Introduction

THE UNALTERABLE ORDER OF ELECTRICAL PALESTINE

> Of course, most of us don't know anybody who knows how any of it works. It's background stuff—*infra* means "below," and a good bit of this "below-structure" actually runs below ground, out of sight, or above our heads in skinny little wires we don't notice anymore; what isn't out of sight remains out of mind—until it fails.
>
> —SCOTT HULER, *On The Grid*[1]

ON A DAY IN LATE MAY 1923, more than a thousand people descended on the Arab town of Tulkarm, a community of four thousand inhabitants perched at the top of the fragmented limestone promontory that connects Palestine's hilly interior to its eastern Mediterranean coastal plain. For centuries, Tulkarm had served as a staging post for armies of conquest and, in more peaceful times, for regional trade. But the agitated multitudes flocking to the town on this late-spring day in 1923 were not looking to truck, barter, and exchange. Nor was the gathering in Tulkarm the only one taking place in the spring and summer of 1923: in Jaffa, Haifa, Jerusalem, Nablus—all over Arab Palestine—people were turning out in unprecedented numbers to discuss the same emergent threat. They came to discuss the electrification of Palestine.[2]

Four years earlier, in 1919, the renowned Jewish engineer Pinhas Rutenberg had turned up in Palestine with designs for a countrywide power system and promises of capital influx and industrial modernity. He arrived in a land of wretched poverty. The Great War, which had ended only the year before, had

cut a wide path of disease and starvation through the population, while the Ottoman war machine, before its ouster by British forces, had decimated the land and the livelihoods that depended on it.[3] Rutenberg's proposal offered a way out of this dire state.

Yet as Rutenberg a few years later prepared to throw the switch at Palestine's first powerhouse, in June 1923, the area convulsed with protest. Three days before the meeting in Tulkarm, a large crowd of Palestinians moved through the streets of Jaffa, chanting: "Rutenberg's lampposts are the gallows of our nation!"[4] A few weeks after that, the Sixth Arab Palestinian Congress convened in Haifa and adopted a resolution condemning "the erection of poles and extension of wire" and called for a countrywide boycott of the works, making Rutenberg the only Zionist mentioned by name in that or any other official document of the Palestinian congresses.[5]

But if Rutenberg was offering a solution to a pressing problem, why did so many Palestinians react with existential alarm? Never before had a substantial cash injection been more urgently needed. The answer is that while few denied that Rutenberg's proposal was poised to solve one problem, as far as the Palestinians were concerned it stood to compound another. They looked at Rutenberg's designs—the ring of high-tension wire delineating a new border; the projected load centers portending urban industry; the medium- and low-tension lines progressively filling in the interior spaces—and sensed not just a power system but also the base plate of a future Jewish state.

Proponents of Rutenberg's plans, for their part, dismissed such concerns with reference to a distinction that to this day remains part of what the cultural theorist Stuart Hall called "the horizon of the taken-for-granted."[6] They insisted that Rutenberg's plans were strictly technical. As such, they were "outside of politics" and therefore "should be considered strictly 'neutral.'" The sentiment was commonplace among supporters of Rutenberg's project, whether Jewish or Arab, throughout the interwar period. These exact words, however, belong to the secretary of the Palestine Electric Corporation and came in response to a number of instances in which "irresponsible people" had "blown up or damaged" parts of the grid. The secretary expressed regret that "some newspapers give publicity to these facts as acts of warfare" when in fact they constituted mere "theft and robbery." The letter's clear depoliticizing agenda appears all the more remarkable when we note that it was addressed to the mayor of Nablus, a stronghold of Palestinian nationalism, in March 1948—in other words, in the midst of what Israelis know as "the War of Independence" (*milchemet ha'atzma'ut*) and Palestinians as "the

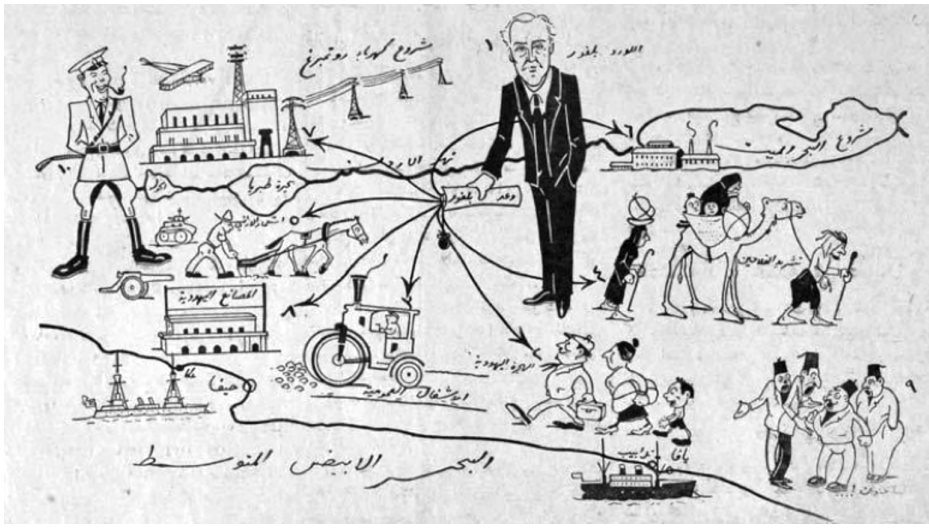

FIGURE 1. Industrial Zionism: Rutenberg's hydropower station, top left, *Filastin*, November 2, 1932. The fifteenth anniversary of the Balfour Declaration. "Balfour and the woes inflicted on Palestine by his fateful declaration."

Catastrophe" (*al-nakba*).[7] Less than two months later, Prime Minister David Ben-Gurion would declare the independence of the State of Israel from the main hall of Beit Dizengoff in Tel Aviv.

In contrast to the apolitical pose of its promoters, electrification was a central bone of contention between Arabs and Jews throughout the period of British rule, and the terms of the debate persistently turned on the question of whether the technical was political. Unlike in 1923, however, by 1948 Rutenberg's abstract vision had materialized in the form of a dense skein of wires crisscrossing the length and width of Palestine, delivering light, power, and heat to industry, agriculture, public spaces, and private homes. Of the quarter million kilowatt-hours sold in the year before the 1948 War, more than 90 percent was consumed by Jews. This book, therefore, tells a story of how a particular relationship between technology and politics was made in Palestine in the period of British rule, and then tracks its consequences. It is a story with global echoes, one that, through an account of Palestine's electrification, seeks to offer a new perspective on the making and substance of modern political power.

Electricity is central to all the things we associate with the modern age: the accelerating rate and increasingly uneven distribution of economic growth,

the making of heterogeneous systems through deepening and multiplying connections between diverse (technical and nontechnical) elements, the exponential increase in our reliance on nonsomatic (chiefly fossil-fueled) motive force and the consequent decoupling of human work and play from earthly rhythms. Electricity is also the technology that allows us to package these developments as spectacles.

So integral is electricity to modern everyday life that we literally cannot imagine our world without it. Electricity's vocabulary and grammar condition how we think and talk about ourselves and our societies: we are shocked by the unexpected, wired from stress, and electrified by excitement; controversial issues are charged, while too much work requires us to recharge. Or most of us, anyway. The human dynamos among us can, of course, power through endlessly. Despite the ubiquity of such metaphors, we rarely register that their origin is in fact technological, just as we take for granted the conveniences that electricity provides. The expressions are what George Orwell called dying images—that "huge dump of worn-out metaphors" whose ubiquitous usage has uncoupled them from the underlying dynamic that gave the expressions force in the first place. To Orwell, dying metaphors contain a political danger. The imprecision of the unmoored images reflects and encourages a "reduced state of consciousness," priming us for unthinking political conformity.[8]

Orwell was no doubt correct. In fact, his insight can be extended beyond the linguistic domain. It is not just in how we talk that electricity has lost much of its original valence, making its politics hard to see. The hollowness of the metaphors corresponds to a larger truth: that building power systems is always rich in politics and fraught with controversy, yet once built, their contested nature disappears from view, as they are sublimated into an apolitical language of technics.[9] Despite the fierce political contention that surrounds the Arab-Israeli conflict, the electrification of Palestine is no exception. Indeed, who still remembers that the first cause of Palestinian national mass mobilization was the construction of an electric grid in Jaffa? That the Zionist movement identified electrification as one of the chief vehicles of Jewish state building? Or that British officials saw the electrification of Palestine as the linchpin of a new era of global peace and prosperity? To recover some of what has been lost, this book considers the power relations that inhere in the technical processes and material objects involved in generating and distributing electrical power. By paying attention to the processes by which the grid took on its seemingly natural form, we gain access to the

previously hidden realm of politics and social formation, and so recover the significance that hides behind the dying metaphor of electricity.

More specifically, this book follows the efforts to build a countrywide electric grid in Palestine, an endeavor that corresponded to the years of British rule from 1917 to 1948. In 1921, the British granted a charter for an electricity monopoly to the Russian Zionist and engineer Pinhas Rutenberg, who had prepared a proposal over the course of a year following his arrival in the country in 1919. Three decades later, the power system of the Palestine Electric Corporation, the firm Rutenberg founded, covered the entire country. Atop this technological complex, this *electrical Palestine*, stood an independent Jewish state, whose economy, society, and politics reflected the electrical logic that had helped call it into being.

In the course of the roughly thirty years that this study spans, Palestine underwent a radical transformation: from a vaguely defined area of some six hundred thousand inhabitants in 1917 into a distinct territory with a population of some two million and all the fundamentals of modern statehood by 1948. The economy was eleven times larger, and per capita incomes had more than tripled, although, as we will see, that growth was distributed rather unevenly. The character and composition of the population had also changed: from a population made up of three religious groups—Muslims (80 percent), Christians (10 percent), and Jews (10 percent)—into two ethnically distinct societies, one Arab (68 percent) and one Jewish (32 percent). While the population of Palestine as a whole grew by a factor of three, the number of Jews grew by a factor of ten. Moreover, at the start of the period, roughly three-quarters of the population were rural dwellers, towns were small, and there was little by way of industry.[10] By 1948, however, industry produced a value double that of agriculture; and one-third of Arabs and three-quarters of Jews lived in cities and large towns that were interlinked by dense networks of roads, rails, and wire.[11]

The elevenfold economic growth of Palestine exceeded that of all other Middle Eastern economies. But the economic growth of the Jewish sector, also known as the Yishuv, was globally unique. To economic historians, the Jewish growth miracle in interwar Palestine is a staple truism. The Yishuv's annual growth rate of 4.8 percent, we learn from the historians' tables, made it one of the fastest-growing economies in the world and, with the exception of Venezuela's oil-fueled boom, the world's fastest-growing non-Western economy.[12]

But the countrywide electrification project was also instrumental in launching the accounting practices by which Palestine's transformation was

and still is being measured, in the form of the statistics just cited. To comprehend Palestine "in numbers"—to quote the title of the economist Yehoshoa Ziman's book from the time—became a pressing imperative for the Zionist movement.[13] The reality conjured by these statistics was not neutral. It enacted the "calculative rationality" that, according to Max Weber, constitutes the beating heart of modern capitalism. The figures announced the sound working of Schumpeter's market mechanism, which rendered the complex social reality of Palestine politically legible as an ethnonational binary, a territory reducible to "Jewish" and "Arab" things. Countless statistical tables published in the years of the British mandate listed "Arab" agriculture, industry, education, life expectancy, and so on in one column, with corresponding "Jewish" figures running alongside. One index, for example, published by the Jewish Agency in 1945, showed that one-third of "Jewish" energy needs were satisfied by electricity, whereas the corresponding "Arab" figure was 7.5 percent.[14] Statistics, therefore, not only reified the simplification of the population into the Jewish-Arab binary we have come to take for granted; they also served as an important means by which the Zionist movement created a distinction between the way the Yishuv produced, consumed, and performed modernity—with the modern bookkeeping to prove it—and the Palestinian Arab community, which, in the words of one Jewish Agency publication, possessed "a mentality that does not always view with favour the exact and numerical approach to reality."[15] Going forward, we will have reason to complicate some of the figures just cited, the assumptions on which they were based, and the politics of their production and dissemination. Like the supposition of an unbridgeable divide between "the technical" and "the political," parsing Palestine into "Jewish" and "Arab" domains was itself a form of politics, whose workings are central to the story at hand.

The central argument of this book is that the story of Palestine's transformation is largely a story of the precipitous and uneven development of its infrastructures, and that its ethnonational conflict is largely a story of diverging economies coevolving with those technologies. Indeed, the Jewish State of Israel, founded on May 14, 1948, was arguably *infrastructural* before it was anything else. From the perspective of fixed capital, the precipitous growth rate of the Jewish infrastructural state outpaced the already significant growth differential in population or capital between the Jewish and Arab sectors.[16] This was not accidental but the outcome of a deliberate effort to erect the material predicates of sovereignty, which proved hugely important to the outcome of 1948. Among the many grand infrastructural projects

undertaken in the late Ottoman and mandate periods that are detailed in these pages, electrification was especially important to Palestine's socioeconomic transformation, as well as to the reconfiguration of the area as a modern and Jewish national space. Like no other undertaking, infrastructural or otherwise, the power system made every inch of the territory the target of a single, centralized undertaking, with far-reaching conceptual and material consequences. Like electrification projects elsewhere, the work of the Palestine Electric Corporation integrated local environments into a systemic network of institutions and culture that mimicked and foreshadowed the characteristics of the nation-state that would emerge in 1948.[17] The national culture that the grid participated in producing in Palestine encompassed only one ethnic minority, the Jews, while to the extent that the grid touched Palestinian Arab national culture, it did so largely in terms of opposition and exclusion. The nature of the forces driving the transformation of Palestine from a vaguely defined imperial backwater into a precisely bounded modern state therefore contained the seed of another radical break, made manifest in 1948 in the form of Jewish statehood and Palestinian statelessness.

To contemporaries there was nothing surprising about the fact that a large technological system was essential to the circulation and accumulation of political power in Palestine. One British official commented that the person in charge of electrification would become "the absolute dictator of Palestine's fortunes."[18] And when it turned out that that person would be Pinhas Rutenberg, a committed Zionist, there were many who considered the implications to be obvious and far-reaching. "We are giving to a Jewish organisation a grip over the whole economic life of Palestine," wrote the head of the Middle East Department of the British Colonial Office a few days before granting the concession to Rutenberg in 1921.[19] The Palestinian Arabs were no less convinced that the stakes involved were high. In a petition to the British Parliament, the Palestinian Arab Executive claimed that "the Zionists, through Mr. Rutenberg, are aiming at getting a stranglehold on the economics of Palestine, and once these are in their hands they become virtual masters of the country."[20] As we have already seen, it was not just the political elite that understood the matter in those terms. And no group was more attuned to the political power of electrical power than the Zionists. In a letter from 1935, the Jewish philanthropist James de Rothschild looked back at the power system, in which he had been an early investor, and what it had

accomplished: "The purpose of this undertaking was to become—as it in reality did become—an important instrument for the Jewish people in Palestine."[21]

It may seem self-evident, in other words, that electrification, with its vast, sprawling infrastructure and ubiquitous fields of use, was destined to insert itself at every level of private and public life, and so be bound up with the economic and political transformations that Palestine underwent during the thirty years of British mandatory rule. Yet the history of Palestine's electrification and its political, social, and economic ramifications have only rarely been studied, and even when they have, then only partially. This reflects a wider propensity among historians to ignore such linkages as those between technology and politics, despite the great significance attributed to them by people at the time, preferring instead to treat the realm of technology as separate from the realm of human relations. This suggests that the notion of there being an unbridgeable gap between technology and politics, a notion on which much, though by no means all, of the present story turns, is alive and well in contemporary society, including much of contemporary social theory. More often than not, historians overlook the question of how societies evolve in conversation with their technologies, despite the interventions of numerous technology scholars over the past half-century.[22] Yet, in the most straightforward sense of the term, an electric grid is inescapably a social construction, that is, a product of human interaction.[23] This study therefore joins a longstanding effort by technology scholars to demonstrate that ignoring the mutual influences running between technology and politics amounts to a form of question-begging that obscures the way technological objects function as both causes and effects of social change. Like all large technological systems—sewage networks, railroads, telegraphs, and so on—electric grids are cultural artifacts.[24] Mistaking a political object for a natural one elides and thus perpetuates, even intensifies, the politics built into it, as it naturalizes an aspect of political claims-making.

By being embedded in a larger sociotechnical network, the power system shaped and was shaped by evolving political agendas, economic activities, and social visions on a multitude of scales, from the global to the imperial, regional, and local. Putting electrification at the center of the story of Palestine's transformation therefore makes new connections visible, with far-reaching implications for how that story should be understood.

For one thing, it becomes clear that the history of empire matters a great deal more to the history of Palestine than scholars have acknowledged, and in ways previously unexplored. The tendency among scholars has been to

treat British policy in Palestine in isolation from Britain's imperial project. But in fact, as this book shows, Britain's attitude toward Zionism and the Arab population was merely another provincial articulation of its empire-wide concern with non-Western development. It was this concern, and the critical role of technology within it, that caused the British to persist in their support for the Jewish national home policy, insisting, despite mounting evidence to the contrary, that Jewish "industry and capital" would facilitate material and moral progress for all inhabitants. At its core, this imperial vision was one of economic development, and one that, given the limited resources that the British state was willing to devote to its imperial project, was necessarily dependent on attracting private capital. The present story, therefore, turns on a technological vision that was profoundly about capital and about capitalism. This is the second insight that electrification makes legible. To call the reader's attention to the social networks that capitalism and technology sustain and are sustained by in turn, this study introduces the term *technocapitalism*. Its purpose is to bring out the deep yet underappreciated connection between the two primary driving forces of this story—technology and capitalism—specifically, to explore how they were mutually sustained by means of the same discursive and material practices, and how in the imperial context of modern Palestine they produced distinctive national movements and, ultimately, territorial partition.

As the case of Palestine demonstrates, capitalism and technology are closely interrelated and share many characteristics.[25] Technological and capitalist reason both rely on self-reinforcing ideas, discourses, and practices that put an ever-growing distance between themselves and alternative systems. Specifically, Zionism's territorial claim was based, to a far greater extent than is recognized in the existing scholarship, on the promise of organizing an economically viable territory in the context of global trade, and of doing so by means of infrastructural technologies. Its advocates justified their claim to Palestine through their promise to transform the territory into an area of modern production and consumption, and crucially also into a viable node in the global flow known as "free trade."[26] That capitalist proposition was underpinned by a belief, on the one hand, in science's ability to stake out the most efficient way forward, and, on the other, in the endless powers of technology to transform apparently backward lands into productive and dynamic participants in global trade.[27] As we will see, this aspiration was expressed on the ground through the application of specific technologies chosen for their supposed ability to engender "free trade," and whose precise properties were

instrumental in shaping the endeavor as it evolved, in both expected and unexpected ways.

The material element of the story is as important as it is usually overlooked. Several scholars of nationalism have pointed to the close relationship between capitalism, industrialization, and nationalism, and so have more recent scholars of capitalism.[28] Most famously, Benedict Anderson identified print capitalism as a critical element in the emergence of national communities in Western Europe. He also emphasized the importance of censuses, maps, and museums, which, he argued, produced a "totalizing classificatory grid," on the strength of which "tightly bounded territorial units" could be established. That, as this book shows, is true not merely if we understand "grid" in the metaphorical sense in which Anderson uses it.[29] The electric grid bounded and structured modern Palestine through its symbolical power but also, and perhaps more important, through its material properties. It imposed its electrical logic on the political entity it helped create.

This was so even for the unelectrified. It is a well-known and much-lamented fact among historians of Palestine (and Israel) that there is far more historical documentation on the Israeli side than on the Palestinian side, another manifestation of the power differential that results from statehood and statelessness. This book draws heavily on the records of the Israel Electric Corporation, the successor to Rutenberg's Palestine Electric Corporation. The company documents offer a unique view into the economic and political life of Palestine for both Jews and Arabs, though for reasons explored in these pages the relationship of the company to each was by no means symmetrical. To further compensate for the lopsidedness of the sources, this book draws on the holdings of various local archives, including those in Nabuls, Tel Aviv–Jaffa, and Haifa, and much printed Arabic material. In this, I depart from the approach taken by Ronen Shamir in *Current Flow*, the other extant scholarly work on electrification in Palestine. To begin, Shamir employs a more focused lens; his book deals mainly with Tel Aviv-Jaffa in the 1920s, whereas the present book takes a broader view of the whole of Palestine and the whole of the period of British rule. Moreover, Shamir, who did not consult any sources in Arabic, offers little insight into Palestinian perspectives on electrification, and explicitly denies any Palestinian agency in the making of the power system, even as he insists on claiming agency for the grid itself.[30] For Shamir, electrification, in a process he characterizes as governed "primarily by commercial considerations and the technological imperatives of machines," enacted an "episteme of separatism," which in the course of the

1920s and 1930s caused the Jewish community in Palestine to disengage from the Arab population, politically, socially, and economically.[31] Thus, even though he initially dismisses distinctions between technology, economics, and politics as "only shorthand," his narrative effectively reaffirms those distinctions. Possibly, it is his reliance on British and Zionist documents that blinds him to the close practical links between technology, politics, and economics, as the British and the Zionists were the ones with a stake in denying such links. The problems inherent in Shamir's approach become especially apparent in his discussion of the 1948 War, as his approach effectively makes commercial and technological logics, which he treats as effectively distinct from other logics, responsible for the flight and expulsion of some 750,000 Palestinians. In the course of researching this book, I have come to believe that Shamir's focus on separatism is misplaced. Like the categories of the "political," "economic," and "technological," ethnonational separatism is better understood as an ideological effect of a de facto relational dynamic. Therefore, I depart from Shamir both methodologically and empirically. In what follows, I seek to show that commercial considerations are never separate from politics, machines have no independent "imperatives," and, most important, Palestinians were an essential part of the network of forces that created Palestine's electric grid.

Palestinian opposition to Rutenberg assumed a central role in the overall struggle against Zionism less than a year after his arrival in the country. Electrification therefore became central to producing Palestine as an object of nationalist contention. The struggle against the first powerhouse, in Jaffa, coincided with a reorientation of Palestinian Arab politics from Greater Syria to a nationalism centered on Palestine. For the Palestinians, then, electrification came to participate in the making of a new inside and outside, constituting Palestine, conceptually and materially, as an object of national politics. The tactics that the nationalist movement adopted, moreover, began from a technological fact, namely, the young electric grid's vulnerability to sabotage, which the Palestinians used to gain purchase for their political demands. Rutenberg countered by switching electricity-generating technologies, from the vulnerable sprawl of waterpower to a contained and thus easier-to-protect fuel-powered station. He then endeavored to expand and thicken the grid ahead of commercial demand, in order to further reduce its physical vulnerability. But most important, Rutenberg engaged in *boundary-work*; that is, he endeavored to align his project with a "free-market" rationale and emphasized the technological exigency that supposedly governed the grid's

development, the better to deny the political quality of his work. In so doing, he managed to characterize Palestinian opposition as politically motivated, in contrast to his own scientific posture. In practice, then, the strategies that Rutenberg adopted, including the design of the grid and the location of the power stations, responded to circumstances generated by the interaction of the system's technological properties and the oppositional politics of the Palestinians. Palestinian nationalism continued to evolve together with the grid throughout the mandatory period. Palestinians experienced continuous friction as a result of their desire to "be modern," on the one hand, and their rejection of "Zionist current," on the other. The internal struggle over electrification through the 1930s remade the political fault lines within the Palestinian community in ways that would bear heavily on the great anticolonial revolt of 1936–39, and Palestinians' drastic change of fortunes during the 1948 War.

MATERIAL MEDIATION

The standard historical account of the emergence of modern Palestine in the period following World War I begins with a written text, namely, the 1917 Balfour Declaration. Virtually all histories produced in the past quarter century highlight that declaration's fateful distinction between Jews, to whom it granted national rights, and "non-Jewish inhabitants," who were accorded only "civil and religious rights." This despite the fact that Jews at the time made up only some 10 percent of the population, and the overwhelming majority of the remainder consisted of Palestinian Arabs.[32] The author of the definitive account of the Balfour Declaration, James Renton, writes that it "became the basis for the British Mandate for Palestine, which, in turn, enabled the birth of the Jewish state almost thirty years later" and "led Palestine into one of the most bitter conflicts in modern history."[33] The standard narrative then continues to track this diplomatic history of texts and declarations: the white papers of 1922, 1930, and 1939 and the emergence of the idea of partition, born of the 1937 Peel Commission and given international legal sanction with the UN partition resolution of 1947.[34] In these familiar accounts, each such diplomatic moment is narrated as a response to anti-Zionist or anticolonial violence, such as the Jaffa Riots of 1921, the Wailing Wall Riots of 1929, and the Great Arab Revolt of 1936–39. The result, we are to understand, is that the political course set by the Balfour

Declaration culminated three decades later in the Palestinians' political and physical dispossession in the 1948 War and the creation of the State of Israel.

To explain this pattern of diplomacy and the apparent pro-Zionist bias of British policy, scholars have cited attachment to the Bible and messianic Christianity, imperial realpolitik, and/or the influence of Jewish and Arab racial stereotypes.[35] In all these accounts, the significance of the text itself is undisputed, and so is the *in*significance of all other people and things. Indeed, according to the prominent historian Anita Shapira, "The Balfour Declaration belongs to an era in which a handful of statesmen in smoke-filled rooms decided on the fates of peoples and states and how to divide up declining empires, with no participation by the media or the masses."[36] For the Palestinians, the result of the declaration was an "iron cage," in Rashid Khalidi's famous image, constraining the Palestinian political action for the duration of the mandate and beyond.[37]

This book does not dispute that the history of mandatory Palestine is to a large degree a history of Palestinian dispossession, or that this process was expressed and enforced on the levels of diplomacy and jurisprudence. It does, however, challenge the standard account's assumption that the Balfour Declaration in itself overdetermined the history of Palestine, such that political power flowed directly from the writ of the document. This book also challenges the common claim that British policy muddled through on a tide of incompetence and prejudice, or that, as Tom Segev has claimed, British policy makers somehow were so enraptured by "the mystical power of 'the Jews'" that it "overrode reality."[38] This book retells the story of evolving power relations in Palestine, as the function not of chance, prejudice, or written proclamations, but of the material enactment, over the course of the 1920s and early 1930s, of a Zionist-dominated technocapitalist order centered on a bounded Palestinian territory and economy. Palestine was not transformed directly by the words of the Balfour Declaration, nor by subsequent proclamations, or the civilizing rhetoric of the Permanent Mandates Commission of the League of Nations. Instead, these texts depended for their implementation on material and discursive vehicles of a far more contingent and often rather provincial sort. And those vehicles, as we will see, ended up determining the outcome of 1948 as much as, if not more than, the ideas as they were originally expressed through paper and ink. In other words, this book focuses on the process of material mediation that translated and transformed the Balfour Declaration's ideas into reality. This mediation

involved the dispersal of agency, beyond a seminal text and its high-powered authors, over a range of human and nonhuman actors.[39]

Modern Palestine—and the Jewish state that emerged from it in 1948—was forged as people, goods, information, and capital moved through the space in patterns largely determined by its infrastructures. The electrification scheme in particular was essential in setting the territorial scale of modern Palestine, pulling local communities together by virtue of being stakeholders in the grid's growth. The concession that the British granted Rutenberg involved a countrywide monopoly, a requirement, as he successfully argued, of the capital-intensive nature of the enterprise. Thus, even before the borders of Palestine were determined, a nascent *electrical Palestine* was conceptually fixed in terms of an exclusive right to electrify the "Palestine" of the concession text, whatever the precise geographic delimitation would turn out to be. In the event, the electrification venture grew to a vast scale whose technical requirements demanded certain borders, and implied a particular economic future for the land, involving large-scale industry and global capital.

Once completed, the electric grid constituted the first material manifestation of what until then had been a mostly abstract claim for Jewish sovereignty in Palestine. It set Palestine up as a site capable of hosting a modern Jewish national home, complete with a (Jewish) national industry, economy, and culture. By the same token, the Palestinians' struggle against electrification amounted to a concrete campaign to prevent de facto Jewish sovereignty over the land, conducted all over Palestine against a network that seemed to threaten local control over every inch of the territory equally. In short, the power system was essential in shaping out Palestine within the larger agendas of technocapitalist colonial development and Jewish nationalism. The system, for its part, was possible only because of its central role in the Zionist gambit to organize a viable political and economic national entity within that technocapitalist framework. Thus, Zionism, Palestinian nationalism, and the electric system enabled and produced each other, as well as modern Palestine. As a result, the conflict between Arabs and Jews inscribed itself on the grid, as the grid in turn inscribed itself on the conflict.

The final product was an entity I call *electrical Palestine*: a shared lifeworld composed of a set of tightly integrated components, conceptual and material, drawn together in continual violation of the received domains of social theory—those of economy, science, culture, and so on. We might consider using concepts like paradigm, habitus, or episteme. Or if electrical Palestine were soccer, it would be the pitch, the sidelines, the goal posts, the referee,

THE HALF-PROMISED LAND.

FIGURE 2. Rutenberg cartoon, *Punch*, June 7, 1922. Reproduced with permission of Punch Ltd., www.punch.co.uk.

the rules, the players, the ball—the entire "complex of men and things" that make soccer distinct from, say, tennis or fly fishing, and whose rules privilege certain attributes over others, creating certain strong path dependencies.[40]

THE MACHINE IN THE MIDDLE

To understand this history, it is necessary to understand the technology at the center of this book. Electric power systems, like all networks, depend on being viably located within a matrix of other networks. It is this network dynamic that makes power systems so instructive to study. They are, moreover, site-specific technologies that connect people with each other and their environment, and yet they depend significantly on technology transfers from far away. They are structured by universal technological laws, while also subject to local contingency.

Technological exigency suggests a certain way of organizing power systems and, by extension, of organizing the societies they serve. For starters, electricity cannot be economically stored and is produced at the same moment it is consumed. Output, therefore, needs to be both high and even over time, something that is usually accomplished through diversification of production (horizontal integration) and of consumption (private, commercial, industrial, etc.). For instance, one power utility in 1920s Germany benefited from servicing different religious communities with different holidays, since it diversified the timing of demand on the system. In the early history of electrification in America, traction companies often built amusement parks at the ends of their lines to increase load diversity by encouraging off-peak electricity use.[41] Furthermore, building power systems is the most capital-intensive enterprise in history. Only steam railways during that industry's formative years approached the sums required for the initial stages of electrification. The huge capital demands of power systems create the need for multinational business interests with the financial muscle to absorb short- to medium-term losses for the sake of long-term profitability.[42] The capital intensity and exponential nature of electrification's economies of scale encourage the creation of legally protected monopolies, similar to those of railways and water utilities. To see the largest possible returns on the outsize investment, electrical utilities often operate subsidiary ventures that depend on access to cheap and abundant power, what economists call vertical integration.[43] Finally, the introduction of large-scale power systems intensifies

labor divisions, by shifting demand on the workforce to skilled and semiskilled labor, both in the electrical industry itself and in the wider industry that electrification spawns. It also intensifies socioeconomic divisions more broadly in that it, like all increases in technological complexity and their attendant increases in production costs, raises the economic threshold for ownership of the productive means.

These structuring conditions have far-reaching implications for society as they interact with local conditions in shaping social, political, legal, and economic orders. But for all the significance of these structuring factors—the "natural" inclination of power systems, as it were—none of the technological exigencies of power systems is deterministic. For every rule, there are myriad exceptions, motivated by context-specific considerations that often fall outside conventional definitions of the technological realm. This is why electric grids, besides being technical systems, are also cultural artifacts.[44] Moreover, because of the site-specific nature of the technology, operating in the context of a highly sensitive ecosystem of international, national, and local governments, businesses, and consuming publics, it serves as a useful bellwether of historical change. There is, in short, an intimate link between electric grids and social fabrics. And the communication, moreover, is two-way: power systems do not simply form according to some presocial technological exigency, and then shape society; nor are power systems simply products of social influence. Technology is always already social, just as society is always already technological.

This, however, hardly prevents people from making grand claims on assumptions of either technological or social determinism, depending on interests or worldview. In fact, the subtle yet vitally important power play inherent in these claims is one of the most significant elements of the history of technology. For instance, it is often in the interest of operators of large technological systems—because of the accelerator effects associated with scale economies and diversification—to see that they expand; and the particular properties of a given technology predispose its promoters to pursue expansion along certain lines. This, however, does not in itself mean that power companies *should* or *must* be monopolistic large-scale enterprises. What is efficient on the level of the system might not be efficient on the level of society as a whole. Yet it is a central feature of the history of large systems that what is good for the system has uncritically been promoted to a holistic prescription for an entire social order.[45]

This insight is critical to understanding the full significance of electrification in Palestine. The story unfolded in what historians of electricity call the first age of systems electrification. The shibboleth among proponents of large-scale electrification of the time was "rationalization," a term that implied a strictly rational search for "the optimal combination of economic gains with a minimum input of economic resources, including capital and labor."[46] In fact, however, the metrics used in these seemingly technical calculations were based more on the perceived virtues of certain technologies than on their actual efficiency. For instance, when Britain put its own National Grid into commission in the 1930s, overcoming decades of resistance by local power companies and their local political patrons, it did not in fact revolutionize the patterns of British industrial development, although that was usually how it was described at the time. What it did accomplish was to make electricity much cheaper in many parts of the country, thereby significantly increasing consumption of that particular commodity.[47] No surprises there: after all, maximizing output efficiency is what large systems and scale economies do. In other words, technology is surrounded by a great deal of confusion with respect to means and ends. Arguments for a certain technological solution are often justified by means of a circular logic according to which the increased output justifies expansion of the system. In Palestine, the unspoken assumption was that maximizing system efficiency unproblematically equated to a science-based, apolitical model for the organization of society along "modern" lines. To such a model, political objections were inadmissible, category errors that served only to indict those voicing them.

In addition, the electrification of Palestine unfolded at a time when economists and politicians increasingly came to turn to per capita consumption of electricity as a catchall metric of scientific and industrial development. Engineers and government officials then took those figures to index the state of the economy overall, which in turn came to serve as a proxy for civilizational standing. The power of electricity consumption as a civilizational metric derived in part from its status as a science-based technology (assumed to operate independently of softer values, like ideology or culture), and in part from the fact that it was easily quantifiable, and thus easily rendered precise, giving it an aura of objective truth.[48]

The widespread intellectual slippage between technological exigency and social order is not a static feature of human society but a function of a historical conjuncture of the early twentieth century, and especially the emergence of modern large technological systems. In fact, it was precisely in order to

name this new kind of interconnected system, combining multiple concepts and objects into a sociotechnical whole, that the use of the word *technology*, in the 1930s, took on the broad meaning it has today. The new concept signified not just a *means* of social and political progress; technology itself was seen as an embodiment of the essence of progress. Yet despite the unprecedented heterogeneity of these systems—which drew on both theoretical and applied science, various forms of expertise, formal institutions like the law, as well as informal social relations—they still tended to be conceptualized in terms of their mechanical element: the machine remained in the middle, the steam engine in the case of the railroad, the generators and wire in the case of power systems. Despite their rapidly growing diversity, then, "technology" was reified as something concrete, mechanical, and objective, and its social relations, its constructed nature and the politics flowing from it, were hidden from view.[49]

Yet while large technological systems transcend borders in practice—stitching together things like mechanics, expertise, production, profit, and social values—in the modern era they also engendered an entirely new discursive edifice of distinct domains, of economics, science, politics, culture, and so on, which served as the foundation of much of contemporary social theory, as well as the common sense that guides us in everyday life. Stuart Hall, as mentioned earlier, calls it "the horizon of the taken-for-granted." Max Weber, in the context of the psychological hold of the capitalist spirit, talks about a seeming "unalterable order of things." Arguably, it is in this paradoxical story of the abundant spread of technology throughout twentieth-century society, and its simultaneous cordoning off as a separate realm, that we begin to see why the historical mainstream has been reluctant to consider the technological elements of the stories we tell. By contrast, the goal of much of Science and Technology Studies, with its explicit goal of scrutinizing the pieties of the "moderns," has been to remind us that there is much more to technological systems than their mechanical elements. "B-52s do not fly," as Bruno Latour reminds us, "the U. S. Air Force flies."[50]

The central and complex role of large technological systems in the modern world matters a great deal to the history of electrification in Palestine and to why that history is so important. The transformation of the area took place at a moment when technocapitalists all over the world were hard at work paving the way for commerce and civilization, combing the globe for

untapped potential that was to be identified and unlocked by the tools that science and technology provided. The power system in Palestine derived its political power from its massive presence on the land, from the way it embodied rationality and progress, and from its status as key to unlocking Palestine's hidden potential. At the same time, its influence was both enhanced and shaped by its quasi-invisibility as political power. This served its promoters well, and they, like technocapitalists elsewhere, often pursued their objectives by playing to the commonsensical understanding that the grid was "outside of politics." From the start, Pinhas Rutenberg and the Palestine Electric Corporation expended considerable effort denying that there was anything political about their activities, and insisting that their power system was conceived of, built, and maintained in strict accordance with scientific reason. These efforts involved an array of tools and discursive strategies, mobilizing the power of objectivity, efficacy, precision, reliability, authenticity, predictability, sincerity, desirability, and tradition.[51] Through their success, they created new sources of power and legitimacy. If this sounds familiar, it is because we are living in a world organized and directed by entrepreneurs like Pinhas Rutenberg. If Palestine is electrical, so too is the world.

But this kind of power is never total. Entities amenable to being claimed for science are equally vulnerable to being pulled back into the profane realm of politics. Some Palestinians never lost sight of the political ramifications of electrification, despite the efforts of the British and the power company to deny them. For example, Palestinian commentators at the time excoriated those who took "Rutenberg's *Zionist* current" as "traitors to their city and homeland."[52] Moreover, during their protests in the early 1920s against Jewish national aspirations in Palestine and then again during the revolt of 1936–39, Palestinian Arabs targeted the grid as one of the forces threatening to strip them of their homeland. To many Palestinian Arabs, electricity had not only technological properties but also political ones: whatever else electricity was, in the context of Rutenberg's monopoly network, it was also Zionist. For the Palestinians, therefore, contesting the social and political order also involved contesting a technoscientific order and the civilizational assumptions that underwrote it.[53]