
CROP SEED MOVEMENTS AS FEMINIST INFRASTRUCTURE

ABSTRACT — This article analyzes Jumana Manna’s video documentary *Wild Relatives* (2018), and its exposition of the Svalbard Global Seed Vault. In 2008, the vault became an international “doomsday backup” of duplicated agricultural seeds to preserve global agricultural biodiversity in event of human or natural disaster. *Wild Relatives* tells the story of a particular collection of crop seeds as they travel between Syria, Svalbard, and Lebanon as part of the vault’s first seed withdrawal from October to November 2015, set into motion by civil war in Syria.

— These various locations and their human and infrastructural components all become elements of landscapes that can, as Manna describes, fold. The concept is generative and reveals the histories and futures of seemingly far-off locations as intimately entangled with a collection of crop seeds. My feminist reading of the vault asks if moments when human hands and seeds connect could offer a new mode of thinking about infrastructure.

CROP SEED MOVEMENTS AS FEMINIST INFRASTRUCTURE — The infrastructural means by which multinational organizations attempt to control agricultural futures are bound by colonial, settler-colonial, and imperial hierarchical metrics of control. Settler-colonialism especially exhibits a continual desire to expand across space and control time (Simmons 2019), and even seeks to pervade the very air we breathe as well as the memories we hold in common (Simmons 2017). To examine infrastructures of food in such a climate, with such pervasive settler “atmospherics” (Simmons 2017, 2019), requires wielding space and time beyond linear limits of so-called progress which facilitate violence against nature and women (Shiva 2009), among a range of globalized othering that manifests on Native lands, through anti-Black and environmental racisms, and which entangle in global networks of extractivist industries and their toxic afterlives.¹⁾

— Visual artist and filmmaker Jumana Manna wields film, sculpture, and words in ways that help audiences of her work ply apart such pernicious atmospherics. This article addresses one way in which her work investigates geopolitical aspects of landscapes, through what she describes as “folding” (Manna 2017: 48–51). A fold, for Manna, means bringing multiple historical layers of a site into conversation with each other. It also means revealing how the histories and futures of seemingly disparate and far locations intimately entangle.²⁾

1)

See, for example: Arvin / Tuck / Morrill 2013; Byrd 2011; Day 2015; King 2019; Liboiron 2021.

2)

This article makes use of contextual footnotes. I use “intimate” primarily in the sense of Lisa Lowe’s articulation of scales of colonial encounter and exchange, both in archives and along global conduits of empire (Lowe 2015), but also in how Katherine McKittrick posits “think[ing] big about the intimacies among social justice, creativity, writing, and racial politics” (McKittrick 2015: xi).

Manna's *Wild Relatives* – a sixty-four-minute video art documentary in Arabic, English, and Norwegian (Manna 2018), for example, folds together the landscapes of Lebanon's Bekka Valley and the Arctic archipelago of Svalbard. *Wild Relatives* follows crop seeds relocated from Syria to Lebanon via the Svalbard Global Seed Vault due to the escalation of civil war following the Syrian Revolution in 2011. In Lebanon, we observe workers in agricultural crop research fields in the Bekka Valley [fig. 1].

— On Svalbard: scientists, priests, diplomats, a global agriculture seed repository, a coal mine, and older remnants of coal infrastructure. In both Lebanon and on Svalbard, Manna also reveals traces of Green Revolution industrial agricultural reform. Yet in *Wild Relatives*, seeds and their plant bodies remain central.

— Manna folds Bekka and Svalbard with precision, transforming a potentially unwieldy set of enmeshed human, more-than-human, and built systems and infrastructures, as well as their partial and ephemeral traces into filmic form. This article highlights the labor of women and young women who appear on screen in moments of physical proximity to and in contact with crop seeds, including grasses and legumes, faba beans, and cereals. Through Manna's filming of the extraction of labor by the unnamed women, we encounter a wide array of built and human infrastructural systems: the minutia of seeds gathered, sorted, and tested by hand, as well as multiscale agricultural operations, and their ties to fossil fuels. *Wild Relatives* allows us to stay close to the seeds as multiple systems vie for their lives. In *Wild Relatives*, the seeds become central figures, as forms and as live beings whose life cycles offer their own kind of folding of space, time, and landscape. Seeds embody links from times ancient to present, and also "carry an obligation to the future" (Sanne 2008), that is, seeds offer repeated nourishment, but in a manner that reminds us how we treat seeds now will have direct bearing on their (and our) futures. I offer continued living with *Wild Relatives*, through times of war in which seeds and their sustenance become increasingly weaponized, withheld, and denied. Moments of connection between seeds and human hands in *Wild Relatives* become a useful tool for dwelling in the more intimate and affective (Lowe 2015), yet no less politically complex and specific scales of



// Figure 1

Jumana Manna, *Wild Relatives*, 2018
(still), HD video with sound, 63 minutes
55 seconds © Jumana Manna, courtesy of
the artist and Hollybush Gardens, London

otherwise vast pathways of colonial, settler-colonial, imperial, and capitalist infrastructures.³⁾ Though infrastructure itself is not inherently pernicious, it “is the *how* of settler colonialism” (LaDuke / Cowen 2020: 245). Infrastructure, especially in proximity to points of human contact with seeds, also carries the potential for both injustice and resistance (Hurley / Insko 2021: 348). In *Wild Relatives*, seeds become connections revealing feminist infrastructural critique and transformation.

WILD RELATIVES AND SEED MOVEMENTS IN BEKKA _____ The title of Jumana Manna’s film – *Wild Relatives* – evokes the so-named wild relatives of the plant world. As key maintainers of biodiversity, wild relatives are plant species that exist in the world, without agricultural interference. They are related to (meaning in the same gene pool as) their domesticated varieties but have not been cultivated. In agriculture, the crossbreeding between favored domesticated crop varieties and their wild relatives is what helps maintain a healthy gene pool and which also helps crops accommodate, as much as possible, to shifting climates and their ongoing breakdowns. Seeds from wild relatives are included in saved collections, yet their continued existence outside of seed banks, seed archives, and seed libraries is what makes wild relatives so highly prized by farmers and the agricultural organizations that both support and control them. Wild relatives grow unincumbered by modifications to their genetic material; they are organisms made robust by surviving, on their own, the extremes of temperature, humidity, and all manner of environmental change. They take full part in living ecosystems.

_____ Near the five-minute mark of the film *Wild Relatives*, we, the viewers, are poised to enter the interior of a crop research center outside the Village of Terbol in Lebanon’s Bekka Valley, which is operated by the International Center for Agricultural Research in Dry Areas (ICARDA). ICARDA, as part of a global network of agricultural research centers titled the Consultative Group for International Agricultural Research (CGIAR), works to develop and distribute agricultural, water, and environmental solutions (CGIAR 2024; Fadda 1991) to alleviate rural poverty and reduce food insecurity. This includes work on high-yield, climate-resilient crop varieties through plant breeding in open fields. But large-scale agricultural operatives such as ICARDA or the United States Agency for International Development (USAID) both rely on *and* threaten the existence of wild relatives, crop seed diversity, and seed exchange among farmers (Shiva 1993: 23–49; Manna 2017). Biodiversity thrives within a wide and intricate variety of human,

3)

Each of the above modes also has distinct parameters that this article does not wish to collapse.

social, and environmental relationships. Networks of large-scale operations supplant difference with decisions over what and how much of what is grown, by whom, when, and how, vastly reducing the available crop gene pool (Shiva 1993: 20).

— In *Wild Relatives*, inside the ICARDA research center outside of Terbol, in a laboratory space, we witness four young women at work as they sort and prepare for vacuum-sealed storage seeds of the following crops: forages (which include grasses and legumes), faba beans, lathyrus (whose seeds are used for unleavened bread and to feed livestock), as well as the wild relatives of cereals and pulses (which are the edible seeds of legumes) (Sheikh 2018; Manna 2017; Bresciani 2019). As these women sort, weigh, and package the seeds, we also hear a woman's voice on the radio as she reads the day's weather report – the very conditions that plants related to the seeds seen on-screen are experiencing outside the walls of the research center. The scene is like a moving tableau: It is a highly organized setting, and the women use brisk yet calm movements as they pass the seeds between one another. One woman, hands gloved in blue, pinches the edges of a brown paper bag whose top edges are torn, reducing its height, and allowing it to function as more of a bowl. She taps its sides, shakes it, and empties its seed contents into a large green container. We hear each crunch of the bag over the sound of the radio and the rapid and variable percussion of seeds sliding against the paper and plastic containers that they come from and fall into. We hear, too, the sound of the seeds hitting each other. The shifting of containers and seeds continues. A different woman maneuvers seeds between containers with the aid of a small tray, perhaps the lid of a different receptacle. Her hands are not gloved, and her fingers touch the edge of a plastic container, while her other hand transfers the seeds on the tray into a slightly shallower container perched on a nearby scale. The sorting, weighing, and packing continue; these movements happen almost simultaneously in an order of operations not easy to quickly discern.

— The film then shifts orientation. We now witness the weighing and continued pouring of seeds from above, though still in close proximity to the table surface. It is as if we are watching our own gloved and ungloved hands. The hands on screen skim over a table filled with paper documents. We can tell there is a color-coded system, though there is no way for us to know precisely what that system signifies. There is also a cell phone, charger, and power strip – other quotidian elements of classification, communication, and infrastructure, entities that belong to multiple networks (Star 1991). Feminist, queer, anti-colonial, and Indigenous technoscientific scholarship

amplifies that such presumably static objects exist along multiple boundaries of nature and culture and are themselves beholden to a full array of different relationships (Liboiron; Tsing; Murphy; LaDuke / Cowen; Akrih 1992). Seeds, too, are objects beholden to multiple uneven webs of human and more-than-human relationships. Their proximity to the quotidian lab materials in this scene reminds us that they, too, are entities that belong to multiple networks. As such, seeds offer a potent location for resisting the pull of any one of the systems in which they are involved (Star 1991: 26–56).

_____ We might then consider that seeds, like those in this particular scene in *Wild Relatives*, offer positions from which one could question the entirety of the operations surrounding them. The seeds in *Wild Relatives* offer an entry into the large seed-vaulting process to which they are tethered: into questions of never-neutral scientific categories and standards, hidden ethics, and politics of large-scale agricultural operations, and who benefits from them (Star / Bowker 1999). The motions of close work with the seeds we see on screen are part of the human infrastructure of such systems.⁴⁾ As the women sort and package the seeds and eventually vacuum-seal them by machine, not a single seed goes astray. Their movements clue the viewer into how closely monitored, and how precious, this seed collection is. Its contents are linked to the earliest agricultural communities spanning the eastern Mediterranean basin along the Nile, Tigris, and Euphrates rivers to the Persian Gulf. The seeds, under Manna's careful eye, are the protagonists in this film. We watch as they traverse lab spaces, cold storage, and transform into crops in fields – where they become forms that produce the next generation of seeds to enter this cycle.

SEED PERAMBULATIONS BETWEEN BEKKA AND THE ARCTIC _____ The indoor seed-sorting sequence in Jumana Manna's *Wild Relatives* is not the only moment when human hands and seeds come into close contact. Throughout the film, this degree of proximity to the seeds at the level of touch only happens in moments of women's work. These scenes also form a pattern: they precede scenes that include institutional, religious, and scientific leaders. They suture together and occur between wide landscape views of the Bekka Valley and the Arctic. Unlike in these scenes, Manna's voice-over goes silent when the women work closely with the seeds. They labor in the nearby shade of the ICARDA complex walls and bushes, separating seed from wheat stalks with what appears to be a small, mechanized thrasher and then sift through the seed by hand using grates placed over wooden boards. In adjacent research fields, women

4)

Jumana Manna is also a prolific sculptor. Her work includes hand-fabricated sculptures that frequently mimic and reimagine forms from agricultural infrastructural apparatuses. These include clay forms used for water irrigation and for saving grain, as well as industrial grates that can be found underfoot in large agricultural institutions, scientific labs, or certain archives. Manna was raised in Jerusalem and lives in Berlin.

disappear in and out of a sea of wheat during harvest time; they wear gloves with thumb and pointer finger removed to hold tweezers and meticulously cross-pollinate plants adjacent to the wheat fields [fig. 2].

— Women and young women also ward off pests by grasping the neck of inverted plastic bottles filled with rocks and shaking them while simultaneously blowing whistles. Manna also includes moments that escape the various tasks at hand: a pause to light a cigarette, a miffed look toward the bottle-rattlers and whistle-blowers who have disturbed a moment of fine tweezer work. These everyday actions sit within the intricate operations of ICARDA. They are also all quotidian “enactments of embodied practice” (Taylor 2003: 274). ICARDA is dependent on the movements and bodily gestures of its workers, yet this level of action escapes full legibility by the system.

— We encounter this particular set of workers at ICARDA in Lebanon, but we learn from Manna’s voice-over that the young women and many other workers at this particular ICARDA center outside of Terbol have been displaced from Syria (Manna 2017; Sheikh 2018). The globally significant collection of crop seeds we encounter in *Wild Relatives* in Lebanon has also survived multiple displacements. ICARDA initially established its headquarters in Lebanon in 1976. After one year, due to Lebanon’s then-widening civil war, the center relocated to Tel Hadya, roughly twenty-five miles outside of Aleppo in Syria (Manna 2017: 49; Fadda 1991). There, operations continued from 1977 to 2015. Damage to Tel Hadya in 2012 during the civil war initiated a redistribution of staff members and large portions of the seed collection to Lebanon, Jordan, Morocco, Ethiopia, Egypt, and Turkey. Research operations at Tel Hadya, and its lengthy seed redistribution process, were able to continue until 2015. So-called rebel forces protected Tel Hadya in exchange for food from the center (Badr 2014).

— The seed, staff, and worker displacements we encounter in *Wild Relatives* also involve hemispheric border crossings. The seed collection was moved from Syria to Lebanon via the high Arctic, with the use of the Svalbard Global Seed Vault. The vault lies just outside the Norwegian settlement on the Svalbard archipelago – itself roughly midway between the North Pole and



// Figure 2

Jumana Manna, *Wild Relatives*, 2018
(still), HD video with sound, 63 minutes
55 seconds © Jumana Manna, courtesy of
the artist and Hollybush Gardens, London

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mainland Norway.⁵⁾ The Svalbard Global Seed Vault, by way of Norwegian public art policy, also includes an artwork: Dyveke Sanne's *Perpetual Repercussion* (2008) – an installation of fiber-optic lighting cables, refracting glass, and reflecting mirror fragments.⁶⁾ The daily operations of the vault are governed by the Norwegian Ministry of Agriculture and Food, the Nordic Gene Resource Center (NorGen), and the Global Crop Diversity Trust (Crop Trust), with guidance from an international council of advisors. ICARDA began shipments to Svalbard in 2012, and in 2014, began to redistribute portions of the seed collection from Svalbard to Lebanon and Morocco, where the seeds are grown in research fields such as those outside of Terbol that we see in *Wild Relatives*. This process of seed redistribution via Svalbard also allows the seeds to be copied – grown into plants whose seeds can in turn be collected to replace the seeds used with their next generation. These copies are then returned to Svalbard for cold storage, thereby safeguarding a “backup” collection of regionally (and increasingly globally) significant genetic material that can be used as needed (see **fig. 3** for a portion of ICARDA's holdings).

— The seeds vaulted on Svalbard are, however, only copies of a formerly abundant diversity of crops.⁷⁾ The vault, as well as ICARDA, CIGAR, and related international organizations, attempt to safeguard vast biodiversity previously insured through agrarian societies. Their operations nevertheless contain traces of the twentieth-century so-called Green Revolution of industrialized agriculture that has decimated global biodiversity. The Green Revolution was a project to end hunger worldwide by way of developing high-yield plant varieties, ensuring their success with specialized pesticides, and tying participating countries into market-based (rather than agrarian) economies (Shiva 1993, 2012; Manna 2017; Bresciani 2018; Sheikh 2018). ICARDA “develops” and “distributes” agricultural, water, and environmental “solutions”; these terms echo those of technology transfer, or the movement of knowledge, innovations, and intellectual property rights between organizations or people, or from one organization to many others.⁸⁾ Green Revolution ideals rely on decisions made for many resting in the hands of a few.

5)

For the purposes of this article, I will also refer to the Svalbard Global Seed Vault as “the vault.”

6)

Dyveke Sanne's *Perpetual Repercussion* (2008) inspired my dissertation work. For Sanne's statement and associated images, please see <https://www.dyvekesanne.com/www.dyvekesanne.com/Global.html>.

7)

Under current law, the seeds deposited on Svalbard are also only accessible through the original depositing nations and organizations. My dissertation takes up the question of what would happen if this existing order were to meanwhile change.

8)

Manna has posed similar questions to ICARDA staff members directly, in fruitful exchange. See, for example: Bresciani 2018.



// Figure 3

Jumana Manna, *Wild Relatives*, 2018 (still), HD video with sound, 63 minutes 55 seconds © Jumana Manna, courtesy of the artist and Hollybush Gardens, London

— The circulation of seeds in *Wild Relatives* depicts a routine way the Svalbard Global Seed Vault was designed to function: seeds are stored, and can be retrieved and replaced as needed. Yet until the relocation of the collection from Syria to Svalbard to Lebanon and Morocco, the vault had only publicly functioned as a receptacle, a collecting point – accumulating seeds from across the globe, since 2008 (and for decades prior from only the Nordic countries). The use of the vault to not only collect seeds and keep them dormant at a stable negative-eighteen-degrees Celsius, but to open the vault to redistribute select so-called accessions (seeds) from its backup archive was framed as a massive surprise by scientists, journalists, and researchers alike: nuclear war and the complete melting of Arctic permafrost being no longer the only publicly imagined events that would trigger the opening of this so-called “doomsday” vault. And even at this moment, of opening the vault to assist in redistributing ICARDA’s seeds, this supposed shock was immediately framed by these same parties as an anomaly, an assurance that doomsday is not yet here.⁹⁾

— Yet Jumana Mana’s *Wild Relatives* crafts a cinematic space that does not simply illustrate the spectacular route of the seeds. We instead remain as close to the seeds as possible and see who exactly circles in close proximity in the multi-locational efforts to duplicate the seeds moved to Lebanon. We enter the process mid-cycle, with seeds only briefly stored on Svalbard already growing in ICARDA’s research fields outside of Terbol. Manna’s consistent proximity to the seeds also helps dispel an understanding of the distance between the vault and Lebanon by vast geographic distance alone. Such a representation would indeed be incompatible with recent understanding of the deeply interconnected web of activity related to the Syrian Revolution and subsequent civil war. Conflicts involving “foreign” actors acting not at great distance, but at very complex and proximate entanglements (Martínez 2019), which have also massively displaced agricultural families and workers (Sajadian 2022). The process of replicating ICARDA’s collection will continue for at least the next ten years.

— I do not wish to critique the intentions behind the operations of the vault, but I do want to recognize how it maintains a seed collection caught in perpetual cycles of displacement. In *Wild Relatives*, seeds temporarily dormant on Svalbard awaken in soil via the hand-labor of young women whose lives have also been violently reconfigured – all in the name of progress. Notions of progress also violently disavow “women’s seed and food knowledge” (Shiva 2009: 17) among so many gendered, raced, classed, and sexed violences.

9)

To address the settler-colonial constructions of time and space that make this framing possible, my dissertation relies on the work of Jean O’Brien, Kyle Powys Whyte, Andrea Carlson, Michelle Wright, and Kathryn Yusoff, as well as the scholars referenced in footnote one, among others.

WHERE HANDS AND SEEDS MEET: SEED GESTURES ——— Seemingly unwieldy, impermeable systems of global order might begin to look different if we allow *Wild Relatives* to also become a way of engaging with more amorphous and ephemeral waves of infrastructural relationships. Connections built of human and more-than-human relationships – those of moments where seeds and human hands actually meet. I would like to refer to these physical, fleeting junctures of human and seed movements as “seed gestures,” while also acknowledging that this term names only one of many relationships in which these seeds exist – only one of many ways that human, mechanic, bureaucratic, imaginative actions are taken that involve the seeds in question. If we view *Wild Relatives* in terms of its included seed gestures, then they are what initiate moments when landscapes fold. Seed gestures offer a structure more supple and buoyant that is usually attributed to more static and untactile understandings of infrastructure.

——— In *Wild Relatives*, we never view the seeds out of reach of those working most closely with them. It seems crucial that the moments linking scenes across vast geographic distances are not abstracted aerial views but are instead representations of the seed gestures themselves. A focus on seed gestures helps hold central one of Manna’s guiding questions: In whose hands are the seeds today? Or, as posed at the conclusion of *Wild Relatives*: “After us, who would water the grapevines? Who would fill the baskets?” These lyrics from the Lebanese pop song *Baadana* (“After Us”), sung by Aida Chalhoub, plays at the close of *Wild Relatives* (Terracciano 2023: 12), supplanting the refrain of a low, beating drone of sound that initiates the film and which returns at moments to haunt.¹⁰⁾ *Baadana* plays when two young women working in ICARDA’s wheat fields play with the rhythm created by shaking the bottles filled with rocks to ward off pests. They catch each other’s attention and come together to dance a version of the *Dabke* – a Levantine folk dance of syncopated footwork whose participants link hands or arms, for any occasion of celebration, resistance, solidarity, or all of the above (Rowe 2010; Mills 2016). Does the future designed by the vault include these young women? And the seed’s other daily attendants?

——— This article considers each movement, each seed gesture, as part of an infrastructure of seed labor. An infrastructure of seed gestures, then, becomes an embodied and ephemeral chain of movements that relate to the seeds in question, yet also always diverge from them. The human body always simultaneously juggles many movements, thoughts, desires, automatic and semi-automatic processes. A seed gesture is an ephemeral link within a web of

10)

For more on Manna’s soundscapes, see Manna 2017 and Hochberg 2021.

movements and gestures. Recall the scene of seed-sorting: Each woman simultaneously enacted portions of multiple movement tasks, demonstrating the ability of the body to calmly live with dizzying simultaneity, while withholding its thoughts from the viewer. Perhaps this kind of a haze could supplant settler atmospherics.

— Seed gestures in *Wild Relatives* (2018) occupy significantly less screen time than in Manna's more recent film *Foragers* (2022).¹¹⁾ Seed gestures nevertheless fuel the folding landscapes of *Wild Relatives* and stitch together the film in its entirety. So, what obstacles exist to recognizing seed gestures in this particular film?

SEED GESTURES IN A FUTURE OF AGRICULTURE WITH AN ENGINE OF COAL

— Seed gestures in *Wild Relatives* share screentime with a powerful entity: the history of coal mining on Svalbard, with which Manna confronts us before any seed gestures enter the film. Yet it is also in the opening sequence of coal mining in *Wild Relatives* that we are trained to attend to movement and gesture in ways that prepare us to encounter seed gestures throughout the film.

— We enter *Wild Relatives* by following Manna deep into the steely-gray underworld of the one remaining active coal mine on Svalbard (of a previous seven). This is "Mine 7," which lies along the same fjord as the Svalbard Global Seed Vault, west of Longyearbyen, the Norwegian settlement on Svalbard.¹²⁾ In 2021, the Longyearbyen *Lokalstyre* (Local Council) approved a transition from coal to diesel originally set for late 2023, as an interim solution while developing renewable energy systems to implement by 2030 (by about when the full replacement of the backup seed copies relocated from Aleppo is expected).¹³⁾ The expiration date of coal on Svalbard was then postponed to 2025, due to European and Nordic energy issues associated with the war in Ukraine (Dell'Orto 2023; The Local 2023). So, although in *Wild Relatives*, we are deep within Mine 7, it is presented as the ur-space of the seed vault itself, which we do not visually enter in *Wild Relatives* until after we first travel to Bekka. The vault itself occupies the space of one of the formerly operating coal mines.

— Deep within Mine 7, we are confronted with an orchestrated soundscape of pounding, repetitive low tones that pulse and vibrate deeply, raising and lowering in tone that can be felt in the body. We become surrounded by the epitome of the targeted removal of minerals or materials from the earth: natural resource extraction. From our first views within the mine, Manna primes us as witnesses to detect many speeds of motion: Eerie whistling wind sends soft clouds of particle dust across a pile of coal remnants that nearly

11)

Both films are currently on view at the Kunsthall Stavanger in Norway as part of a major traveling solo exhibition of Manna's work: *Jumana Manna: Break, Take, Erase, Tally* (March 7–August 25, 2024). I viewed this exhibition at MoMA PS1 in New York in January 2023, and include *Foragers* and sculpture from *Break, Take, Erase, Tally* in my dissertation chapter.

12)

The Norwegian settlement is named after U.S. coal miner Jacob Longyear (*Longyearbyen* meaning Longyear Town). Svalbard also has a Russian settlement: Pyramiden. Both settlements are on the same island in the Svalbard archipelago: Spitsbergen. In the twentieth century, the islands were a contested site for World War II and Cold War radio waves. Svalbard has also captivated Western geopolitical interest since waves of early international whaling, mining, and exploration industries. And what of Svalbard's long history in an Indigenous circumpolar North?

13)

This calculation predates the current barrage of military strikes deep into Lebanon and the associated horrors of the ongoing war on Gaza.

fill the screen, its size impossible to discern in relation to a wash of steely gray surrounding rock, tones of deep purple and light yellow barely discernable. We traverse the uneven tunnel deep into the mine in a nauseating car ride. We face a cast of machines navigating shallow space; their headlights and the headlamps of workers monitoring their progress provide some of the only



lighting in this setting. For one extended moment, we are brought uncomfortably close to the unsettling whirring of mechanical “continuous miners” – machines whose sharply-toothed circular faces devour the mine wall with enough force to rattle the machine itself while generating wind that visually affects the clothing of the nearby worker. We learn to attend to constant motion. Even a static view of one of the mine rock walls is set into motion under a kaleidoscopic display of ever-shifting light created by the constant movement of workers wearing headlamps, and, presumably, the film crew.

From the mine we suddenly re-emerge and take in a blinding sun against a clear sky. And then encounter a sea of wavering young wheat plants, verdant and gently swaying to a breeze reaching their upper stalks, while we (the camera) are placed beneath their topmost reaches, nestled into their collective forest [fig. 4].

This strange, tri-partite movement, from growing mine shaft to light, to young, still verdant wheat, offers a striking inversion of an expected plant diagram (soil, roots, stalks, tips), in which soil has been replaced with a mined void (the surrounding permafrost that helps keep the vault cool is left out). This is the only scene of active coal mining in the film, yet it is crucial for how we approach seed gestures.

Extraction, or the targeted removal of certain elements, minerals, materials, or wealth from land and people, can take many forms. Various spaces and processes are beholden to extraction as an ideological position and a process – one that seeks full site conversion (and all life and matter therein) into profit for colonial capitalist enterprises (Gómez-Barris 2017), which are themselves beholden to raced, sexed, gendered, and classed “carceral geographies of empire” (Gilmore 2019). Ways of conducting research, whether scientific or otherwise (whether the whaling industries and scientific exploration on Svalbard which preceded its mining

// Figure 4

Jumana Manna, *Wild Relatives*, 2018
(still), HD video with sound, 63 minutes
55 seconds © Jumana Manna, courtesy of
the artist and Hollybush Gardens, London

operations, or my own academic training) are also not exempt from extractive tendencies (Liboiron 2021). And there is much about amassing a global collection of crop seeds that could be said to be extractive in its own right – a separating of seeds from the people who have lived with them, and from a more open exchange of seeds among farmers. From conditions supporting self-reproduction, and robust biodiversity insured by the proximity of forests to fields (Shiva 2011, Shiva 1993: 27–39). There is also the extraction of labor from the young, mostly female Syrian refugees who carry out ICARDA’s field labor in Bekka. This could be an opportunity to further explore the relationship between the seeds and this subset of workers as engaged in carceral capitalist and neoliberal logics, or, in conversation with ecofeminist scholar Jennifer James, as also embroiled in the idea of an abolitionist ecology (James 2023). From the clear delineation of land as a mine space, to its reincarnation as a tightly sealed vault space, to evenly marked and highly controlled field and lab spaces, there is much about the stark, geometrically rendered settings of *Wild Relatives* that reflect the continued presence of colonial understandings and uses of land: driven by the will to select, control, and sever from existing, robust and varied relationships to the environment (Liboiron 2021). The undertow of the many faces of extractive processes in *Wild Relatives* is potent.

— How Antwerp-based Nigerian artist Otobong Nkanga and U.S. writer, artist, and activist A. Laurie Palmer each research sites of prior and current mineral and material extraction also deeply guides my thinking about gesture in *Wild Relatives*.¹⁴⁾ Nkanga and Palmer include the human form and experience in their metrics of research: both that of their own as well as those of others they encounter on-site and in their travel preparations. Each artist also offers representative strategies for understanding where and when moments are and are not connected to the ongoing engine of extractive processes.¹⁵⁾ Manna’s physical presence in Mine 7 on Svalbard affords us, as witness-viewers, proximity to active coal mining, just as her presence in Bekka permits our close viewing of seed gestures. *Wild Relatives* thereby links the location and velocity of a churning, active “underworld of movement” (Ballestero 2024) to the gestures inherent to cycles of seed-saving, sorting, planting, pollinating, harvesting, and testing that we also witness on-screen.¹⁶⁾ Manna exhibits a full range of movements associated with the vault while the language of seed gestures serves to herald further investigation into the many live, never-fully subjugated portions of movement witnessed on-screen; her careful direction ensures seed gestures are not overburdened, flattened, or entirely subsumed by the visual and sonic undertow of extraction in the film.

14)

I also further attend to the work of Nkanga and Palmer in my dissertation chapter.

15)

For example, their work also keeps extracted material present as itself, as earthly material in its own right with its own physical and temporal properties (Nkanga 2015: 149, 168; Nkanga 2017).

16)

Though Ballestero here references the movement of underground water and not coal mining, her work promotes applying an imaginary of the subsurface as a lively place to decisions made about natural resources and their management.

CONCLUSION: EMERGENT GESTURES ——— *Wild Relatives* opens the mechanics of one operation of the Svalbard Global Seed Vault to closer examination. Seed gestures emanate from scenes of women’s labor, drive the folding of seemingly far-off landscapes and their histories, and transform the eerie and disorienting drama of the opening coal mine sequence into a final sequence of percussive dance. The experience of shared space and time among Manna, her collaborators, and worker-subjects also exists outside of the metrics of extracted seeds and labor beholden to state, international, and global-level operators.

——— The medium of film offers a linear temporal experience of a sequence of fractured moments; seed gestures in *Wild Relatives* become embroiled in the movement of a particular segment of living agricultural heritage between Lebanon and Svalbard. We might describe the film screen as offering Manna a way to mediate the actions and choices of seed gestures; these movements extend toward us, caught in a contradictory pull between what art and film historian Kris Paulsen describes as “being here and being there” – a multidirectional tension that resists a unidirectional mode of viewership (Paulsen 2017). A model encompassing a plurality of representational relationships and modes also crucially differs from the unidirectional movement of extraction, a process of severing certain material or matter from its surroundings by all means possible (Gómez-Barris 2017; Palmer 2014; Nkanga 2015).

——— And perhaps in the initial seed sorting sequence, and with other seed gestures in *Wild Relatives*, we are also witnessing a kind of folding. Not only of the locations preceding and following this particular sequence, or of encounters with previous histories of locations and seeds, but, too, in the moments just prior to the seeds becoming vacuum-sealed, movement of shared air exchange among the women at work, the seeds, and the filmmakers. Immersed in ephemeral cycles of breath, attention, gestures, growth, dormancy, and movement, perhaps in seed gestures we have the ingredients for something emergent – laden with the potential to fuel what adrienne maree brown names as “emergent strategy”: “plans of action, personal practices and collective organizing tools that account for constant change and rely on the strength of relationship for adaptation” (brown 2017: 23).¹⁷⁾ Works of art set in conversation with our planet’s only global seed vault, all tethered to seeds which are themselves forms that mutate, grow, and change, demand thinking with emergence and relationship (yesterday, today, and tomorrow).

——— Are we currently witnessing events that will again endanger and forcibly displace the seeds and workers currently outside Terbol?

17)

brown explicitly references “adaptive and relational leadership model[s]” from the work of science fiction author Octavia Butler (and others) as inspiration (ibid.).

While 1938, 2023–24, and times ancient and coming, continue to fold into the present, seed gestures offer one metric by which tethers to settling and colonizing systems are exposed as neither strong nor flexible enough to endure critique or to extinguish transnational feminist solidarity.

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// About the Author

Lilah Leopold is currently a Ph.D. Candidate in Art History in the School of Art and Design at the University of Illinois, Urbana-Champaign. Her dissertation, *Agricultural Futurism: Seed Gestures and Art Now*, analyzes how select works by three contemporary artists, Jumana Manna (Palestine), Monique Verdin (Houma), and Sara Siestreem (Hanis Coos), include food crops, seeds, and plant matter to imagine and enact futures that exist beyond settler-colonial conceptions of land use. Lilah's work has been supported by the Humanities Research Institute and Graduate College at the University of Illinois and the Kate Neal Kinley Memorial Fellowship.

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