the Italian company ENI for technical support in the event of nationalisation, the British embassy in Rome tried to pressure the Italian government to prevent ENI's collaboration (FO 371/157725). In February 1964, the US and Britain again asked the Italian government to dissuade ENI from taking up any oil contracts in Iraq (FO 371/175777). See also Wolfe-Hunnicutt, 'End of the Concessionary Regime': 144–74.

Iraq's oil income by two-thirds.[20] BP was happy to shut down Iraqi production, as this offered a way to deal with the problem of oversupply, while causing a further crisis with Iraq. In June 1967, Israel launched the Six-Day War against Egypt and Syria, and in protest the Syrian government cut the pipeline again.

The strategy of crisis and delay gained the major oil companies a decade, but came to an end in the aftermath of the 1967 war. In August 1967, Iraq rescinded a proposal to restore the large North Rumaila field to IPC, a plan favoured by the Oil Ministry but blocked by nationalist opposition to the role of the international oil companies. Over the following months the government made agreements for the state-owned Iraq National Oil Company, established in 1964, to develop the country's oil resources with partners not susceptible to pressure from the oil majors or the US government. In December 1967 it agreed a joint venture with a French state-owned oil company, and the following April it invited bids for technical support to develop North Rumaila and build a pipeline to a new refinery at Basra, to be operated not as a partnership but as an enterprise run directly by the Iraq National Oil Company. An offer from the Soviet Union was finalised a year later, after a coup in July 1968 that brought to power right-wing army officers allied with the Ba'th Party. Iraq was now able to build the independent capacity to process and export oil that Qasim had first sought in 1959.[21]

Arab states that had developed oil industries outside the jurisdiction of the world's seven large oil firms had already established national control. Syria nationalised its small petroleum industry in 1964, Algeria took majority ownership of its French-built industry in February 1971, and Libya began to nationalise foreign-owned oil production in December 1971. The following year, Iraq became the first Middle Eastern producer to wrest control of oil from the dominant Anglo-American cartel. When production from the Rumaila field began in April, IPC cut its production in the north by 50 per cent. After preparing austerity measures and taking two leaders of the Communist party into the cabinet to ensure popular support, on 1 June 1972 the Ba'thist government nationalised the Iraq Petroleum Company.[22]

BOXED IN

In the oil-producing states the powers of sabotage over which oil workers and oil firms had struggled were being increasingly taken over by governments – which were equipping themselves with the palace guards and intelligence services that

20 George Ward Stocking, *Middle East Oil: A Study in Political and Economic Controversy*, Nashville: Vanderbilt University Press, 1970: 270–99; Marion Farouk-Sluglett and Peter Sluglett, *Iraq Since 1958: From Revolution to Dictatorship*, 3rd edn, London: I. B. Tauris, 2001: 99–100.

21 On the details of these developments, see Wolfe-Hunnicutt, 'End of the Concessionary Regime': 209–62.

22 Bamberg, *History of British Petroleum*, vol. 3: 171, 469–70.

by the late 1960s made them immune to further foreign- or domestic-organised military coups. In industrialised countries, the 'power of inhibition' underwent a different change.[23] The rise of oil had weakened the old alliance of coal, which brought together miners, railwaymen and dockworkers, allowing them unprecedented power. By 1948, spurred by the role of the Marshall Plan in subsidising the switch from coal to oil, the era of the mass strike was over. In its place emerged a new method of making political claims, based on new ways of interrupting industrial processes.

In 1958 the French sociologist Serge Mallet studied workers at the CalTex oil refinery at Bec d'Ambes on the Gironde Estuary, near Bordeaux. CalTex was a joint venture created by the owners of Aramco to market oil from Saudi Arabia, originally operating in Africa and Asia. In 1947, when construction began on the Tapline to bring Saudi oil to Europe, CalTex took over the former Texaco refinery near Bordeaux, which had been destroyed during the war, and rebuilt it with Marshall Plan funds to handle the new shipments from Saudi Arabia. So the Bec d'Ambes refinery was part of the equipment installed to manufacture a less recalcitrant labour force in Europe.

Ten years later, unaware of this history, Mallet described the formation at Bec d'Ambes of what he called the 'new working class'.[24] The oil refinery exemplified a form of industrial production, dating from the 1930s but spreading rapidly since the 1950s, based on the automated processing and synthesising of materials. Unlike the old assembly-line methods in which workers directly constructed objects, Mallet argued, in a refinery or petrochemical plant workers supervised a flow of substances and managed the automated assembling of complex new materials. In oil refining, synthetic chemicals, electrical energy and telecommunications, workers were now managers, governing automated, computer-controlled processes. The same methods of automated processing were spreading to car manufacturing, railways, steel making, and even coal mining. Work was becoming technicised, eliminating many of the differences between manual labour and lower management: 'Between the operator of a cracking unit who, in a white collar, watches over the continuous flow of oil and the diverse pressures to which it is subjected and the engineer or higher level technician who supervises him, there is no longer a difference in kind, simply a difference of hierarchical situation.'[25]

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23 Thorstein Veblen, 'On the Nature of Capital', *Quarterly Journal of Economics* 23: 1, 1908: 106.

24 Serge Mallet, *The New Working Class*, translation of *La nouvelle classe ouvrière* (1969), transl. Andrée Shepherd and Bob Shepherd, Nottingham: Bertrand Russell Peace Foundation for Spokesman Books, 1975: 85–118.

25 Serge Mallet, *Essays on the New Working Class*, ed. and transl. Dick Howard and Dean Savage, St Louis: Telos Press, 1975: 41.

The rise of forms of labour based on the supervision of continuous, automated processes did not eliminate industrial action. It produced a new form of strike. Rather than attempting to shut down an enterprise indefinitely through a total stoppage of work – an action difficult to sustain given its impact on the income of strikers – workers were now able to use their technical knowledge and critical role in automated processes to bring about 'the systematic disorganization of production' by causing limited work stoppages, 'spread out along the production process at the most sensitive places'. Brief interruptions aimed at vulnerable points or critical moments within an industrial process could paralyse an industry for months, without workers feeling the impact on their household income.[26]

From the 1880s to the 1940s, workers had built the power to sabotage critical processes at the level of national coal-based energy systems. They had used this power to organise mass parties and win radical improvements in their conditions of social vulnerability. By the 1950s and 1960s, the location, scale and duration of effective sabotage had shifted, now focusing on critical points and flows in complex chemical, metallurgical, communication and other processes. Its more localised scale made this power appear less revolutionary. But the strike waves of the later 1960s, Mallet argued – including the great upheavals of 1968, in which his writings became influential – suggested workers could use this power to acquire greater control of production.

By the late 1960s, as a struggle over the control of energy supplies unfolded in the Middle East, in the industrialised world the efforts among the forces of labour to protect or improve levels of income and conditions of work had intensified. The conflicts were found in the new manufacturing processes, but also in an older industry where the coordinated flow of materials could still be successfully interrupted: transportation. Disruptions to railways, shipping and docking, and increasingly aviation, accounted for 35 to 40 per cent of world labour unrest in the 1950s and 1960s. Shipping and docking, where stoppages had the most power to affect multiple upstream and downstream processes, accounted for more than half this unrest.[27]

The most effective challenge to these struggles once again made use of oil. A generation earlier, the switch to oil as a source of fuel for motive power was decisive in the defeat of the coal miners. The vulnerability of rigid regional energy networks carrying coal had been overcome with flexible, transoceanic energy grids, which isolated the producers of primary energy from those who put it to work in the main industrial regions. Once again, the fix that petroleum offered

26 Ibid., 43.

27 Beverly Silver, *Forces of Labor: Workers' Movements and Globalization Since 1870*, Cambridge, UK: CUP, 2003: 98–100.

was partly spatial, and was based on the introduction of more fluid processes.[28] This time, the transoceanic separation rested on the use of cheap oil to transport a standardised metal box.

This second change was made possible by containerisation. The introduction of metal shipping containers of standard dimensions that could be carried by road, rail and sea allowed goods to be moved in bulk without using labour to unload, stack and reload the individual merchandise as it switched from one mode of transport to another. Much as the fluidity of oil allowed energy to move easily over great distances because it could be pumped onto tankers, eliminating coal heavers and engine stokers, the shipping container made the movement of solid, manufactured goods into a fluid, uninterrupted process. Earlier attempts to introduce the use of containers had failed because different shippers preferred different sizes, making it difficult to stack the containers or build trucks, trains and ships to an optimum size. The escalation of the American war against the Vietnamese people in 1965 produced a logistics crisis as the supply of military goods overwhelmed Saigon's port facilities, leading the US military to introduce containerisation and speed the adoption of standard container dimensions. In 1969, shipping companies introduced huge new custom-built ships that could carry more than 1,000 containers in their holds and on deck. Containers eliminated most of the skilled labour and unionised power of dockworkers, and helped bring a halt to the 'unprecedented advance' in the conditions of labour in industrialised countries in the two decades after 1945.[29]

The container did more than reorganise relations of control at the narrow point where dockworkers could exercise power. Combined with the cheap oil of the 1960s, it made possible the moving of manufacturing overseas, just as the supply of energy used in industrialised countries had earlier been outsourced. After delivering military supplies from the US to Vietnam, the container ships returned empty. Looking for ways to earn additional income, the shippers began to stop in Japan and pick up manufactured goods to carry back to the US, cutting dramatically the cost of shipment and creating the boom in Japanese exports to the US.

Industrial labour could now be threatened with lower costs and unemployment, caused by outsourcing production to Japan and other countries with less unionised, lower-paid workforces. In the decade after 1966, the volume of international trade in manufactured goods increased at double the rate of the volume of global manufacturing.[30] The expansion of global shipping increased the demand for oil, helping create conditions that contributed

28 On the 'spatial fix', see David Harvey, *Spaces of Capital: Towards a Critical Geography*, Edinburgh: Edinburgh University Press, 2001.

29 Marc Levinson, *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*, Princeton: Princeton University Press, 2006: 4.

30 Levinson, *The Box*: 11, 184–8.

to an increase in oil prices. The jump in oil prices in 1973–74 interrupted the development of outsourcing, as savings from containerisation were suddenly offset by much higher fuel costs for transoceanic shipping. In 1976, however, stable energy prices and the introduction of a new generation of even larger container ships allowed the growth of outsourcing to resume. At the same time, as we will see, the oil crisis and its market laws provided the 'shock' to explain the ending of improvements in conditions of labour, and a gradual reappropriation of the political powers and more egalitarian forms of life won over preceding decades.

INSTITUTIONALISED USELESSNESS

In 1964, the British government had tried to encourage the new military government in Baghdad to settle the dispute with the foreign owners of the Iraq Petroleum Company by offering it something in exchange: weapons. At a meeting with the Iraqi prime minister to discuss the oil law passed by the Qasim government before its overthrow the previous year, the British ambassador 'took the opportunity of making a reference to our supplying Iraq with arms and equipment'. Reporting that he 'merely juxtaposed the two things', he told London that its plan to use the sale of military equipment to gain concessions in the oil dispute was unlikely to succeed, since 'they are really doing us a favour in buying arms from us'. The Iraqis were supporting Britain's weakening trade balance by 'paying large sums in sterling', he explained, and at the same time were 'well aware of our desire that they should not seek alternative sources of supply'. A month later the Foreign Office noted in the same file that Iraq was now purchasing arms from the Soviet Union, and that 'partly as a result of poor after-contract performance by major British firms', Britain would 'have to fight hard to persuade the Iraqis to continue to buy British'.[31]

Although the ambassador pretended that oil and weapons were merely juxtaposed, in fact the two fit together in a particular way: one was enormously useful, the other importantly useless. As the producer states gradually forced the major oil companies to share with them more of the profits from oil, increasing quantities of sterling and dollars flowed to the Middle East. To maintain the balance of payments and the viability of the international financial system, Britain and the United States needed a mechanism for these currency flows to be returned. This was especially a problem for the US, since the value of the dollar was fixed in relation to gold, and provided the basis for the Bretton Woods financial system. Arms were particularly suited to this task of financial recycling, for their acquisition was not limited by their usefulness. The

31 'Roger Allen, Ambassador in Baghdad, to Foreign Office', 8 February 1964, FO 371/175780; cover note added 12 March 1964.

dovetailing of the production of petroleum and the manufacture of arms made oil and militarism increasingly interdependent.[32]

The conventional explanation for the rapid increase in arms sales to the Middle East, beginning in the mid-1960s, relies on the arguments offered by the arms salesmen, and by the governments that supported their business. Since the arms trade encouraged the militarisation of Middle Eastern states, its growth shaped the development of carbon democracy. To understand this dimension of the relationship between oil and democracy, we need to unpack the justifications used for selling weapons and provide an alternative account.

The purchase of most goods, whether consumable materials like food and clothing or more durable items such as cars or industrial machinery, sooner or later reaches a limit where, in practical terms, no more of the commodity can be used and further acquisition is impossible to justify. Given the enormous size of oil revenues, and the relatively small populations and widespread poverty of many of the countries beginning to accumulate them, ordinary goods could not be purchased at a rate that would go far to balance the flow of dollars (and many could be bought from third countries, like Germany and Japan – purchases that would not improve the dollar problem). Weapons, on the other hand, could be purchased to be stored up rather than used, and came with their own forms of justification. Under the appropriate doctrines of security, ever-larger acquisitions could be rationalised on the grounds that they would make the need to use them less likely. Certain weapons, such as US fighter aircraft, were becoming so technically complex by the 1960s that a single item might cost over $10 million, offering a particularly compact vehicle for recycling dollars. Arms, therefore, could be purchased in quantities unlimited by any practical need or capacity to consume. As petrodollars flowed increasingly to the Middle East, the sale of expensive weaponry provided a unique apparatus for recycling those dollars – one that could expand without any normal commercial constraint.

Since 1945, the United States had relied upon the 'institutionalised waste' of peacetime domestic military spending to soak up surplus capital and maintain the profitability of several of its largest manufacturing corporations.[33] It

32 Nitzan and Bichler offer an important study of this relationship. They locate its dynamic in the dominant place of arms manufacturing among leading US corporations and the superior profitability of arms exports over supplying domestic government demand. However, they downplay the role of dollar recycling and the deliberate wastefulness of military sales, especially in the case of oil states for which alternative spending options were limited. Jonathan Nitzan and Shimshon Bichler, 'The Weapondollar-Petrodollar Coalition', in *The Global Political Economy of Israel*, London: Pluto Press, 2002: 198–273.

33 Thorstein Veblen noted the role of 'conspicuous waste' in *The Theory of the Leisure Class: An Economic Study of Institutions*, New York: Macmillan, 1899: 36–42, but did not connect it with military spending, even in his subsequent discussion in *Imperial Germany and the Industrial Revolution*, New York: Macmillan, 1915.

enhanced this mechanism of waste with spending on the Korean and Vietnam wars. When projections for expenditure on Asian warfare began to drop in the later 1960s, America's two dozen giant military contractors were in urgent need of new outlets for their hardware. No longer able to rely on increased purchases by the US government, they sought to transform the transfer of weapons to foreign governments, previously a relatively small trade financed mostly through US overseas development aid, into a commercial export business.[34] The financiers concerned with dollar recycling now had a powerful ally.

Meanwhile, for the autocrats and military regimes of the Middle East, arms purchases provided a relatively effortless way to assert the technological prowess of the state. More importantly, once the West turned the supply of arms from a form of government-to-government aid into a commercial business, a space opened for middlemen to operate as brokers between the local state and the foreign firms. Members of ruling families, their in-laws and their political allies were well placed to fill this role, allowing a part of the revenues from oil, recycled as arms purchases, an easy diversion into prodigious levels of private accumulation.

After 1967, Iraq turned to France and the Soviet Union for arms, rewarding the countries that were helping it develop a national oil industry. For Britain and the US, the main recycling point was Iran, which imported almost three times as much weaponry as Iraq in the decade after 1967.[35] In 1966, the shah of Iran agreed to a large purchase from General Dynamics of its new F-111 fighter-bomber, an aircraft that was over budget, failing to meet performance targets, and frequently crashing in test flights.[36] He then persuaded the Western oil consortium to increase production by 12 per cent a year to finance this and future military spending. The following year the companies were able to increase production by double that amount, thanks to the Arab oil embargo during the June 1967 Arab-Israeli war, but in 1968 and 1969 Iran demanded even larger increases in revenue. As the supply of weapons and equipment accelerated, increasing numbers of arms contractors, bankers, construction companies, consultants, public relations firms and military officers began to profit from the flow of finance, building themselves into the capillaries and arteries through which it flowed. US banks and arms manufacturers, aided by their British,

34 See Nitzan and Bichler, 'Weapondollar-Petrodollar Coalition': 206–10, where the core arms firms are identified. In the 1950s about 95 per cent of US arms exports were financed by government aid; by the 1990s the figure was about 30 per cent. Ibid.: 216.

35 Arms Transfers Database, Stockholm International Peace Research Institute, at www.sipri.org/databases/armstransfers.

36 The smaller naval variant of the aircraft, the F-111B, had so many faults it was cancelled soon after going into production and replaced with the Grumman F-14, the plane eventually delivered to Iran in a deal that saved Grumman from bankruptcy. Marcelle Size Knaack, *Encyclopedia of US Air Force Aircraft and Missile Systems*, vol. 1, Washington, DC: Office of Air Force History, 1978: 222–63; Anthony Sampson, *The Arms Bazaar*, London: Hodder & Stoughton, 1977: 249–56.

French and Italian counterparts, transformed the export of weapons into one of the West's most profitable export industries.[37]

THE GUAM DOCTRINE

Since arms sales were useful for their uselessness, and there was no precedent for the volume of weapons sold, they needed a special apparatus of justification. The work of transforming the superfluous consumption of weaponry on a gargantuan scale into necessity was performed by a new rhetoric of insecurity, and by a series of US actions to produce or sustain the required experience of instability and uncertainty.

The old rhetoric of the postwar period about a communist threat to American interests in the Middle East was proving hard to keep alive. Having finally found a foothold in the oilfields of the Gulf, the Soviet Union had failed to threaten supplies of oil to the West, despite the warnings of Cold War experts. Soviet aid in exploiting the vast reserves of North Rumaila, offered in 1968, would allow Iraq to produce oil from a field whose development Western companies had spent four decades trying to delay (or seven decades, if one counts back to the days of the Baghdad Railway). Instead of threatening the security of the West's oil supplies, the Soviet Union was threatening to increase them.

The Arab defeat in the June 1967 war weakened Arab nationalists and strengthened the conservative, Western-backed regimes in the Gulf. The defeat also hastened a financial crisis in Britain. The brief Arab oil embargo and the closing of the Suez Canal interrupted the supply of Britain's sterling oil from the Gulf, creating a balance of payments crisis that forced the Labour government to devalue the pound and abandon its postwar effort to maintain sterling as an international trading and reserve currency. To address the financial crisis, Britain announced in January 1968 that it would end its role as an imperial power in the Middle East, withdrawing all military forces from the sheikhdoms of the Gulf within four years.[38]

Militarists at right-wing think tanks in Washington, in particular the new Center for International and Strategic Studies, began to warn that the British withdrawal would create a 'power vacuum' in the region. In reality it was thanks to the creation of a vacuum, or at least a 'deflation' in local power, that Britain could justify ending its military presence in the Gulf. Since the 'revolutionary Arabs' had been 'completely deflated' by the 1967 defeat, the Foreign Office noted, the sheikhdoms of the Gulf could survive without a

37 Nitzan and Bichler, 'Weapondollar-Petrodollar Coalition': 198–273; James A. Bill, *The Eagle and the Lion: The Tragedy of American-Iranian Relations*, New Haven: Yale University Press, 1988.

38 Steven G. Galpern, *Money Oil and Empire in the Middle East: Sterling and Postwar Imperialism, 1944–1971*, Cambridge, UK: CUP, 2009: 268–82.

British military presence.[39] The State Department official responsible for the Arabian peninsula agreed, arguing that the claim of the US ambassador in Tehran that hostile forces were ready to fill 'a vacuum' in the Gulf caused by the British departure was 'overdrawn if not inaccurate'. He pointed out that the major Arab powers, Egypt, Syria and Iraq, 'are pinned down elsewhere by the Israelis and Kurds' (whose rebellion in northern Iraq was funded by Israel), while the conservative Arab states saw an armed Iran 'more as a threat than a reassurance'.[40]

The shah of Iran seized the opportunity of Britain's departure to portray the large Iranian military purchases already underway as a scheme to turn Iran into the region's policeman. The only significant threat the shah faced was the growing number of domestic political opponents his government hunted down and imprisoned, a form of police work that had no need for most of the weapons he wished to purchase. He nevertheless demanded to buy ever more sophisticated and expensive arms, and to be given the increased oil revenue and large US government loans to pay for them. The US ambassador relayed to Washington the arguments the shah picked up from the American arms manufacturers, reporting his view that increased arms sales 'would benefit US industry (he mentioned DOD [was] obliged to bail out Lockheed), substantially help difficult US balance of payments situation, and serve our own vital strategic interests in Gulf and Middle East'.[41]

The arms manufacturers helped promote the doctrines of regional insecurity and national military prowess, instructing their agents to discuss arms sales not as commercial arrangements but in terms of strategic objectives. In September 1968, Tom Jones, the chief executive of Northrop Corporation, wrote to Kim Roosevelt (the former CIA agent who had engineered the overthrow of Mossadegh in 1953, and whose consulting firm now facilitated arms sales to the shah) about trying to sell Iran Northrop's P530 lightweight fighter, for which it had been unable to find buyers: 'In any discussions with the Shah', Jones explained, 'it is important that they be kept on the basis of

39 Foreign Office Minute, May 1971, FCO 8/1311, cited in William Roger Louis, 'The Withdrawal from the Gulf', in *Ends of British Imperialism: The Scramble for Empire, Suez and Decolonization: Collected Essays*, London: I. B. Tauris, 2006: 877–903, at 888. For a similar US assessment, see Central Intelligence Agency, 'National Intelligence Estimate 34-69-IRAN', 10 January 1969, in US Department of State, *Papers Relating to the Foreign Relations of the United States, 1969–76*, vol. E-4: *Documents on Iran and Iraq, 1969–1972*, ed. Monica Belmonte and Edward C. Keefer, Washington DC: US Government Printing Office, Document 1, available at history.state.gov, referred to in subsequent notes as FRUS.

40 William D. Brewer, 'Memorandum from the Country Director for Saudi Arabia, Kuwait, Yemen and Aden to the Country Director for Iran', 27 February 1970, FRUS, Document 51; Douglas Little, 'The United States and the Kurds: A Cold War Story', *Journal of Cold War Studies* 12: 4, 2010: 71.

41 DOD refers to the Department of Defense. Douglas MacArthur, 'Embassy in Iran to the Department of State', 19 March 1970, FRUS, Document 55.

fundamental national objectives, rather than allow it to take the appearance of a sales plan.'[42]

In 1969 the newly elected administration of Richard Nixon inadvertently offered the arms manufacturers and their clients a new term for these 'fundamental national objectives' – the so-called Nixon Doctrine. On a trip to south-east Asia in July, the president made some off-the-record remarks to the press at a stopover in Guam, intended to reassure the American-backed military dictatorships of the region that his promise to begin withdrawing forces from Vietnam did not imply any overall change in US policy, which would continue to rest on arming and assisting its client states to fight the threat of popular and democratic movements – or what Washington called 'subversion' – with the US intervening overtly only when local counterinsurgency programmes failed. The remarks about the limited role of direct intervention also provided cover for the action on which the Nixon government was secretly embarking, behind its public promise – a large escalation of the war against Vietnam and its extension into Cambodia and Laos. Since the reassurance about continuing to arm client states was off the record and could not be quoted directly, the US press started referring to it in shorthand as the Guam Doctrine, and then simply as the Nixon Doctrine, a term later adopted by Nixon's foreign policy team. This continuation of longstanding American military relations with client states was heralded in the American media as marking a new direction in American policy, a claim subsequently echoed in almost all academic scholarship on US foreign policy and the Middle East.[43]

The advantage of turning existing US counterinsurgency policy into a 'doctrine' was that rulers like the shah, and his allies in American arms firms and think tanks, could now appeal to it and demand to be given the same role as the south-east Asian dictatorships. Insisting that Washington either subsidise his weapons purchases with Congressional loans or pressure the American oil companies to pump more Iranian oil to pay the arms bills, the shah told the US ambassador 'he could not understand why we did not want to help him implement [the] Nixon doctrine in [the] Gulf area where our and our allies' interests were also threatened'.[44]

Deploying the Nixon doctrine enabled the shah and his supporters to overcome opposition in the State Department and other parts of the US government. By 1972 the American ambassador to Tehran was writing to Henry Kissinger, the national security advisor, criticising those in Washington who argued that

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42 Cited in Sampson, *Arms Bazaar*: 248.

43 Jeffrey Kimball, 'The Nixon Doctrine: A Saga of Misunderstanding', *Presidential Studies Quarterly* 36: 1, 2006: 59–74. Mahmood Mamdani, *Good Muslim, Bad Muslim: America, the Cold War, and the Roots of Terror*, New York: Pantheon, 2004: 63–118, traces the continuity in US counterinsurgency strategy.

44 MacArthur, 'Telegram 1019'.

the US should do what was possible 'to prevent Iran, in our studied wisdom, from overbuying'. Using a back-channel communication to bypass the State Department, he warned that Britain, France and Italy were competing for arms contracts, and insisted 'there is no reason for us to lose the market, particularly when viewed over the red ink on our balance of payments ledger'. In the margin of the message Kissinger added a handwritten note: 'In short, it is not repeat not our policy to discourage Iranian arms purchases.'[45]

Facing a collapse in the value of the dollar, and increased lobbying from the arms firms, the Nixon administration decided to sell the shah all the weapons that he and his American lobbyists were demanding, allowing the sales to circumvent the normal governmental reviews and creating what a Senate report called 'a bonanza for US weapons manufacturers, the procurement branches of three US services, and the Defense Security Assistance Agency'.[46] Since Congress was unwilling to finance additional military sales credits, and the large New York banks were beginning to voice concerns about the shah's ability to maintain payments on the money they were lending him to buy weapons, the US government also began to push for an increased price of oil to pay for them.[47] The decision to weaponise the oil trade with Iran, and later other oil states, was announced as an extension of the 'Nixon Doctrine' to the Gulf, supplying the extraordinary levels of arms transfers with the equipment needed to explain them. Subsequent histories of these events faithfully reproduce this apparatus of justification.

As we will see in the following chapters, the Nixon administration also blocked the efforts of the UN and the Arab states, and at times even its own State Department, to settle the Palestine question, helping to maintain the forms of instability and conflict on which American 'security' policy would now increasingly depend. In Kurdistan, the other conflict keeping Arab states 'pinned down', Washington was unable to prevent Iraq from reaching a settlement with the Kurds in 1970, but responded to this threat of stability in the Gulf two years later by agreeing with Israel and Iran to reopen the conflict with renewed military support to one of the Kurdish factions. The aim was not to enable the Kurds to win political rights, according to a later Congressional investigation, but simply to 'continue a level of hostilities sufficient to sap the resources of our ally's neighboring country [Iraq]'.[48]

The arms sales to Iran and their supporting doctrine played no important role in protecting the Gulf or defending American control of the region's oil. In fact the major US oil companies lobbied against the increased supply of weapons

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45 Harold Saunders, 'Memorandum for Dr Kissinger', 14 July 1972, FRUS, Document 212; see also Wolfe-Hunnicutt, 'End of the Concessionary Regime': 273.

46 Bill, *The Eagle and the Lion*: 200.

47 On the New York banks, see MacArthur, 'Telegram 1019'.

48 Bill, *The Eagle and the Lion*: 205; Little, 'The United States and the Kurds': 74–85.

to Iran and the doctrine used to justify them. They argued that political stability in the Gulf could be better secured by America ending its support for Israel's occupation of Arab territories and allowing a settlement of the Palestine question. The Nixon administration had also initiated a large increase in the sale of arms to Israel, although weapons sent to Israel were paid for not with local oil revenues but by US taxpayers. Arming Iran, an ally of Israel, the companies argued, only worsened the one-sidedness of America's Middle East policy. The oil companies also objected to the extraordinary level of weapons sales to Iran because the increased oil revenues Tehran required to pay for the weapons would force them to switch more production away from the Arab states, weakening the companies' relations with those states and benefiting the European oil firms and independent US firms that shared production in Iran. It might also lead Iran to demand an even higher share of profits.[49]

The absurdity of the scale of arms sales to the oil states later became apparent, when the hyper-armed Iranian state was brought down by street protests and a general strike led by oil workers in the 1979 revolution, and when the tens of billions of dollars Saudi Arabia spent on weapons left it helpless in 1990 against Iraq's occupation of Kuwait. Whatever the excess, however, the arms sales also militarised the oil states, with continuing consequences for local populations. The Kurds of Iraq had already discovered this in the 1960s, when the government used its British-supplied weapons against them, and would discover it again when Iran and the US abruptly cut off support for the Kurdish insurgency in 1975. Protesters in Iran felt the consequences when the government deployed American-supplied helicopters to fire on political demonstrations in 1978–79, and in countless other episodes. The militarisation also lined up numerous interests in the US that preferred to see regional crises unresolved and wars in the Middle East prolonged.[50]

REORGANISING THE POWER OF SABOTAGE

Iraq had assembled the political power to take control of its oil by developing an oilfield, a pipeline and a refinery. Taking full control of oil required more: not just the ability to produce oil independently of the major American and British oil companies, but the coordinated ability to cut back production as a means of putting pressure on the companies. Up to this point, producer states had been individually demanding an increased volume and share of production. They now sought to construct the collective capacity to limit production. Libya was the first producing country to achieve this, but the ability to cut back was assembled out of wider acts of sabotage.

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49 Wolfe-Hunnicutt, 'End of the Concessionary Regime': 242–3.
50 Nitzan and Bichler, 'Weapondollar-Petrodollar Coalition'.

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 wanted 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 that would undermine their agreements on production quotas and price-fixing. And they needed to maintain a grid of alternative supply routes and sources. These 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, ever since the Soviet attempt to keep American oil companies out of northern Iran had been used in the manufacturing of the Cold War in 1946 – namely that the Soviet Union might try to seize the oilfields of the Middle East, imagined as a continuation of the 'Great Game' of Russian expansion to the south, whose invention we encountered in Chapter 2. The more serious concern was that the USSR might find a way to connect its Caspian oilfields 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 on 'security' grounds not to allow Soviet oil into Western Europe.[51] With the containment of the Soviet threat, the main challenge to the oil majors in the 1960s had been the rise of smaller, independent producers, refiners and distributors. These had begun to build a small share of the oil trade by undercutting the prices fixed by the cartel of major companies, forcing the majors to discount downstream

51 Sweden provided the main exception to this embargo. It was not a member of NATO, and its coal, iron and steel, and petroleum refining conglomerate, A. Johnson and Co., was powerful enough to act independently of the oil multinationals and trade with the Russians. Hans de Geer, 'Trading Companies in Twentieth-Century Sweden', in Geoffrey Jones, ed., *The Multinational Traders*, New York: Routledge, 1998: 141–4; and Peter R. Odell, *Oil and World Power*, Harmondsworth: Penguin, 1979: 48–71.

prices (in refining and distribution) and rely increasingly on their enormous profit margins from production in the Middle East.[52]

From the late 1960s the situation began to change. In the June 1967 Arab-Israeli war, the Iraq–Syria pipeline was cut again, 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 other states that supported Israel's attack, including Britain and West Germany. 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. Iraq also called for the nationalisation of local oil-production companies. But Saudi Arabia succeeded in getting the embargo lifted, while the Libyan government ended the oil strike and imprisoned its leaders.[53]

In May 1969, a Palestinian resistance 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.[54] Israel was simultaneously maintaining the closure of the other major conduit for carrying oil to Europe, the Suez Canal. Its invasion of Egypt in 1967 blocked the Canal, and its rejection of UN and American proposals for a peace settlement based on a return to the pre-1967 borders kept the waterway closed.

Although the story is little known, the blocking of the 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, bypassing the Suez Canal, allowing Iran to loosen the control of the major oil companies over its oil industry. It also enabled Israel to export oil it took from an Egyptian oilfield in Sinai, which its forces had seized in the war.[55] To evade the

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52 Stocking, *Middle East Oil*, 416–33.

53 John Wright, *Libya: A Modern History*, Baltimore: Johns Hopkins University Press, 1982: 105; M. S. Daoudi and M. S. Dajani, 'The 1967 Oil Embargo Revisited', *Journal of Palestine Studies* 13: 2, 1984: 71–2, 80. The Saudis had already allowed Aramco – the US company that controlled the Trans-Arabian Pipeline, or Tapline, which carried oil from the Saudi fields to the Mediterranean – to resume pumping oil, even though a few miles of its route cut across the north-east corner of the Golan Heights, the part of southern Syria now under Israeli occupation.

54 The Tapline Company agreed to pay for the repair and cleanup and to cover the cost of protecting the pipeline. James Feron, 'Israel in Accord with Aramco on Repair of Damaged Tapline', *New York Times*, 11 July 1969: 7; 'Israeli Jets Strike Military Targets in Egypt and Jordan', *Washington Post*, 17 September 1969: A26.

55 Uri Bialer, 'Fuel Bridge across the Middle East: Israel, Iran, and the Eilat-Ashkelon Oil Pipeline', *Israel Studies* 12: 3, 2007: 29–67. The pipeline replaced a smaller one, built using 200 kilometres of pipes, together with pumps and other equipment stolen from Egypt during Israel's 1956

oil majors' control of marketing, Iran and Israel sold the oil through a Swiss-registered joint venture, Trans-Asiatic Oil Ltd, shipping most of it via Romania to Spain, where the fascist government under Franco had successfully excluded the international oil companies from operating.[56] Meanwhile, Egypt tried to build a pipeline to bypass the Suez Canal on the other side, connecting the Gulf of Suez to the Mediterranean, but its efforts to open a conduit outside the control of the oil majors were blocked by the British government.[57]

The closing of the Suez Canal also hastened another weakening of the oil majors' control 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 the Second World War. Following the first closing of the Suez Canal in 1956, the Italian state oil company, ENI, led by Enrico Mattei, had begun to obtain oil from the Russians. In 1968 the Soviet Union completed a pipeline to the Baltic Sea, terminating at Ventspils on the Latvian coast. Soviet oil could now be shipped cheaply to northern Europe.[58]

These disruptions and alterations to the flow of Middle Eastern oil had further effects. Since the grant of the first oil concession in southern Iran in 1901 – which was partly motivated, as we saw in Chapter 2, by an earlier effort to block the export of Russian oil – Western oil companies had controlled the flow of oil from the Middle East, using this control to manage its price around the world. Seven decades later, within three years of the upheavals of the 1967 war, that ability 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 thirty-six-year-old leader of the 1967 oil strike, Mahmud Sulaiman al-Maghribi, and appointed him initially as prime minister and the following April, after Captain Muammar Qaddafi emerged as leader of the coup and took al-Maghribi's place as prime minister, as head of a team to renegotiate the terms of the country's

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invasion of Sinai, and used to bring smaller quantities of Iranian oil to the refinery at Haifa. The post-1967 pipeline secured supplies to Israel, but was also intended to reduce Europe's dependence on Arab oil.

56 In the 1970s, the trader who handled the Israeli pipeline oil, Marc Rich, used it to break the contract system for oil sales and create the spot market in oil, which would end the method of pricing oil through agreements within and among the large oil companies and allow the development of speculative markets in oil futures. Previously part of the Bretton Woods mechanism for limiting the global threat of financial speculators, oil would itself become a medium of financial speculation. Daniel Amman, *The King of Oil: The Secret Lives of Marc Rich*, New York: St Martin's Press, 2009: 64–86.

57 Elie Podeh, 'Making a Short Story Long: The Construction of the Suez-Mediterranean Oil Pipeline in Egypt, 1967–77', *Business History Review* 78: 1, 2004, 61–88.

58 Marshall I. Goldman, 'The Soviet Union', in Raymond Vernon, ed., *The Oil Crisis*, New York: Norton, 1976: 130. Enrico Mattei also maintained contacts with the FLN in its independence struggle against the French in hydrocarbon-rich Algeria (P. H. Frankel, Mattei: *Oil and Power Politics*, London: Faber & Faber, 1966: 120).

contracts with foreign oil companies.[59] Talks with Exxon and Occidental made no headway, until Libya's position was reinforced by a Syrian bulldozer. On 3 May 1970, a mechanical excavator laying telephone cable in southern Syria near the Jordanian border cut the Tapline. The Saudis called the incident 'planned sabotage'.[60] Using the interruption in supplies to negotiate higher transit fees, Damascus refused to allow repairs and kept the line closed for nine months.[61] Two weeks after the pipeline was ruptured, the Syrian oil minister met with his Libyan and Algerian counterparts (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, implement their demands for a higher share of the oil income by unilateral action if necessary, and set up a fund for mutual support in any confrontation with the oil companies.[62] 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 a new tax rate, breaking the united front among oil companies. Libya became the first producer country to use an embargo on supplies to win an increase in the level of taxation of oil production.

POSTED NOTES

Reinforced by the interruptions in supply from the Gulf, the Libyan embargo had broken the ability of the oil companies to dictate to the countries with large oil reserves the tax they would pay on their profits from the production of oil.

Since the 1930s, world oil prices had been governed by the international oil companies, which attempted to limit the supply of oil from the Middle East, in collaboration with a system of government production quotas and import controls in the United States. Overseas, the cartel agreement made between the seven major international oil corporations in 1928, in response to the large discoveries in Iraq and to the 'oil offensive' from the Soviet Union, established exclusive territories for each company and set quotas intended to maintain world prices at the level of US prices.[63] From 1932 the Texas Railroad Commission set

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59 Joe Stork, *Middle East Oil and the Energy Crisis*, New York: Monthly Review Press, 1975: 153–7.

60 Francisco Parra, *Oil Politics: A Modern History of Petroleum*, London: I. B. Tauris, 2004: 122.

61 'Hopes Rise for Tapline Repair', *Washington Post*, 6 December 1970: 25; 'Pipeline in Syria is Reopened After Nine Months', *New York Times*, 30 January 1971: 3; Paul Stevens, 'Pipelines or Pipe Dreams? Lessons From the History of Arab Transit Pipelines', *Middle East Journal* 54: 2, 2000: 224–41.

62 'Chronology: May 16, 1970–August 15, 1970', *Middle East Journal* 24: 4, 1970: 500.

63 Alzada Comstock, 'Russia's Oil Offensive', *Barron's*, 30 January 1928: 17. See also Chapter 4.

quotas to regulate domestic US production.[64] As production in the Middle East began to increase after the Second World War, threatening to lower the price of oil, Congress pressured the major oil companies to protect US oil prices by limiting imports from the Middle East. In 1954 the Oil Policy Committee, an industry-government body, established regular US import quotas, formalised by a proclamation by President Eisenhower in 1959, limiting imports to 9 per cent of domestic demand.[65] The blocking of imports allowed domestic US production to continue expanding despite the availability of oil at much lower costs of production in the Middle East. As a result, American oil reserves were exhausted more quickly than those of other regions. By 1971, US production had started to decline, as the volume of reserves in the lower forty-eight states passed their peak. Declining production, coupled with continually rising demand, meant that the US no longer had the surplus capacity required to regulate prices.

In 1960, in response to the drop in demand for non-US oil caused by Eisenhower's import quotas, Venezuela and Saudi Arabia – together with the other three large Gulf producers, Iraq, Kuwait, and Iran – set up the Organization of Petroleum Exporting Countries (OPEC). For Venezuela, where a revolution had overthrown the military government and brought an elected government to power, the aim was to imitate the collective arrangement among US states for restricting production, in order to negotiate an increased share of oil revenues and conserve supplies, and thus to allow an orderly process of economic growth and avoid a premature depletion of reserves. Initially the Middle East producers were trying to maintain their tax revenues from oil by increasing the volume of production. Only a decade later were they in a position to increase revenues by adopting the US method of limiting the volume of production.[66]

Part of the difficulty facing the producer states in negotiating the tax revenues to be paid by the production companies was that, before the mid-1960s, there was no 'market' price for crude oil. US prices were established by government production and import quotas, while elsewhere most crude was transferred by the large firms to their own refining affiliates, or traded from one major to another at low prices under long-term contracts. The level of tax paid to the

64 The Texas quota system was reinforced by the federal Connally Act, known as the 'Hot Oil' Act, of 1935. Harold F. Williamson, *The American Petroleum Industry*, 2 vols, Evanston: Northwestern University Press, 1959–63, vol 2: 543–4. Thirty years later, OPEC took the Texas system as a model for its system of international quotas. Anthony Sampson, *The Seven Sisters: The Great Oil Companies and the World They Made*, London: Hodder & Stoughton, 1975: 92.

65 Williamson, *American Petroleum Industry*: 543–4. 'Overland' imports were exempt from the import quota, to protect Canadian suppliers whose pipelines gave them no alternative market. Mexican suppliers had no pipelines to carry oil to the US, but took advantage of the same exemption: tankers that had previously shipped Mexican oil to New Jersey were diverted to Brownsville, Texas, from where the oil was carried in tanker trucks twelve miles south across the Mexican border and then re-imported overland. Richard H. K. Vietor, *Energy Policy in America Since 1945: A Study of Business–Government Relations*, Cambridge, UK: CUP, 1984: 130.

66 Parra, *Oil Politics*: 89–109.

producer countries was calculated in reference to an artificial figure called the 'posted price' – a benchmark set by the oil firms, with the tax per barrel set at 50 per cent of that figure. Following Eisenhower's introduction of import quotas, the companies lowered the posted price, thereby reducing their tax payments to the producer states. When the latter responded with the creation of OPEC, the companies agreed after 1960 to leave the benchmark at a fixed level. This guaranteed the producer states a set income per barrel of oil produced, even as the price of oil outside the US began to decline due to competition from independent oil companies and from the Soviet Union. Since the posted price was not adjusted for inflation, however, the real tax rate per barrel of oil fell, especially in the later 1960s when the value of the dollar began a rapid decline.

Meanwhile, a group of independent, mostly German oil dealers started to publish regular figures on the price of refined oil products in Europe. An American oil economist, Morris Adelman, was able to take these figures, deduct known costs for refining and shipping, and infer for the first time an approximate 'market price' for Middle Eastern oil (it would take another decade to create a functioning global oil market). His figures showed that in 1960 the oil companies were producing oil at a cost of 10¢ cents per barrel, including a 20 per cent return on invested capital, and earning a profit above that return of 68¢ per barrel. For the major oil companies, Adelman later remarked, 'a market price was an uninvited intruder'.[67]

The general public failed to notice the intruder for almost a decade – an ignorance from which the oil companies continued to benefit. Negotiations over rates of taxation on the extraordinary profits that international firms were earning from Middle Eastern oil took the form of attempts to raise the posted price. Unaware that the 'posted price' was simply a device for calculating tax rates, the news media and the public assumed these were negotiations over the price of oil. The companies could then portray the increased taxation of their windfall profits from oil as an increase in its 'price' – an increase that they would be obliged to pass on to the consumer.

Following the success of Libya in winning a new tax rate in 1970, OPEC was in a position to challenge the setting of tax rates by the major US and European companies. Iran led the OPEC states in demanding a general increase in the posted price, along with an increase in the tax level based on that price from 50 to 55 per cent. This represented an attempt by the producer countries not to increase the price of oil, but to return real tax rates to the levels they had enjoyed before inflation, Israel's closing of the Suez Canal and other factors had pushed up the oil price in the later 1960s.

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67 Morris Adelman, 'My Education in Mineral (Especially Oil) Economics', *Annual Review of Energy and the Environment* 22, 1997: 21; and *The Genie Out of the Bottle: World Oil Since 1970*, Cambridge, MA: MIT Press, 1995: 41–68.

Supported by the State Department, which arranged for the Justice Department to waive anti-trust regulations, the companies met together and decided to accept an increase in the benchmark. Undersecretary of State John Irwin had circulated a memo following the Libyan deal pointing out that, given the import quotas that made crude oil prices in the US much higher than in Europe, an increase in Middle East prices would be to America's benefit:

> Many claim that access to cheaper energy sources has given European producers an advantage over goods produced in the United States, particularly in certain industries such as petrochemicals. The Libyan settlements will increase energy costs to Europe (and probably to Japan) and could reduce whatever competitive advantage those areas enjoy over the US because of access to lower cost oil.[68]

By April 1971, the companies had agreed with OPEC to raise the posted price from less that $2 per barrel to more than $3. The price at which oil from the Gulf actually traded remained at just over half the posted price, rising from about $1.30 to $1.70 per barrel – still below the level of the mid-1950s in nominal terms, and well below that level when adjusted for inflation. Meanwhile, refined oil products were selling in Europe at a price of more than $13 per barrel, 60 per cent of which represented government taxes in the consumer country. Following the 1971 OPEC tax increase, in other words, European states were still earning about four times as much revenue from each barrel of oil as the OPEC states.[69]

The 50 per cent increase in tax rates was only a temporary measure. It ensured the OPEC countries a higher share of oil profits, but the system of allowing international companies to earn all the profits from oil and then attempting to tax those profits was itself coming to an end. Led by Iraq, the large producer states had gradually built the infrastructure and the expertise to take control of production themselves. Iraq announced its nationalisation of the British-controlled Iraq Petroleum Company in 1972. Iran had already warned the oil companies that, when the 1954 consortium agreement expired in 1979, it would expect a radically different arrangement.[70] Saudi Arabia negotiated a gradual transfer of ownership of Aramco to the state, threatening the company

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68 Cited in Tore T. Petersen, *Richard Nixon, Great Britain and the Anglo-American Alignment in the Persian Gulf: Making Allies out of Clients*, Brighton: Sussex Academic Press, 2009: 38.

69 Parra, *Oil Politics*: 110–34; V. H. Oppenheim, 'Why Oil Prices Go Up (1): The Past: We Pushed Them', *Foreign Policy* 25, Winter 1976–77: 24–57; Morris Adelman, 'Is the Oil Shortage Real? Oil Companies As OPEC Tax-Collectors', *Foreign Policy* 9, Winter 1972–73: 86.

70 'Telegram 7307 From the Embassy in Tehran to the Department of State, December 23, 1971, 1300Z', Documents on Iran and Iraq 1969–1971, Document 155, available at history.state.gov.

with the same fate as the Iraq Petroleum Company if it refused to negotiate. By the end of 1972, the other large producers in the Gulf, Kuwait and Iran, were making similar arrangements.

GOLD FINISH

Facing the loss of their control of the oilfields in the Middle East, the international oil companies now needed a means of generating a large increase in the price of oil. A much higher price would enable them to open up new production sites in less accessible areas, such as the North Sea and Alaska. It would also allow them to realise a greater share of profits from the downstream refining and marketing, compensating for the loss of profits from producing Middle Eastern oil.

There were three changes that would allow the reorganisation of the mechanisms for pricing oil. First, following the successful collaboration developed to raise the Libyan oil price, the producer states had to take over from the oil companies the system of restricting production, to prevent surplus oil from lowering the price. This would be easier for a group of sovereign states to achieve than for a cartel of oil companies liable to anti-trust investigation if they were seen to be forcing prices up.

Second, the international firms, which would process and market oil for the new state-run production companies, had to find ways to sell more oil and protect it against rival sources of energy. To raise the price of oil, it was not enough for those producing it to make the supply scarce. A higher price would simply drive consumers to switch to cheaper alternatives. The oil companies needed ways to 'sabotage' the supply not only of oil, but also of coal, natural gas and nuclear power. For this reason, as we will see in the following chapter, what is now remembered as the 1973–74 oil crisis was first discussed not as a problem of oil, but as an 'energy crisis'. Since oil was the largest commodity in world trade and shaped the international flow of dollars, the transition to a new petroleum order also began as a financial crisis.

Third, to maintain demand for oil as its price increased, the international oil companies needed to open up new markets. The largest market to which their access was restricted was the United States. The US import quotas helped prevent lower-priced Middle Eastern oil from competing with domestic production, which in the first half of 1971 was selling for $3.27 a barrel – almost double the new price of oil from the Persian Gulf. However, the import controls had become a mechanism of the postwar international financial system, protecting the value of the dollar. By restricting imports of oil into the United States, Washington reduced the flow of dollars abroad, limiting the accumulation of dollar reserves overseas. Later it tried to give further support to the dollar's value by interventions in the London gold market. When these two mechanisms

proved insufficient, a third technique was added: the rapid increase in arms exports to oil-producing countries, especially Iran.

The oil companies needed an alternative to the use of oil (and escalating arms sales) to control dollar flows. The quota on US oil imports was denying them access to the world's largest petroleum market, and the drive to sell arms to Iran was putting pressure on them to increase production there. The solution for which the oil companies had begun to argue was to abandon Bretton Woods.[71]

In March 1967, Chase Manhattan Bank, the Rockefeller financial house closely tied to Standard Oil of New Jersey (Exxon), proposed that the United States abandon the gold standard. The American Bankers Association condemned the proposal, and Chase quickly offered a retraction. Questioning the automatic convertibility of dollars into gold was considered a threat to the stability of the postwar international monetary system and to America's political and financial authority. Eight months later, however, Eugene Birnbaum, senior economist at Standard Oil, published a report entitled *Changing the United States Commitment to Gold*. The report called for the US to end the Bretton Woods system unilaterally by rejecting the obligation to convert dollars into gold. Birnbaum's arguments were critical to making the idea of abandoning Bretton Woods acceptable.[72]

A year after Birnbaum's report, in November 1968, America's decade-long effort to support the value of the dollar collapsed. The US tried to transform Bretton Woods into a mechanism that allowed the gold peg to float. In an effort to combat inflation by lowering domestic oil prices, Washington began removing the controls on oil imports in 1970, but this caused more dollars to flow abroad. By the following year, the US had used up most of its non-gold reserves, and only 22 per cent of its currency reserves were backed by gold. When European banks requested payment for their dollars in gold, the US defaulted. Abandonment of the gold standard in August 1971 amounted to a declaration of bankruptcy by the US government.[73]

The transformation in methods of controlling flows of oil and finance was completed in the 1973–74 crisis, to which the following chapter turns. We do not know for certain how far these changes were planned by the oil companies,

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71 The major oil companies wanted the import quotas rationalised, to remove the hundreds of exemptions that favoured mostly small operators, and steadily increased. Vietor, *Energy Policy in America*: 135–44.

72 Eugene Birnbaum, *Changing the United States Commitment to Gold*, Princeton: Department of Economics, Princeton University, 1967.

73 Fred Block, *The Origins of International Economic Disorder: A Study of United States International Monetary Policy from World War II to the Present*, Berkeley: University of California Press, 1977: 164–202; William Engdahl, *A Century of War: Anglo-American Oil Politics and the New World Order*, 2nd edn, London: Pluto Press, 2004: 127–49. In contrast to Engdahl, Block makes no mention of the oil dimension of the crisis.

and how far the transformation came about through the rivalries between them, their conflict with the producer countries, and the changing agendas of the US government. But there was no doubt that the creation of a crisis made it easier to blame outside forces for the radical alterations that occurred.