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Wastelanding Arabia: America's 'Garden of Eden' in Al Kharj, Saudi Arabia

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Abstract: In the late 1930s, the American oil company Aramco helped Saudi Arabia's King Ibn Saud develop his royal farm outside Riyadh. On the king's request, Aramco introduced new technology to tap the Al Kharj region's rich aquifer water and establish vast fields of wheat, alfalfa, and other water-intensive crops. Saudi Arabia's aquifers have since been pumped dry in service of the 'Garden of Eden' idyll promised by American advocates, who boasted of their ability to reclaim thousands of acres of 'desert wasteland.' This article draws on Traci Voyles' formulation of 'wastelanding' to interrogate the agricultural spectacle of Al Kharj in the 1930s-50s. The project was an early exemplar what came to be an established pattern of wastelanding Arabia, built on the unsustainable use of groundwater and social inequalities to create an 'Eden' in the desert. Agricultural wastelanding has unique spatial and temporal dimensions that set it apart from other extractive industries, like the uranium mining that Voyles examines in Diné lands. But as this article shows, desert greening projects draw on and produce similar structures of social and environmental violence – with America's 'Garden of Eden' in central Arabia being just one case among many of wastelanding across space and time.

Keywords: wasteland; desert; Al Kharj; Aramco; Saudi Arabia; Arabian Peninsula

1 Introduction

'I Like Being the Garden of Eden's First Lady,' was the title of Mildred Logan's 1951 article in *The Cattleman* about her time as the wife of Aramco's farm manager at its venture in Al Kharj, Saudi Arabia.[1] In the article and another in the same publication in 1952, Logan boasts of the American efforts to create this Edenic oasis in the middle of the Arabian Desert, where 'groves hang heavy with the succulent dates; the grape vineyards are loaded with sweet, juicy grapes; and the vine crops produce melons of all varieties.'[2] For Logan, this cornucopia stood in stark contrast not just to the barren desert surroundings of Al Kharj, but also to the Saudi capital: 'All around Riyadh are signs of biblical times, camel's [sic] lumbering along in the distance, the screech and grind of the donkey wells. Not a blade of grass, not a tree, not a shrub for miles—just Arabia, hot and dry and dusty' (**Figure 1**).[3] In Logan's telling, Saudi Arabia was a wasteland beyond the unique green spaces of Al Kharj engineered by Aramco (Arabian American Oil Company), where it aimed to kick-start the country's move to commercial agriculture.

Drawing from archival research on Al Kharj, this article examines the interlocking narratives of 'wasteland' and 'Eden' in the farming venture from the 1930s until Aramco left the project in 1959.[4] The Al Kharj region, just south of Riyadh, may not strike outsiders as logical home for an agricultural revolution. Its sandy dunes belie the fact that it sits atop some of the country's richest and most accessible aquifers – or, it did. The aquifers have since been pumped dry in service of that 'Garden of Eden' promised by the Americans, flowing to vast new fields of wheat, alfalfa, and other water-intensive crops that made Mildred Logan so proud. Aramco did not have specific oil interests in this region, but got involved in Al Kharj farming operations on the request of King Ibn Saud (Abdulaziz ibn Abdul Rahman) in the late 1930s.

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[1] Mildred Logan, 'I Like Being the Garden of Eden's First Lady.' *The Cattleman* 38, no. 5 (October 1951): 30-117.
[2] Mildred Logan, 'The Arabs Call Me Madam Sam.' *The Cattleman* 38, no. 8 (January 1952), 63.
[3] Logan, 'The Arabs Call Me,' 64.
[4] This is part of a larger study of Al Kharj, but material for this article are drawn from the Foreign Relations of the United States Diplomatic Papers, the William E. Mulligan Papers at Georgetown University, the George Babcock Cressey Papers at Syracuse University, the Karl S. Twitchell Papers at Princeton University, and a range of published accounts of the Al Kharj project in books and other media.

Figure 1. Donkeys extracting well water in central Saudi Arabia, 1950s. *Source: George Cressey Papers, University Archives, Special Collections Research Center, Syracuse University Libraries.*

Aramco had many social programs in Saudi Arabia beyond the oil industry, through which 'corporate officials merged everyday operations with broader notions of development, erecting a corporate modernisation framework built on technical aid and service to the Saudi monarchy.'[5] Agricultural development was one such program and, as Toby C. Jones shows in *Desert Kingdom*, its took various forms throughout Saudi Arabia.[6] Much of Aramco's developmental work was loosely aimed at crafting an image of corporate benevolence, but at Al Kharj, they more specifically aimed to curry favor with King Ibn Saud. They were not eager to get involved in the farm, but they knew it held a special place for him as a favorite royal retreat. So when the king's advisors pushed, the company eventually agreed to import technology to pump the Al Kharj aquifers and reclaim the surrounding 'desert wasteland.'

The wasteland narrative visible in accounts of Al Kharj had shifting implications across time and space as it became entangled with the history of American involvement in the Arabian Peninsula. In Traci Voyles' formulation, 'wastelanding' is built on the dual 'assumption that nonwhite lands are valueless, or valuable only for what can be mined from beneath them, and the subsequent devastation of those very environs by polluting industries.'[7] This is a familiar dynamic when applied to oil and mining, but the

[5] Chad Parker, 'Controlling Man-Made Malaria: Corporate Modernisation and the Arabian American Oil Company's Malaria Control Program in Saudi Arabia, 1947–1956.' *Cold War History* 12, no. 3 (2012): 474. See also Chad Parker, *Making the Desert Modern: Americans, Arabs, and Oil on the Saudi Frontier, 1933-1973* (Amherst: University of Massachusetts Press, 2015); J.E. Peterson, *Saudi Arabia under Ibn Saud: Economic and Financial Foundations of the State* (New York: I.B. Tauris, 2018); Robert Vitalis, *America's Kingdom: Mythmaking on the Saudi Oil Frontier* (Stanford: Stanford University Press, 2007).
[6] Toby C. Jones, *Desert Kingdom: How Oil and Water Forged Modern Saudi Arabia* (Cambridge: Harvard University Press, 2010).
[7] Traci Voyles, *Wastelanding: Legacies of Uranium Mining in Navajo Country* (Minneapolis: University of Minnesota Press, 2015), 10.

wastelanding lens can also be applied to agricultural interventions, including in the Arabian Peninsula, where groundwater was extracted to create an American vision of 'Eden' in the desert. As I argue, agricultural spectacle is part of a broader pattern of wastelanding Arabia through unsustainable resource use. Agricultural wastelanding has unique spatial and temporal dimensions that set it apart from oil – the extractive industry that Aramco is best known for – but the case of America's 'Garden of Eden' in Saudi Arabia illustrates how desert greening projects are built on the same racial and colonial structures of violence explored by Voyles in the Diné lands of the U.S. Southwest.

2 Wastelands, Edens, and Deserts

'Wasteland' is a powerful designation. As a way to code a landscape, terms like this often imply a kind of 'natural' state that they objectively describe. Yet all human interpretations of landscapes are necessarily cultural and the labeling of a place as a wasteland is an act of power.[8] In the West, deserts have an especially long history of being defined as wastelands and, more generally, as places with many negative associations.[9] In *Wastelanding: Legacies of Uranium Mining in Navajo Country,* Traci Voyles builds on the work of Valerie Kuletz to consider the wasteland discourse as an expression of environmental racism: 'The "wasteland" is a racial and a spatial signifier that renders an environment and the bodies that inhabit it pollutable.'[10] Both scholars trace the history of uranium mining in Diné lands to show how state and non-state actors spatialize environmental harms by adjudicating between landscapes that have value and those that do not.

The wasteland is thus part of a broader moral geography of people and places that are 'worth' protecting. For Voyles, wastelanding is a two-part process of assuming nonwhite lands are valueless and then acting on them in a way that physically devastates them and their inhabitants. In the Diné case, the colonial U.S. state transformed their territory into a sacrifice zone: 'As sacrificial lands, these landscapes of extraction allow industrial modernity to continue to grow and make profits.'[11] The tragic history of American settler colonial state-building and the genocide it entailed – for the Diné and countless other Indigenous people – is no secret. Nor is the U.S. past and present of anti-Indigenous racism.[12] Yet what Voyles shows by tying these histories to the violent political ecology of uranium mining is that 'wastelanding reifies—it makes real, material, lived—what might otherwise be only discursive.'[13]

Wastelanding is readily apparent in the broader history of Euroamerican colonization of deserts, wherein they are first defined as valueless, nonwhite lands, and then the wasteland characterization becomes a self-fulfilling prophecy of environmental devastation. Of course, outside evaluations of deserts as worthless do not replace local interpretations of their landscapes, as Kuletz notes in the U.S. Southwest:

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[8] Too vast to survey here, the discipline of geography has a deep history of investigating the cultural production of landscapes, but foundational texts include Denis Cosgrove, *Social Formation and Symbolic Landscape* (London: Croom Helm, 1984); Denis Cosgrove and Stephen Daniels, *The Iconography of Landscape: Essays on the Symbolic Representation, Design, and Use of Past Environments* (Cambridge: Cambridge University Press, 1988); Yi-fu Tuan, *Space and Place: The Perspective of Experience* (Minneapolis: University of Minnesota Press, 1977).

[9] Diana Davis, 'Desert 'Wastes' of the Maghreb: Desertification Narratives in French Colonial Environmental History of North Africa.' *cultural geographies* 11, no. 4 (2004): 359-87; Diana Davis, *The Arid Lands: History, Power, Knowledge* (Cambridge: MIT Press, 2016); Diana Davis, 'From the Divine to the Desertified: The Foundational Case of Deserts in the Middle East.' *Global Environment* 12, no. 1 (2019): 56-83; Diana Davis and Edmund Burke, *Environmental Imaginaries of the Middle East and North Africa* (Athens: Ohio University Press, 2011); Lary Dilsaver, 'A National Park in the Wasteland: American and National Park Service Perceptions of the Desert.' *The Public Historian* 38, no. 4 (2016): 38-55; Robert Fletcher, *British Imperialism and 'the Tribal Question': Desert Administration and Nomadic Societies in the Middle East, 1919-1936* (Oxford: Oxford University Press, 2015); Andrew Isenberg, Katherine Morrissey, and Louis Warren, 'Imperial Deserts.' *Global Environment* 12, no. 1 (2019): 8-21; Valerie Kuletz, *The Tainted Desert: Environmental Ruin in the American West* (New York: Routledge, 1998); Brittany Meché, 'Bad Things Happen in the Desert: Mapping Security Regimes in the West African Sahel and the 'Problem' of Arid Spaces.' In *A Research Agenda for Military Geographies*, ed. Rachel Woodward (Northampton: Edward Elgar, 2019): 70-83.

[10] Voyles, *Wastelanding*, 9; Kuletz, *Tainted Desert*, 13.

[11] Voyles, *Wastelanding*, 10.

[12] For an introduction, see Roxanne Dunbar-Ortiz, *An Indigenous Peoples' History of the United States* (Boston: Beacon Press, 2014).

[13] Voyles, *Wastelanding*, 10

'Rather than a no man's land, or wasteland, many Indians describe these deserts as places of origin and emergence, as holy places, and sacred geographies.'[14] These counter-mappings are important, but they are often silenced due to stark inequalities in who has discursive power in any particular context. In contexts subject to Western colonization, environmental imaginaries silenced local narratives that accorded spiritual significance and inherent value to deserts, and instead constructed the desert as unproductive, ruined, or untilled 'wastelands.'[15] The precise contours of this discourse shifts over centuries, but the broader association is rooted in Biblical environmental imaginaries, which long framed deserts as places occupied by evil or sinful people. These ideas about deserts remained largely abstract, Diana Davis argues, until 'the frenzy of colonialism in the nineteenth and early twentieth centuries.'[16] From this time and extending into the era of postcolonial capitalist development, deserts around the world have been framed as needing to be 'corrected' and 'restored' to some kind of productive landscape, for example through agricultural greening campaigns. Interdisciplinary research on desert greening projects has shown how they are justified through aspirational stories of modernity, progress, and cornucopian transformation – in places as diverse as India, Iran, Israel/Palestine, Morocco, the Soviet Union, and the U.S. Southwest.[17]

Scholars have traced many of the same colonial and postcolonial dynamics with desert greening schemes in the Arabian Peninsula, similarly showing how they are built on unsustainable resource use that leads to significant environmental harms in the long run, if not in the near term.[18] As Voyles suggests, when the wasteland narrative is acted upon materially, it becomes a self-fulfilling prophecy. Gulf studies scholars have clearly documented the self-fulfilling *environmental* devastation of supposed desert 'wastelands' in the region, but Voyles' approach helps us to unite this with the *social* devastation of unsustainable agricultural projects, built on the fantasy of greening the desert.

The desert wasteland narrative does not exist in isolation, as a kind of ahistorical floating signifier, however. Diverse cultures have different stories about deserts. In the Western tradition, it is commonly paired with another Biblical imaginary – that of Eden. Carolyn Merchant's genealogy of Eden narratives in the West shows how idealized landscapes of productive gardens and other green spaces go hand in hand with constructing the wasteland desert as an 'other.'[19] This is tied to the allegory of Adam and Eve in the Bible – the Christian story of 'Fall and Recovery': 'The Christian story is marked by a precipitous fall from a pristine past. The initial lapsarian moment, or loss of innocence, is the decline from garden to desert as the first couple is cast from the light of an ordered paradise into a dark, disorderly wasteland to labor in the earth.'[20] The allegorical tale then moves to the valorization of human labor in transforming the earth to produce food, casting men (and not women) as 'the earthly saviors who strive, through their own

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[14] Kuletz, *Tainted Desert*, 14.
[15] Davis, *Arid Lands,* 21.
[16] Davis, *Arid Lands,* 79.
[17] Majed Akhter, and Kerri Ormerod, 'The Irrigation Technozone: State Power, Expertise, and Agrarian Development in the U.S. West and British Punjab, 1880–1920.' *Geoforum* 60 (2015): 123-32; Irus Braverman, *Planted Flags: Trees, Land, and Law in Israel/Palestine* (Cambridge: Cambridge University Press, 2009); Sterling Evans, *Farming across Borders: A Transnational History of the North American West* (College Station: Texas A&M University Press, 2017); Richard Garlitz, *A Mission for Development: Utah Universities and the Point Four Program in Iran* (Logan: Utah State University Press, 2018); Alan George, ''Making the Desert Bloom': A Myth Examined.' *Journal of Palestine Studies* 8, no. 2 (1979): 88-100; Natalie Koch, 'The Violence of Spectacle: Statist Schemes to Green the Desert and Constructing Astana and Ashgabat as Urban Oases.' *Social & Cultural Geography* 16, no. 6 (2015): 675-97; Maya Peterson, *Pipe Dreams: Water and Empire in Central Asia's Aral Sea Basin* (Cambridge: Cambridge University Press, 2019); Will Swearingen, *Moroccan Mirages: Agrarian Dreams and Deceptions, 1912-1986* (Princeton: Princeton University Press, 1987); Harry Verhoeven, *Water, Civilization, and Power in Sudan: The Political Economy of Military-Islamist State-Building* (New York: Cambridge University Press, 2015); Yael Zerubavel, *Desert in the Promised Land* (Stanford: Stanford University Press, 2018).
[18] Elie Elhadj, *Camels Don't Fly, Deserts Don't Bloom: An Assessment of Saudi Arabia's Experiment in Desert Agriculture* (London: Water Issues Study Group, SOAS/King's College London, 2004); Sabrina Joseph, 'Farming the Desert: Agriculture in the Oil Frontier, the Case of the United Arab Emirates, 1940s to 1990s.' *British Journal of Middle Eastern Studies* 45, no. 5 (2018): 678-94; Jones, *Desert Kingdom;* Natalie Koch, 'AgTech in Arabia: "Spectacular Forgetting" and the Technopolitics of Greening the Desert.' *Journal of Political Ecology* 26, no. 1 (2019): 666-86; Pernilla Ouis, '"Greening the Emirates": The Modern Construction of Nature in the United Arab Emirates.' *Cultural Geographies* 9, no. 3 (2002): 334-47.
[19] Carolyn Merchant, *Reinventing Eden: The Fate of Nature in Western Culture* (New York: Routledge, 2003).
[20] Merchant, *Reinventing Eden*, 11.

agricultural labor, to recreate the lost garden on earth.'[21] The desert and the Eden are intertwined through this tale:

> The Recovery story begins with the Fall from the garden into the desert (and the loss of an original partnership with the land), moves upward to the re-creation of Eden on earth (the earthly paradise), and culminates with the vision of attainment of a heavenly paradise, a recovered garden. Paradise is defined as heaven, a state of bliss, an enclosed garden or park—an Eden.[22]

The Recovery story built around this vision of recreating Edenic gardens, Merchant shows, courses through imperial programs to develop agriculture around the world and across history. The broader idea of environmental improvement gathered strength in the eighteenth century, becoming 'increasingly important for western thinking about deserts and the global environment in general.'[23]

Just as Mildred Logan did in her *Cattleman* article in 1951, European and American agents of empire in desert contexts drew heavily from the logic of Eden in creating the moral geographies to endow themselves with the 'right' to take over the lands and autonomy of others.[24] Crucially, this colonial story of mastery is a racialized story, in which nonwhite others are cast as unenlightened at best and part of the problem at worst. Logan, however, did not see herself as an agent of empire. Her language and worldview nonetheless reflected and set up a racial divide between the white Americans and the nonwhite Saudis. She may not have seen herself as being on a colonial mission, but she clearly understood herself to be a more 'civilized' outsider headed into a dark veil of an unknown and uncivilized land – albeit not donning a veil herself:

> When I boarded that Aramco (Arabian American Oil Company) C-47 headed for the oasis in the heart of Saudi Arabia I was seized with doubts, apprehensions, and anticipation. What would these Arabs think of me, the first American woman ever to be given permission by His Royal Highness the Crown Prince to live in the deep interior of this vast kingdom. I knew before I started that Arabian women are looked upon by their husbands as merely tools for living and have no prestige in their country. […] Many of the Arabs at Al Kharj have never seen a white woman, or any other woman unveiled other than their mothers, sisters, or wives.[25]

Reflecting a broader pattern of American engagement in the Arabian Peninsula, which privileged (and continues to privilege) whiteness, Logan's narrative consistently set her apart from the Arab 'others.'[26] This racial othering works through the language of supposed benevolence, as she highlights their 'dirt, filth, and ignorance,' while also expressing 'compassion' for their poverty.[27] She also notes, almost with pride, that her baby daughter 'likes these Arabs, all of them,' but then adds, '—sometimes I think the dirtier they are, the better she likes them.'[28] Logan was not exceptional in this racial accounting of Arabia. As American

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[21] Merchant, *Reinventing Eden*, 11.
[22] Merchant, *Reinventing Eden*, 17.
[23] Davis, *Arid Lands,* 67-68.
[24] See Diana Davis, *Resurrecting the Granary of Rome: Environmental History and French Colonial Expansion in North Africa* (Athens: Ohio University Press, 2007); Michael Goldman, *Imperial Nature: The World Bank and Struggles for Social Justice in the Age of Globalization* (New Haven: Yale University Press, 2005); Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism, 1600-1860* (Cambridge: Cambridge University Press, 1995); Omar Tesdell, 'Wild Wheat to Productive Drylands: Global Scientific Practice and the Agroecological Remaking of Palestine.' *Geoforum* 78 (2017): 43-51; Harry Verhoeven, 'Gardens of Eden or Hearts of Darkness? The Genealogy of Discourses on Environmental Insecurity and Climate Wars in Africa.' *Geopolitics* 19, no. 4 (2014): 784-805; Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Pantheon, 1985).
[25] Logan, 'The Arabs Call Me,' 22. She disparagingly describes the veiling practices thus: 'The women peer around the corners like Hallowe'en characters. Just two peepholes for their eyes in the stiff black masks—or veils, if you feel like being romantic' (Logan, 'The Arabs Call Me,' 66).
[26] For contemporary studies of whiteness and white privilege in the Arabian Peninsula, see especially Katie Walsh, 'Placing Transnational Migrants through Comparative Research: British Migrant Belonging in Five GCC Cities.' *Population, Space and Place* 20, no. 1 (2014): 1-17.
[27] Logan, 'The Arabs Call Me,' 22.
[28] Logan, 'The Arabs Call Me,' 62.

individuals, public and private, encountered the region, they frequently drew similar distinctions and judgments.[29] In building their vision of a 'Garden of Eden' at Al Kharj in the 1940s and 50s, people like Logan may not have seen themselves as undertaking an explicit civilizing mission, but it was nonetheless predicated on the same racial geographies had been used to justify American imperialism for centuries.[30]

In the U.S., the vision of a 'New World Eden' was built on the same logic of white supremacy. Merchant's analysis of this racial geography highlights the intertwining of wasteland and Eden storylines, and is worth quoting at length:

> With the taming of wilderness, the removal of 'savages' and 'wild men,' and the repression of blacks, the American Eden had become a colonized Eden. People of privilege were inside the garden, colonized minorities outside it or on its margins. The control of the wild represented the kind of state that Western societies could export throughout the world to colonized 'other' lands. That state was the 'self' of Western European countries, in particular, those that exported their science, technologies, and methods of controlling resources to the 'others.' The others were the colonized indigenous people, immigrants, and people of color who were outside the controlled, managed garden. Throughout the world, as land was transformed into ordered gardens, what lay beyond the periphery were wastelands and deserts, the place of outcasts, of waste, of people of color, and of immigrants—in short, those colonized others not admitted into the enclosed space of the reinvented garden. From the perspective of the western European 'subject,' such wastelands were the locales of the 'others.' The garden and the desert were demarcated, both naturally and socially, in a moral narrative of progress capable of relapse if vigilance was not pursued.[31]

The Edenic visions of agricultural development that American actors brought with them to Saudi Arabia were thus not isolated projects. They arose from this broader moral and racial geography that assigned value to certain landscapes as wastelands or Edens, and people managing them as full human subjects or less valued 'others.' This is the geography that underpins the wastelanding dynamic that Voyles has highlighted. If this was the broader logic that informed American interventions in the Arabian Peninsula, and if supposedly noble visions of 'making the desert bloom' could set wastelanding processes in motion, then it empire in the Middle East.

3 Building America's 'Garden of Eden' in Al Kharj

Al Kharj sits just south of the Saudi capital, Riyadh. Its unique geology made it an obvious place to introduce agriculture: a series of large limestone sinkholes in the valley were visibly filled with water (**Figure 2**). The region's 'amazing water pits,' American geologist and Saudi royal advisor Karl S. Twitchell explained, 'are actually gigantic natural wells.'[32] Measuring about 300 feet in diameter and 400 feet deep, the sinkholes made underground aquifer water readily accessible, even before modern technologies could rapidly pump it to the surface. Yet its location in the Nejd, in the middle of the Arabian Desert, meant it was an isolated oasis. It was not just an ecological oasis, but also a political oasis – a place favored by the Saudi elite who treated it as a kind of royal retreat from Riyadh. Nils Lind, a U.S. State Department cultural attaché who visited in the 1940s described it thus:

> Al Kharj is a small Nejdi town of minor significance situated about 65 miles southeast of Riyadh, capital of Saudi Arabia. Leaving Riyadh the trail crosses some of the most uninhabitable badlands of the Peninsula, a most uninviting approach to this large and fertile and well-watered valley. The scene changed as swiftly as a movie projection once the valley came into view. Long stretches of palm trees meet the eye, canals of flowing water

[29] See Vitalis, *America's Kingdom.*
[30] Paul Frymer, *Building an American Empire: The Era of Territorial and Political Expansion* (Princeton: Princeton University Press, 2017); Robert Vitalis, *White World Order, Black Power Politics: The Birth of American International Relations* (Ithaca: Cornell University Press, 2015).
[31] Merchant, *Reinventing Eden*, 154.
[32] Karl S. Twitchell, 'Water Resources of Saudi Arabia.' *Geographical Review* 34, no. 3 (1944): 380.

crossed the road, and deep green wheat fields spotted the landscape. Over the long journey from Jidda, through the Hejaz mountains and up into the Nejd plateau, no settlement or oasis could compare with Al Kharj. The wide valley plain unfolded for miles in all directions, palm groves and green fields marking the numerous plantations. In the distance the town of Al Kharj came into view, a small settlement of gray mud houses typical of Nejd. High above them towered the King's palace with its ramp and fortifications, the medieval sign of majesty in the midst of poverty.[33]

Figure 2. Syracuse University Geography professor George Cressey viewing one of the Al Kharj area sinkholes, 1950s. *Source: George Cressey Papers, University Archives, Special Collections Research Center, Syracuse University Libraries. Digitally altered with permission.*

The 'uninhabitable badlands' surrounding Al Kharj were viewed by the former British political agent in Kuwait, Gerald de Gaury, in similarly menacing terms. He described the track from Jeddah as 'twisting over hideous hobgoblin mountains' and 'a barren and evil land,' populated by seemingly ominous lizards: 'As we bumped our way onward great yellow lizards three feet long, the "dragons" of the Bible, ran away before us. In those jagged ridges were there still strange animals surviving? A real dragon or some prehistoric beast would not have much astonished us.'[34]

The desert surrounding Al Kharj was, in these Western depictions, a prototypical wasteland. But the valley itself was an Eden. This was not a passive Eden, however. It needed to be constructed and maintained, as in the Biblical Recovery story that cast men as 'earthly saviors' working to recreate the 'lost garden' through their agricultural labor.[35] By most accounts, the farming efforts at Al Kharj were initiated

[33] Nils E. Lind, 'Report on the United States Agricultural Mission at Al Kharj,' Enclosure to Despatch No. 108 (April 15, 1945) from American Legation, Jidda, Saudi Arabia. *U.S. National Archives and Records Administration (NARA), Records of the Foreign Service Posts of the Department of State, 1788-1964,* RG 84.121.8, 1945, Dhahran Post Files, Box 683, 1.
[34] Gerald de Gaury, *Arabian Journey and Other Desert Travels* (London: Harrap, 1950), 41-42.
[35] Merchant, *Reinventing Eden*, 11.

by a close ally of King Ibn Saud, the finance minister Sheikh Abdallah Sulaiman.[36] Fond of spending time at Al Kharj, the king supported the farming initiatives and he soon worked to develop them further. These men's vision for Al Kharj marked the beginning of a trend toward concentrating agricultural power among Saudi elites, essentially from the very start of the state in 1932. With Sulaiman's assistance, the king first enlisted Egyptian and Iraqi technicians to manage the farming operations in 1937. The Saudi ambitions to expand the cultivable lands at Al Kharj soon outstripped the abilities of these technicians, so they convinced Aramco to help with importing new diesel-powered water pumps and other machinery like tractors. Unwilling as the company was to take it on, Aramco finally agreed, and was soon put in charge of managing the farm's general operations and expanding its irrigation networks.

Aramco made some progress in expanding Al Kharj, but by 1940, King Ibn Saud set his sights even higher. He came to see the farm as part of his broader state-making effort. Or, at least, he understood the utility of this story in selling the project to his new friends in the American government. As Richard Sanger of the U.S. Department of State's the Office of Near Eastern and African Affairs explained it in 1947:

> Now in his maturity, Ibn Saud wishes to develop and consolidate this kingdom he has forged, and to help his people thereby to live fuller lives. He plans to do this by taking the best economic and agricultural techniques that the Western world has to offer, and by applying them to Saudi Arabia in a way that will not upset the basic religious and social pattern of his countrymen.[37]

To realize this agenda, Ibn Saud turned to Karl Twitchell in 1940, voicing 'his desire that interested groups or companies be found who might be willing to undertake a thorough examination of Najd's water resources and agricultural possibilities. He went on to express a wish for the introduction of drilling, pumping, and farming equipment.'[38] Dutiful advocate that he was, Twitchell went to work lobbying the U.S. government to support Saudi agriculture. At this time in the early 1940s, American officials and policy advisors were beginning to position science, technology, and agricultural development as a key part of extending U.S. influence overseas. Agrarian diplomacy was something that British and French imperial agents had long been advancing, but the formal empires undertook no such projects in the Gulf region until the British set up an experimental farm in the Trucial States in the 1950s.[39] Twitchell was well aware that these dynamics could give the U.S. an edge and that his agricultural development proposal would thus reach a receptive audience in the State Department. And he was right – his efforts resulted in the Roosevelt administration funding a 6.5-month U.S. Agriculture Mission in Saudi Arabia in 1942.

The U.S. government always understood the 1942 Agriculture Mission as a 'good will' gesture to gain political favor with the king, but it was publicly described as a 'scientific' enterprise. Led by Twitchell, the mission was to travel through Saudi Arabia to map the country's water and agriculture resources.[40] An official report was then issued with the team's findings and recommendations for future developments. In it, Twitchell and his co-author Ahmed Fakry call on the Saudi government to heed the words of President Franklin Roosevelt, quoted in a 1937 address on natural resources saying: 'In our generation, a new idea

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[36] Parker T. Hart, *Saudi Arabia and the United States: Birth of a Security Partnership* (Bloomington: Indiana University Press, 1998), 30; Peterson, *Saudi Arabia,* 107; Karl S. Twitchell, *Saudi Arabia, with an Account of the Development of Its Natural Resources* (Princeton: Princeton University Press, 1953), 171; Daniël van der Meulen, *The Wells of Ibn Sa'ud* (New York: Praeger, 1957), 205; Vitalis, *America's Kingdom*, 70.

[37] Richard Sanger, 'Ibn Saud's Program for Arabia.' *Middle East Journal* 1, no. 2 (1947): 180.

[38] Twitchell, *Saudi Arabia (1969 edition),* 44.

[39] See Sven Beckert, *Empire of Cotton: A Global History* (New York: Alfred A. Knopf, 2014); Joseph, 'Farming the Desert'; Sabrina Joseph, and Brigitte Howarth, 'Fertile Sands: Colonial Politics and the Development of Land and Water Resources in the Trucial States, Mid- to Late 20th Century.' *The Arab World Geographer* 18, no. 3 (2015): 139-68; Joseph Hodge, *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio University Press, 2007); Matthew MacLean. *Spatial Transformations and the Emergence of 'the National': Infrastructures and the Formation of the United Arab Emirates, 1950-1980.* PhD, Department of History (New York: New York University, 2017); Sara Pritchard, 'From Hydroimperialism to Hydrocapitalism: 'French' Hydraulics in France, North Africa, and Beyond.' *Social Studies of Science* 42, no. 4 (2012): 591-615.

[40] 'Telegram: Hull to the Secretary of State to the Minister in Egypt (Kirk)' (February 6, 1942), 890F.61A/2, United States Department of State, *Foreign Relations of the United States: Diplomatic Papers, 1942: The Near East and Africa*, *Volume IV,* Washington, D.C.: U.S. Government Printing Office, http://digital.library.wisc.edu/1711.dl/FRUS.FRUS1942v04, 563.

has come to dominate thought about government – the idea that the resources of the Nation can be made to produce a far higher standard of living for the masses if only Government is intelligent and energetic in giving the right direction to economic life.'[41] National scale resource planning, they argued, was the key to unlocking Saudi Arabia's future prosperity. And yet, this sweeping vision was not what followed from the Agricultural Mission's report. Rather, Twitchell was aware as early as 1940 that Ibn Saud's primary interest in U.S. agricultural cooperation was to find a way to put Western machinery and knowhow to work at Al Kharj.

By the time the 1942 Agricultural Mission passed through Al Kharj, Aramco had 2500 acres under cultivation and an additional 1000 acres were being prepared for irrigation.[42] But the king and his minister Shiekh Sulaiman wanted more. Using the Agricultural Mission's report as a platform, Twitchell then went to work convincing the Roosevelt administration to use funds from the Foreign Economic Administration to take over the farming operations at Al Kharj, sponsoring a team of Arizona farmers led by David A. Rogers.[43] These Americans only stayed for 18-months, from the end of 1944 until mid-1946, when the U.S. government decided it could no longer afford subsidizing a pet project of the Saudi royal family in the wake of the war. After the U.S. government ended its direct support of Al Kharj, Crown Prince Saud managed to keep American support for the project alive by going back to Aramco. The company again reluctantly agreed to take over its management and sent a new team of U.S. farmers to replace Rogers in 1946.

Despite the U.S. failure to renew the Rogers Mission's contract, it was hailed as an American PR success in the Nejd. In his State Department report on Al Kharj, Nils Lind described a meeting he attended about the project in 1945, when King Ibn Saud told Rogers:

> I have confidence in you and now I wish to tell you all that is on my mind – I want you to take over the management of the entire Al Kharj valley. Al Kharj, as a whole, must be known as the American Agricultural Development. There have been too many experiments in Al Kharj in the past, but now you will and must succeed, for anything America undertakes cannot fail. This project is the only important one in all the Nejd, and it must stand as a memorial to American assistance in the Nejd.[44]

Picking up on the same effusive threads coming from the king, U.S. diplomat Parker T. Hart, who had opened the U.S. consulate in Dhahran in 1949, noted how the king, 'who loved the desert and camped in it often with hundreds of his entourage, was a keen farmer and took an admiring interest in the energy, endurance, and wisdom of these Americans of desert upbringing.'[45] The 'Americans of desert upbringing' won many friends and their supporters consistently emphasized Al Kharj as a model for the fledgling Saudi state. By the time they left in 1946, the farm was growing a wide range of crops, including alfalfa, wheat, barley, oats, sudan, as well as tomatoes, eggplant, squash, melons, dates, and more.

Al Kharj was, proponents argued, to be an experiment in desert farming that could broadcast knowledge and skills needed to bring the desert wasteland under cultivation and build a 'modern' Eden around commercial farming. In the words of Syracuse geographer George Cressey writing on water in the desert at this time, a field of bright green alfalfa near Al Kharj was 'a reminder of the way in which irrigation canals may transform an arid waste.'[46] As much as the Americans liked to describe Al Kharj as a 'demonstration' farm, it was anything but. Rather, it was widely understood to be a royal 'kitchen garden,' specifically to produce crops for the King's personal disposal – most of it being distributed to the vast royal family being supported in Riyadh, while grains were produced as feedstock for the hundreds of royal horses stabled in the area, and for other livestock in and around Riyadh.[47] Whoever was the beneficiary of the

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[41] Ahmed Fakry and Karl S. Twitchell, *Report of the United States Agricultural Mission to Saudi Arabia* (Cairo, 1943), 84.
[42] Fakry and Twitchell, *Report,* 99.
[43] For more on the Rogers Mission, see Natalie Koch, *Arid Empire: The Entangled Fates of Arizona and Arabia.* (New York: Verso, 2023); Natalie Koch, 'Desert Geopolitics: Arizona, Arabia, and An Arid Lands Response to the Territorial Trap.' *Comparative Studies of South Asia, Africa and the Middle East* 41, no. 1 (2021): 88-105.
[44] Lind, 'Report,' 4-5.
[45] Hart*, Saudi Arabia,* 31.
[46] George B. Cressey, 'Water in the Desert.' *Annals of the Association of American Geographers* 47, no. 2 (1957): 106.
[47] Lippman, *Inside the Mirage*, 184; Logan, 'I Like Being,' 108; Vitalis, *America's Kingdom*, 72.

farm's cornucopia, the visual effect was powerful: 'One of the main reasons the Al Kharj farms are so unusual to Arabs and Americans alike is the plush green of the fields in contrast with the bleak, barren desert elsewhere.'[48] The spectacle of contrast is precisely what underwrites desert greening projects anywhere, but it something that diverse American actors learned to capitalize on in the Arabian Peninsula – including various subsequent farming projects in Kuwait and United Arab Emirates.[49]

4 Mechanizing Eden: Labor and the technostate

On May 16, 1948, the *New York Herald Tribune* carried a number of images of Al Kharj, proclaiming, 'Arabs and Americans Join in Creating modern "Eden."'[50] The irrigation ditches on display were captioned as evidence of the effort to reclaim 'thousands of acres of desert wasteland.' A few years, the *Los Angeles Times* sent a reporter, Lorania Francis, who boasted that 'Arab Farms Boom Under Americans: Output Doubled in Year as Aramco Runs Project on Man-Made Oasis.'[51] This was American ingenuity and benevolent exemplified, the articles all suggested. In a second article on Al Kharj, Francis drew on the Biblical lore to describe the Arabian Desert's supposed past as 'once a fertile land':

> According to the Bible—words of which seem borne out by still-observable dry river beds, or 'wadis,' which lie in a zigzag pattern across the sand—the Arabian 'crossroads of Christianity' once was a fertile and prosperous land where grass and palm trees flourished and the camel, sheep and goats of roving Bedouin tribes waxed fat. Not so today. A recent trip by a *Times* correspondent, in which literally thousands of miles were traversed by airplane and automobile, revealed nothing more than a few stretches of short-lived grass and some scrubby camel's-thorn and other desert growth where Arab nomads feed their stocks before the summer trek to the Euphrates Valley.[52]

Francis' reporting systematically painted Aramco's efforts at Al Kharj in glowing terms, emphasizing the modern technology that the company brought to realize a vision of Eden revived. In her telling, it was a story of salvation. Until the Americans' arrival, the Saudis were still drawing their water from 'sources dating back to Biblical days.' But, **'**Saudi Arabia's water troubles have been greatly relieved by the arrival of Americans and American ingenuity. The California-born Arabian American Oil Co. has brought in American techniques and drilled water wells in places previously marked only by the bones of camels.'[53]

Framing American ingenuity as salvation was a fundamental trope in the broader storyline of U.S. imperial visions built on agricultural modernization after WWII. Billed as the 'Green Revolution,' U.S.-dominated 'foundations and scientists joined foreign governments and experts to produce new crop varieties that would respond vigorously to a technological package involving chemical fertilizers, pesticides, mechanization, and irrigation.'[54] The American interventions emphasized 'modern' science and technology, which its politicians and technocrats alike claimed to have special access to. Yet as one early critic of the Al Kharj project pointed out in 1951, the Americans didn't go to Saudi Arabia to teach the Arabs something 'new' about how to farm:

> Practically everything Americans know about the basic principles of irrigated agriculture was known to the Arabs two thousand years ago. The Americans can, however, apply mechanized power, the use of fertilizers, seed selection, and other new knowledge to an

[48] Logan, 'I Like Being,' 112.
[49] See also Koch, 'AgTech in Arabia'; Howard Bowen-Jones, and Roderick Dutton, *Agriculture in the Arabian Peninsula* (London: Economist Intelligence Unit, 1983).
[50] These accompanied an article, J.D. Tompkins, 'Saudi Arabia's Reclamation Plan Turns Desert into Fertile Farm,' *New York Herald Tribune* (May 16, 1948).
[51] Lorania K. Francis, 'Arab Farms Boom Under Americans: Output Doubled in Year as Aramco Runs Project on Man-Made Oasis,' *Los Angeles Times*, March 28, 1951.
[52] Lorania K. Francis, 'Americans Relieve Arab Water Woes: Engineers Drilling New Wells Now Turn to Rainmaking Theories,' *Los Angeles Times*, April 11, 1951.
[53] Francis, 'Americans Relieve Arab Water Woes,' n.p.
[54] Michael Latham, *The Right Kind of Revolution: Modernization, Development, and U.S. Foreign Policy from the Cold War to the Present* (Ithaca: Cornell University Press, 2011), 112.

> age-old agricultural system and thus point the way to increased yields and somewhat greater self-sufficiency.[55]

Thus, it was the claim to *scientific* arid lands expertise and technology that underpinned the American belief that they were uniquely placed to create an Eden out of the desert wasteland.

The technofetishism of this story was not lost on the Saudi leadership. King Ibn Saud's aspiration for Al Kharj, and for his broader claim to build a 'modern' state, was tied to the vision of modernity being sold by the Americans. Western-defined techno-modernity was key to the Saudi state's development, as Jones argues: 'Foreign experts and expertise would prove to be central to the consolidation of the Saudi Arabian state.'[56] Jones illustrates how foreign experts like Karl Twitchell and companies like Aramco worked alongside the royal family and Saudi officials to develop systems of managing the natural environment and resources to benefit a select circle of insiders and allies: 'In conjunction with the oil company Aramco, Twitchell's work reinforced the Saudi belief that the conquest of nature and control of the country's limited natural resources were vital to the consolidation of the ruling family's power.'[57] That is, by investing in a project like Al Kharj, the Saudis understood it to bolster their goal of consolidating state power. For their part, the foreigners understood supporting a project like Al Kharj as carrying high-stakes financial and political rewards – even if they were to be found elsewhere in the Kingdom rather than on the farm itself.

One direct reward of contributing to Al Kharj was the ability to sell a vision of mechanized farming in Saudi Arabia – and eventually, the machinery itself. The Rogers Mission emphasized the importance of machinery in accomplishing what they did in their short 18-months. Near the start of their contract, however, they struggled to get the farm equipment that had been ordered from the U.S. When Nils Lind from the U.S. State Department visited in 1945, his delegation complimented Rogers on the work. But Lind reported, 'In answer to our praise and amazement, Mr. Rogers replied – "This is only a fraction of what we could have done had our farm machinery, our tools and our transportation arrived. What you see here has been done by the help of our natives and one tractor."'[58] That situation quickly changed and for Karl Twitchell, the reduction in human labor as a result of machinery was a point of pride: 'Mechanization at El Kharj has proven practical. In 1945 there were 1,452 workers on the farm; in 1949 this number was reduced to 742 but production increased.'[59]

Twitchell was not the only enthusiast. Even before the heavy-duty machinery started to arrive, de Gaury reported speaking with the royal gardeners at Al Kharj, 'who were as enthusiastic over their pumping engines and their new canals as Western youths are over super-charged aero-engines or a new fuel.'[60] Likewise, Sheikh Sulaiman was reportedly 'convinced that modern machinery would succeed where the ancient Arab had failed. Motor pumps would make the water flow into the irrigation ditches and then Al Kharj's former prosperity would return.'[61] Daniël van der Meulen, a Dutch diplomat and one of the loudest critics of the farming project, had visited in January 1945 and he was not impressed with the techno-centric approach. And yet he understood that this was what the Americans were selling and what the Saudis were buying: 'The Arabs, for their part, were much impressed by the technical wonders the Americans brought to their deserts. Oil-money and oil-equipment and, particularly, […] the water the Americans produced meant a revolution in desert life.'[62]

The zeal for American technology actually became a point of frustration for Mildred Logan, who complained in one of her *Cattleman* articles about the fact that the locals were persistent in making requests of them and would not take 'no' for an answer: 'After all, though, the Americans are magicians: they can make engines, pumps, cars, tractors, trains, and air conditioning. Why can't they wave a magic wand and

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[55] Crary, 'Recent Agricultural Developments,' 367.
[56] Jones, *Desert Kingdom*, 54.
[57] Jones, *Desert Kingdom,* 54.
[58] Lind, 'Report,' 2.
[59] Twitchell, *Saudi Arabia (1953 edition),* 211.
[60] de Gaury, *Arabian Journey*, 44.
[61] van der Meulen, *Wells of Ibn Saud*, 205.
[62] van der Meulen, *Wells of Ibn Saud*, 144.

produce everything that could be desired!'[63] Yet like her husband's employer Aramco, she was proud to see all the American equipment at work in the Saudi fields – and seeing Saudis learn to master it themselves:

> Many types of modern machinery have been imported to Al Kharj to be used in farming. Now, to see an Arab boy driving a D-8 caterpillar tractor, an International planter, or a bulldozer you might think he had done it all of his life. It took time and patience on the part of the Americans to help the Arab make the adjustment necessary for the jump he made from the camel's back right into the driver's seat of a truck, tractor, or other mechanized implements.[64]

This 'adjustment' may have photographed well in the service of Aramco's civilizing narrative (**Figure 3-4**), but it was not exactly an easy transition. Various accounts over the years of the Al Kharj project stress the miscommunications and difficulties of teaching the local laborers to use the modern new technology, as well as certain farming techniques like applying fertilizer, planting grids, and water use:

> Those laborers employed were at first slow to adjust to Western farming methods. Many months passed before they could become accustomed to the handling of unfamiliar tools and machinery. Not until after the first successful crops were harvested, with their yields remarkably high for Arabian soil, could the Saudi student farmers be convinced of the desirability of using fertilizer, or regulating the use of water.[65]

Despite these initial challenges, the machinery was treated as a sign of progress – not just the implements themselves, but also as a way to induce locals to make the 'jump from the camel's back' toward a Western vision of prosperity in America's Eden.

Figure 3. Aramco photo captioned, 'Arab tractor driver explains problem of cultivating sandy soil at Al Kharj to an American agricultural expert. American farming engineers were brought into Arabia by the Arabian American Oil Company at the request of the Saudi Arab Government. They have successfully taught Arab farmers modern machine farming techniques and methods of crop rotation and use of high test fertilizers.' *Source: T. F. Walters/Saudi AramcoWorld/SAWDIA.*

[63] Logan, 'The Arabs Call Me,' 64.
[64] Logan, 'I Like Being,' 107.
[65] Henrietta M. Holm, *The Agricultural Resources of the Arabian Peninsula* (Washington, D.C.: U. S. Department of Agriculture Foreign Agricultural Service, 1955), 5-6. On fertilizer, see also Lippman, *Inside the Mirage*, 183; Twitchell, *Saudi Arabia (1969 edition),* 29.

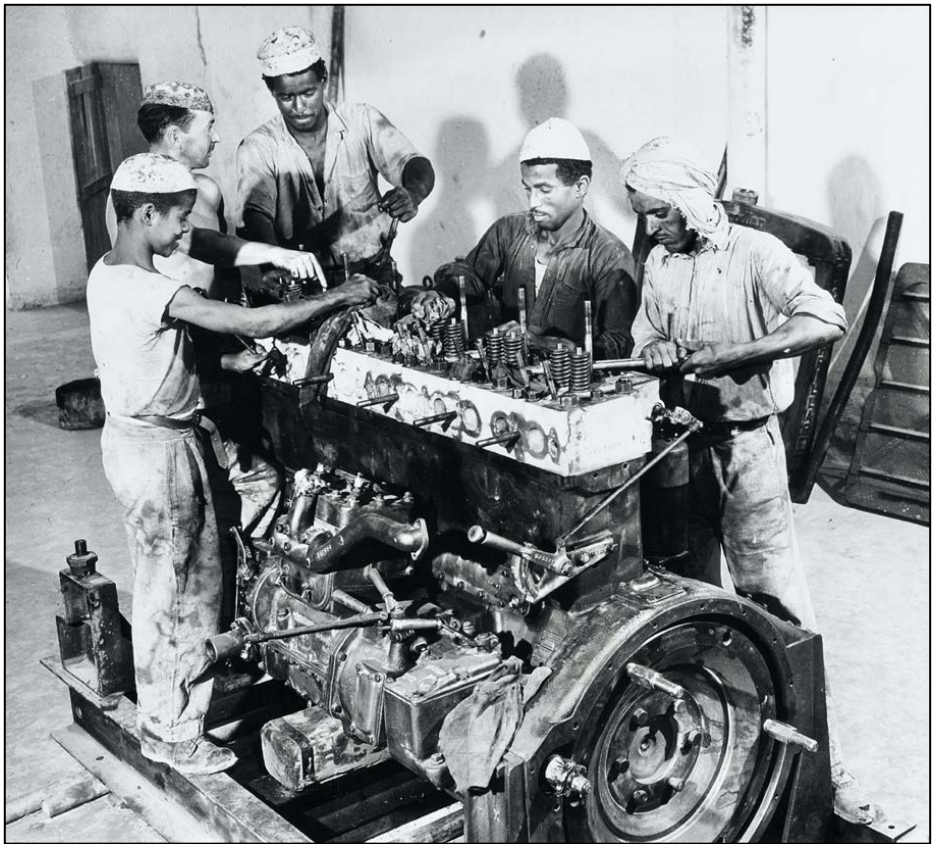

Figure 4. Aramco photo captioned, 'Young Arab men tearing down tractor motor as part of his training on modern farm equipment taught by American farm experts at Al Kharj, Saudi Arabia. Brought into Saudi Arabia by the Arabian American Oil Company at the request of the Saudi Government, American farm experts have taught Saudi farmers the know-how of modern scientific farming, thereby improving crop yield and the quality of crops.' *Source: T. F. Walters/Saudi AramcoWorld/SAWDIA.*

This Eden was a capitalist's Eden, of course. As a more secular variation on the familiar Biblical plotline which took root in the 1800s, this American narrative is tied to capitalism's origin story, which 'moves from desert wilderness to cultivated garden. In the new story, undeveloped nature is transformed into a state of civility, producing a reclaimed Garden of Eden. […] This story is one of converting wilderness into ordered civil society— creating a reinvented Eden— through science, technology, and capitalism.'[66] People like Twitchell, Logan, and Sheikh Sulaiman all understood the mechanization of Al Kharj farming as a sign of the Saudi move to modernity, of leaving behind the wasteland of backwardness and into the Eden of the modern capitalist technostate.

Wastelanding Arabia: Legacies of an Unsustainable Eden

The moralizing rhetoric of salvation and progress may have added a nice veneer to the American Eden story, but the choice between machinery and labor-power was largely made on the basis of cost. The State Department's Richard Sanger noted, 'In spite of the low cost of labor in Arabia, tests have shown that it is often cheaper to use farm machinery than native manpower.'[67] The U.S. role in short-circuiting local labor opportunities notwithstanding, Sanger saw the broader American contribution to Saudi Arabia as being a net positive: 'Arabia is indeed changing under the impact of Western civilization, and no one who has seen its dust and dirt and poverty, its half-blind children, its women old before their time, and its men

[66] Merchant, *Reinventing Eden,* 64-65.
[67] Richard Sanger, *The Arabian Peninsula* (Ithaca: Cornell University Press, 1954), 65.

struggling to wring a barren living from a dust bowl of sun, sand, and rock, can doubt that on the material side the change is for the better.'[68]

For his part, the Dutch critic van der Meulen was not convinced that the American project would actually help matters if ordinary Saudis could not afford it. He was especially concerned that the Americans were applying the same strategies that they had used in the 'desert lands of America,'[69] but with the effect of eliminating jobs. When he returned to Al Kharj in 1952, he noted:

> There were scarcely any labourers to be seen in the cultivated fields of Al Kharj. The American principle of doing the work with machines instead of men had been followed here. […] The only men who had their houses in the plantations were the guards who patrolled the fields on horseback during the night keeping away thieves and preventing Arabs from letting their camels stray on to the greenstuff.[70]

The Americans at Al Kharj were setting Saudi Arabia on the wrong track, he thought, by entrenching social inequalities. Worth quoting at length, he argued that by working in the service of the royal family and its inner circle, the Americans at Al Kharj were advancing a system that benefited the elites and harmed the poor:

> Introducing American methods in the heart of Arabia is fundamentally wrong and will only continue so long as American money (even if it is oil money made by Americans in Arabia) is paying for it, so long as American machinery does the work and American know-how is its driving force. This type of experiment is often superficially successful but breaks down in backward countries whenever one of these three conditions is not fulfilled. These experiments do not take root in Arabian soil. In Al Kharj for instance the Americans did not attract the Arab agriculturist but pushed him aside. They wanted large, open spaces for their machinery and any small farmers that happened to be in their way were asked to settle elsewhere. So the American plantations became royal, princely and plutocratic interests. 'Abdullah as-Sulaiman, the royal family and the few 'nouveaux riches' alone profited by it and became the owners of this new type of Arabian 'garden'. Into the largely democratic Sa'udi Arabia Americans helped to introduce a feudal type of society such as Europe discarded hundreds of years ago. Instead of serving the interests of the governing few, Al Kharj should have been the el dorado of a new type of Arab peasant. The American experiment should have been applied to creating a new landed peasantry, an Arab smallholder: it is based on what is good for Americans in America. Its leaders ought to try to reshape it into a plan based on what is good for Arabia and for Arabs living in Arabia.[71]

To van der Meulen, the elite-centered approach to agriculture at Al Kharj was the original sin that set Saudi Arabia on a path of nondemocratic rule. Since van der Meulen's early critique, Gulf studies scholars have made similar accusations, including Robert Vitalis, who described Al Kharj as a white elephant that did little except 'to establish the precedent of sinking vast sums into uneconomical projects.'[72] Paralleling a common Gulf development trajectory, these early schemes helped to consolidate elite power through building an 'environmental technostate,' in which foreign experts, technocrats, and royal families worked together to establish a new 'sociopolitical compact that sought to bind ruler and ruled through the pursuit of material prosperity.'[73]

The political precedents set at Al Kharj were far-reaching. Ever since, the Saudi agricultural landscape has been developed around its model of concentrating power and profits in the hands of relatively

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[68] Sanger, *The Arabian Peninsula,* vii.
[69] van der Meulen, *Wells of Ibn Saud*, 207.
[70] van der Meulen, *Wells of Ibn Saud*, 208. Theft of farm goods, equipment, fuel, feed, produce and more became a major concern for Aramco, which is highlighted in the company's 1954 audit of the project: 'Field Audit Report No. 4, Al Kharj Farms 1954' (August 28, 1954), Arabian American Oil Company, Dhahran, Saudi Arabia. *Mulligan Papers, Box 8, Folder 10:* 30-35.
[71] van der Meulen, *Wells of Ibn Saud*, 213-214.
[72] Vitalis, *America's Kingdom,* 70.
[73] Jones, *Desert Kingdom,* 54-5.

few. American support consistently aligned with the Saudi elite's effort to personally consolidate land ownership and, since the 1930s, 'Royalties and their trusted allies amassed tracts in prime spots that were suitable for irrigation, such as Al-Kharj and the oases of Al-Hasa and Al-Qatif.'[74] As agriculture and land became concentrated, the entire sector came to be dominated by 'members of the royal family or entrepreneurs enjoying royal connections, a situation that was not exactly spreading the wealth to the masses. These patrons tended to import cheap Egyptian and South Asian labor rather than train and pay Saudis.'[75] There was, in short, an entrepreneurial logic at work that reflected a capitalist orientation toward profits, but it was not exactly aimed at developing a 'free market.' Rather, the market came to include huge government subsidies that these agricultural elites jockeyed for access to.

The market for access to state funds was always tightly controlled by the Saudi royal family, but as the example of Sheikh Sulaiman suggests, others could find their way into the system through strategic moves. After visiting Arizona on an agricultural tour in 1947, then-Crown Prince Saud became enthusiastic about bringing cattle to Al Kharj and eventually asked the Aramco farm managers to help set up his own 'Grade A Dairy' at Al Kharj. Sam Logan, Mildred's husband, was the man put in charge of the project in the early 1950s, and he dutifully set to work importing equipment and a range of cattle breeds from the U.S.[76] The Al Kharj dairy was an instant success, and Sheikh Sulaiman wanted in. Shortly after the main royal dairy was set up, Aramco helped with two more dairies in the area by 1953 – one to be owned by Sulaiman and another by Saud's son Prince Abdullah bin Saud.[77] Sulaiman found other ways to profit from Aramco and the king's generosity at Al Kharj, including appropriating thousands of tons of alfalfa for his dairy, and availing himself of the breeding and veterinary services of the farm's staff – something that displeased Aramco auditors a great deal in their wholly condemning 1954 report of the farm's operation and finances.[78] Whatever his personal interests might have been, Sulaiman was a harbinger of the kind of connected elite who would come to dominate Saudi agriculture for decades into the future: someone who skillfully leveraged his connections to consolidate power and resources in the service of some noble goal like bringing food self-sufficiency to Saudi Arabia.

Aramco's auditors may have been frustrated by the wanton theft at Al Kharj, but its staff invariably found ways to frame their work in a positive light. As noted previously, these Americans did not see themselves as agents of empire, but they clearly articulated a benevolent civilizing logic to explain the agricultural initiatives in this 'Garden of Eden.' Reflecting on the Aramco farming team's plans to expand the dairy and later poultry projects, Mildred Logan explained in the first *Cattleman* article in 1951:

> These plans exemplify the attitude of the Americans: they are not forced to undertake this extra work, they do it because they want to. Joe, the two Genes, Frank and Sam all want to do the things that are best for the people, their livestock, and the land. They want to see Arabian people have advantage of the various improvements that America and other foreign countries have to offer, so that Arabs, too, can have a better life.[79]

In her second article in 1952, she expressed remorse about how the Saudis were spending the country's new oil wealth, decrying the fact that it was getting poured into 'mud palaces, expensive cars, and other non-essentials of life enjoyed by the Royal family,' rather than developing 'adequate medical facilities, decent schools or modern sanitation in the villages.'[80] To Logan, the 'improvements' that America could offer to Saudi Arabia should not include luxuries like cars and other 'non-essentials.' Apparently the cornucopian produce and poultry grown for the royal family at Al Kharj was acceptable, however, and so too was the fact that Logan's family was eventually to be 'employed directly by King Saud to be paid through the Royalty Superintendent' when they returned in 1955.[81]

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[74] Eckart Woertz, *Oil for Food: The Global Food Crisis and the Middle East* (Oxford: Oxford University Press, 2013), 67.
[75] Lippman, *Inside the Mirage*, 197.
[76] Mildred Logan, 'Summary on Al Kharj from Sam T. Logan, Feb. 1985,' *Mulligan Papers, Box 8, Folder 10:* 2.
[77] Logan, 'Summary on Al Kharj,' 2.
[78] Aramco, 'Field Audit Report.'
[79] Logan, 'I Like Being,' 117.
[80] Logan, 'The Arabs Call Me,' 66.
[81] Logan, 'Summary,' 2.

The Logans' second tour lasted until 1959, after then-Crown Prince Faisal gave the farms to the Saudi contractor Mohammad Bin Laden to run. Like his Aramco predecessors, however, Bin Laden was less concerned about ecology and more concerned about cost. Knowing Al Kharj would cost him money, he refused to invest in the necessary supplies to keep the farms running. Mildred Logan recollected, 'No seeds, no fertilizer, no dairy or poultry supplements were on order so Sam [Logan] sent Bin Ladin a message which read something like, "If you are not interested in the successful operation of the Al Kharj Farms we think you are wasting your money and our time to keep us on the payroll."' And so they left. Some American farmers were brought back to Al Kharj in the early 1980s, but their role in shaping the farm's fate had essentially ended after the Logans left in 1959.[82]

The institutionalization of unequal social structures and white, Anglo-European visions of modernity at the expense of the health and wealth of nonwhite 'others' was a significant consequence of Al Kharj. America's 'Garden of Eden' is a case of wastelanding Arabia insofar as this racial geography was built on and expanded through its devastating impact on the natural environment. As the Dutchman Daniël van der Meulen stressed in his critique of Al Kharj, the Americans were being foolhardy for trying to defy nature. Pointing to failed experiments in other parts of the Dutch and British empires, he argued that 'schemes for agricultural development in any country can only succeed if they satisfy local laws of nature.'[83] Indeed, the social implications of the Al Kharj farming scheme were just as predictable as the ecological ones: the rapid depletion of underground water reserves that were pumped to vast grain fields.

According to Eckart Woertz, much of this neglect for the long-term sustainability of the country's water supply was tied to a blind faith in the American promise of technological silver-bullets: 'Advisers of the king on the other hand were not fazed by the prospect of dwindling groundwater resources, fully trusting technical fixes and Western engineering ingenuity.'[84] As with similar ecologically unsustainable projects that arose from the Green Revolution's techno-optimism from India to Africa, the downward spiral only deepened social inequalities.[85] Sinking water tables meant that deeper wells and stronger pumps were needed, which 'was affordable for the government and its rich benefactors, but not for small-scale farmers. Their fields ran dry and they lost their livelihoods.'[86] The Al Kharj project may have been built through the allegory of Eden, but just as in the U.S. West, defying the 'local laws of nature' in the Nejd led to a spiral of violence – structural and immediate, social and ecological – and the wastelanding of Arabia.

Conclusion

Wastelanding is a process with as many pasts as presents. The story of Al Kharj as an opulent Eden dissipated after the Americans left in 1959, but it lives on in many ways today. In Saudi Arabia, the Al Kharj farm was a harbinger for the social and environmental unsustainability that would shape the country's agricultural sector. President Roosevelt's acclaim of strong, centralized state control of natural resources, which Karl Twitchell advocated for Saudi Arabia in the report on the 1942 U.S. Agricultural Mission, was adapted by Saudi elites and their foreign allies over the years. The result was an elite, techno-centric model made possible by enormous subsidies – both financial and ecological – from the state. This was later entrenched and expanded through massive subsidy programs beginning in the early 1970s, which benefited big farming conglomerates and continued to decades-long trend of quashing small-scale farming across the country.[87] The subsidy regime led to a widespread rush to produce unsustainable quantities of grains and

[82] On the Kirks' time at Al Kharj, see Thomas W. Lippman, *Inside the Mirage: America's Fragile Partnership with Saudi Arabia* (Boulder: Westview Press, 2004), 196-7.
[83] van der Meulen, *Wells of Ibn Saud*, 213.
[84] Woertz, *Oil for Food,* 69.
[85] Michael Goldman, *Imperial Nature: The World Bank and Struggles for Social Justice in the Age of Globalization* (New Haven: Yale University Press, 2005); Corey Ross, *Ecology and Power in the Age of Empire: Europe and the Transformation of the Tropical World* (Oxford: Oxford University Press, 2017); Vandana Shiva, *The Violence of the Green Revolution: Third World Agriculture, Ecology, and Politics* (London: Zed, 1991).
[86] Woertz, *Oil for Food,* 68.
[87] Adam Hanieh, *Money, Markets, and Monarchies: The Gulf Cooperation Council and the Political Economy of the Contemporary Middle East* (New York: Cambridge University Press, 2018); Jones, *Desert Kingdom;* Natalie Koch, 'Food as a Weapon? The Geopolitics of Food and the Qatar–Gulf Rift.' *Security Dialogue* 52, no. 2 (2021): 118-34; Laurent Lambert and Hisham Bin

other water-intensive crops. And despite dire warnings as early as the 1980s, Saudi aquifers were eventually decimated.[88] It took until 2008 for the Saudi government to act more decisively about the loss of underground water reserves – after phasing out the subsidy programs, it moved to completely ban domestic forage production by 2018.[89] The Al Kharj region nonetheless continues to be the home of Saudi Arabia's enormous dairy industry, including the headquarters of Almarai – now the largest dairy company in the Middle East.[90]

The agricultural wastelanding at Al Kharj also lives on in the way that the Saudi desert was an early testing ground for the extravagant dreams of capitalist agriculture that would underpin countless other desert greening initiatives around the world. As this model clearly illustrated, the winners of the American vision of techno-modernity at its 'Garden of Eden' in Al Kharj could remain far removed – spatially, temporally, and socially – from the natural destruction that it wrought. Arabia may still be romanticized by outsiders as a 'mysterious desert idyll, a biblical land, […] a kind of extraterrestrial utopia.'[91] But for those who must live there every day, it is their home – not just a site of extraction. The colonial distancing that underpins extractivism is precisely what gives way to the process of wastelanding. By extending Voyles' insights beyond the settler colonial context of the U.S. Southwest, we can see that the idea of mastering or 'correcting' the desert to become a productive landscape also shaped U.S. imperial visions overseas. Just like the uranium mining that Voyles examined, projects to green the desert, American and otherwise, are simultaneously violent and colonial.

When contrasted to the environmental violence of oil extraction, wastelanding Arabia through agriculture may appear less significant because it is less toxic. Desert agriculture does involve some toxic inputs like pesticide and fertilizers, but its violence is largely tied to the unsustainable and unequal use of water resources. The jointly social and ecological harms of grandiose desert farming projects are thus incredibly significant for the Arabian Peninsula – just as they are for so many other arid lands and residents who need water to live. By law, the bovine residents of Al Kharj are fed by alfalfa and fodder grown overseas (in the Arizona desert, no less), but without the plentiful water of the region's famous sinkholes, it is unclear how long even they will remain as the last holdouts of America's Eden in the Nejd. As elsewhere, '"mastering" nature to reclaim Eden has nearly destroyed the very nature people have tried to reclaim.'[92]

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[88] Vahid Nowshirvani, 'The Yellow Brick Road: Self-Sufficiency or Self-Enrichment in Saudi Agriculture?' *MERIP Middle East Report* 145 (1987): 7-13; Woertz, *Oil for Food,* 67-9.

[89] 'Fodder cultivation to be banned,' *Arab News* (February 21, 2015), https://www.arabnews.com/saudi-arabia/news/707616

[90] See Koch, 'Desert Geopolitics.'

[91] Davis, *Arid Lands,* 115.

[92] Merchant, *Reinventing Eden,* 3.