

Warzone Ecology

The Violence of Planetary Repair in Iraq

BRIDGET GUARASCI

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Warzone Ecology

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The Violence of Planetary Repair in Iraq

Bridget Guarasci

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For Zoë

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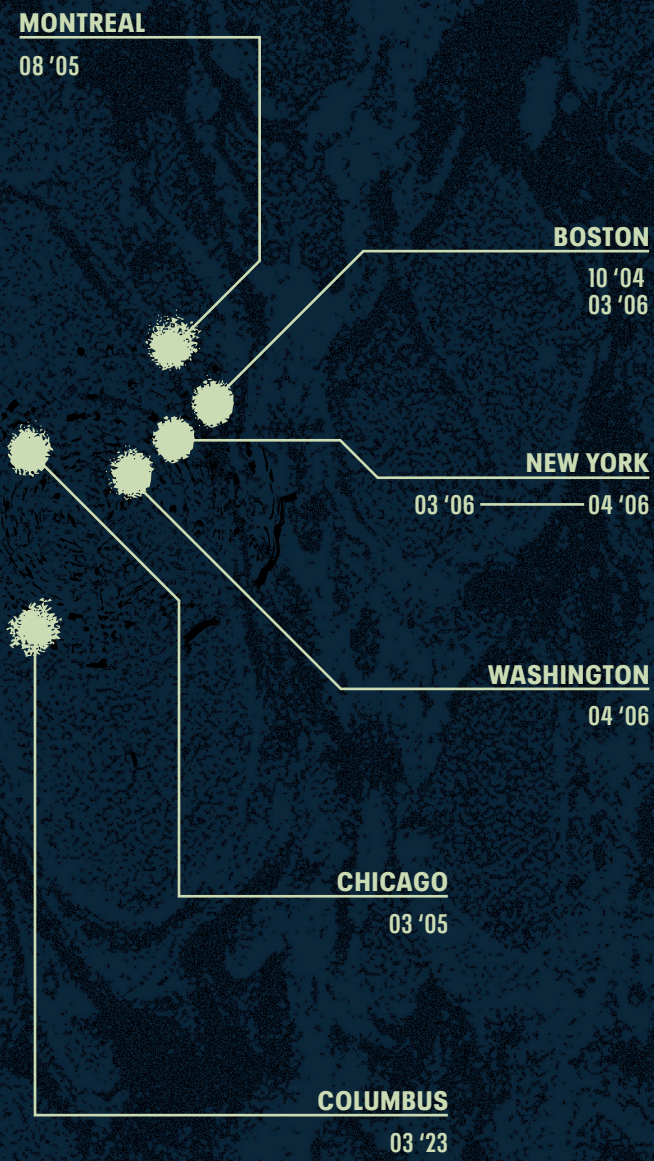
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LONDON

05 ’03
09 ’05 — 12 ’05
11 ’07 — 12 ’07

GENÉVE

05 ’06 — 06 ’06

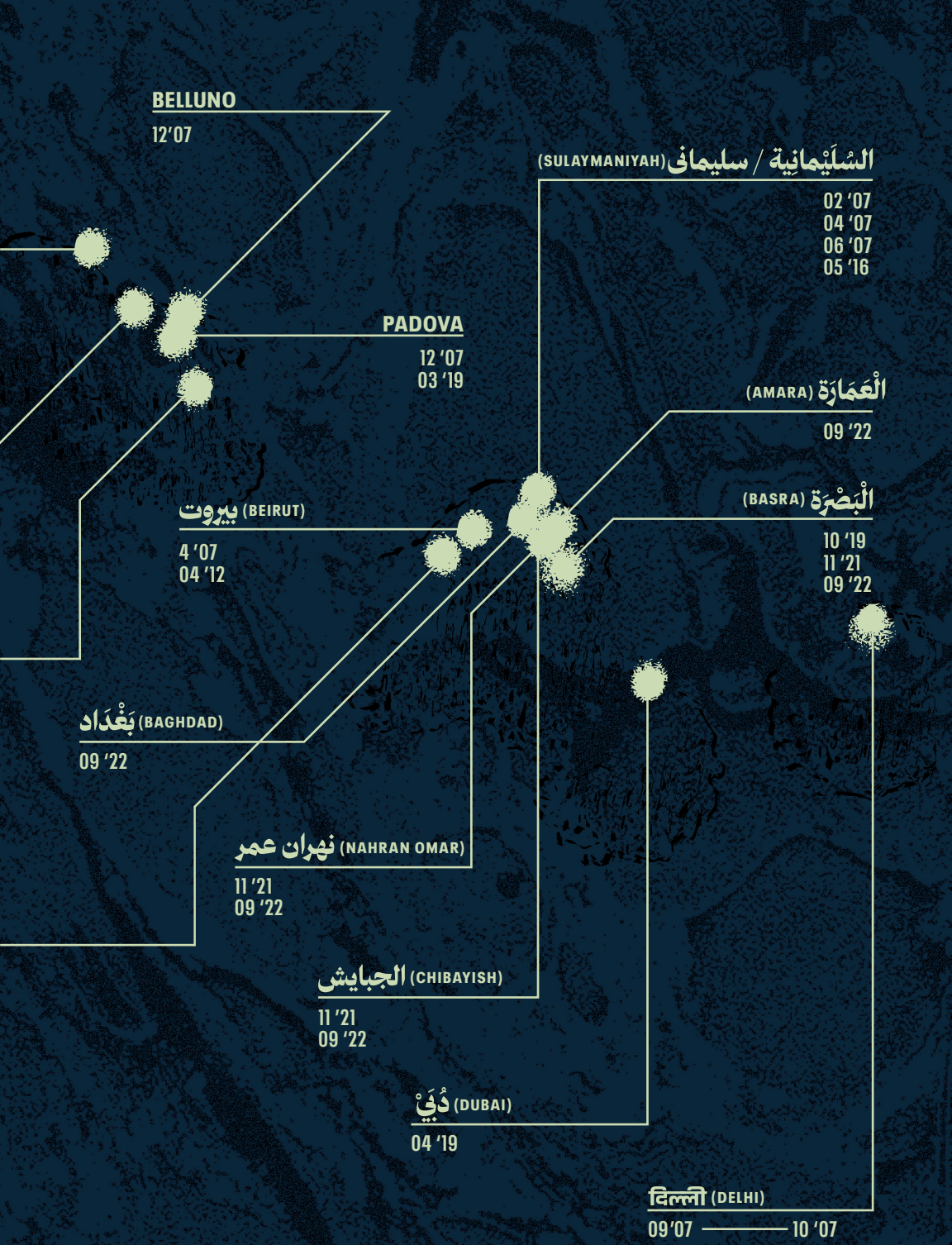
ROMA

05 ’19

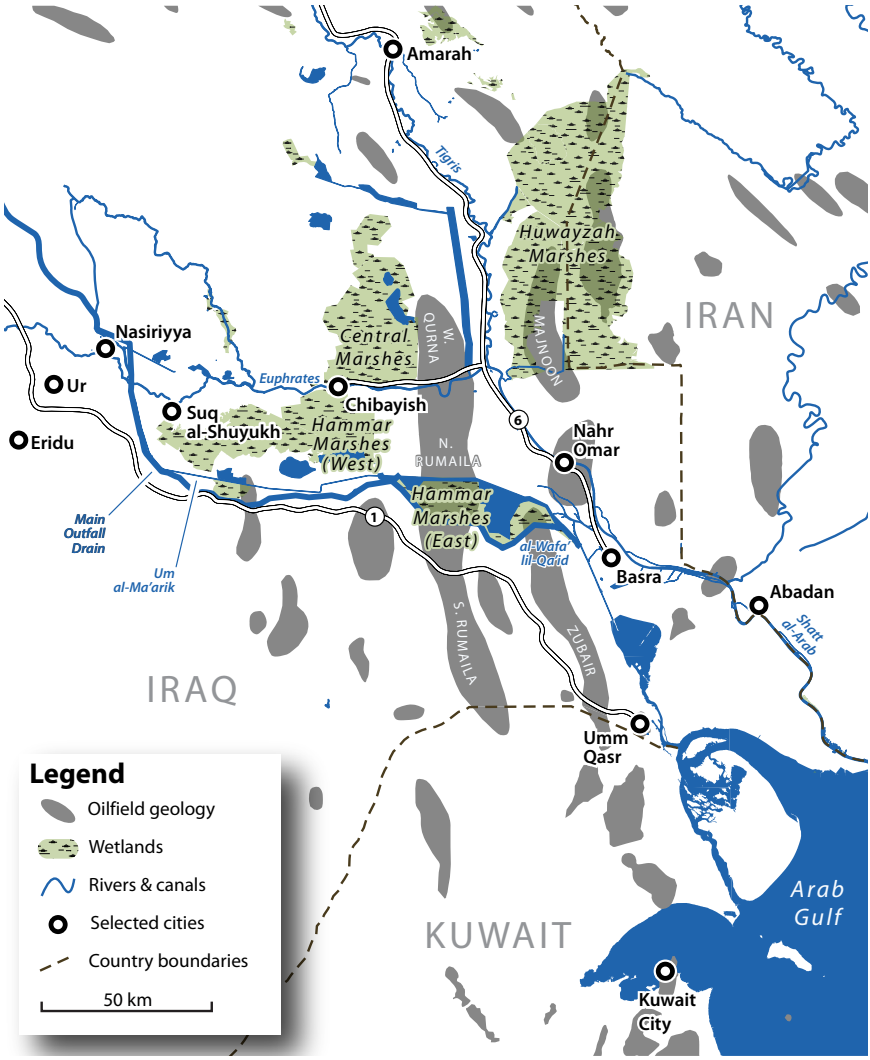
عَمَّانْ (AMMAN)

08 ’06 — 10 ’07
12 ’11 — 07 ’12
05 ’16
02 ’19 — 06 ’19
09 ’19 — 10 ’19

MARSHLAND CONSERVATION SITES



IN IRAQ’S WARZONE ECOLOGY



MAP OF SOUTHERN IRAQ SHOWING THE MARSHLANDS IN PROXIMITY TO THE OIL FIELDS AND WATERWAYS.

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Introduction

Repair: Mobilizing Wetlands in a Warzone Ecology

Oil flares blaze the night sky orange at Nahran Omar, on the easternmost edge of the Hammar marshes in southern Iraq.[1] Flames the size of skyscrapers jump from oil stacks, vaporizing methane into black smoke plumes that coil across the horizon and, soon after, through noses into bodies (figure 1). Every breath hurts: the acrid air pierces my throat and lungs. A family sits outside to catch a breeze and a bit of relief from the endless summer heat. Neighborhood children play chase-and-tag around them. My friend, filmmaker Hussein al-Asadi, turns to me and says, "Imagine what it is to breathe this every day." It is September 2022, nearly twenty years after the US invasion and occupation of Iraq and, as President George W. Bush argued, around the same amount of time that we would begin to see a positive outcome from the Iraq War. Also nearly twenty years ago, in August 2003, US citizen and Iraqi exile Zaid Kubra left his home and executive job at an engineering consulting firm in the US, where he had worked for close to two decades, and returned to Baghdad to start the nongovernmental organization (NGO) Green Iraq and pursue the biodiversity conservation of Iraq's marshlands full time.[2]

The marshes, *ahwar* as they are called in Iraq, were once the most extensive wetlands in West Asia. They spanned roughly 20,000 square kilometers and inundated three southern governorates—Basra, Maysan, and Dhi Qar—and the Iraq–Iran border. The marshes are three inland, interlinked wetland lakes—Hammar (now divided into East and West), Huwayza, and the Central marshes—formed by seasonal runoff from the Tigris and Euphrates Rivers just before their confluence at the Shatt al-Arab that flows to the Arab Gulf. Located in the northeastern frontier of the Arabian desert, the marshes are a wetlands oasis revered for their ethereal beauty. *Ahwari* residents make homes on individual reed-made islands and



FIGURE 1. Oil flares at about 9:00 p.m. in Nahran Omar. Photo by Ivor Prickett, July 16, 2020. Courtesy of *The New York Times*/Redux.

navigate the wetlands via *mashuf* (canoe-like boat, often outfitted with a motor) through narrow canals that cut labyrinthine channels in embankments of fifteen-foot towering reeds opening out onto lagoons. This life now also includes the presence of both conservation projects and oil extraction.

Earlier, in the mid-twentieth century, southern Iraq was so verdant that Iraqis remember crossing dense date-palm forests to get from one side of Basra to another. The historic groves at Abu al-Khaseeb, along the Shatt al-Arab, crosscut by canals for ease of transport, comprised a serious date-export industry. By 1917 the date groves on the Fao peninsula at the southernmost end of Basra were valued at one million lira, or $92 million (Cole 2020, 259; Young 2025; Fattah 1997). The ahwar have been a resting place for migrating birds on the African–Eurasian flyway, a critical resource for commerce and revolutionary activity, a conduit for religious pilgrims to holy sites at Najaf and Karbala, and where the world's first cities originated. Geologically, too, the marshes offer abundance (see Oguz 2023). Three of the planet's largest oil reserves—West Qurna, Rumaila, and Majnoon—are encapsulated in marshland subsoil, amounting to one-third of the country's oil wealth. There is a symmetry between the richness of biodiverse life on the surface and in the subterranean world below. In Iraq's marshes, the sky, the terrestrial surface, and underground oil resources are one ecosystem through which every ruling polity has asserted biopolitical control of the country's territory and population for over a century.

Kubra had been part of the Iraqi opposition movement in exile and toured the US in the 1990s with a PowerPoint slideshow that made the case for US military intervention in Iraq to forcibly remove Saddam Hussein, arguing that his intervention in the marshlands amounted to criminal environmental harm. In October 2001, less than a month after the September 11 attacks, the US Department of State invited 200 Iraqi exiles from around the globe as part of the Future of Iraq Project to plan the aftermath of a war that had yet to begin. Tom Warrick, director of the project, recruited Kubra and his father for one of five priority working groups, Water, Agriculture, and Environment, drawing Kubra and his marshlands conservation project into the theater of war. Although US Secretary of Defense Donald Rumsfeld ultimately shelved the State Department plans, Kubra made durable political connections at the highest levels of US and Iraqi state governments through the project, which gave him relative carte blanche to pursue marshlands conservation.

Fast forward almost two decades and 43 percent of marshland residents (68,670 people) abandoned their homes in the wetlands over the summer of 2022 because of climate-related factors (International Organization for Migration 2022). The waters had become saline due to rising temperatures, which dried vast areas of the marshlands and killed scores of water buffalo that families depended on for their livelihood. Between 2012 and 2022, Basra, Maysan, and Dhi Qar governorates, where the marshes are located, have experienced the highest number of water-induced internal displacements in Iraq (International Organization for Migration Iraq 2022, 11). As of June 2025, Iraq's marshes encompass roughly 4,000 square kilometers with a population that was estimated at 250,000 residents in 2020, but that is now in decline (Crisp 2023). Some villages in Dhi Qar have seen up to half the number of homes abandoned; water shortages triggered 15,000 displacements in the three governorates as of January 2019; and in November 2021, the International Organization of Migration recorded more than 12,000 people displaced from southern Iraq due to drought (International Organization for Migration Iraq 2022, 10). Climate-related displacements have continued across southern Iraq, such that as of 2023, 30–40 percent of the population of Amara and 20–30 percent of the populations of Chibayish and Nasiriyya have been displaced due to environmental factors (International Organization for Migration 2023, 5). As of March 2024, over 140,000 individuals or more than 23,000 families have been displaced in central and southern Iraq as a result of climate change. Nearly half of those families (44 percent) are from Dhi Qar governorate, followed by 22 percent from Maysan (International Organization for Migration 2024). In Nahran Omar, like other villages near Zubair and Rumaila oil fields, seven out of ten children were found to have naphthalene in their blood and will likely develop lethal childhood cancers, according to a 2022 pilot study conducted by University of Basra professor Shukri al-Hassan in partnership with the BBC (Stallard et al. 2022; Kelly 2022). Naphthalene is a known carcinogen released into the air along with

methane when not all the natural gas is burned during flaring. "This is our share of the oil," a man from Nahran Omar told my friend, Bahraini cinematographer Muhammed Almubarak, in November 2021.

During my research trip to southern Iraq in fall 2022, nearly everyone I met knew a child who had cancer or who had died from cancer. When I visited Um Riyad in Chibayish, on the westernmost end of the Hammar marshes, she had just returned from her nephew's funeral. He was two years old and died of cancer. In Basra, my friend Hassan Aleidani's five-year-old nephew was undergoing costly treatments for his cancer. Aleidani took on extra work to help his family afford his nephew's care. Kids joked that the supergiant oil field Rumaila, where ten out of ten children had naphthalene in their blood, was "the cemetery" (*maqbara*) (Kelly 2022). Standing there, I thought about my own daughter, who was a few months shy of turning five years old. I wondered: How did the largest wetlands ecology in West Asia, so lush it was known as the Fertile Crescent and the birthplace of human society, become incompatible with life? How is it that instead of saving the marshes, biodiversity conservation ended up solidifying the social and political foundations of their ecological collapse? This book explores these questions by focusing on the ecology of war.

War does not have an ecology; war *is* an ecology.[3] War actors comprise a holistic, living, active, materializing, metabolizing, transformative ecology of relations. As they form a warzone ecology, these actors mobilize the biosphere by capitalizing on ideologies of "nature" and environmentalist arguments for its proper care. By mobilize, I mean to systematically organize and then put into action for political purposes, much like a military would its troops. In Iraq's marshes, Kubra and his foreign contractors mobilized marshlands conservation by systematically organized messaging of Iraq's biodiversity conservation effort; they then put this messaging into action to achieve natural resource control of Iraq's marshlands for profit and power. Natural scientists define ecology as the processes that influence "the distribution and abundance of organisms, the interactions among organisms, and the interactions between organisms and the transformation and flux of energy and matter" (Cary Institute of Ecosystem Studies cited in Rademacher et al. 2023, 133). Central to ecology, thus, is the transformative role of organisms, particularly "how organisms are engaged in transformations of energy, matter, information, and each other" (Rademacher et al. 2023, 133). A warzone ecology operates in just this way. War actors—Kubra, representatives of the US and allied governments, private sector contractors, Iraqi scientists, marshlands birds, media frames, the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Convention, oil multinationals, international environmental policy, hydraulic studies, and the United Nations Environmental Programme (UNEP) employees, to name a few—work in and through each other in pursuit of marshlands biodiversity conservation; they are themselves changed by the process, and in their work create new possibilities for power, violence, and

agency in Iraq. The relationships that these actors have with each other creates the conditions for change. As these actors change through the work they do together, they create possibilities for the transformation of the Iraqi state. In *Warzone Ecology* I identify and name these actors and their creative potentials as the life force of war. I argue that war-making via biodiversity conservation is not a bug but a feature of the design of late liberal capitalist projects like environmental conservation.

Warzone ecology recontextualizes energy production by historicizing and broadening it beyond the moment oil multinationals pull petroleum reserves from the earth, refine it, and sell it to analyze the conditions that made oil production possible, such as the Iraq War and marshlands conservation. Understanding a warzone ecology is akin to what feminist science studies scholar Karen Barad calls "intra-activity" (Barad 2007, 139). For Barad, "agency" is the ability to act. Action happens as war actors engage each other. This means that matter is not a fixed essence nor is it "the mere end result of different processes," but generated and generative (Barad 2007, 137). With regard to wartime Iraqi marshlands conservation, Barad helps us think about how people, policies, institutions, species, violence, and power are related and co-constituted. Here I am suggesting that the numerous imperial wars in Iraq shaped not only Iraq but also contemporary geobiopolitics, which I define as late liberal capitalist institutions and their interventions in our planetary conditions (Hanieh 2024; Al-Bulushi 2024).

Iraq is a significant space of energy production in the world, but so far our understanding of that industry has been limited to petroleum production. Defining energy production largely in terms of the oil industry removes from that context a set of crucial but seemingly unrelated conditions, such as war, that created the very possibility of extraction. This is especially true of how oil multinationals in particular, and foreign agencies for resource extraction in general (including foreign experts' appropriation of Iraqi expertise and foreign contractors' extraction of water and mineral resources), operate in Iraq. Foreign multinationals in Iraq implemented a work structure that endangered the lives of Iraqi nationals and expanded foreign profits markedly differently from other Gulf countries like Saudi Arabia that are also petrostates but maintain state control over production and profit more significantly from it.

In this book, the social world of Iraq's marshlands conservation is the terrain of warfare. The ecology I refer to is not primarily the marshlands but the global milieu of wartime marshlands conservationists that formed across oceans and continents in a vortex of international conferencing and training that was Iraq's reconstruction. These conferences and training sessions were a vortex by design; they were quickly assembled, disassembled, and moved on to the next meeting place in the world. This was how actors invested in the war and occupation of Iraq conducted the business of the Iraq War, in temporary, collapsible, and restaged meeting grounds that moved from hotel to hotel, conference room to conference room around the globe. In researching political officials, foreign donors,

contractors, and environmentalists who were not primarily from Iraq and who operated mainly outside the country, I study how Iraq's environment was made in war from afar.

War investors—from Kubra to his donors and contractors to international environmentalists to state donors—designed, financed, and governed Iraq's marshland environment from outside Iraq. Biodiversity conservation of Iraq's marshes was not done by the people who lived in them. Marshlands residents did not have access to the foreign-staged arenas of war business or agency over how the environment was defined. Kubra and his contractors who worked on marshlands conservation created conditions for a system of violence that evolves over time. This warzone ecology includes both the marshlands geography and the network of conservationists—exiles, foreign donors, oil multinationals, and global environmentalists—who actualized it. Through their nature preservation work, they created direct channels of foreign influence in Iraqi state ministries, avenues for resource extraction for maximum profit with minimal infrastructure investments in Iraq, and vehicles for messaging corporate, financial, and political control as environmental protection. For example, one country donor, Italy, had a history of diplomacy in Iraq that included investments in marshlands conservation, which collectively appear to be a strategy of investment that led to Italy-based oil multinational Eni winning the 2009 bid to develop the Zubair oil field encapsulated in the subsoil of the marshlands and to Italian hydrological engineering firms winning the 2011 bid to develop Iraq's national water plan.

War does more than kill and destroy; it is an ecology of violence. Conceptualizing war as ecology moves us beyond the binary of seeing war as life or death to focus on the dynamics of war's social relations. I define violence as energy harnessed to achieve a goal in ways that cause harm to others. Violence originates in social relationships (Nordstrom 1997), including how we sense and perceive the world (Feldman 1997) and how we understand ourselves in relation to others (Daniel 1996). Violence encompasses social relationships "that link physical and psychological force, individual and structural harm, pain and pleasure, degradation and liberation, the violent and the non-violent" (Coronil and Skurski 2006, 5). That is, violence is a phenomenological experience of being in the world (al-Mohammad 2015; Rubaii 2019; Saleh 2020; Hermez 2017).

I organize my inquiry around a few questions. How does war shape material surroundings, and how is it shaped by them? How do people living through or engaged in war experience the full scope of its violence? What agencies and processes are involved in economic, political, and environmental transformation? And what might an analysis of war as an ecology help us understand about life and livelihood? In pursuit of these questions, I analyze how conservation projects failed to cohere as anticipated while still creating change. I investigate how ephemera that have strong visual expression—images, remote sensing maps, bird counts, and dreams—make durable material change in Iraq (Stoler 2001). Unlike

the "hard infrastructure" of war that confronts immediate, physical limits, the critical imagination of actors invested in the war is boundless and has vast potential for violence. I posit the conceptual framework of *warzone ecology* to expose the violence of institutionalized environmental conservation at a time of war. I track the energy of wartime conservationists as they harness bodies and epistemes and capitalize on territorial mobilizers like waterways. To analyze how a warzone ecology comes into being, operates, and changes, I focus on the intermediary actors and processes that create the conditions for environmental and climatological change, rather than amplifying the result—the moment of collapse.

Finally, I analyze how planetary repair was a prime theater of the Iraq War by attending to the nuances and textures of biodiversity conservation that define occupation and war but remain beyond normative understandings. I investigate how Kubra and his foreign donors and contractors argued for the value of Iraq's marshlands biodiversity conservation by positioning wartime conservation as planetary repair in two ways: by supporting US President George W. Bush's argument that the Iraq War was preemptive and humanitarian, which defined the war as a preventive act to repair global security, and by intervening in a notable terrestrial ecosystem for remediating the damage of the Anthropocene.

Planetary repair was the predominant rationale used by the US government for war in Iraq. They pursued global security in Iraq by waging war, which as I have been arguing involved preserving nature (Masco 2010). Anthropologists study repair to think through questions of value and responsibility in relation to material infrastructures, scientific processes, and their breakdowns (Jackson 2015; Strebel et al. 2019; Martínez and Laviolette 2019); of what modern sovereignty looks like in the wake of violent atrocity such as slavery and imperial war (Thomas 2019, 2020; Bardawil 2023; Haruyama 2024; Nugent and Suhail 2024; Shange 2022); and of what a moral future might look like and how scholars should investigate it by accounting for how environmental decline and white supremacy are and have long been inextricable projects (Papadopoulos et al. 2023; Barra 2024; Patel and Moore 2017; Velednitsky 2017). Repair requires wartime conservationists to deal with planetary breakdown as, Ekin Kurtiç (2023) argues, "pivotal generative moments of 'learning, adaptation, and improvisation' in a world that 'constantly decays.'" President George W. Bush and the US Congress argued the Iraq War would stop terrorism and safeguard the planet.

Hegemonic and institutional processes of nature conservation are forms of war disguised as planetary repair. I examine the politics of land in a geological epoch when human subjugation and the domination of the planet are inseparable (Hage 2017). And yet, such warfare was commonly promoted as necessary *repair* for biopolitical harm by the US government, Kubra, foreign donors, and environmentalists—that is, by war proponents *and* opponents. A substantial body of literature exists on conservation as international development, as a feature of capitalism, or as a technology of displacement (Lowe 2006; West 2006; Li 2007;

Brockington 2009; Büscher et al. 2014; Lorimer 2015; Peutz 2018; Rahder 2020). These interventions are best understood as warfare because each instantiation is tied to imperialist or hegemonic claims over territory, often aimed at displacing or controlling Native populations through systemic reeducation or forcible removal. In Iraq, plans for marshlands conservation designate a reserve that would cover roughly 9 percent of the three southern governorates of Basra, Maysan, and Dhi Qar. Today, as a solution for the climate crisis, a growing conservation estate covers 10 percent of the earth (Lorimer 2015, 162). Iraq's marshlands conservation project was an object of scientific inquiry that inhabited multiple social worlds at once: more an infrastructure than a discrete entity, it bridged competing goals and interests, divergent knowledge systems, and distinct networks of information (Star and Griesemer 1999). Marshlands conservation made a powerful argument for the Iraq War because of its insistence not on destruction but on planetary repair, which attracted different foreign investors who capitalized on its messaging to serve their unique interests in the ecologically and petroleum-rich ecosystem.

Any examination of warzone ecologies must be intersectional given the diversity of war actors, forms, and processes that tackled international development in "post-conflict" Iraq. Imperial formations governing occupied Iraq were heterogeneous (Al-Bulushi et al. 2023; Vaughn et al. 2021). International development in Iraq was also remotely mediated. Foreign experts, donors, and contractors from Switzerland, Canada, Italy, Japan, and the US relied on Iraqi nationals to carry out their development plans and wager their own lives to advance the occupation.

Warzone Ecology is a history of the present. Proponents of the Iraq War have argued that history would be its only rightful judge. Throughout, I analyze the three major dimensions of a warzone ecology: how war actors mobilize ideals of the biosphere; how war actors intervene in Iraq in ways that act on bodies; and how scientific knowledge production authorizes war. I analyze processes instrumental to the denationalization of Iraq by examining how competing foreign influences arose inside Iraqi state institutions and how conservationists made a key Iraqi symbol—the ahwar—into biodiverse wetlands. Through ethnographic research, I analyze both personal experience and institutional processes and the relationships between them. *Warzone Ecology* offers a way to investigate how the goals of planetary repair in the Anthropocene and the Global War on Terror have been pursued in inseparable relation, thereby opening new avenues for conceptualizing war, nature, and violence.

THE IRAQ WAR

The Iraq War was a protracted battle led by the US from 2003 to 2011 that removed Iraqi President Saddam Hussein from office, denationalized the Iraqi economy, caused roughly half a million Iraqi civilian deaths (Hagopian et al. 2013), resulted in the displacement of 9.2 million Iraqi civilians (Vine et al. 2020), and cost the

US $8 trillion (Brown University Costs of War Project 2021).[4] In the early hours of March 20, 2003, President George W. Bush ordered the aerial bombing of Iraq, followed by a ground invasion of more than 130,000 US troops, with an additional 46,000 troops from the United Kingdom (UK), 2,000 Australian troops, and under 200 Polish troops, collectively referred to as the multinational forces in Iraq (Belasco 2009). The president argued that the war was necessary "to disarm Iraq of weapons of mass destruction, to end Saddam Hussein's support for terrorism, and to free the Iraqi people" (Bush 2003a). US troop and monetary commitments continued to substantially outpace the UK and other allies during the war. The Iraq War was one theater of the broader post-9/11 US military campaign called the "Global War on Terror," which refers to multiple ongoing US wars including in Afghanistan, Pakistan, Iraq, and Somalia (Savell 2023).

President Bush set the stage for the Iraq War in his January 2002 State of the Union address, when he declared Iraq, Iran, and North Korea as the "axis of evil." Although the United Nations (UN) Security Council originally sanctioned the war on the basis of Saddam Hussein having "weapons of mass destruction," their own nuclear weapons inspector, Hans Blix, soon reported that he was able to find no evidence of such weapons.[5] Nevertheless, the US and UK assembled a "coalition of the willing" that included nearly forty countries lured by the promise of financial aid from the US government (McClure 2003); they secured the UN Security Council's endorsement for the invasion as a result. US allied forces seized Baghdad on April 9, 2003.

The official war was declared "over" in a matter of months, but US military occupation and violence continued in Iraq for years. As a result, Iraq's reconstruction *was* the war in which "post-conflict" development projects, like marshlands conservation, were essential battlegrounds. Recognizing this is crucial to broadening conventional, narrowly defined understandings of the Iraq War to modes of war that were officially unrecognized but were crucial vectors of conflict. Normative discourses of the beginning and end of the Iraq War worked to conceal war in ways that had significant material consequences. Following President George W. Bush's official "mission accomplished" declaration of the war's end, the UN could not, as a matter of policy, address the growing conflict in Iraq as an active, ongoing war. Instead, it mobilized "post-conflict" statecraft operations.

Significant to the Iraq War are two prominent features. First, the war intensified amid the official US government denial of the war. It is hard to underestimate the effects of this denial: I personally witnessed meetings with the highest-level UN officials at gatherings in Amman, Jordan, in 2007, where they discussed not being fully capable of addressing needs in Iraq because they could not openly acknowledge the rising conflict. Second, the theater of operations was Iraq's economy and the wholesale transformation of it. In the context of the denial of the war, economic transformation appeared secondary and unrelated, but it was in fact the fertile terrain of this growing conflict.

On May 1, 2003, President Bush stood on the USS *Abraham Lincoln*—magic-hour light casting a golden glow on his cheek and a "Mission Accomplished" banner unfurled in the background—and declared the end of major combat operations in Iraq. UN Security Council Resolution 1483, issued on May 22, 2003, sanctioned the US-led occupation of Iraq and put its largest asset—oil—in an international trust, called "The Development Fund for Iraq," held by the Central Bank of Iraq. Funds from the trust were dispersed only at the direction of an International Advisory and Monitoring Board consisting of representatives of the UN Secretary General, the managing director of the International Monetary Fund (IMF), the director general of the Arab Fund for Social and Economic Development, and the president of the World Bank. The policy was consistent with US intervention in the country since the early 1990s, which has been heavily motivated by Iraq's oil wealth (Jones 2012). From April 9 to May 16, 2003, Iraq had no national government in place. US forces permitted widespread looting of Iraqi state and cultural institutions.

By US envoy Paul Bremer's own admission, the primary goal of the US invasion and occupation of Iraq was to restructure Iraq's economy from a command, socialist economy to a late liberal capitalist economy with minimal regulation on private enterprise (Wilson 2003). Bremer was the de facto head of the Iraqi state as US-appointed leader of the Coalition Provisional Authority (CPA) from May 2003 until June 2004, when Iraq held national elections. On taking up the position, he quickly issued a series of edicts, known as Bremer's 100 Orders, the first of which had disastrous consequences: Order 1, "De-Baathification of Iraqi Society," which removed numerous people from their jobs—many of whom joined the Ba'th Party under Saddam Hussein under duress or fear of reprisal—thereby creating widespread unemployment. Order 2, "Dissolution of Entities," disbanded the Iraqi army, deepening the unemployment crisis and creating the conditions for a rising insurgency of trained soldiers who knew where weapons caches were stored and eventually grouped together in what would become Da'ish, or the Islamic State of Iraq and Syria (Saleh 2014). Order 4, "Management of Property and Assets of the Iraqi Baath Party," gave foreign investors a prime role in the transformation of Iraq's economy (Coalition Provisional Authority n.d.). Thereafter began the most intense warfare of the Iraq War, post-conflict or "post-Ba'th" reconstruction, when US troops and Iraqi militias opposed to the occupation battled for the right to define and control the Iraqi state and its assets.

Chaoplexic Warfare

Warzone ecology is an appropriate analytic for the Iraq War not only because it helps us conceptualize how war investors and proponents—economic, political, environmental—acted in inseparable relation but also because it was the predominant organizing principle of US military action in Iraq. "Chaoplexic warfare" was US Secretary of Defense Donald Rumsfeld's theory of war for Iraq. It draws on chaos and complexity theories to approach human society, and the battlefield,

as a "complex adaptive system" that continuously changes. Such a system is synonymous with ecology as understood by Gregory Bateson, whose work heavily influenced military theory and practice from World War II until the end of the twentieth century and whose own theorization of ecology is evident in how military scholars define a complex adaptive system.[6] Military strategists view this system as a dynamic network of agents operating simultaneously, acting and reacting to what other agents are doing (Bousquet 2010, 150). They understand complexity as the "intricate intertwining or interconnectivity of elements within a system, and between a system and its environment" (Moffat 2003, 68; quoted in Bousquet 2010, 121), focusing on insect colonies, bird flocks, ecosystems, businesses, stock markets, and other forms of social organization and envisioned constituent agents as not only human beings but also cells, species, firms, or nations (Bousquet 2008, 924).[7] While war proponents—such as governments of the US, Italy, and Canada—waged war according to a theory modeled on ecological systems, Kubra and his associates pursued biodiversity conservation to preserve newly reflooded marshlands ecology with funds granted by those same war proponents. Wartime conservationists established their political power in Iraq through their investments in Iraq's environment, Iraq's economy, and the US-led war all at the same time.

Chaoplexic warfare has a direct connection to contemporary cultural anthropology and its approach to ecology. During World War II, Gregory Bateson, Margaret Mead, Ruth Benedict, and others collaborated with the US military to develop new technologies of psychological warfare that used their ethnographic fieldwork for the war effort, which they viewed as a necessary ethical compromise to stop the Nazi advance (Price 2008, 2011). Drawing on his background in studies of ecology and the mind, Bateson brought cybernetics—the science of control or prediction of future action—to the US military and intelligence communities (Halpern 2014, 41).[8] His work is widely credited as contributing to the formation of the Central Intelligence Agency. Cybernetics would come to define post–World War II military strategy, including the formation of international development (Breen 2024, 71–82).[9]

Post–World War II marked the birth of key institutions—the UN, the IMF and the World Bank, and the environmental movement—that enshrined globalism and its central concepts: "the economy" and "the environment" and "global security" (Edwards 1996; Mitchell 2011; Masco 2014). In the context of Cold War globalism, international development became an arena of competition where agents in a "development theater," inseparable from the geopolitics of war and empire, leveraged development in the capitalist world system to bolster their nation-state status (Levin 2022, 16). This long-standing project, whereby global institutions undertake the fiscal and political *improvement* of Global South political systems and economies through a set of systematic and structural interventions, often involves land reform like biodiversity conservation (Li 2007).

International development was a vital technology of planetary repair in Iraq. Long before cybernetics defined global politics, Iraq was the place where British imperial development discourse originated (Satia 2011, 25; cited in Pursley 2019, 17) during World War I and the interwar period. The British undertook the development of Iraq through the Tribal Criminal and Civil Disputes Regulation that imposed one set of laws for tribes and another for everyone else, a policy that imposed racial segregation (Pursley 2019, 20). In the London diaspora a hundred years later, Iraqis talk about their subjectivities and their bodies as inseparable from imperial development schemes (Saleh 2020). This fact is not evidence for the continuity of historical time. Each moment has its own textures, modalities, and expressive forms of violence; and in each moment, Iraqis forge distinctive ways of creating life through such violence. The US government waged the 2003 Iraq War as a war for development, not unlike the British invasion and occupation a century before (Satia 2007). President George W. Bush and the US Armed Forces argued that they undertook warfare to save the planet from terrorism as much as from ecological harm, and in so doing made international development central to Iraq once again in the twenty-first century, this time as planetary repair.

In twenty-first-century Iraq, the US Armed Forces emphasized international development as warfare when they put "cultural knowledge" to work in two military programs. US Special Forces built replica Iraqi villages in the US for its qualification course that anthropologist Nomi Stone (2022) argues worked as sites "training their bodies and imaginations for Unconventional Warfare." The US approached counterinsurgency as "armed social work," according to David Kilcullen, General David H. Petraeus's senior counterinsurgency adviser (Stone 2022, 11–12). Anthropologist Montgomery McFate, who found inspiration in Bateson among other anthropologist–military strategists, developed "human terrain systems": five-person civilian–military units that conducted social science research about the occupied population "to provide situational awareness to the military" (McFate and Fondacaro 2011, 63).[10] In February 2007, the first "systems" were deployed to Iraq. The same year, the American Anthropological Association condemned the program for ethical violations of the discipline, and it abruptly came to an end in 2015 (González 2015; American Anthropological Association 2007; Sluka 2010). But a high-ranking official who worked on the project told me in a Zoom interview on March 1, 2024, that human terrain did not fully die; it evolved into what the US Armed Forces now call the "human domain."

I make this history of anthropological collaboration with the US military explicit because to use ethnography as a resource for critically analyzing power and violence in war, as I advocate in this book, we must first acknowledge how useful anthropology has been for war, empire, and white supremacy (Beliso-DeJesús et al. 2023). Ethnography, too, can be a critically important method for analyzing

war, but only if we integrate our shared history of war-making into our rubrics of analysis. I return later to this discussion to address the ethics of an anthropology of war and my own positionality within it.

Statecraft as War

In Iraq, chaoplexic warfare did not always look like war in the classic sense. Often, it looked like statecraft.[11] General Jim Mattis, who led the First Marine Division in the early years of the Iraq War and later worked with US Army General Petraeus, emphasized that one of his key strategies was to cultivate relationships with Iraqi civilians to reduce his reliance on kinetic force, which he believed escalated violence (Mattis 2008). The generals worked to "secure the population" by interacting with civilians and paying off political leaders for support.

The relationship of the US military with the occupied Iraqi state was a slippery one. After the invasion of Iraq, the US Department of Defense created and funded the CPA, which would act as Iraq's temporary national government body until elections a year later. Paul Bremer was the administrator of the CPA and reported directly to the US Secretary of Defense. In practice, the CPA was more than a US entity; it was a multinational institution with personnel from the UK and other countries, which represented the heterogeneous character of international rule over occupied Iraq (Al-Bulushi et al. 2023; Dobbins et al. 2009). The CPA razed the Iraqi state to the ground and sought to remake it entirely. During this time, US advisers for the CPA were assigned to every Iraqi minister represented in the national Council of Ministers. For example, a senior official with the US Army Corps of Engineers, who had been instrumental in designing New Orleans's levies that failed during Hurricane Katrina, was assigned as Iraq's Minister of Water Resources and, as a result, worked on Kubra's marshlands restoration project.

The US military seized Saddam Hussein's presidential palaces in Baghdad and turned them into the Green Zone, one of the largest US embassies in the world, from which US government representatives governed Iraq. Inside the Green Zone, US personnel printed new currency, formulated a computerized stock market, applied American patent laws, and rewrote grade-school textbooks and university curricula. In lieu of banks, CPA personnel stashed bricks of cash inside the former president's gold-lined toilets. The Green Zone was a frenetic, wartime party of wholesale statecraft: officials who had minimal knowledge of Iraq drank in excess and swam in palace pools under the baking sun (Chandrasekaran 2006). From within this frenzy, US officials viewed civil society building projects, like marshlands biodiversity conservation, as central to the statecraft objective.

Then, suddenly, after a bombing that killed their envoy in August 2003, the UN withdrew all "nonessential" foreign personnel from Iraq—approximately 600 employees—and relocated them to Amman. This decision meant that the United Nations Assistance Mission for Iraq, which the UN Security Council

created in 2003 to oversee "postwar" reconstruction, staged operations from Amman, not Baghdad. Remote mediation came to define the Iraq War. The UN left a skeleton crew of fifty people in Iraq who operated from fortified compounds in Baghdad (the Green Zone), Irbil, and Basra. The UN then relied on 4,000 Iraqi national employees, called "facilitators," to be the "eyes and ears" of ground operations. Iraqi employees of the UN left behind in the exodus bore the risks for their work. Iraqi nationals' association with the US occupation was deadly and made them the target of militias battling the US-led multinational forces. They were easy militia targets because they lived outside the Green Zone and had to wait in long queues at its gates to go to work. Civil society building organizations, including Green Iraq, followed UN protocols of hiring Iraqi employees to take on risks that foreign experts would not, thereby enshrining Iraqi subjugation in daily labor seemingly unrelated to the war, such as standing in line or counting birds in the marshes.

Facilitators did everything in Iraq that foreign personnel would not: they spoke with village residents and visited schools, collected housing data, used GPS to follow the movements of the internally displaced, and doled out emergency relief packages that included blankets, water purifiers, and mattresses, according to Skype-communicated plans from Amman. Iraqi field biologists were facilitators for Green Iraq's Italian contractors, who relied on data from the marshlands to formulate their conservation plans, but who did not travel to the marshes themselves in 2006 and 2007. Iraqi facilitators, including those at Green Iraq, bore the full physical impact of the radical inequality produced by this policy, as they faced kidnapping, threats, intimidation, and even death to carry out UN plans (Buch 2018). UN policy positioned Iraqi national facilitators to become the sentient human infrastructure for absorbing wartime violence (Graeter 2020). As a result, Iraqi nationals died in disproportionate numbers to advance the foreign occupation of their country.

IRAQ'S MARSHLANDS

Marshes have a particular geography that is different from oceans and that make a different set of social relationships possible (Scaramelli 2019; Ogden 2011, 88). Marshlands are shapeshifters in flux, both liquid and soil, water and not water, vegetation and animal life; like the shoals of an ocean or sea, their shape, expanse, and density change over time, making them "as much a dynamic and moving set of processes and ecological relations as . . . a longitudinal and latitudinal coordinate that cartographers attempt to fix in time and space" (Lethabo King 2019, 3). Scholars have conceived of material fluidity as instrumental to capital because it can enable flow and mobility (Braverman and Johnson 2020), but waterways also enable forms of militarization, exclusion zones, and maritime choke points (DeLoughrey 2019; Dua 2019). As we will see, the peculiar geography of

Iraq's marshes was itself a choke point that residents used to slow, interrupt, or sabotage imperial and authoritarian attempts to claim territory.[12]

Iraq's marshes, as we know them today, formed about 3,000 years ago. The marshlands geography encompasses horizontal space and vertical depth: the ecology is subterranean oil, terrestrial water, atmosphere, and exosphere. The materiality of Iraq's wetlands demonstrates the inseparability of water and petroleum resources. The same geological churn, resulting from clashing Arabian and Eurasian tectonic plates in the Pleistocene roughly 1.64 million years ago, produced hydrocarbons that filled petroleum reserves in subterranean inter-shelf basins and an alluvial plain with a basin on the terrestrial surface that became the marshlands (Pitman et al. 2004; Cooper 2007; UNESCO 2014, 58). Between the fourth and third millennia BCE, the Sumerian cities of Ur, Uruk, and Eridu rose inside the marshlands waterscapes (Pournelle 2003, 177, 256; Hammer and Michele 2023), where agricultural bounty of the wetlands nourished human ingenuity and the world's first systems of writing, mathematics, astronomy, and monumental architecture, and a work of great literature, the epic poem *Gilgamesh* (Mitchell 2006). These achievements were made possible by the material capacity of marshlands ecology to mobilize resources: to grow food, yield water, speed human movement, raise and support settlements, and generate novel forms of life. Over their lifespan, the marshlands themselves have moved: roughly 6,000–7,000 years ago, in the mid-Holocene, the marshlands systems shifted inland, away from the coast, to its current location at the delta of the Tigris and Euphrates near present-day Qurna (Cooke 1987).

The marshes originate from seasonal alpine melt from the Taurus and Zagros mountains in eastern Turkey, which swells the Tigris and Euphrates Rivers—one of the largest river systems in the Middle East, second only to the Nile—at their source. In the low elevation alluvial plains of southern Iraq, the already swollen rivers overrun their banks and saturate the marshes, sometimes with a force so rapid and overpowering it creates epic flooding (Roux 1992; Stahl 2014). Iraq's marshes are characterized by vast fluctuation, making its terrain unruly and unpredictable, and also politically problematic. Twentieth-century British colonial travelers, twentieth-century Iranian and Iraqi soldiers, and twenty-first century field scientists alike became disoriented and lost their way in the internal maze and relied on shaykhs and other esteemed residents for safe passage.[13] Iraq's marshlands are therefore unstable mobilizers of water, commerce, political ideology, technoscience, and war.

The marshlands impenetrable geography for outsiders has meant the area has enjoyed relative political autonomy, while also being subject to an array of political interventions that connect them more closely to centralized rule (Scott 2009). In the mid-nineteenth century, Ottoman officials imposed Tanzimat land tenure reforms across southern Iraq, including in the marshes, in an effort to tie imperial hinterlands more closely to Istanbul.[14] The Ottoman strategy backfired when

Shaykh Nasir al-Sa'dun purchased the title deed for the entire Muntafiq province in a move that contributed to the collapse of the Ottoman Empire in Mesopotamia (Warriner 1957, 143). During this time, southern tribes, including those in the marshes, converted to Shi'i Islam, possibly as a protest, to gain control over social identity, or as a means to cope with the loss of a former way of life. In converting, tribes gained greater respect and religious legitimization in a transnational community and, in observing Shi'i rituals, improved their relationship with urban Shi'i in the south (Nakash 1994, 45; see also Jabar 2003).

Iraq's marshes have been the target of every imperial and statecraft intervention since the Ottoman Empire through the 2003 Iraq War. The location of Iraq's marshlands between two major rivers just north of the Arab Gulf makes these a site of robust economic and political activity: they have moved dates, mail, commerce, and fish; facilitated religious pilgrimage and revolutionary action; and witnessed three major wars in the last fifty years—the Iran–Iraq War, the Gulf War, and the Iraq War.[15] However, as Shaykh al-Sa'dun's example shows, marshlands residents have successfully co-opted, circumvented, or resisted imperial attempts to incorporate the marshlands.

Draining

Despite its small number of residents, the marshlands historically had an outsized presence in the Iraqi cultural sphere where interest in the region spanned Ba'thist, Communist, and Shi'i political and social movements. Saddam Hussein appropriated Sumerian marshlands iconography in the 1980s during the Iran–Iraq War when he orchestrated televised Babylon festivals that drew on such symbolics and tied his family's genealogy to heroes of antiquity like Nebuchadnezzar (Tripp 2000, 225). Also at this time, Iraqi soldiers from all over the country gathered in the marshes, whose porous border was a significant war liability, to fight some of the most intense battles of the war. These soldiers speak of their time fighting in the marshes as an education in Iraqi geography and natural history (Khoury 2013, 96). From the 1960s to the early 1990s, the marshes served as staging ground for communist organizing, refuge for professionals and intellectuals seeking safe passage out of the country, and muse for numerous artists and poets.[16]

Zaid Kubra, CEO of Green Iraq, saw his decisive political leadership during the 2003 Iraq War as a corrective for his lack of involvement in the 1991 Gulf War. In 1991, with encouragement from President George H. W. Bush, southern Iraq and Kurdistan rose up to overthrow Saddam Hussein. One by one, governorates fell to the insurgency, only for the uprising to be squashed by the Ba'th airpower that bombed the populist revolution, as US warplanes circled the sky but did not engage (Zenko 2016). Following the popular uprising, Saddam Hussein drained the marshes and executed thousands of marshland shaykhs and religious clergy,



FIGURE 2. Photo of ship to transport reeds to market, gifted by President Saddam Hussein to the marshes at Chibayish in the 1970s. Photo by Asad Niazi, November 2021. Courtesy of Niazi.

who he deemed traitors to the regime. The former president had a complex relationship with the marshes; in the 1970s, he made public visits to Chibayish and bestowed gifts of two ships—one served as a health clinic, and the other ferried reeds to town to promote trade and boost the local economy; today the latter lies decaying in the Hammar marshes at Chibayish (figure 2). Throughout the 1970s, the former president incrementally drained the marshes and invited a team of British photographers and travel writers to record marshlands images for posterity (Young 1977). But in the 1990s, Saddam Hussein pursued draining aggressively in retribution for the popular uprising, recruiting a legion of hydrological engineers to undertake the monumental task.[17] One of these engineers told me in Montreal in August 2005 that he was reluctant to participate because he knew draining would create an ecological disaster and he cared about the marshes, but he felt that he had no choice.

In less than a decade, the engineers erected an ambitious hydraulic regime by cutting new river channels across the vast marsh expanse that conducted wetland waters through the Shatt al-Arab into the Arab Gulf. President Hussein wrote romance novels in his spare time and chose to mark his authority in the land by inscribing poetry into it; he named rivers built for drainage to declare his hold on southern Iraq with flourish: Umm al-Maʿarik (Mother of All Battles), Wafa' lil-Qa'id (Fidelity to the Leader), Nahr al-ʿIzz (Prosperity River), and Taj al-Maʿarik (Crown

of Battles) (United Nations Environmental Programme 2001, 25, 27). On completing the feat, the former president feted engineers with medals of achievement. Between 1991 and 1995, Iraqi engineers under orders of the president drained roughly one-third of marshlands waters and reduced the marshes to nearly 10 percent of their size (United Nations Environmental Programme 2001, 25–29).

Inside Iraq, Saddam Hussein publicized the draining as a modernizing project and public health initiative. National television broadcast images of Iraqi government officials doling out televisions to marsh residents.[18] Iraq's Parliament speaker announced plans to relocate marsh residents to new housing communities equipped with electricity, clean water, schools, and medical care to "make them good citizens" (Human Rights Watch 2003a, 9). Outside Iraq, by the early 2000s, international organizations and Iraqi exiles wrote about the drying of the marshes in wholly different terms. Humanitarian reports document the government's mass detention and executions of shaykhs, religious clergy, and marsh residents; the destruction of religious shrines; and the systematic demolition and burning of villages (Human Rights Watch 2003a, 7–8; Middle East Watch 1992, 10, 17). Journalists confirmed the violence, documented initially in martyr books and amateur videos smuggled out of Iraq in the 1990s, with post-invasion evidence of mass graves unearthed in the marshes (Tyler 2003). Sahib al-Hakim (2003) of the Islamic Supreme Council of Iraq (ISCI),[19] for example, made it his personal mission to record the numerous casualties, from clergy to ordinary citizens, who were subject to violence and often killed during draining.

The contrary accounts from within and outside Iraq meant that until UNEP published satellite images confirming the widespread draining in 2001, the exact state of the marshes was unknown to many Iraqis outside the country. In 1991, the number of marsh residents amounted to roughly 250,000. In 2003, fewer than 40,000 remained (Human Rights Watch 2003a, 1). When the Ba'th government fell, and US soldiers captured Saddam Hussein, residents of the marshes brought heavy earth-moving equipment from Nasiriyya to cleave open dams and dikes and reflood the marshes (figure 3). Kubra told me he was present at the reflooding. Archaeologists aligned with the US military recall that Kubra was instrumental in procuring the equipment necessary to reflood the marshes. Residents at Chibayish, whom I spoke with in November 2021, asserted that they obtained the machinery independently from Nasiriyya. Given the vast expanse of marshlands, both accounts are possible.

Draining the marshes was nothing new. The Ottoman and British colonial governments had pursued it first. Ottoman authorities hired British irrigation expert Sir William Willcocks fresh from the Nile to develop plans for the marshes in an effort to regain purchase over Mesopotamia. In 1911 Willcocks issued his report recommending marshlands draining to irrigate adjacent fields and build agrarian industry, thereby restoring the "Garden of Eden," which he defined not as the marshlands proper but as the agrarian bounty of the fields they irrigated



FIGURE 3. Photo of old drainage infrastructure opened by Chibayish residents after the fall of Baʿth government. Photo by author, November 11, 2021.

(Willcocks 1911, 1912). The British continued rigorous land reforms based on irrigation plans for southern Iraq and the marshlands (Batatu 2004, 63–153).[20] In fact, it was British engineer Fred Haigh's 1951 plans to drain the marshes, developed for Iraq's Irrigation Development Commission, that became the blueprint for Saddam Hussein's plans implemented throughout the 1970s (United Nations Environmental Programme 2001). Despite this history of draining, President Hussein's campaign in the 1990s was unprecedented and retaliatory. The US government used this evidence to criminalize Saddam Hussein—making him the first world leader to be prosecuted in part on the basis of environmental harm—and promote the Iraq War as necessary and just.

In 2003, when the US government instrumentalized marshlands reflooding and conservation they pursued a warfare strategy that included ecological intervention in the marshes as Saddam Hussein, the British, and the Ottomans before them. Kubra and some Iraqi exiles I met in London, who did not grow up in the marshes, viewed them as a proud bastion of political autonomy and the locus of Sumeria, as if people in the marshes today are the living vestiges of antiquity. Today Iraqis both celebrate marsh residents because of their imputed relationship to Sumeria and denigrate them by virtue of the affiliation.[21] *Maʿdan*, and related term *maʿadi*, is a racial slur that refers to marshlands residents and is used by some in Iraq to criticize others' behavior as antique, unrefined, unsophisticated, and anti-modern. Meanwhile, contemporary conservationists, like British imperialists before them,

assert the marshlands are Eden and use this attribution of the marshlands to the antique past of Sumeria to market marshlands conservation.

WARZONE ECOLOGY

Mobilizing the Biosphere

Actors mobilize the biosphere when they undertake or participate in war. Armies do not simply battle on the terrestrial surface or in the air; they deploy weaponry that seeps into water tables, saturates soils, and is ingested in bodies and ecosystems, where it is metabolized over years and generations (Gregory 2016). That is, when actors undertake war, they do so ecologically; war is internal to morphogenesis (the shaping of an organism) and biogenesis (the development of life from preexisting life). Anthropological scholarship has shown how war generates life (Khayyat 2022), that militarism produces novel landscapes and lifeforms (Kim 2022), that waste can be a form of siege (Stamatopoulou-Robbins 2019), that roadblocks emplace the geography of occupation (Bishara 2015), and that the Global War on Terror is a landscaping project (Rubaii 2022) or even a Terracene, an epoch marked by the convergence of racialized militarism and environmental destruction (Mameni 2023). Each of these works among others elaborates how the violence of war is affective, sensory, productive, lively, and experiential (Yildirim 2023; Ruiz-Serna 2023). I build on the work of scholars who argue that for individuals in warzones, making life in war is a creative project that involves "trouble-making" (Pardo Pedraza 2023) and skilled attunement to "propositional life making processes" (Lyons 2020).

While many scholars conceptualize the entanglements of war and ecology by focusing on communities subject to violence, I hone my analysis on the experts who make war to investigate the social relationships of warcraft. To assess a more complete picture of war-making, I turn not to military institutions as my primary site but to the principal US government civil service project—marshlands conservation—that occupying forces used to argue that the Iraq War was a greater good for Iraq, the US, and even the planet. In this way, I examine how Iraqi marshlands conservation investors defined, made, emplaced, and contested the category of "environment" in and through the operations of war and vice versa (Bond 2022). By tracing how these actors made Iraq's marshlands environment, I analyze how they mobilized the ethical discourse of planetary repair for extraction.

Politicians, economists, and earth and military scientists created "the environment," "the economy," and contemporary warfare in an effort to globalize governance following World War II, such as by creating the United Nations. When the National Aeronautics and Space Administration (NASA) captured the *Earthrise* photograph on the Apollo 8 mission in 1968, six years after Rachel Carson published *Silent Spring*, it created conditions for the growth and development of the contemporary environmental movement (Masco 2015). Such terrestrial

monitoring systems are the product of a back-and-forth development between earth science and the military (Edwards 1996). At the same time, financial institutions like the World Bank and IMF made these biopolitical technologies possible and, in turn, expanded the horizons of late liberal capitalist growth (Scott 2016; Mitchell 2011).

British imperialists first identified Iraq's marshlands as Eden-proper. Iraqi exiles allied to the US government reinvigorated this imperial imagination by recalling for political purposes their childhood memories of visits to the marshlands as an experience of Eden in ways that substantiated the US's rationale for the Iraq War. A year after the invasion of Iraq, it was clear there were no weapons of mass destruction, and President George W. Bush, facing an election year with an unpopular war he promulgated based on a lie, attempted to rebrand the Iraq War as a humanitarian intervention. During this time, the US president and members of the Republican Party turned to the environment, specifically Iraq's marshlands, to legitimize and fortify the US occupation of Iraq. So pronounced was this rhetoric that Human Rights Watch (2004) denounced it.

Nevertheless, the US government used this humanitarian rhetoric to advance the criminal prosecution of Saddam Hussein. When an Iraqi judge arraigned Saddam Hussein on July 1, 2004, he issued seven preliminary charges, including a combined charge for the suppression of the 1991 Shiʿi and Kurdish uprisings, and the "genocide" of marsh residents and the draining of the marshlands that followed (BBC 2004). The criminal charge supported President Bush's framing of the war and served the interests of international prosecutors at The Hague and the International Criminal Court (2013) who wanted to expand the capacity of environmental law (International Criminal Court 2013; Smith 2016). The new Iraqi constitution, which US advisers had a heavy hand in writing, inscribed the marshes into the legal architecture of the state. The preamble of the constitution noted that Iraqis marched to the ballot in January 2005 "inspired by the tragedies of Iraq's martyrs, Shiite and Sunni, Arabs and Kurds and Turkmen and from all other components of people, and recollecting the darkness of the ravage of the holy cities and the South . . . burnt by the flames of grief of the mass graves, the marshes, Al-Dujail and others" (Government of Iraq 2005). In this way, US political advisers and Iraqi government officials made large swaths of Iraqi territory "the environment" for the first time, bringing three of Iraq's southern governorates, where oil wealth is concentrated, under the domain of international conservation law and policy.

The US military destroyed Iraq's environment through a series of wars and military operations. President Bush then highlighted his government's role in conserving Iraq's marshlands in ways that evaded US responsibility for this destruction. US ground forces in 1991 and 2003 fired roughly 1,200 tons of ammunition in Iraq, contaminating the soil with radioactive material from depleted uranium, which leached into waters, wastelanding the country (Dewachi 2013; Zwijnenburg 2014; Faa et al. 2018; Voyles 2015). This contamination has caused breast

cancer, lung cancer, leukemia, and lymphoma incidence rates to double and triple, resulting in 140,000 cases of cancer in Iraq in 2013 (Fathi 2013). Recent data indicate that Iraq's total cancer incidence rate continues to rise, particularly breast and colorectal cancers (Hussain and Lafta 2021; Ibrahem et al. 2022). In Basra the 2017 cancer incidence rate increased by over 30 percent from 2005 (Abood et al. 2020), including increased incidences of leukemia and lymphoma in children (Al-Asadi and Ibrahim 2018). The US bombing of Falluja in 2004, which took place as Kubra mobilized support for marshlands conservation, resulted in a 2,200 percent increase in leukemia incidence rates and a 1,260 percent increase in childhood cancer (Chalabi 2023; Busby et al. 2010). In Basra's maternity ward, incidence of congenital birth defects increased seventeen-fold between 1994 and 2003, with the enamel from children's teeth born with these defects indicating lead contamination three times higher than in children living in unaffected areas in Iraq (Al-Shammari 2015; Rubaii 2020a; Specht et al. 2024). In 2013, the UN World Health Organization aided the US cover-up with a summary report denying that decaying US munitions were the cause of Iraq's high incidence rate of congenital birth defects (Ahmed 2013). Across the south of Iraq, decades of war and sanctions heavily damaged water and sewage infrastructure (al-Mohammad 2007). But Kubra did not direct marshlands conservation to tackle the problem of US contamination in the marshlands. Instead, he directed it to serve the interests of his foreign donors and contractors interested in extracting marshland resources.

The state of Iraq's southern waterways is dire: in 2018 an algal bloom in Basra sent 118,000 people to the hospital in severe gastrointestinal distress. Iraqi residents responded with mass demonstrations that highlighted government failure as the definitive factor responsible for the ecological crisis (Human Rights Watch 2019). Throughout the twentieth and into the twenty-first century, UK, Ba'th, and US forces weaponized Iraq's air. Toxins from deployed weapons seeped into the soil, rivers, and marshes, forming poisonous precipitation, contamination, and rising heat in new environmental and weather configurations that continued to wound and kill Iraq's residents long after the US declared the official end of war (Nixon 2011). As this book makes clear, US government officials and their allies mobilized Iraqi marshlands conservation as war.

Bodies at War

Actors invested in Iraqi marshlands conservation, such as Kubra and his donors and contractors, reconfigured and forged bodies in relation. Predominant in literature on the environment and war is the common recognition that bodies extend beyond the skin or external boundary because their corporeal existence is forged in relationship with the world around them (Grove 2019; Baptista 2022). That is to say, the human body is best considered as a socioecological process (Moore 2019, 15). Conservationists of Iraq's marshlands put multiple, diverse bodies in relation, including sentient beings like humans, animals, and plants;

ecosystems like marshlands, rivers, and habitats; geological formations like waterways, subterranean oil reserves, atmospheres, and stratospheres; legal and political doctrine such as laws, environmental treaties, official Iraqi state policies, and Iraq's constitution; financial and political entities such as country donors, states, multinational corporations, militias, and armies; and knowledge production such as media, scientific publications, social media, and image collections.

Modernity, philosopher Peter Sloterdijk (2009) has argued, is characterized by war that no longer targets the body but the environment. But as the biodiversity conservation of Iraq's marshlands reveals, the environment was not a target but a medium of violence, and hence there is no separation between war and the environment, just as there is no separation between the environment and the body (Doughty 2026). Bodies are the product of social relationships and come into being in inextricable relation, enmeshed in webbed existence (Haraway 2008, 72). In war, bodies come into being under conditions of violence; war actors harness bodies as agencies and technologies of that violence (MacLeish 2013). Taking marshlands conservation in Iraq as an example, bodies can be material, such as the marshlands ecosystem or the network of marshlands conservationists, and ideological, such as ideals imbued in that ecosystem by conservationists. If we understand bodies as being in a permanent state of becoming, we can also think of them as a crucial "scalar inter-text" of those processes (Agard-Jones 2014; Thomas 2011; Hecht 2018), and thus an important register for analyzing how warzone ecologies themselves come to be, how they operate, and how they catalyze change.

In this book, I focus my analysis on the conservation body of agencies that came together to make Iraq's marshes a biodiverse wetland. I consider the marshlands a body upon which conservation seeks to act. I also focus on the ecology of investors in the Iraq War who aimed to conserve them. The foreign conservationists I followed engaged with the marshlands from a distance, in ways that Iraqi scientists who conducted field research in the environs saw as abstract.

Kubra and his NGO Green Iraq took on the ambitious project of remaking southern Iraq's marshlands as a space of nature. Kubra undertook biodiversity conservation as an iterative process that actively transformed bodies in co-constitutive relation. The bodies of Iraqi scientists, the species bodies of birds, the body of the marshlands, the body of the state, the body of scientific expertise, and the body of the global economy changed in relation through the process of marshlands conservation. Simultaneously, Green Iraq employees and Italian donors and contractors pursued marshlands conservation in embodied ways as they made decisions that concerned the bodies of others in the warzone ecology, such as by quantifying species life in the marshlands or by forging conservation in ways that endangered their Iraqi colleagues. In the process, this diverse network of wartime conservationists, too, emerged as a body recognizable to each other and to a larger network of wartime development actors in which they were embedded. Bodies in the warzone ecology included physical bodies and institutional arrangements. Scholars

have used terms like "assemblage" or "network" (Latour 1987, 2005; Callon 1999; Law and Hassard 1999; Riles 2000; Ong and Collier 2005) to describe the inextricable relations of matter and discourse, but I use "body" to emphasize how as these entities undergo processual value transformation, they take on positions in a value hierarchy and are objectified in the process as corporeal entities, such as the bodies of birds and those of the Green Iraq scientists who counted them.

Actors direct the violence of war on bodies in particular; military targets are population and territory. "Kinetic" warfare, too, emanates from the bodies of soldiers and weapons systems. Making an argument for how bodies are central to warfare as projects and resources requires an understanding of bodies as not situated in an environment but intra-actively co-constituted, such that bodies—species, matter, expertise, policy, and finance—"are integral 'parts' of, or dynamic reconfigurings of, what is" (Barad 2007, 170). All bodies, including human bodies, "are not entities with inherent boundaries and properties but phenomena that acquire specific boundaries and properties through the open-ended dynamics of intra-activity" (Barad 2007, 172). By focusing on bodies, it becomes possible to track how global phenomena are embodied and, therefore, localized and particularized. It also becomes possible methodologically to trace how violence and ethics become and cohere in iterative practices that define our lives in relation to others.

To understand how war works on bodies in a way that remakes worlds, we need to start with the idea that war actors harness energy. We typically see war as a destructive force. Life might grow in spite of war but not because of it. But if we think about war as ecology, we open up the possibility of conceptualizing violence that is simultaneously life affirming and life taking. War involves actors' relations to each other and their war-making labors. Scholars have demonstrated that terrestrial bodies, from islands to waves, are continuous forms of energy (Moore 2019, 1; Helmreich 2023, 11), and so, too, is war. International relations scholar Jairus Grove draws on Ludwig Wittgenstein to assert that war is a "form of life," "the very fabric of relations that make a form of life and a world" (Grove 2019, 59; also Helmreich 2009, 6). Thinking about war as an ecology enables a focus on the social relations of war proponents with distinct interests acting together in ways that are mutually transformative. Iraqi marshlands conservation reveals that the biopolitics of war operates also as a productive mechanism of "improvement," "cultivation," and the "energizing" of environments. Marshlands biodiversity conservationists "energize" the environment by transforming nature into a system of values, thereby creating a form of "energy" that can be wagered to achieve biopolitical objectives (Marzec 2015, 12; Foucault 2007). In this way, a diverse ecology of conservation agencies creates "biodiverse" wetlands to then mobilize ideals of the biosphere for conservation, capital accumulation, and war.

This approach to ecologies might feel familiar because anthropologist Gregory Bateson—whose work defined US Cold War militarism as much as it did the ecology concept used by political ecologists today—also argued that ecology

is an "energy" (Bateson 2000, 409). But Karen Barad (2007) helps reframe an understanding of how energy moves in an ecology through her emphasis on intra-activity—which insists that "phenomena are ontologically primitive relations," that is, they do not precede relations but are made of them—represents a significant conceptual shift in how we think about causality. Prior theories, such as Bateson's, emphasizing "interaction" presume the existence of independent entities and their relations (Barad 2007, 139). Intra-activity, as Barad conceives it, helps us to understand how power and violence come to being through action (agency), which not only brings a more explicit focus to the nuances of power formation but also brings a reframing of ethical responsibility: if people create power through their actions, they also bear responsibility for the outcomes of war. That is, the violence of war does not exist outside or beyond the self.

Investigating the body of wetlands conservation agencies means that I analyze processes that made contractors, Iraqi biologists, birds, waters, maps, international environmentalists, country donors, media images and articles, scientific data, value hierarchies, expertise, toxicity, and biodiverse wetlands in emergent and inextricable relation. Nature conservation is a form of settlement (Cattelino 2015); it emplaces bodies in relation and according to plan. Conservation is biopolitical infrastructure that traffics mixed economies of information: "human and animal bodies, nature reserves, fences, guns; scientific instruments, maps, papers, and databases; legal designations, action plans, and market mechanisms; and films, websites, and online transfers" in ways that allow elites to act at a distance (Lorimer 2015, 10). Iraqi marshlands conservationists imagined creating a marshlands national park with core zones free of human activity and buffer zones where human activity would be regulated, which would require depopulating areas of the marshes home to Indigenous residents with ancestral ties to the land.

Kubra and his contractors aimed to conserve the marshes, and they were successful in convincing Iraq's Council of Ministers, UNESCO, and the Ramsar Convention on Wetlands of International Importance to develop policy or to ascribe the marshes into treaties that would protect them under law. However, inside the marshes these policies and the monies that financed them were hardly visible during my visits. Yet, the work of conservation involved Green Iraq biologists' field study in the marshes and report and journal article writing in Baghdad; teams of hydraulic engineers at two Italian companies contracted to Green Iraq; the work of ministry officials at four of Iraq's national ministries; and fundraising, lobbying, and media efforts by Kubra to popularize and win support for marshlands conservation. All these efforts brought a network of conservationists into being as a recognizable social body. In Iraq, as is common to the region, actors invested in the infrastructure of wetlands management move capital, science, and policy to forge the "connective tissue" of imperial capitalist occupiers and "symbolize their power" (Scaramelli 2019, 8). The process of making the wetlands body in Iraq was also a means of producing moral, financial, and biopolitical economies of

conservationists. In Iraq, human, water, atmospheric, and territorial bodies have long been sites of imperial intervention, such as during the 1950s British campaign to eradicate smallpox by clearing marshland migrants' recreated marshlands in Baghdad settlements (Farhan and Gupta 2022; Dewachi 2017) or through the US weaponization of the skies for intermittent bombing during the sanctions regime (Gordon 2010). Distinct in the twenty-first century is how making Iraq's marshes an environmental body, a wetlands, through the work of nature preservation served to enhance and expand the body and the power of networked foreign agencies (i.e., conservationists) inside Iraq.

Science Concretizes War

Kubra insisted that Iraqi marshlands conservation was a pure knowledge project separate from the corrupting forces of motivated interests. He claimed the project was scientific and therefore not political. Scholars have long dismissed such assertions by demonstrating how biological sciences, like wetlands conservation, concretize political authority in the construction of scientific categories (Feeley-Harnik 2001; Subramaniam 2014). But the point here is that Kubra's definition of the project as a scientific endeavor did critical work: he separated biodiversity conservation from the war and then capitalized on that separation to achieve the wartime objectives of expanding foreign private sector profit and political priorities inside Iraq, while subjugating Iraqi authority to the expertise of his foreign contractors. Foreign donors to and contractors with the marshlands project achieved imperial hegemony in the realm of science. Nature has been an important method of imperial warfare: natural scientists were imperial officers who defined scientific categories such as species and quantifiers like biodiversity to expand empire through the process of creating epistemological standards that have determined our understanding of life on Earth (Cronon 1995; Grove 1995; Raffles 2002; Davis 2007).

The science of biodiversity conservation *was* the Iraq War. Biodiversity is a form of reason that produces subjects and objects (Lowe 2006, 23) that, in Iraq's marshes, aligned the wetlands it produced with global biodiversity values that were also late liberal capitalist values. Biodiversity refers to the diversity of species that comprise life on earth. Yet, it circulates as "at once a natural fact, a species-extinction event, a scientific field of inquiry, a political referent, a moral discourse, an abstract pattern, and a tool of governance" (Youatt 2015, 1). The concept emerged from the 1992 UN Earth Summit in Rio de Janeiro that produced the Convention on Biological Diversity. The Rio conference pushed forward agreements based on the idea that biodiversity is a resource of the sovereign nation-states where it is located, thereby enshrining the idea of nature as property. In the 1990s, biodiversity was tied to sustainable development, but in the aughts, biodiversity came to be described as the indirect provider of goods and ecosystem services. This ecosystem services model of biodiversity conservation put species, like birds, at the forefront of environmental politics (Youatt 2015, 8–9).

Conservation is the "art of government" directed toward populations (Li 2007, 18) and the lands they inhabit. Government in this sense is not limited to state politics but is an "art" that encompasses an array of techniques including the biopolitical control of lands and populations (Foucault 2007). Biopolitics has meant different things at different historical moments. I invoke the term to consider how nature and war are relational in the twenty-first century, much like Foucault coined the term to analyze how human life at the level of population became an object of governance. Statecraft was essential for conservation because global conservation treaties legally proscribed the authority of Westphalian nation-states over their sovereign territories. However, Iraqi marshlands conservation demonstrates how the substantial monetary investments of foreign-country donors, whose funding ensured the priority of their contractors in governance matters like wetlands conservation, circumscribed state autonomy over land and population.

Foreign experts leading marshlands conservation harnessed Iraqi expertise and values for life and marshaled them toward the global standards set by the International Union for the Conservation of Nature that were at odds with customary ways of valuing birds and marshlands in Iraq. Scientific study of Iraq's marshes created new forms of value and new pathways to extraction by defining social categories—like species and wetlands—and applying them as legal and political directives for the management of the marshes (Peet et al. 2011, 37). In the labor process, Iraqi biologists worked to emplace these value standards of global biodiversity inside Iraq. In so doing, they created an opening for the related economic values of biodiversity conservation—such as the use and exchange values of the ideals of nature—which were inseparable from capital, and the moral values of the war, which served to justify the US invasion and occupation of Iraq (Fairhead et al. 2012).

Iraqi marshlands conservation reveals how experts inculcated wartime hierarchies of life. The Iraq War laid bare the calculus of human life numerically. The US government paid a "tariff" in "condolence payment" for an Iraqi civilian killed in the line of fire amounting to $2,500, but 160 times more for a US soldier killed in war, $400,000. The differential of death payments in the humanitarian sector was sharper still; a Western humanitarian worker could be ransomed for a million euros whereas local aid workers were unlikely to be ransomed but simply killed by militia forces (Fassin 2015, 776).

In contrast, Iraqi marshlands experts ranked the value of lives in more subtle, less perceptible registers, and in ways that made the project seem "empowering" to Iraq. As a result of the specifications of donor funding, Kubra hired donor-country experts who formulated plans for the marshes but did not travel to the wetlands. Instead, these experts relied on the sensory experience and biological expertise of in-country Iraqi biologists hired by Green Iraq to conduct marshlands fieldwork essential to the project. The arrangement of contractors subcontracting ensured the protection of foreign experts while placing the lives of Iraqi scientists in

immediate jeopardy. Here again we see how expertise is an intangible, ephemeral process that delivers and circumscribes Iraqi authority. Experts benefited from the wartime scientific mission of conservation science and were also compromised by it. Even those at the top of the knowledge hierarchy—foreign expert contractors—were not immune to the volatility of the war economy.

In 2014, the war economy imploded as Da'ish consolidated its hold over Iraq. Capitalizing on their early work to conserve Iraq's wetlands, Italian contractors won subsequent and more lucrative natural resource contracts in Iraq's national water management. To meet the demands of this work, Italian hydrological firms quickly hired staff and grew rapidly. This growth made them vulnerable when the war market dried up; they were unable to pivot quickly enough to other areas of the Global South to sustain their size, and, complicated by an embezzlement lawsuit, the firms collapsed. Much like the known instability of scientific categories, warzone ecologies are durable but unstable.

Conservationists have not yet succeeded in creating in the marshes a national park with core and buffer zones of regulated human activity. Instead, Green Iraq's project and subsidiary marshlands conservation efforts were ideologically disconnected from the geographically located marshlands. Marshlands conservationists did make material and substantive changes, but they did not produce an ecologically viable marshlands safe from toxic fallout. Instead, Iraqi marshlands conservationists asserted their foreign donor interests in and over Iraqi state ministries and secured their profit potential in Iraq through extractivist practices that limited their exposure, physically and financially.

TOWARD AN ETHICS OF AN ANTHROPOLOGY OF WAR

Warzone Ecology is an ethnography of experts who waged war. It focuses on the foreign engineers and conservationists who carried out wartime transformations of value key to solidifying their power and Iraqi biologists who experienced being devalued and disempowered through the process of building their expertise. This is not a book primarily about marshlands residents. Through an analysis of cultural production of marshlands conservation in war (Robben 2010; Bourdieu 1993), this book shows how war transforms social relationships into hierarchies of life at a planetary level.

As an American woman who had watched the US invade Iraq in 2003 when I was twenty-nine years old, I was invested in understanding the repercussions of the war. Many scholars have done work on how US policies and warmaking had devastated Iraq by focusing on US military operations, but I wanted to understand the broader experience of war by researching wartime biodiversity conservation, a statecraft effort foundational to the US and UN Iraq War development directive. To learn from experts inside and outside of Iraq the scope and scale of warcraft, I conducted research for more than twenty years before publishing this book.

Three weeks after US soldiers dismantled Saddam Hussein's statue in Firdos Square (Saleh 2018), I learned about the marshes from Samia Layali, a public health program director at an NGO in London serving Iraqi residents where I was volunteering. Layali's memories of visiting the marshes with her parents as a child were vivid and poetic and seemed to make broader claims about who should lead Iraq. George W. Bush ran for US presidential elections on a campaign that included opening the Alaskan wildlife preserve to oil exploration and he continued to advocate for drilling in the preserve as president. When in spring 2004 I saw the president say on national news that we went to war in Iraq to redeem a critical environment, the marshlands, I set out to investigate the entanglements of Iraqi biodiversity conservation with the war.

I met Zaid Kubra in October 2004 at a Harvard conference entitled The Mesopotamian Marshlands and Modern Development. That morning, I walked across the Harvard yard—a riotous autumnal heap of vermilion, burnt sienna, and ocher crunching underfoot—and entered the Graduate School of Design to meet war proponents gathering to plan Iraq's marshlands conservation. They were Iraqi ministers and their directors general, international NGO and development agency representatives, a member of UK royalty, US military officials, senior members of the US Army Corps of Engineers, executives of oil multinationals and hydraulic engineering firms, representatives of UNEP, and tenured biology professors from US and Canadian institutions. Neil Harvey, the conference organizer and an adjunct associate professor in the architecture department, a tall, if rumpled, landscape specialist in his mid-forties, attempted to persuade the 140 conference registrants and 40 presenters to marshal resources for marshlands biodiversity conservation with a quote from Henry David Thoreau that demonstrated the potential of their investment: "Redeeming a swamp comes pretty near to making a world."[22]

At the Harvard conference I asked Kubra if he would allow me to conduct research on how he and Green Iraq pursued marshlands conservation during war. He agreed. In August 2005, Kubra told me that Green Iraq scientists would be participating in an international ecology conference in Montreal, which I attended and observed and where I also conducted a few interviews. In August 2006, full-time ethnographic research became possible when I moved to Amman, where Kubra had newly relocated Green Iraq's headquarters and where he was living with his family. I was transparent with Kubra that the focus of my research was to investigate not the marshlands but the relationship of marshlands biodiversity conservation to the Iraq War. Kubra saw academic study in much the same way that he viewed media coverage of the marshes: he thought it was a good thing. As a white US citizen and an expert associated with the University of Michigan, with funding from the Social Science Research Council, and with Kubra's endorsement, I benefited from wide access to marshlands conservation proceedings including participation in backstage conversations with foreign experts, environmentalists, state representatives, and Iraqi biologists, all of whom helped me understand Green Iraq's work and its relationship to both conservation and natural resource

engineering. My positionality enabled me to examine firsthand how private foreign contractors extracted expertise and economic value from Iraqi experts and political leaders in ways that were central to marshlands conservation. My vantage point made it possible for me to investigate how private foreign contractors and donors worked to denationalize and privatize Iraq's economy via their investments in marshlands conservation. From August 2006 to September 2007 when I was in Amman, Kubra gave me full access to Green Iraq meetings, including closed-door meetings among relevant parties and day-to-day operations of Green Iraq, and sat for several interviews with me. I made three week-long to ten-day trips in February, April, and July 2007 to Sulaymaniyah to attend Green Iraq meetings with Italian contractors and Iraqi ministry representatives. I made those trips during the height of civilian violence in the Iraq War, when it would not have been possible for me to travel or stay in Iraq without Kubra's support.

But access to the field is not static. In September 2007, at a meeting in Amman, Kubra threatened to sue me for libel if he did not like the findings of my research. Except for attending a talk Kubra gave in New York in 2008, I did not see him again for many years. Then, in 2011 during a subsequent period of research in Amman, I met Kubra to share a copy of my dissertation, which argued that marshlands conservation was a form of warcraft. I knew he would not like my work. Predictably, he then severed contact with me, and my access to many foreign experts and their conservation efforts ended.

Kubra was not the same in 2004 as he was in 2007. When I started researching marshlands conservation, Kubra was a domineering figure in the field who created a lot of friction because he insisted that work proceed according to his plans. And yet he seemed to love the marshes and care about successfully restoring them to the wetlands that he remembered kayaking in during his childhood and youth. When I traveled to Sulaymaniyah in Iraqi Kurdistan in 2007, I observed Kubra and his Italian contractors discussing a private sector venture they were setting up. It took me twelve years to figure out that I had witnessed Kubra and his colleagues discussing a business that they would use to embezzle money for the Italian Minister of Environment Corrado Clini.

This book is not an exposé of Zaid Kubra or Green Iraq. It is a book about how war and the environment are relational forms of power. There are many Kubras and there are many Green Iraqs affecting Iraq. And there are individuals and NGOs like them affecting places that may or may not be considered classic war zones. At the same time, I see Kubra as representative of charismatic leaders and heavy-handed leadership in the context of war and development of economies around the world, because although the particularities of context and people may vary, charismatic political leaders are common and universal (Weber [1905] 1987; Lindholm 2020).

Over the next eighteen years, as I widened my scope to Iraqi artists, Iraqi activists, and Iraqi scientists studying toxicity in southern Iraq among others, I

attempted to situate my research with Green Iraq in a broader context of the Iraq War. I tried for many years to find safe passage to the marshes to conduct ethnographic research with residents. In November 2021 and September 2022, I made two research trips to Chibayish and to Ur, Nasiriyya, Suq al-Shuyukh, Amara, Abu al-Khaseeb, and Basra. I traveled during much of that time with artist Alia Farid, whose work begins and closes this book. During visits, I prioritized research with marshlands families and stayed in the home of Um and Abu Riyad, who generously took me in and introduced me to their neighbors. In Chibayish I investigated marshlands draining as well as the extent and reach of conservation. Tracking restoration of the marshes over twenty years has enabled my analysis of an occupation project past the official US withdrawal from Iraq in 2011 and allowed me to specify how such a wartime project continued to establish and reestablish international interests in Iraq long after the formal occupation and war ended.

A principal goal of this book is one I share with Adam Hanieh: to specify the social relations that give war, capitalism, and extraction meaning, particularly because the relations that constitute oil, capitalism, and war are largely invisible (Hanieh 2024, 4, 20). The man I call Zaid Kubra was the center of marshlands conservation. He had a commanding presence and marshaled a diverse array of actors, from journalists to country donors to engineers to environmentalists at various branches of the UN to Iraqi biologists and national ministry employees. In order to show how marshlands conservation is made, I had to critically examine Kubra's role in that process. His outsized presence reflects how war worked in Iraq; in the lead up to war, the US government was looking for charismatic individuals from Iraq capable of accomplishing the wartime transformation they aimed to produce in Iraq. Kubra, like other notable Iraqi exiles, was able to achieve a high degree of power, influence, and autonomy over marshlands conservation because his work served the needs of the US occupying forces.[23] My aim in this project is not to reify his perspective, but to show in ethnographic detail how Iraq War proponents made war. Throughout the book, I amplify the voices and experiences of Iraqi experts and statemakers who were both caught up in the marshlands conservation project and criticized its logics, using their resources to challenge its proponents, including Kubra.

To research how conservationists shaped Iraq's environment, I had to be outside of Iraq where investors in the Iraq War worked and met. I tracked the development of marshlands conservation in three principal ways: I followed the movement of money, studied scientific production of the conserved wetlands, and investigated the role of Iraq's marshes in US and UN policy in Iraq and in popular global media coverage of the Iraq War. My research draws on more than 150 interviews with key war investors; participant observation at international conferences, trainings, meetings about Iraqi marshlands conservation between representatives of Iraqi ministries, Italian and Canadian contractors for Green Iraq, and Green Iraq scientists; and British colonial archival research held at the National Archives of India.

During interviews, I attempted to make research participants as comfortable as possible, which meant that with the permission of participants I used audio-recording devices at times and took detailed notes by hand at other times, and sometimes switched between these techniques to adjust for comfort in real time. I changed all names of people and organizations to pseudonyms, with the exception of leaders of state and other publicly known figures and institutions.

I provide a nuanced understanding of the scope, scale, and stakes of Iraqi marshlands conservation by conducting participant observation research in formal meetings with ministerial employees, Italian hydrologists, and Green Iraq scientists in Montreal, Amman, and Sulaymaniyah and during "backstage" conversations and hangouts where Italian contractors, Kubra, Iraqi ministers and ministry representatives, and employees of Green Iraq had informal, relaxed, and off-the-cuff conversations about their work (Shryock 2004). I focus my analysis on variations of expertise in Iraq by conducting participant observation of foreign and Iraqi partnerships across private and public sectors. Invisibility is one technique of power and privilege for elites that scholars studying experts need to work to reverse (Gusterson 1997, 115). Participant observation with experts enabled me to show in detail how people participated in, shaped, and experienced large-scale political, economic, and environmental transformations, thereby advancing an analysis of war that moves from micro to macro scales.

Participant observation poses an unresolved dilemma in anthropology: namely, that our ethics discourse favors anthropological study of marginalized groups (Gusterson 2025, 60). For more than fifty years, anthropologists have called to "study up" (Nader 1972) but continue to be uncomfortable with the ethical challenges doing so poses. This is especially true of the anthropology of war because anthropologists from World War I to the 2003 Iraq War have been informants, collaborators, spies, and human terrain experts in war—Gregory Bateson notable among them. Through Bateson, the concept of "ecology" has been instrumental to warcraft since World War II. My analysis strives to make ecology an overt formulation of war as opposed to a conceptual apparatus for waging war. My specific challenge was not something I foresaw when I started research on the project as a graduate student: I would observe research participants making decisions that harmed others. Over the course of researching Green Iraq and Kubra in Amman in 2006–2007, I saw Kubra strongarm members of the Iraqi government and heard him express his interest in recruiting financial support for his work from oil companies and private sector contractors as a gross violation of the sacrifices that Iraqi employees of Green Iraq and national ministry representatives made to carry out marshlands conservation. To do research with war proponents in an ethical way, I had to rethink my own praxis.

Anthropology operates on a clear ethical mandate: do no harm. Yet anthropologists also know that morality is not oppositional—a better choice made from a stark contrast—but often requires wrestling with "multiple moral rubrics" that

require continual negotiation (Deeb and Harb 2013). Anthropologists deal with this ethical negotiation in the field all the time, but fieldwork in war brings to focus the messiness of morality and provides an opportunity for scholars to rethink our own subject position in the field. In my experience, ethics in research required situational awareness, the ability to readily adapt and change course as I uncovered new information.

Artist Alia Farid explores Iraqi marshlands life and livelihood through residents' expertise for wetlands navigation, or wayfinding, that informs not only how they move through the marshes, but also how they locate themselves and each other as part of an epistemology of marshlands social life. Inspired by her work, I take up wayfinding in this book as a methodological praxis and a conceptual intervention for counterhegemonic thinking in war. Wayfinding is a form of situational awareness for maritime navigation that has been a definitive principle for anthropology (Carse 2020; Bishara 2015; Ingold 2000; Malinowski [1922] 1984). I define wayfinding as expertise, drawing on Ashley Carse (2020, 7), who argues that wayfinding is "enskillment" derived from embodied knowledge and an ability to respond to place-specific information. As a method, I used wayfinding to first learn about and then contextualize Kubra's elite position in the Iraq War and the special status of the NGO, Green Iraq. Beyond my research with Green Iraq, I did expansive research with marshlands residents, Iraqi artists, ahwari activists, Iraqi biologists studying marshlands pollution, NGOs, exile organizations, religious institutions, environmental agencies, Iraqi refugees and those that helped them, journalists, Iraqi political leaders, Italian judges, personnel at various branches of the UN, and representatives of the US government. This fieldwork was essential to my understanding of Kubra and Green Iraq's positionality, operation, and relative power.

As a concept, I develop wayfinding through my engagement with artists from Iraq and the region whose practice represented a longue durée of counterhegemonic discourse to nearly a century of imperial and authoritarian wars in Iraq. The Iraq War was a media war, a battle of images (Gürsel 2016). Iraqi artists and their image-making practices are vital counterdiscourses that center Iraqi experience in war. These artists do critical work because so much of the overwhelming media coverage of the war either obscures or dehumanizes Iraqi experience. Beginning in 2006, art scholars and curators Kristine Khouri (Khouri and Salti 2018) and Rijin Sahakian (Abbas et al. 2023), who founded the initiative Sada in Baghdad during the 2003 war to support young artists, facilitated my research by introducing me to artists working in and on Iraq. In 2011 during a postgraduate research fellowship in Amman, I met May Muzaffar, poet and wife of Iraqi artist Rafaa Nasiri, who maintains his studio in Jabal Lweibdeh and enables community for young Iraqi artists. Similarly, Areej Hayder and Hasanain al-Ibrahimi enabled my research on Iraqi artists at the Ibrahimi Collection in Amman.

Artists and art practitioners working on Iraq make images that challenge the imperial logics of war by identifying the perpetrators of war, by centering war

violence as both immediate and unfolding over time, and by visualizing the affective, embodied, and often invisible experience of life in war. As artists sort out in their work their own relationships to war, to Iraq, to history, to violence, they are suggesting ways to move in and through war that resonate with the everyday ways that ahwari residents are also living in and moving through warzone ecologies. By featuring artists and ahwari residents' wayfinding strategies in interleaves between primary chapters, I recontextualize warzone ecology as it is materially lived and experienced inside the marshlands and as it is discursively mobilized by artists to critique imperial capitalist warfare.

BOOK STRUCTURE

This book analyzes how scientific experts, political officials, donors, contractors, and environmentalists form a warzone ecology through biodiversity conservation of Iraq's marshes. Much as the Iraq War was a war of images; so, too, was marshlands conservation. Each chapter explores a particular register of making Iraq's conserved marshlands, a project that centrally involved new ways of visualizing the marshes. Between the chapters, I include interleaves that intervene directly in this visual lexicon that overdetermined how the war was seen and understood; these draw on my work with artists from and engaged with Iraq and its marshlands. Each interleaf focuses on one artist as they reframe Green Iraq's mobilization of marshlands conservation. In this way, *Warzone Ecology* analyzes a predominant visual politics to expose forms of violence not commonly seen or understood.

Chapter 1, "Frame," opens the monograph with analysis of the centrality of image-making to the Iraq War. The chapter delves into how Zaid Kubra successfully cultivated relationships with the press to market Iraq's marshlands conservation as a remaking of the biblical Garden of Eden, what I call *framework*, and in the process acquired political power for himself by making the US government look good by framing war as redemption. Our understandings of war stem from the images that define war violence as immediate and spectacular, such as bombings and gunfire, rather than the mundane "out of sight" incremental accretions of violence that unfold "across a range of temporal scales," such as the transformation of nature (Nixon 2011, 2). Here I show that "the environment" was a frame of war in Iraq that imputed to the marshes a temporality and spatiality of Eden that was suited for occupation, through mainstream media coverage in hundreds of articles over the last twenty years. Such framing designated the marshes as a global space of exception in Iraq wherein state sovereignty over its territory was superseded by the planetary imperative for biodiversity conservation.

Chapter 2, "Ground Truth," delves further into the work of defining Iraq's marshlands by analyzing how UNEP Geneva scientists made its geography in a Swiss lab through remote sensing. Before marshlands conservationists could protect the marshes, they first needed to define its geographic parameters. In the Geneva

lab, scientists who had never been to Iraq worked on a different kind of image-making, preparing groundcover maps from NASA satellite images of the marshes, which inside the lab raised epistemological and ethical questions of "the ground" and how it can be known. This chapter explores how, during a two-week training course of Iraqi biologists in Geneva, Iraqi expertise is made to fail in a process I call *forced futility*. The chapter details the extractive donor relationships with Iraqi state employees and experts in a knowledge economy that prioritizes foreign state interests at the expense of Iraqi nationals who represent the state. In this chapter, I demonstrate how the laboratory, a space that was most decidedly not the war, was nevertheless embattled terrain.

Chapter 3, "Bird," continues exploring foreign donor extractive interests in Iraq through an analysis of bird counting in the marshlands for biodiversity conservation. Kubra and his donors, the Italian Ministry of Environment and the Canadian International Development Agency, trained Iraqi biologists employed by Kubra's NGO Green Iraq to become ornithologists, or bird experts. While foreign experts in Italy and Canada developed plans for marshlands conservation, the Iraqi birders for the NGO were the only ones who risked their lives and physically went to the marshes. Birding shows a different valence of extractive violence, including in the creation or appropriation of Iraqi expertise for species identification. Rather than being set up to fail, as in UNEP Geneva, Iraqi birders became experts in ways that exposed them to lethal risks while advancing foreign interests in Iraq. Through birding, foreign experts developed a modality of extraction I call *eco-value*, in which they mobilize the goodwill they generated through marshlands conservation to "leap-frog" (Günel 2021) into and win control over adjacent natural resource sectors, such as water and oil.

Chapter 4, "Dream," returns to Kubra's vision of Iraq's conserved marshlands to analyze how he and his Italian contractors attempted to impart that vision to Iraqi state ministers and their representatives through a series of meetings in 2007, one of the worst years of civilian violence in the war. The chapter analyzes what I call *dreamwork*, how dreaming was one process of denationalizing the Iraqi state by developing the priorities of international experts and donors inside Iraqi state institutions, such as the ministries that formed Iraq's Council of Ministers, the principal executive body of the federal government. Previous chapters considered how mid-level employees at Green Iraq and in Iraqi ministries developed expertise that was violent. This final chapter analyzes how high-level employees of Iraqi ministries and the ministers themselves became subjugated to foreign donors and experts through their participation in marshlands conservation at the same time that this work endangered their lives by making them militia targets. Yet, Kubra and his contractors were not immune to the violence of war, even as they expanded their power in Iraq and profiteered from marshlands conservation through embezzlement. After 2014 when Da'ish gained control of broad swaths of Iraqi territory, the war economy imploded and so, too, did the Italian firms that

benefited from it. This chapter demonstrates how a warzone ecology might be mobilized by people, but through financial and political investment becomes larger than any one person such that even its initial proponents can become casualties.

The book ends with "Wayfinding," which returns to Chibayish in the Central and Hammar marshes to analyze how marshlands residents live through and experience ecological decline due to marshlands biodiversity conservation as Kubra practiced it. By examining marshlands expertise, *wayfinding*, which foregrounds awareness, I close the book with a critique of hope as a framework for environmental justice. I make the case, instead, that any movement for environmental justice requires a theory of society, such as wayfinding, that privileges critical consciousness.

As the US's Global War on Terror expands across the world, which now includes seventy-eight countries (Savell 2023), so, too, do the substantial US infrastructures of war on foreign soil that maintain it, including in Iraq: the military bases with their barracks and weapons depots; their ship repair facilities, golf courses, and basketball courts; their toxic industrial sites, laboratories, training facilities, and legal experts who work to facilitate US access (Lutz 2009, 4–6). Yet, life does not stop in war. Iraqi nationals, just as people elsewhere living through war, make their lives in war; they celebrate birthdays, go to clubs, work farms, cultivate dates, prepare family meals at holidays, drink coffee in family gardens, take their children to daycare, dine on *masgouf* (chargrilled white fish) by the Tigris, work out in gyms, hang at cafés (al-Mohammad and Peluso 2012; Finnström 2008; Hromadžić 2022). A warzone ecology trains analytic attention to the infrastructures and the inseparable affective qualities of making life and death in war.

Together, these chapters build a method of analysis and conceptual category—warzone ecology—to investigate the convergence of military, economic, and environmental crises in our geologic era. *Warzone Ecology* analyzes how scientific experts, political officials, donors, contractors, and environmentalists claimed power by their work to "save the planet," and in so doing encourages thinking about nature as an ecology of war and violence that does more than unfold slowly, but transforms over and over again.

1

Frame

The View from Eden

In early 2004, President George W. Bush and his administration had all but capitulated that Iraq had no weapons of mass destruction and began to assert instead that the Iraq War was a necessary preemptive, humanitarian war to check the "axis of evil" by winning the "hearts and minds" of Iraqis (US Senate 2004). It was a year after Hans Blix had issued his report confirming that Iraq had no nuclear weapons, nine months after Paul Bremer disbanded the Iraqi army—which laid the foundations for a rising insurgency challenging the US occupation—and five months after the UN completed its withdrawal from Iraq. In late February 2004, for the US government the news from Iraq was grim: helicopters had been shot down, the Red Cross was bombed, and it was clear that Iraqi militias challenging the occupation were gaining force. And then, on February 21, 2004, *The New York Times* published a front-page feature suggesting good news: "THE STRUGGLE FOR IRAQ: ENVIRONMENT; Marshes a Vengeful Hussein Drained Stir Again" by Edward Wong, with a full-color image by João Silva (figure 4). The article and accompanying image indicated a positive aspect to the Iraq War because the US occupation was reviving marshlands that Saddam Hussein drained. The piece was the first of what would become an essential frame of the Iraq War: that the marshlands environment benefited from the war. Mainstream media, Zaid Kubra, and the US government used this frame heavily, marketing marshlands revival as the remaking of the biblical Garden of Eden, which located the marshes in antiquity for future prosperity and skipped over the present war in ways that fueled conservation while concealing how it, too, was warfare.



FIGURE 4. Kurmashia Marsh. Photo by João Silva, February 21, 2004. Courtesy of *The New York Times*/Redux. Published with the feature story "THE STRUGGLE FOR IRAQ: ENVIRONMENT; Marshes a Vengeful Hussein Drained Stir Again" by Edward Wong.

Since 2001, Iraq's marshes have featured in the news more than 1,700 times, about as much as they did in the hundred years previous. What is remarkable about this twenty-first-century spate of reporting is how media coverage positions the wetlands in two predominant ways: as related to the criminalization of Saddam Hussein, noting that the former president was formally charged with and would be tried for environmental crimes concomitant with the genocide of marshlands residents, *or* as the recuperation of an ancient land often referred to as *the* biblical Garden of Eden. These dual narratives together emphasized Saddam Hussein's brutality and the US's success at recuperating a critical and historic global ecology because of the war. In so doing, the Eden frame underscored the US presidential message that the Iraq War was imperative and just. Every major English-language media outlet covered Iraq's marshes in this way, including the BBC, NPR, *The New York Times*, *Washington Post*, *The Guardian*, Associated Press, *60 Minutes*, and *National Geographic* (Molavi 2003; Pelley 2009; Gies 2013). In April 2006, then *New Yorker* columnist George Packer told me Iraq's marshes had become "the success story of the war."[1]

Media has played a dominant role in the creation and entrenchment of empire, particularly in the Middle East (McAlister 2001; Said 1981), but in Iraq especially, media has been an essential arena for the theater of war. In the 1990s, the Gulf War essentially made CNN; it was the first live-action war. Nearly a decade later,

the Iraq War was the first digital war where, because of the advent of digital photography, images circulated in greater quantity and speed than ever before. The Global War on Terror was itself a discursive construct that spanned multiple wars and events and was actualized as a single entity only by news coverage, Zeynep Gürsel argues; "It is always also a war of images" (2016, 5). Battle itself is "radically changing fields of perception," and thus inseparable from the media frames that define war (Virilio 1989, 7; Mirzoeff 2011). Images of war define how we understand and recognize violence by focusing on the spectacular and the immediate at the expense of mundane forms of violence, such as ecological decline from the resulting pollution of military operations, which unfurls slowly over decades (Nixon 2011, 3), or from warcraft like biodiversity conservation that has seemingly no relationship to war. Media frames also influence popular support for wars in ways that impact military operations. When I met Iraq War generals at a military conference in Columbus, Georgia, commemorating the twenty-year anniversary of the Iraq War, they commonly spoke about their fear of bad press: "At least we stayed out of the papers," emphasizing that avoiding press coverage was essential to achieving tactical success.[2]

During the Iraq War, the Bush administration heightened the importance of image-making by investing heavily in the powers of stagecraft. The White House hired Hollywood producers who commissioned barges of Musco lights to illuminate the Statue of Liberty in just the right way for a presidential speech at Ellis Island, or positioned cameras off to the side to capture President Bush's profile perfectly aligned with the four presidents carved in stone during a speech at Mount Rushmore, or produced a backdrop that repeated "Helping Small Business" for a speech promoting his tax cut with type too small for the live audience to read, but perfect for the television viewer at home (Bumiller 2003). These acts of stagecraft extended to President Bush's messaging of his wars in Afghanistan, where women's rights was a prominent discourse (Abu-Lughod 2013), and Iraq, where nature conservation was a feature of war.

The discourse of human rights, which included environmental preservation, was central to the Global War on Terror due to the prominence of neoconservatives in the Bush administration, for whom human rights was the logics of US international intervention (Kumar 2021, 226). In fall 2003, for example, President Bush asked the US Congress for $100 million to restore Iraq's marshlands as a "national security matter" to stabilize Iraq and rectify the "atrocities of Saddam Hussein," while also securing the area to protect "our troops," in the words of USAID administrator Andrew Natsios (Heilprin 2003; Bush 2003b). The president's funding request placed environmental rehabilitation of Iraq's marshes within the scope of US national security, which together made the argument that conserving the marshes was the necessary work of planetary repair. Though House Republicans cut these marshlands funds from the US's Iraq reconstruction budget, President Bush and Republican congressional representatives continued to invoke

the marshlands in their Iraq War strategy. Natsios was so firmly committed to the project that he funded it with USAID's earmarked money for the environment without Bremer's knowledge or approval (Peasley 2018, 84). The president's 2004 budget request indicates a clear chain of command for the Iraq War: the Department of Defense would undertake military operations and the Department of State would lead the humanitarian reconstruction of state through USAID and the US Army Corps of Engineers, thereby revealing the substantial role of international development, driven by the ethos of planetary repair, in Iraqi statecraft and one possible reason Natsios felt he could take financial risks.

In March 2004, one month after *The New York Times* story appeared, a group of congressional Republicans invoked the Iraqi marshes to justify the war when they proposed a nonbinding resolution, H.Res.557, that argued, "Saddam Hussein and his regime committed crimes against humanity, systematically violating the human rights of Iraqis and citizens of other countries." At the time, the Bush administration was under increasing public scrutiny to provide a rationale for the Iraq War, as it had become clear that the evidence from Iraq did not support his weapons argument. The resolution stated that Saddam Hussein committed "mass destruction against Kurdish citizens," relied on rape as an intimidation tactic, and punished "Marsh Arabs by draining the marshlands, which created hundreds of thousands of refugees and caused an ecological catastrophe." On March 17, 2004, almost exactly a year from the US invasion, House Minority Leader Nancy Pelosi took the podium and denounced the maneuver:

> When I say that this resolution is in denial about why we went into the war, of course it mentions nothing about weapons of mass destruction, but it does mention that Saddam Hussein drained the Arab marsh, causing an ecological disaster. Did my colleagues realize that that was the reason we went to war, the same folks who have rolled back thirty years of bipartisan environmental progress are declaring a cause of war, the draining of the marsh in Iraq? It was a terrible environmental disaster. Nobody spoke about it at the time. (United States Congress 2004)

As Pelosi noted, the environmental rationale for war was inconsistent with the president's record promoting resource extraction, including his interest in opening the Arctic National Wildlife Refuge to oil drilling that featured in his election campaign. The US 108th Congress continued to emphasize marshlands draining in their debates over funding priorities and policy decisions for the Iraq War, inviting Zaid Kubra to testify in February 2004, and his associate and institutional sponsor Iraq Foundation President Rend Rahim to testify in June 2004. Rahim was one of three direct advisers to President George W. Bush in the lead-up to war.[3] This meant that US Congress debated the role of Iraq's marshes as part of their security strategy for the war at the same time that the Iraqi Special Tribunal, established by the US Coalition Provisional Authority, arraigned

and charged Saddam Hussein with seven initial crimes (on July 1, 2004) that included the combined charge of genocide and ecocide that, as discussed in the introduction, made the deposed president the first world leader to be criminalized for environmental harm.

THE EDEN FRAME

When Kubra and his associates framed Iraq's marshes as Eden—mounted and curated idyllic, utopian spaces—they created the conditions for state donors and contractors to invest in marshlands conservation and in so doing forged Iraq's warzone ecology. This chapter investigates Iraq's warzone ecology by considering the role of the media frame in warcraft. I trace Zaid Kubra's journey from his home in the US back to Iraq to focus on marshlands conservation and chart his efforts to build a biodiversity preservation campaign by actively working to shape the media message of it. I explore how Iraq's warzone ecology, including its funding, political support, and proponents, began to coalesce as a recognizable body of Iraqi marshlands conservationists through their cultivation of the Eden frame. By following Kubra as he moved within a global ecology of war business, traveling across countries to attend key conferences, I demonstrate how he and his associates became and operated as a warzone ecology, mobilizing around the discourse of marshlands reparation.

Kubra created the world of Eden from his childhood memories of the marshes, which tapped into universal romantic ideals of childhood innocence, play, and discovery. They marked Iraq's marshes as a space of exception that the war did not touch, thereby promoting war actors—those invested in war—as benevolent forces rather than violent invading and occupying imperial powers. In this way, Iraqi marshland Eden represented a virtual world born of Kubra's critical imagination and amplified by prominent US policy and Italian and Canadian funding. Mainstream media reporting on Iraq's marshes, however, treated Eden as putatively real. Biblical historians substantiated media accounts of marshlands Eden because they located the origins of the garden in the Tigris–Euphrates River Valley, citing Genesis 2:2: "A river rises in Eden to water the garden; outside it forms four separate branch streams. . . . The name of the third river is Tigris. . . . The fourth river is the Euphrates" (Speiser 1964). I am not suggesting here that the virtual is not real, rather the opposite; people inhabit virtual worlds in ways that are affective, cultured, and economically and sociopolitically connected (Boellstorff 2008). These worlds are virtual because they exist within a digitally networked space, which also applies to the world of marshlands Eden brought into being through digital news and social media content. Mainstream media, government officials, Iraqi exiles, and marshlands conservationists together created facts, like Eden, that were affective and persuasive arguments for war.

Actors like Kubra formed Iraq's warzone ecology through this shared work of their critical imagination.

FRAMEWORK

Kubra cultivated his memories to shape the sensory and spatiotemporal dimensions of the marshes for mainstream media. I call this craftwork *framework*, the work of harnessing digital media to build, cultivate, and establish the life of Eden as a shared cultural imaginary for popular consumption not unlike the metaverse of Minecraft or SecondLife, which are sensory and immersive digital realms (Boellstorf 2023). A framework is a basic structure underlying a system. I reposition framework as frame *work* to focus analysis on media framing as labor and to convey how framing by journalism is foundational to a warzone ecology. In the context of a highly mediated war wherein all UN operations were conducted from outside Iraq via Skype and GPS, where the US Armed Forces relied on drones, video games, and replica villages, and mainstream media actualized the Global War on Terror by reporting it, *framework* makes overt the discursive work of virtual media that framed Iraq's battlefields and reconstruction zones. My emphasis on the virtual and the mediated aligns with other insights on the Iraq War, like how the US Armed Forces, weapons scientists, climate ecologists, and resource multinationals shared digital infrastructures (e.g., NASA satellites and their instruments) that made the atmosphere a technological space of geopolitical intervention, what Jerry Zee calls "a machine sky" (2020; see also Edwards 2010; Masco 2010; Gusterson 2001).

Framework as I use it resonates with the soaring popularity of battle video games in Iraq since the US invasion in 2003, particularly Fortnite and PlayerUnknown's Battlegrounds.[4] Gaming enables "different people to experience a shared reality" (Sheldon 2023, 471), which is what the Eden frame did, but with political motivation; it made the marshes palatable to media consumers in the Global North while also appealing to the Global South in ways that advanced the Iraq War. But framework for Eden was not a virtual gaming space, it was news, which meant that the media public consumed framework as documentary fact. I invoke *framework* to make apparent how Kubra's crafting of the marshes narrative was a discursive technology that was not apart from, as media narratives suggested, but worked in concert with the host of virtual media technologies that defined the Iraq War.

A frame is technology that delimits a visual and discursive field, and in so doing sets the parameters of what counts as valued life (Butler 2009, ix–x). Frames "are themselves operations of power" that create, facilitate, and animate the materiality of war: "There is no way to separate, under present historical conditions, the material reality of war from those representational regimes through which it operates and which rationalize its own operation" (Butler 2009, 1, 29). As discussed in the introduction, from the mid-twentieth century, "the environment" became

a normative frame for valued life inseparable from the emergence of geopolitical forms governing the global ecosystem, such as the economy, the UN, and NASA (Mitchell 2011; Masco 2014; Edwards 1996). The environment is not an a priori "nature" but a frame that directs one to see and therefore value life as part of the natural world. Nature is a technology of power that operates as a mode of observation. As cultural theorist Raymond Williams argues, "It is in the act of observing that this landscape forms; the river 'conducts the eye'; the sloping land 'displays' its grace; the stream 'inlays' the vale. It is a beautiful picture, in the strict sense" (1973, 126). Those who define the aesthetics of nature have the power to define the environment and disappear from the frame as an actor in its creation, thereby naturalizing the "picture" or frame as existential rather than a social category.

Notable in twenty-first-century Iraq is how conservationists and politicians positioned the environment as an overt frame of war. Kubra and a legion of journalists mobilized "Eden" as the most expressive lexicon of the concept of "environment." For a frame to be successful, it must conscript a broader public, and Eden offered the possibility of wide consumer appeal because it is, as frames are, polysemic and can be read in many different ways at the same time (Hall 2007; Butler 2009, xii). Eden invoked environmental rescue and recovery in an era of unprecedented ecological loss through wartime destruction (Merchant 2003; Cronon 1995); it recalled biblical time by referencing the marshlands, as some scholars do, as *the* location of the biblical Garden of Eden; and it served the US political effort to rebrand the war in Iraq as a preemptive humanitarian effort that extended such notions of justice to ecologies. Media publics on the political left, such as climate change activists and environmentalists who clashed with President George W. Bush's support for the oil industry, were compelled by the Eden frame for Iraq's marshlands just as were media publics on the political right, such as Christian fundamentalists whose endorsement was essential to the president's electoral success.

In the Bible, Eden is a space of exception, surrounded by hell.[5] The Eden frame offered Iraq's marshes as a space of exception untouched by war, which war actors—from President Bush to Kubra's Italian hydrology contractors to oil multinationals Eni and BP—could use to expand profiteering and territorial conquest by framing it as nature preservation. A space of exception refers to an extraterritorial space in which the law is suspended in the name of a political emergency, such as war (Agamben 2005). I assert that media frames create spaces of exception that are not primarily concerned with suspending the law but that open up spaces and vectors for epistemic and extractive violence. In fact, oil multinationals used their own internal publications to run their own special interest pieces on the marshes, likening "post-war" conservation as the remaking of "Eden," in ways designed to make palatable for consumers their extraction of oil in those same marshlands.[6] Foreign donor countries used the Eden frame to designate the marshes a nonwar space, marketing their funding of a project as apolitical, universally beneficial, and unimpeachably good in ways that they could capitalize on for resource extraction.

The New York Times reporter Edward Wong's headline framed the marshlands story within the war, but his imagistic writing set the marshes aside as an exceptional space of peace. The article opens with this sentence: "Steering his wooden skiff between thick clumps of reeds, Kadum Abdullah took one hand off his pole and held it up for a visitor to see" (Wong 2004). Wong told me in March 2017 that his editors made the call about the front-page placement. He figured they would have been thinking that there "must be some benefits also to the toppling of Saddam. That would have generated some interest." In January 2024, I spoke to Susan Chira, Wong's editor at the time the story ran. Silva's photograph, as Wong suspected, had a lot to do with the front-page placement: the photograph "is spectacular," Chira told me. "This is not meant to be dismissive of the content, but you're looking for something for the top of the page. This is a stark and striking image" that is "arresting," "evocative," and "sums up a lot of what the story is about," she explained. For Chira, that marshlands story was about how "Saddam had been so vengeful and destructive." Wong's article therefore elaborated, according to her, "both a humanitarian and a climate story, and it was connected to the past in which we'd seen acts of vengeance by Hussein." As Wong recalled, "Reporting the marshes, that whole era was completely different. It felt really free, very vivid, because we could travel a lot more. We could drive places," as if the optimism of the moment was reflected in his article. Missing from this story and the more than 200 that followed was an account of how marshlands revival was intrinsic to the architecture of the Iraq War. It was a story made by war in a material sense, with financial and political ties from the US president down to Zaid Kubra.

Historically, in Iraq different frames for the marshes have bolstered distinct political regimes, from the British empire, where imperialists likened the marshes to Eden, to the Ba'thist government, wherein Saddam Hussein likened himself to Babylonian King Nebuchadnezzar, who was from the marshes. In the twenty-first century, it was the mainstream media—print journalism, radio, and television—that framed Iraq's marshes, reifying Kubra's vision of marshlands conservation as their lead source, and worked alongside official US war messaging. Such media representations had material effects on the funding and political support for Iraqi marshlands biodiversity conservation and elevated Kubra to political prominence in Iraq and in the global environmental movement.

Media framing of the marshes as Eden involved several key steps. First, Kubra emerged as the leader of marshlands conservation largely because of his family's political connections and his notable charm. Then, Kubra crafted the sensory, affective, and spatiotemporal qualities of Eden from his memories to resonate with those of other Iraqi exiles and for broad popular appeal. Finally, framing Eden opened the marshes as a space of exception ripe for foreign investment because it made them appear as a space of peace ripe for international development through

biodiversity conservation. By focusing on framing, it becomes possible to see how a warzone ecology mobilizes the biosphere concomitant with the socially recognizable emergence of a group of diverse social actors—marshlands conservationists—who each had distinct interests in and objectives for Iraq's marshes and leveraged their investments in Eden to achieve them.

A DETERMINED MAN

"I didn't set out to restore the marshes per se," Kubra told me at the Harvard conference in 2004. "I told you it initially started as a political ploy. Okay, let's use his [President Hussein's] attempt to get out of the sanctions to try to get the marshes back. And I got involved in politics that way and pretty soon I learned the various maneuvering." The marshes had been significant for Kubra ever since his childhood when he made periodic visits to them with his father, but after the 2003 US invasion of Iraq, Kubra learned how to maneuver the marshes politically, and use his authority as an upper-class Iraqi exile and a US citizen to lead marshlands conservation and represent that effort to the broader global public by strategically using the press.

To understand his approach to Iraqi marshlands conservation, we first have to understand what motivated Kubra to reflood and conserve them. Kubra's introduction to Iraq's marshes came through his dad. He dreamed of recreating the experience by kayaking Iraq's marshes one day with his own young children, indicating how his value of the marshes was rooted in familial, even filial, love. Kubra cried when he spoke about how his work conserving Iraq's marshes took him away from living with his children full time. But he made the sacrifice because "after the liberation of Iraq [in 2003] I thought, if I don't do this now and the marshes do not get restored, I will never be able to live with myself." The period between 1991 and 2003 was rough on Kubra and he regretted not getting involved in the Iraqi opposition movement during the Gulf War (August 2, 1990–February 28, 1991): "I had this thing in my heart that said you should have done more when you could have. . . . And maybe the fact that I didn't do anything between 1991 and 1995, 1996 until 1997 played a part in my growth and my decision-making in 2003 that one cannot just stop and watch. . . . You yourself should do something and lead if you believe in something." He had achieved financial and professional success, but "I achieved the goals that I had and I still felt empty." He would go to work, return home and head to his garage where he taught himself to make wood furniture. "My youngest daughter when she first learned to speak said 'dad go to work come home eat dinner go to garage smoke cigar work with wood.' That was my routine. And then we had kayaking." That began to change toward the end of the millennium when Kubra took on a more active role in the Iraqi Opposition Movement in Exile.

Kubra has fond memories of traveling the wetlands with his father, a famous irrigation engineer. Like other members of the Iraqi elite—middle and upper class individuals from notable families—who did not live in the marshes but visited them on childhood outings or school trips, Kubra maintained a strong affinity for the place. Such childhood memories of Iraq animated Iraqi exiles' advocacy for the removal of President Saddam Hussein and their support of the US invasion and occupation of Iraq. Iraqi exiles are not a homogeneous diaspora, but a diverse community with differences of political opinion, relationship to Iraq, and migration histories that date back to the early twentieth century (Shryock and Abrahan 2000, 18; Saleh 2020). The exiles I knew were elite members of the UK (primarily London) and the US who had left Iraq for university or postgraduate education abroad, following the pathways edged by empire, and who had become the middle- and upper-class professionals of the countries where they resettled. It was this group of exiles that the US government courted in the lead-up to the war, whose support President Bush and his government then performatively used to describe the war as an Iraqi priority and objective while dehumanizing Iraqis who lived through the war violence on the ground (Saleh 2019).

On October 31, 1998, US President Bill Clinton signed the Iraqi Liberation Act into law, which issued $97 million to seven opposition parties, including the Iraqi National Accord (INA) (Allawi 2007, 50–69). INA was the political party of Ayad Allawi who was the first head of government after Saddam Hussein when he was interim prime minister of Iraq from 2004 to 2005; later Allawi became the vice president of Iraq in 2014–2015 and 2016–2018. Kubra's sister worked for Ayad Allawi, and Kubra himself would become the campaign manager of his unsuccessful 2005 bid for reelection. The Iraqi Liberation Act stated that it was the express policy of the US to support regime change in Iraq (Unites States Congress 1998). In 1999, Kubra was on the board of directors at the Iraq Foundation, a DC-based nonprofit at the forefront of the Iraqi Opposition Movement in Exile, and rallied the cause for the US's forcible removal of Saddam Hussein from office.

Less than one month after the events of September 11, in October 2001, Kubra's audience for marshlands restoration grew substantially bigger when the US Department of State recruited him and his father to the Future of Iraq Project that would plan the aftermath of war (National Security Archive 2006). In December 2002, Iraqi exiles gathered at the London Metropole Hotel for a conference where they produced two major position papers for Iraq's post-Ba'th political future: "The Declaration of the Shi'i of Iraq," written by Sahib al-Hakim of the Supreme Council for the Islamic Revolution in Iraq (SCIRI), Muwaffaq al-Rubai'e (who became the CPA's National Security Adviser), and Ali Allawi (former Prime Minister Ayad Allawi's cousin); and "The Transition to Democracy," edited by Salem Chalabi (lawyer and first general director of the Iraqi Special Tribunal set up in 2003 to try Saddam Hussein and other members of

his government) and Kanan Makiya (Brandeis professor and one of three Iraqi exiles to directly advise President George W. Bush on the war). Although it was clear that the US at that time did not intend to hand over Iraq to the opposition, the London conference nonetheless reintegrated opposition parties into the war-planning effort, including SCIRI and al-Dawa, and triggered formalization of the role of several prominent Iraqi exiles, who then returned to take notable positions in Iraq's government following the US invasion (Allawi 2007, 70–85; Packer 2005). Though there were varying opinions about the war within the exile community, Iraqi exiles I spoke with in the US and UK believed that removing the Ba'th government would restore Iraq to the time of prosperity they remembered in the mid-twentieth century and into the early 1970s, after oil nationalization. The Iraqi state at that time claimed high literacy rates, offered important social services such as subsidized childcare, boasted regionally renowned biological sciences, particularly in marine science, and invested heavily in the arts and architecture (Al-Ali 2007).

One month before, in November 2002, Kubra and his wife had flown to Valencia, Spain, to make a case for Iraqi marshlands restoration at the formal meeting of contracting parties at the Ramsar Convention, for which they had no invitation. On the plane there, the pair formulated the three most important issues they wanted to convey: "drying is reversible, restoration is possible, all that's needed is political will." They built their PowerPoint presentation from UNEP specialist Khalil Walid's images of the marshes, Gavin Young's (1977) book with Nik Wheeler's photographs of the marshes, and Kubra's father's hydraulic data: "We basically scavenged," Kubra told me in March 2007. When they arrived in Valencia, they tried slipping notes to Walid, whose work with UNEP broke the story on the extent of Saddam Hussein's marshlands draining program with satellite imagery as proof. When that did not work, they lobbied a Greek delegate and then they tried to persuade an Iranian delegate, but to no avail. Finally, they called Tom Warrick, who connected them to an environmental specialist with the US Environmental Protection Agency who was in the official US delegation. Kubra and his wife delivered their presentation to the US delegation outside the official conference room.

In July 2002, with $220,000 in seed money from the US Department of State, Kubra assembled a team to study the potential of reflooding and restoring the marshlands. On February 16, 2003, he held a workshop for the blue-ribbon panel he assembled that included US wetlands scientists, BirdLife International representatives, and Walid. Kubra told me during a 2004 interview that the day after the US declared war on Iraq, March 20, 2003, the panel issued its report that restoring the marshes was not only feasible but warranted. Three days later, they held a planned press conference. Kubra recalled: "We had a press conference scheduled for March 23rd, three weeks before the war started. So maybe it was fortuitous, maybe it was serendipity, maybe we were manipulated. Who knows?

I don't know. It just happened that we came out right when the war was taking place so there was a *huge* amount of interest." Such US attempts to popularize the war capitalized on the idea that war could be a salvo for planetary repair, but Kubra's marshlands conservation did not exactly work that way. The war delivered Kubra a media audience for marshlands restoration, which in turn attracted donors. Very soon after that, Italian engineers contacted him with the possibility of a multi-million-dollar donation from their government and asked, "So what do you plan to do next?"

Kubra decided to return to Iraq to see the marshes for himself. In June 2003, he visited Chibayish for the first time in twenty-five years:

> My reaction was actually physical: it was like somebody hit me in the gut. When I first saw the area that my dad and I used to love, Chibayish, [it was a] desert to the eye. When we were there back in the sixties and seventies, you stood up on this bridge where there were reeds and water and the weather was pleasant. In 2003, you stood up on the same bloody bridge and you saw nothing but dust and dry desert. Tamarisk stands that basically live in a salty environment. It was *incredible* devastation: no birds, no water, no fish. For me it was a physical blow. This is when I set about actually asking people to start breaking the embankments that were there.

Kubra's chance at marshlands revival and conservation came with the initial Italian funding of $1.2 million in July 2003, but he was not sure how he would implement his plans; he had young children at home and a lucrative career: "Was I going to hire a project manager to run this project and stay with my comfortable career and my family? Or, or what? But a month and a half of sleepless nights and discussions soul searching with my wife, she told me basically, 'Look, if you don't do this, I know you're going to be an unhappy man.'" So Kubra decided to quit his job and move back to Iraq to launch Green Iraq and pursue marshlands conservation full time.

When I first met Kubra at Harvard, he told me that as an executive at a Fortune 500 company, he knew the value of marketing, which is why he spoke about marshlands preservation as the recreation of Eden in its biblical location, Iraq's marshes. In 1999, when he first started working with the Iraqi Opposition Movement in Exile, he and his wife started an organization called New Eden to advocate for the removal of Saddam Hussein from office because of the draining of the marshes. His work with New Eden was supported by the Iraq Foundation. Shortly after he returned to Baghdad in 2003, he registered the organization as an NGO in Iraq and changed the name to Green Iraq. During our conversation in a breakout room at the conference, Kubra told me:

> We came up with the idea of [New Eden] to try to appeal to the western mind. Eden is thought of as the place at the confluence of the Tigris and Euphrates, and we wanted a sexy name, sexy logo. We recognized that there is a need for marketing. I freely admit that this was trying to appeal to the western prejudices, as it were.[7]

Marketing is vital to framework. Kubra framed a compelling story of the marshes for reporters that resonated with the marketing interests of the newspapers—that is, their aim to attract readers by publishing public interest features that told a story of the Iraq War beyond the daily focus on military operations.

In a 2009 televised interview, a reporter asked Kubra why he returned to Iraq after building the life he had in the US. Kubra replied, "I realized that money, success, and the American dream is not everything. Working on passion, on something that drives you is everything." Kubra's soft-spoken restraint during interviews was notable. He knew how to make impactful sound bites, such as by suggesting that Saddam Hussein's weaponization of marshlands draining was the "weapon of mass destruction" that US government officials were looking for in Iraq. But he also knew how to temper his punches with the press by considering and validating different opinions from his own, as when he described the draining of the marshes as a major engineering achievement. When asked during the interview about his own role and the process of reflooding the marshlands, Kubra was demure: "You don't need to do much, you open the dikes and get out of the way, nature will take care of the rest, she knows what to do."

THE PERSONAL POLITICS OF MARKETING EDEN

But restoring the marshes was not quite that simple or "natural." Because of his elite family, his professional status, and his connections to the US Department of State and the Iraq Foundation, Kubra had the capacity to "speak for" or represent the marshes (Said 1984; El-Kurd November 27, 2023). He uniquely defined Iraq's marshes for mainstream media, and when he did, he described them as a mesmerizing and exotic land of antiquity in ways that echoed colonial travel writer Wilfred Thesiger whose book *The Marsh Arabs* (1964) popularized Iraq's marshes for Global North audiences and Thesiger's mentees, including Gavin Young (1977, 1980) and Gavin Maxwell (Maxwell 1957, 1960, 1994; Young 1977, 1980; BBC 1979). Kubra earned his right to speak by virtue of his elite Iraqi exile status, which positioned him as an upper-middle-class professional who is now American, but also Iraqi, and because he is charismatic and a good storyteller. Journalists often touted Kubra as an audacious environmental hero who braved war to save Iraq's marshlands. He embraced that role, ending his televised interview in America with, "If you're gonna dream, dream big. It's free, right?"

Kubra brought the marshes to life with his stories of boyhood travels that he intentionally modeled after Young's *Return to the Marshes* (1977), which his wife bought him as a present from a bookshop selling preloved books in California, where they lived. "Look, half of the stuff I learned about the marshes and Sumer and the history of Iraq, I did not learn in Iraq. I learned when I came to the West," Kubra told me at Harvard. Young's book included marshlands aerial

photographs by Wheeler that are often reprinted. Maxwell also made a film, *Ring of Bright Water*, about his pet otter Mij (Couffer 1969). Kubra relied on these British imperial travel narratives to popularize the idea of marshlands Eden. He mixed these narratives with his own memories to render spatial and temporal qualities of the marshes that made them relatable and recognizable to a broader consumer public outside of Iraq. In interviews, Kubra positioned Iraq's marshes as the opposite of war and instead referenced them as a place of world history and biblical import.

When Kubra spoke for the marshes, he brought together a group of social actors including scientists like ornithologists, hydrologists, and ecologists; oil multinationals; journalists; media consumers; Iraqi ministries; and his Italian and Canadian donors. In other words, he forged a global network of relations through which he mobilized Eden to generate support for biodiversity conservation of Iraq's marshes (Zuntz 2023). "I'm not a wetland ecologist, I'm an engineer manager. My only skill is being able to recognize the people with expertise in this field, with expertise in that field, find the financing and bring them together and lead them. Lead them? Not lead them, ask them to help me." As an "engineer manager," he knew how to make marshlands conservation a successful project by making "technical adjustments," "imaginative and wide-ranging responses to global climate change" that open up certain possibilities while foreclosing others (Günel 2019, 10); by creating "channels of authority" that mediated between nature and technoscience (Vaughn 2022, 133); by coordinating "diverse physical, natural, and social processes into components" of a manipulable system (Zee 2020, 1); and by cultivating a public sphere invested in marshlands conservation through his efforts to shape appropriate discourses, like Eden, that defined the project (Graan 2022). "Landscape is a process" (Zee 2020, 2) and that process "lays bare much more than legacies of race and settlement; it sustains relations of encounter, desire, and expertise" (Vaughn 2022, 129). The stories that Kubra carried with him about the marshes since his childhood and youth, all of his regrets about the first Gulf War, and his wishes for his children were his total affective being that made him capable of engineering marshlands Eden.

In early August 2005 to debut Green Iraq's work in the marshes as a scientific contribution to ecology, which Kubra and his environmental advisers believed was essential to their credibility as a conservation body, Kubra and seven Green Iraq scientists traveled to Montreal to present at the joint Ecological Society of America–International Congress of Ecology professional meeting. Their biological research on Iraq's marshlands had recently been published in the top science journal of their field. Kubra entered the dimly lit ballroom wearing a diaphanous, gold-embroidered white linen handmade robe gifted to him by a marsh shaykh. A Green Iraq affiliate exclaimed that he looked like a "king," "the king of the marshes!"

The next day, Kubra held a press conference called The Marshlands of Southern Mesopotamia, with targeted messaging aimed at widespread appeal that brought Sumeria into the present, evoking for reporters the idea of the marshes as living antiquity, with no mention of war. "Iraq is the land of two rivers," Kubra began, displaying a political map of Iraq with rivers marked and marshlands boxed. The next two slides showed full-color scans of Wheeler's photographs from Young's book, while Kubra spoke about the flooded alluvial plain of the marshes and how residents built houses on individual reed-made islands. Then, he projected an image of a large golden *mudhif*, a reed-made reception hall for guests, while saying, "The pulse of fresh water is a breath of life. . . . Inside the mudhif there's a oneness with God." In the upper left-hand corner, Kubra superimposed a thumbnail image of a Sumerian tablet depicting a mudhif. He continued, "Since the Sumerian times, people used the reeds to build their homes and gathering places from the abundantly present reeds. A clay tablet from 3000 BC shows the architectural style of building that is replicated in this mudhif, which is only two months old. [It is] an architectural style that has been perfected over 5,000 years of civilization."

Striking is the way that Kubra draws heavily on ancient Sumerian civilization to enliven for reporters, in 2005, why the marshes need to be reflooded and conserved in the midst of the worst years of war violence for Iraqi civilians.[8] Describing the marshes as Sumeria severed the space from its immediate embattled present and past genealogy of marshlands political protest, such as the 1991 uprisings that nearly toppled Saddam Hussein, and the 1920 revolt against the British empire. The Sumeria reference made the marshes appear apolitical and secular, further empowering Kubra's authority to define Iraq's marshlands as Eden (Said 1984, 31). When Kubra included marshlands residents in his presentation, he described them as "Marsh Arabs," a dehumanizing moniker that naturalized marshlands residents as the living remains of antiquity and ecological features of the marshlands, rather than his peers and modern contemporaries (Fabian [1983] 2014). Kubra concluded the event with a provocation: "Is it oil or marshes? I say both. There's no better joy than living your dream. The marshes are back, guys. Our job is to shepherd them, to keep them." It seemed odd to me that Kubra brought oil into the context of a scientific conference, but it also indicated the extent to which Kubra used Eden as his strongest argument for why, given the war for oil, environmental conservation also had a place in a future Iraq. Kubra's framework at the press conference reconfigured older, colonial Eden narratives with sensory and immersive details primed for virtual consumption of digital news.

Kubra gave Eden a particular look and feel that was consistent across the more than 235 press interviews he did from 2002 to 2023, including YouTube talks, radio addresses, television interviews, and print journalism.[9] The consistency indicates that Kubra likely had a formulated script he created and memorized and which

structured the Eden frame as a specific sensory experience with distinct spatio-temporal anchors in biblical history.

FRAMEWORK I: BUILDING THE SENSORY AND AFFECTIVE WORLD OF THE MARSHES

When Kubra spoke for Iraq's marshes, he created whole sensory worlds with such detail that a broader public who had never been to Iraq let alone the marshes felt as if they were navigating the ecosystem with him. Statecraft is craft in the sense that it is "tacit but teachable, a collective inheritance and savoir faire that escapes statistics and standardization, reliant as it is on the vitality of tools, technologies, and people" (Martínez and Sirri 2023, 398). Kubra knew how to draw people to the marshes project with convincing persuasive images and affective experiences, such as his childhood delight of kayaking the marshes and discovering frogs, birds, and snakes. By framing the marshes as Eden, he invoked and emplaced imperial racialized grammars that stemmed from Thesiger's writings and that defined the wetlands and its residents as anti-modern relics of Sumeria, one of the world's oldest societies extending from 5500 to 1800 BCE. Thesiger wrote of his first venture into the marshes:

> As I came out into the dawn, I saw, far away across a great sheet of water, the silhouette of a distant land, black against the sunrise . . . then I realized I was looking at great reedbeds. A slim, black, high-powered craft lay beached at my feet—the sheikh's war canoe, waiting to take me into the Marshes. Before the first palaces were built at Ur, men had stepped out into the dawn from such a house, launched a canoe like this, and gone hunting here. Woolley had unearthed their dwellings and models of their boats deep under the relics of Sumeria, deeper even than evidence of the Flood.[10] Five thousand years of history were here and the pattern was still unchanged.
>
> Memories of that first visit to the Marshes have never left me: firelight on a half-turned face, the crying of geese, duck flighting in to feed, a boy's voice singing somewhere in the dark, canoes moving in procession down a waterway, the setting sun seen in crimson through the smoke of burning reedbeds, narrow waterways that wound still deeper into the Marshes. A naked man in a canoe with a trident in his hand, reed houses built upon water, black, dripping buffaloes that looked as if they had calved from the swamp with the first dry land. Stars reflected in dark water, the croaking of frogs, canoes coming home at evening, peace and continuity, the stillness of a world that never knew an engine. Once again I experienced the longing to share this life and to be more than a mere spectator. (Thesiger 1964, 23).

Thesiger's portrait of the marshes as a space out-of-time was consistent with British imperial warmaking that imagined the marshes as Eden and the origin of human society (Satia 2007, 218–19) and inconsistent with the work of his contemporary, Iraqi anthropologist S. M. Salim (1962), who documented marshlands residents' substantial geopolitical and economic ties. But Thesiger's book continued to be

important to US government officials like Andrew Natsios who recommended it in his testimony about Iraq's stabilization and reconstruction: "This [the marshes] is the remnant of the classic Marsh Arabs that Wilfred Thesiger wrote about in a wonderful book in the 1950s about living among those Marsh Arabs, and is something I have always remembered in the work I've done around the world." Rhode Island Senator and former US Secretary of the Navy John Chaffee, who was questioning Natsios at the time, asked: "And you recommend it?" To which Natsios replied: "I strongly recommend it" (US Senate Committee on Foreign Relations 2003).

By directly invoking Thesiger in framing Iraq's marshes as Eden, Kubra made them globally understandable and politically actionable through the "racial grammars" of the twentieth century British empire reappropriated for the twenty-first century American-led imperial occupation of Iraq. In so doing, he made Eden based on the notion of the fundamental racial difference of marshlands residents. He then made that Eden frame available to state actors and oil multinationals in ways that rendered "the unequal institutional and material relations of resource extraction . . . through terms that sediment cultural narratives of this presumed . . . inferiority" (Pierre 2019, 87). Eden was not some innocent characterization of Iraq's marshes. It was a deliberate political act to insert the imperial imagination into contemporary US warcraft. Through his careful formulation of Eden, Kubra created the conditions for international development within the context of the Iraq War that were, in turn, instrumental to foreign donors seeking pathways for extraction of the country's water and oil resources.

This is what I mean by *framework*; it is the work Kubra and others did of crafting the Eden frame for Iraq's marshes by working with the media, and in so doing making them conceptually available to a global media consumer in and out of Iraq. By reading the Eden genre, the media consumer participates in a shared process of critical imagination that is useful to imperial states and extractive industries. The Eden frame is therefore a discursive and valued commodity that could be made transactional by Kubra, the US government, and oil multinationals alike. Framework cultivated affective ties to marshlands Eden, particularly ones based on childhood and sensory memories of distant times, that linked people who are not physically in Iraq to it and gave them legitimacy and the authority to mediate from afar—using another form of mediation: the press. The environment is an important dimension of crafting Eden because it "naturalizes" the frame and helps universalize Kubra's experience to reach a broader audience.

Childhood was an important entry point for Kubra's work to develop marshlands Eden. He often started press interviews by talking about his childhood travels in the marshes with his father, tapping into the universal experience of parent–child love that extended to his own desires to revive the marshes so he could kayak there with his young children. "I have very warm memories of this place," he told a major American television channel, adding, "To me, they extended to

heaven." Key to the success of Kubra's marketing was how his own memories drew upon the universal nostalgia for childhood, which made it possible for global media consumers to access and engage in the virtual world of Eden. Kubra spent his childhood years in Nasiriyya, close to the marshes. His father was an engineer for the Ministry of Irrigation in charge of the district of Nasiriyya, including areas of the Hammar and Central marshes. His job was to go from farm to farm, community to community, resolving water disputes. He was also an avid hunter and had friends in Chibayish, all of which meant that Kubra's father traveled to the marshes often throughout the 1960s. His father told him that as a kid, Kubra insisted on going with him every two weeks. When Kubra was ten, he moved to Baghdad with his family. In high school, Kubra used to make trips to the marshes with his friends, and when he attended the University of Basra to study engineering, he would "escape to the marshes every month or so." He told me in October 2004, "You know, we'd skip classes one day and go for two to three days. I had a friend from the area, and we'd go, eat *masgouf* (chargrilled white fish) and get drunk. Hang out."

Kubra had a talent for making the marshes come alive for international media consumers, whose assent to war was, in the eyes of US generals, key to its success. The media appreciated his talents too. As *The New York Times* Editor-in-Chief Bill Keller (2003–2011) told Swedish anthropologist Ulf Hannerz, they were looking to report things that did not fit comfortably into dominant narratives and that represented a broader concern for societies, not just states (2003, 36, 145). In a competitive media market, journalists vie to keep readers by writing more seductively and playing with the senses (Hannerz 2003, 31). They use their own bodies to render the shot, to capture just the right image, and these "skills of proximity" are essential to cultivating a frame that is resonant with media consumers (Bishara 2012, 139, 161). Similarly, Kubra relied on his own embodied experiences, his evocative and vivid childhood memories of the marshes, to bring Eden to life for the public. In so doing, Kubra created a visceral pleasure for media consumers that made it difficult for them to perceive his storytelling as warcraft (Butler 2009, 88).

Kubra poached his early childhood memories when recalled the marshes in media interviews. His story was consistent, composed, practiced. He described the waters being full of fish that he saw swimming just below the surface when he peered over the side of the boat, hearing the birds as they flew above him, feeling the rush of cool air when the canoe broke free of the reeds and entered an open lagoon of placid, still water. The marshes were a wholly sensory and embodied experience; their sights and sounds dazzled young Kubra. He told an American broadcast that Iraq's marshes were atypical of the images people have of Iraq as desert and burning oil. As the broadcast footage from the interview cut from an image of him and the reporter boating through reeds to water buffalo submerged

in the marshes, Kubra said, "It's magical, is what it is. This is magic." Kubra told me at Harvard in October 2004:

> My first memory is me as a child in a wooden boat that had the motor right in the middle of the boat. It was a long boat, probably about twenty feet, covered. My dad, in his pith helmet, sitting. He had a shaykh with him and they're talking. I got bored. I remember looking over the side of the boat and I was amazed to see the number of fish. I could see the bottom of the water and it was full of fish. I remember getting in a trance, peering over the side of the boat. That is my earliest memory and the visual that I have in my mind. These green tall reeds, sky high. In fact, you couldn't see the sky, you had to kind of peek from underneath the canopy to see the sky. It was hot, hot. I also have this memory of emerging out of this stream to the open lake and the breeze hitting you and the cooling down. I also remember the buzzing flies.

Kubra paints the image in exaggerated and vibrant detail. He starts with metaphors of containment that create for the listener the feeling of being enveloped inside a sanctuary: the "green tall reeds" are "sky high," their canopy is dense and crowding, the ambient heat is "hot, hot." Then, quickly, Kubra releases his audience into an open world: they emerge with him from the narrow stream out into the "open lake," together hit by the cooling breeze. He actively transports the listener to the marshes with his words, as if they are sitting beside him in the boat, listening to the onomatopoeia of the flies buzz. This experience of being cocooned in an enclosed world and rooted in that world through bright sensory and embodied experiences is characteristic of how participants in multiuser virtual worlds describe the allure of these metaverse spaces (Boellstorff 2008).

Kubra's childhood marshlands memories are common to elite Iraqi exiles who were, like him, not from the marshes, but who also visited them with their families as children, including prize-winning architect Zaha Hadid, who drew design inspiration from her visit to Iraq's marshes in the 1970s (Glancey 2006). In May 2003, I began research on Iraqi exile politics by interning at a London-based Iraqi NGO providing social services and organizing community events for British Iraqi exiles, including the elite families of Abdul Latif Rashid, who had just returned to Iraq to become the minister of water resources (2003–2010) and who became the president of Iraq in 2022, and Hussain al-Shahristani, who had also just returned to Iraq and became the minister of oil (2006–2010) and then the deputy prime minister for energy (2010–2014). At a conference in London in 2005, I met UNEP administrator Khalil Walid, who Kubra had sought out at the Valencia Ramsar meetings in November 2002 and whose work documented the extent of Saddam Hussein's marshlands draining with remote sensing images. Walid told me that his parents brought him out of Iraq "in the crib." He, like Kubra, learned the value of Iraq's marshes in exile when he discovered Thesiger's *The Marsh Arabs* (1964) in a Canadian bookshop during his college years.

At the London Iraqi NGO, I heard about Iraq's marshes for the first time from Samia Layali, the director of their public health program. The early days after the official US declaration of the end of war on May 1, 2003, were full of promise for the London exiles I met, and many considered returning to Iraq to participate in its reconstruction. Layali told me that she, too, was contemplating return. I asked what she thought she would find in Iraq after decades away. She replied by recounting her childhood visit to the marshes with her parents. Her father was a professor of law at the University of Baghdad, and her mother had been a lecturer there in Islamic history.

> It was just so enjoyable, my god! It was, I remember, it was sometime in June, and it wasn't very hot, and the water was very pleasant and cold, and we had all this beautiful—[softly] god, it's so difficult to—*qasab*, what's it called in English? Reeds coming from the water. You go between this reeds, and you see under the water lots of fish and lots of snakefish and birds! Birds are wonderful! We had so many different birds, and I remember the man who took us was saying. "Look at these birds between these things" and "Look at that."
>
> We saw all these houses which they built on the water. People were living in these houses, and they are going up and down with the water. Oh, he took us to see Adam's tree in Basra, he took us to Qurna and all the way back we saw Nasiriyya, Amara. It was a strange feeling, I always asked my daddy, "Why, why are you taking us to [these places]?" He said, "You have to see these places. It's your country and you have to *feel* the beauty. Maybe one day you wouldn't be able to see all of this." Like he had been feeling this.[11]

When I turned off the recorder, Layali began to cry: "You know, Bridget, it will never be the same." After thirty years, she worried, "Saddam did not change only nature, he changed very much the human being. He changed the characteristic of *being* a human being." When Saddam Hussein dried the marshes, "he changed our people," she lamented. Children do not have the experience of nature, but instead they "see Saddam's pictures everywhere" and have become "robots who would serve . . . their government." Layali's argument established the right for exiles of her generation to care for the marshes, and by extension Iraq, because of their ability to *feel* custodial attachment to these national spaces. Kubra made these memories politically and economically actionable by crafting the Eden frame from his own such that it resonated with other Iraqi exiles and media consumers outside of Iraq.

When Kubra framed the marshes as a space of pure nature, he waged this argument for his generation's right to lead Iraq because of their moral values. Kubra's values aligned with British and American imperial values for governance, which they also expressed through their valuation of nature. Kubra told me:

> I think the restoration of the marshes is sort of like the phoenix rising out of the ashes. I mean what better symbol to the reconstruction of Iraq and the rebirth of Iraq

> as a nation and the healing of the wounds, the scars left by the former regime both physically and symbolically? The return of the marshes signals that things are going back to normal, to the way they were. Unfortunately, the younger generation are not familiar with the marsh; they have no idea what they are. The older generation, however, my generation, middle-aged people remember the marshes, they remember what they're all about, they are the lovers of the marshes. They are the ones pushing restoration because they have seen them in their beauty and their grace, they have seen them in their glory and they know what it means, they know what it could bring to the nation. The ecotourism potential is nothing to laugh about. I mean combine ecotourism with religious tourism. Or I mean the birthplace of western civilization is right there on its shores . . . Imagine what can happen!

Like Layali's, Kubra's testimony to the marshes naturalized the right of exiles of his generation to rule Iraq because they could *naturalize* the marshes in sensory detail, helping them appeal to an external audience as did Kubra's explicit marketing of Eden appeal to Christians. Such romanticism by Kubra, Layali, and others discounted the feelings marshlands residents had about their homes and their political objections to the appropriation of their lands.

Kubra's argument for Eden directly aligned with Christian fundamentalist concerns for originary history. Kubra emphasized the marshes as the "birthplace of Western civilization," *the* source of life on Earth. He amplified Christian and Judaic ways of seeing Iraq's marshes, while downplaying Islam. Today Iraq's marshes are predominantly Shi'a. Every year, pilgrims from all over the world cross through the marshes on their journey to the holy cities of Najaf and Karbala for Arba'in. Arba'in and Ashura are critical annual commemorations of the death of Imam Husayn, grandson of the Prophet Muhammad, who was killed in Karbala in AD 680. In 2023, approximately twenty-two million pilgrims made the journey to Karbala (Ali 2023).

Kubra was not religious, and neither was his father, but his grandfather was an ayatollah. One night after a full day of meetings in Sulaymaniyah, on February 18, 2007, I asked Kubra what he thought about the American military occupation. "The Americans just cannot leave right now. If they did, Iran would control the south of Iraq." According to Kubra, this would be "a *huge* problem" because, he believed, Islam was "a totally repressive religion." Kubra then spoke about how much he loved speaking to his grandfather about religion. He used to tell his grandfather that he did not believe in God, and his grandfather would ask, "What about the universe and the galaxies and the Big Bang? What started the Big Bang?" "Well, I would call that nature," Kubra replied to his grandfather. "You call it nature, I call it God," his grandfather quipped, adding that he believed God was the essence that is in all of us and the universe. I asked about the obvious connection to Kubra's devotion to reflooding and conserving marshlands nature. Had his love and respect for his grandfather influenced his dedication? "I've never thought about it that way before," he replied, astonished by the link. Kubra framed the marshlands by

turning away from Islam to assert a Judeo-Christian sensory of Eden as the correct episteme for Iraq's marshes. By privileging Judeo-Christian and imperial history, Kubra crafted Iraq's marshes to appeal to a Global North audience.

FRAMEWORK II: DEFINING THE SPATIOTEMPORAL WORLD OF THE MARSHES

When Kubra and the media crafted Eden, they made implicit arguments that Iraq's present marshes were inseparable from the biblical past, which had the effect of fixing marshlands residents to a revered past at the expense of acknowledging violence against them in the present (Yusoff and Coleman 2014). The erasure of Native history is a precursor to the violent imperial seizure of land. Through their near total reliance on Kubra as the definitive environmental voice of the marshes, reporters tethered the marshes to the imperial contemporary, including mid-twentieth-century British travel writers, and the biblical past. The verb tense "the future anterior" refers to what *will have happened* in the future. Kubra invoked it when he argued for preserving the marshes in an active war, despite the risks to Iraqi scientists, because of the critical need to preserve the ecology for the future of the planet. When I asked him why it was important to conserve the marshes in war, Kubra explained:

> So from the security standpoint of the West, I would think it is in their best interest to reward this population. . . . I think it's important for the people to appreciate their roots, to appreciate the fact that culture started, Western civilization started there. I see Ur refurbished. I see Eridu refurbished. I see the historic sites around the marshes, not restored but excavated, available for people to see the way Rome is. You go around Rome and you see the roots of Roman culture, Western civilization. Roman culture is rooted in Ur culture. Why can't we have that? Why can't we be proud of our history the way Italians are proud of their history?

By relegating marshland conservation to the future anterior, Kubra created separations, what Beth Povinelli (2011) calls "spacings," that separated lives into valued (nature) and nonvalued or lessor-valued (classes of Iraqi human) categories and made the lives of Green Iraq scientists and marshlands residents disposable to a greater future good. This temporal separation has been the predominant tense for accomplishing violence in war as it has in late liberal capitalism (Mirzoeff 2011, 284; Povinelli 2011). Photographic images have a special capacity to cast life in the tense of the future anterior (Butler 2009, 96). The Eden frame made temporal spacing by exalting an image of a pure state of nature and by naturalizing, and therefore dehumanizing, the presence of marshlands residents, who were included in the frame through the noble savage trope. Before and after images of Iraq's once-drained marshes under Saddam Hussein juxtaposed with the post-Ba'th reflooded images of verdant marshlands ecologies were some of the most effective forms of framing Eden as a discourse of war (El-Hibri 2021, 72–84) (figure 5).

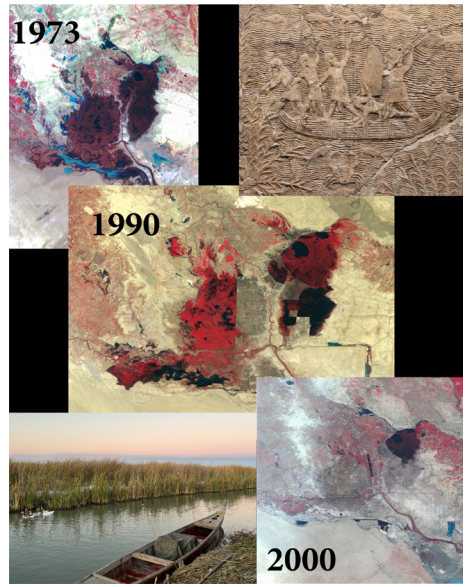


FIGURE 5. Recreation of Kubra's slide for the INTECOL Press Conference, Montreal, August 2005. Center: Landsat satellite images courtesy of US Geological Survey. Bottom left: Chibayish, photo by author, November 10, 2021. Top right: Gypsum wall relief at Nineveh of Assyrian battle in marshes circa 640–620 BCE courtesy of The Trustees of the British Museum.

The Eden frame oriented toward the future by invoking the "timelessness" of the biblical and imperial past. Environmental frames for the marshes therefore oscillated between the past and the future; they did not dwell in the present or the material conditions of war. In this period of wartime Iraqi statecraft, the project of building that past was, as during the British imperial period, largely directed not by Iraqi residents but by Iraqi exiles like Kubra and others who partnered with the US government. By making the Eden frame, such as in his slide presentations, Kubra made marshlands residents the objects of environmental intervention. He naturalized marshlands residents in Eden as though they were living relics of an ancient place and not contemporary landowners who valued the ecological integrity of the marshlands in ways that differed from and challenged his own conservation vision.

These acts of violence are part of heritage preservation, whose proponents expel from the realms of protection those who might compete with the vision they seek to install, including by forcible removal from their homes—as Kubra and his contractors anticipated by installing a conservation area in the marshes (Mitchell 2002, 205). Land expulsions as well as increased policing and criminalization have been common practice in the creation of conservation areas all over the world (West et al. 2006).

The environment as a biopolitical category is "an experience *of* time marked by endless repetition" (Peutz 2018, 151). Thus, environmental discourses impose categories of time—as with the Eden frame, by orienting the past toward the future while skipping the present—and are temporal technologies that reinvent themselves in different places and at different moments around the world according to the same structure and logics. When linked to ecology, modalities of time connect "the notion of 'action' with 'nature'"; time is, therefore, not just lived but made by living (Munn 1992, 97, 109). Making time in the marshes was part of the framing technology that prepared Iraq's marshes for international "development," and in so doing made it possible for war donors and proponents to intervene in the marshlands to serve their interests.

On September 2, 2007, a story by a British media source manifested a real-time relationship between Kubra and Thesiger through the power of media, splicing mid-twentieth-century audio of Thesiger with their present-day interview with Kubra. I found out about the interview on a notoriously chaotic day in the Amman offices of Green Iraq. When I arrived at the office, seven different conversations were happening at once around a large conference table. Kubra's Italian contractors, Antonio Romano with Bionatura and Gianluca Sienna with AcquaTerra, were there with their team; Canadian International Development Agency (CIDA) representatives were there too; and several Green Iraq staff were in the office. Everyone landed in Amman unexpectedly for the next round of Green Iraq "stakeholder" meetings, which were moved to Jordan at the last minute because of a cholera outbreak in Sulaymaniyah. *Stakeholder* was the NGOs official term for its donors and contractors reflecting both Kubra's corporate approach to conservation and UN standards. Green Iraq's small Amman office was the group's only common space until the meetings began, and it was where last-minute details were sorted. Kubra bummed one Marlboro after another from a Green Iraq administrator who wore his shirt loose and semi-buttoned. A book of Sudoku puzzles peeked out from under a pile of carelessly tossed papers. I sat down next to Kubra, whose commanding presence predominated. "Did you hear the [media] report?" he asked. Canadian ecology expert Dennis Heatherington, who once worked for CIDA but was then directly contracted to Green Iraq, announced to me and everyone else in the room: "Yeah, he's doing his Thesiger!"

A British media source aired the remixed interviews as part of its series on the global threat of climate change, focusing on the "faith" and "hope" that contemporary marshlands revival offered in the face of this looming planetary crisis. Archival footage of Thesiger led the broadcast: "Just before you get to Basra, you see below you a vast patchwork of reedbeds, lagoons, and waterways. In winter, it's cold, and often damp. And in summer, it's terribly hot and sticky. But there's a strange fascination and even charm in this remote land when once you've been made free of it by the marsh men." Kubra picked it up: "You know I'm one of the lucky few who actually experienced the marshes in their glory days, as it were." When Kubra spoke about the significance of the marshes, he crafted Eden from

the blueprint image Thesiger passed on to Young and Maxwell, which centered around idyllic stories about the wetlands as a magical, out-of-time place with singing birds and traditional reed-constructed islands.

According to Thesiger, who "loathed cars, aeroplanes, wireless, and television," the marshes were a place where "everything was strange and different," and where his life in a "smoke-filled hovel" gave him a contentment he could not find at home (Thesiger 1964, 59). His words revived language that British colonial officers used while traversing the wetlands to defeat the Ottoman Empire during World War I. These officers described being moved by their proximity to biblical sites in a "proverbially mystical and antique land," where they could experience a "metaphysical certainty they no longer felt at home" (Satia 2008, 3, 168). Similarly, Iraq's marshes figured in Thesiger-esque narratives as a hotspot for imperial self-actualization. Thesiger ends *The Marsh Arabs* sitting for tea with friends in Ireland in July 1958, when he heard the news of the revolution, the execution of the Hashemite monarchy, and the realization "that I should never be allowed back, and that another chapter in my life had closed." Kubra echoed Thesiger's dramatic doomsaying with his own continual media reference to Saddam Hussein's draining of the marshes as "a weapon of mass destruction." Yet, he ended his Eden narrative by noting the possibility of a hopeful future because of the opening the Iraq War created for conservation.

Kubra's interviews had the effect of positioning him as the voice of the marshes. He spoke of marshlands residents using the slur 'ma'dan,' which elite Iraqis used to mean backward and uncivilized, but which journalists cited as if it was the correct term for the Indigenous community. Some journalists, Wong included, attempted to complicate the "noble savage" portrayal by writing about the presence of satellite dishes in the marshes. Most of the time, marshlands residents appeared in media coverage as a homogeneous group that lived an isolated existence in the waterworld enclave of individual homes built on reed-made islands, known as *chibayish*, for which the land-based marshlands city Chibayish is named. Journalists described marshlands residents as primitive, living in a world without much opportunity for education or health care. In doing so, the media reinforced a false image of marshlands residents that did not include a history of transnational connection or the present political and economic ties of wetlands communities. In a radio address, Kubra described the marshes as a place where "time stops." Similarly, during Kubra's televised interview, the reporter says, "We have entered another time," to which Kubra replies, "This is the waterworld."

In 1914, British officers battling Ottoman soldiers for control of Mesopotamia during World War I wrote in private letters and published memoirs of how emotionally moved they were by their proximity to the Garden of Eden, Ezra's tomb, the Tower of Babel, Ur, and other Old Testament sites. The war, Priya Satia argues, was a British romance with Eden whereby imperial soldiers would

reclaim lands, rescue Eden as British irrigation officer Sir William Willcocks had recommended in his Ottoman-commissioned study of the marshlands' irrigation potential, and fulfill the promise the Ottomans had failed to realize of reestablishing Mesopotamia as the "granary of the world" (Satia 2007, 218–9; Satia 2008; Davis 2007).

Engraved images of the marshes adorned personal effects and handheld sterling-silver household items and were British imperial social media of the mid-twentieth century: marshlands scenes of sailboats, reed islands, birds, and date palms decorated makeup compacts, cigarette lighters and cases, salt-and-pepper shakers, trinket trays and boxes, teapots, tea strainers, pitchers, platters, napkin rings, and candlesticks. Many were personalized. One makeup compact depicted a boat sailing across the marshes and underneath, the inscription: "To Betty. With fondest love. From, Michael." These tokens of affection bristled with the "tense and tender ties" (Stoler 2001) of imperial occupation, which claimed the marshlands as their prized iconography. British imperial images that cast the marshlands as transhistorical human civilization differed fundamentally from the robust genre of Arab-language histories of marshlands tribes that testified to land tenure by generations of genealogical custodianship (Al-Roudan 2003, 2008; Al-Ka'bi 2008; Al-Taher 1972). But Kubra's Eden took media consumers further into the marshes; instead of possessing them in the hand, they could enter and experience the marshes for themselves through virtually mediated Eden.

The imperial imposition of biblical history onto a land and its people has been a historical precedent for land control by dispossession in Iraq, as it has been in Palestine (Makdisi 2023). In 1865, the Palestine Exploration Fund (PEF) was founded in London to investigate the archaeology, geography, geology, and natural history of Palestine. When the PEF undertook a survey of Western Palestine in 1871, it did so in cooperation with the British War Office (Abu El-Haj 2001, 23–24). By digging up material artifacts that they correlated to biblical lore, British officers with the PEF effectively turned Palestine into the Holy Land itself. In this way, archaeological practice created evidence that laid the foundations for the British colonization of Palestine. By unearthing antiquity, archaeologists helped British imperial officers justify the need for the British Mandate to govern Palestine, as confirmed by the League of Nations in 1922. In 2007 in Amman, Kubra sought to forge a relationship with a prominent Iraqi archaeologist, Abdulamir al-Hamdani, who later became Iraq's minister of culture, to work in partnership on marshlands conservation (a relationship I further document in chapter 3). In the years leading up to 2016, when the government of Iraq and UNESCO prepared the nominating file for Iraq's marshlands to the World Heritage Convention, the archaeological evidence proved convincing. UNESCO (2016) ascribed Iraq's marshes to the convention in the document *The Ahwar of Southern Iraq: Refuge of Biodiversity and the Relict Landscape of Mesopotamian Cities* as one of the few recognized mixed natural and cultural sites.

This apolitical version of Eden, as Kubra predicted, had major donor appeal that made it a feature of the Iraq War. Because of the favor the project carried with foreign donor countries, even the most reluctant state ministries supported it, such as the Ministry of Water Resources (MoWR), one of the strongest within the national government, whose minister was constantly at odds with Kubra over the allocation of water resources to the marshlands. Essential to authoritative discourses, like the Eden frame, is the expectation that its subjects, such as Iraqi nationals and members of government, will take up the lexicon and "participate in the dismantling of their own history" (Said 1984, 38). That same year Penguin Classics reissued *The Marsh Arabs* with a foreword by *New Yorker* war correspondent Jon Lee Anderson (Thesiger [1964] 2007). The reissue was a full-circle moment whereby the press reframed a book that had been instrumental to Iraqi warcraft as explicit warcraft.

EDEN AT WORK

Over more than twenty years, the Eden narrative has continued to predominate media coverage of Iraq's marshes. Through vast changes in the sociopolitical landscape of Iraq—the US withdrawal of troops in 2011, the expansion of Da'ish over Iraqi territory in 2014, and the media attention to the fallout of toxic pollution from oil flaring in southern Iraq—the Eden frame has remained a constant polysemic force. This indicates the staying power and relevance of marshlands Eden as critical warzone ecology infrastructure, even during change.

Of Green Iraq's stakeholders, Iraq's MoWR had the most power in the Council of Ministers. Minister Abdul Latif Rashid and Zaid Kubra clashed publicly and often. Minister Rashid was concerned about Iraq's water supply given the pressure created on the Tigris and Euphrates when Turkey and Syria built upriver dams. Kubra insisted that water allocation to keep the marshes intact was feasible. Minister Rashid remained skeptical, but the public acclaim and funding for Kubra's marshlands vision created a certain stress for his ministry. In 2007 Minister Rashid had Young's 1977 travelogue *Return to the Marshes* translated into Arabic, *al-'Aoudh ila al-Ahwar*, so that his staff could learn the language driving marshlands preservation (Young 2007). Young had been Thesiger's protégé, making his first trip to the marshes with Thesiger in 1952. Of that first voyage to the marshes, Young wrote: "In the years that followed I came to recognize the new feeling that possessed me at that moment: the exquisite thrust of excitement under the breast-bone that only tranquil end-of-the-world places . . . can induce. . . . I was on the brink of a great adventure" (1977, 17). When Minister Rashid capitulated to Kubra's vision and translated Young's marshlands adventure, he acquiesced to the relevance of the material for foreign-driven statecraft plans. Contrary to the Eden frame, residents of Iraq's marshlands are not a timeless people, nor are they a living Sumeria or Eden. People, argues Sultan Doughan (2024), are essentially

embodied time; which is to say, no one exists outside of the material conditions of history. But Iraq War proponents made Eden and Sumeria a popular framework for Iraq, even inside the country where some artists and writers began to engage southern Iraq as the living representation of Sumerian life in order to argue for the importance of preserving the wetlands, which were growing more saline and evaporating because of climate-related change.

When Kubra and mainstream media began promoting the nature preservation of Iraq's marshlands with Eden imagery, it did not appear entirely inconsistent with the long and layered history of marshlands iconography inside Iraq. This meant that when Iraq's government issued new stamps in 2006 featuring a marshlands boat carrying reeds with the series title, "Ancient Transportation," in English embossed underneath, or Baghdad artists painted mural scenes of the marshlands on US concrete T-walls, they could be read in multiple ways: as a sign of alignment with the US war (in the case of the stamps) and at the same time as a rebuke of US occupation (in the case of the blast walls). What mattered was the material context in which the image appeared. But significant across the context is how consistent marshlands iconography has been and how it has strengthened the Eden frame even as Iraqis who deployed the marshlands image did so to reclaim militarized spaces.

Iraqi artists of the mid-twentieth century, including a group of modern surrealists cultivated by Dia al-Azzawi as part of al-Ru'ya al-Jadida (the New Vision Group) (Guarasci 2021), drew on the revolutionary potential of the marshlands to forge a pan-Arab progressive modernist vernacular. So central were the marshes to an understanding of revolutionary time that Iraqi artist Jawad Salim included panels of a marshlands resident and water buffalo on Nusb al-Hurriyya (Freedom Monument) in the heart of Baghdad's Tahrir Square (Pursley 2019, 226–7). In the 1970s, when al-Azzawi was an artistic consultant for the Iraqi Cultural Center in London, he organized a show of Young's writing and Wheeler's photographs called *The Marshes of Iraq*. When I spoke to al-Azzawi, he expressed fondness for Young because he lived in the marshes and wrote about them from his own experience.

This overlap between Iraqi exiles and British imperial travelers who had a shared affinity for the marshes, but distinct if not contradictory politics, continues to this day. In June 2023, Rice University installed a mudhif on its campus through a partnership with Archaeology Now, whose work is funded in part by Aramco (the world's largest integrated energy and chemicals company), and the Arab-American Educational Foundation. Kubra and his team helped organize the initiative and participated in building the reed guesthouse on a corner of the campus. The installation was the second of its kind; the first had been installed by Iraqi veterans and Iraqi immigrants at a nature preserve in Roxborough, just outside Philadelphia, in 2021. Both projects described the mudhif as ancient Sumerian vernacular architecture from Iraq's Garden of Eden. Both projects were

promoted with the warcraft Eden frame. An article in *Texas Monthly* described the Rice University mudhif, referencing Gertrude Bell's awe at the sight: "To see a *mudhif* in its natural habitat would mean traveling roughly 7,500 miles to the ancient lands of Mesopotamia—the cradle of Abrahamic religions, writing, and the first cities—to a delta and its shallow waters once believed to be the Garden of Eden" (Badrei 2023). The Schuylkill Center for Environmental Education described the project in this way: "For more than 5,000 years, Iraqi inhabitants of the lower Mesopotamian valley, the cradle of civilization, have been building guesthouses—*mudhifs* in Arabic—out of reed grasses" (Krauss 2021). Both projects were promoted on social media by Iraqi poets and artists whose work is defined by their vehement critique of the US war and occupation of Iraq. These two recent examples of mudhif construction demonstrate the power of marshlands Eden iconography and its ability to integrate potential dissent into support for the marshes.

Underlying the staying power of the Eden image is the structural condition of Kubra's hegemonic control over foreign access to the marshlands, and thus media coverage of them. When Kubra started Green Iraq, he hired Muntaha Ammar, who was from the marshes, to run his operations in Chibayish. Ammar opened Green Iraq's offices there, which doubled as an informal guesthouse for people, like filmmakers who needed a space to stay for a night or two. Ammar also forged connections with the Chibayish mukhtar (highest municipal authority), who was simultaneously working as an engineering executive for oil multinational PetroChina and who himself operated a mudhif for tourists and a guesthouse that could accommodate them for a few nights or weeks as needed. To travel from these guesthouses into the marshes proper, one needed to take a boat. All boats in and out of the marshes were regulated by the tourist police, who were friendly with Ammar and the mukhtar. A marshlands elder, Ali Baqir, a man in his eighties with a weathered face, controls all boats provided to tourists for 50,000 Iraqi dinar (roughly $38). Baqir wears a white dishdasha and kefiyyeh and uses a bamboo pole from China purchased on Amazon to guide the mashuf through the water as he sings customary songs from the marshes and regales his passengers with stories. In addition to securing boat operators from the marshes, Baqir works with marshlands families who are open to receiving guests, welcoming them with tea and allowing them to photograph. Marshlands families I spoke with said they did not mind the company because it was easy for them to offer tea, and their guests sometimes provided cash tips. The entire marshlands tourist experience is a carefully orchestrated, rehearsed event that reiterates and reproduces the Eden narrative that Kubra shaped. The tourist experience reinforces how foreigners digest the marshes in their media consumption, including and especially TikTok, Instagram, and YouTube. In turn, these visitors produce their own collections of images for social media that

expand the repertoire of Eden imagery in the marshes. Marshlands residents, outside of those like Ammar and the mukhtar who run the tourist economy, do not control how foreigners experience the marshes or the images they make. To marshlands residents, foreign tourists live in a world apart that has nothing much to do with their values or interests.

When I visited Chibayish, I looked for the mudhif Kubra featured in his presentations and another that a major American broadcast captured in its exposé. Chibayish residents directed me to a mudhif along the major Basra–Chibayish road across from the marshlands waters. It was not exactly the one featured in video production, but it was the only one I could find associated with the NGO in the marshes at Chibayish. The Green Iraq mudhif I visited was across the marsh from the martyr's monument. When they inscribed the ahwar to the World Heritage Convention in 2016, UNESCO built the monument to honor marshlands residents killed by Saddam Hussein when he drained the marshes. Scattered by the monument were a fleet of sun-bleached blue boats UNESCO installed for tourists that looked like they had not been used. From the road, the mudhif was large, but it was not the shaykh's reception hall Kubra described in his presentations where ennobled marshlands elite would welcome esteemed guests. A thick layer of dust has settled inside, cobwebs drape the corners, the reed-bundled beams that form the arches have dried and cracked.

Though the Iraq War has long officially been over, the Eden frame continues to be instrumental to the US government and foreign multinationals to secure their interests inside Iraq, as we will see in greater depth in chapter 3, *Bird*, when I focus on how marshlands images were a commodity with exchange value. By tracing the Eden frame, the longue durée of the Iraq War comes into focus. Kubra deployed Eden to attract global media consumers and donors to Iraq's marshes for biodiversity conservation. In this way, he drew on his rich sensory and affective childhood experiences to craft an image that was a powerful and effective space of exception inside Iraq because it appealed to the US government and armed forces, international donors, exiles, and environmentalists alike as an investment opportunity. When Kubra framed Eden, he made the marshlands accessible to conservationists, donors, contractors, and US government officials, many of whom operated outside of Iraq, by creating a virtual experience they used to argue broad territorial, socioeconomic, and biopolitical war interventions were necessary in Iraq.

By framing Eden, Kubra and marshlands conservationists opened the world of a warzone ecology by making its object—the marshes—real, palpably alive, and urgently in need of protection not just for Iraq but for the world. Eden outlasts the official duration of war as it continues to act on and frame, in the sense of narrating the lives of, marshlands residents in ways that attract new donors, new development projects, new sets of governing protocol for the marshes. Unlike virtual warmaking technologies such as drones, video games, role playing, and even

remote sensing, to which I turn next, that are more overt forms of warcraft, Kubra's skilled recruitment of journalists could be seen as simple storytelling or nostalgia put into action for a greater good. Framework obfuscates representation as a form of war violence. Media legitimized Kubra's vision of Eden as materially real and geographically localizable to the marshes. Kubra's framework created Eden as a simulacrum, a virtual space defined in sensory and affective terms palatable to Global North media consumers that created broad-sweeping support for international wartime intervention in the marshlands.

Media images were not the only set of images useful for the marshes: once their image was set, for Kubra and his associates to formally conserve Iraq's marshes according to global biodiversity conservation protocol, they needed to locate the space-time of Iraq's marshes on a map. In doing so, they moved them from the critical imagination of aesthetics, which was largely seen as subjective with its appeal to the affective, to the critical imagination of cartographic science, which was largely viewed as objective with its emphasis standardizing calculations such as geo-located coordinates. As explored in the next chapter, marshlands conservationists undertook remote sensing science to locate and map Iraq's marshes in real time. In so doing, UN scientists brought their virtual experience of marshlands Eden together with their experience of remotely crafted expertise.



A Theory of Sight

When visual artist Alia Farid and I visited Riyad Samir at his home in Hammar marsh in September 2022, he was sixteen years old and had just returned from his first Arbaʿin pilgrimage to Najaf.[1] Newly back from the journey, Samir had a haircut popular among young cosmopolitan Iraqi men and a battery of cell phone video footage. He opened his phone and together we watched videos and stills of his journey of 331 kilometers (roughly 206 miles).[2] He had captured scenes of hundreds of pilgrims who, like him, dressed in black thobes and carried black flags featuring a color portrait of Imam Husayn. What Samir saw during Arbaʿin transformed him, and it was not just the haircut.

Seeing is more than observing with one's eyes. Sight always partly involves *doing* (Rajchman 1988, 94); it is an embodied experience that involves not only and not always the eyes, but *all* the senses that enable us to perceive, take in, and interpret the moments and events of our lives. Samir's cell phone camera was an essential element of his visual perception: he held his body in particular ways to capture the right shot, he experienced himself as both participant and witness to the event, and he imagined an audience for which he crafted a visual field. Samir saw Arbaʿin again and again through his video footage, and he shared that experience with friends and family, who had their own experiences watching his films.

When Samir participated in Arbaʿin, he used the full capacity of his body to walk, to march, to pray, to move, to feel, to taste, to photograph, to perceive affective states, to voice, to film, to engage people and his material surroundings. His

FIGURE 6 (previous page). Riyad Samir performs the *hosa.* Alia Farid, Chibayish 2023. UHD video, color, sound, 15 minutes. Commissioned by The Vega Foundation and Doha Film Institute. Courtesy of the artist.

ability to see Arbaʿin was a totalizing sensory, affective, and embodied experience, and that experience was inseparable from his camera. Our vision also is more than our own individual capacity; it is shaped both by the social conditions that predominate our lives, our relationship with others and the material environment, and by what *can* be seen (Rajchman 1988, 92; Foucault 1977). Sight is a metaphysical, multidimensional experience that involves spatiotemporal and historical material connections. Films enable one to share what one sees with others in ways that extend the process of self-transformation. Sight is always and already participating in *framework*: to see is to edit for oneself just as it is to frame how others see.

When Samir made the Arbaʿin pilgrimage, he took part in a spatiotemporal event that connected the past to the future *through the present* (Asad 2009, 20). Samir's family—like other families living in marshlands Chibayish—are not strict about observing prayers, but highly value Ashura, Arbaʿin, and pilgrimage to the shrines of ʿAli, Husayn, and ʿAbbas (see Nakash 1994, 179). Samir participated in Arbaʿin during a post-Baʿth revival that was transforming Najaf. During Saddam Hussein's presidency the pilgrimage was banned, but in recent years many more people participate annually in Arbaʿin than the sacred pilgrimage of Hajj to Mecca. The material world Samir saw—the dressed-in-black pilgrims' procession overtaking streets, the pilgrim families camping in roadside tents, and the crowds of celebrants—was tied to a changing Iraqi polity and to Shiʿi devotion.

I traveled with Alia Farid to the Hammar marshes in November 2021 and September 2022. She went to Iraq's marshes to personally experience a land that her father's family, now living in Kuwait, had once moved across with ease before British imperial statecraft and the formalization of borders. Farid spent her childhood in Bnaid al-Gar (land of tar)—an area of Kuwait where large bruise-like swells of crude oil percolated through the surface of the land. She was five years old when she watched Iraqi military tanks during the invasion of Kuwait in August 1990 drive past her ground-floor apartment with windows facing Gulf Road and the sea.

Farid went to Chibayish for a second reason: to make a film. Over the years from afar, she had watched Iraq's marshes become the principal subject of feature news coverage of the Iraq War. Farid was cautious: How do you create images in a community that has been so overdetermined by imperial image-making? Farid and her cinematographer Muhammed Almubarak sought to partner with young residents of the marshes to make a collaborative project. For years, they made frequent trips to Chibayish to visit Samir and his family; sometimes they filmed, and others they did not. The result? An ongoing film series *Chibayish . . .* that focuses on quotidian life in the marshlands of Iraq and has the look and feel of home movies. The first in the film series, *Chibayish 2021*, is from November 2021 and features Samir and his cousin Jassim (both fifteen years old at the time) giving Farid a guided *mashuf* tour of their neighborhood in the marshes where families live on individual reed-made islands.

During the 2021 trip, Samir became especially interested in filmmaking, and so Farid and Almubarak left Samir their handheld camera. Farid, Almubarak,



FIGURE 7. Still of Fatima Samir. Alia Farid, Chibayish 2023. UHD video, color, sound, 15 minutes. Commissioned by The Vega Foundation and Doha Film Institute. Courtesy of the artist.

and Samir filmed the second in the series, *Chibayish 2023*, in September 2022, a week after Samir returned from Arbaʿin. *Chibayish 2023* is shaped by Samir's perspective, either filmed by him or featuring him, and by Farid's experiences in the marshes and priorities for making visual art. Samir's film footage features his siblings in and around their family home. Samir filmed his sister Fatima, face illuminated in the black of night by the light of the camera, as his uncle said, "She looks scary" while their siblings giggled. Her face appeared to be floating in the center of blackness. Fatima Samir looked straight at the camera, smiling (reproduced by Mohammad Almubarak in figure 7).

When I visited Chibayish in November 2021 and September 2022, Green Iraq was running a tourist economy that is ready-made for social media outlets like YouTube, TikTok, and Instagram. Um Riyad, the family matriarch, participates because doing so is easy and offers "a bit of fun." A few weeks after our 2022 visit to the marshes, Almubarak's sister messaged him a picture that an American tour guide had posted on Instagram. It was a picture of Wardeh Samir, the youngest daughter, drawing. The caption on the post read: "These people live here on an island, only accessible by these boats." The image ideologically reinforced all the elements of the Eden narrative.

When Farid was just two years younger than Wardeh (seven years old), she personally experienced this kind of cinematic violation by global media. During the 1991 Gulf War, a month after Iraq's invasion and annexation of Kuwait, Farid, her pregnant mother, and her brother were airlifted out of Kuwait on a jumbo jet secured by Jesse Jackson to evacuate US citizens, with a focus on women and children. When Farid left Kuwait, she left her father behind. The plane stopped in

Baghdad to make sure everyone on board was American. Iraqi officials attempted to hold Farid and her brother, claiming they were Iraqi (because they had been born in Kuwait, and were now therefore prisoners of war as Iraq had taken over the country). The siblings were only able to continue their journey after Farid's mother staged an hours-long protest, refusing to board the plane without her children. The three eventually landed in Washington, DC, and traveled onward to Puerto Rico, where Farid's mother's family was waiting. For months, Puerto Rican news media ran a story about their harrowing exodus from Kuwait—four hours of footage in total—as one of the first reality TV news programs.

Farid has no memory of the coverage, but years later as an adult in Puerto Rico, she found a cache of VHS tapes her grandmother had recorded of these news broadcasts. She felt exploited. Farid compiled the footage into a film titled *Theater of Operations: The Gulf War Seen from Puerto Rico*, exhibited at MoMA PS1 in 2019–2020, examining her personal history in relation to US militarism in Puerto Rico.

When Farid films Samir, her cinematic and editorial choices are informed by her experience of media exploitation and her desire to resurface sublimated histories of connection such as those that once joined southern Iraq, Iran, Kuwait, and Bahrain before the imperial imposition of borders. Farid grapples with how to account for the magnitude of that loss.

Farid directs Almubarak to film when, during our visit, Samir recites the *hosa* (Shi'i poetry of lament) and performs the *dacha* (its percussive beat) that were part of his family's routine life.[3] In commemoration of Ashura, the body is an instrument that opens a frequency of communion with others and strengthens social relationships of participants who enter into a shared emotional state (Chatelard 2017, 91). Almubarak centers the camera on Samir who recites, stomps, and spins rhythmically as his siblings pop in and out of frame. Farid positions Samir's performance of the dacha and the hosa as the chorus and spine of the film around which other cinematic moments of household life unfold—the preparation of pastry, the care for buffalo, the work of the household. Throughout his performance, Samir holds the viewer's gaze, reaching through the screen to an unknown audience that must see him (Guarasci 2024) (figure 6).

As Samir swirls and stomps, he activates narrative structures and temporal frames that are part of a Shi'i discursive tradition. A tradition that enlivens Imam Husayn's revolutionary commitment to justice and emplaces it in the materiality of his own experience of the present. Through his performance, Samir places himself in the framework of Shi'i mourning that is embodied, progressive, multigenerational, multinational, and grounded (Deeb 2009, 245; Chatelard 2017). When Samir performs the dacha and hosa for Farid, he opens a space of *communitas* (Turner [1969] 2008) that puts him in a metaphysical relationship with Shi'i Muslims, past, present, and future. Participants delve into the metaphysical universe that has the power to effect change by reconfirming communal solidarity and generating feelings of moral improvement by building support for "worldly callings" (Jabar 2003, 189).

As Samir participates in a shared practice of Shiʿi lament, he draws on the past in the present to deliver a moral charge for a better future. Anthropologist Lara Deeb (2009) argues that Ashura can be experienced both paradigmatically, as a metaphoric relationship where elements can substitute for one another in the same context, and syntagmatically, as a metonymic relationship where elements exist in a sequential construction, such that the sequence determines the relationship among elements. The Battle of Karbala can be understood as paradigmatic, as a constant battle between good and evil where history repeats itself until Judgment Day when good will finally triumph. Syntagmatically, Karbala is the origin for a historical narrative of the possibility of Shiʿi resistance and its locus of inspiration. Crucially, both frameworks bring the Battle of Karbala into the present through Shiʿi practice wherein people see public activism as making personal progress and societal progress inseparable (Deeb 2009, 247–48, 251).

. . .

Farid's film series *Chibayish . . .* is a theory of sight. As the title indicates, the film does not end. It is an ongoing experiment in what it means to visualize being and belonging in the marshlands amid biopolitical precarity. When Farid films Samir, what he sees becomes part of her vision of the marshes. Through his eyes, connected to her experience in Kuwait, she restores sight of her own family history that was severed by wars and political borders. Farid's *Chibayish 2023* posits a theory of sight as an intergenerational and collaborative process of making vision, of finding ways to see that which had been rendered by imperial desire impossible to visualize.

2

Ground Truth

The Violent Geography of Knowing

At the United Nations Environmental Programme (UNEP) laboratory in Geneva, Switzerland, remote sensing trainee Samir Abdullah was determined to get his map right, but he could not decipher the end limits of dark, light, and wet soil and, as a result, could not locate land cover classes. Abdullah classified wet soil as dark. He knew it was wrong, but wondered, "How do I know what they meant when they determined these classes?!" It was Monday, June 5, 2006, the beginning of the second of two weeks of training, but a public holiday for UN employees. While UN scientists were at home, Iraqi trainees were in the office. I arrived after 3:00 p.m. to find Abdullah alone in the conference room, sitting at his computer. He pushed ahead, attempting to complete the exercise and fulfill his assignment despite his frustrations. In an effort to understand his motivation, I asked: "Are the marshes important for Iraq?" "Not so much," Abdullah replied, but they are important internationally "because they've gained a lot of attention in the media and with human rights organizations." I was struck by his comments because he was working in overdrive, pushing himself to grasp a complex science in an impossible time frame, but he was not driven to do so because he believed in the project like Kubra did. Instead, he saw it as a pragmatic professional opportunity with the possibility of making international connections that could be beneficial both to him professionally and to Iraq politically. Abdullah told me why he wanted to work for Green Iraq: "First of all, because I don't have a job. Second, there are opportunities for training and building skills by working on this project. Third, I want to give something back to my country."

When I asked what was most important to him in Iraq, Abdullah did not hesitate: "Security." Over lunch in the UNEP cafeteria the week before, his colleague

from Iraq's Ministry of Water Resources (MoWR) and fellow trainee Fatima Qasim explained: "It's really, really bad where I live. In the morning there are bodies lying in the street. Nobody knows who took them or who killed them. It's hard to know who is fighting who." MoWR used to send a bus for Qasim and other employees, but things had deteriorated so much that Qasim felt she could no longer go to the office, so she stayed home with her parents and ten siblings: "People are abducted all the time. Someone would show up at the house and inform the family that they need to take a young man in for questioning. He will never come back. Or maybe they will find him in the street later. Or maybe they will find him in the trash." Zainab Thamir, another MoWR employee and third training candidate, confirmed with a nod, "Yes, they're putting people in the trash now."

"I don't trust anyone in the government," Thamir said, as Abdullah nodded. Thamir continued, saying that they are all corrupt, they steal money, and "they don't feel the same way about the country. It's not the same feeling that you would have for your country if you'd stayed inside. If you'd lived there the whole time." The suggestion was that the people running Iraq's government, like Kubra, had lived in exile so long they were out of touch with Iraqi nationals, like themselves, who had lived through the two US-led wars and sanctions. Abdullah and Qasim avoided getting too close to American soldiers, who they feared would spook and shoot them without warning or cause: "Americans are so scared and so naive. It is a deadly combination for Iraqis. They don't think of Iraqis as human." Cement walls snaked across Baghdad sectioning one neighborhood from another, and, sometimes in the absence of walls, people blockaded the streets with rudimentary materials to protect them from violence. The nights were the worst, they all agreed. Most of the time they stayed inside. A former UNEP head of operations in Iraq, who was at the lunch table, interjected: "What are the conditions in Iraq?" Abdullah replied: "It's very dark." Thamir shook her head: "It's 50/50. Before I thought it was very dark."

UN and other international development agencies believed that securing Iraq was not their job but the responsibility of the occupying army, the US multinational forces. Their mandate was to pursue international development as part of UN postwar reconstruction, including in biodiversity conservation. Recall that after the US presidential "mission accomplished" declaration on May 1, 2003, according to policy the UN formally addressed Iraq as a "post-conflict reconstruction" operation. However, the most intensive period of war and the greatest number of Iraqi casualties occurred during this period of UN "postwar" reconstruction when international development was the official method by which foreign donor agencies engaged with Iraq. Pierre Beaumont was the head of UNEP's Marshlands Watch System (MWS), reporting to Khalil Walid, whose work at UNEP had been instrumental to marshlands conservation and who oversaw the initiative as part of UN post-conflict operations. Beaumont's mandate was to produce remote sensing

maps of Iraq's marshes to evaluate whether reflooding the marshes made them a viable wetlands ecology. Beaumont worried that the maps scientists in his labs produced would be used for nefarious purposes. One day in the lab before the training began, Beaumont asked if I thought the MWS maps would be used to forcibly repatriate Iraqi refugees who had fled to Saudi Arabia in the early 1990s. He could sense that there was violence in the UN remote sensing project, and he was actively looking for it. What he did not anticipate was being caught up in war violence, even creating it, right there in his Geneva lab, as UN and Iraqi scientists worked to map Iraq's marshes and, in the process, established hierarchies of expertise ranking UN scientists above Iraqi scientists.

Although scholars have roundly demonstrated that maps are the first technology for empire (Said 1979), analysis reveals how MWS relationships of mapping were themselves part of the violent warzone ecology. The Geneva lab was violent because it ranked remote sensing experts according to hierarchies that valued the esoteric knowledge of satellites over and above the experiential knowledge of the ground. In this way, scientists' relationships within the MWS lab were consistent with how Paul Bremer ran the US occupation, which devalued Iraqi expertise while amplifying that of foreign experts, such as with de-Ba'thification. The UN Security Council specified that Iraqi statecraft programs would aim to repair postwar Iraq by reintegrating it within global financial institutions and geobiopolitics. However, neither the UN nor the US entirely controlled these processes of international development, which heavily depended on foreign donors and, thus, were carried out according to their priorities. This chapter focuses on how remote mapping builds on the framework of Eden, which created a global imaginary of the marshlands, to scientifically locate and monitor Iraq's marshlands in a specified geography. This is essential work within the warzone ecology of marshlands conservation because, before the marshlands can be conserved, conservation proponents need to define their geographic location and specificity.

Through mapping, Iraqi and MWS scientists' expertise and subjectivity are transformed because of their relationships with each other and the technologies they use to apprehend the ground. These transformations rank expertise according to a hierarchical structure of value for human life imposed by war actors (e.g., US government and armed forces, state donors, UN agencies) directly involved in Iraqi reconstruction. After the UN exodus from Iraq in the fall of 2003, global spaces far from Iraq, like the Geneva MWS lab, became the primary sites of wartime Iraqi territorial transformation. In their remote sensing work, Iraqi and UN scientists reveal different orientations to and values for how they conceptualize "the ground" in Iraq, generating distinct and unequal subjectivities for the experts involved. Remote sensing mapping emplaced in the geometry of the map the evolving social relationships of scientists, the grounds they apprehended, and the satellites, software programs, and analytic devices that were their technologies of mediation.

Building on this insight, this chapter draws attention to "ground truth." Ground truth is a scientific process that refers to work performed by geographers, ecologists, biologists, and archaeologists to conduct on-the-ground surveys as a way of "truthing" or testing lab hypotheses about the surveyed territory based on the initial analysis of satellite images. During ground truthing, field scientists go to specific locations to study the ground and report back, thereby corroborating or refuting the veracity of lab hypotheses about the geography in question. In its ideal form, remote sensing is structured around grounding lab hypotheses through human experiential knowledge of territorial ground. However, as analyses of MWS and other remote sensing labs in high-conflict environments reveal, ground truth is not always tethered to material geography (Rahder 2020, 88). Instead, MWS scientists used laboratory-based analysis of expensive, high-resolution satellite images to verify their preliminary analysis of free and more widely available low-resolution satellite images. And yet the term of art "ground truth" valorizes direct, experiential knowledge of the ground, not human expertise. Without ground truthing, maps cannot be scientifically verified.

I take up ground truth in a conceptual way to highlight how remote sensing operations, which were definitive of Iraq War "post-conflict" operations planned from afar, produced truth regimes in the act of knowledge creation about the ground that valued foreign expertise over Iraqi expertise. I use ground truth in ways that may be uncomfortable or seem metaphorical to practitioners of remote sensing, but I do so intentionally to expose the truth regimes inherent in knowledge production, in scholarship that makes claims over territory by defining it according to UN satellite diagnostics as opposed to Iraqi experiential knowledge. In the Geneva MWS lab, foreign expert knowledge of remote sensing was valued over Iraqi direct experience of the marshlands in contradiction to the purposes of ground truthing.

During the two-week training course, I observed Iraqi scientists, who were learning remote sensing, become experts without authority because at the end of the training, MWS experts formally recognized their Iraqi colleagues' expertise by "successfully" transferring leadership of the project to them while privately fretting over their inability to conduct remote sensing analysis and map the marshlands according to MWS protocol. MWS scientists, under donor pressure to demonstrate results, put Iraqi experts in a position of *forced futility* wherein Iraqi biologists were asked to cram remote sensing in ways that everyone agreed would fail. I use ground truth to refer to how MWS scientific practice built value for expertise that systematically devalued, deprioritized, and deauthorized Iraqi expertise in direct relation to the valuation, prioritization, and authorization of Global North expertise despite these foreign experts not setting foot in the marshes or in Iraq; in theory this violated the stated aims of ground truthing. MWS experts, concerned about how their work would be manipulated to advance the war, actively sought ways to intervene in remote sensing operations; by directly participating in the

structural relations of remote sensing training, they strengthened the truth conditions that valued their expertise more. Ground truth, in my sense of the term, refers to how scientific praxis participated in and advanced the aims of the Iraq War to amplify the authority of foreign experts inside Iraq.

I explore ground truth to highlight the relationships of different kinds of grounds in the Iraq War: the Iraqi ground to the Geneva lab, the grounds for establishing expertise, the relationship of the material to the virtual in both military and "post-conflict" operations. Ground truth also references the complex movements in these geometric spatial relations; that is, as UN and Iraqi scientists made remote sensing maps, they were also actively producing their own relations to each other, to Iraqi territory, and to claims to expertise. Drawing lines on a map is always more than inking a border on paper; lines are full of the complexities of the social relations of war that take up geography as a principal project, as they have historically been in Iraq as elsewhere (Pursley 2015a, 2015b).

By analyzing MWS efforts to build remote sensing expertise, I analyze how expertise is defined by mastering the realm of that electronic data and what it signifies—namely, the three-dimensional movement of solar energy in terrestrial, atmospheric, and then again terrestrial space. I am arguing here that the atmosphere is *made*, not *given* (Adey 2010) and that, as MWS demonstrates, it is a space from which to see how experts make geography to bring human subjugation, war, and something defined as "the environment" into relation. Images, including remote sensing maps, produce vision through electronic mathematical data (Crary 1990, 2). To be a remote sensing expert, one must be able to inhabit the virtual space of remote ecologies in an embodied sense; one must be able to intuit the relations of pixels to the materialities they signify. As exemplified by MWS, remote sensing operations far from Iraq were the place where these value transformations for expertise took place (Coburn 2018). These operations characteristic of the Iraq War, of which MWS was part, ensured that foreign experts would define and control the Iraqi statecraft project. The ground truth of the Iraq War is how these remote sensing operations produced the primacy of foreign experts to define the Iraqi state after the 2003 US invasion.

In their quest to map Iraq's marshlands, UNEP scientists did not go to Iraq but relied on their expert abilities to analyze high-resolution satellite images. This chapter moves from mainstream media image-making of marshlands Eden to the scientific interpretation of aerial images for mapping the regeneration of the marshlands with remote sensing analysis. Iraq has a special place in the development of aerial images for warfare because it was the first place where the technology was used, during the British Royal Air Force's efforts to seize and control Ottoman Mesopotamia beginning in 1914. During World War I, the British perceived Iraq and other deserts as "almost unmappable" because of the inability to conduct ground surveys. The new technology of aerial surveillance created

the power to see and apprehend the ground from above, thereby producing visuality from afar. In practice, the British relied on these maps as technologies of "applied realism" that made navigation and political suppression possible (Kaplan 2018, 174). Concomitant with aerial mapping, the British Royal Air Force used its newfound aerial powers to put down the 1920 populist southern uprising that challenged their rule (Vinogradov 1972; Royal Air Force Mesopotamia 1918). The convergence of military use and environmental use of aerial power in contemporary Iraq is an extension of a century of imperial use of the skies to dominate and suppress the populous. The violence of aerial power is produced in its own making, in the social relations of its own production (Bhimull 2017), as much as it is in its products (i.e., images or maps) or its military powers.

In this chapter, I focus not on the images themselves, but, much as with chapter 1, on the labor and resources that conservationists devoted to creating them. Through twenty-first-century remote sensing analysis, UNEP scientists valorized, in performative ways, experiential knowledge of the ground. The work required Iraqi nationals to risk themselves either by devoting themselves to the forced futility of mastering remote sensing, as I explore in this chapter, or by physically deploying to the marshlands to take material samples, as I examine in chapter 3. This chapter and the next, the heart of the book, therefore, focus on the violent dynamics of foreign extraction of Iraqi expertise in war: on the one hand by cutting off the possibility of expertise and setting up Iraqi experts to fail, and, on the other, by recognizing Iraqi expertise to send their bodies into lethal battlefields to physically absorb the risks of this labor.

THE VIOLENCE OF EXPERTISE

As part of a broader warzone ecology, the MWS mapping project was violent in two key ways. First, it was violent because Iraqi national participants and the project itself were set up to fail, as was customary of the structure of international development projects in Iraq in postwar reconstruction. Iraqi scientists were set up to fail because the project donor, Japan, required them to participate in a two-week training course (Japan funded three training courses, but not a formalized university course of study such as that which UN scientists completed) that was structured to be unsustainable. If the government of Japan wanted sustainable investment, why would officials build a training course that did not meet the needs of participants or the project donor? MWS was not violent because it was underresourced. MWS was structurally violent because it generated a power and sovereignty for war actors who staged it (i.e., Japan and UNEP), while simultaneously dehumanizing Iraqi experts by tasking them with work of no value. Everyone at UNEP, including Walid, openly recognized MWS was destined to fail, but as was common with international development projects in Iraq, the project was structured in a

way that shifted the blame for that failure onto the objects of development—in this case, occupied Iraqi subjects. The work Iraqi nationals performed at the training was *forced futility*, meaning that their work did not produce value, but their presence at the training alone did and was itself the end product because it enabled Japan and UNEP to assert that their work was repair work for Iraq's benefit. I call this labor arrangement forced futility to refer to the resource and expenditure violence of compelling Iraqi scientists, and through them the resources of the Iraqi state, to devote themselves to a project that consumes their labors while actively devaluing them by making them experts without authority.

Second, the MWS mapping project was violent because as scientists made maps of marshlands, they collectively unmade the authority of Iraqi expertise by devaluing their experiential knowledge of the ground. For Iraqi trainees, Iraq's ground was not an algorithmic problem; it was livelihood, inheritance, and survival (Garcia 2010; Simpson 2014). The dynamics of MWS training reveal how UNEP, like other international development agencies operating in the reconstruction of Iraq, increasingly relied on abstract, remotely mediated forms of knowing the Iraqi ground in ways that were inaccessible to Iraqi experts. MWS, like other international development projects for Iraqi reconstruction, reframed war as a problem of knowledge. MWS scientists aspired to know the Iraqi marshlands by monitoring it from above, via satellites. For Iraqi training candidates, learning remote sensing analysis was an experience that built on their own sensory and embodied experiences of the war and how it acted on Iraqi geographies, whether by bomb or by map. Remote sensing protected UNEP Geneva scientists by enabling their distance from Iraq but put Iraqi nationals at risk through its need for geographic proximity. In the MWS lab, the aspirations of the Geneva scientists to know Iraq put pressure on Iraqi training candidates to risk themselves to become remote sensing experts while feeling that they were not doing a good job. The systematic breakdown of Iraqi civilians in body and mind that occurred from this work was tied to the breakdown of Iraqi geography. MWS experts, too, experienced mental and physical breakdowns as they bore the stress of working with their Iraqi colleagues under an impossible timeline, and they recognized this stress as dynamics of the Iraq War funding and were critical of it. The MWS lab was part of the ecology of war violence, one that looked quite different from how war violence is traditionally conceived.

This argument builds on the recent work of scholars who have analyzed forms that militarism and war take today, including the critical importance of digital technologies that facilitate war agents' power over the skies (Gusterson 2007; El Dardiry and Hermez 2020; Guarasci and Kim 2022; Parks and Kaplan 2017). To do so, several scholars have turned to infrastructure, which in an expansive sense (Star 1999; Carse 2012) offers a means to investigate the many material and ideological forms war takes and, especially, how war infrastructures operate systematically as "objects that create the grounds on which other objects operate" (Larkin 2013,

329; Stamatopoulou-Robbins 2019; Kim 2022). Like other international development projects, MWS created new ways of seeing and engaging the ground in Iraq. UN experts viewed Iraq through satellite diagnostics and knew there was violence in the remote sensing project but could not determine its source, whereas Iraqi experts asserted there was war violence taking place in Iraq and that any exercise of ground truthing geography must include some acknowledgment of this fact.

As elaborated in chapter 1, I do not see images as separate from the material environs of the marshes; but in this chapter, I further suggest that UN and Iraqi scientists did not see Iraqi geography in the same way. For analysis, I group modalities of seeing and engaging the ground into two prime categories: the UN remotely sensed ground and the Iraqi national "rough ground" (al-Mohammad and Peluso 2012). Both forms of ground are real and engaged through embodied, sentient experience, but in international development the UN mode of engagement is valued more. Similar to Kubra's work to frame Eden by the remote mediation of using the realism of photojournalism to anchor it in the virtual, digital media landscape, remote sensing—also a virtual technology—gained its authority from verifying lab hypotheses of land cover types against other satellite (i.e., virtual) images. Deauthorizing Iraqi expertise compromised state sovereignty despite the official aim of state improvement. An additional and important element of Iraq's warzone ecology was the central role of denial of the facts on the ground. Building on my previous analysis of US framing of the Iraq War as preemptive and humanitarian, denial—including the deniability of violence—was definitive of Iraq War violence. Denial was the predominant framework for war; Iraq War proponants undertook war through postwar reconstruction international development projects that formally denied their relationship to the war even as their existence depended on funding from war donors and war policies determined by the US, the UN, and related international agencies.

THE UNEP LAB IN THE SPACE OF WAR

Khalil Walid was a bit of a celebrity in the Iraqi diaspora, but you would not know it by his unassuming and soft-spoken demeanor. His work with satellite images was the first to prove the extent of Saddam Hussein's draining of Iraq's marshes. Walid's goal for his MWS project at UNEP was to continue that work by using remote sensing analysis to map the extent and viability of marshlands reflooding. Since residents cleaved open dams and dikes to reflood the marshes upon the fall of government, they had been re-inundated and mysteriously started to regenerate reed stands and other forms of vegetation. Kubra's team believed the marshes sprang to life on reflooding because of their seasonality, which meant they ebbed and flowed according to rain patterns and experienced periods of dormancy and revival on a cyclical basis. MWS maps documented the extent of reflooding and measured the quality of new marshlands vegetation, thereby serving as a diagnostic tool

for the Iraqi government and Green Iraq, which could help them direct resources to support marshlands conservation.

The UNEP lab is one site in the genealogy of empire in Iraq as evidenced by the long history of international development in the country, which I outlined in the introduction. Here I turn to a moment in May and June 2006 in a UNEP laboratory in Geneva, Switzerland, to show how a space far from the war, a seemingly nonwar place, was a critical site of war and its violent transformations. Twenty-first-century international development obscured continued hegemonic rule by "transferring" technologies to Iraq, which, by official documents, meant that Iraq was in control and desired these changes. It was classic empire-building that echoed British imperial goals in Iraq. In the mid-twentieth-century, the British undertook Iraqi statecraft by building civic infrastructures like hospitals, schools, transportation, and museums (Dewachi 2017; Farhan 2022; Falb Kalisman 2022). But remote mediation differed from this approach in its efforts to remain outside Iraq and divested from the creation of hard infrastructure. Now donor transfers of technology could happen completely outside of Iraq.

MWS training started on Monday, May 29, 2006, and ran through Friday, June 9, 2006. Samir Abdullah was a University of Baghdad doctoral student who represented Green Iraq, and Zainab Thamir and Fatima Qasim were University of Baghdad graduates in the biological sciences who represented Iraq's MoWR. Pierre Beaumont was the head of the MWS team at UNEP Geneva and faculty in earth sciences at the Université de Genève. He was a seasoned analyst with an illustrious career, but MWS was his first project in Iraq. To describe his remote sensing effort, he often said that reflooding was not the same as ecosystem restoration. The MWS lab was one of fifteen environmental data centers in the world that UNEP's Division of Early Warning and Assessment managed from its headquarters in Nairobi, Kenya. At the MWS lab, Beaumont oversaw a staff of three remote sensing analysts. Sylvie Burkhardt was in charge of analyzing weekly satellite images of Iraq and making simplified land cover maps to chart their revival. Burkhardt started the weekly mapping project in 2005 and continued through May 2006, when the training program began. During this time, she also retroactively mapped marshland regeneration every two weeks dating back to 2003, preparing ninety-four maps altogether. Burkhardt was a new MA graduate from Beaumont's department, a master diver, and a semi-professional flamenco dancer. UNEP was her first postgraduate job. The two other remote sensing analysts on the team, Samantha Brown and Robert Charles, focused on analyzing high-resolution satellite images of Iraq's marshes, which, in the absence of regular ground truthing, they would use to test Burkhardt's hypotheses.

Historically, Iraq has been the premier global laboratory for innovations in aerial power. In the last two decades of the nineteenth century, British imperial officers considered homing pigeons to deliver covert messages to gain control

over Ottoman Mesopotamia (Baghdad Residency Records 1729–1914). The UK inaugurated the Royal Air Force at the end of World War I and then used it in 1920 to put down an Iraqi intifada that rose in the marshes against the British empire (Vinogradov 1972). In the 1980s, Saddam Hussein used aerial power during the Iran-Iraq War, including during Ba'thist al-Anfal chemical attacks on Kurdish populations. The 1991 largely aerial Gulf War was followed by Saddam Hussein's use of airpower again to squash the intifada that nearly toppled his regime, after which he razed palm groves and drained the marshes. In the 1990s, the US bombed Iraq every one to three days during the decade of UN sanctions, to devastating effects: half a million Iraqi children died from the combined effects of bombing and sanctions, which together contaminated Iraq's waters and soils and ruined the country's medical sector (Gordon 2010). *The Guardian* journalist John Pilger wrote that the US bombing of Iraq under sanctions was the largest Anglo-American bombing campaign since World War II. Denis Halliday—the UN coordinator of humanitarian relief to Iraq and the assistant secretary-general of the UN in 1998—suggested that sanctions amounted to a policy of "genocide" because more children died as a result of sanctions than in the US bombing of Hiroshima (Pilger 2000). By the time the Iraq War started in 2003, the US peacetime bombing of Iraq had lasted longer than the US invasion of Vietnam or the war in Laos (Mamdani 2004, 185). During its invasion in 2003, coalition air forces led by the US dropped more than 29,000 bombs on Iraq, resulting in high numbers of civilian casualties (Human Rights Watch 2003). Taken together, these acts represent a century of near-continuous war in Iraq, where the US and Ba'th governments experimented with novel aerial technologies to squash popular dissent and assert their control over territory. During this time people in Iraq lived through the imperial and authoritarian weaponization of the skies.

Japan was part of the US war coalition and a major donor in Iraqi reconstruction. Japan funded the MWS project as part of their ongoing, substantial investments in Iraq after 2003, which included the international development of Iraq's marshlands. In 2004, the government of Japan donated $11 million to the UN Development Group (UNDG, now the UN Sustainable Development Group) Iraq Trust Fund to be administered by UNEP's International Environmental Technology Centre based in Osaka, Japan, to "support the environmental management of the Iraqi marshlands" for a period of three years (United Nations Environmental Programme 2009, 16).[1] Japan's funding created one of the largest environmental projects implemented by the UNDG Iraq Trust Fund and one of UNEP's most expansive efforts to "support the transfer of environmentally sound technologies" (United Nations Environmental Programme 2009, 2).[2] But the entire collective effort, including UNEP's installation of reverse osmosis units in the marshlands and the MWS remote sensing project, was so big and so far beyond the capacity of

UNEP Japan that it was all destined to fail.[3] Japan earmarked half a million dollars of their grant for Khalil Walid's MWS program at UNEP Geneva and continued its strong record of donor support to Iraq in the years since, long after the Iraq Reconstruction Fund Facility (IRFFI) closed at the end of 2013 (World Bank Iraq Trust Fund 2009, 23).[4] Funds for Iraq's reconstruction came from two major sources: IRFFI with its legion of country donors, and the country's oil revenue, which UN Security Council Resolution 1483 put into international trust in May 2003. Iraq did not control either fund. In addition to these two official funding sources, country donors made bilateral agreements (e.g., Italy's funding of Green Iraq). Similarly, donor countries could direct funding through IRFFI back to UN initiatives based within their national borders. Japan was thus one donor in Iraq's warzone ecology that included a distributed development network—including Spain, Jordan, and Switzerland—of foreign states mobilizing to act in wartime Iraq (Al-Bulushi et al. 2023).

Japan expected the MWS team to develop the remote sensing project for the marshes over two years and then train their Iraqi colleagues to run it in three, two-week intensive courses in the MWS Geneva lab. After training, MWS would transfer the project to the government of Iraq, via representatives of MoWR and Green Iraq, who would run it independently after the fact. Project transfer would mark the achievement of international development for Iraq. But Japan's donor resources were not sufficient to effect the holistic change it anticipated (Checker 2020): two-week training intensives were not adequate for anyone to master remote sensing science, which was commonly taught in postgraduate education over two years and involved learning multiple complex software programs and iterative practice mapping. Japan's funding of UNEP in Iraq indicates that development work in Iraq conferred authority not to Iraqi training candidates who were ill-prepared to carry the project forward, but to foreign donors who benefited from these training breakdowns because they continued to demonstrate the need for foreign expert intervention.

The UNEP remote sensing course was one of thousands of training courses the UN undertook during the postwar reconstruction era. The UN pursued remote mediation of reconstruction in Iraq through two primary modalities: conferences where international experts and donors made policy decisions, and trainings that they ran to teach Iraqi nationals to develop the skills necessary to carry out the plans they formulated for Iraq, all of which were located outside of the country. International NGOs followed precedent and operated according to the same structure and logic. The international community approached Iraq as a development problem. They believed that Iraq had, under sanctions, become isolated and removed from international expertise in the arenas of government, science, and finance. International experts did not meaningfully involve Iraqi experts in the postwar reconstruction initiatives they planned.

In September 2006, the Canadian International Development Agency (CIDA) flew a hundred representatives from Iraq's marshes to Amman, putting them up at the five-star Kempinski Hotel for three days of donor meetings. On the final day of meetings, one shaykh stood in protest of CIDA's opulent conference spending and lackluster, doomed-to-fail proposal: "We will be embarrassed to go back to the marshes and say that this is what we have come up with!" Iraqi officials I spoke with at the CIDA conference expressed concern that funding for the conference alone could have been directed to marshlands infrastructure, where sewage treatment facilities were failing, and which were the material results their constituents expected. CIDA representatives disagreed and, as was typical of international development agencies working in Iraq, asserted that these types of infrastructure-building projects were a military objective beyond CIDA's scope.

Trainings in the distributed landscape of the Iraq War were similarly ubiquitous. I attended trainings in Amman in 2006 and 2007 by a Czech NGO for Iraqi state employees on transparency in government; at Jordan's Azraq Oasis by Italian hydrologists for Green Iraq on the correct procedures for building a national park; and in an Amman hotel by the Washington, DC-based National Democratic Institute on constitutional processes a year after Iraq's constitution was ratified.

Trainings were also where the Iraqi national government could exercise control. In what can be read as an act of sabotage of imperial warcraft (see Mitchell 2011), Iraqi ministries treated trainings as an employment benefit for ministerial employees, akin to a paid vacation rather than an educational opportunity. Instead of sending the same candidates to multiple trainings, they sent different employees each time. This meant that three different candidates went to the three UNEP remote sensing trainings that the MWS lab conducted. Thus, international development trainings could not build skill through iterative or cumulative practice, much less under conditions that were insufficiently resourced. In addition, the MoWR had decided that the two representatives it sent to the MWS training would not necessarily be the ones responsible for mapping the marshes with the remote sensing project, but they would perhaps teach it to others in the ministry who would run the mapping endeavor, adding another layer of remote mediation that made project continuation unlikely.

Today, remote mediation is standard practice for high-intensity conflict zones. For example, the Israeli army uses the artificial intelligence-based program Lavender to rapidly identify and kill military targets, such as during their 2023–2024 war on Gaza when Lavendar identified 37,000 Gazans as targets for airstrikes, thereby rapidly accelerating Israeli military action and resulting in high numbers of Palestinian casualties (Abraham 2024). In early twenty-first-century Iraq, remote mediation meant that international organizations undertaking development

projects sent Iraqi nationals to the field as bodily technologies to *ground* the occupation. This was a new formulation of indirect rule made possible by partnering aerial technologies with the labor of occupied subjects. But while Iraqi bodies grounded the mediated occupation directly in this way, another form of grounding was also going on—one based on dismissing Iraqi expertise despite the stated aim of valuing experiential knowledge.

SENSING WITHOUT CONTACT: RELATIONSHIP OF THE BODY, THE LAB, AND THE GROUND

On the first day of training, Pierre Beaumont introduced remote sensing: "You sense without contact." Projecting remote sensing images on the large screen at the front of the class, he continued: "The size of the marshes is enormous. If you go with a car or boat, you won't see the whole marshes. From satellite images you can. Remote sensing is an extraction of information from the satellite imaging in order to make maps. . . . Look at them [the images], aren't they beautiful? When you understand these images, reading a landscape is just like reading a novel. It's like a text."

Remote sensing was originally conceived as a military tool, but earth scientists adopted the technology and perfected it in times of peace. As long as there's been war, there has been a desire to get above the battlefield to see: during the American Civil War, the military used balloons to gain vantage over the battlefield; in the mid-nineteenth century, militaries also relied on balloons, and then kites in the 1880s and pigeons in the 1900s; Winston Churchill secured victory in World War I with air power, and this increasing reliance on aviation over the years culminated in the bombing of Hiroshima (Elachi and Van Zyl 2006, 4). World War I represented a major leap in the advancement of aerial photography, but it was the technological demands of World War II that sparked innovation in aerial surveillance, pushing scientists to open up the full range of the electromagnetic spectrum. It was also during World War II that the environment came into view as a way of understanding the world. NASA established a program in remote sensing the year Neil Armstrong landed on the moon. Three years later, in 1972, NASA launched its first satellite into orbit (Campbell 2002, 8–9). Satellites made it possible to visualize the globe in its entirety, providing humanity for the first time the ability to envision the globe as an environment, as a gleaming blue sphere of ecological life (Edwards 2010; Masco 2014). These back-and-forth military and earth sciences established science as it exists today.

Scientists use remote sensing to analyze the earth's terrestrial groundcover from the vantage point of space, where satellites monitor biophysical processes on the planetary surface. Twice daily, Aqua and Terra, two satellites each roughly the size of a school bus, pass over the globe at 705 kilometers above sea level in the exosphere—the outermost layer of our planet's atmosphere—to measure

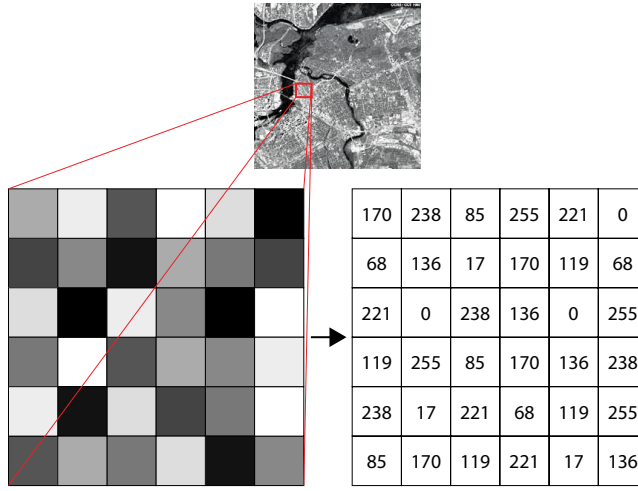


FIGURE 8. Natural Resources Canada Remote Sensing Tutorial diagram "Numeric Values of Pixels" (Canada Centre for Remote Sensing, 20). © CCRS/CCT.

the human impact on the earth and evaluate natural hazards such as fire and volcanoes. Of the two, the Terra satellite is the flagship mission of NASA's Earth Observing System. NASA launched Terra in 1999 as an international mission of the US, Japan, and Canada, three of the four principal donors of the Iraqi marshes project. Terra is equipped with five earth-monitoring instruments. The US is responsible for three of those, among which is the Moderate Resolution Imaging Spectroradiometer (MODIS), an instrument that sees every point on the planet every one to two days and can track the widest array of the earth's vital signs.

NASA delivered free 250-meter resolution MODIS images to Burkhardt, which she used to map Iraq's marshes. Japan funded Terra's Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER), the instrument that produced the costly fifteen-meter resolution image the MWS team would use to ground truth Burkhardt's maps. When Japan donated to expand UN remote sensing projects in Iraq, it was directing funds to the tactical expansion of technologies it had a direct hand in developing. Satellites were themselves "lively, affective, and signaling" agents that were an essential part of the distributed agency of the Iraq War (Bennett 2010, 117). The satellites were intrinsic to the US military strategy for Iraq because they patrolled the ground from above. During the war, development projects like MWS relied increasingly on aerial technologies to enable their remote mediation of reconstruction, and thus through their scientific praxis took up technologies financed by the same countries that promulgated and financed the war, such as Japan and the US.

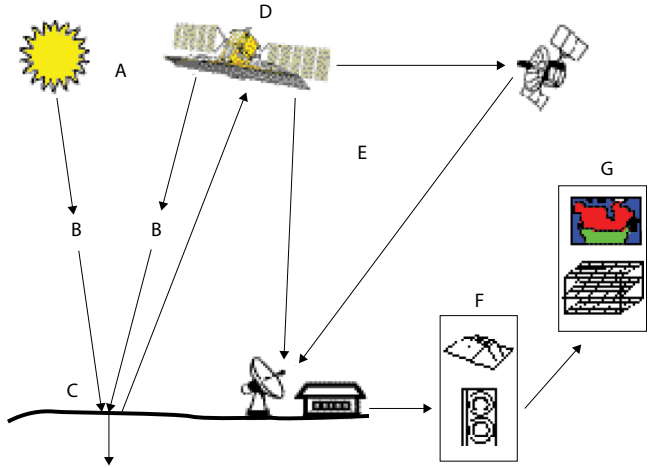


FIGURE 9. Natural Resources Canada Remote Sensing Tutorial diagram "Remote Sensing Process." (A) Energy source or illumination; (B) radiation and atmosphere; (C) target; (D) recording of energy by the sensor; (E) transmission, reception, and processing; (F) interpretation and analysis; (G) application (Canada Centre for Remote Sensing, 5–7). © CCRS/CCT.

Remote sensing scientists use satellites that map the earth by analyzing data encoded in the pixels of satellite images. Each pixel in a satellite image has a distinct numeric value that indexes light reflected from the surface of the earth. The numeric values of these pixels in the satellite image represent values of reflected solar radiation from the earth's terrestrial groundcover (figures 8 and 9).

Different forms of groundcover—reeds, trees, soils, flowers—reflect different wavelengths of the electromagnetic spectrum. When MWS scientists analyzed Iraq's marshes, they did so in *vertical* relationship to the ground, from the top-down perspective of looking from above.

Zainab Thamir, Samir Abdullah, and Fatima Qasim arrived at the UNEP Geneva conference room enthusiastic and eager to learn and show their skills on that first day of training. Abdullah had worked with Canadian scientists on Iraqi marshlands research, spoke a bit of French, and quickly took responsibility for navigating his colleagues around Geneva by public transit. Thamir was quick to challenge Beaumont on his geographic knowledge of Iraq. Qasim did not speak much in the classroom, where English predominated, but was outspoken during lunch in Arabic and dazzled the Geneva team with her quick mastery of remote sensing analysis. Each day the training consisted of four modules—each consisting of lectures, reading, discussion, practical work, and tests—that covered the methodologies and introduced the six different software programs MWS used for remote sensing. "It might not be easy, but we will try," Beaumont said.

Trying meant that MWS scientists assigned a hefty load of reading, lecture, and practicum material and asked Iraqi scientists to digest it all each day. Course overload was the strategy Beaumont and Walid developed to satisfy the Japan government, which wanted evidence of international development that lesson plans and homework assignments could verify. But the overload displaced the unrealistic burdens of sustainability onto Iraqi scientists who were not given sufficient time to learn the material. They experienced this mounting pressure to cover the material as *cramming*, the force of bombarding the brain with overwhelming material every day for two weeks. Walid and others were realists, they knew the strategy would fail, but on paper they would have succeeded. Walid often encouraged Thamir to laugh it off and not take the training too seriously. And yet learning is also a sensory process that Walid and Beaumont did not account for in order to meet their funder's deadline. As they piled on lesson after lesson, one homework assignment after another without allowing time for the mastery of concepts, Thamir, Abdullah, and Qasim experienced the unrealistic workload as unbearable, embodied stress. Thamir and her colleagues wanted to do well, to substantiate their professional careers. As they were pushed by UN scientists to undertake work without a full understanding of remote sensing, they experienced that "education" as a violent process of devaluation, both mentally and physically.

While UN staff knew they were not adequately training Iraqi scientists to be independent remote sensing analysts, they did not understand what Abdullah, Thamir, and Qasim experienced in the training where they knew with every passing day that they were being set up to fail in a professional opportunity that was internationally important. UNEP would go on to characterize their project as a "success" in its final report to the government of Japan because it could document that it carried out the training the donor requested. But when UNEP transferred that program to Iraq through the MoWR and Thamir and Qasim were unable to continue it, that failure would become a failure of the Iraqi government linked to each of them personally. Kubra at Green Iraq had his own, more substantial financial donors, and his Italian contractors conducted their own remote sensing analysis of the marshlands, so he was more openly critical of the UNEP project than the Iraqi ministry could be. Still, Abdullah wanted to prove himself to be a valuable employee to Green Iraq but could not under the structure of remote sensing training. This was the violence of forced futility: Iraqi scientists had no choice but to participate in a training course destined to fail and whose express but unstated purpose was to attribute that failure not to Iraq War proponents, like Japan, but to Iraq and to the Iraqi scientists.

Beaumont's chief concern in his UNEP remote sensing lab was the credibility of his map in the absence of traditional ground truthing fieldwork. Geneva scientists faced analytic problems because they did not conduct field visits and could not verify lab hypotheses based on experiential knowledge, and it concerned them. By

contrast, their Iraqi colleagues had some experiential knowledge of the marshes, but they could not, by UNEP standards, serve as viable sources of authority because they had not achieved proficiency in remote sensing.

FORCED FUTILITY

The first module of the first day would cover the introduction to remote sensing, sensors, and image analysis. Beaumont marked in green the chapters in the Canadian Center *Fundamentals of Remote Sensing* textbook they would cover in this first session: "1.1, 1.3, 1.4, 1.5, 1.7, 2.1, 2.2, 2.3, 2.4, 2.6, 2.8, 2.12, 2.15; cancel 2.11, 2.9, 2.7, 2.13, and 2.14 we will not use them; image analysis 4.1–4.7 (inclusive); chapter 5 is optional; and the others you can skim, but normally we would read it." We were two hours into the training course and the amount of material Beaumont had assigned was already overwhelming.

On that first day of training, Beaumont raised a couple of issues with MWS's remote sensing that would indicate the need for field visits to Iraq's marshes, but this was not his recommendation; instead, he instructed his students on laboratory fixes via specialized technological manipulation of satellite data. One problem the lab encountered was dust in the atmosphere, which would affect the spectral data encoded in the pixels of the satellite image. He explained: "The same landscape photographed on a dusty day will look very different than a photograph taken the next day if it is clear. It will give you the impression that water levels and vegetation changed, when in fact it was just the dust." To solve the potential pitfall, MWS did "atmospheric correction" in its remote sensing analysis. Thamir interjected: "Yesterday, it was dusty in Iraq." Beaumont wrote on the board: "Check RRS image 5/28." But based on their preliminary reading of the MODIS image from yesterday, there was no evidence of dust. Thamir offered other suggestions: Maybe the dust did not appear as far south as the marshes? Maybe it was not present when MODIS passed over Iraq as it did daily at 10:00 a.m.? Beaumont could not explain it, but he cautioned trainees that they should discard any images where dust was present and skip mapping for that day. But there was no time to delve into a discussion of how to detect dust or how to perform atmospheric correction, and these variables seemed less critical than learning the fundamentals of remote sensing analysis.

Beaumont charged ahead to cover the calculation of band ratios, the signal carried by reflected light, and the differential return of reflected light or "the spectral signature," all of which were important elements for the preparation of a satellite image for analysis. Each category represented specialized language for stages of remote sensing analysis that required command of a foundational level before one could manipulate data according to the parameters specified. To keep the class on track, Beaumont piled on: he dropped complex terminology into a

classroom that already had unresolved questions. Introducing new knowledge without satisfactorily resolving questions created a condition in which Thamir, Abdullah, and Qasim might be able to perform the mechanics of remote sensing according to the MWS instruction manual, but they did not have intuitive proficiency in the science of remote sensing. Beaumont cautioned against this pitfall time and again, emphasizing the need to make determinations based on individual perception as opposed to mechanically following protocol. But if the fix for dust was sophisticated digital manipulation, MWS did not allow time to prepare Iraqi scientists to address it.

In the afternoon, Beaumont introduced a second problem, which again seemed solvable to Thamir and her colleagues by direct observation. He said: "For some reason, part of the reed stands get a little yellowish at certain points in the season. We cannot discriminate with the 250-meter resolution MODIS image if it's a question of density or if it's a question of health." Thamir spoke up to ask, "So we must go to the field?" Beaumont replied: "That wouldn't be possible because if you had to go to the field for every image they took, you'd have to go every week and you'd need to check hundreds of square kilometers across the three major marshes. So, we have developed ways for dealing with it. One way might be in using high-resolution images. With higher resolution, you might be able to see the structure of the stems and therefore tell more about the state of health of the reeds."

Thamir may have struggled to keep pace with the course and its abstract principles, but she knew Iraqi geography. Beaumont moved artfully through complex problems in remote sensing analysis, but that afternoon he located Kirkuk's oil fields in southwest Iraq, and he could not find Baghdad on a map. One would assume Thamir was the more reliable expert, but remote sensing analysis redirected away from direct experience of the ground, which was seen as unreliable in the context of war and impractical to conduct for a landscape as large as the marshes. Instead, Beaumont and his team developed a workaround not uncommon to remote sensing analysis projects elsewhere in the world. MWS specialists Samantha Brown and Charles Rogers would ground truth Burkhardt's analysis of low-resolution satellite images by comparing them to the high-resolution 15-meter ASTER satellite images of the marshlands. The fix drove MWS scientists into relationships with algorithms and pixels and a ground they rendered through data manipulation in the lab.

Iraqi training candidates experienced cramming as both anger with the structure of wartime international development projects in Iraq and their own personal failure. At the end of the third day of training, Thamir put her head down on the table beside her computer. "There's just so much pressure," she told me. She picked up the Switzerland guidebook I brought into class for her to use, asked Burkhardt if she could take a walk, and, with permission, left the room. On Saturday, Walid

suggested everyone meet at the lake for a picnic. Sitting around Lake Geneva on a beautiful bluebird day with remote sensing tutorials splayed out in the grass, Zainab Thamir had had enough: "This is really bad. There's no way we are going to learn it like this. Maybe if they gave us laptops and we could practice at night after the sessions. But to pack everything into a day. There's no way. It's really bad." The pace of training also meant that Burkhardt and Beaumont did not have time during the training to learn from their Iraqi counterparts about their experiences of marshlands geography. Before the training they had been excited by the opportunity to ask about marsh areas for which questions arose during their remote sensing analysis. By the second week of training, when Burkhardt took over the more practice-based instruction and corralled Thamir, Qasim, and Abdullah back into the room after breaks, Abdullah took to yelling out "Burkhardt!" every time she brought the class back to work. It was funny, but he was serious: he was essentially saying the class was too much.

By the middle of the second week, the Iraqi scientists had reached their limit of what they could absorb. Burkhardt was teaching image classification, the most difficult part of image analysis—learning how to group pixels into classes of land cover. Burkhardt introduced a table with different criteria used to measure the different elements of the landscape, like soil, water, and vegetation: "So now I suggest that you return to your classes and determine the classification." Yesterday, she said, "you figured out vegetation, non-vegetation, soil, and water, and now we'll work on hydrophytes." By the time she dismissed Thamir and the others for lunch, again there were no sandwiches in the cafeteria. Thamir was exasperated. She felt like the MWS team controlled her every movement, pronouncing in the middle of the cafeteria: "Now we have the feeling of being ruled. It's not like we can eat when we want, sleep when we want, study when we want. No, we are told what we have to do. But it's okay. We are used to it." The last part of her rebuke drove it home: "We are used to it." This was not the first time in her life that Thamir had experienced war in Iraq. As someone likely born in the 1980s, she grew up and came into adulthood entirely in the context of war. Thamir's critique of the UN project resonated with the moment when the limits of their expertise were sharpened by software programs and satellites they could not decipher.

UN officials at MWS felt that they, too, were compromised by the training, particularly Burkhardt, who had made the weekly marshlands maps and who was responsible for teaching her protocol to Iraqi trainees. She worried that the success of the transfer would depend on her ability to teach better, to impart what she knew clearly so as to create a baseline of skill and confidence for Iraqi scientists in training. Over drinks at La Terrasse, the alfresco bar by Lake Geneva where many UN employees gathered after work, Burkhardt was exasperated: How could anyone learn this program in two weeks? Burkhardt had classified hundreds of images. "It's impossible!" she emphasized again and again, shaking her head.

Beaumont ran lesson plans and homework assignments at a frenetic pace with an eye toward the material he covered daily, which would be documented in his final report to Japan, and Burkhardt accommodated Beaumont's pace in her practicum sessions. Beaumont did make time for questions, as on day four when Abdullah asked him to reintroduce the software program from the beginning, which he did, and then gauged comfort: "Is part 1 of the procedure clear? Because we won't go back to it. . . . It's good you ask lots of questions. You are very thorough. It's good that we build a house on a good foundation." But these pauses did not slow the relentless pace of training. Instead, in the final week, Burkhardt made changes in instruction that enabled the Iraqi trainees to continue the program by doing what Beaumont had cautioned against, following protocol without individual analysis.

Both Iraqi and MWS experts experienced the forced futility of the training exercise, but those experiences and their effects differed in ways that mirrored their structural positions to the Iraq War. MWS experts felt pressured too. They were in a bind and, as Burkhardt suggests, felt controlled and manipulated by their funders and their expectations for a tangible positive outcome resulting from their investment—namely, the successful transfer and continuation of the marshlands monitoring project in Iraq. But Burkhardt, Beaumont, and Walid knew the project's limitations and that they could not deliver that result in actuality. They decided to use their official final project report, which they would deliver to Japan, as an opportunity to mark the project's success by detailing and substantiating their mapping and training methodology. Thamir, Qasim, and Abdullah also recognized the limitations of training to build the anticipated marshlands monitoring program in Iraq and saw the training as a professional opportunity to learn something and move on to other work. However, in the context of the Iraq War, they could not escape the international development paradigm of forced futility. It defined foreign donor relationships with the Iraqi state and civil society.

For Iraqi nationals, MWS was but one of many experiences of forced futility. The experiences of the Iraqi state and civil society employees working on reconstruction had much bigger ramifications: it meant that the Iraqi national government had to devote its labor resources to the priorities of foreign donors inside the country. Because the structure of UN Iraqi reconstruction meant that there were many foreign donors, via trust funds and also via direct arrangements with Iraqi institutions, diverse development priorities for Iraq took hold of state resources to further donors' own interests and began to divide the resources of Iraqi ministries such that the ministries struggled to define a coordinated response to the war. Forced futility applied not only to the conditions of Iraqi labor on international development projects but also to the allocation of Iraqi resources to development projects that were destined to fail and that fractured and weakened the ability of Iraq's national ministries to govern according

to a national agenda. Forced futility therefore represents the process by which the Iraqi state was denationalized.

EXPERIENCE

Trainee Samir Abdullah was the only scientist on the MWS project who went to the marshes regularly and had experience of its geography; he went once a month with Green Iraq as part of their field-science research team, a job he got through his thesis adviser, Dr. Mustafa, who recommended him to Zaid Kubra. Abdullah worked on the water analysis team and each month spent two days on a boat in each of the three marshes, five nights total in local hotels, gathering water samples for analysis in the NGO's Baghdad lab on things like nutrient composition. His first-hand field experience bore out in the detail with which he was able to talk about the marshlands.

Abdullah lived at home in Baghdad with his parents and five siblings, but he traveled internationally through his work with Green Iraq. He spent forty-five days at the University of Waterloo in Canada training on paleoecological indicators that enabled scientific analysis of the marshes across spatial and temporal scales. When I asked Abdullah if he found the Waterloo training useful, he shrugged and said it was winter when he was there, and there was so much snow, he was not able to do much research in the nearby marshes.

Geneva-based MWS scientists built credibility for their maps by standardizing their methods for processing data according to a series of ordered steps that involve coding, marking, correcting, reading, and writing. Each MWS computer program, each data coding activity, every chart and graph, every map, and each report is an "inscription device," a literary device that transforms matter into usable diagrams through practices of writing that build on each other to open up further realms of abstract investigation (Latour and Woolgar 1986, 48).

Despite the typical attention to bodies in ground truthing, the bodies in the lab also grounded European expertise through remote sensing analysis. When Burkhardt worked on a satellite image of the marshes, she relied on her intuition and her somatic relationship with the software programs and satellite images to separate pixels at the end limits of land classes, where discrimination was especially difficult. The "feeling of the analyst" was the prime tool in Burkhardt's arsenal. Beaumont had attempted to stress this fact by emphasizing throughout the training that remote sensing depended on the analyst's ability to think independently: "The analyst is the brain, and the analyst has to be in charge, not the computer. It [remote sensing] might not work if the analyst is not capable of being the master and not the slave of the computer." To analyze satellite images, Burkhardt drew on her intuition, her sense of what the spectral data in the pixels represented on the ground in Iraq's marshes (figure 10). Decisions to "activate" new classes of land cover, like "very sparse vegetation" to describe patches of scrub slowly emerging

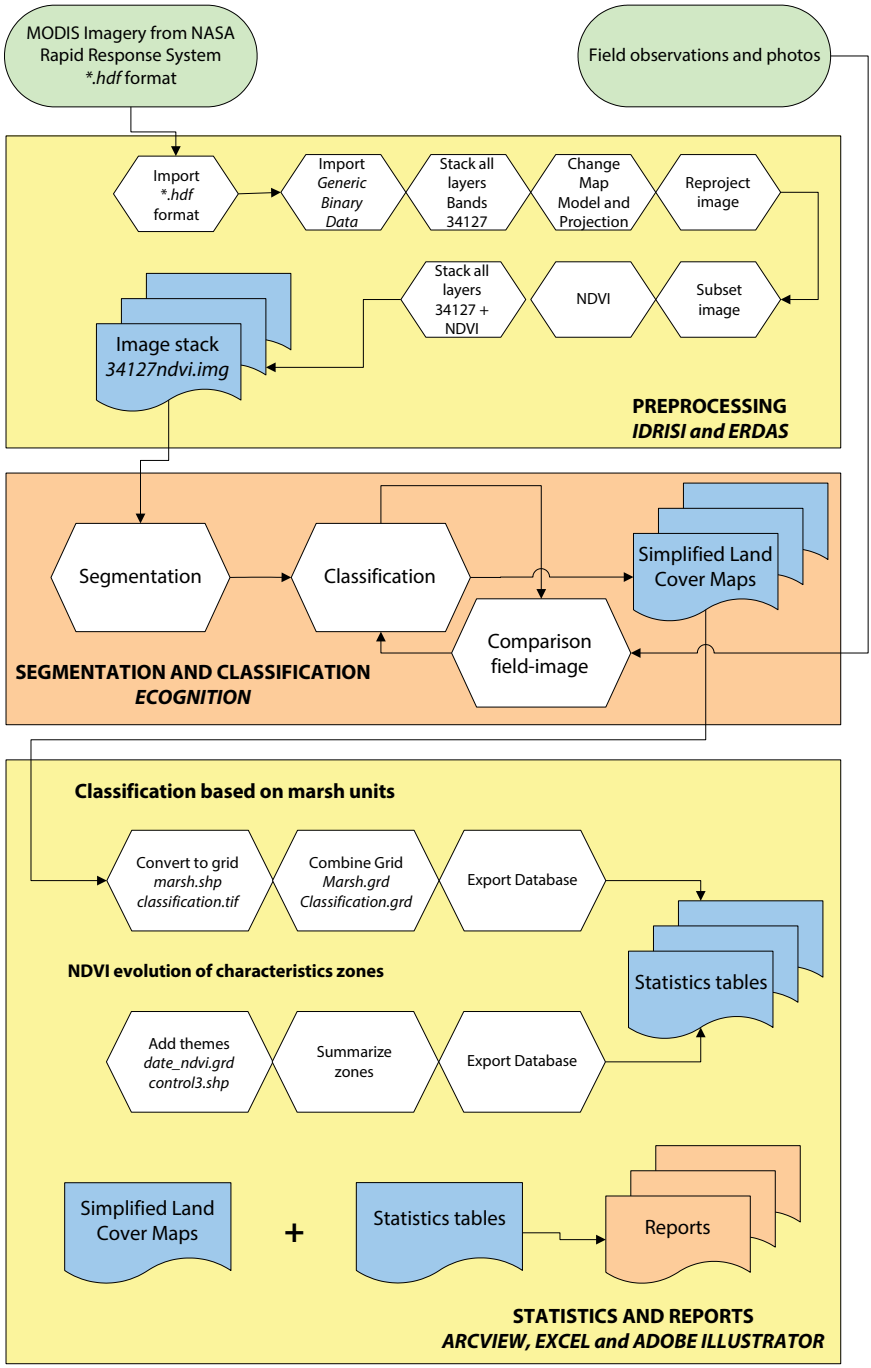


FIGURE 10. Sylvie Burkhardt's land cover mapping methodology for MODIS satellite images, where many steps required tacit, rather than crammed, mechanical knowledge that was accessible to only some knowing bodies. Courtesy of MWS.

on screen, or to "deactivate" other classes like xerophytes, plants that need very little water, depended on instinct.

Burkhardt's dexterity depended on years of study and practice in remote sensing, such that her discriminatory abilities became an innate sensory skill. The *sense* of remote sensing, Burkhardt suggests, refers to the somatic competence of the analyst. Burkhardt's embodied laboratory practices evoke anthropologist Natasha Myer's (2015) ethnography of protein modelers who engage their bodies kinesthetically and affectively in their laboratory analysis of DNA molecules. Though Burkhardt had never been to Iraq's marshes, she brought them into her world through her kinesthetic and affective engagement with image pixels. She used the map to analyze the marshes by comparing one map against others she had already produced to determine whether vegetation had become more verdant, waters more abundant, and soils more saturated—all signs that the marshes were once again a vibrant ecology. Through her analysis, Burkhardt organized "spaces of many different kinds," each step taking her deeper into the analytic process, each act of inscription further confirming her expert ability to intuitively know the map (Goodwin 2018, 302). Through her act of color selection, Burkhardt "enlivened" the map (Taussig 2009). As she worked, she demonstrated her expert competency, each stage of her methodology reconfirmed her skill and ability.

Iraqi experts in contrast to Burkhardt were unsuitable bodies in their untrained form for grounding the MWS lab remote sensing analysis. Abdullah's experiential knowledge of the marshes was the missing "ground truth" data that Geneva analysts wanted, but he could not move dexterously across multiple software programs; could not proceed confidently through the multiple, ordered, and complicated steps of image preparation; and did not have an intuitive sense for image pixels needed to define land cover classes and render the map. In this way, Abdullah and his colleagues stood apart from UNEP expert Khalil Walid, who was born in Iraq but whose expertise UNEP recognized because he had the necessary postgraduate degree from a prominent Canadian university. But Iraqi postwar reconstruction was not set up to create viable Iraqi expertise. After the Monday holiday when Abdullah had mapped on his own in the lab, he sought clarification from Burkhardt on class discrimination. Tuesday morning in the conference room, Burkhardt asked Abdullah about his work the day before: "So it was good? You did [image] preprocessing and you didn't have any problems?" Abdullah replied: "Yeah, I did it, but I had problems. Not problem, *problems*. I was not sure of the differences between dark and wet soil." Burkhardt replied, "Well, you have to define this for yourself," meaning it was up to Abdullah to determine the range of dark, wet, and light soil. Abdullah emphasized that deciphering the class "water" or distinguishing "dense hydrophyte" vegetation from "sparse hydrophyte" vegetation posed no problem, but the division of soil into three classes was not intuitive and just did not make sense. Then Beaumont arrived and said, "Apparently you were working hard yesterday, a little bird told me." Thamir answered, "Yes. We

had some difficulties." Beaumont attempted comfort: "Don't worry, especially with the stack, it's a little complicated. Making mistakes is common and it's the way we learn." Burkhardt added, "It's a good way to know what you need to pay attention to." But Beaumont knew that under the allotted time for training, there was no time to learn by experimentation.

Abdullah's difficulties with mapping indicate that analysts could not gain proficiency in remote sensing by studying the mechanics of the science alone. Remote sensing analysts had to embody their relationships with the software and protocols they used to *intuit* how to decipher them. Tacit knowledge is knowledge that exceeds what can be learned by studying methodological principles. It requires the scientists to internalize the geography of the land they are mapping, to have a feeling for the numerical data recorded in pixels, to move across software programs with dexterity. Achieving that level of comfort and confidence could only be learned over time through repetition and mentorship. Being experienced is not the same thing as experience, science studies scholar Hans-Jörg Rheinberger argues: "Experience enables us to judge a particular piece of work or a particular situation. Being experienced enables us to literally embody the judgment in the process of making new experiences, that is, to think with our body. Experience is an intellectual quality. *Erfahrenheit*, that is, acquired intuition, is a form of life" (Rheinberger 1997, 77–8). Citing Michael Polanyi's work on tacit knowledge, Rheinberger asserts that mastery of a probe or a tool requires the analyst to become as aware of it as they are of their own body, such that it becomes part of our interior being and a dimension of human experience.

Maps produced by scientists thus represent a "materialized and exteriorized system of imagination" (Rheinberger 1997, 77–8). As scientists actively engaged in mapping practices to define Iraq's space, they participated in decoding pixels, making spatial plots of these pixels, and then affixing those value registers to the map. Deciphering remote sensing images required analysts to operate geometrically, to trace and evaluate the movements of solar reflectance in three-dimensional space as they moved from the ground through the atmosphere and back to the ground again. When Iraqi and European scientists learned to map, they were learning to inhabit this geometric space such that analyzing the movement of solar light across realms of the earth became intuitive and embodied, making tacit knowledge possible. Maps are representations that depict not only an image but also the analyst's expert ability to define geography. Through the process of mapping the marshes, European experts showed the skill recognized by the scientific community as the authorized knowledge required to define Iraqi geography. In this sense, maps represent scientific expert labor that, when put into use, makes claims on land.

Foreign experts mapping Iraq's marshes experimented with forms of analysis, like remote sensing, that were partly developed by military scientists for use in war. Their tacit knowledge of remote sensing technologies and methods was therefore inseparable from war. And their knowledge of the marshes was politically valuable

because it was seen as scientific, objective, and free from subjective experience, including of the US Iraq War. Ironically, MWS maps aimed to document the scale of Saddam Hussein's marshlands draining and provide evidence of marshlands regeneration in the context of the 2003 US-led war and occupation, which had the effect of offering scientific proof that the Iraq War had positive outcomes for Iraq. Thamir, Qasim, and Abdullah called the value of such tacit knowledge into question with their assertion that knowledge of the marshes necessarily depended on direct, implicit experiences of Iraqi geography, such as their own, that valued their lived experience of war as fundamental to the understanding of marshlands geography, such as their ability to map the marshes because of their ability to navigate Baghdad's streets and survive the war. None of the experts at the MWS training recognized the tacit knowledge of marshlands residents who understood marshlands geography and ecology as inseparable from war, such as areas of the marshes that were reflooded because residents broke Ba'th era dams and dikes or areas where there was water and reeds but sewage contamination threatened the health of residents, buffalo, and fish.

On the Friday of the first week of training, Beaumont and Burkhardt were teaching land cover classification in anticipation of the mapping exercise training candidates would do independently the following Monday. Beaumont prompted Burkhardt: "Can you find hydrophytes?" Hydrophytes are plants that live completely or partially submerged in freshwater, such as reeds in the wetlands. "Yes," Burkhardt replied, "but I'm going to do it the other way because I have done a lot of spectral analysis and I know that hydrophytes fall here on the feature space plot." Beaumont hesitated at Burkhardt's confidence in sensing the classes and cautioned humility. "I think," he corrected her. "I think that's where they are," Burkhardt replied. Burkhardt's slip revealed what MWS scientists believed but did not say, at least not officially, that ground truthing was not based on experiential knowledge of Iraq's territory, but on the expertise of European scientists that was of higher value.

Thamir wanted to be a good student, but her technical questions could not help her: "So it's together? The spectrum and the feature space plot?" Beaumont attempted an answer, knowing that it would not address the underlying issue, the inability to achieve an embodied sense of the mapping process. As the training continued, tensions between UN and Iraqi scientists mounted. Beaumont and his colleagues used language that racialized and devalued their Iraqi colleagues: "Well, if you want to do it simultaneously you can. . . . From this work, you can distinguish your classes. If you don't do that first, then you're blind, you know, and then you're just pushing keys like a monkey." "I would prefer you to stop here and launch into spectral analysis in the afternoon. It's complicated," Beaumont concluded. "No," Thamir replied, pushing back on his categorization of her abilities to achieve remote sensing expertise, "not complicated, it just needs practice." On Monday, Beaumont continued his passive rebuke; they would

have the chance to practice "and then it will become clear. Like clear water." To which Thamir angrily and sarcastically retorted: "You mean by Monday I will have this all under my belt?!" MWS scientists may have been worried about exposing marshlands residents to violence, but they did not seem to understand that their commitment to training with full acceptance of Japan's unreasonable parameters was violence. Beaumont and others were frustrated with the structure of training too, but they directed those frustrations at their Iraqi colleagues by either speaking to them as if they were not smart enough to understand the remote sensing tutorials or growing frustrated with them that they could not just laugh off Japan's unreasonable training expectations. UN scientists may not have inflicted this violence intentionally—they, too, felt caught up in a structure that they viewed critically and felt pressured by their accountability to the project donor, Japan—but neither did they make a conscious effort to break the cycle of violence. Yet, the result was that Japan officials and the UN scientists introduced to Iraqi trainees the structural and systematic embodied stress of cramming, while they enjoyed the official formalized "success" of their development efforts no matter what they understood behind the scenes.

Burkhardt and Beaumont identified fixes for the demands of the remote sensing course and mapping protocol, but their solutions reinforced that Iraqi scientists would perform the remote sensing protocol procedurally, according to instruction and without independent thought. The entire structure, set up by Japan and implemented by UNEP, clearly undermined Japan's goal of international development that purported to build programs that would bolster the Iraqi state for years to come by investing in its experts. In the final days of training, Burkhardt decided to simplify the classification hierarchy for land cover classes that Thamir, Qasim, and Abdullah would need to define on the feature space plot to create the map. Burkhardt's revised protocol was a helpful and necessary shift in programmatic expectations after transfer, but the shift was also an acceptance that Iraqi scientists would not be able to conduct remote sensing analysis as well as Burkhardt. Instead, it made it more possible that back in Iraq, scientists would be able to map the marshes according to Burkhardt's instructions outlined in the manual she wrote for them that detailed each step of remote sensing analysis. The simplified protocol aimed to minimize analysis.

According to Sati al-Husri, director general of education in Iraq from 1921 to 1927, "'education for real life' and 'learning by doing' were deployed by Western experts in Iraq in order to arrest the psychological development of the 'children of the colonies' in a pre-conscious or pre-rational stage so that they could be more easily exploited by colonial interests" (Pursley 2018, 339). Walid opened up to me one day about Japan's involvement in the Iraqi marshlands project. Japan funded the UNEP remote sensing program and the installation of six reverse osmosis water purification units, but the scope of work was not in UNEP's realm of expertise; it was more like UNICEF to carry out such work. "It's been a mess," Walid

confessed, "Ask Kubra, he'll tell you." Walid believed UNEP Japan was in over its head and that it was not equipped or experienced to execute the project. I asked why the money did not just go to another office better suited to the task. "Well then, the other office would get credit for it," Walid explained. A few months later in Amman, I sat down with Kubra to ask him about the Japanese initiative in the marshes. Was the overall project successful? Kubra was more direct about Japan's role: "They got a lot of ink out of it."

The theory of knowledge evident in the MWS lab was directly connected to the economic transformation of Iraq that was foundational to its warzone ecology. Michael Polanyi's conception of tacit knowledge was foundational to the formation of late liberal capitalism because it posited a theory of knowledge that emphasized the role of the entrepreneurial individual operating unfettered as critical to a successful economy (Elyachar 2012, 83–84). At MWS we see two forms of tacit knowledge coming into conflict: the experiential knowledge of Burkhardt and Beaumont with remote sensing analysis of satellite images and of Thamir, Qasim, and Abdullah with Iraqi geography that was inseparable from their experience living their entire young lives in the context of three US military interventions: the Gulf War, sanctions, and the Iraq War. At MWS, only Geneva scientists' tacit knowledge of the marshes via satellite diagnostics, which disarticulated Iraqi geography from the experiential context of war, was seen as valuable for making a reliable map. The social relationships of the Geneva lab were the work of building the post-socialist Iraqi economy. Foreign donors and contractors invested in Iraqi reconstruction valued their own tacit knowledge to map and define the Iraqi state rather than that of Iraqi experts. This value structure was definitive of technology whereby foreign expertise established authority in Iraq.

THE ROUGH GROUND AND THE REMOTELY SENSED

MWS and Iraqi scientists in Geneva had two distinct understandings of the ground in Iraq. For Beaumont and his team, Iraq came to life through their discrimination of pixels and their differential values of solar energy encoded in satellite images. Recall that for Beaumont, deciphering a satellite image with remote sensing analysis was "just like reading a novel . . . like a text." For UNEP, Iraq's ground came into focus through their hours of remote sensing analysis of satellite images. That the MWS scientists related to the Iraq ground through virtual media does not mean their work is not real. Burkhardt felt a responsibility and a connection to her remote sensing maps; Beaumont spoke of the images they read and the maps they produced as beautiful and arresting. They, too, had affective and embodied relations with the remotely sensed ground. It was their labor of care and devotion that prepared the map. The point is not that one way of understanding is more real than the other. The point is that scientific realism and the world of material experience were distinct but interwoven ways

of engaging spatial and temporal dimensions of the Iraqi ground, and they ran parallel to each other during the war.

While MWS apprehended Iraq via a vertical plane of electromagnetic radiation, Iraqi training candidates lived *in* Iraq. Development agencies accessed the city vertically, without necessarily touching the earth, via satellites—including military drones and NASA satellites—that hovered and combed the ground. But for Abdullah, Thamir, and Qasim, Iraq's ground was a *horizontal* experience of direct encounter; they forged lives and families in Baghdad and greater Iraq. At the time of training, Thamir, Qasim, and Abdullah were actively attempting to survive and protect their loved ones, as the US military bombed and demolished Baghdad and greater Iraq. Death felt close. Baghdad residents were living in the most violent period of the Iraq War. In May 2006, more than 2,200 Iraqi civilians died from counterinsurgency violence, with numbers remaining in the multiple thousands per month for more than a year. Watchdog agency Iraq Body Count (2025) recognized the period between March 2006 and March 2007 as the worst year for civilian violence in Iraq during the US occupation.[5] In the capital, the death rate was roughly five times what it was in the rest of the country (Iraq Body Count 2007). On the second day of training, militia violence killed more than forty Iraqi civilians in one of the worst days for such violence in Baghdad. That day continued a trend over the months between February and May 2006, when civilians experienced an average of 600 militia attacks per week (Oppel 2006).

Iraqis felt targeted by the violence of Iraq's physical destruction whether they were in the country or not. Thamir, Qasim, and Abdullah lived in high anxiety in the Geneva lab, uncertain about where bombs had exploded, where militias were kidnapping, and which neighborhoods were embattled—all of which threatened their friends and family back home, while Japan and UNEP were requiring them to cram remote sensing. It was not just the violence of forced futility and the devaluation of their own experience and knowledge while feeling that they were being controlled by an imperial force. It was the experience that this violence was unaccounted for by MWS scientists in the training course while buildings fell back home in Baghdad; that the US Air Force killed Abu Musab al-Zarqawi (on June 7, 2006), for which they feared retaliation; and that two days earlier on the Pentecost Monday that UNEP employees had a holiday and Thamir, Qasim, and Abdullah were in the office rendering the map on their own, gunmen dressed in police uniforms in a convoy of fifteen cars raided a bus station in central Baghdad in broad daylight and kidnapped fifty travelers, merchants, and tea vendors (Stack and Rasheed 2006). Beaumont told me that he did not bring up the war in class because he did not want to traumatize his Iraqi colleagues. But not acknowledging the war was another source of stress for Iraqi trainees who felt they had to hide their distress in order to appear professional to their European colleagues.

In Baghdad, surviving the war was predicated on what Hayder al-Mohammad and Daniela Peluso have referred to as "the rough ground of the everyday." The

rough ground is an intercorporeal ethics where "life is not only open to the pain, suffering, joy, and ennui of others, but also to how in the entanglements and relations of lives with other lives in the everyday, lines of care and concern emerge, are fostered, and also frayed" (al-Mohammad and Peluso 2012, 44). The rough ground is an ethics that resides in "living-in-action"—that is, "phenomenologically, experientially, and sensibly grounded" in one's relations with others and one's material environment, including the streets, neighborhoods, and cities that are home (al-Mohammad and Peluso 2012, 44). Such an ethics pushes beyond ideals of the cultivation of self and toward understanding how people live in and encounter the world around them in entangled relationships that extend beyond one's own body. The rough ground, thus, is an ethical praxis that takes shape through gestures of kindness, care, and recognition and acts of generosity that intertwine lives not in any single event but across the "distributions and movements of lives entangled in the lives of others in the everyday" (al-Mohammad and Peluso 2012, 49). The rough ground also includes everyday "callousness, violence, and indifference" that mark the fullness of human experience as it is distributed across the lives of others (al-Mohammad and Peluso 2012, 54–55). A focus on grounding in this way moves beyond the devastation people experience in war, to identifying how people forge lives in its midst, what Scheper-Hughes (2008) has called the "talent for life" (cited in al-Mohammad and Peluso 2012, 54; Scheper-Hughes 2008).

The lives of Iraqi residents and the life of the city were phenomenologically bound by mutually reinforcing forces of destruction that targeted civilians through the decimation of the city and its infrastructure, under both the Ba'th and the US-led occupation. In Basra in retaliation for the 1991 uprising, al-Mohammad (2007) argues, the Ba'th government allowed Basra's sewage infrastructure to fail, and residents walked streets full of raw sewage while the Ba'th government arrested, imprisoned, and tortured civilians, breaking the human mind by violating the sanctity of the body as they defiled the tortured and imprisoned with excrement. With the US invasion in 2003, the systematic breakdown of Basra residents continued as people became renewed targets of war and lost their lives, their bodily remains becoming waste filling the city (al-Mohammad 2007). Thamir and Qasim referenced as much when they described how the bodies of those killed by militias would be discovered in the trash. During this period of intense violence, Green Iraq scientists told me they developed a wicked if gruesome sense of humor and joked that they would be the next bodies in the trash.

Under the MWS strategy for training, Thamir, Qasim, and Abdullah had to push any discussion of their concerns and anxieties about war to training breaks, lunches, and dinners, moments when they were not with Burkhardt or Beaumont. Over the course of two weeks, I saw how Thamir, Qasim, and Abdullah transformed these breaks into opportunities to check in with each other and their friends and families back home and to bring the sociality of their lives in Iraq into the spaces of their Geneva experience. One day over lunch during the first week of training, Thamir

told me things in Iraq had deteriorated rapidly in the last nine months. Even since last summer, she said, life in Baghdad degraded under the strain of war: "Every day it's worse. At the same time, it's so hard to think about leaving your country. It's very painful. . . . Bremer made a huge mistake in disbanding the Iraqi army," Thamir argued. Qasim concurred: "Now the security situation is awful because members of the militia have infiltrated the police. They wear police uniforms and drive around in police vehicles. So you don't know who is who."

As Thamir, Qasim, and Abdullah crammed remote sensing, they lived through this violence of war and the uncertainty of whether their families and friends were okay. There was no time for them to make phone calls during the day to check up on people as they would at home, so they toggled their screens between remote sensing diagnostics and internet browsers, where they relied on updated news from Iraq and Google Maps to check whether bombings or militia attacks endangered those back home. Over the course of two weeks, their stress grew palpably until that Pentecost Monday when they were at work while MWS team members stayed at home. By the time I arrived after 3:00 p.m., Abdullah was struggling. I asked if he wanted to take a break and sit for an interview with me. We left the conference room where he had been working and sat together in the lobby while Thamir and Qasim were at the mall getting lunch takeout. Abdullah spoke about his life in Iraq. "You know things are not as they were before. I have a father, but it is not enough. My salary supports my family . . . food, clothes, everything." Abdullah choked with tears and found it hard to talk. Just then, Qasim and Thamir returned from lunch, and Abdullah ran from the room. In a room thick with awkward silence, I helped Qasim and Thamir pack up. Thamir called Walid to ask what they should do with his key to the office. "Leave it on the table," he said. Abdullah emerged from the hall bathroom, his eyes red, and without saying a word, Thamir and Qasim led him back to the hotel. In that moment, I saw how Qasim and Thamir responded to Abdullah with immediate recognition and care that were a corrective to the stress I had caused. Sometimes, this unspoken responsibility to one another felt like a burden. Abdullah told me that he wished he had another male companion with him in Geneva so he did not feel so responsible for his female colleagues and could "feel more like himself," hang out, and venture out into the city unencumbered. Later that summer in Amman, I met Abdullah's supervisor at Green Iraq, Dr. Mustafa, and I learned from him that militia had forced Abdullah's father from his position at a ministry and threatened his life should he return.

The day before Thamir, Qasim, and Abdullah returned to Iraq, I met them at the shopping mall, Manor, and we had lunch by the lake. Over lunch, I asked Thamir permission to ask a few questions about her life. She agreed and I began asking about her school and where she lived. But Thamir pushed back: "Why do you need this information . . . that's personal . . . I no longer feel comfortable. . . . What were you doing in the training? You took so many notes, you wrote down everything we said. *Everything*. It was too much! You took so many photos. It

was too much! Why did you do that?" Thamir's invective was a personal charge: it was clear to me that she perceived me like she did the UN scientists, as an agent of the Iraq War. I introduced myself as a doctoral student on the first day of training, but Thamir's critique reflected her knowledge of US experts, including anthropologists, as part of the history of US war and occupation in Iraq. Anthropology has a history of ground truthing our own expertise through our engagements with ethnographic subjects who are our research participants in ways that have been instrumental to war-making, including in Iraq (Middleton and Cons 2014). I saw Thamir's critique as a broader evaluation of how scientific experts make knowledge through extractive practices. Extractive knowledge practices depend on acquiring the expertise of others while simultaneously devaluing that knowledge by asserting the expertise developed from it is scientific, objective, and authoritative (Gonzalez 2009; Price 2011; Beliso-DeJesús et al. 2023). Thamir's criticism reminded me that I, also, was not outside of or apart from Iraq's warzone ecology, but systematically benefited from its structural relations that rewarded US expertise (Bishara 2023).

Abdullah told me on the last day that he felt his movement in the world was controlled—by his work, by his passport and visas, and by the conditions of war. Thamir, too, had expressed this feeling throughout the training, stating that she felt "ruled" by MWS discipline. Late in the second week of training, Abdullah received an email from someone in Baghdad he didn't know well: "How are you enjoying Switzerland? I hope you have a good time." It was a veiled threat to blow Abdullah's cover as an employee of a US-affiliated NGO, Green Iraq, and therefore out him as an ally of the occupation. In the context of the MWS lab, which sidelined any talk of war, Abdullah did not bring it up with Beaumont or Walid. There simply was no space to discuss this threat to his life within the grounds of international development, built on foreign expertise derived from the remotely sensed. In this way, the international development apparatus in wartime Iraq missed and dismissed the knowledge of lived experience of the war that could only be gleaned from Iraqi nationals.

GROUND TRUTH

After the MWS project ended, Kubra fired Abdullah in Jordan on his way back to Iraq. Though I asked at different times, I could never get Kubra to discuss why he made the call. Walid was convinced that if any of the trainees continued mapping, it would certainly be Abdullah; he was banking on it. But when Abdullah was fired, the MWS program ended. I reconnected with Abdullah in January 2021 and learned that he had completed his PhD and was teaching in the College of Sciences at the University of Baghdad; his professional aspirations for a career in global development never materialized. I lost touch with Thamir and Qasim. Sylvie

Burkhardt became a remote sensing analyst who held a joint position between the Université de Gèneve and the UNEP remote sensing division and had twenty-two publications to her name. She never worked on Iraq again. Predictably, the MWS program failed on transfer to Iraq's national government. Kubra used Italian funding for AcquaTerra and Bionatura to resume the remote sensing project in Italy, where they continued to make maps of the marshes with limited ground truthing. He used UNEP's maps in PowerPoint presentations to show the extent of draining and revival, as he worked to persuade media and stakeholders—representatives of Iraq's national government—in marshlands biodiversity conservation that *his* organization had gathered the data that proved the imperative for conserving Iraq's marshes.

The UN, other international NGOs, and civil society building institutions undertook international development in Iraq through remote mediation, which meant nearly all planning of postwar reconstruction took place outside Iraq. Under the conditions of remoteness, international development put into relation bodies, grounds, and technologies of mediation. People's relationships with physical space constantly involve the exercise of power, argues geographer Doreen Massey (2005). Geometric principles that define maps materially affect people's lives, resulting in "diverse spatial relations and, as importantly, spatial separations, spatial cuts, and spatial hierarchies" (Green 2020, 177). Analysis of the MWS training reveals how UN experts apprehended Iraq through media that offered a vertical, top-down sightline, which enabled remote mediation of Iraqi territory while producing a remotely sensed image of the ground. Iraqi experts, by contrast, experienced the rough ground of living through war in ethical relationships, of varying degrees, to each other and one's material environs.

Ground truth, as it was practiced during the Iraq War, was forced futility. Analysis of MWS in Geneva reveals the power of foreign donors, like Japan, to organize the time and labor of Iraqi government employees to fail. The ground truth of remote sensing at MWS and other spaces of development outside Iraq was infrastructure that enabled foreign donors to make durable impact on the architecture of the state without setting foot in Iraq. In remote sensing science, ground truth is the baseline for knowledge. Scientists in various applications of remote sensing and military officials, including Donald Rumsfeld, would say often, "there's no ground truth for that," meaning there's no way to standardize knowledge (*The Washington Post* 2002; Blitzer 2003). What ground truth did for remote sensing was make the technology coherent as an authorized knowledge and, therefore, available for future international development work in warzone ecologies under the auspices of planetary repair. Grounding knowledge made it possible to bring into existence a set of phenomena operating as an analytical referential (Jaton 2021, 68, 76). But as we have seen in the MWS lab, scientists set the algorithms and protocols of their ground truths (Jaton 2021, 86). The formulation of ground truth is a human social

phenomenon, shaped by the parameters of human experience that then determine and shape the outcomes of knowledge (Jaton 2021, 81). Ground truthing as practiced in Iraq by UN scientists and others had the effect of denationalizing the Iraqi state by systematically devaluing the expert authority of the people who worked in Iraq's national ministries.

MWS scientists like Burkhardt and Beaumont authorized remote sensing as an Iraq War technology predicated on scientific formalism and Global North perspectives of places they had never been. This reinforced the experiences of Global North scientists as the standards for knowledge creation of and for Iraq, reinforcing the hegemonic powers of foreign agencies over Iraq. The UN remote sensing program I analyze here reframed war as a problem of knowledge, including the scientific devices, protocols, data coding, and pixel classifications. In making geographic knowledge of Iraq's marshlands, MWS scientists and their social relations with Iraqi trainees were also standardized into a grammar of international development practice. UN experts published programmatic reports that formalized the methodologies of these knowledge regimes into a "common sense" of foreign rule over Iraq (Weizman 2019, 304). Scientific formalism is heavily politicized to uphold the logics that make the Global War on Terror universal truth (Asad 2007; Li 2019).

Ground truth as progressive politics demands human experiential knowledge of the ground to understand how to read aerial images, because that is where the stakes of knowledge production are understood. Remote sensing analysis has the potential to expose the atrocities of settler colonialism, make them visible, factually verifiable, and potentially actionable by law, but only if accompanied by a serious, human experiential engagement with the territory and the people who live there (Weizman 2019, 276, 289, 296).[6] This is why Beaumont, Burkhardt, and I, too, could not immediately understand the violence Iraqi trainees experienced in the lab. Progressive politics demands grounding in experiential knowledge and an intentional, sustained, and critical understanding and evaluation of one's structural position in war knowledge economies.

MWS reveals that in the Iraq War ecology, there was no singular, imperial sovereign actor; rather, the warzone ecology was a vast world of war actors and agencies. These included experts like MWS scientists and Iraqi trainees; technologies like remote sensing, modalities of grounding knowledge regimes like ground truth; ideals of space and time such as the remotely sensed and the rough ground; multinational organizations like UNEP, military institutions like NASA and its satellites with country-specific instruments; and global capitalist institutions like the World Bank and the UNDG. These war actors harnessed expansive dimensions of planetary spaces, such as the electromagnetic spectrum and outer space, to conduct operations in Iraq from outside of its national bounds. As MWS reveals, a network of donors and experts working in Iraq during the Iraq War harnessed the airspace above the earth's surface for their imperial capitalist development schemes that had a material impact on the ground, in terms of how it could be known and how

it was experienced inside and outside of Iraq and the marshlands. In this formulation of development work, Global North aid workers do not have to be on the terrestrial ground at all. Ground truth is the technology for authorizing knowledge regimes that align Iraq for vertical control, domination, and extraction (Weizman 2007, 12). As analysis of MWS reveals, the maps create a vision for Iraq useful to war. In the next chapter, I analyze how the visions of the marshes created by framework and remote sensing analysis are substantiated by ground truthing fieldwork, such as by counting birds in the marshes. Moving from lab to field, I show another dimension of knowledge extraction in the Iraq War.



I Learned to Draw by Tracing the Sun and . . .

"The sun taught me to draw," poet and visual artist Ali Eyal told me over Zoom from his home in Los Angeles in July 2024.[1] "By placing faces on the window, I was able to trace and multiply them," he recalled. Eyal spent his childhood in a place he only identifies as "small farm." Born in Iraq in 1994, he was six years old when the Israeli Defense Forces shot and killed twelve-year-old Muhammad al-Durrah during the Second Intifada in Gaza. Al-Durrah's father attempted to shield him from gunfire by crouching against a wall behind a concrete cylinder. Following al-Durrah's death, Eyal remembers elementary schools all over Iraq undertook initiatives challenging children to draw: "I got to know about the world through the language of these political cartoons. American global hegemony wore a cowboy hat and held a gasoline hose. Our national resource [in Iraq] was a milk cow." One of Eyal's early influences was the political cartoonist Najji al-Ali, who created Handala, the child personification of Palestine whose character became a prominent symbol of nationalism and resistance.

When Eyal was nine, US Coalition Forces invaded Iraq. "I woke up screaming, 'We were hit!'" It was two in the morning and his house shook when US forces bombed the telecommunications center next to his elementary school. In prose accompanying *Just a group school photo, but . . .* , a pastel work on Japanese paper, Eyal recalled:

> Soon enough, our president was American and my parents were paid in dollars. The next time we took our class photo, the wall behind us had developed a crack. The crack swallowed all the political drawings, until nothing remained of them. They

FIGURE 11 (previous page). Ali Eyal, *A Depiction of Things at the Back of My Head. And . . .* , 2021. Oil on canvas, 39 in × 47 in. Courtesy of the artist.

> were among the first casualties of the new era. . . . How often did I wish I could crawl into pictorial space to escape, while the pain and pictures crawled into me and remain to this very day. Look, I sincerely hope that you never have to experience the senseless and international ordeals of wars, the catastrophe of those experiences. This sort of knowledge is torture. Art can't heal. It can only avoid the pain, but it creates its own pain. Those pale memories invade you without permission. The art sometimes it's not enough. (Eyal 2024)

Shortly after the invasion, his father and four uncles disappeared and were never seen again. Eyal has not allowed his face to be photographed since.

The line is definitive of Eyal's work. His linear trace of the sun was his first mark on the page and act of self-definition. Traces *form* surfaces (Ingold 2016, 2) just as lines define a geometry of metaphysical relations (Derrida 1978, 19). The line is therefore both form and sign; its form signifies life that could potentially extend ad infinitum, and simultaneously its mark denotes finitude or death (Lyotard and Lydon 1988). Much like the lines of the rough ground analyzed by al-Mohammad and Peluso (2012), Eyal's line does not create boundaries or demarcate bodies one from the other.[2] Quite the opposite. For Eyal, the line is an "energetics" (Reifenstein 2021, 1) that makes visible the dynamic, relational existence of various forms within a shared social world.

When Eyal takes up the line, he reclaims narrative control by defining the geometry of the social relationships that form the ground, or surface, of his images (Ingold 2013, 161). Anthropologist Tim Ingold argues that empire is "not the imposition of linearity upon a non-linear world, but the imposition of one kind of line on another" (Ingold 2016, 3; Levi-Strauss [1955] 1992). As noted in chapter 2, lines and geometric coordinates define maps and charts, such as the remote sensing maps for Iraq's marshlands, "but they have no physical counterpart in the world that is represented by these maps" (Ingold 2016, 50). When Eyal takes up the line in his work, he forges a geometric plane that brings to visual life a canvas that centers the nuanced, mundane, and unnoticed ways war dehumanizes.

In his 2021 canvas *A Depiction of Things at the Back of My Head. And . . .* , Eyal (2021) draws a line that is an awareness, a critical consciousness that moves from his body outward into the world (figure 11). Eyal's line opens up the sensory, affective, and enduring capaciousness of violence. Lines on the canvas trace the disembodied hands that rip it open to reveal a smoldering, monstrous world; lines define the staccato motion of a comb suspended midair and tearing at the head of a principal subject as if unraveling that mortal coil one hair at a time; lines compose the subject who sits back to the frame, hands bound, head enflamed as if a sun; lines give shape to the mutant tree in the background grasping from afar toward the central protagonist.

Eyal brings a forcefield of relations to view. His line churns, severs, and pulses, pulling the subject, the home, the land, the enraged sky, the grass, and the trees into a whirling cyclone that sucks up everything in the subject's world as he sits still, attempting to withstand its force. The hands around the edges seem to pry

open a portal to this world right at the spot where its own head has been severed. That portal offers outsiders a glimpse of the interior world's dynamics.

> I found a small house, walls, plant and comb stuck in my hair. My hair is falling apart, my sun is my bald spot. I been thinking about how I wanna depict things in my head, some days are dark and emotional, some days are everything. All the sunshine and feels. I live on both of these spectrums often.[3]

Eyal was forced to flee Iraq soon after his father and uncles disappeared. In exile he became interested in an early Disney's imagineering of dark and turbulent color. He used the same satellites the US military used to plan their attacks to keep track of his family home. With Google Maps, he surveyed his family farm, which appeared as if the violence he remembers was a mirage (Giller 2024). Scholar of modern art Dina Ramadan (2023) asserts: "The world that Eyal creates is haunted by the absent and disappeared: 'When my brush touched the roof of one of the houses, I could hear them all.'" Eyal's surrealist paintings hold US Coalition Forces accountable for the catastrophic loss that he and other families suffered as a result of the invasion.

When I asked Eyal what motivated him to paint *A Depiction of Things . . .* , he told me he wanted to amplify his family members' experience of the rupture of the Iraq War. Eyal shared a prose poem he wrote to accompany the painting:

> I wish to produce a statue that will amplify this theme of refusal and silence, respecting and limning rupture. It will be in the center of the room, and this statue will be of my uncle's back, and from every angle all the viewer can see is his back. This [painting] commemorates my uncle's silence upon his release from prison; when we met and I offered to paint his portrait, he gave me his back and walked away. We cannot bear to look into the face of trauma, so we turn away. The pain cannot be disclosed except by silence.[4]

Eyal's work reinvents and extends an Iraqi modernist tradition of image-making. In the late 1960s Dia al-Azzawi did a series of line drawings for revolutionary poet Muzaffar al-Nawwab's (1968) poetry collection *Lil Rayl wa Hamad*. Al-Nawwab wrote the beloved collection while hiding in the marshes to escape a governmental death decree, resulting from his poetry and political activism.[5] In their work together, al-Azzawi and al-Nawwab forged a modern Iraqi aesthetic premised on the historical tradition of Sumerian art practice, emphasizing the line as a metaphysical relation that brought the past into the present for the future (Guarasci 2021).

Just as the line connects practices of writing and drawing, so, too, does it connect these to the making of other kinds of lines, such as bodily movement through a material space, including that of nonhuman bodies. One night Riyad Samir's favorite buffalo did not return to the family compound. Samir and his father searched deep into the marsh to find her, trekking into the thick of reeds at the core of the marshlands where buffalo prefer to spend their days before returning at dusk, answering the unique calls of their owners.

Abu Riyad and his family moved homes that summer not only because their boats could not pass through the canal easily but also because now more buffalo were stuck in the mud and could not free themselves. Marshlands families sold buffalo milk, homemade cheeses, and *gamer* (clotted cream), sought-after southern Iraqi delicacies, in urban markets. One buffalo was worth roughly $700. One marshland woman told me in November 2021 that she would never sell her herd: "The buffalo is more precious to me than my soul. Some people tell me to sell it. I laugh. . . . If you're used to them, you can't live without them." In the summer of 2022, the Samir family lost two of their buffalo. Riyad and his father could not pick up their trace in the marsh.

When buffalo move, when they breathe, eat, and shit, they inscribe their presence in the marshlands; these movements assert territorial claims. Buffalo leave a trace, extending the line that connects their own bodies to the bodies of other beings, policies, and networks inside the marshlands, some visible on the surface, others not.

As the trace of living bodies in motion, lines are generative; they are the "torsion, flexion, and vivacity" that create the ground, which is itself a variegated "interface within a world of materials" that undergoes continuous and perpetual transformation (Ingold 2015, 4, 38, 43). Lines produce bodies and their relations through complex agential intra-actions (Barad 2007, 140). This changes how we understand the surface and foundation of knowledge: moving is knowing (Ingold 2015, 47). The ground on which knowledge is built is a complex surface of continual transformation configured by social relationships that are themselves processes of thinking and knowing (Ingold 2015, 49).

. . .

When marshlands water buffalo get stuck in the mud, it is in mud made by imperial war violence (Liboiron 2021). Gas flaring releases methane, which raises the temperature such that summer in Basra reaches 120 degrees Fahrenheit or more, making it one of the hottest places in the world.[6] In that temperature I felt like I was walking through an oven; the heat felt heavy and alive, like an animal on my face. That heat threatens biological life by evaporating rivers, marshlands, seas, and rain, contributing to the rising salinity of the soil. It changes the viscosity and the density of mud. When I visited in September 2022, vast stretches of the Central Marshes were baked, salt-crusted, rough-textured cracked surfaces. Closer to the Samir's new home the marshes were wet enough for a canoe to pass, making it possible for people to come and go, to reach the market, to carry on daily activity and trade. But the water buffalo were more vulnerable.

Evaporation of river and marsh waters in extreme heat further depletes water that is already constrained by up to 50 percent as a result of upriver damming (United Nations Integrated Water Task Force for Iraq 2011; Jongerden 2010).[7] The Tigris and the Euphrates, which feed the marshes, are heavily polluted as a combined result of US military waste and Ba'thist era policies that allowed southern

Iraq's sewage treatment plants to collapse in retaliation for the 1991 uprising (al-Mohammad 2007). The salinity of Iraq's waterways is rising, particularly in the Shatt al-Arab around Basra where salinity caused the 2018 algal bloom that sent over 100,000 people to the hospital and catalyzed a wave of popular uprisings contesting the failures of the state to protect its populace. Water buffalo cannot survive above a certain threshold of water salinity because it is poisonous to them. In recent years, residents of Chibayish indicate that the water buffalo population is half of what it once was (Aty 2025).

The toxicity caused by US Coalition Forces and their donor allies moves through the atmosphere to the waters and the soils and back again. When the water buffalo moves through Iraq's marshes, it moves through these "additions" (Shuker 2023a) of accumulated violence of a warzone ecology. Life is *lived* in the marshes and that life is as intrinsic to the making of the geos as the violent and layered toxicities of war (Griffiths and Rubaii 2025). These rivers are more than "vectors of war violence"; they are a source of life, leisure, and celebration (Rubaii 2023). Iraq's ecologies degraded by war are inheritance (Garcia 2010). The movement of the buffalo extends the *life line* of the marshlands ecology even as it marks its limit. The buffalo's line marks the grounds of recognition for violence just as Eyal's line defines the surface of war's image. These are the truths the ground holds.

3

Bird

Making and Deploying Eco-Value in the Battleground

Mohammad Sharif was feeding his birds on the roof of Green Iraq's Baghdad office one Saturday in April 2007 when four armed Iraqi men in civilian clothes burst through the door. Sharif was the NGO's principal ornithologist, a slim man in his late twenties with a soldier's chiseled build. He was startled by the commotion, turned from his birds, and found his colleague, as he described it, "with a terrible face." The militia men pushed Sharif and his friend into a downstairs back office where they had corralled the thirteen other staff members present that day. Newly back from a marshlands research trip, the Green Iraq field scientists—birders and hydrologists—had gathered at the office in the affluent Mansour neighborhood to process their research findings, check email, sort lab specimens, organize photographs, reconcile budgets, and prepare reports.

The militia fighters had guns with silencers. Sharif was convinced they would be executed but concluded that fifteen "was too many for four to execute, even with a silencer." The men identified themselves as representatives from Iraq's Ministry of Interior intelligence branch, which controlled the national police. They ransacked the NGO office, raided personnel files, and demanded to see Dr. Mustafa and Dr. Ibrahim, the two Green Iraq administrators who reported directly to CEO Zaid Kubra. They were out of the country, the fast-thinking office manager Abbas Salam replied. One of the men charged the NGO with the "terror of killing and the blood of innocent people." Anyone who funded "these people" should be found and punished, they declared. Then the men departed, threatening to return.

Panicked staff rushed to gather files, pried hard drives from computers, shoved personnel records into bags. They needed to get out, and fast. The militia forces had confiscated a staff list with names and addresses during the raid. One Green Iraq scientist recalled the event: "Until this, I did not realize [that] I was worried

because this was the first time this happened to us. Although everything is dangerous in Baghdad, you are going and you are coming, but nothing happens to you. Until something happens. And it happened." Ornithologist Mohammad Sharif was the only Sunni member of staff. He was convinced the squad would come for him.

US occupation policies catalyzed sectarian violence in Iraq, beginning with Paul Bremer's orders that created widespread unemployment and privatized Iraqi national assets. During occupation, US forces built blast walls all over Baghdad, reinforced by the Iraqi police, that intensified divisions and fragmented the capital (Damluji 2010; Rubaii 2019). At the same time, Iran-supported Shi'i militias infiltrated Iraq's Ministry of Interior, like the Badr Brigades of the Supreme Council for Islamic Revolution in Iraq (SCIRI) that seized control of the national police and used it to carry out revenge killings throughout Baghdad, primarily targeting Sunnis, a practice that has endured (Allawi 2007, 44).[1] Iraq's Interior Minister Bayan Jabr (2005–2006) had been a top deputy in SCIRI. He swelled the ranks of the national police with Badr Brigades commanders. Despite being largely autonomous, Badr militias received funding and training from the state government, operated in conjunction with the Iraqi national police and the army, and were nominally controlled by the Ministry of Interior and the Ministry of Defense (Morris 2014). When Minister Jabr left the Ministry of Interior, he became Iraq's finance minister, a position he used to control Ministry of Interior funding and salaries (Beehner 2005; Perito February 2007).

Sharif completed service with the Iraqi army weeks before the 2003 US invasion. He fell back on his military training, wandering Baghdad's streets for hours, wondering whom to call, what to do. Calling the police was out of the question. He phoned Kubra, who wanted to help but said he needed two days to relocate Sharif. Sharif went home and prepared to hide. Evidence connecting him to Green Iraq was deadly. He tore through his photographs, destroying images of him with Kubra and the staff. He gathered binoculars, cameras, and CDs and distributed them among neighboring families to protect his own. That way if the militia found him at home, "I would lose my life only." Before disappearing underground, Sharif took one last precaution: he saved his bird photos on a USB drive, walked into his yard, climbed a tree, and hid it in a bird's nest.

Mohammad Sharif's harrowing encounter raises the question: Why would people concerned with wetlands conservation be linked to the "terror of killing and the blood of innocent people?" Days after the invasion in April 2007, I spent a week with Sharif in Sulaymaniyah, where he was living and where Green Iraq was holding marshlands conservation stakeholder meetings. Sharif told me then that he had loved birds his whole life, but he never experienced the hobby as dangerous, lethal even, until he became a nature conservationist.

"Bird" takes us into the marshes for the first time to examine how Kubra and his Italian and Canadian contractors built value for the marshlands as a biodiversity site through globally standard methods by counting, enumerating, and valuing

marshlands birds. Birding was violent in the context of the Iraq War because, as with the UNEP remote sensing project, birding created expertise for the purposes of extraction. Birding in Iraq produced "eco-value," which I define as a form of economic value for species life, and by extension the ecosystems they inhabit. Eco-value differs from "biocapital," which analyzes life as a form of capital (Sunder Rajan 2006), and "lively commodities," which focuses on value tied to a being's living nature (Barua 2016), in that it focuses on the social relationships that produce life forms as ecologically valued and then shows, through an analysis of the social relations of consumption, how that value is actualized. In Iraq, nature conservationists produced eco-value for environmental repair, and this value form then served to facilitate resource extraction. In Iraq and elsewhere, eco-value is realized by foreign donor–funded private sector contractors "leapfrogging" across resource sectors, from biodiversity to extraction (Günel 2021). Birding was the structure and practice of producing eco-value in wartime Iraq.

Different from scientists in the UN remote sensing project, Iraqi birders created value for ecological life while simultaneously doing labor that made their own lives vulnerable to violence and even killable (Graeter 2020). Green Iraq's contractors made the NGO's scientists bird experts so that they alone would venture out into Iraq's active battlegrounds to collect the field data needed to make biodiversity conservation plans and demonstrate its global imperative even at a time of war. Iraqi birders became recognized experts to protect Canadian biodiversity specialists and Italian hydrologists who did not want to go to Iraq or the marshes at the height of the insurgency to count birds or collect water samples for quality checks that conservation required. Iraqi experts carried out the business of occupation by sacrificing their lives. This chapter again demonstrates the importance of Iraqi national expertise for multinational resource extraction via birding. In Iraq's war-zone ecology, extraction is built on labor subjugation that is inseparable from the subjugation of imperial occupation. Birding was a more obvious form of war violence than framework or forced futility as it violently endangered Iraqi lives.

Yet, birding violence also worked by subterfuge: birding concealed that violence by making it appear as professional improvement. Global media broadcast beautiful images of birds alighting in the marshes, rallying a foreign audience to support biodiversity conservation and, by extension, the war that enabled this conservation. These images, not unlike Eden, framed the marshes for broad consumer appeal. These media images of birds normalized the human vulnerability that made birdlife possible and in so doing rendered it undetectable as violence. Ultimately, this eco-value that conservation efforts produced was useful to international contractors for securing resource control, including over water and oil. Biodiversity conservation may have aimed to restore Iraq's marshes, but through scientific value creation it concretized the contemporary collapse of the ecosystem.

People like the militia men who attacked the Green Iraq office believed that the organization was an institution of the occupation because of Kubra's known ties

to the US government and to foreign donors. In this chapter, I examine how Iraqi birders' expertise was both privilege and subjugation by analyzing how a network of conservationists, foreign country donors, and private contractors financed, structured, and implemented the biopolitical regime of eco-value in Iraq.

ECO-VALUE

As this book has been detailing, the US invasion played a central role in destroying Iraq's environment, once renowned for its rivers and date palm groves. In 2003 the US went a step further and strategically invested in Kubra's marshlands project, mobilizing "the environment" to promote the Iraq War as just. Private sector hydrology contractors and the oil multinational Eni were the beneficiaries of then Italian Prime Minister Silvio Berlusconi's vociferous support for the US-led Iraq War and Italy's participation in postwar Iraqi reconstruction, and they won lucrative contracts as a result. Kubra's policies aided extraction: he established labor hierarchies inside Green Iraq that enabled foreign contractors to extract knowledge from Iraqi biologists; he supported oil mining and argued that slant drilling would safeguard the marshes and make conservation possible: "And I really think that slant drilling is the way to go . . . it's a lot more efficient and the footprint is a lot smaller on the land."[2] These pathways to extraction via biodiversity conservation are not written down nor made public.[3] I can only describe the methods of biodiversity conservation and how they created opportunities for extraction by analyzing how Iraqi birders valued the marshes by counting its birds.

Eco-value enabled a form of resource extraction that risked human life for the sake of preserving birdlife. The assemblage of foreign agencies—including the extractive industry, state donors, occupying powers, and environmentalists—secured Iraq's natural resources for their own economic benefit. Whether Kubra and his associates truly believed that bird lives were more important than human lives was beside the point. The act of valuation made claims over the marshlands and how they should be used. Much has been written about complex multispecies relationality (Kirksey and Helmreich 2010; Kirksey 2015; Kohn 2013), including in the context of war (Kosek 2010), but my interest here is on how fostering birdlife for the future of the planet led to extraction and endangered Iraqi human lives.

Birding generates eco-value by separating life forms into categories and hierarchically ranking those categories in a late liberal capitalist valuation scheme. Eco-value does not invoke "eco" to signify a special, biological determinant of value (Birch and Tyfield 2012); rather, eco-value is produced from the intra-active, processual, and emergent relations of people, labor, birds, reeds, marshlands, and their lifeways as they are made into resources (Barad 2007; Bear et al. 2015). In Iraq, expert knowledge production for species life in Green Iraq's field operations and in UNEP's remote sensing lab had distinct relationships to value production. Whereas the labors of Green Iraq bird experts produced value, the

labors of Iraqi UNEP remote sensing training candidates did not. Both forms of Iraqi expertise were processes of "accumulation by dispossession"—privatization, financialization, the manipulation of crises, and state redistribution in favor of capitalist business interests—that characterize capitalist imperial warfare (Harvey 2005; Fairhead et al. 2012, 243). In birding, the use-values—the usefulness of a commodity—created by the life-risking labors of Iraqi citizens are directly linked to the exchange values, actualized by the exchange of commodities. Foreign multinational contractors and exiles reaped the exchange values of marshlands conservation by using them to win subsequent natural resource contracts in water and oil while investing in the fiction that their scientific mission was not war.[4] I understand economic value as "socially necessary labor time" and also how actions become meaningful to the actor by being incorporated in a larger social totality (Marx [1867] 1976; Graeber 2001, xii, 26, 31). I therefore suggest that value engenders and actualizes economic and moral power at the same time (Scaramelli 2021).

Making the species lives of birds valuable by counting their numbers advanced imperial wartime imperatives. Eco-value works in and through bodies, bringing into violent relation birds, the humans who count them, and the marshlands they inhabit (Baptista 2022; Vaughn 2022). Scholars of science have argued that empire is not only a process of territorial and economic accumulation "but also a reproductive process of managing bodies in unequal planetary conjunctions of life and death," such that empire itself can best be understood as a project in the "government of species," the processes by which nonhuman animals become entangled in forms of government that manage bodily transition and risk (Ahuja 2016, viii, x, 10; Haraway 2008).

Biodiversity, which is designed around the species concept, produces conservation landscapes that are layered with violence, death, and new forms of life (Rahder 2020, 17). Conservation birding in a nonwar context is already extractive because it is a value technology for biological governmentality at odds with Indigenous value systems (Cronon 1995; Parreñas 2018) that seeks to supplant value by reeducation, manipulation, and even force (Li 2007; West 2016; Davis 2013). Marshlands residents valued the marshlands as their home, the place where they raised families, and where their family ancestry wound through their relationships with the water buffalo they husbanded. Kubra and his Italian contractors planned what would become Iraq's first national park in 2013 as a site that would include a core zone free of human activity and a buffer zone where some human activity was allowed, which would involve relocating marshlands residents and an education campaign to convince them. In 2016 the formalization of Iraq's marshes as a UNESCO World Heritage Site created a protective area of 210,899 hectares with a buffer zone of 207,643 hectares, amounting to roughly 9 percent of the three governorates that contain them (UNESCO 2014, 53). In the marshes today there is little sign that either project has successfully implemented core and buffer zoning inside the marshes. Yet, conservationists imagine ideal nature preserves as

including such zoning. Zoning remains the predominant practice for biodiversity conservation and is among the generalized practices of land dispossession common to nature and heritage conservation.

Eco-value names and brings into focus vital intermediary processes of valuing life forms that facilitate militarized resource extraction. Iraq has been a war for oil (Jones 2012), but most analyses of the war have narrowly understood the social facts of that reality in terms of agreements between the US government and private sector corporations. In political ecology, the relationship of capitalist accumulation to environmental harm is largely understood as direct and causal (Büscher and Davidov 2016; Massé and Lunstrum 2015). Similarly, scholarship on war has taught us about its manifold destructive powers to ruin, but comparatively little is known about its generative ability to create life (Duffy et al. 2019; Grove 2019). The concept of eco-value helps us capture the capillary forms of resource extraction by attending to how war, nature conservation, and resource extraction work in a warzone ecology. By analyzing the production of eco-value, I allow for the disarticulation of the meaty terrain of value production, rather than skipping over the production process to focus on the extractive result.

Kubra, his Italian and Canadian donors and contractors, and Iraqi birders produced eco-value for the marshes in three ways: first, when Iraqi birders marked the birds they observed in the marshlands indicator species, which established their use-values; second, when Kubra signed foreign donor contracts, which emplaced value hierarchies; and finally, when Iraqi birders in consultation with British ornithologists and Canadian biodiversity experts prepared lists of marshlands birds. These lists standardized the data for birds observed and made bird value accessible to states, environmentalists, and private sector industry who used it for extractive purposes in subsequent projects. Iraqi biologists experienced birding as alienated labor. As with the Eden frame, mainstream media framed the marshes by the birds when they broadcast beautiful images of Iraqi marshlands birds. These media images drew popular audiences whose consumption of marshlands discourse and support of marshlands conservation contributed to the creation of eco-value. Despite these efforts to build eco-value for the marshes, the diminished livelihood of marshlands water buffalo over time reveals how eco-value has not been beneficial to marshlands residents, contrary to Kubra's and mainstream media's messaging.

IRAQ'S "POSTWAR" ENVIRONMENT

Iraqis were living through the most lethal year of the war when militia fighters invaded Green Iraq's office in April 2007. In January 2007, the US Armed Forces implemented its surge by deploying 20,000 additional troops. In that one-year period between May 2006, when the remote sensing training started, and April 2007, when militia fighters invaded Green Iraq's Baghdad office, between 2,000 and 2,500 Iraqi civilians died every month as a result of the war (Iraq Body Count 2007).

The Mansour neighborhood, where Green Iraq had its office, had been a refuge from this violence, but beginning in 2006, sectarian conflict roiled the neighborhood. Mansour was known as the "embassies district," the playground of wealthy Iraqis and the international elite and another staging ground for the US occupation beyond the Green Zone. The neighborhood was full of residential villas that had been repurposed as offices by international NGOs, such as Green Iraq. The offices were part of a neighborhood of luxury estates outfitted with blast walls; gold-embellished, wrought-iron fences; CCTV cameras; and internal amenities such as lush, green gardens decorated with fountains, grass, flowers, and palm trees. Ahmad Chalabi, once the US favorite to lead Iraq, maintained residence in Mansour; in his backyard he built a replica mudhif for guests. Though predominantly Sunni, Mansour was a mixed neighborhood. As sectarian conflict displaced Baghdad residents in the early 2000s, including those fleeing Mansour, Sunni families from primarily Shi'i neighborhoods moved into empty houses, causing anxiety among established neighborhood residents who began to restrict residency to newcomers as a result (Morris 2014). In 2006, Shi'i militias, including those embedded in the Iraqi national police, started to target Mansour, where they gunned down a city councilman, kidnapped four Russian Embassy workers, attacked Chalabi's SUVs, and bombed popular businesses like the historic Khassaki sweet shop (Tavernise 2006).

Ornithologist Mohammad Sharif had reason to worry that his life was at risk. Iraqi militias saw Green Iraq as a foreign organization connected to the US occupation. And counting birds in the wild for conservation was atypical in Iraq, although plenty of civilians practiced falconry or kept pet birds purchased in urban markets. The cars, cameras, tripods, and testing equipment that Sharif and his colleagues carried into the marshes marked them as part of the US occupation. Militia fighters commonly targeted Iraqi employees of foreign agencies and their families by threat, intimidation, torture, kidnap, and ransom, including in the marshes. This is how the occupation led Iraqi civilians into a continual state of precarity (al-Mohammad 2012). Green Iraq undertook birding in the Hammar marshes near Chibayish, among other locations. Here the marshes are a labyrinthine maze of fifteen-foot-high reed stands accessible only by a ten-minute boat ride across open waters. Kubra told me that he gave staff money to bribe marshlands shaykhs, but birding posed a threat to residents by bringing unknown men into the private domain of marshlands households where they undertook work in neighborhoods that was not of the community's making. As Sharif's experience as a militia target indicates, interspecies relations are sites of geopolitical transformation that enable us to glimpse a fuller warzone ecology (Guarasci and Kim 2022; Kim 2022; Khayyat 2022; Stamatopoulou-Robbins 2019), including the economic and political terrain of conflict, the alliances forged, the cash exchanged, and the motivations driving statecraft.

But the April 2007 militia invasion was not the first time Green Iraq scientists had a near-death experience because of their work. In January 2005 on their first-ever birding trip to the marshes, marshlands militia forces kidnapped Green Iraq's ornithological team of eight Iraqi biologists. Green Iraq birders, none of whom were from the marshes, had set out in boats at dawn and dusk to navigate the wetlands, binoculars in hand, cameras at the ready, hoping to capture evidence of avian life. They trolled the endemic and endangered, recording species and populations, and documented seasonal rest stops of migratory birds on route from Europe to Africa. After seizing the group, the militia released two women and ransomed the others. Kubra paid $25,000 for them. "I forgot how I disguised it in the budget. Field supplies! That was painful. The very first trip was a disaster. That was a KBA [key biodiversity area] trip, essentially configured to see how it was going to work. Ha, ha. Not too well." Kubra cautioned his team not to be out after sundown: "Well, if you're birders and you're out in the field, you're not going to go back." He gave money to Talal Salim, the team lead, to pay a local shaykh for guards, but Kubra believed Salim did not give the payout and pocketed the cash instead (see Rubaii 2020b). Green Iraq birders took five days off after their release and then returned to work.

Samir Abdullah, a UNEP training candidate and a field biologist for Green Iraq, told me in Geneva that he felt the palpable danger of fieldwork. Green Iraq field scientists worked far from shore, roads, or cars that could speed them to safety. "Marsh Arabs are mean," he said. They expected large bribes of $75 per boat and did not seem to care about the NGO's scientific mission. Abdullah did not feel kinship with the community; he felt threatened by them. Yet he opposed the US occupation too. Iraqi civilians, both NGO staff and marshlands residents, lived this condition of double-jeopardy—neither safe in Iraq nor protected by the occupation.

ESTABLISHING VALUE HIERARCHIES

The wartime value transformation of Iraq's marshes began with Kubra's bilateral contracts, agreements between him, as CEO of Green Iraq, and his state donors. Green Iraq's principal donors were the Italian Ministry of Environment, Land and Sea (54 million euros between 2003 and 2011) and CIDA (3.5 million Canadian dollars between 2004 and 2007); Kubra received $220,000 from the US Department of State at the direction of Tom Warrick, director of the Future of Iraq Project, in July 2002 to undertake a preliminary study of the restoration potential of the marshes. The Iraqi state regulated the Iraq-registered NGO, and oversight was minimal. In their memoranda of understanding, state donors required that Kubra spend a "significant" portion of donor funds on donor nation soil. Kubra set the amount at 80 percent. To honor this agreement, he hired contractors from the donor countries. In Italy he hired Italian hydrological engineering firms AcquaTerra and Bionatura

to model a hydraulic plan for the marshes and design "green villages" inside the wetlands. In Canada he hired Canadian biodiversity experts affiliated with CIDA to develop Green Iraq's conservation methodology and birding campaign.

Kubra built Green Iraq as an Iraq-registered NGO led by two administrators, Dr. Mustafa and Dr. Ibrahim, biology professors at the University of Baghdad's College of Science and the University of Basra's Marine Science Center, respectively. Dr. Mustafa also served as senior adviser to Iraq's minister of environment, indicating the direct influence of Green Iraq on national environmental policy. They managed a staff of about thirty young biologists, their colleagues and former students, mostly men in their twenties and thirties and a few women, who they hired to gather data about Iraq's marshes. Their goal was to compel Iraqi state ministries to adopt international conservation policies by signing treaties.

Residents reflooded the marshes on an ad hoc basis after the fall of Saddam Hussein, so Kubra's focus was not on engineering reflooding but on data collection, publishing, and political lobbying. During my 2021 trip to the marshes, I saw the destroyed damming infrastructure up close. Residents' work to breach the dams appeared rough-hewn, not systematically organized or orchestrated. Friends of the Chibayish *muktar* (mayor) told me they rented heavy earth-moving equipment from Nasiriyya when the Ba'th government fell. In other areas of the marshes, Kubra had been present when residents commandeered heavy earth-moving equipment to reflood the wetlands. As I boated through the marshes, I could see where residents cleaved open cement dams just enough to reintroduce marsh waters, or in other places what looked like metal sluices had been pulled back allowing the water to course through water channels once again. The architecture of draining remains, now covered by water, sometimes peeking out above its surface.

Italy and Canada approached Kubra about investing in his conservation project for the newly reflooded marshlands in Iraq after the US occupation, despite not participating in the "Coalition of the Willing" that invaded Iraq on March 19, 2003. Outside the UK, Italian Prime Minister Silvio Berlusconi was President George W. Bush's biggest European ally, measured by the number of times he visited the US—on eleven occasions. As early as April 2003 Berlusconi had agreed to send 3,000 troops to Nasiriyya, the capital of Dhi Qar governorate on the edge of the Central and Hammar marshlands, in Operazione Antica Babilonia. These troops were members of Italy's Carabinieri Multinational Specialized Unit that worked in and around Nasiriyya to provide "post-conflict" socioeconomic development services, including competition for bids to restore public infrastructure as well as protect archaeological sites and relics (Ministero della Difesa 2025). Shrugging off popular disapproval in Italy, Berlusconi publicly supported the Iraq War, for which he was rewarded by the US with the helicopter contract for Marine One and a promise to review Italy's request for a seat on the UN Security Council (Davidson 2023; Laurence 2005; Ministero Della Difesa 2006).

In addition to Italy's "hard power" investments in Iraq through military troops, branches of the Italian government issued "soft power" funding by investing in archaeology in the vicinity of the marshlands in addition to the Ministry of Environment's investment in marshlands conservation. By their own admission, Italian archaeologists I spoke with on Zoom in May 2025 told me they were among the first on the ground in Iraq after the US invasion in 2003, highlighted by the fact that the carabinieri deployed during Operazione Antica Babilonia were tasked with protecting Iraq's archaeological sites around Nasiriyya.[5] In 2008, the Italian Ministry of Foreign Affairs started a program for the "civil and cultural rehabilitation of Iraq" run by Task-Force Iraq and focused on Dhi Qar governorate where the task force partnered with the US Provisional Reconstruction Team, a unit consisting of military officers, diplomats, and reconstruction experts. The Italian team received its funding from the Italian Ministry of Foreign Affairs and Bionatura, the hydrological firm contracted to Green Iraq to model marshlands conservation. Iraq archaeologist Abdulamir al-Hamdani was a doctoral student at Stonybrook University in New York when in 2008 he learned about Italy's archaeological interest in Sumerian sites in Dhi Qar, including Ur and Abu Tbeirah. Al-Hamdani had just convinced the American forces at Tallil Air Base near Ur to conduct civil projects to support excavation of the site and protect its ruins, work that was ultimately carried out by the US Provisional Reconstruction Team. When the Italian archaeological team started their work, they partnered with Iraqi archaeologist al-Hamdani, who later became Iraq's minister of culture (2018–2020), to excavate the sites. Kubra also knew al-Hamdani; he met him at the American Center of Research in Amman, Jordan, in the fall of 2006 and was eager to work with him. In his research report on the Abu Tbeirah excavation, al-Hamdani writes about how in 2008 South Oil Company dug trenches to install a pipeline connecting the Basra and Nasiriyya oil fields to the Nasiriyya refinery three kilometers west of the excavation site (Romano and D'Agostino 2019). In 2016, South Oil Company took over Occidental Petroleum's 23.44 percent stake in the oil consortium contracted to mine Zubair oil field, whose reserves are encapsulated in the Hammar marsh where Kubra was undertaking biodiversity conservation. In my Zoom conversations with Italian archaeologists, they told me that Kubra and Green Iraq had been a supportive resource for their work. These crisscrossing social relationships of Kubra, Italian archaeologists, and Italian archaeological donors who are also Green Iraq's contracted experts and deployed military troops in Iraq indicate the deep enmeshment of the civil sector, corporate institutions, environmental agencies, and active military troops in the business of the Iraq War. Kubra's marshlands conservation project was one part of a larger infrastructure of donor country warcraft and profiteering that interwove military, diplomatic, scientific, and corporate investments in Iraq. Italy's tripartite scheme of deploying military troops to Nasiriyya near the Central and Hammar marshes, investing in archaeological excavation of Sumerian sites in the vicinity of the marshlands, and acting as the

principal donor of marshlands conservation reflects a familiar pattern whereby governments use diplomacy to win petroleum mining contracts (Muttitt 2012).

Canada had its own investments in the Iraq War. It was the third top donor (after the US and the UK) to Iraqi reconstruction in the first 100 days after the invasion, and it continued to serve as one of the top five donors to Iraq through at least 2021. Canadian funding to Iraq totaled more than two billion Canadian dollars, largely allocated to rebuilding "hard" infrastructure like roads and schools, but also to "soft" power projects like women's empowerment and environmental rehabilitation (The White House 2003; Financial Tracking Service 2021). CIDA funding for Green Iraq was earmarked for biodiversity surveys of the wetlands, which Green Iraq biologists would undertake by learning bird-counting techniques and habitat monitoring from experts at and contracted by the University of Waterloo and Environment Canada (renamed Environment and Climate Change Canada in 2015). Canadian-sponsored birding in Iraq enabled Italian contractors to build the value of the marshes as a nature conservation site and secure partnerships with Iraqi ministry representatives. That Italy benefited from birding, too—beside the Ministry of Water Resources (MoWR) and Ministry of Oil contracts—is another example of how eco-value works by leapfrogging (figure 12): Italian contractors to Green Iraq benefited from the work of Canadian contractors to Green Iraq by exceeding Canada's own profits from their investments.

Kubra's contracts with the donors had two primary effects. First, the contracts ensured that foreign donors to Iraq could maximize their investments by directing 80 percent of the funds back to the donor nation through a policy of hiring donor country experts as staff. Second, bilateral contracts enabled foreign donors to maximize their investments in Iraq while minimizing their personal risk and financial exposure. Foreign contractors would not travel to the marshes after the UN withdrawal in August 2003. Instead, they subcontracted Green Iraq field biologists like Mohammad Sharif to conduct required marshlands research, including birding, habitat mapping, and water sampling. Kubra paid staff $500 a month on top of their monthly faculty salary of $350, more than doubling their income. These extractive working arrangements characterize biodiversity conservation, where foreign donors and global environmental institutions hire in-country nationals to carry out nature conservation work and maintain reserves while dispossessing marsh residents of their lands (West et al. 2006; Chatelard 2003; Brand 2001). Conservation contractually limited the accountability foreign contractors would have to Iraqi nationals in much the same way that the offshore oil industry does in West Africa (Appel 2012). The labor environment was a warzone, and the laboring class was made up of subjects employed by donors from the same countries that were agents of war; environmental conservation advanced those countries' agendas inside a warzone of their making. Iraqi nationals landed in the direct line of fire in the war with one false turn of the boat or by lingering too late in the marshes. Canadian contractor–organized ornithological training



FIGURE 12. Expertise in Iraq, design by Studio Safar. Courtesy of the Studio.

did not prepare Green Iraq field biologists to keep themselves safe; they learned those skills impromptu, on the run from militia soldiers in Baghdad and kidnappers in the marshes.

MAKING BIRDS INDICATOR SPECIES AND STANDARDIZING BIRDLIFE VALUE

"I think it's extinct," Kubra said, leaning over his seat to make himself heard above the thrum of the airplane engine. It was mid-February 2007 and, as civilians fled Iraq by the thousands,[6] we were flying from Amman to Sulaymaniyah to attend Green Iraq stakeholder meetings. Kubra spoke to me about the smooth-coated otter, made famous by British explorer Gavin Maxwell in his book *Ring of Bright Water* (1960) and feature film of the same name about Iraq's marshlands. Kubra directed his field teams to scour the marshes, but the otter was nowhere to be found. He had hoped to use the otter as "charismatic megafauna" to attract popular support for Green Iraq, like other conservationists had with Arctic polar bears. Kubra resigned himself to promoting Green Iraq through "the ducks." "It's not ideal, but that's what we've got."

Conservationists turned to biodiversity in the mid-1980s. As mentioned in the introduction, the logic prevailed after the 1992 UN Earth Summit in Rio, with the implementation of the Convention on Biological Diversity. Environmentalists see biodiversity conservation as a remedy to ongoing species extinction from human causes. Species was the "intuitive ontology" of biodiversity and its premise, which meant that biodiversity conservation was founded to conserve species and focused on that task so that species came to define biodiversity (Lorimer 2015, 67). But species "don't just happen"; they must be achieved through labor, skill, and determination (Van Dooren 2014, 37; Bowker 2000). Birding labor emplaced species life in Iraq, and through it, relational human violence. Biodiversity has been less successful than climate change as a global political discourse, but it continues to put distinct forms of social power into action (Youatt 2015).

Before a species can be conserved, it has to be described (Lowe 2006, 17). Species lists made data standardized, comparable, and readable by experts, but they were not easily achieved (Cepek 2011, 508). It takes years of training and experience to properly separate birds into species because classifying a species presupposes a substantial amount of data. Designating a species endangered or extinct comes at the very end of that laborious data collection (Bargheer 2018, 152). As Green Iraq's birders prepared lists, they linked "different orders and scales of things: science, politics, law, economics, culture; individuals . . . the whole of biodiversity, nations, parks, and the global environmental community" (Thompson 2002, 185). Lists bring birds in a localized ecology into the realm of geopolitics. In the context of Iraq, birds connected foreign donors and contractors to a pinpointed, resource-dense environment without requiring wholesale investments

in Iraq's infrastructure of roads, water systems, or electrical grids necessary for resource extraction.

Kubra adopted the International Union for Conservation of Nature (IUCN) method of using birds as "indicator species" to compel wetlands conservation when he turned to "the ducks." IUCN defines "indicators" as endangered, endemic, or migratory species that *indicate* the health of ecologies critical to the planet by virtue of living in them for some time. Conservationists use indicator species to value ecosystems according to the numbers and diversity of bird species in it. Birds are good indicators because "key bird areas" (population numbers and species diversity) are possible only in habitats known as "key biodiversity areas." Conservationists designated both with the acronym KBA and used them interchangeably to signal that the high birdlife density of an ecosystem indicated its high biodiversity. Indicator species gained popularity in the mid-twentieth century after Rachel Carson published *Silent Spring* (1962)—the title refers to the silence created by global-scale bird loss caused by industrial pollution—prompting nature conservationists to use species life as a barometer for biosphere vitality. Birds were suited as indicators because many of them are high up in the food chain and their population is widely distributed, so conservationists use population levels to measure environmental change. Making birds indicators therefore produced two inseparable use-values—the conservation imperative and the demand for global intervention in Iraq—that together created the conditions for resource extraction.

In 1964, IUCN created its trademarked Red List of Threatened Species to be the "barometer" of species life on Earth. Birds were the group with the best available data and the first group for which a Red List was assembled (Bargheer 2018, 150–52, 162–64, 170). Conservationists embraced the market-driven values definitive of Iraqi marshlands conservation at the turn of the twenty-first century when they adopted the ecosystem services model of conservation that attributed numerical value to ecological assets through pricing and payment schemes that could be exchanged on the market and by "banking" densities of ecosystem services in biodiversity hotspots (i.e., wetlands) to offset deficits elsewhere (Büscher et al. 2014; Brockington 2011).

On the eve of the Iraq War in 2001, UNEP Geneva published a first-of-its-kind report with satellite images documenting marshlands draining in Iraq. In its report, UNEP used predictions of bird extinction to warn of Iraq's imminent environmental collapse: sixty-six bird species were under direct threat; the native Basra reed warbler was critically endangered and could be wiped out entirely; and the marbled teal duck population, on the IUCN Red List, would be cut in half (United Nations Environmental Programme 2001, 34). Iraq's marshes are located on the West Asian–East African flyway from Europe to East Africa and support 312 species of migratory birds. In environmental science, the extinction premise suggests not all planetary ecosystems can be saved, but those most critical to the planet must be preserved (Sodikoff 2012). BirdLife International estimates 183 bird

species have been lost in the last 500 years. This number is roughly 100 to 1,000 times greater than the extinction rate of birds as a result of normal "background extinction" (Van Dooren 2014, 6). In the words of UNEP's director of the Division of Early Warning and Assessment, the report's satellite and bird data suggested international intervention in Iraq was necessary to save critical planetary ecosystems: "At the dawn of the new millennium, the tragic loss of the Mesopotamian marshlands stands out as one of the world's greatest environmental disasters. . . . It is up to the world's nations to act on this knowledge" (United Nations Environmental Programme 2001, viii).[7]

Green Iraq's birding campaign trained Iraqi biologists to value birds according to established scientific practice: distanced observation in the field coupled with scientific standardization of data collected in the lab (Latour and Woolgar 1986; Lynch and Law 1999). On the advice of a Canadian biodiversity expert, Kubra hired British bird expert Alistair Banks to train his team to bird. Through the screen of our April 2012 Skype call, I met Banks, an older Englishman with white hair who wore silver wire-rimmed glasses. He had a fifty-year career specializing in Middle East birds with the British Royal Society for the Protection of Birds and later opened the Middle East office of BirdLife International in Amman.

Banks described his first Green Iraq training in November 2004 on the northeast Euphrates reservoir at Lake Assad in northern Syria, about an hour's drive west from Raqqa and a two-hour's drive east from Aleppo. Kubra planned Green Iraq's first "key bird area" marshlands survey for January 2005. Scientists on that first trip conducted surveys of a selection of 30 sites from the 150 sites published in the *Field Guide to Birds of the Middle East* (Porter et al. 2004). Eight Green Iraq scientists spent ten days studying basic bird identification skills, survey techniques, database management, and habitat evaluation. Banks gave each scientist binoculars, a notebook, and a pencil: analog instruments that suited a country with intermittent electricity. Team photographers carried a large telephoto camera lens and full-sized tripod. The group shared a couple of telescopes. Their goal was to update and improve Iraq's bird list to use that data to compel Iraqi state support for and international protection of Iraq's marshes through the admission of the wetlands to international biodiversity conservation conventions, like the Ramsar Convention on Wetlands and the UNESCO World Heritage Convention.

Sharif and his colleagues organized life into heuristic and reified species categories when they birded. As Banks's training methods evidenced, birding involved four primary technologies—counting, naming, listing, and visualizing—that produced the eco-value of birds. I address the first three technologies here and later return to visualizing, which is primary to consumption. *Counting* individuated birds and enumerating them as members of a species gathered birds at the level of population and made them governable (Foucault 2007). Birders then *named* birdlife according to the Linnean-derived, Latin-based taxonomic system, bringing them further into biopolitics (Livingston and Puar 2011, 7). Taxonomy is a

kind of "energy" of anthropogenic change based on the human capacity to harness the earth and shift priorities for the biosphere toward human requirements (Marzec 2015, 163). Finally, conservation birders *listed* observed species. These bird lists were "charismatic" instruments that compelled policy and attracted funding by building "a situated 'point of view' from which to engage globalism" (Tsing 2005, 163, 170). In 2007, Green Iraq published these lists as the first Iraqi-authored field guide to the birds of Iraq along with a children's book on Iraq's birds. Each of these three steps in birding produced the biodiversity bird value and, in turn, eco-value through scientific processes of standardization. The production of successful scientific knowledge is socially forged: it requires the mobilization of economic resources, the expansion of institutional power, and discursive legitimation (Youatt 2015, 50). Only authorized experts with specialist training could be birders, which eliminated marshlands residents as qualified caretakers of their lands and confirmed the need for outside administration. Birding represented a "financial–scientific–policy nexus" aimed at the wholesale transformation of Iraqi society, polity, and economy for the benefit of foreign war actors who profiteered from the occupation (Fairhead et al. 2012, 246).

Iraqi birders were good at their job. When I spoke to Banks in 2012, he estimated that over eight years he had trained sixty to seventy Iraqi biologists. He ran the training in Syria every year for four years after that initial 2004 training. In 2009, he relocated the training to Iraqi Kurdistan, where he continued training annually for the next three years. Banks told me: "Of all the people I've trained in the Middle East, those at Green Iraq are the best I've ever seen." When I asked Banks why he loved birds, he replied: "I think I just love their freedom." I was struck by his response, which resonated with the Pentagon's name for the 2003 US invasion of Iraq: Operation Iraqi Freedom. But birding, ironically, not only concerned the population of birds and the lands they inhabited; it also worked on the bodies of Iraqi national birders who did not experience birding as freeing or liberatory.

ALIENATION

Birding required learning new modes of engaging birds. When Sharif and his colleagues began birding for Green Iraq, they learned to observe wild birds up in the skies rather than birds as semi-domesticated pets procured in Baghdad's renowned markets as was customary of human–bird relationships in Iraq. Donna Haraway argues that interspecies relationality is a process of "becoming with" (Haraway 2008, 16), suggesting mutual transformation. Green Iraq field biologists experienced this transformation as both professional opportunity and oppression. They expressed ambivalence for birding in the true sense of the word, of having multiple conflicting emotions at once, ranging from pride in their mandate, to rage over the mortal risks this work introduced, to contempt for the foreign

contractors who had the power to make policy recommendations over sovereign Iraqi territory, to aspiration that, despite it all, they might achieve professional success. To understand why Iraqi biologists like Sharif would risk their lives for an endeavor so closely connected to the occupying forces, we need to look more closely at customary Iraqi relationships with birds.

Sharif was devastated by the US occupation: "To lose is a hard feeling. It is a very sad and difficult feeling." Sharif had been a soldier in the Iraqi army until one month before the US invasion. Did you feel like you lost your country, I asked? "No! No. No. No. Not my country. I lost my honor." Sharif told me he started to feel honorable again when he began birding for Green Iraq because he could mobilize his passion for birds to undertake a globally valued project.

Honor is a value system, but so, too, are birds. In the Gulf as across the Levant and North Africa, bird markets are robust places of commercial activity and where families, particularly fathers and sons, gather on Friday afternoons. Baghdad's al-Ghazl bird market is one of the largest and most significant in the Arab majority world. Suq al-Ghazl dates to the Abbasid era when Baghdad was founded by Caliph al-Mansur as the "round city," intended to be the "crossroads of the universe." Today the market sells various kinds of birds—pigeons, parrots, lovebirds—in addition to other pets like monkeys, snakes, dogs, and cats. Next door in Jordan in a similar market—Suq al-Tuyur—vendors sell birds according to a class hierarchy where pigeoneers selling varieties of pigeons for a few dinar sit at one end, signifying their comparatively low status; those selling Syrian lovebirds—the most popular pets—occupy the central portion and sell at a middle range; and vendors selling rare and expensive exotic species gather at the far end of the market.

The markets are only one dimension of a thriving bird economy that also includes auctions and private breeders, both of which raise birds as pets and competitive racers or for hunting. A high-end pigeon at a bird auction can fetch roughly $28,000, but a well-bred falcon can command $250,000 (Martin 2016). Bird markets chart a trade geography spanning Baghdad, Beirut, Ramallah, Amman, Cairo, and Dubai that has endured for centuries but exists today in subterfuge; not illegal, but illicit. That is because Iraq, Jordan, Syria, Lebanon, Saudi Arabia, Yemen, and Oman are signatories to the Convention on International Trade in Endangered Species of Wild Fauna and Flora that seeks to shut down unauthorized trade in animals by criminalizing these economies (Guarasci 2020). At the same time, conservationists like Sharif commonly get their start in nature preservation because of their love for birds that grew from their engagement with popular local markets. In Baghdad, the popularity of Suq al-Ghazl and other bird markets also made them notable and repeated targets for some of the largest militia bombings in Iraq because of the crowds they attracted.

Sharif did not want to elaborate on what honor meant to him, but he followed the comment by specifying his family's genealogy through birds, which made me think the two were linked for him. Sharif came from a family of falconers. His

passion for birds distinguished him even at Green Iraq. He told me his family practiced falconry because they celebrated "Arabian traditions," which indicated their elite class status and relative power, potential connections to Gulf elites, and their ability to afford the multi-thousand to quarter-of-a-million-dollar price of falcons. Sharif loved birds "from the moment of his birth" when his father gifted him a falcon. He described his family's professional achievements as inseparable from their love of birds: "My uncles were bird lovers and they were also scientists. My mother has an MSc in geographic sciences. My father has an MSc in political affairs and worked in the Ministry of External Affairs. My uncle has a PhD in engineering from the UK. My aunt is a children's doctor who works at the University of Pennsylvania." Falconry is an elite hobby with a long and expensive pedigree that marks a person's social class and familial genealogy of distinction similar to how biodiversity birding marks individuals as experts who are part of the elite because they are university educated, highly skilled, and part of an esoteric scientific practice (Mikhail 2013; Macdonald 2014). Throughout the 1990s, Saddam Hussein's presidency underwent a metamorphosis that embraced tribalism and the glorious Mesopotamian past, during which time tribal values of honor and courage came to be seen as integral parts of Iraqi national culture (Dawod 2018). Sharif had been a soldier in the army before the US invasion, and so I wondered: Was his recollection of his family history with falcons also an argument about the moral right to govern?

Mohammad Sharif came to Green Iraq through his university professor, Dr. Mustafa, the NGO's senior administrator whom militia had demanded to see. In college, Sharif had earned the dean's recognition for a short film he made called *Backyard Birds*. In November 2004, Dr. Mustafa invited Sharif to join Green Iraq's bird training program in Syria. In January 2005, Sharif was among the Green Iraq scientists on the maiden birding voyage that ended in kidnapping. He told me how on that trip in the boat he watched birds fly over wetlands that he had first observed in his childhood illustrated encyclopedia of Arabian birds: "When I went to the marshes, it matched the magnificence of the photos and so, I said, Whew! What is the time?"

When Sharif began birding for Green Iraq, he mobilized his values for birds to implement a conservationist land-tenure plan that endangered his life. Ghassan Hage argues that human subjugation is inseparable from the human domination of the planet because both rely on "generalized domestication," the mode of inhabiting the world for the purpose of making it yield value (2017, 55–56). Sharif was furious with Green Iraq's administrators and Kubra—all of whom were marred by criminal allegations, as I explore in chapter 4—and resentful of his entry-level position as a birder despite his expertise and social stature. His anger was a response to the violence of knowledge extraction he experienced within Green Iraq and by its foreign contractors. Sharif expressed to me his anger about the racialized violence he experienced as an occupied subject, but he was afraid Kubra would learn of

his criticisms and fire him, so he spoke only in vagaries. He was especially angry with Dr. Ibrahim, the Green Iraq administrator in charge of field operations—"Don't talk about him. Don't kiss asses for him. [He's] a fucking guy now." Dr. Ibrahim routinely embezzled from the NGO and created divisions between field scientists like Sharif, who collected data, and scientists in the lab, who interpreted their results in publications, which made Sharif feel devalued. Sharif told me he lived and died by his principles, invoking his earlier claim to honor: "Don't leave your friend, don't gossip, do no harm. . . . I'm trying to decide. I don't need to [stay] with these people. I just need to quit. I don't want to talk to people with these weak principles. I need money, but if I have money, there is no force in the earth that would [make] me talk to these people. Believe me."

At the February 2007 Green Iraq stakeholder meetings in Sulaymaniyah, Iraq's minister of environment delivered a direct invective to the NGO. The Iraqi minister struggled to execute a national environmental agenda without Kubra's political and financial support because the ministry had been created on the heels of the 2003 invasion at UNEP's urging and had little credibility among Iraq's Council of Ministers. After sitting through two days of presentations, including one on the significance of birds, as scores of Iraqi bodies were turning up in the trash in Baghdad, the minister blurted out sarcastically: "So we need human rights in Baghdad and bird rights in the marshes?!"

I never saw Sharif criticize Kubra or the Italian contractors face-to-face, but one evening during the April 2007 Green Iraq stakeholder meetings in Sulaymaniyah, just a few weeks after the militia invasion of the NGO's offices in Baghdad, Sharif returned from a business trip to Irbil with a Barbary falcon perched on his arm. He had purchased the bird on the trip. Sharif brought the bird to dinner in the hotel ballroom and introduced it to a very confused group of Italian hydrologists and architects. "Would anyone like to hold the falcon," he asked. One young Italian hydrologist agreed, but when Sharif settled the falcon on his arm, he flinched as he felt talons dig into his arm. The Italian contractor's reaction was a visible contrast to the principles of honor that associated men of renown with falcons. I thought back to Sharif's decision to stash his USB drive in his backyard bird's nest. Did Sharif enact with birds what he could not verbalize?

Sharif seemed to live in an embattled state (Hage 2010): in one breath he would critique Green Iraq and in another he told me he was proud of the work he did with them. "Suddenly you gave the world all the data about birds in Iraq. Who did that? We did." Sharif believed he could make Green Iraq better because "the KBA is just scouting" and he knew more about birds. He wanted to build a tower for bird observation, make movies about birds, breed endangered species in the marshes, mark migratory birds, and create tourist experiences and bird merchandise.

But in 2010, Sharif took this one step further and began working on a joint campaign with Green Iraq and BirdLife International to curb and potentially criminalize hunting with falcons in Iraq. I found Sharif's participation in the program

confusing given his familial history with falcons. Falconry hunting was known to target the sociable lapwing, a critically endangered wader bird that migrates through Iraq in winter. Sharif got word that a transmitter on one bird indicated a flock would land in Lake Tharthar, territory controlled by al-Qaeda in Iraq at the time, so he convinced an Iraqi district military commander to give him a convoy of nine armored Humvees and set off through Anbar looking for the birds, which eluded him that day. He then published a Green Iraq report that called for a crackdown on Iraq's flourishing falcon trade. It was hard to make sense of the extent to which Sharif would go to support Green Iraq given his criticisms of the NGO.

Iraqi biologists commonly told me that they chose to work with Green Iraq despite their compromises to do so because of the unparalleled opportunity to do meaningful, cutting-edge, globally recognized work in their profession. Environmental anthropologist Michael Cepek argues that national conservationists he worked with in Ecuador's Amazonia did not transform into "environmental subjects," passively internalizing values of nature conservation as taught by foreign experts; rather, they experienced their participation in environmental projects as "alienated labor" and maintained a critical consciousness about their participation in conservation, which reminded me of Sharif's experience (Cepek 2011, 502). One field scientist, Ali Suleiman, told me he chose to work for Green Iraq even after he was kidnapped because he grew up near the marshes in Basra and it promised an esteemed career in biology that would benefit his family's lands. "I'm young and the work on the marshes is so universal that when I work in this sector, I'll be famous. . . . I meet other institutes. There are unique opportunities to work on the marshes because of the donors who are connected to the project. When I work on the marshes, I have a good position in the Ministry [of Environment] and my work is important." While providing minor benefits for Iraqis like Mohammad Sharif and Ali Suleiman, the labor, contract negotiations, and value standardization quantified the marshlands and made eco-value transactional in ways that profited foreign contractors.

WHAT CONSERVATION BIRDING ACHIEVED IN IRAQ

One late afternoon in November 2021, I watched water buffalo swim across the Hammar marsh as an oil flare in the distance pumped noxious black fumes into the sunset. On the drive from Basra we saw one oil flare after another across the desert expanse. Flaring is a cheap way of burning methane, natural gas that bubbles up with the extraction of oil. Although plenty of other countries flare gas, including the US, Iraq flares half of the natural gas produced by its oil fields, more than any country except Russia and Iran and enough to power three million homes (World Bank 2024; The Lancet Planetary Health 2019; Trew 2021). The Iraqi Prime Minister Mohammed Shia' al-Sudani has stated his intention to eliminate gas flaring by 2028 (Rudaw 2024), but progress toward that end has not been sufficient



FIGURE 13. A broken sewage pipe dumps toxic sludge into the Hammar marsh near Chibayish as fishermen fish and water buffalo swim home before dusk. In the distance the silver dome of the UNESCO martyrs' monument is visible, and directly above it one can just about see the orange glow of the oil flares. Photo by author, November 9, 2021.

to meet it. Until recently, Iraq has opened only one "world-class" recapture plant (Bernstein et al. 2025). The recapture facility in Basra opened in 2018 at a cost of $1.5 billion but recovers gas from only three fields. There are fifteen oil fields in Basra governorate alone (Rubin 2020). Gas flaring combined with aging water-treatment facilities and the decay of depleted uranium munitions fired by the US in both Iraq wars have created a toxic stew of pollution. Failing sewage infrastructure and rising temperatures resulting from oil flaring contaminates and compromises Iraq's water supply, particularly in and around Basra and the marshes (Human Rights Watch 2019) where they have sent cancer and birth defect rates soaring (Faa et al. 2018).

Pollution is an existential threat for marshlands residents, who depend on domesticated water buffalo for income (figure 13). Marshlands residents call this pollution *mlah*, which translates as "saltiness" but references also the broader problem of contamination. The salinity is killing the buffalo in numbers. Pollution, they argue, is inseparable from the political corruption of the Iraqi state and of foreign interests, which balance between US-allied and Iranian-allied goals for Iraq, that drive its profit-oriented motives (Liboiron 2021).

Given these facts, what exactly did Iraqi marshlands conservation achieve? Zaid Kubra wanted to protect the marshlands, but he pursued biodiversity conservation by prioritizing the goals of foreign donors and contractors, which contributed to its ecological demise. Green Iraq's birding campaign and the whole conservation

initiative could be considered a success by the UN Security Council's standards for reconstruction. Iraqi marshlands conservation had four principal achievements, but each one broadened the power of foreign agencies inside Iraq more than it improved the ecology of Iraq's marshes, as evidenced by the recent decline of the marshlands ecosystem.

First, Green Iraq attracted positive media attention for Iraq. In 2011, British reporters from a major network accompanied Green Iraq's bird team to the marshes, where they captured on film a murmuration of marbled teal spiraling in a thick black plume toward the clouds. The resulting documentary called the return of the marbled teal to Iraq's marshes a "miracle." Green Iraq's 2010 winter bird count documented 46,000 marbled teal in the marshes, about twice the previous estimate of the entire global population, which seemed to prove that the NGO's interventions prevented UNEP's predicted species collapse. Kubra's power to influence Iraq's state ministries grew at the same time that the media expanded its coverage of marshlands conservation, suggesting a relationship between Kubra's ability to control the media message through framework and the expansion of his power and influence in Iraq.

This brings us back to the birding technology of *visualization*, which resulted from Kubra's image-making and was the final stage in producing the bird as an indicator species for biodiversity conservation that bridged the production and consumption of value. Whereas eco-value produces economic value that can be exchanged for extractive advantage, it also produces moral value directed toward consumers. Economic and moral values inherent in the production and consumption processes, respectively, work together in a mutually reinforcing fashion inseparable from war. Iraqi birders made birds visible as value markers by counting, naming, and listing them, and by their efforts to photograph and video record species observations. Every major mainstream media outlet, including NPR, BBC, *The New York Times*, and *60 Minutes*, glommed onto these arresting images of Iraq's wetland birds, publishing more than 1,200 features for the web, TV, and print media, creating a spectacle and cult of celebrity for Kubra essential to green consumer culture (Igoe 2017; Brockington 2009). In March 2007, Jon Stewart's regular correspondent Lewis Black spoofed Green Iraq's bird book for his segment "Good News Explosion," a vicious parody of the US's Iraq War policy. Kubra reveled in the attention. Iraqi birding drove the value of birds to new heights because of its dual capacity to scientifically produce bird value and then visually display that value for a global consumer audience moved by witnessing the return of birds to Iraq's marshlands.

The logics of visuality that are foundational to a warzone ecology originated with hunters: stalking and shooting. Conservation, too, originated with hunters. Even as scientific birding for conservation evolved over the twentieth century from using the gun to collect bird specimens for study in museums to the camera that would direct the human gaze, this logics of visuality prevailed (Bargheer 2018, 257). A US Army soldier published *Birding Babylon*, based on a blog

of his bird sightings, as he invaded Iraq from Kuwait, such that the blog, which never mentioned soldiering, had the effect of marking US territorial advance bird by bird (Trouern-Trend 2006). He met Green Iraq birders in the marshes and marveled about their achievements. In January 2010, Jonathan Trouern-Trend returned to Iraq with the National Guard to join an informal network of soldiers helping Green Iraq scientists safeguard the environment. Kubra spoke about the significance of the collaboration: "Birding warriors like Jonathan have been helping fill a gap in our knowledge."[8]

Iraq's marshes stand apart from other conservation sites and national parks as spectacular: the marshlands are the premier conservation site in Iraq (see Lunstrum 2014, 820). The space of exception of the marshlands as a biodiversity conservation site that renewed Eden in contemporary Iraq reinforced the space of exception of the war. Eco-value was embedded in and activated the logics and values of the Iraq War. Economic value produced by birding helped fulfill the major US objective of the war, the creation of a free-market capitalist economy. Consumers took in the moral values generated by birding when BBC, NPR, *The New York Times*, and other global media outlets broadcast beautiful images of migrating birds alighting in the marshes that rallied a consumerist foreign audience to support biodiversity conservation and, by extension, the war. The consumption process was violent: the wartime environment in which Iraqi birders worked was, as Kubra liked to describe marshlands Eden, "sexy" to media outlets and investors, who broadcast birding as wartime heroics. While the production of economic value made Iraqi lives killable, the consumption process layered onto eco-value another dimension of violence, that of making unrecognizable and thus acceptable the very real epistemic and oppressive violence that Iraqi birders experienced to produce eco-value.

Second, building on visualization, Green Iraq oriented marshlands discourse to the values of an English-language audience. In 2017, Green Iraq published a book on the key biodiversity areas of Iraq in addition to its earlier bird books. Sharif's Green Iraq colleague and ornithologist, Talal Salim, has published more than seventy articles, book chapters, and conference proceedings, including a 2021 chapter in an edited volume on Iraq's marshlands environment. Sharif himself gave a web talk in 2014 on wartime conservation. These publications by Iraqi scientists underscored conservationist messaging as defined by global biodiversity conservation institutions like the IUCN and UNESCO, including priorities for bird protections that sought to curb Sharif's beloved falconry. Iraqi scholarship published since the invasion has internalized global conservation priorities for land use and legitimized them as Iraqi values, directly contradicting marsh residents' values for the wetlands and making their displacement logical.

Third, at a different scale, Green Iraq's work took Global North moral values for the governance of species and enshrined them as Iraqi law when state ministries formalized environmental laws, and global treaties inscribed the marshlands

into protective agreements. In 2007, the Ramsar Convention on Wetlands admitted Huwayza marsh to the convention, followed by the Hammar and Central marshes in 2014. In 2013, Iraq's Council of Ministers declared the Central marshes the country's first national park. That same year, Prime Minister Nouri al-Maliki announced a 2013–2017 National Environmental Strategy and Action Plan for Iraq and declared 2014 the Year of Environment to support the World Heritage nomination. Iraq's national government has passed twenty-seven environmental laws since 2007 and made plans to create eighteen other protected areas (Roselli and Zomer 2014). In 2016, UNESCO ascribed Iraq's marshes to the World Heritage Convention as "The Ahwar of Southern Iraq: Refuge of Biodiversity and the Relict Landscape of the Mesopotamian Cities."

Fourth, Green Iraq's conservation work expanded the influence of Kubra and the Italian hydrological contractors, Bionatura and AcquaTerra, inside Iraqi state ministries. While CEO of Green Iraq, Kubra sometimes consulted for the oil companies—"all of them," he told me, including Shell, ConocoPhillips, and ExxonMobil. When Kubra pulled back from managing day-to-day operations of Green Iraq in 2011, he began working as an environmental consultant for Iraq's Ministry of Oil. The oil contract signed by the Ministry of Oil and Eni on January 22, 2010, included no specific requirements for carbon recapture by multinationals, enabling them to flare with abandon. Residents of the marshes and southern Iraq have expressed frustration that while Iraq has environmental laws on the books, the government does not enforce them (Shuker 2023b). Meanwhile, Dr. Mustafa escaped Iraq shortly after the invasion during a business trip to Jordan with Iraq's minister of environment. He took a job with a Russian oil multinational in Dubai that valued his knowledge of marshlands geology. But based on Gulf standards, he was paid as an Iraqi national at a rate far below that paid to American or European experts; the latter's remuneration packages include not only much higher salaries but also private cars, drivers, and gated mansions. Dr. Mustafa escaped the war but not foreign exploitation by multinationals profiteering in Iraq.

In spring 2012, I met AcquaTerra engineer Gianni Moretti at a garden party in Amman. Years earlier, during a visit to Italy in winter 2008, Moretti had given me a tour of his firm. As we walked, Moretti told me that the marshes had not been the firm's primary interest in Iraq, but that it pursued the project to gain a foothold in the water sector. In the years between our visits, AcquaTerra opened an office in Amman, and Moretti's supervisor relocated there with his family. They opened a guesthouse for the numerous Italian employees traveling in and out of Baghdad, where they had several MoWR contracts. In 2011, Eni hired AcquaTerra to model the hydraulics of the Hammar marsh to learn about possible hydraulic threats that the wetlands posed to the development of the giant Zubair oil field. That same spring of 2012, a colleague at the United Nations Development Programme in Amman told me that AcquaTerra and Bionatura won their bid to develop Iraq's national water master plan for the MoWR, adding cynically, "They

cut up a slice of pie in Iraq." I later asked Moretti if the firm had earned its contacts with Iraq's water ministry through its work on the marshes. "Yes," Moretti said, "that's what ended up happening."

ECO-VALUE AND PLANETARY RELATIONS

Birding is a valuable wartime technology because of its ability to instrumentalize biodiversity conservation for resource extraction. The broader public has largely understood the extractive war in Iraq in simplistic terms, as the drive of multinationals to redevelop Iraq's oil fields for the benefit of foreign agencies. Distinct in Iraqi nature conservation was the degree to which Kubra invited resource extraction in the context of wetlands preservation. The eco-value created by birding shows how expansive the war of extraction has been. A network of diverse wartime actors as opposed to a single sovereign, created new value standards in Iraq that were foundational to extraction and that make accountability difficult. Since those foundations were also biological (i.e., species lives), they were agentive and operated as a lifeforce that lived on past the immediate conflict: they grew, mutated, adapted, and were uncontrollable by the foreign agencies that rendered this value system, as evidenced by the state of the marshes today.

Birding in Iraq is a localized example of extractive planetary relations that exploit nature and people for profit. Human subjugation is inseparable from human domination of the planet because "capitalism is an integrator of racial and ecologically destructive exploitation" that operates best under a state of exception, like war (Hage 2017, 55–56; Yusoff 2018). I have attempted to show how subjugation of people and the planet cohere in producing the materiality of ecosystems—the birds, the waters, the wetlands—as valuable resources. By analyzing Green Iraq field scientists' labors to produce eco-value, I show how eco-value gains moral value and produces violence through consumption. While I focus on birding in this case, eco-value is not limited to one life form; rather, it is produced by harnessing species' lives to be charismatic technologies of resource extraction. It can extend to Kenyan elephants (Thompson 2004), South African rhinos (Lunstrum 2014), or even the fictional Smokey Bear (Kosek 2006). I highlight birding here because of its prominent role in Iraq and because of its definitive role in green consumer culture since the birth of the global environmental movement in the early twentieth century (Price 1999).

In October 2019, amid Iraq's populist revolution, I messaged Sharif to ask how he was doing. I wondered about the flash drive he hid in the bird's nest twelve years earlier. Did he ever recover it? We had not kept in touch in the intervening decade. Sharif did not want to talk on the phone, but he responded to my WhatsApp messages. He wrote that he could not answer my questions because "well, I lost that interest of birdwatching a while ago, so I feel that I can't be of help to you." When I asked about the USB drive, Sharif reiterated: "I totally can't remember what

happened in the past or know why I lost interest in being a conservationist since I left Green Iraq! Therefore, I can't be of help. I'm sorry." I was perplexed. It was clear that Sharif did not want to speak with me, but, I wondered, had he really lost interest in being a nature conservationist and, if so, why? Sharif had been in the news; he had given public talks to a global audience that still exist online; he gave radio interviews at major venues.

I cannot know for sure what happened to Sharif, but by 2019, several field scientists had left Green Iraq, and Kubra faced corruption charges brought by Iraq's High Judicial Council, a case that was eventually dismissed. In May 2021, I read an Associated Press story about an intrepid Iraqi conservationist searching for the smooth-coated otter. He saw the otter near the Iranian border and went searching for others in the westernmost marshes around Chibayish (Kullab 2021). Environmentalists have focused on wetlands conservation as an impactful climate change solution because of wetlands' capacity to support a diversity of species and because of wetlands' remediating ability to absorb carbon dioxide. And yet, environmentalists' ability to make a positive ecological impact remains just as elusive as their search for the otter because of the enduring violence inherent in conservation. In my focus on birding in this chapter, I have analyzed how a warzone ecology builds Iraqi expertise to facilitate extraction and undermine Iraqi sovereignty. In the final chapter in this book, "Dream," I move from the internal dynamics of Green Iraq to explore their relationships with Iraqi national ministry employees. In so doing, I show how war actors in Iraq's warzone ecology encouraged state representatives to dream in ways that facilitated the denationalization of the Iraqi state.



Pivot

Muayad Muhsin does not want to talk about his experience fighting in the Huwayza marsh. It is September 28, 2022, and we are sitting in a second-story café in the Mansour neighborhood of Baghdad, close to where he lives in Karrada. Muhsin smokes one cigarette after another as waiters in black uniforms shuffle by to serve tea and coffee. Muhsin was a soldier in the mid-1980s stationed in Huwayza during the deadliest part of the Iraq–Iran War. He told me the marshes for him were a world unknown. "Even the smell of the marshes was different; the water, the insects." When I asked Muhsin more questions about his time in the marshes, he brushed me off: "I witnessed a lot of scenes from mid-1985 to 1986 I don't have time to talk about." But he told me his 2017 painting *Another Road* represents "dreams of a soldier who escaped military service."

With *Another Road*, Muhsin depicts Iraqi families being forced out of the marshes at gunpoint (figure 14). The hudhud, also known as the hoopoe—a rust-orange bird with crown fringe and needle beak—is the moral pivot of this work. All action on the canvas centers around the bird's inescapable eye. Muhsin told me he painted the hudhud in this work as a sentry "delivering a message of destruction." He decided to portray the fall of government as overturned chairs. He marked a headless gray suit with the triangle emblematic of Ba'thist soldiers. The suit's cigarette-holding hand points toward an unknown place as a hudhud sits on its right shoulder. The hudhud is symbolic in both Iraq and Iran for in the Qur'an it was the bird that provided intelligence to Prophet Sulaiman about the Queen of Sheba and her betrayal of Allah. The twelfth-century epic poem *The Conference*

FIGURE 14 (previous page). Muayad Muhsin, *Another Road,* 2017. Oil on canvas, 150 cm × 225 cm. Courtesy of the artist and the Ibrahimi Collection.

of the Birds describes the hudhud as the wisest of all birds, uniquely equipped to lead the quest to find the king (ud-Din Attar 2013). Muhsin paints the hudhud as spy, witness, and accuser. His bird is active critique; the hudhud's eye seizes and holds his unknown viewer's gaze.

A pivot in a warzone ecology is a move within violence to reclaim something of the self. This is partly because war actors, as we have seen with birding, work by leapfrogging (Günel 2021) or pivoting from one resource sector (i.e., biodiversity) to another (e.g., extraction). Pivoting is also a strategy for living in a warzone ecology. A pivot is the ability to respond to change in an immediate and impromptu way. A pivot is often spontaneous, provisional, precarious. One pivot might require future pivots. But a pivot is intentional; it is a strategic maneuver. A pivot is aesthetic because changing course requires the navigator to open a point of view yet unseen. A pivot is economic in that it requires the intuitive knowledge to course-correct for survival or prosperity.

When Muhsin told me *Another Road* represented the dreams of a soldier who escaped military service, he was speaking about himself. Over the years that Iraqi soldiers lived and fought in the marshes, Iraqi historian Dina Khoury argues, they "established a communion with the habitat of the marshes rarely achieved in the distant imagining of poets" (2013, 188). Like the bird he paints, Muhsin's canvas is a pivot. It represents his attempt to marshal all the unspeakable trauma, grief, and rage from soldiering the marshes to painting them as a way of exposing the crimes of the many imperial and authoritarian wars fought in them. *Another Road* depicts families displaced by Da'ish, Muhsin told me, but they could just as easily have been marshlands families targeted by Saddam Hussein or cast out of the marshes by the US-led Iraq War or Gulf War, both of which triggered the resulting climate-related violence in the marshes.

Although Muhsin did not want to talk about soldiering, he did tell me he encountered the Iran Army in Umm al-Na'aj marsh, a central western part of Huwayza. During this time, he slept two hours a day. In February 1984, Iranian troops launched the Battle of the Marshes when they made a nightfall amphibious assault on Huwayza by crossing its porous, marshy border. Iraqi troops were caught off guard. At daylight, Iraq's Republican Guard went to the front to motivate Iraqi troops shaken by Iranian encroachment: they ran a high-tension line through the marshes to electrocute Iranian soldiers fighting in the waist-deep water and flew Swiss turbo trainer planes over the battlefield at low altitude that sprayed the highly toxic tabun nerve gas over Iranian positions. The assault was a high casualty event: over the next several hours, thousands of poisoned and electrocuted Iranian soldiers drowned in the marshes. In total, the Iraqi military response killed 20,000 Iranians and wounded 30,000 (Razoux 2015, 267–68).

In the mid-1980s, desertion of Iraqi soldiers stationed in the marshes was relatively common. The Southern Bureau of the Ba'th Party identified desertion as a major threat to their success in the war and in April 1983 launched Operation Peace to uncover Iraqi deserters. During the operation, party officials made 538

arrests, killed 189 troops, and publicly executed deserters during a widely attended ceremony in Maysan (Razoux 2015, 267–68). The operation was a turning point in how the Ba'th Party conducted war on the southern front. It involved a concerted and detailed mapping effort of Iraq's marshes including the terrain and waterways useful to deserters, the isolation of the marshes from towns and cities of the south, the expansion of Southern Bureau presence throughout the marshes by opening new divisions and branches, and, in 1985, the creation of a cordon sanitaire wherein Iraqi soldiers destroyed villages to remove whole populations and cut down reeds and palm groves to clear the marshes of all vegetation (Khoury 2013, 31, 111–13). Soldiers like Muhsin fighting in the marshes participated in an expansive project to remake marshlands geography and as such got to know the wetlands by putting their bodies to work diverting waters, cutting vegetation, depopulating villages—that is, by the hard labor of moving people, water, and land.

In Iraq's marshes, we have seen the instrumental pivot of the Italian government from biodiversity conservation to oil extraction. For marshlands residents, subsistence involves the ability to pivot in the marsh as conditions change. Marshlands residents place intrinsic value on an array of living beings—the buffalo, the fish, the reeds—with which they have close relationships, even intimate and familial when it comes to the buffalo. Residents straddle a subsistence and a market economy. Households convert valued resources from the marshes into commodities for cash as needed. Knowing how and when to do so selectively and in moderation to balance an ecology under the strain of climatological change requires expertise. These choices are as much aesthetic as they are economic: one needs to know how to read the size of the fish, the color of the reeds, the turgidity of the mud, the rise of the water. In the marshes, a pivot is a cultivated awareness that makes a rapid, spontaneous, yet sound course correction possible.

Zaha al-Chibayish smoked cigarettes on her motorized *mashuf* in the Hammar marsh as she talked to me about how the drought crushed the fish trade. A few years ago, Yalla News did a two-minute feature that described her as a commercial broker who collected fish from men and resold them at the market. The story included aerial drone footage of al-Chibayish boating through the marshes to the soundtrack of Alicia Keys's "This Girl Is on Fire." Al-Chibayish lives outside of the normative gender binary but had not faced social critique until the video aired. Her fish business survived the publicity but not the summer 2022 droughts. She no longer gave recorded interviews, but she chatted with me—boat to boat—about her pivot from fish to reed harvesting.

The fish were more profitable, al-Chibayish lamented, but she had to do something to support herself, so she and her mother decided to cut dried reeds to sell at the market. The reed trade has long been a substantial enterprise for marshlands residents, who sold reed bundles, mats, and weavings that could be used in a variety of ways including for home construction (Gupta 2019). But fish were better economically: al-Chibayish could sell them for a higher price and rely on them for food.

Al-Chibayish was not alone in this endeavor. In summer 2022, ahwari residents in general pivoted from subsistence to a cash economy; unable to source their own food, they had to buy it and sometimes also the saline-free water that buffalo needed. Marshlands residents began selling water buffalo from residents' herds. But unlike the renewable resource of marshlands fish and reeds, the hard limit of cash pushed more residents to migrate to Samara or even to the comparatively less expensive but more toxic Rumaila, named for the oil supergiant underneath the village, a place residents call *al-maqbara*, the cemetery. In fall 2023, I heard about marshlands migrants who began working in tomato plantations around Basra in Zubair and Samara. Soon after, Riyad Samir and his older sister, Fatima, began working seasonally on these tomato plantations. While the work conditions introduced ahwari migrants to new toxicities, their ability to adapt to circumstances offered new, if degraded, ways of living while also preserving the possibility of return.

As Muhsin and al-Chibayish suggest, pivoting is a strategy to make life viable as options for doing so are narrowed by violence. Muhsin's dream was to escape soldiering in the marshes. Riyad Samir and other marshlands residents' dreams can be liberatory, as with his participation in Arbaʿin, but they can also open up other forms of exploitation, such as tomato farming (Chari 2024, xix). Dreaming in a warzone ecology can be perilous. Navigating it requires the ability to pivot.

4

Dream

Aspiring to Build Iraq's First National Park

ASPIRATION

On the day of the bombing that took her life, Neda A. Hussain anticipated an award from Vice President ʻAdil ʻAbd al-Mahdi honoring her service as one of the directors general of urban planning in the Ministry of Municipalities and Public Works.[1] On February 26, 2007, she joined her fellow awardees, the other directors general, in the third-floor conference room at the ministry's headquarters in Mansour, the neighborhood home to Green Iraq, other international NGOs, and embassies outside the Green Zone in Baghdad. Hussain had been born in the marshes, in Suq al-Shuyukh, thirty-nine years ago and brought this background to bear on her work planning Iraq's first national park in the marshlands. She lived in Baghdad, where she graduated from university and earned a master's degree in urban and regional planning. Hussain was smart, outspoken, and fearless, and everyone who knew her seemed to admire her for these qualities despite often finding themselves on the receiving end of her sharp critique.

I met Hussain two weeks earlier during Green Iraq's stakeholder meetings for the marshlands national park that the NGO and some of its contractors were proposing. Within minutes of the meeting's start she made her presence known, numerous times interrupting Nicola Rossi, the Italian architect contracted with Green Iraq, as he presented his park design plans: "Why did you select this area? What criteria did you use to define this area? Some of these houses are outside the master plan. We need to start with the boundaries of the legal master plan." Rossi was flummoxed and annoyed; he saw Hussain's questions as a barrier to progress on park design.

Hussain stood out with her vocal protests. Her questions continually reasserted the national government's autonomous right to decide Iraq's land-use policy. After

several back-and-forth exchanges, she registered her complaint directly with Rossi: "You do not develop one plan and present it to us for approval. You develop options and *we* [the national ministries] will decide what to do." To Hussain, marshlands conservation "made good business sense." She told me that she had come up with the idea for the national park and proposed it to Kubra. Hussain saw the international clamor to fund the project as a positive because wetlands conservation, no matter where the money was coming from, would ultimately benefit Iraq. The problem for Hussain was Green Iraq's top-down approach. She expressed to me in private conversations that the NGO and its foreign contractors expected the Iraqi government to adopt their plans as they presented them, with no input during their formulation and little ability to shape them after the fact. To Hussain, that felt like an unacceptable breach of power.

Two weeks later, when Vice President ʿAbd al-Mahdi stepped toward the lectern to give his remarks at the award ceremony, a handmade bomb exploded under the chairs of the ministry's senior staff, killing at least five people, including three directors general from the ministry, nearly the entire senior staff. Deputy Public Works Minister Kamil al-Chaderji sat next to the vice president when the bomb exploded. He remembered that everyone dove to the ground and rushed to the windows to breathe. Bystanders quickly threw themselves on top of Vice President ʿAbd al-Mahdi in an attempt to save his life. Al-Chaderji recalled: "The worst thing was the smoke. It filled our lungs. . . . I could see some of our ministry director generals still sitting in their chairs and I heard they passed away" (Sly 2007). Witnesses who survived the attack suggested it was the work of someone who had infiltrated the ministry in advance and planted an improvised explosive device (IED). The bomb appeared to have been planted to the right of the front row where the directors general sat, but the vice president, the minister, and his deputy of Munipalities and Public Works, Riyad Gharib, sat on the left side. The vice president narrowly escaped with minor scratches. Minister Riyad Gharib was injured but lived.

The attack appeared to target both the vice president and the Ministry of Municipalities and Public Works. The bombing was "one of the most serious breaches of government security since November [2006], when dozens of employees at the Ministry of Higher Education were kidnapped by gunmen dressed in police commando uniforms" (Cave and Habeeb 2007). The bombing could have been a retaliatory act by Sunni militia in protest of the ministry's appropriation of government services to predominately Shiʿi neighborhoods. Vice President ʿAbd al-Mahdi and Minister Gharib are both Shiʿis, the ministry was de facto run by the Supreme Council for the Islamic Revolution in Iraq (SCIRI), and there were unanswered long-standing complaints by Sunni officials about the ministry's inequitable distribution of resources.[2] It was the third assassination attempt Vice President ʿAbd al-Mahdi survived. Eleven years later, he became the prime minister of Iraq. Neda Hussain died that day.

Most people killed by an IED die from "blast lung injury" (US Department of Homeland Security 2019). When an IED explodes, it creates a high-pressure

blast that lifts people off the ground and sends debris flying. We can deduce that because Hussain sat in her chair unmoving, she likely died when the exploding IED sucked all the air out of her lungs. As Hussain took her last breath, Zaid Kubra was in Amman selling his marshlands national park plans to global media and environmentalists by arguing that Iraq's marshes were, in his words, the "lungs" of the country. Just like the lungs purify air for the human body, the marshes filtered impurities from Iraq's waterways for society's benefit. Kubra delivered the news about Hussain to me after an interview with him and his wife at his home in the upscale Abdoun neighborhood in Amman. When I heard, I fell weak-kneed into a chair. Hussain's death seemed so much larger than the loss of one person; it felt like a blow to Iraq. It was hard to believe Hussain was gone. We had just been with her, and she had been the oxygen in the room.

Unlike other organs of the human body that are cocooned inside its frame, the lungs are portals to an outside world, they are an interface between the human body and the atmosphere that surrounds it (Stephen 2021). To breathe is to aspire and to aspire is also to dream (Ahmed 2017, 221). As indicated by the word that conjoins them, in Iraq dreaming and breathing are inextricably linked, such that the ability to realize one's dreams is stymied by the physical and embodied peril of living in toxicity (Simmons 2017; Liboiron 2021). But that toxicity is not limited to pollution alone; it is the total climate of violence (Sharpe 2016; Mbembe 2020) of the warzone ecology that includes the epistemic violence of dreams and their materiality (Benjamin 2016a, 2016b). Walid Taher's (2012) graphic collection of poems about Egypt, *A Bit of Air*, invokes air as a broad reference for the atmospheric qualities of endemic corruption and revolutionary potential that are so ever-present and elemental that they are as diffuse and essential as the air we breathe. I will return to the connections between dreaming and breathing later, but in this final chapter I focus primarily on the dreaming dimensions of aspiration. I show how what I call *dreamwork* was the chief method Kubra and his Italian contractors used to encourage Iraqi ministry representatives to imagine and materialize the infrastructures of a post-Ba'th future state, for which biodiversity conservation of the southern marshlands would be a signature project. Analyzing dreamwork reveals how futurist discourses of growth shape human agency within the war of Iraqi statecraft. Through dreamwork, Kubra and his contractors sought to instill their values for Iraq's marshlands in Iraqi ministry representatives. Remaking Iraq's national economy was, as previously discussed, Paul Bremer's chief objective in Iraq. Kubra and his contractors undertook conservation as a statecraft project to build a new Iraqi economy by teaching Iraqi ministries to dream according to the values of imperial capitalism. Dreaming facilitated the US occupation policies of denationalizing Iraq's state economy by prioritizing foreign donor interests and instilling them in Iraqi ministries that were the vanguard of the state.

Kubra pushed for the creation of Iraq's first national park in the marshes because he wanted a place that highlighted Iraq's historical roots in early human

civilization: "Roman culture is rooted in Ur culture, why can't we have that?!"[3] During an interview with Kubra in September 2007, after the last round of stakeholder meetings I attended in Amman, I asked him more about his plans for the marshes. Kubra elaborated: "I have this vision, dream, whatever, of creating a set of national parks around the border of Iraq and Iran. Build pieces here, here, here, here and then connect them all together in a belt of national parks. We'll call them a peace park." If the model was successful and Kubra was around in twenty years, he wanted to replicate it in Kurdistan, where he envisioned building a cluster of national parks connected by a migration belt that would allow for seamless passage. "I hear you," I said, "You're a dreamer." Laughing, Kubra replied, "Ah, it's free. Dream big, right?"

In August 2005, during a conversation at a break in a Canadian conference, I had asked Kubra what his ideal role was in Iraq. Kubra told me he wanted to be the "maestro." I pushed for details, unsure if he meant of marshlands conservation or something bigger. Kubra told me his ideal position was senior adviser for the environment to the prime minister. Given his political connections, it seemed like his dream of political leadership was likely, even if marshlands conservation seemed precarious. But Kubra's dreams were not free for Neda Hussain and scores of other Iraqi ministry employees who I came to know over the course of ethnographic fieldwork in 2007. Kubra's dream of nature conservation endangered their lives for a vision they did not always share. Realizing his dream meant Iraqi ministry representatives struggled to survive a dystopian nightmare. Iraqi artist Mohammed Muhraddin suggested that living the Iraq War was akin to battling Cerberus—the three-headed beast of the underworld born from the tripartite alliances of intellectuals, mercenaries, and occupation agencies (figure 15).

DREAMWORK

Dreamwork was Kubra's method for instilling the ethos and logics of planetary repair in Iraqi state ministries. The dream required Iraqi ministry representatives to see the horrors of violence they were living through as temporary, fleeting, and making no permanent material change in the country, so they could imagine a time twenty years ahead when Iraq would somehow become peaceful, prosperous, and stable. Several ministry employees I spoke with struggled to see the future as discontinuous from the present. But Kubra and his foreign contractors saw dreamwork as a necessary first step in their efforts to manufacture state support for nature conservation, beginning with the construction of Iraq's first national park in the southern marshlands. In 2007, Italian contractors for Green Iraq encouraged dreaming about the marshlands national park to open up space for creative expression, to cultivate the collective imagination of state employees, and to direct those nurtured desires toward formal endorsement of marshlands conservation as defined by Kubra and themselves.



FIGURE 15. Mohammed Muhraddin, *Cerberus, a Dog with Three Heads, Occupation, Mercenaries, Intellectuals and . . .* [. . . و المثقفون، المرتزقة، الاحتلال، الثلاثة رؤوس ذو الكلب سيربيروس،]. Mixed media on carton, 45 cm × 40 cm. Courtesy of the Ibrahimi Collection.

Dreams are often considered anathema to rational, secular thought and reform, the opposite of science, modernity, and progress, but dreams are essential modalities for pursuing productive life (Mittermaier 2011). Dreams were, in fact, an essential ingredient to the mid-twentieth-century formalization of the economy and its related development projects. Much like the Eden media images that framed popular discourses of the marshes, the economy is also a frame. Tim Mitchell argues that the economy "frames" a host of rules, laws, and regulations that are externally rationalized and acknowledged, commonly called "institutions" (2002, 292). The

economy is also driven by internal processes such as personal choices, desires, and dreams (Miyazaki 2006, 2013). However, the frame has an extra-economic nature—"each piece of the frame, each rule, procedure, understanding, constraint, enforcement, and sanction, involves potential exchanges of its own"—such that the frame does not bind the economy but is a "horizon that at every point opens up into other territories" (Mitchell 2002, 292). Therefore, there are tensions between interior and exterior dimensions of the economy that characterize its nature and make it unstable. This is because practices that frame the economy do more than regulate the market: they open the economy to other forces and logics. In this context, the dreamwork Kubra's Italian contractors pursued can best be understood as part of the internal processes of building Iraq's state economy within the violence of war. If the work of enframing the economy is violent, so, too, are the internal processes of transformation: violence speeds the development of capitalism (Mitchell 2002, 295–98). Dreamwork was not only statecraft, it was also warcraft: when Kubra and his contractors encouraged national government employees to dream, they were ordering their relationships to the government and shaping Iraq's economy in hierarchical and unequal relationships. This Iraqi exile- and contractor-driven reordering put foreign actors invested in the war in key decision-making positions within Iraq's national economy.

The concept of the Iraqi state was essential to building the national economy. As Hannah Appel argues, "There is no economy without the state" (Appel 2017, 301). In the mid-twentieth century, "*the* economy bounded by national borders began to replace the spatiality of empire" (Appel 2017, 299). At the time that Iraqi ministers were learning to dream about marshlands futurity, economic investors held a conference in December 2007 in Equatorial Guinea, Horizon 2020, whereby the minister of mines and representatives of state oil and gas companies passed out booklets, which some called "dream papers," that called on national subjects to dream about a utopian future of economic prosperity. But it similarly ignored the material conditions of the present that would make that future an impossibility. Appel asserts of the conference: "This is the space between the world and its representation as ethnographic fact? What is possible in these spaces? What happens here? . . . On what fictions and forgetting does the making of a thing called a national economy depend?" (Appel 2017, 307, 309).

In Iraq, one of the biggest and most obvious enforced fictions required for dreamwork to be effective was the denial of the war itself and any relationship, especially those of profit, Italian contractors had with the war as a space of economic opportunity. An even bigger fiction was the idea that Iraq operated as a sovereign, autonomous actor. This fabrication was safeguarded by a dominant set of practices, such as Kubra and his contractors performing their deference to state authority at Sulaymaniyah stakeholder meetings. Neda Hussain despised those performances and insisted in meetings with Kubra that state ministries have authentic power. Yet the state was essential in the postcolonial framework that

imposed the state as a model of governance. Today IUCN and global conservation conventions recognize the sovereign state as the only actor capable of signing onto environmental treaties and conventions. However, as Green Iraq's national park project reveals, in practice the nation-state was an accumulation strategy for global capitalism in Iraq, as it was elsewhere in the "developing" Global South (Rabie 2021). Kubra and his contractors were representative of the legion of partnerships between foreign donor countries, private sector contractors on their national soil, and Iraqi government officials—partnerships that represented the scalar project of building Iraq's new national economy by embedding their power into the architecture of the state. Foreign donors and institutions used their finances to select and prioritize statecraft projects within Iraqi ministries. Supranational institutions like the World Bank and the IMF and Global North countries like the US therefore dominated the Iraqi statecraft project, partly because these were also the parties holding Iraq's chief asset—oil—and thus its national economy in trust (Smith 1984, 181).

The US's Iraq occupation policy ensured the US would take the commanding role in reestablishing the Iraqi polity while placing clear limits on the power of the state they rebuilt (Dodge 2013). The Ba'th Party created great dependency on the state, which was the single biggest employer and purchaser in the economy (Farouk-Sluglett and Sluglett 1987; Sassoon 2012). On invasion, the US government undertook radical measures to reform the state from the inside out. Bremer's de-Ba'thification policies removed the state's institutional memory and a large swath of its skilled workforce and disbanded the military in an attempt to end its influence on state politics, making 400,000 men unemployed in what had been the fourth largest military in the world.[4] The US-led, UN-sanctioned reconstruction of Iraq was an entirely top-down affair: the US and its foreign allies decided reconstruction plans and gave little meaningful opportunity for Iraqi ministries to shape the process (International Crisis Group 2004). The CPA embedded US advisers in each Iraqi ministry, but the role of foreign advisers to the Iraqi state prevailed long after the official occupation ended. Although the Iraqi state received an influx of US funding for reconstruction—which by 2014 amounted to $220 billion, with a 40–60 percent execution rate between 2005 and 2013—ministries struggled to spend their budgets under the strain of violence that targeted their employees, and under the weight of the massive demands of infrastructure reconstruction that involved the wholesale reconstruction of sewage and drinking water systems and the electricity grid (Matsunaga 2019, 13).

The contracting process, developed between ministries of Iraq's national government and their foreign contractors, is directly responsible for the extraordinarily high levels of state corruption. Corruption is endemic to war, but the levels of corruption in Iraq rose far beyond the ordinary. Transparency International's Corruption Perception Index (2020) lists Iraq as 160 out of 180 countries. The World Bank rated countries out of 100 in its Worldwide Governance Indicators

on the basis of the rigor of their anti-corruption institutions, and Iraq scored five points (Dodge 2013, 254). Corruption was exacerbated by the Iraqi constitution, developed in heavy consultation with the US government, and the use of the *muhasasa ta'ifiya* system—the sectarian apportionment of the leadership of state including state ministries and their resources, largely developed in exile in the early 1990s after Iraq's invasion of Kuwait and reintroduced to Iraq in 2003 (Dodge 2019)—both of which restructured the state by apportioning its institutions, and through them economic capital, to political parties asserting sectarian identities. "Each party would then exploit the resources of the ministry they were awarded to gain economic capital in their struggle to dominate the political field," Toby Dodge argues (2018b). The combination of corruption and sectarian politics that mobilized the war are clearly exemplified in the battle of ministries to capture the attentions and interests of Green Iraq and its Italian contractors. In Iraq, dreaming about the national park was statecraft that made foreign resource extraction and the resulting high levels of pollution possible.

Dreamwork, as practiced by Kubra and the hydrological firms AcquaTerra and Bionatura, involved three chief interventions in the Iraqi state beyond its work on the collective imaginations of ministry representatives. Kubra and his affiliates used donor funding to establish their power in Iraq's national ministries that were stakeholders on the marshlands' conservation project. Then, they wielded this funding as political pressure to define and set a national agenda at ministry stakeholders, particularly at Iraq's neophyte Ministry of Environment. Finally, Kubra used the press to add to his pressure on state ministries to adopt his dreams as policy while also strategically crediting ministry representatives with the work to make it appear that the initiative was state directed. Dreaming was integral to the processes of denationalization that resulted in the high level of foreign influence inside state ministries and thus the fracturing of Iraq. Dreaming was one among other processes in the early twenty-first century whereby foreign donors and foreign-funded militias, as those from Iran, used their purchase in state ministries to mobilize state resources to serve their own interests in Iraq.

DREAMING UP THE NATIONAL PARK

"He spelled Chibayish wrong," Neda Hussain leaned over and whispered to me during Nicola Rossi's afternoon presentation "Al-Chubayish Preliminary Urban Plan." "It's Chi-bayish, not Chu-bayish," she confirmed. Rossi was an Italian architect with a firm in the Dolomites that the Italian hydrological firm Bionatura subcontracted to design Iraq's national park. Bionatura was one of two Italian firms Kubra had hired to fulfill his memorandum of understanding with the Italian Ministry of Environment, his principal donor. It was the first day of stakeholder meetings for Green Iraq's national park designs. The nearly fifty participants included representatives of the relevant ministries and at times the ministers themselves;

members of Green Iraq, Bionatura and AcquaTerra, and their subcontractors; and at times, members of the Italian Ministry of Environment.

To build the national park, Kubra's foreign contractors met in Sulaymaniyah, Iraq, in the Kurdish north every two to three months with Iraqi project "stakeholders": mid- to high-level employees of Iraq's national ministries—including the Ministry of Municipalities and Public Works, Ministry of Water Resources (MoWR), Ministry of Environment, and Ministry of Agriculture—and one state minister, the minister of the marshes. I attended three of these week-long meetings between February and July 2007 and a fourth, held in Amman, in September 2007. At stakeholder meetings, Italian hydrological engineers, architects, and cultural consultants working for Green Iraq encouraged Iraqi state representatives to imagine the marshlands national park in a distant, peaceful future twenty or more years later. At these meetings, I observed how Kubra and his contractors worked with Iraqi state representatives and their emphasis on dreaming in that process.

Kubra and his Italian contractors identified the Central marsh as the site for the Mesopotamian marshlands national park with Chibayish as its gateway. The park would be 1,000 square kilometers and would include lands in Dhi Qar, Maysan, and Basra governorates. Italian park plans suggested that the park authority could be in Abu Shabat village, three kilometers east of Chibayish. The park had four major purposes: protecting the marsh environment, creating educational and scientific research opportunities, promoting socioeconomic development, and being a site for international tourism. The park would have a core area where human activity would be limited; a buffer area where "compatible" human activities would be allowed, such as agriculture, fishing, hunting, and other common economic activities that would be planned and regulated "according to the park's main objectives"; and an external area related to the park where employment, tourist services, and marshlands commerce would be located.[5]

The plan would substantially change where and how marshlands residents lived, but it did not account for or seem to understand the scope of change recommended. Kubra and the chief operating officer of Bionatura, Antonio Romano, detailed reforms of Chibayish that felt fantastical: there would be an airport and luxury bungalows constructed with traditional reed material in eco-conscious architecture. At the April 2007 Green Iraq stakeholder meeting in Sulaymaniyah, Romano told national ministries that the major goal of the park was to build a conservation network across southern Iraq to unify the marshes. To protect the species living in and migrating through the marshes from inevitable industrial growth of cities along the Tigris and the Euphrates, the park would designate "corridors" of protection, thereby contributing to conservation. Planning the design of the national park and executing Romano and Kubra's vision for it meant that the project itself was a kind of corridor, a conduit through which Italian contractors built relationships with Iraqi ministry representatives and the natural resources,

ecologies, and land-use plans they managed for the state. In 2013, Iraq's Council of Ministers made part of the Central marsh the country's first national park.

In February 2007, we gathered in Sulaymaniyah's only three-star hotel, a building meant to evoke the majesty of the clients it wished to attract with its crystal chandeliers, ballroom restaurant, hand-carved wood arched doorways, and elevated ceilings of a furnished marble lobby where customers gathered for informal conversations. In the middle of the lobby, roped off by brass and velvet stanchions, was a large glass-encased replica of Sulaymaniyah at the base of the Kurdish hills. The city itself was a dusty metropolis of low-profile buildings in a valley that stretched toward mountainous ranges. Cranes on the horizon signaled an unbridled construction boom fueled by Kurdistan's perceived security due to its autonomy from Iraq and its policies that favored foreign capital and lured investors in droves after 2003 with the promise of economic windfall. I flew with Kubra from Amman to Sulaymaniyah's newly built airport. The airport was an investor's wish, Kubra told me. The man had grown tired of the arduous trek from Irbil and "solved his own problem." When we landed, airport personnel escorted us to the VIP waiting room, where we sat on velvet couches and airport staff served us tea in porcelain as officials processed our passports. The room was meant for state dignitaries, but Kurdish officials considered Kubra's entourage to fit that description—until July 2007, that is, when Kurdish authorities reconsidered whether foreign investors should be granted privileged treatment on par with official state representatives.

Gianluca Siena, the fresh-faced Italian who landed Kubra his first donor contract through the Italian government, was now an executive at AcquaTerra. Siena planned the agenda for Green Iraq's stakeholder meetings. Starting around 10:00 a.m., stakeholders gathered for tea, coffee, and biscuits in the second-floor hotel conference room. Kubra was nervous. "I always get nervous about these things," he told me, "because you never know how the dynamic between the Iraqis and the Italians and us [Green Iraq] will shape up." On cue, Nicola Rossi stepped to center: "Welcome everyone . . . I'm very proud to show you this work. So many Iraqis and Italians worked on it."

I sat next to Neda Hussain during Rossi's Chibayish presentation, during which he walked stakeholders through his multicolor architectural plan for the city in the Central marshes near Nasiriyya. Rossi proposed that Chibayish could become the capital district of the entire marshlands region because it was a "famous city of the area" that could accommodate a lot of public services. He planned to expand the city to the north and along the southern bank of the river where the relevant state ministry—the Ministry of Municipalities and Public Works—would build public facilities and residential buildings. These public spaces, Rossi suggested, would offer a great opportunity for the redevelopment of Chibayish to better use its surrounding environment and river front. "According to the locals," Rossi said, the preferred economic activities included fishing and the production of

milk, paper, and handicrafts made from reeds. Residents faced problems in developing these economic activities due to "lack of experience and required funds," he stated. This was where Green Iraq, the Italians, and the government could help because, Rossi offered, "everyone remembers the 1970s, when Chibayish was so beautiful." Tourism, he argued, had the strongest potential for developing the city's economy, and Chibayish had great geographic and environmental value to realize in the tourist economy. As for "depressed" areas of the marshes where former refugees returned, Rossi proposed that the "optimal solution for this issue is the construction of 'green villages' that would accommodate the refugees." Priority projects to achieve the economic potential of Chibayish included improvements to civic infrastructure, like the construction of sewer and wastewater treatment systems, and to industrial and solid waste management. Rossi acknowledged additional questions about land tenure, especially of people living in Hammar marsh between Suq al-Shuyukh and Chibayish who opposed the MoWR releasing water in the area. After Saddam Hussein drained the marshes, they took up farming under a government program that encouraged agrarian redevelopment of the dried marshes. If the government reflooded those areas of the marshes, they would lose their farms and their livelihood. Whenever I asked Kubra about this eventuality, he dismissed the concerns, suggesting that marshlands soil was too saline to support agriculture and that extant farms were not viable.[6]

Rossi spent considerable time detailing his methods: "We started about a year ago to prepare the strategy of data collection." One of his main objectives was to create a big database to store and organize all the GIS information they gathered. Rossi's team worked by conducting remote sensing analysis of a six-meter resolution image, "the best possible to use on the market," and by working with a team of "native people to the area" to conduct a survey of urban spaces. Under the supervision of a Green Iraq scientist who lived in the marshes, twenty people went to the field to collect ground truthing data on urban spaces, including 3,000 buildings in the area. They took more than 6,000 photos that Rossi and his team married with their remote sensing analysis. Together the survey and the image analysis represented the core of their work. But as was symptomatic of ground truthing at UNEP in Geneva (analyzed in chapter 2), the project, while seeming methodologically sound, did not adequately involve Iraqi state ministries or their experts, as was clear from Rossi's presentation. One woman, a Ministry of Environment representative, called him out on it, asking, "What work has been done by Iraqi staff? Who input and analyzed information?" Rossi's younger female colleague, Lucia Verdi, responded that she had conducted the analysis. The admission plunged Iraqi state representatives into a rigorous debate about the Italian approach to park planning, and many opposed their top-down approach.

One Iraqi adviser to UNEP surveyed the participants: "Do people think Chibayish is the middle of the marshes?" Some wondered whether this was a political question. The minister of the marshes suggested it was not the right time

to ask people whether Chibayish was the geographic or symbolic center of the marshes right now because everything was going to change—the government was considering a proposal to divide the state into three autonomous regions, including one made by joining the southern governorates where the marshes were located. One Green Iraq employee, translating for the Italians, stressed, "This is a *very* important comment." Mohammad Sharif, Green Iraq's chief ornithologist featured in chapter 3 and who was in attendance, suggested that defining the center of the marshes would open the door to municipalities and governorates competing to host it. When I later asked Romano what he thought of these concerns, he said, "Well, we cannot think of things that are not relevant." He felt he needed to keep working to move the project ahead.

As the meeting continued, Hussain began to have her own issues with the maps Rossi prepared. "I think you have to compare this map with the legal area of the master plan and maybe you will reach some conclusions about which areas should be included. Do you agree?" Hussain's questions raised the issue of sovereignty and the right of Iraq's national government to do more than sign off on Rossi's plans; she wanted to control the research process. To oversee the process, she had to be involved in formulating its methodology and she wanted transparency from Rossi about "the rationale" behind the building evaluation criteria. Rossi attempted to defend himself by arguing, "This is not a problem if I've collected more information," outside the boundaries of the legal master plan. For Hussain, it was. Her municipality was responsible for keeping building records, and Rossi's plan made it obvious that he had not consulted existing government documents. He had not indicated illegal businesses on his map, which Hussain pointed out. To which Rossi replied, "But I am not a policeman, I cannot determine this information." "But there's official data and you need to compare it to what you have found," Hussain urged, adding that her municipality maintained the records. Yes, yes, Rossi nodded affirmatively while rolling his eyes. For Hussain, Rossi's plans indicated that he had sidelined state authority in his design process and did not accurately represent Chibayish. Instead, his plans revealed Rossi's limited knowledge of the city based on remote sensing analysis conducted by his office without Iraqi participation. Sharif was angry, too, and said to me during a meeting coffee break: "Look, this is how they plan the marshes? From photos?"

Jumping from present to the distant future was central to the exercise of imagination Rossi attempted. "We have decided not to use years," Rossi stated. Timing was important, but given the conditions of war, he did not know how long it would take to achieve the first stage of the plan; it could take five, ten, or even twenty years. So Rossi advocated working in temporal stages. Attempting to coax support from Iraqi ministry representatives, he explained: "I'm not showing you the *right* scenario, I'm showing you a method. The core of our methodology is to demonstrate the importance of that area. When we prepare the preliminary plan, we are just interrogating the city *as if she were a person* [emphasis added]. We are asking

how it works, how it can play different roles inside the territory, and so on. We are not planning the future exactly; we are just identifying the potentials." Jumping tenses was something Rossi could do with relative comfort. For him, the plan was theoretical; he had no personal context to understand Chibayish or the difficulties this kind of future planning might pose for ministries contemplating commitments to infrastructure in the present. His responsibility was to design but not to implement. Implementation was the purview of state representatives like Neda Hussain, who had to figure out how to build Chibayish infrastructure from Rossi's plans. Beyond the problems Hussain noted with the plans themselves, which made them unworkable, implementation was similarly impossible. Hussain could not safely travel to her own office, which meant that holding coordinated meetings between different ministries was also unsafe. Hussain and her colleagues had little ability to affect the kind of grand-scale change Rossi conceived. Like the Geneva MWS scientists tasked by their donor with teaching remote sensing in two weeks, Rossi knew it was next to impossible to think about the future, but his plans required it. "We can imagine a future," he implored Iraqi stakeholders.

In early December 2007, I visited Rossi at his architectural firm in Belluno, Italy. Before the marshes project, Rossi had never worked in Iraq. Compared with Bionatura and AcquaTerra, Rossi's architectural firm was a small boutique operation that mostly handled residential projects and small commercial businesses. Iraq's marshlands project was the first wartime statecraft project he undertook. On the white wall behind his desk, Rossi hung five four-by-six photographs in simple white frames, all from his visits to Sulaymaniyah: one of the clouds from the airplane, one on the Sulaymaniyah tarmac, one at dinner with Gianluca Siena and another colleague in the hotel restaurant, one of fishmongers in the market, and a portrait of him and Neda Hussain. Rossi told me he could not muster the same drive for the project after she died. He felt like he was "designing in the dark." He was not sure whether the plans he drafted for the park would become a reality, and he was not used to that. As an architect, he liked to see the buildings, and the marshlands project felt so far away from that result. "Normally," he said, "I work in reality."

Toward the end of the stakeholder meetings, I spoke with the state minister of the marshes, who did not mince words in his criticism of Green Iraq's park plans. "It's not reality. It's a dream. No one is thinking about the people in the marshes. They don't have local teams on the ground." To the state minister, Baroness Nicholson's UK-based AMAR International Charitable Foundation was the best NGO working in the marshlands because the organization opened health clinics and provided direct services. Referring to it as a "dream" was his way of critiquing Green Iraq's project as an illusion, a performance, a mirage.

For Kubra, dreaming was the point. He wanted ministries, investors, and his staff to move beyond any material limitations in the present to think of bold ideas that might not seem possible. When, in a private evening meeting of ministry

signatories to Green Iraq's plans, Neda Hussain raised concerns about how she and other ministry representatives would implement their proposals, Kubra responded: "Don't you want to see your dream come true, Neda? We all want to see our dreams come true, let's help each other. You can work with the ministry. Now you have an endorsement from the minister of planning, it will be easier to get funding. Just to get our dreams built." But for Neda Hussain, as for her colleagues at other ministries, dreaming was not immaterial; it would cost her life. Late for another meeting, Kubra issued a request: "I'm sorry, I have to go because the minister of environment is waiting. I will see you tonight. Stay up, huh?"

FANTASIES FOR EXTRACTION

As Kubra's interaction with Hussain and other directors general of Iraqi ministries indicates, he and his foreign contractors each had particular plans for the marshes, but they could not achieve them without the state, which is why dreamwork was so critical. If Kubra could teach Iraqi ministry representatives to dream, he might convince them to internalize his goals for the marshlands national park. If the state is an accumulation strategy for foreign contractors in Iraq, the state also poses a potential limit to the financial interests of these contractors in Iraq's natural resource sector. Global biodiversity conservation treaties, including the Ramsar Convention and the UNESCO World Heritage Convention, are policies for managing territory and, following international policy set by the UN, can only be adjudicated by a sovereign power that has legal domain over that land. The Iraqi Treasury legally owned the country's marshes, which meant that any global conservation strategy had to involve the state, thereby reinforcing the nation-state system. Kubra and his Italian contractors formulated their plans for Iraq's marshes without substantial involvement of Iraq's ministries, but they knew they needed their full endorsement of the project. The Italian contractors intended the fantasy of a marshlands national park to inspire, but they used that fantasy to coax the state to yield to their preformulated designs.

Romano and his colleagues planning the national park learned from the February meeting that their approach was not working. Living through the counterinsurgency meant that Iraqi ministry representatives had a hard time thinking beyond the urgency of now imagining a national park in the future, so Antonio Romano and Mia Bianchi—another Italian subcontractor to Bionatura on the national park design and the ex-wife of the firm's technical director, Lombardi—arrived at the April 2007 stakeholder meetings with visual aids. "Please, during this presentation, you will try to use your fantasy," Romano said as he opened the meetings. Romano meant imagination, but his slip was apt. The project seemed fanciful. There were people missing from the meetings. Haider Ali from the Ministry of Environment, and Green Iraq's second administrator, Dr. Ibrahim, who had fled to Canada to pursue a different dream that included his new bride and a

suitcase of cash skimmed from the NGO, according to Kubra. Kubra told me he understood Dr. Ibrahim's motivation and concealed the theft from his investors by chalking it up to extra-budgetary wartime operational costs. Neda Hussain's absence introduced a new silence to the proceedings. An older representative of the ministry had replaced her, but he was timid and rarely spoke up. The only reason he escaped the bombing, he told me, was because at the time he was home preparing for his retirement. Two young women, biologists at the MoWR, told me during a coffee break that they loved the American show *CSI*. "Maybe that's where we'll end up, cadavers on a steel gurney," they joked.

The first slide in Romano's presentation read: "The Park in 2027: What Could It Look Like?" Romano argued that managing the national park "asset" required careful regulation of human activity such that zoning—core, buffer, external—would be necessary to control economic activity. Zoning was typical of national park designs and created areas of human exclusion on lands that people were no longer able to use (West et al. 2006). Romano argued to the ministries that these activities would need to be tightly regulated to ensure the major objective of protecting the marshlands ecosystem. Kubra knew that he would need to account for the marshlands refugees returning after the fall of Saddam Hussein. He proposed to build "green villages" in the wetlands to relocate them away from the core zone of the marshes. The villages, Kubra exclaimed, would have all the modern conveniences of urban life, like running water and electricity, and they would be built according to sustainable conventions to be appropriate for the marshes. He planned to get the oil companies to fund their construction.

On a map, Romano plotted educational activities with pink diamonds, including research and training centers, a lab, a convention center, an environmental education center, and a youth hostel; blue triangles represented socioeconomic activities such as agriculture, fisheries, livestock husbandry, reed gathering, handicraft production, and a training center; and yellow circles were tourist activities like tourist information points, two visitors' centers, a museum, bird observation points, archaeological excavation, docks, and "traditional ma'dan villages." The map included planned routes for walking pathways, a marshlands boat trip, a Euphrates boat trip, and a guided itinerary of the wetlands. Under the national park plan, marshes would become a gateway for the continual presence of foreign expert scientists to conduct research in the environs and to train Iraqi scientists in analytic research and wetlands protection. It was unclear how the redesigned space would affect existing tribal boundaries and associated economic and political life, economies of religious pilgrimage in the vicinity, and existing illicit smuggling of guns and oil in and through the marshes, or whether the park would require the Ministry of Interior to regulate clandestine movement over Huwayza's porous Iranian border.

Mia Bianchi handed out a newsletter to aid the imagination. "Mesopotamia Marshlands National Park, a Utopia Becomes Reality. The First Iraqi National Park

Is 20 Years Old," the lead article headline read. The newsletter imagined 2027 Iraq as an imperial paradise that described the marshes as the "Mesopotamian" marshlands and included a 1916 note from Gertrude Bell. The newsletter richly set the stage for commemoration of the park's creation twenty years later. "Blue skies and placid waters provided the setting for this historic day. The Prime Minister along with the Minister of Environment, the Minister of Water Resources, the Minister of Municipalities and Public Works, the Minister of Agriculture, the Minister of Culture, and, of course, the Minister of the Marshlands . . . delivered a speech to an enthusiastic crowd of park supporters." The prime minister would open the meeting in this way, Bianchi imagined: "A project that seemed unattainable was realized, and here, in front of our eyes, we can see the results: clean blue water, reeds swayed by the winds, birds on the horizon." A chief park ranger, who moved back to the marshes from exile in Iran after 2003 when he was five, gave an interview attesting his pride in the park effort: "For a boy like me, every time on the boat was a fantastic experience. It's still fantastic! I like going through channels between the reeds, enjoying the silence, and hearing the occasional sound of birds."

Bianchi's use of direct speech in the present tense transported stakeholders to the future as if living it in real time. Her vision of the marshes was a careful illustration of Kubra's memories fleshed out by the British imperial travelogues that imagined the marshes to be the biblical site of Eden. Kubra used Eden as a direct marketing scheme. He told me that he knew Eden would sell the park to foreign investors, and he loaned his memories to help flesh out that imperial vision for the press and for his investors. Romano concluded the presentation: "This is totally imagination. But it's possible. It can happen." His presentation seemed to have stunned his audience, who sat in silence at the end of his talk until Kubra broke the stale air with a call to lunch. Most state representatives later told me they did not fully support Romano's plan, or the way the Italian team presented it for approval only, but much like Neda Hussain, they recognized the level of foreign interest in the marshes as both a positive investment in Iraq's environment and a project so well-funded and politically supported it could not be ignored.

DREAMING DENATIONALIZATION

Fiscal Power

Kubra and his contractors used the primary technologies of funding, political pressure, and the press to contribute to the disarticulation and denationalization of the state by using their financial power inside state ministries, which were stakeholders in marshlands conservation, to influence their governance of marshlands geography and geology. Donor command in Iraqi ministries was based on their funding of state projects like marshlands conservation. Through Iraq's Ministry of Environment, Kubra found a way to realize his dream of conserving Iraq's marshes, including the creation of the national park. During the February

stakeholder meetings, Haider Ali, adviser to the minister of environment, Narmin Othman, shared with me his concerns about the influence of Green Iraq on the Ministry of Environment, which had funding and little credibility in Iraq's national government. When UNEP, through Khalil Walid, helped establish the ministry, it did so amid the US invasion and occupation of the country. As a result, other ministries perceived it as a foreign body in the government. Abbas Khalid at the Ministry of Agriculture told me he viewed the Ministry of Environment as a purely political organization with strong ties to the occupation of Iraq: "Yes, politics, that's exactly what I mean." Khalid viewed the Ministry of Environment as not having the power to effect change or draft conservation laws, unlike the Ministry of Agriculture. Neda Hussain felt the same way. She said the ministry needed to set a strong environmental agenda to succeed and then present her plans to parliament with a request for additional funds. Hussain argued the minister needed to take control.

Other ministry representatives saw Minister of Environment Narmin Othman as a potential problem; she needed to make a break from Kubra and articulate her own vision for protecting Iraq's environment. Haider Ali suggested that the minister's difficulty in striking her own course had to do with the ministry's funding. As head of a smaller and newer ministry, Othman had comparatively less funding than other national ministries that existed before the US occupation, and she relied on donor funding to support her work. Marshlands conservation donor agencies like the Italian government did not work directly with the Iraqi ministries; instead, they funded NGOs like Green Iraq, which had close relationships with the implementing ministries but, in practice, would use Italian contractors instead of Iraqi ministry employees to do the work. Kubra de facto ran his marshlands agenda through Iraq's Ministry of Environment, over which he had great influence because of his funding and global appeal. Ali confessed that he believed exiles, like Kubra, who had lived outside the country for twenty years and returned with conceptual projects, like restoring the marshes, did not understand the needs and desires of Iraqis who had remained in the country. Their funding did not benefit Iraqi citizens. It was easy for the money to "disappear," as he told me, "Money is regularly lost in Iraq."

Engineering State Support

For dreaming to work, national ministers had to adopt the dream and endorse it with their total support. I sat down with Minister Othman at the February stakeholder meetings to elicit her response to criticism from Haider Ali and others. She boldly affirmed: "Yes, we are run as an association. We are the new way, not like the old way the ministries are run. It is good." When I asked whether her small budget required her to rely more heavily on foreign investors, Minister Othman conceded it did, but she saw it as a good thing. Her ministry was not like these "old ministries" that worked only inside the Iraqi government and did not have

relationships outside of it. Yes, her ministry was influenced by outside donors, it had a great relationship with its donors, and they worked cooperatively to get things done, she told me. Then Minister Othman backpedaled: her investors did not tell her ministry what to do. The ministry set its agenda and foreign investors worked to accomplish what they wanted. Investors submitted proposals, the ministry reviewed them, and the ministry chose projects it would fund.

Private closed-door meetings, however, told a different story—one where Kubra clearly established his dominant role over Minister Othman, as happened during one meeting with the Jordanian minister of environment, Khalid Irani. Dr. Mustafa recalled the incident to me in August 2006, after he had just attended a meeting with Zaid Kubra and his wife, Minister Othman, and Minister Irani. Dr. Mustafa was an adviser to the Ministry of Environment under Minister Othman and her predecessor, and one of two senior administrators of Green Iraq working from Baghdad. Both Dr. Mustafa and Dr. Ibrahim were the Green Iraq administrators the militia searched for during the April 2007 raid on the NGO compound. An embarrassed Dr. Mustafa recalled that Kubra dominated the conversation: "It was just one of those meetings where Zaid kept talking and just did not stop. Even Kubra's wife was cross." Iraq's minister of environment had been in the room, but he did not show her respect. "Even though Green Iraq is really doing a lot of the work that falls under the mandate of the ministry's office, Zaid should not let this show to other foreign ministers," Dr. Mustafa complained. Kubra wanted Minister Irani's advice because he had successfully applied for a Global Environment Fund (GEF) grant for Jordan's leading environmental NGO, the Royal Society for the Conservation of Nature. GEF grants could be tens of millions of dollars. So, when Minister Irani suggested that Kubra first apply for a smaller GEF grant of $25,000 to $50,000 to fund the application process, Kubra grew impatient. To apply for seed funds, Green Iraq would need to demonstrate that they have worked in partnership with Iraq's Ministry of Environment and, specifically, they would have to provide documentation and a letter attesting to that partnership. Kubra was annoyed and waived off the suggestion, saying he would get the Italians to fund the application process instead. Dr. Mustafa felt Kubra's conduct at the meeting "was a huge mistake because it gives the impression that Zaid feels his power is above the Ministry of Environment. Like he doesn't need them. And that is what he was saying."

Outside of this meeting, Kubra tried to manage his relationships with Iraq's ministries carefully to maintain their support for marshlands conservation. In a private meeting with Bionatura and AcquaTerra after the February 2007 stakeholder meetings, Kubra discussed the ministries' criticisms that Green Iraq had not adequately consulted them or demonstrated appropriate deference to their authority over the rule of law in Iraq. "We need to get into the habit of writing the reports to the minister [of each of the ministries] on a regular, periodic basis. The minister must be aware of our activities. Some focal points don't have

good relationships with their ministers." Each of the ministries identified a "focal point," a member of their staff, usually a director general, to work with Kubra on behalf of the ministry. Focal points had the power to sign legal documents on behalf of their ministry with Green Iraq that outlined the NGO's scope of work for the national park and specified next steps. These official state documents outlined land use and allocation policies for the marshlands national park. Neda Hussain was the focal point for the Ministry of Municipalities and Public Works, Haider Ali was the focal point for the Ministry of Environment, and Dr. Ahmed Ibrahim was the focal point for the national park project.

Kubra's conversation with his contractors indicates the extent to which he could control ministry access to information and drive ministry approval for plans he defined. Gianluca Siena asked Kubra privately whether "we are going to bypass them [the focal points]," indicating that Kubra would circumvent Iraq's national government altogether. Siena continued: "We had the signing of the plans yesterday. They [the focal points] don't know what they signed. But basically, what they signed was the list of projects giving their approval for us to propose them to the ministry in Italy, and then Italy will pay for everything that's approved." Siena's comments indicate the extent to which Green Iraq and its Italian contractors retained control of the national park design. Rather than pursue collaboration with Iraqi ministries, Kubra and his Italian contractors sought to keep their Iraqi partners just happy enough to get their signatures for the plans the Italians had already drafted.

Leveraging the Press

Kubra's third strategy to circumvent ministry challenges to Green Iraq's platform was to use the press more actively. "We have access to the press here. Creating more opportunities for press conferences is important. Green Iraq needs to publicize the work we are doing," Kubra directed his staff, Bionatura, and AcquaTerra. Siena agreed: "In the last year we have done a lot of work, but the feeling is that we could have marketed it even more than we have." Kubra suggested they hire someone from the media in Kurdistan who spoke Arabic and English because "I have had problems with Iraqis and Jordanians, you talk to them, talk to them, talk to them and they promise you and they don't deliver shit." He added that he felt limited because his staff could hardly manage the work they have committed to do, but publicizing their work was important, and one way to address the publicity issue was to begin writing quarterly reports that Green Iraq would post to their website.

Kubra knew his conservation work needed to appear in the press as an Iraqi state initiative. "I think the results of the reeds is going to be huge," Kubra offered, referring to their discovery of a new species of reed that exists only in Iraq. That was the work of Iraq's MoWR and the Italian Ministry of Environment, but Kubra said, "When we have a press conference, it needs to be the [Iraqi] Ministry of Environment. . . . In September we'll have the children's book, and that will be

another opportunity. Then we need to think of other press opportunities. Maybe the opening of the RO [reverse-osmosis water purification] units. Four times a year is good." Kubra's press strategy aimed to highlight each of these achievements as those of the Iraqi state and conceal the fact that Green Iraq was leading the effort. In this way, the NGO and its foreign contractors were not rogue actors within state infrastructure; they were formal parties to the formulation, funding, and broadcasting of official Iraqi environmental policy.

Effective use of global media was a strategy not only to bypass the state by naming it as an actor but also to drive funding for Green Iraq, which in turn would make Kubra's environmental plank powerful enough that Iraqi state ministries would not be able to ignore it. Kubra admitted he was concerned about his funding, which was "only 50 percent of last year," making it unclear whether he could achieve all his plans. In a somewhat circuitous fashion, Kubra also needed Iraqi state support, or the performance of it, to secure funding. Kubra may have had international funding and acclaim, but he did not have the institutional role to sign Iraq, as a state body, to international conservation treaties. He had to keep state representatives adequately happy so that they would be willing to implement conservation and preserve the marshes by becoming signatories to biodiversity conventions. Kubra directed Siena and Romano: "So we want to write letters to the focal points outlining which projects have been approved and which are under review. We promised yesterday that we would do this, and we need to do follow up with them. Shit, we've been together four years guys! April in Geneva [will be four years]."

DREAMING TO SURVIVE

Dreaming was also a survival strategy for Iraqi ministry representatives who became targets of militia violence because of their activities with the occupied state and foreign donor projects like marshlands conservation. Some state employees I knew had dreams of building a professional future by securing marshlands dreams in their ministry, as representatives of the Ministry of Agriculture expressed. Others, such as an MoWR senior engineer, dreamed of using their connections to Kubra and Italian contractors to find a way out of Iraq after living through multiple kidnappings. Like Green Iraq employees, state representatives also felt that participation in international development schemes, like biodiversity conservation of the marshes, could lead to greater professional opportunity and potential advancement in their careers beyond Iraq. State representatives who had been career employees at the illustrious MoWR had significant technical expertise and expressed feeling invested in Iraq's reconstruction because they deeply cared about the country and wanted to be custodians of its future. Through their personal relationships with Italian contractors, some Iraqi state representatives found a way out of wartime violence by leaving their state post to work directly for private industry,

which enabled their families to relocate safely outside the country. On an individual level, Iraqi state representatives I knew saw their partnership with foreign contractors as a resource strategy too, one that would protect their families' futures.

Key actors in each of the ministries involved in Green Iraq's stakeholder meetings demonstrated their commitment to the national park project by attempting the dreamwork that Italian contractors and Kubra had encouraged. Some articulated their own visions for Iraq's national park. Most surprising was the participation of the Ministry of Agriculture in Green Iraq's stakeholder meetings. That ministry was controlled by Moqtada al-Sadr, who had a firm anti-occupation stance. On April 16, 2007, al-Sadr had six of his ministers quit the Iraqi cabinet, including the minister of agriculture, because the Iraqi government refused to set a timetable for US withdrawal. Abbas Khalid was one of the ministry's directors general, and he attended Green Iraq stakeholder meetings in Sulaymaniyah in February and April 2007. When I asked him about al-Sadr's edict, he sidestepped the question and suggested that the minister would be a benefit to the national park effort because he would have fresh ideas. Green Iraq's official status as an Iraq-registered NGO enabled this kind of alliance with national ministries that al-Sadr controlled. On paper, Green Iraq was not an occupation organization, but in practice its funding, political support, and alliances firmly established the organization as part of the occupation. Abbas Khalid knew this, and the minister likely did too, but they chose to ignore the matter because Green Iraq attracted millions of donor dollars and, along with the other ministries, Khalid wanted the chance to recruit their financial and political support for his ministry. The clearest evidence of that was Khalid's efforts to appeal to Mia Bianchi.

On the last day of the February 2007 stakeholder meetings, Khalid approached Bianchi, who had just completed a presentation on what a national park was and how it could be relevant to conserve Iraq's marshes. Bianchi recalled their private conversation for me the next day. Khalid's ministry envisioned building a concrete wall to encircle a dedicated area of the marshes. Inside, they would build a tower where they would invite guests to watch buffalo-hunting tournaments sponsored by the ministry. Bianchi was stunned: killing for sport inside a concrete pen was not the vision of a national park she had communicated. Bianchi thought Khalid's ideas "old-fashioned" and inconsistent with "modern" ideals of a national park. Her vision of a protected area had the goal of safeguarding wildlife in a natural habitat. Khalid's plan revealed how Iraqi state representatives did not internalize marshlands conservation as Kubra and his Italian contractors envisioned it but entertained it in ways that were also performative—much like Kubra's strategy for using the press to amplify Iraqi state leadership of marshlands conservation.

Kubra was not the only one with dreams for the marshlands. Ministries recognized the popularity of marshlands conservation and developed their own projects to conserve it without partnering with Green Iraq. An architectural competition to design a museum of the marshes funded by Iraq's Ministry of Culture

was closer to Bianchi's vision. An Iraqi Canadian husband-and-wife team of Ali and Laila Hashem, at the firm Ali Architects, won the bid. They modeled the museum after human-built reed islands, also called *chibayish*. Ali Hashem told me during an April 2007 interview in Beirut that the architectural form of the museum "combines all the elements of nature." Marshlands reeds would clad the walls, drinking water would be purified on site, windmills and sprinklers would offer a light continuous water spray to naturally cool the air, rooftop panels would harness solar energy to supply electricity and heat, and a green roof of indigenous marshlands plants would cool the building and serve as a visitor's park. The problem was that Ali Hashem could not oversee the construction directly, the equipment required expertise to install, and training would be difficult if not impossible by Skype in the midst of war. Ali Hashem had tried to recruit Green Iraq's support for the project, but the Ministry of Culture was not part of the Green Iraq effort, and without Kubra's support, it could not establish the ground operations necessary to build the museum. When former Deputy Minister of Culture Maysoon Damluji left to take an elected position in the Iraqi parliament, her absence created a political vacuum, and to date the museum has not been built. Even with Green Iraq's direct support, the museum would likely not have materialized. Kubra's "green villages," for example, were never built either.

Beyond their visions for the marshes, Iraqi citizens, including state representatives, had other dreams for Iraq that centered security for their families. Amer Yousef was a director general at Iraq's MoWR and was highly respected by Green Iraq's hydrology contractors for his deep knowledge of Iraq's water infrastructure and for his tempered, but strong voice of critique in stakeholder meetings. Yousef sat with me in Sulaymaniyah during the April 2007 Green Iraq stakeholder meetings. The violence of Baghdad was inescapable, he relayed, and he worried civil war was hours away. His colleague Neda Hussain had been killed, and other friends had also died. Three times Yousef was kidnapped on his way home from work. Three times he ransomed for his life. He could not stop worrying about what would happen to him or his family; he had young children. Friends and colleagues constantly shared stories of survival and death. Yousef had tried to convince his ministry to open a temporary office in Irbil or Sulaymaniyah, but they refused. It is unlikely that moving an Iraqi ministry to Kurdistan would have been politically possible or desirable, but Yousef's plea indicates the urgency he felt to safeguard his family: "It is impossible to be effective in your work when you're depressed and worried all the time." Amer Yousef found his escape through his close relationship with Gianluca Siena, who, on hearing his story, hired Yousef on the spot. Within days after the conclusion of the Sulaymaniyah meetings, Siena relocated Yousef and his family from Baghdad to Amman. Yousef's dream was to secure the future of his family, who had been under attack because of his ministry job.

Haider Ali knew the anguish Yousef endured; he experienced it personally. On his way home from school just before Christmas, Ali's son was murdered in the

street. He, too, had contemplated moving and had begun to take measures to relocate his family, but he was not able to act quickly enough. He tried to get the police to pursue the crime, but his son was one person, and scores of university students had been kidnapped at the same time. That is when Ali decided to leave his job as a director general and become a consultant for the ministry, which meant he could leave Baghdad for safety. I last saw Ali at the February 2007 stakeholder meetings. I wondered for a long time whether he survived, but Ali indicated to me at our last meeting that his survival was predicated on resigning his job with the state. Years later I saw his name listed as a contributor to Iraq's UNESCO World Heritage Convention marshlands nomination file and I knew he was alive.

Dr. Mustafa's dreams of survival took root in exile. He was not yet out of the country when the self-identified Ministry of Interior militia invaded Green Iraq's offices in April 2007; he was at home, hiding. A few days after the invasion, Dr. Mustafa was scheduled to accompany Minister Othman to Europe, and he did make the trip. On his return, he did not go back to Iraq, but remained in Amman and eventually slipped into Dubai, which is when he landed his next job with a major oil multinational to conduct environmental risk assessment of their oil plans in the vicinity of Iraq's marshes. Kubra had his own criticisms of Dr. Mustafa, who he claimed had enjoyed a special relationship with a previous minister of environment. Kubra would not say exactly what happened, just that money from Green Iraq went to "other projects" that included an NGO Dr. Mustafa had started with the former minister. "That's a very good way of saying it," Kubra told me. It seemed to me that Dr. Mustafa, like many other high-level Iraqi employees of state or occupation NGOs, had their own plans for Iraq that did not include Kubra's dreams for the marshes as he envisioned.

Kubra was not overly concerned when his senior staff skimmed from the NGO, but he was concerned that the mortal threat they faced in Baghdad would compromise his ability to work in Iraq, and he, too, looked for a way out, after the growing exodus of Iraqi elites. By comparison, Kurdistan seemed like a friendlier place for foreign investment, and its measure of safety inside Iraq had already begun to attract global NGOs that left with the UN. As Kurdistan began attracting new kinds of investors and the international community, Kubra told me that he worried "Amman is losing its importance as a staging point." When Barham Salih approached Kubra about opening an American University of Iraq in Sulaymaniyah (AUIS), Kubra took on the job to shore up his dream for marshlands conservation. Just as Green Iraq put pressure on the state, the state also put pressure on the NGO. Salih was a prominent long-standing leader of the Patriotic Union of Kurdistan and a friend of Kubra's. In May 2006, he became the deputy prime minister of Iraq, a position he held until August 2009. Later he became the prime minister of the Kurdistan region from October 2009 to April 2012, and, from October 2018 to October 2022, the president of Iraq. In exchange for overseeing the construction and launch of the AUIS campus, Salih helped Kubra quietly open a Green Iraq

office in Sulaymaniyah and relocate his Amman staff to Kurdistan. He also helped Kubra secure the official travel documents his Arab Iraqi staff needed to attend Sulaymaniyah stakeholder meetings, since Kurdistan was an autonomous region that would only admit Iraqi citizens who had the necessary travel documents to enter. At a time when Iraqis south of Kurdistan were looking for opportunities to flee to safety, Kurdistan issued few of these travel documents.

The Green Iraq office in Sulaymaniyah could double as a residence for Kubra's staff. Salih asked that they keep a low profile, but they did not speak Kurdish and the house easily stood out in the neighborhood, which made them potential targets. Kubra's Italian contractors also needed help getting into Sulaymaniyah, but his deal with Salih ensured they would receive their visas directly from the AUIS and, as he told me, they "wouldn't be hassled anymore." The Sulaymaniyah arrangement offered Kubra a workaround for violence in Baghdad that enabled him to continue plotting marshlands conservation and offered some additional measure of protection for his staff, though not necessarily their families. Kubra knew he could not move all his staff north. In February 2007, he began a series of informal conversations with his staff at their office in Sulaymaniyah about the possibilities of relocation. For Kubra, this was a new kind of responsibility, as those he could relocate would have refuge. "I don't want to play god," he told me.

EXTRACTION IS THE LOGICS OF PROGRESS

Today, the Central marsh is a national park, the whole of the marshes is a UNESCO World Heritage site, and each of the three principal marshes are protected by the Ramsar Convention. Yet, as with dreams, everything is not what it seems. Kubra believed that he was a "realist," that he could help establish marshlands conservation by yielding to oil redevelopment in some areas of the marshes and to Italian donors on funding priorities. In this theory of progress, Iraq's "development" required some measure of death, in the form of building sacrifice zones that compromised the lives of Green Iraq scientists. Kubra's vision of national development was based on the logic of extraction, according to which value is cultivated through sacrificial practice. Although he publicly criticized oil flaring, once he partnered with extractive agencies like the Italian Ministry of Environment and the oil multinationals, he could not rein them in.

On February 12, 2007, the day I arrived in Sulaymaniyah to attend my first Green Iraq stakeholder meeting, Elaine Smith, an American who was the NGO's office manager, told me her colleague was working with Kubra on the "for-profit" side, on a project with the Italians called Aden al-Jadida (New Eden). When I asked for details, Smith said, "He has a role that is not clear to me," and directed me to Kubra.

On February 18, 2007, the day after all the stakeholder meetings, I had the chance to ask Kubra about the private sector business Smith mentioned to me.

Kubra told me his Italian partners would pay him 5 percent of the contracts they secured with their private clients through his help, and that he thought Aden al-Jadida would guarantee their continued funding of Green Iraq. I asked him about criticisms from the ministries about Green Iraq's top-down approach to state business and to the criticism the minister of the marshes had about his lack of attention to providing direct services for the marshlands, as AMAR had been doing since 1991. Kubra confessed: "I'm not motivated to do that kind of work. I just don't want to do it. . . . The thing that kills me is that they don't know where this comes from. It comes from the heart. They think I'm pocketing money, but I'm not. The truth is that I was making good money in the US and that if I had stayed there, I could have made twice as much. I could have made so much more money, and I wouldn't have had to give up the time with my family." He recalled for me a question one reporter asked: "Was it worth it?" Kubra said "No" flat out. He did not feel the three years of time away from his family was worth it, and had he known now what he does, he would not have made the same choices. "Look, the marshes are dead," he said abruptly. "The marshes are dead," he repeated with dramatic flourish and a look that made sure I heard him. "There will be marshes one day," he continued, "they will come back, the way life works in cycles and one day there will be marshes." Kubra thought it would happen when "Iraq changes" and people saw a new reason for wanting the marshes to be there.

I could not understand the meaning of Kubra's comments, which I found both shocking and cryptic. I knew Kubra felt that marshlands conservation required Iraq's MoWR to allocate more water to the wetlands, and that Iraq's water budget was constrained by damming in Turkey and Syria, which he could not control. But it felt like he had deeper frustrations than these publicly familiar constraints he had dealt with since he conceived of Green Iraq. It was not until twelve years later in Rome that I had any sense of what Kubra might have meant.

In 2019, I found the name Aden al-Jadida in Roman court documents I obtained in Italy and which I had translated. The organization had been created as part of an embezzlement scheme between Kubra, the head of AcquaTerra Lorenzo Ferrari, the head of Bionatura Emilio Lombardo, and Italian Minister of Environment Corrado Clini. Between October 14, 2010, and June 22, 2011, Kubra helped Lombardo and Minister Clini siphon 3.17 million euros from the 54 million euros the Italian ministry gave to Green Iraq in bilateral funding. He had created false invoices for work and directed funds to the Dutch shell company GBC, and then into offshore Caribbean accounts. Some of the fake invoices were for activities on the Management Plan for the Mesopotamian Marshlands National Park and the Preliminary Urban Plan for the City of Chibayish. Reading the court records, I was reminded of Kubra's remarks in February 2007: he started helping Minister Clini and Lombardi embezzle funds through Green Iraq at the time of Neda Hussain's death.

In November 2015, Kubra pleaded guilty in exchange for a deal with the Roman court prosecuting him. The judge gave him a conditional suspended sentence of

one year and eight months imprisonment, a sentence that meant Kubra would not serve prison time in Italy if he did not commit another crime during the term of his sentence. Gianluca Siena was AcquaTerra's point person for the firm's work with Green Iraq. He had been Kubra's first contact in Italy and had helped him secure funding from the Italian Ministry of Environment. In his statement to the court, Siena recalled telling Kubra about the problem of paying out the GBC invoices for work that had not been undertaken in Iraq, and that Kubra had explained that he knew the invoice was false, that it was a condition Lombardo, the head of Bionatura, had imposed, and that if he did not follow Lombardo's directions, there would be no more funding for Green Iraq. Siena's statement echoed what Kubra told me about Aden al-Jadida: Kubra had wanted to be a "maestro," but the court records suggest his dream overtook him.

But Kubra's extractive work did not relate to his role in embezzlement alone; it was part of his strategy for attracting funding for Green Iraq, as chapter 3 illustrated. Kubra's strategy of using the promise of oil extraction to entice Green Iraq donors is evidenced by email correspondence obtained by the court. In an email dated October 20, 2013, Kubra told Minister Clini about the possibilities of creating business with Eni and other international oil companies in southern Iraq. Except for the Italian media, which broke the story of the minister's embezzlement through Green Iraq in 2014, none of this behind-the-scenes corruption was public. In 2013, Kubra won the major global prize for grassroots environmental activists and continues to be the international media's Iraqi environmentalist.

When Barham Salih became the president of Iraq (2018–2022), Kubra did achieve his dream and became his personal senior climate adviser. Kubra's duties included advising the president on oil flaring by multinationals across southern Iraq that had raised the cancer rates, particularly among children, to lethal and unprecedented levels (Stallard et al. 2022; Stallard 2022). Kubra's advisory role also included drafting the country's climate policy to address this environmental decline. That Kubra was able to claim this senior role in government despite his efforts to shore up biodiversity conservation with his support for the oil industry is revealing of corruption within the Iraqi state. Under these circumstances, it was no wonder that Iraq's climate policy had no teeth. Kubra and his associates pursued an environmentalism that would not endanger multinational resource extraction, and that filled Iraq's air with noxious methane gas that poisoned the skies and the bodies of Iraq's citizens. All these years after the official end of the war, Iraqi residents struggle to breathe.

Breathing and dreaming in violence maintains Iraq's warzone ecology. I have attempted to show throughout this book and in this chapter particularly that the entirety of the warcraft endeavor began with the critical imagination and cultivation of dreams. Dreaming about Chibayish as a biodiversity conservation site on the western edge of the Hammar marsh is inseparable from breathing the toxic

and lethal fumes of air on the eastern edge of the Hammar marsh at Nahran Omar. Air, recent scholars have argued, is material and its materiality matters for how we understand politics and economy (Ahmann and Kenner 2020; Zee and Choy 2015; Choy 2011). For Marx, making a commodity, such as a biodiverse and conserved marshlands, involves labor that produces a certain amount of population death in pursuit of economic growth and "development" (Murphy 2017, 21). Understanding how dreaming about Chibayish in the early aughts is relational to the toxicity of oil flaring at Nahran Omar today requires tracking pathways of extraction that are not direct or overt. It requires an understanding of climate change that begins with the work of critical imagination, such as in dreamwork, geared toward the design of the economy.

The corruption case broke AcquaTerra and Bionatura, which collapsed under public scrutiny at a time when Iraq's war economy went bust. In 2014, Da'ish seized Iraq and, at its height, controlled 40 percent of the country's territory (Wilson Center 2019; Saleh 2014). Iraq's market for international business collapsed as a result. AcquaTerra and Bionatura had completed work on their three-year contract with Iraq's MoWR that same year. AcquaTerra had grown fast, taking on employees, opening offices in Amman, and working overdrive to keep pace with Green Iraq's contracts. Bionatura was an older and more established company that had been in the family for generations, but which merged with Lombardi's company in 2005 or 2006, according to Ferrari's court testimony, just before beginning work with Green Iraq. Lombardi and Clini had known each other for twenty years, dating back to another court case in 1996 against Clini, for which charges were dropped, for a project Lombardi had been involved in regarding the construction of an incineration plant.

When the Italian media broke the story about the New Eden scandal in November 2014, both AcquaTerra and Bionatura's reputations in Italy were damaged. Italy's economy was hit hard by the global recession in 2008, and it has struggled economically since; it was difficult for either company to financially recover from the scandal and Italy could not reabsorb its labor force working in the Iraq market. A few AcquaTerra employees pooled resources, bought the company, renamed the engineering firm, and pivoted to pursue hydraulic engineering contracts on the African continent and elsewhere in the Global South (Günel 2026). Bionatura folded. Romano, who helmed the firm before its merger with Lombardi's company and whose family name was also the company's, left Italy for work as an employee of a large engineering company in Dubai; others went to Europe. But even before this time, public court records show that Kubra, under pressure from Lombardi, made another sacrifice: he cut AcquaTerra out of the Italian consortium with Green Iraq involving the Italian minister of environment and Bionatura, which was striking given that Siena was the first to recommend Green Iraq for Italian donor funding and the person who gave Kubra his chance

to pursue marshlands conservation. According to the court records, Ferrari wrote an email appealing to Kubra to retain AcquaTerra in the consortium, revealing the internal dynamics and motivations of how contractors, like himself, worked with Green Iraq:

> Over the recent period—which has been economically difficult in and of itself—we have been anticipating costs for the order since last May. That means we have been self-funding the project, significantly delaying salary payments to the associates. The structure of [AcquaTerra] has greatly changed over recent years. We have invested significantly in staff and resources (computers, software, offices) through the Iraq project, in order to deal with the international market but especially in order to remain up to the challenge of the activities to be undertaken in Iraq. . . . For us Iraq was and remains strategic, both in terms of the current situation and in terms of future development, with or without the Ministry of Environment. . . . For our organization, Iraq will continue to be a strategic market for the future, not only in terms of environmental engineering and water resources, but more generally in terms of gas and oil engineering (including with Eni) and civil infrastructure (roads, rail, airports, buildings). . . . Above all, we have shared a common goal, which is not [Lombardi's] goal of getting large quantities of quick money but of investing in the reconstruction of a country, and creating an important business area for our firm.

Ferrari closed the email with a plea to Kubra: "As I had the opportunity of telling you in Rome when we parted ways, we . . . continue to completely trust you and share your dream of making great things in Iraq."

Kubra's dream of conserving the marshes put in motion a set of processes and conditions that embedded foreign donor funds and expert contractors in the architecture of the Iraqi state (i.e., via contractor relationships with ministry representatives), privileging foreign projects over ministry priorities to varying degrees. Whereas Iraq's Ministry of Environment fully embraced Green Iraq's objectives for national environmental initiatives, the minister of water resources was constantly at odds with Kubra and yet also prioritized his relationships with AcquaTerra and Bionatura, as evidenced by the firms winning the contract to develop Iraq's national water plan. As foreign contractors turned to dreamwork to persuade Iraqi ministry representatives to adopt and internalize their goals for statecraft, Iraqi state employees lived the nightmare of targeted attacks, murder, and kidnappings because of their association with foreign-led reconstruction and, thus, the occupation. Kubra's dream compromised their lives in the present.

Less noticed are how these dreams of the early aughts were the genealogy of material change in Iraq that has led to a fractured state where foreign actors embedded in ministries vie for control; where embezzlement is rife; where state infrastructure building is patchy and impartial; where across the southern region, children are dying in large numbers because they breathe toxic air daily from flaring. In 2019, the Tishreen revolution laid out these concerns and called for a state—*nureed watan*—accountable to its citizens that provides the country with

durable infrastructure, employment opportunity, and a national government by and for its people (Ali 2019). The dream of marshlands conservation, as Kubra pursued it, laid the foundations for the bad air Iraqis breathe today. To understand Iraq's warzone ecology, we must begin with the recognition that war exceeds combat and takes shape in a "total climate" of violence (Sharpe 2016) whose logic of extraction pervades how we dream about the world.



Barzakh

Hanaa Malallah worked hard to open the space between life and death. At forty-eight years of age in 2006 to escape the mounting civilian violence resulting from the US military battling Iraqi militias, she left everything behind and moved to London where she started all over again, one canvas at a time.

Barzakh is the intermediary space in Islamic eschatology where the spirits of the dead dwell until they ascend to Jannah. Malallah's recent work meditates on the barzakh to explore these liminal, in-between spaces as sites of potential as they involve not only life and death but also modes of existence in war. Barzakh is a space of critical imagination—as in dreamwork—"that is not anchored in the individual subject but instead refers to an intermediary realm between the spiritual and the material, the Divine and the human, the dreamer and multiple others, presence and absence" (Mittermaier 2011, 3; see also Allan 2014; Pandolfo 1997).

For Malallah, her exploration of barzakh started in the 1990s. Bombs collapsed Baghdad's houses, buildings, and bridges and drove down dust like rain on the date palm, fig, and olive trees in familial orchards. Amid this destruction, Malallah teased apart a space in her work between existence and obliteration; in practice, this became a space between the figurative and the abstract. During this time, Malallah was a student attending her professor Shaker Hassan al-Said's lectures at the Archaeological Museum in Baghdad.[1] Twenty-three days into the bombing by US forces, Malallah opened her first show in Baghdad at a time when "every bridge, all the important buildings were reduced to rubble" and the capital was unrecognizable to her.

FIGURE 16 (previous page). Hanaa Malallah, *Shroud V,* 2012. Folded burned canvas and mixed media on canvas. Courtesy of the artist.

Malallah developed barzakh from mass destruction. She originated her "ruins" technique to rework the materiality of found objects from Iraq in soft sculpture by "burning, distressing, and obliterating" them. By "ruining" her archive of material objects, Malallah harnessed destruction to wrench open "the visceral experience of the reality of war." She created her sculptures by hand with artifacts that referenced her movement through the world. But Malallah insists that her ruins technique is not personal experience; rather, it represents a collective experience of "the inherent violent nature of contemporary life" (Malallah 2018, 11, 14, 18, 199). "From my experience," she asserts, "Mesopotamia is no longer defined as a land between two rivers, but as a landscape reduced, by archaeological pillaging and repeated wars, to ruins and rubble" (Malallah 2023, 116–17). Malallah was on a fellowship in Paris when she realized she could not return to Baghdad.

Shroud is among the first works Malallah made in her Streatham Hill studio after she arrived in London (figure 16). She made the series at the height of her ruins technique, which enabled her to explore dimensions of barzakh by working and reworking found materials. In Islam, a shroud protects the body of the deceased and ushers it into the afterlife by enabling its soul to release from its terrestrial form. A shroud is the threshold of barzakh. Malallah told me that Ludwig Wittgenstein's theory of knowledge—which posits that we cannot know for sure whether something exists or is a dream unless we have concrete, material proof of its existence—and Jean Baudrillard's concept of the lethal energy in ruins have influenced her own treatment of artifacts as living matter that testifies to violence.

Shroud is a series of multidimensional, multilayered soft sculptures that explore time and space in war as it is embodied and experienced. *Shroud* haunts (Dawood 2023): Malallah interjects the remains of objects that came into contact with her own body into the sculptures, thereby putting herself into a relationship with the bodies of the deceased she references. In a July 2024 Zoom interview, Malallah told me that she composed the *Shroud* series from objects within her personal archive: cotton calico shroud from the holy city of Najaf where her parents are buried, sand from Najaf, twigs and branches from trees outside her London studio, seeds from apples and other fruits she ate, artists' canvas, clay *turbah* (small, circular seals that Shi'i Muslims use in daily prayer to symbolize the earth). In this way, Malallah enters found objects into an ecology that transforms each of the individual materials into a collective and transforms their connections to war by burning, twisting, folding, shredding, and burying objects by her own hand. "When I see something decayed in material, it really affects me. Whether it is rust or metal or bodies or anything, when I see this decay, it gives me some emotion that I don't know. What is it?"

Shroud asserts that the dead are not dead; they exist in a liminal space between death and rebirth in the afterlife. Taking seriously a shroud as an active threshold, Malallah sculpts a portal that lives without end even in death. Malallah told me she became so fascinated by numbers and numerology as a student that she focused her doctoral dissertation on numbers as abstract language. Several of Malallah's

works foreground numeric code; *Shroud* features words coded as numbers. It is also part of an enumerated series, which means that Malallah extends the life of her finished composition into infinity by placing it in numerical progression. During our conversation, I thought about Neda Hussain because Malallah's *Shroud* holds open a space where those who died in war remain.

Talking to activists in the fall of 2022 and the spring of 2025, I learned that mobilizing the space in-between referenced by barzakh is also a technique for political organizing. In recent years in Huwayza, young activists have been executed or disappeared by militia, the Iraqi police, or Iranian border command. Residents like Salim al-Ahwari recruited media attention as a political strategy to expose the high levels of toxic pollution from oil multinationals like PetroChina, Eni, and BP. In October 2022, I spoke with al-Ahwari via Zoom about his work running the activist group Ahwari Voice at Huwayza.[2]

Unlike other areas of the marshlands, Huwayza is a closed military zone. This means that anyone without a residency permit needs government permission to enter. Huwayza therefore lives under a de facto press blackout where Iraqi police in concert with militia and the Popular Mobilization Forces (PMF, an Iranian-backed paramilitary group) operate with impunity.[3] Young activists like al-Ahwari use social media as a flare sounding the alarm from inside the marsh to international reporters. "I first saw videos shared on Twitter [now X] of burning skies and clouds of black smoke over people's houses in Iraq's oil fields in 2019," said BBC reporter Owen Pinnell (2022). In 2022, reporters began writing about activists at Huwayza who had been disappeared, suggesting that the strategy worked.

Al-Ahwari told me in 2022 that the summer drought's effects on Huwayza were extreme. When the Iraqi national government did not respond to requests by Ahwari Voice to address the combined effects of drought and oil contamination, al-Ahwari and his members inundated Twitter, Facebook, and Instagram with images, making the drought *the story* coming out of Iraq in summer 2022. In September 2022, BBC aired Pinnell's documentary on the toxic impact of oil flares on southern Iraq, which release benzene at three times higher than the national limit. Within weeks of publication, Iraq's minister of environment defied a confidential government-issued gag order to admit that flaring caused cancer. Oil multinationals and Iraq's government have committed to ending flaring in Iraq by 2028, but since 2012 it has increased 40 percent (Stallard et al. 2022).

Al-Ahwari's tactics reflect the abilities of Iraqi political activists to forge a found space for activism when the prospect seems all but impossible. Ahwari Network, the current name for the organization, works the space in-between, barzakh, when they identified spaces within Huwayza's media blackout that would attract political attention. Al-Ahwari told me: "If the government won't answer us, we'll make them pay attention."

In May 2025, I spoke via Zoom to a leader of the Ahwari Network living in Najaf. He stressed a priority of the network was to get people to understand ahwar as "one homeland," not as different marshes, governorates, cities, or even countries.

The ahwar are a space in-between: they are older than the contemporary political state borders that seek to render the ahwar into discrete bounded forms. Ecologies are not limited by borders.

By calling attention to the surprising and often unseen capaciousness of in-between spaces, barzakh poses a new structure for the critical imagination. This work has its fullest potential not in the obvious, normative, or seen realms of human experience but in the vitality of ephemeral qualities, whether for making war or for living life in.

Barzakh is a strategy for critical imagination that harnesses conceptual tools and forms of a past to make claims to a viable future. The pathway to that future involves full awareness of the destruction of war and concrete material change of political leadership in the present—notably, revolution. A warzone ecology operates through ephemera—image-making, mapping, bird counting, and dreaming—that can easily be missed as war violence because they are so normalized that they evade perception or because they run counter to how we perceive violence and are not qualified as such. To critique that violence, we need to open up the in-between, *barzakh*, for a richer, deeper analysis of warzone ecologies and how they seize not only resources but also the capacities of critical imagination.

At the end of our discussion in July 2024, Malallah told me that of all her works, *Shroud V* was most precious to her and that she would not part with it: "Many people came to the studio. They would like to buy it. As well as those from overseas. I said no, I will not. This. Just leave this. I will not sell it. . . . [With *Shroud*] I reached the space between."

5

Wayfinding

Life in a Warzone Ecology

In mid-December 2025 Alia Farid WhatsApped me from Zubair along the Kuwaiti border with the news that the Samir family and fifteen of their neighbors from the Chibayish area had left the marshes and were now living near the oil fields in temporary housing. The Chibayish marshes were unlivable, Riyad Samir told her. "No water, no fish, no reeds," Farid messaged. In addition to the marshlands, the Tigris, too, was drying up (Lynch 2025). The family's two eldest children, Riyad and his sister Batul, moved in 2023, following the lead of their neighbors who had started migrating to Zubair in 2021 (figure 17). Anticipating the need to move when the marshlands began to collapse, their parents' dreams for the family home shifted from a reed to a cement house, which they built in the village of Chibayish. Life in the marshes was becoming increasingly more difficult as a result of rapid environmental decline, and more families were moving into concrete homes in the village. This past year, the Samir family installed at their village home a more permanent roof cast in concrete. They are making plans to build a second floor. Abu Riyad and his daughter, Sahar, move between their marshlands home, where they sleep to care for their buffalo flock, and their cement home, where the rest of the family stays. Abu Riyad's brother is the custodian for Riyad and Batul at the plantations. He and his wife just welcomed a child. The little girl was born without musculature in her legs, making it impossible for her to walk.[1]

The lands at Zubair where Riyad, Batul, and other former marshlands residents found work on tomato plantations are named for their subterranean oil fields. Workers on the plantations receive housing from the owners and keep 25 percent of the profits to share among themselves while 75 percent go to the owners. It is a labor arrangement that echoes the 20/80 percent split that Kubra set forth for the allocation of bilateral grant funds at Green Iraq. During the Gulf War in



FIGURE 17. Riyad and Batul Samir in front of their living quarters in Zubair, December 18, 2025. Photo by Alia Farid. Courtesy of the artist.

1991, the US Army bombed these lands and contaminated them with cluster munitions that had to be removed in 2022 before farmers could cultivate them again.[2] Historically, Zubair and neighboring Safwan districts have been the epicenter of Basra's robust tomato farming industry, which serves both a domestic and an export market (Wazir 2003). Here the low-salinity, highly fertile soil produces

tomatoes that are plump, sweet, and bright red (+964 2024). Vinyl Eni banners fly over these lands, staking the Italy-based multinational's claim to its oil. Flares from Eni facilities illuminate the night sky.

Just like marshlands residents, migrants, too, live in the shadow of these inextricable toxicities of war and oil. Biodiversity conservation contributed to the marshlands' collapse and drove its residents to relocate and find work within the same extractive industries that made their autonomous lives in the marshes untenable. The violence of a warzone ecology operates such that after marshlands ecologies are decimated by extraction, people from the marshes find that their options for labor and survival exist uniquely within those same extractive economies.

At the same time Farid conveyed this sobering news, she also sent videos of Hassan Aleidani laughing while teaching Riyad to drive his car through the streets of Zubair and a photograph of Wardeh, now seven, in a beautiful red silk dress she gifted her. While the Samir family lived the fallout of Iraq's warzone ecology, they *lived*; they forged lives of meaning and purpose that included placeholding (the second floor of their Chibayish home) for future generations.

A warzone ecology does not end. It evolves, it mutates, it transforms, as I analyze in this book through more than twenty years of engagement with biodiversity conservation of Iraq's marshes. When I visited the Hammar marshlands in 2021 and 2022 and felt the heat of those oil flares on my face and shoulders, I did not find a thriving marshlands ecosystem, but an environment in decline. Flaring has dramatically raised the average temperatures in Iraq, which are rising at twice the rate of the rest of the planet.[3] Increased temperatures spiked the salinity of the marshlands, what residents call *mlah*, referring both to their saltiness and to the state and international corruption that created the conditions of rapid environmental decline. Extensive drought across the marshlands meant residents were either moving house or leaving altogether, like the thousands of internally displaced climate refugees (International Organization for Migration Iraq 2022).

The present moment of environmental decline in Iraq's marshlands is one among many that marshlands residents faced, particularly in the thirty years after President Saddam Hussein drained the marshlands almost entirely in the 1990s but also over generations as the marshes ebbed and flowed, changed course, and relocated (Pournelle 2003). However, the speed, scale, and scope of environmental degradation in Iraq is unprecedented. The current pace of change is linked to the rise of oil extraction after 2008 when the Iraqi government opened international bidding to redevelop its oil fields. Ecological degradation of Iraq's marshlands, international state and corporate exploitation of Iraq's ample natural resources for their own profit, and the fracturing and denationalization of the Iraqi state are the principal effects of Iraq's marshlands biodiversity conservation.

Marshlands residents I knew at Chibayish experienced Green Iraq's presence tangentially. They engaged the NGO's local staff by participating in a growing tourist market helmed by Muntaha Ammar, Green Iraq's current senior administrator who is from the marshes and runs the NGO's Chibayish city office. Ammar

maintained a network of tourist facilitators in the Central and Hammar marshes at Chibayish. Yet, marshlands residents I spoke with do not see tourism that comes from Green Iraq as central to their lives or livelihoods (Davé 2023). Instead, residents like the Samir family, prior to their move, experienced the warzone ecology created by Green Iraq and its investors not as a positive but as toxic fallout from petroleum extraction that endangers their lives and livelihood inside the marshes (Ogden 2021).

And yet marshlands residents are making their lives within this warzone ecology by drawing on ahwari expertise for navigating and carving out spaces of life and possibility (however small) within that ecology. At the end of this book, I want to consider the capaciousness of a warzone ecology by grappling with the major question: Just how totalizing is the violence of Iraq's marshlands warzone ecology?

HARNESSING AND REDIRECTING POWER IN A WARZONE ECOLOGY

It was Professor Shukri al-Hassan who documented for the BBC in 2022 the treacherous impact of oil flaring, and thus post-Ba'th oil production. His research on environmental contaminants in the air and soil demonstrated that flaring was introducing methane in toxic levels into the atmosphere of residents living within the southern Iraqi oil fields. On November 24, 2025, I spoke with him on WhatsApp about his current work. "There is no update," Professor al-Hassan told me.

A year ago, he recalled, he and his master's students set out in his car to visit Qurna, Rumaila, and Zubair oil fields where they had been conducting regular research. They were turned back at each of the police checkpoints at the entrance of these towns. "Scientific field research on environmental contamination became really difficult, almost impossible. I am surrounded by a lot of threats," Professor al-Hassan relayed. "We had to rely on another way to get samples. We found volunteers who were working in the fields to sneak them out to us." The samples showed a high degree of hydrocarbons in the soil that have been linked to health risks such as infertility, miscarriage, and birth defects, the professor told me.

Given the risks he was facing, I asked whether Professor al-Hassan wanted me to write about his work and the risks associated with it. He didn't want to speak about the specifics of the harassment he experienced, but when it came to his research, he was resolute: "Due to my academic specialization in environmental pollution, I feel it is my duty to generate public awareness of factors impacting the environment."

When Kubra chose to pursue marshlands conservation through alliances with foreign donors and oil multinationals, he calculated that sacrificing some parts of the marshlands would ensure the vitality of others. His gamble did not pay out as planned. As I show in this book, there is no possibility of progressive environmental mitigation through partnership with the oil industry (Hanieh 2024, 310).

Yet, Kubra argued that biodiversity conservation and oil extraction were both possible with slant drilling. Slant drilling is the practice of drilling nonvertical bores to access oil without going directly through the marshes. Kubra worked cooperatively with multinationals on marshlands conservation rather than challenge their extractive models. His work with state donors, hydrological engineers, and oil multinationals made it possible for them to maximize their profit with minimal infrastructure investment in Iraq, thereby harnessing the full potential of an imperial capitalist war ecology that they built through biodiversity conservation.

Italy's fifty-four million euros along with the multimillion-dollar investments of Canada and Japan in marshlands biodiversity conservation are not evident in the marshes today. One marshlands activist and Chibayish resident tried to hold Kubra personally responsible for financial corruption by filing charges against him at the Iraqi High Tribunal that asked him to account for how he spent the donor funds. I heard from a nongovernmental advocacy organization that those charges were later dismissed by an Iraqi government official closely linked to Kubra.

During our WhatsApp call in 2025, Professor al-Hassan asked me to follow up with a friend who was an activist with Ahwari Network in the Huwayza marsh, which I did the next day on Zoom. Mortada al-Janoubi told me: "Oil aggression has been accelerating over the years." As a fisherman and resident of Huwayza, he felt it was his duty to expose it. Al-Janoubi is thirty-three years old. He lived his whole life in Huwayza, which he believes is "the most beautiful marsh of the marshlands."

Huwayza is one of the largest marshes in Iraq. A little more than ten years ago a consortium including French energy company TotalEnergies, PetroChina, and Petronas began developing Halfaya oil field in the Huwayza marsh (TotalEnergies 2012). *The Guardian* reporters documented that Halfaya is "an area three times the size of Paris" and "includes 300 wells, three oil-processing plants, a water-treatment facility, and its own airport" that serves its foreign workers. After PetroChina began operations, six water-pumping stations were built along the Tigris River that extract roughly 60,000 cubic meters of water daily to boost crude extraction by injecting it into wells. The water is roughly equivalent to the daily requirements of a mid-sized city. Halfaya is state-owned PetroChina's largest overseas project (Al-Rubaie et al. 2025). The *Global Times*, a Chinese newspaper published under the auspices of the Chinese Communist Party's flagship paper, announced the project under the headline "PetroChina's Oil Field Project in Iraq Turns Wasteland into Vibrant Town" (Xinhua 2022).

Oil, the Chinese government asserted, was a boon for the development of Huwayza. Their assertion echoes the logics of Ottoman, British, and US imperial strategies for marshlands development. Green Iraq argued that conservation was a new development paradigm for Iraq that would build a global ecotourist market. Conservation was, as it turns out, an economic windfall, but not in the way Kubra and his investors suggested it would be. Instead, their conservation politics created

an environmentalism that does not hold multinational corporations accountable for making Iraq unlivable.

In this sense, a warzone ecology is definitive of marshlands life, which is rapidly deteriorating as extractive industry destroys marshlands life and livelihood. At the same time, marshlands residents and experts like al-Hassan and al-Janoubi draw on the resources a warzone ecology makes available—namely, global media markets and the language of environmentalism to argue for a progressive politics that holds the Iraqi state and oil multinationals accountable for turning Iraq into a toxic wasteland for the purposes of extraction (Pulido 2016). The environmental politics they advocate begins with holding war proponents, corporations, and state actors accountable for Iraq's rapid environmental decline in order to guarantee ecological integrity of the marshlands and Iraq.

Al-Janoubi emphasized the complicity of the Iraqi state in driving environmental decline: "The Ministry of Environment is acting like nothing is going on. Like there is nothing happening." We didn't know that oil expansion was happening in Huwayza until the oil ministry announced the license of oil company GeoJade in 2023, he told me (Al-Maleki 2023). Al-Janoubi told me: "That's when we knew that Huwayza marsh had been turned into an oil field." In early November 2025, Iraq held parliamentary elections that would decide who would become the next prime minister. Al-Janoubi expected that when the new government is formed, they "will implement their oil agenda," which was supported by the prime minister's office previously. The Iraqi Prime Minister Mohammed Shia' al-Sudani says he will eliminate gas flaring by 2028. In 2021, Iraq's Minister of Oil, Ihsan 'Abd al-Jabbar Isma'il, announced his ministry's Gas Growth Integrated Project with CEO of TotalEnergies, Patrick Pouyanné, which launched in 2023 and includes several new projects to reduce gas flaring in southern Iraq, including the construction of additional recapture facilities (Bernstein et al. 2025, 3–4). However, the recapture facilities appear to be yet another strategy by which multinationals can advance their investments in Iraqi oil extraction, which shows no signs of slowing. In 2022, the five leading oil supermajors—ExxonMobil, Shell, Chevron, BP, and TotalEnergies—announced a total of $200 billion in profits (Hanieh 2024, 275).

In 2025 in Iraq, there is no unified environmental movement capable of compelling the oil industry to stop polluting Iraq's atmosphere, which is the primary contributor to Iraq's toxic ecologies. Oil revenues comprise over 90 percent of the country's budget, and consequently the national government in Iraq has classified the securitization of the oil sector as a matter of national security, which means that public critics of oil extraction or pollution from it can be criminalized by the government (Alkhudary 2025). In the early 2020s, various militia fighters in Iraq murdered, kidnapped, and intimidated climate activists, whom they accused of acting as agents of foreign interests. In addition, corporations in the private sector co-opted climate activists' environmental campaigns, making it harder for them to achieve their desired objectives (Yassin 2023).

Despite this violence, Ahwari Network took direct and immediate action at Halfaya: "We protested against the oil exploration; we blocked roads and we were able to postpone it," he recalled. When I asked what he wanted readers of this book to know, he said: "Today I want people to focus on the environment. This land is historical. It is a place for migratory birds. It is an environment critical to the world. It is a UNESCO World Heritage site." Al-Janoubi used conservation logic to appeal to a global public to demand accountability in Iraq for upholding the 2016 UNESCO inscription of the marshlands to the World Heritage Convention.

Notable in Professor al-Hassan's and activist al-Janoubi's speech is not only their insights on the ways in which marshlands conservation has quickly yielded oil extraction, but also the ways in which they skillfully use media and scholarly interest in the marshlands and the language of environmentalism to reinforce their grassroots campaign for social justice. The effects of Green Iraq's oil-friendly conservation are evident in the ability of oil multinationals to execute contracts with Iraq's Ministry of Oil for oil fields in the marshlands that do not have adequate health provisions for pollution. And yet, Iraqi experts like al-Hassan and al-Janoubi also demonstrate their abilities to harness and redirect aspects of this conservation agenda, such as the UNESCO World Heritage designation or the migratory birds, by recruiting journalists and scholars to cover their story. Similarly, they are adept at rallying media consumers who may have supported marshlands conservation in the early aughts to support their call for a more progressive national environmental policy based on the autonomous right to health and self-determination.

A warzone ecology is therefore definitive but not totalizing. In saying that, I do not wish to minimize the effects of multinational oil extraction, which ravaged the marshlands and made them unlivable. Rather, I suggest that even from within that devastation, residents living in the marshlands and in southern Iraq use the resources they have to protest, interrogate, and redeploy conservation framings. Activists and experts like al-Hassan and al-Janoubi use their expertise to document and publish accounts of oil toxicity and the continuation of war violence. Similarly, residents of the marshlands like Riyad Samir carve out autonomous space to grow into adulthood; engage transnational bodies, like Shiʿi communities of religious practice that enrich their lives; and find work in adjacent economies, such as by laboring in tomato plantations. Yet the choices people must make to exist in a field of narrowing options often foreclose prosperity and redirect toward new forms of extractive violence. This is what it means to live in a warzone ecology.

WAYFINDING IS A COUNTERPOLITICS TO HOPE

Marshlands residents navigate a warzone ecology by wayfinding. Wayfinding is marshlands expertise for life by staying attuned to one's surroundings. Wayfinding did not originate as a strategy for surviving the warzone ecology I analyze in

this book; rather, it is cultivated marshlands expertise for living in a precarious, seasonally fluctuating environment—and now also a resource for political action. Wayfinding refers to how people navigate, particularly in seafaring or waterborne environments, by orienting themselves in physical space. To hold course in an environment is to be attentive at all times to what is going on around you and to respond in ways that answer to your purpose (Ingold 2000, 223). Wayfinding in Iraq's marshes also refers to the expertise of impromptu, embodied, and situated action for navigating ecological collapse.

Wayfinding is conceptual in the sense that it orients one to the world through radical attunement and it is also methodological; it is the technology of survival. The skills of wayfinding are sight, definition, pivoting, and learning to make life against all odds, in the spaces in-between. Artists I engage throughout the book highlight these technologies of wayfinding. Seeing, as Riyad Samir and Alia Farid articulate, is not only perceiving with one's eyes, it is a metaphysical, embodied, and full sensory experience of taking in the world around us that is shaped by the social conditions that predominate our lives and govern what we are able to see. Self-definition manifests in the lines with our movements through and across our social worlds. This is exemplified by drawing such as the work of Ali Eyal or the Samir family's livelihood with buffalo. In this sense, creating the line renders visible the active, relational existence of life and violence within a shared social world. Pivoting is a move within violence to reclaim something of the self, Muayad Muhsin and Zaha al-Chibayish articulate. Barzakh is, as Hanaa Malallah argues and Salim al-Ahwari demonstrates, the intervention of the critical imagination to hold open possibilities when all possibility for life appears to be foreclosed. Together, these technologies of wayfinding comprise the expertise of making life in the face of a warzone ecology, however provisional that might be.

Wayfinding demands *awareness*. In this way, wayfinding is a counterpolitics to hope. Political ecologists suggest that hope is a possible method for living through progressive environmental decline, indicating that ecosystems are geologically resilient and adaptive over the longue durée (Kirksey 2015). Yet, aspirations—from the audacity of wartime biodiversity conservation to technologies of dreaming—are not outside of but intrinsic to capitalism and, therefore, cannot serve as fertile ground for a progressive environmental politics (Miyazaki 2006; Tsing 2015). A warzone ecology harnesses virtual mediums to reframe, question, appropriate, and put into use particular compositions of the real, such as Eden or remote sensing maps or indicator birds, to normalize violence and in so doing justify foreign, hegemonic control over Iraq. Iraq War proponents strategically invoked "hope" to advance institutional forms of planetary repair, such as international development programs, formalized biodiversity conservation initiatives, and international security including war. Hope requires trust and faith. In the context of the Iraq War, hope was a strategy for optimism used by war proponents to articulate a future consistent with late liberal capitalism and its expansive potentials.

Wayfinding is critical consciousness. In a sense, wayfinding is hopeful, as it navigates toward a future. And yet in our lifespan, that future is one of environmental collapse. Hope is a conservative framework for thinking about climate change because it is etymologically ill-equipped for political confrontation and tends to inadequately address the scope of political agents and factors responsible for environmental decline. Biodiversity conservation in Iraq's marshes, for example, modeled hope for wetlands climate change remediation through ecological preservation, or the idea of holding in place species life. In so doing, conservation reified ideals of nature as separate from culture, ideals instrumental to dehumanization and extraction. Wayfinding, by contrast, centers analysis of climate change remediation on the expertise of residents navigating risk to move through it and live within it. When Iraqi revolutionaries rose up to challenge the government in 2019, they argued for the need for state accountability, insisting that any progressive environmental politics begin with an epistemology of awareness emergent in marshlands daily life, economy, and politics.

Wayfinding is expert technology, which means it can be used by anyone regardless of their political position. Kubra's ability to find openings for marshlands conservation by charming political leaders of states and selling Eden to donors is also a form of strategic redirection. However, wayfinding becomes a resource for challenging violence when people use it to expose, reframe, redirect, or confront violence.

When actors like marshlands residents operate at this level of awareness, it is political: it creates the conditions for transformative planetary repair that are separate from the domination and exploitation of capitalist warfare (Thomas 2019, 214). Iraqi experts wayfind through political violence, such as when Mohammad Sharif hid the USB drive of his bird images in a bird's nest or when Amer Yousef, director general of Iraq's Ministry of Water Resources, used his connections to AcquaTerra to relocate himself and his family to safety. Wayfinding has also been instrumental as an ethnographic method that attempts to hold open a space of ethical research in war. On-the-spot adjustments are typical of ethnographic research in general, but in the context of fieldwork in violence where the stakes of ethical choices are magnified, wayfinding is purposeful redirection.

CENTERING LIFE IN THE WARZONE

Because wayfinding is spontaneous and impromptu, how can we—as ethnographers—know and hold space for these ephemeral histories and memories that are not written down, the archives of which the violence of war seeks to destroy or remove (Navaro 2020)?[4] We must take seriously their material trace—the material and metaphysical lines of bodies as they move through the marshes. Marshlands activists at Ahwari Network registered their politics by using social media to signal their progressive politics in the face of a media blackout, for

example. But there are other traces in the marshes, too, that testify to the limits of imperial development work.

In 2022 the European Union (EU) and the Food and Agriculture Organization of the United Nations (FAO) had money to "empower rural dairy women in ahwar" and chose Um Hayder to be their pilot project. Um Hayder is a businesswoman famous for her ahwari buffalo-milk cheese, yogurt, gamer, and leben (a yogurt drink). When the EU and FAO launched their campaign, they needed to find a local representative who could become the face of their "women's empowerment" initiative. UN and EU employees working on the campaign found Um Hayder because she already had a media presence and a successful business that fit their objectives. Rather than "empowering" Um Hayder, FAO and the EU leveraged Um Hayder as evidence of their own effectiveness; in other words, by citing her as an example, FAO and EU employees were able to demonstrate and then claim the success of their development projects. In this way, international development operates as a smokescreen for late liberal capitalist initiatives that have little purchase inside ahwar. And yet, while international development does not occur according to the aims articulated by its proponents, these projects, like marshlands biodiversity conservation, make powerful impact in the marshlands where they played a role in the rise of international institutions and corporate powerbrokers vying for and seizing resource control.

Um Hayder's marketing savvy made her business a beacon for international development agencies. Her eponymous shop on Highway 6 just south of Qurna is in constant motion with people who peel off to procure her artisanal products. Over the years, she has cultivated a select group of ahwari buffalo-milk purveyors, but she always first tests the milk she buys using a syringe to check water content. On the day I visited in November 2021, she pulled Alia Farid and me behind her counter display of fresh cheeses, held us close at either side, made googly eyes, and insisted we pose for photos, which we obliged while laughing uncontrollably.

Um Hayder did not need support from the EU and FAO to keep her business going, but the money did not hurt either. FAO and the EU needed her potentially even more to spend their earmarked grant; generate publicity for their work in Iraq, and the marshes in particular; and, on the part of FAO, burnish a reputation of being unethical and corrupt earned as the facilitator of the UN's Oil-for-Food program established by the United Nations in 1995—during the UN Security Council-imposed sanctions—to allow Iraq to sell oil on the world market in exchange for food, medicine, and other humanitarian needs (Gordon 2010, 173–89).

Um Hayder's engagement with development work is one of her many forms of wayfinding that transforms extractive projects such as the one by FAO and the EU to serve her own interests. Um Hayder invites such investments as part of her business strategy to raise her profile and grow her business. In May 2021, Egyptian Nilesat channel Al-Janoubia did a special-interest piece on her shop. Five years prior, in July 2017, the Basra governorate featured a video short about her on its

YouTube channel. Google Maps geo-references her shop. Um Hayder leverages such corporate, media, and humanitarian enterprise working in the marshes to reinforce, bolster, and center her own investment in ahwari economic and political infrastructure.

Um Hayder's story returns us to the question of how one holds space for the ephemeral memories and histories that are not written down, and which war seeks to destroy or remove. Um Hayder does not need "empowerment" by FAO; she has already created a thriving business by partnering with other marshlands buffalo breeders linked through a regional and national economy of their making. These are the material traces that form lines and trajectories of movement of everyday life in the marshlands. These material traces constitute value creation, markets, transnational community, and migration in the marshlands, one that exists in complex relation to the warzone ecology. I have been arguing throughout this book that we need to pay critical and focused attention to the social relations of warcraft, those relations such as the imposition of new and violent labor hierarchies through species value or the ways in which contractors leverage conservation for extraction. To analyze war, we must stay attuned to and make visible these untold histories that form both the warzone ecology and the strategies people mobilize not only to live through them, but also to turn away from them toward connections and collaborations that they value and which sustain their lives.

Taking up wayfinding as an analytic places ahwari expertise at the discursive center of the marshlands (Bishara 2015; Lethabo King 2019, 19). In the same way that a warzone ecology is configured by social relations, so, too, is wayfinding. Through a series of "technical adjustments," ahwari market brokers, buffalo farmers, businesspeople, and activists formulate "technological fixes" to navigate risk and demand accountability (Günel 2019). Wayfinding defines the marshes in much the same way that it has defined the discipline of anthropology: early-twentieth-century scholars and imperial travelers analyzed wayfinding as a mental exercise, in ways that dehumanized. By examining wayfinding as a form of expertise, I forge a different path to argue that economic and political relationships are not outside of or additional to marshlands navigation expertise but central to it (Carse 14 May 2020; Dua 2019; Starosielski 2015; Dawdy 2008). As people, buffalo, waters, policies, monies, carbon, and waste move through the marshes, they wayfind; they forge pathways that are processes of mutual becoming (Chao 2022, 37).

Extending out the vision of Ahwari Network, a truly progressive environmental politics in Iraq requires holding the US government, oil multinationals, and other war profiteers accountable. By 2004, Iraq paid $18.8 billion in reparations related to Saddam Hussein's 1990 invasion and occupation of Kuwait, millions of which went to the world's richest countries and corporations (Klein 2004). A progressive environmental politics in Iraq must therefore begin with the payment of reparations for the two trillion dollars of military investments (Brown University Costs of War Project 2021) and the billions of dollars of oil profits that caused the

wholesale devastation of Iraq. Reparations is a form of planetary repair that begins with holding war profiteers and proponents accountable for the full scope of violence they wrought on Iraq. Beyond reparations, a progressive environmental politics demands—as Tishreen revolutionaries did—an autonomous and sovereign Iraq free from foreign interests and capitalist profiteering.

Our biosphere is heating up and there is a critical need to address the extractive practices foundational to late liberal capitalism that are driving climatic change. The conceptual models we use for planetary repair matter. The current prevailing logic for planetary repair is one rooted in militarism, imperial development practices, and neocolonial environmentalism. What we need instead are models that build from wayfinding to foreground critical awareness, the entanglements of life forms and life systems, including and especially warzone ecologies, and that put this knowledge to work in favor of a progressive politics of life that scales up from actors' ethical responsibility.

NOTES

INTRODUCTION: REPAIR: MOBILIZING WETLANDS IN A WARZONE ECOLOGY

1. My use of the conjoined word "warzone" is intentional, signaling the inseparability of time, space, and geography from war.

2. As is customary in cultural anthropology, I use pseudonyms for all persons and organizations throughout this monologue with the exception of public political figures, such as presidents and prime ministers. Artists gave me permission to name them and I do so to identify their work. In the time that I began publishing on Iraqi marshlands conservation, an Iraqi NGO originated by the name of Green Iraq. I kept the pseudonym to maintain consistency across publications, but my use of it does not refer to any extant Iraqi NGO by the same name.

3. This is a riff on Jason W. Moore's analysis of what he calls a "world-ecological regime" where he argues "capitalism does not *have* an ecological regime; it *is* an ecological regime" (2015, 158).

4. Iraq Body Count—the official census for Iraqi civilian deaths due to the US-led Iraq War—estimates between 186,968 and 210,380 Iraqi civilian deaths as a result of the war (Iraq Body Count 2025). However, that number is low by their own admission because they relied on counts of reported deaths. A 2013 study by a university consortium focusing on indirect deaths puts the estimate of Iraq War casualties at roughly half a million Iraqi civilians (Hagopian et al. 2013).

5. On November 8, 2002, the UN Security Council sanctioned the war by unanimously passing Resolution 1441, which called on President Saddam Hussein to disarm. Ten days later, Hans Blix arrived in Iraq to lead the United Nations Monitoring, Verification and Inspection Commission. His team of 250 scientists made 700 inspections and found no weapons of mass destruction (The Guardian 2003a, 2003b; United Nations Security Council 2003).

6. Bateson's ecology is cybernetics, whereas chaoplexic warfare turns away from cybernetics' emphasis on control and negative feedback toward positive feedback loops, self-organization, nonlinear dynamics, and emergence (Bousquet 2010, 114).

7. In an attempt to redefine counterinsurgency strategy, Arquilla and Ronfeldt (2000, 2001) posited the "swarm"—based on bees, ants, and birds to rapidly adapt and disarm a threat—as an ideal conceptual and tactical approach to war (Arquilla and Ronfeldt 2000, 2001; Kosek 2010). The US military saw ecological forms and techniques, which they defined as nature in a pure sense, as offering new strategies for "kinetic warfare" (overwhelming force) and counterinsurgency operations. This turn toward ecology was part of the US military's "cultural turn" that centralized cultural understanding and empathy—"winning hearts and minds"—in military strategy.

8. "Cybernetics" etymologically derives from the Ancient Greek *kubernetikes*, "good at steering," which appears in Plato's *Republic* (Wiener 1948) and extends the metaphor of a steersman to the governance of people. It draws on the example of the helmsman steering a ship to adjust for arising environmental conditions to consider the impact of and one's responsiveness to unpredictability.

9. Cyberneticians defined Cold War American modernism including architecture (Eames, Nelson, Saarinen); city planning (Olmstead); finance technologies like derivative pricing equations (Von Neumann, Morgenstern, and Simon); and social theory (Deleuze and Guattari) (Halpern 2014, 102–29, 176–77, 194).

10. Human terrain was one of the most expensive social science programs in history, costing $725 million over eight years (Gonzalez 2009). In her latest book, McFate (2018) urged the US Armed Forces to reconsider Bateson's work as a social theory of war.

11. In February 2004, Major General Peter Chiarelli, commander of the US Army's First Cavalry Division, and his top commanders studied municipal design in Austin, Texas—"everything from electricity to sewers," he told me in an interview on March 10, 2023—in anticipation of their deployment one month later to Baghdad where they and 20,000 troops would take over US Army operations (see also Hockstader 2004).

12. There is considerable variation between the marshes. Huwayza, which borders Iran, is in Maysan governorate. Unlike the other marshes, it retains its water throughout the year and is characterized by large, deep ponds. Today it is a closed military zone that requires special governmental permission to enter. The Central marshes are in Dhi Qar governorate and are characterized by high reed densities interspersed with water ponds of varying size and depth. East Hammar marshes are in Basra governorate and are highly affected by the tidal movements of the Arab Gulf through the Shatt al-Arab and higher salinity levels. West Hammar marshes are also in Dhi Qar governorate, southwest of Nasiriyya, and characterized by a gradual change in water depth toward the middle and south of the marshes, brackish water, and species abundance. West Hammar is the last stopover for millions of migratory birds before entering the Arabian desert (UNESCO 2014, 10–12).

13. In 1880, for example, members of the Al Bu Muhammad tribe pirated a British Lynch Brothers mail steamer beached by marshlands shoals in an effort to challenge Ottoman imperial land reform and encroaching British imperial interests via private sector investments (Clement 1880; Parry 2013).

14. The Ottomans sought to win authority in the tribal south by co-opting influential shaykhs like Shaykh Nasir al-Sa'dun of the Muntafiq and namesake of the city Nasiriyya (Anscombe 1997, 67), who became the first *mutasarrif* in Suq al-Shuyukh, and then the *vali* (governor) of Basra.

15. The "Iraq War" was the official US military term for the 2003 invasion of Iraq. The military designated the 1991 US war in Iraq "the Gulf War." For this reason, I use these terms to refer to these periods of US war in Iraq. Several prominent revolutions across centuries that challenged ruling hegemony originated in the wetlands: the Zanj slave rebellion against the Abbasid Caliphate prevailed for fourteen years between 869 and 883 CE; the 1881 Muntafiq Battle of the Ra'is that shattered the Ottoman Emirate (Warriner 1957, 143; Jwaideh 1984, 345–6); the 1920 marshlands uprising against the British challenged statecraft; communists fleeing persecution in the 1960s found refuge in and organized campaigns from the marshes; and in the twenty-first century, numerous revolutionary protests originated there, culminating in the 2019 Tishreen movement protesting foreign influence and the absence of a state in contemporary Iraq as a result of the US invasion and occupation. Marshlands geography is a key ingredient to such revolutionary action. Reed stands and labyrinthine canals make the landscape difficult for external actors, and thus ruling powers, to safely navigate, swamping their political ambitions.

16. Following the 1963 Ba'thist coup, members of the central command branch of the Communist Party, including the revolutionary and revered poet Muzaffar al-Nawwab, found refuge in the marshes and used them as a staging ground for reorganization. Several Iraqi exiles, including doctors and members of the intelligentsia I interviewed in London in 2005, also found refuge in the marshes by doing medical rotations or securing direct shelter there until they could find safe passage out of the country.

17. In 1992 the Iraqi National Assembly approved the legal framework to drain the country's marshes (Khoury 2013, 142).

18. My thanks to Sinan Antoon, Yasmin Hanoosh, Nada Shabout, and Zainab Saleh for sharing their memories of marshland draining from inside Iraq.

19. ISCI changed its name from the Supreme Council for the Islamic Revolution in Iraq (SCIRI) in 2007. In this manuscript, I use the name that is appropriate to the time period with notation of the name change.

20. The UK's formal involvement in Iraqi statecraft began on November 6, 1914, when the Indian Expeditionary Force landed on Fao peninsula in Ottoman territory at the head of the Arab Gulf, continued through the mandate years of 1920–1932, and formally ended with the July 14, 1958, revolution led by 'Abd al-Karim Qasim that overthrew the Hashemites and ended imperial rule (Dodge 2006).

21. Following World War I amid British imperial occupation, Iraqis worked to construct Western-sponsored nation-states by erasing the Ottoman past, for which the Sumerian narrative for the marshes may have been helpful (Minawi 2023).

22. Thoreau's exact words were "it comes pretty near to making a world; redeeming a swamp does, at any rate" (Thoreau 1894, 254).

23. This included Kanan Makiya and other members of the Iraq Foundation. The US Department of State and later the US Department of Defense recruited these Iraqi exiles and then empowered them with cash and political support after President George W. Bush's declaration that the Iraq War was over.

1. FRAME: THE VIEW FROM EDEN

1. George Packer, interview by author, April 26, 2006, New York.

2. In his keynote address, General Peter W. Chiarelli, who led the First Calvary Division to Iraq in 2004 and who became the commander of the multinational forces in Iraq in 2006,

stressed the importance of a good relationship with the press: "We were getting hammered by *Al-Jazeera* at the time."

3. For Rend Rahim's testimony, see Subcommittee on National Security 2004. To anonymize Kubra's identity according to anthropological convention, I do not include a citation to his testimony.

4. Iraq's parliament banned these games in April 2019 citing their detrimental impact on youth (Aboulenein 2019).

5. The Garden of Eden is present in all the Abrahamic religions, though in Islam it is not a terrestrial paradise but a level of Jannah. However, when Kubra and mainstream media referenced Iraq's marshes as Eden, they did so exclusively as a biblical reference.

6. I refer to a specific article published by an oil consortium in May/June 2004, but I cannot name it due to anonymity.

7. All the quotes in this section are from my interview with Zaid Kubra at Harvard University, October 30, 2004, with the exception of Kubra's discussion of his first return visit to the marshes in 2003, which I quote from an interview with a news outlet that I will not cite here to anonymize his identity.

8. Iraq Body Count (2025) reported 16,583 Iraqi civilian casualties in 2005, 29,526 in 2006, and 26,112 in 2007, making the years 2005–2007 the bloodiest of the war.

9. According to Nexis Uni, as of December 4, 2023, Kubra has given more than 350 interviews with the press on Iraq's environment and 235 of these focus on Iraq's marshes. His broader comments on the Iraqi environment have also been published by *Al Jazeera*, the *New Yorker*, and *Vanity Fair*.

10. Sir Charles Leonard Woolley (1880–1960) was a British archaeologist known for his excavations of Ur in Mesopotamia beginning in 1922 and was knighted in 1935 for his contributions to archaeology ([1928] 1965).

11. Qurna is the confluence point of the Tigris and Euphrates Rivers to form the Shatt al-Arab waterway and is often considered the site of the original Garden of Eden.

A THEORY OF SIGHT

1. Arba'in is an annual pilgrimage Shi'i Muslims make to Imam Husayn's shrine in Karbala, with stops along the way such as to the holy city of Najaf; that year, roughly 21 million Shi'i pilgrims from around the world participated (Al Jazeera 2022). Arba'in takes place forty days after Ashura, the day of mourning that commemorates Imam Husayn's martyrdom during the seventh-century Battle of Karbala and stands for moral righteousness against corruption and protest in the face of oppression. The Battle of Karbala solidified the initial division between Shi'i and Sunni Islam, which began over the issue of leadership of the Muslim community following the death of Prophet Muhammad in 632 CE. In 680 CE, Imam Husayn was the Prophet's grandson and the third Shi'i Imam. When Caliph Mu'awiya died, his son Yazid inherited his position, and thus began dynastic inheritance of the caliphate. But Yazid was reputed to be corrupt and a group of residents in Kufa called on Imam Husayn to lead them in revolt. Husayn agreed, despite foreknowledge of his own imminent death, and set out to confront Yazid. He and his party were intercepted and besieged at Karbala, where they were prevented from reaching the Euphrates. Husayn and all the men in his party were killed in battle. Women and children were taken captive by the

Umayyids and marched to the caliph in Damascus, where they were led in captivity by Husayn's sister, Sayyida Zaynab (Deeb 2009, 246).

2. Here I use the names of the family and the children centered in Farid's work to match the names in the film. I have their permission to do so.

3. Alia Farid, interview by author, June 29, 2023.

2. GROUND TRUTH: THE VIOLENT GEOGRAPHY OF KNOWING

1. An additional $947,234 from the government of Italy and $1.9 million from the government of Japan funded additional related work on the project until 2009.

2. The UNDG Iraq Trust Fund was one of two funds, the other being the World Bank Iraq Trust Fund, created out of the UN-organized October 2003 Madrid International Donors Conference that established the International Reconstruction Fund Facility for Iraq (IRFFI), to collect foreign donor funds for Iraq's reconstruction and administer them through these two trust funds. The World Bank would concentrate on technical assistance, infrastructure support, and feasibility studies, and the UNDG, with Iraq operations based in Amman, Jordan, would concentrate on quick impact projects and activities related to the country's political and economic transition (United Nations 2003). In 2003, Japan was the lead donor of the twenty-five countries that contributed funds to the IRFFI; it pledged $5 billion in financial assistance, with $1.5 billion of grant aid and up to $3.5 billion in loans, in addition to the cancellation of 80 percent of Iraq's debt (Embassy of Japan in Iraq 2010; ReliefWeb 2004).

3. Projects funded through the Iraq Reconstruction Fund Facility were plagued by a host of problems, including corruption due to lack of accountability and breakdown due to lack of national buy-in to infrastructure projects formulated by foreign experts. Among the challenges the Board of Supreme Audit in Iraq noted were "communication difficulties" that the board attributed to the "remote" management of UNDP operations in Iraq from their Amman headquarters. The board proscribed the official "lesson learned" as "operate locally rather than remotely" (United Nations Development Programme 2009, 8). But the board's findings were unrealistic, almost laughable, since remoteness was the standard practice of the entire UN war apparatus, which relied on adaptations in aerial technologies like those in the Geneva lab.

4. Japan donated $540 million to Iraq between 2014 and 2020 (World Food Programme 2020) and has continued to donate to a wide array of infrastructure projects in Iraq, including more than $1.37 billion in 2023 for an upgrade of Basra oil refinery (Japan International Cooperation Agency 2023).

5. Iraq Body Count maintained the numbers of Iraqi civilian casualties when the US government would not, and it is commonly recognized as an authority on the topic.

6. Beirut Urban Lab (2024) and Forensic Architecture (2024) are two examples of remote sensing projects that use the science to the benefit of people living in the territory of geographic interest.

I LEARNED TO DRAW BY TRACING THE SUN AND . . .

1. I titled this interleaf in homage to Ali Eyal, who titles all his works to end with "And. . . ."

2. Recall from the previous chapter, in the rough ground "life is not only open to the pain, suffering, joy, and ennui of others, but also to how in the entanglements and relations of lives with other lives in the everyday, *lines* of care and concern emerge, are fostered, and also frayed" (al-Mohammad and Peluso 2012, 44, emphasis added).

3. Ali Eyal wrote this poem in 2021. I accessed it on his website on March 26, 2024, but the page is no longer active and the poem is no longer available online. I publish it with permission from the artist.

4. Ali Eyal wrote this untitled poem in 2023 for his artwork *A Depiction of Things at the Back of My Head. And . . .* I publish it with permission from the artist.

5. During that time, al-Nawwab worked with the central command of the Communist Party that also fled to the marshes to regroup after the 1963 Central Intelligence Agency-supported Ba'thist coup that executed Prime Minister 'Abd al-Karim Qasim, several leaders of the Iraqi Communist Party, and hundreds of resistance fighters, and also imprisoned 7,000 Communist Party members (al-Azzawi and al-Bahloly 2016).

6. In July 2016, Basra's temperature reached 129 degrees Fahrenheit, making it likely the hottest temperature recorded anywhere in the world (Samenow 2016).

7. In Turkey, the Southeastern Anatolia Project (Güneydoğu Anadolu Projesi [GAP]) is one of the largest river basin development projects in the world (Human Rights Watch 2019, 94). Dams in the GAP infrastructure have a storage capacity five times greater than the annual flow of the Euphrates and twice that of the Tigris (United Nations Environmental Programme 2001, ix).

3. BIRD: MAKING AND DEPLOYING ECO-VALUE IN THE BATTLEGROUND

1. In 2007, SCIRI changed its name to the Islamic Supreme Council of Iraq (ISCI), but I use the prior name here for historical accuracy.

2. Zaid Kubra, interview by author, October 30, 2004, Harvard University. Slant drilling is drilling for oil at an angle between vertical and horizontal as opposed to the typical vertical drilling method.

3. The oil industry has historically operated by hiding the architecture of agreements, contracts, and policies that structure its vast power to profit from extraction (Hanieh 2024, 33).

4. I thank the anonymous reviewer who encouraged this line of argumentation.

5. The Università di Roma has been excavating Tal Abu Tbeirah, seven kilometers south of Nasiriyya, since 2011, for which they have received funding from the Italian Ministry of University and Research and, more recently, a three million euro grant from the Italian Ministry of Foreign Affairs to develop the tourist economy of the site. Sapienza University's funding from the Italian Ministry of University and Research to excavate Tal Zurghul has ranged between 7,000 and 15,000 euros annually since 2014. Together the Università di Roma and Sapienza University excavated Eridu in preparation for the UNESCO World Heritage Convention nomination file, of which Eridu was a named site.

6. Around this time, more than four million Iraqis—roughly one in seven of Iraq's population—were outside the country (Human Rights Watch 2003b).

7. UNEP's Marshlands Watch System (MWS) remote sensing project was undertaken by the Division of Early Warning and Assessment.

8. I omit this citation intentionally to protect the identities of Green Iraq scientists.

4. DREAM: ASPIRING TO BUILD IRAQ'S FIRST NATIONAL PARK

1. On October 25, 2018, ʻAdil ʻAbd al-Mahdi became the prime minister of Iraq. In 2019, a popular revolution swept Iraq and removed him from office as a result of intractable corruption that plagued the state; he tendered his resignation on November 29, 2019.

2. Since 2005, ministerial posts in Iraq have been divided according to an apportionment system known as *muhasasa ta'ifiya*, whereby party bosses divide ministerial posts and the resources that accompany them for their own material benefit (Dodge 2018a). In 2007, SCIRI changed its name to the Islamic Supreme Council of Iraq (ISCI).

3. Ur was an important Sumerian city-state in ancient Mesopotamia founded in 3800 BCE that is located in the present-day Dhi Qar governorate of Iraq, near the southern marshes.

4. At its greatest number in 1988, Iraq's military employed 1.7 million men.

5. These quotes are from Bionatura's April 2007 "Feasibility Study" PowerPoint presentation at the Green Iraq stakeholder meeting in Sulaymaniyah.

6. On the controversies of US agricultural policy in occupied Iraq, see Beer 2016.

BARZAKH

1. Shaker Hassan al-Said and Jawad Salim founded the Baghdad Group for Modern Art (Jamaʻat Baghdad lil-Fann al-Hadith) in 1951, which was highly influential in shaping Iraqi modern art. Artists viewed their work as part of the political struggle to build the Iraqi nation-state (Shabout 2012, 147). The group advocated *istilham al-turath*, drawing inspiration from cultural heritage and developing works that derived from and drew on historical forms of artistic expression from the region that had become the Iraqi state, such as the thirteenth-century Mesopotamian school of painting and Islamic art, to serve as a foundation for modernism rather than European traditions (Dawood 2023).

2. Ahwari Voice is the earlier name for the organization that eventually became Ahwari Network.

3. The PMF, backed by Iran, report to the Iraqi prime minister and formed in 2014 in cooperation with the Iraqi Armed Forces to defeat Daʻish. In recent years, they have been cracking down violently on Iraqi activists, such as during the 2019 Tishreen Revolution (Amnesty International 2024).

5. WAYFINDING: LIFE IN A WARZONE ECOLOGY

1. As previously noted, birth defects are common in the marshlands as in southern Iraq due to the pollution and toxicity of US decaying munitions, contaminated water, and oil flares.

2. Norwegian People's Aid worked on clearing these munitions in 2022 (van Broekhoven 2022).

3. The Middle East on the whole is experiencing temperature rise at twice the rate of the planet (Tsui 2022); however, Iraq has one of the highest levels of carbon intensity due to the oil sector as compared to its regional peers according to the World Bank (November 2022).

4. The loss of history in Iraq has been especially painful as the US military permitted widespread looting of Iraq's museums and libraries and then permitted the removal of one of the few substantial Baʻth records from the country to be then archived at Hoover Institute at Stanford University in 2008 (Gravois 2008) only to be returned under the cover of night in 2020 after it had been digitally preserved by the university (Gordon 2020).

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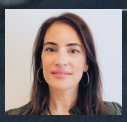
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