Maria Thereza Alves

Seeds of Change

Edited by
Carin Kuoni and
Wilma Lukatsch

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Seeds of Change archive, Berlin, Germany (Photo: Wilma Lukatsch)

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Introduction: Seeds of Change

Carin Kuoni

In an era of extractivist economies, climate change, and forced mobility, who and what belongs? Who and what does not? What can be learned from sitting with a plant you germinated from seed? One of the most significant voices to emerge in recent years, Brazil-born Maria Thereza Alves has focused precisely on such questions in her twenty-year art project *Seeds of Change* that has spanned continents, embraced art and non-art publics, and is deeply informed by and evidence of Indigenous cosmologies.

As the first monograph of Alves's historic project *Seeds of Change*, this book assembles some of the latest scholarship and artist and curatorial voices from around the world to consider the legacy of colonialism, the forced migration of peoples and plants, and the role of art in uncovering these narratives and empowering affected communities now. In so doing, the book contributes to a rising tide of scholarship that is beginning to dismantle Western epistemologies and narrative frameworks to consider other ways of critical understanding.

Initiated in Marseille in 1999, *Seeds of Change* has materialized at port cities across Europe, including Bristol, Liverpool, and Dunkerque, and concluded in 2019 in New York City. In each city, the project focused on the influx of imported plants, the seeds of which were historically part of a ship's ballast—soil or other material used to balance shipping vessels, such as those used in the colonial maritime trade of goods and peoples between Europe, West Africa, and the Americas. Alves's *Seeds of Change* is tracing the relationship between these "alien" plants, the colonial trade of enslaved peoples, and the genocide of Indigenous nations. And she engages local communities in the co-creation of exhibitions or gardens to explore the vigorous and colorful flora as witnesses to these histories. Through the entangled history of plants and earth, we are invited to de-border postcolonial historical narratives and consider what Alves calls "borderless history."

Alves's momentous body of work—encompassing an entire human generation—has given visible form to the ongoing legacies

of colonization that have recently come into sharp, violent focus in Europe and the United States. By focusing on plants, her project collapses conventional notions of time, scale, distance, and species separation. It is also a project of extraordinary complexity that with its embrace of plants gently draws in audiences from a multitude of backgrounds and experiences, from children to artists, students and teachers, activists and researchers.

Each chapter of this book is dedicated to one iteration of *Seeds of Change*, introduced by the artist. Alves's concise openings act as a call for engagement and for de-colonizing the archive, and are augmented by exclusive material and artifacts from her studio. The intimacy of the artist's personal accounts then gives way to contributions by a range of scholars, curators, other artists, and historians, who take on different narrative threads that transcend the geographical localized episodes in each chapter. Special focus is placed on the concluding chapter of *Seeds of Change*, presented in New York City by the Vera List Center for Art and Politics at The New School as part of the center's Jane Lombard Prize for Art and Social Justice, which was awarded to Alves in 2017. In collaboration with three partner organizations—the High Line, Pioneer Works, and Weeksville Heritage Center—the project unfolded over the course of three years, from 2017 through 2019, allowing for the steady germination of the plants.

Wilma Lukatsch has been a formidable co-editor of this book, and I thank her for her immense enthusiasm and deep knowledge of Maria Thereza Alves's practice. Our collaboration was most enjoyable and passionate. Both of us are deeply grateful to the contributors to *Seeds of Change*, who with great generosity and creativity took up our invitation to write across geographies and mine core aspects of Alves's practice that far exceed individual locales. They are Katayoun Chamany, Seth Denizen, Yrjö Haila, Richard William Hill, Heli M. Jutila, J. Kēhaulani Kauanui, Lara Khaldi, Tomaž Mastnak, Marisa Prefer, Radhika Subramaniam, and, in memoriam, Jean Fisher.

Common Name, headed by Yoonjai Choi and Ken Meier, provided the exquisite and sensitive design that grounds each chapter within the artist's own reflections and archive, and we're grateful for their extensive commitment to the project. At the Vera List Center, our work is carried forward by an extraordinary team. Each member supported, cared, inspired, and enriched the exhibition and now this publication, and we'd like to especially thank curator Eriola Pira as well as assistant director of editorial initiatives Re'al Christian and assistant director of operations Adrienne Umeh. Previous staff members to

Heli Jutila's earth sample corer and the artist. (Courtesy the artist, 1997.)

be recognized are curator Amanda Parmer and former assistant director of editorial initiatives Wen Zhuang. At the artist's studio we would like to especially thank Kai-Morten Vollmer for his invaluable support throughout the project, as well as our thought partners Ruth Wilson Gilmore and Saidiya Hartman for their early insight into the project and the subject matter.

In Amherst College Press, under the directorship of Beth M. Bouloukos, we have found an ideal publishing partner. We are delighted about this collaboration and thank her and assistant acquisitions editor Hannah Brooks-Motl. Thanks are also due to our exquisite copyeditors Jasmine Weber and Jenn Bennett-Genthner.

The generosity of various funders has been vital for the success of the project. We would like to thank Elizabeth Firestone Graham Foundation for an early vote of confidence, the Ford Foundation, the Andy Warhol Foundation for the Visual Arts, and the board of the Vera List Center, chaired by James Keith Brown, for their steadfast belief in and support of our mission. Tabor Banquer, VLC director of strategy and advancement, helped secure the support of these foundations. The New School is our academic home, especially the Schools of Public Engagement directed by executive dean Mary Watson. As always it has been rewarding to work with her and our faculty colleagues Katayoun Chamany and Radhika Subramaniam.

Our deepest thanks, admiration, and respect are due to Maria Thereza Alves. *Seeds of Change* is one of the most significant and longest-running artist projects to address the violent histories of slavery, colonialism, and the lack of visibility of Indigenous peoples. That it accomplishes this through the beauty and poetry of plants and their displacements along transatlantic slave routes speaks to the artist's expansive notion of poetry that is matched by deep commitment, discipline, and extraordinary clarity of intent.

Further Exercises in Decolonizing One's Imagination: Weaving Common Ground

Maria Thereza Alves
and
Wilma Lukatsch

This exchange took place in Naples and Berlin in April 2020.

WL I see *Seeds of Change* as an opener for thinking about history, its governance, and the ongoing processes of colonization. By looking deeply at the movements of material earth and seeds, we encounter crucial facets of human history and the processes of colonization that continue to affect us, in manifold and often unrecognized or denied ways. As earth and seeds were made into ballast to "counter-balance" colonial cargo, we can start to face and realize that the earth we are walking on is neither fixed, nor a fixed and solid fact nor history, but is colonized itself. It is consequently producing its own database of counter-facts, counter-truths, counter-witnesses, counter-archives, and counter-histories to hegemonic historicity. When we begin to be aware that we are walking on moving history, we can start to recognize that the earth talks back to the process of its colonization. We are, through a project like *Seeds of Change*, invited to a practice of decolonial listening to these unconceived and blanked-out histories, all of which enable us to shift our vision and imagination of "how a place became," as Dwayne Donald said.

I want to start with the overall agent, which spans all the *Seeds of Change* iterations: the earth, her colonization, her forced movement, and her producing of "unrequested histories." She is the first mobilizer and principal agent in your *Seeds of Change* projects, and what is set free through listening to her unrequested stories is what you have called "a borderless history." This history brings to light those intertwinings of colonialism that are repressed, excluded, or disinvited. So, when did you realize that the earth herself carries a history that counter-narrates colonial narratives? And connected with that, how did you start to feel invited to collaborate with the planet?

MTA I would say it began when I moved to Mexico and was closer to earth, as opposed to in New York—where I grew up—and where I would be with earth in the minuscule backyard of

the building that my family lived in, or whenever we went to the park or camping. In Brazil, I was usually near earth intensely, but for short periods. In Mexico, I made the work *No Soy Su Madre*, a large installation about earth, the female body, and patriarchy, which was exhibited at La Estación Gallery run by Tacho (Anastacio Acevedo), a local Indigenous artist.

I went to Mexico, along with my partner, to be in and on land that was visibly Indigenous and could not be denied, unlike the US and Brazil, which had much higher genocide rates. We wanted to experience the peoples, the cultures, the food, the languages, the clothes, the bodies, the art, and the architecture. There, we could be completely alive with our mind, soul, and body, and be joyfully creative on land where Indigeneity was the normality, and the settlers the aberration of continuing colonization. (That is not to say that the situation was joyous, but that we had the privilege to be artists and thinkers in this situation.) Our daily lives in Mexico made it clear that our present was our moving with our past, with all the living and all the dead involved.

WL Through investigating the histories of ballast flora, you learned more and more to see the colonized and nationalized connections of land and belonging as a determination of a politicized landscape. Landscaping is a neocolonial state practice that is closely linked to colonial histories, as you are precisely pointing out in your *Seeds of Change* iterations. Through your ways of thinking about and elaborating on connecting space and time, you are, one might say, a bit declamatory. Likewise, it is also a decolonial and decolonizing practice, because you make yourself an accountable witness of the contorted histories you present in your works. This brings me to the relation of how your works are shaped, or come into existence, through the specifics of the research you do for each of them. Research is, especially for *Seeds of Change*, of massive importance. I would like to know more about what research means for you. What is your claim when involving yourself in an artist's research projects? How does this connect to your research-based project *Seeds of Change*, which started in 1999 in Marseille in France? Also, I wonder what were the conditions of the archives you entered, and in which ways did you have to "invent" your vision toward and with the archival material? Is there any archive story that you will always remember, or from which you learned a lesson?

MTA

I began with the natural curiosity of looking. Certain situations interested me in some way or another, and then I would think: Why is that so? In the beginning, pre-internet, it would entail a great deal of what has become known as deep looking and thinking. There was not much of another way to understand—access to written material was not so easy, especially where I lived in Mexico, and I had no money to purchase books.

In the archival research in Marseille, I became over-enthusiastic for too much old paper. I would come to realize that much of the resulting plethora of facts was not pertinent to figuring out why we are in our present situation. The next iteration, *Reposaari*, encouraged me to understand the importance of living archives, in this case, the residents of Reposaari themselves and their knowledge. I welcomed being able to leave the solitude of the archives for discussions with the local community members, who on their own had taught themselves about ballast flora, ballast stones, and ballast history.

In Liverpool, I came to realize that time and research are strange company that help construct a path for one's work—but all of that can change at the last minute, and that is much welcome, especially if there is a budget and time to continue with the work. Unfortunately, in Liverpool, there were not. It was at the last minute that I found information that there were "ballast-made roads at Claughton and Birkenhead." I still very much want to return to Liverpool and walk the streets there and look.

In the Exeter and Topsham iteration, I was at first reluctant to expand the work to include trade goods, as it would deviate from ballast flora, but I realized the urgency of this history. I also realized that the "academy" had almost convinced me to maintain "rigor" and to keep to the subject. With this iteration, I realized that it is the work, along with history, research, and beings, that must guide the necessary "rigor" of the work.

In Dunkerque, the canals disrupted the notion of confined territory for ballast flora as they could travel to sites where there were no ports, seas, or oceans. Also, earth, sand, and stones are constantly being moved in and moved out of Dunkerque, and I would like to further study this in the future.

In Bristol, as we had the University of Bristol as partners to the work, I had access to their extensive library. Here I came upon three papers on the economics of slavery and the use of ballast in the transportation of people that were timely in helping me understand how colonization, the earth, and ballast were connected.

The archives in Antwerp were the most extensive I had come across. Originally, I had been invited by curator Anselm Franke to make a new work for Antwerp. But the incoming director had no interest in such a commission, and I could only return to it when I was invited to exhibit it in 2019 in Leuven. In 2009 there was still active amnesia about the atrocities of the colonial trade in the Belgian Congo. But by 2019, publications had come out about the Belgian involvement in the everyday colonization of the Congo. It would have been timely to present the work when it had been commissioned.

For New York, I wanted to make a new path for the work. I was by then proficient in ballast archival research and could easily accumulate much documentation. But I felt that with the experience of all those iterations, I could approach the work in a different manner and see where else it might go. I began by wanting to find a key historical fact that would highlight the beginnings of colonization. From there, I went to research the slave trade in New York. So much has been written by eminent scholars and academics regarding this, that for quite some time I wondered what I could contribute. Then I found in the *New York Times* shipping news section just a few words about the return of the ship *Liberia* on February 20, 1893, "in ballast." The scale of earth arriving—at times millions of tons in a single day—and also of earth leaving, throughout the history of New York, was striking. This happened, at first, due to the slave trade, then immigration, and finally World War II, when chunks of bombed-out European cities arrived in New York. So much taken away. I see the earth as histories of site-specific accumulations of interactions between beings. Thus, so many histories were removed and then others added to forever change the topography of New York. I had not understood until the research for this iteration that the very earth of New York is colonized. I see *Seeds of Change* as an epic poem, in the sense that the work would remain in you as you walked out onto the streets of New York, and the plants and earth would assist you in witnessing these missing histories.

WL Thank you for explaining these paths, which bind the different iterations so densely together. This brings me to the role of the communities and their specific knowledge, which is very much highlighted in your texts about the project. Besides that, this community-based knowledge is all too often not valued or acknowledged, and mostly not recognized as valuable within the scientific community because it is not "expert" enough. What guides

your search for the inclusion of community members and their knowledge, as well as their interest and participation in the project?

MTA I remember once reading in a newspaper, several years ago, the account of an expedition of experts going on an archaeological dig in Mayan country. They found some artifacts with glyphs, which the expedition linguist could not read. The young daughter of a worker came up and began to read it. No one in the expedition had thought to invite the local community into a mutual study of the community's own territory and history.

I have seen via my own family that exclusion from art—that is, the art one finds in museums and galleries—is an accepted phenomenon. I disagree with how we have been taught to believe that you had to be from a certain class and have a certain education to be allowed to have access to art. (It would take me to my twenties to have the courage to walk up that long flight of stairs into the Museum of Art of São Paulo.) My first major work, *Recipes for Survival*, made in 1983, was in collaboration with the communities my mother and father were from in Brazil. I asked, "What do we want the world to know about us?" There is much we are thinking about and can contribute to, and to be invited to discuss is a beginning.

I also think it is important when in a community to say: these are my skills as an artist, and this is what I am interested in working on in your community, but what do *you* think is important that I should also work on? One needs to build enough trust to rely on the community to guide you. Sometimes you might not agree, but a process of discussion and decision-making begins that is mutual for the development of the work. There are several communities that I have a longtime relationship with and that I turn to to see what might be interesting for us to further collaborate on, such as the Valle de Xico Community Museum in the state of Mexico, with whom I have been working since 2009. The results have been the installation *The Return of a Lake*, and the book, lectures, a conference on water, and other collaborations.

WL What I am also wondering about is how the idea of the garden, which is part of your *Seeds of Change* research from the very beginning in Marseille, and the experiences of working with communities within your *Seeds of Change* iterations, are intertwined. I would like to know what the garden within the projects means for you, because it is a place to meet and exchange,

to talk, relax, and let one's mind wander. It brings people together, maybe including those who have not felt or been seen before as part of the same community. It also provides space and time for other stories, other archives, and other modes of experiencing communality.

MTA Since Marseille, I have seen the garden as an essential element of the work. I had thought about the importance of the community's involvement, particularly as there was no flora of Marseille and no documentation of ballast flora, and thus very few "experts" to assist in uncovering their origins. Since there is a large immigrant community who are from rural situations, I thought they could provide more lived information about the plants than the experts. And you are right that they are very much intertwined. It seemed to me to be a natural development and solution for the work that would encourage discussion between academics and the local community, hopefully not just the men but also the women. I had imagined the local community working on the garden and eventually expanding it to whatever would suit their needs; perhaps allotment gardens, perhaps a community research center. That was why the proposal was made for the garden in the large area by the cathedral at the port, where there was space for it to grow. I wanted it to be a place where women, children, and men could have a place to sit and talk. There were so many histories of so many peoples from different areas colonized by France. The area has very limited possibilities for people to meet. I was hoping it would provide some much needed green space in the high density, historical center by the port.

WL My next question regards the "presentation" or exhibition of your immense ballast research. In *Reposaari*, the first realized *Seeds of Change* show, there was a greenhouse with the names of community members on the seedlings. It served as a meeting area, which you thought of as the place where separated knowledge systems can easily find common ground. So, from the beginning of showing your *Seeds of Change* work, the presentation of the work was connected to the people and their expertise, no? Could you talk a bit more about how you thought about the ways to present *Seeds of Change*?

MTA How to present the work depends very much on the work process, the interaction with the community (or not), and a production budget. I completely funded the Marseille

iteration. For Pori, I presented the greenhouse with the growing ballast flora samples, labeled with each person's name and the chairs around it so that the ballast flora thinkers of Reposaari could meet and have a place to discuss their shared passion. But it was also a place for Heli Jutila to be able to meet fellow experts who could assist her in further ballast studies. The presentations have been very modest. Even the original garden proposal for Bristol, before funds were available, was a far simpler one than the *Ballast Seed Floating Garden*. In Bristol, community networks were activated, and many different groups and people came forth to volunteer to take in the samples and germinate the seeds. Unfortunately, it was a very hot summer, and people went away on holiday, and the majority of the samples died. I have thought about this and have found the experience of the participation of such a range of people and communities far outweighed the loss of the ballast samples. It was very different from Marseille or Reposaari, which are homogenous communities. The *Ballast Seed Floating Garden* in Bristol—an amazing four-year program of inviting artists, writers, poets, performers, musicians, and scientists to the garden—made it the city's most successful public art project. It demonstrated how the work can reach out to a varied community and allow for further creative developments beyond the scope of the original work.

For the gardens in New York, I had at first imagined much larger spaces, but the intense activities on all three sites made that unfeasible, so I adapted the plans. I wanted to work with organic, meandering shapes, which would form irregular archipelagos of witnessing history that might not so easily intertwine with the environment around them. This was possible at the High Line and Weeksville Heritage Center, whereas at Pioneer Works, small, rectangular planters were made available for the work. All three venues also developed extensive programs around the growing ballast flora. I still want to experiment with the possibilities of creating not only larger sections of gardens, but entire gardens that encourage people to meet, discuss, and investigate through science, writing, poetry, and making other ways to respond to a community of thinkers.

WL The 2017 New York exhibition stood out in your *Seeds of Change* shows, insofar as never before did you do so many texts on paper and linen. The show is like a book in itself but spread out on the walls. You tell stories of and from New York in a multidimensional way, combining drawings and tales you read on

how New York became a "modern," meaning a settler-self-satisfying place. And the way you combine these stories is not that you force the aggression of an aggressive history, but that you neighbor the stories to each other in such a way that makes the visitor lose their ground. They recognize that they do not know the place called "New York" at all. Yet they may know that they are encountering something immense here, which forces them to leave the show and walk the streets, knowing that New York can never be the same place as before. I dramatize, but I am thinking that the potential of the art and of visiting exhibition-worlds is to set my mind into a drama-mode to shift my vision towards another equilibrium of justice.

Therefore, lastly, would you please say something about how and why you made your New York show almost like a "killer-poem" that brings us to our knees. We have to acknowledge that "we" forever lost the place called New York.

MTA

New York is the place I have lived the longest in my life—from childhood until adulthood. My entire academic education was in New York. I am intimate with how it distorts, makes outright lies, or can so effectively destroy much of history to make a commonality of settler identity, which is transferred, albeit with not all the rewards, to non-European immigrants. The New York I grew up in was a wasteland for the non-immigrant: the Indigenous, Black, and Latinx bodies lost to drugs, alcohol, and general despair. At the same time, people such as Corinne Jennings, Joe Overstreet, Juan Sanchez, Faith Ringgold, Jimmie Durham, David Hammons, and others involved in the arts who were also activists, forced our inclusion and our visibility.

For these reasons, *Seeds of Change: New York* began from a different place than the other iterations, which influenced the work's path. The growing plants in the installation are holding these histories that come into being with images and text. I hope that the histories then become part of each person who meets the work, so that when one walks out again in New York, one may do so as a being that holds those histories on a non-forgetting, vision-gathering walk of the violence against the land, the non-animal and animal that constructed, and is constructing, New York each day.

Marseille, France

Maria Thereza Alves
Seeds of Change: Marseille, 1999–2000

Until the early twentieth century, it was common practice to dump ballast overboard into the open sea before entering a port to avoid deballasting fees. But in Marseille, France, ships came into the port fully ballasted. Otherwise, the mistral wind rushing down the Alps could easily push lightened ships right back into the turbulent sea and onto the rocky coastline. Another common but illegal practice was to dispose of ballast surreptitiously, usually under cover of darkness, directly into the port's waters. But this was not always possible in Marseille, as the port was shallow and therefore easily silted up. Therefore, ballast could typically only be unloaded onto land, usually into the legally designated depot on the quay. And along with the ballast came seeds.

For hundreds of years, seeds coming from the regions trading with Marseille, including Norway, South Africa, Mexico, and Vietnam, have likely been accumulating along the corners of the port of Marseille without being noticed. When I embarked on my *Seeds of Change* journey, I wanted to find them.

Marseille is France's oldest port city. As early as the Middle Ages, it served as the major military port for soldiers leaving for the Crusades. Soldiers and colonists sailed to the Americas from Marseille. During the French Empire, colonists and soldiers left its port for Algeria, Morocco, and Tunisia, among other places. These acts of religious wars and colonization transformed Marseille into a rich city. At the time, it was the world's fourth-largest port, making it key to the administration of the colonies. Sometime later, defeated colonists from North Africa returned and settled there, bringing on their ships even more ballast. (I learned in later iterations of *Seeds of Change* that much ballast is needed when humans are transported.)

Before contacting Dr. Heli Jutila, an expert in ballast flora who consulted on the botanical investigation, I met with Dr. Frédéric Médail of the Institut Méditerranéen d'Ecologie et de Paléontologie at the Faculté des Sciences de St. Jérôme of the Université d'Aix-Marseille, as it was then called. I hoped he could help me ascertain whether ballast studies already existed. None did. In Marseille, I was able to contribute original research and botanical studies on ballast flora without duplicating existing scientific work.

Each iteration of *Seeds of Change* would lead me to different

paths of investigations on ballast and ballast flora. I began to research in the local libraries and archives, as well as the city's history museum and chamber of commerce, for clues on the location of ballast sites.

The earliest letter I found mentioning a ballast site was from a concerned citizen in Marseille to the ruling Marquis in 1816. "Before the revolution," he reminds the authorities, "there was an enclosure on Rive Neuve known as Pierre de Marbre where ballast was received and provided for ships. This enclosure was destroyed during the unfortunate moments. [...]" Due to this lack of a ballast depot, as noted in another letter of complaint from 1824, ballast was abandoned at estates in the countryside. Finally, a ballast depot was built later that year at what seems to be the site of the earlier depot, on the Quai de la Pierre de Marbre of the Rive Neuve.

Map from the Archives of Marseille with probable ballast site locations by Alves in the Port of Marseille. (Archives de Marseille.)

A likely spot for the ballast depot seems to be a parking lot surrounded by ancient, high walls, an area large enough to build a ship in. I remove two forty-centimeter samples of earth. In my research, I used only the deepest layers, which are the oldest and therefore less disturbed by current human activity. I placed these in pots numbered three, four, five, and six.

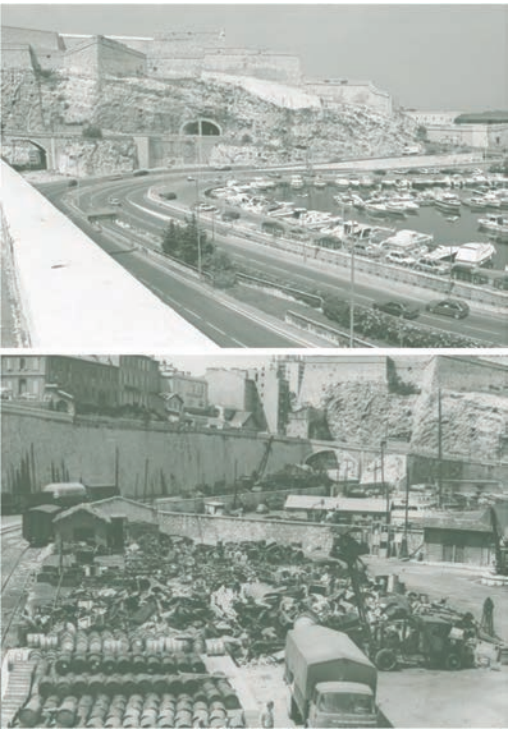
Probable ballast depot of 1824. (Photo by MTA, 1999.)

In February of 1851, four ships were ballasted in the port. Research reveals both legal and illegal ballast practices were common. In some cases, frequently used illegal ballast sites soon became legal. The depot at the Bassin du Carénage, known as "Depot X" near Fort Saint-Nicolas,

and the depot at the Bassin de la Gare Maritime, were eventually listed as official ballast sites in the *Cahiers des Charges* of 1855.

Investigations led to the discovery of the following ballast sites in the Port of Marseille: the Pierre de Marbre depot, the Depot X at the foot of Fort Saint-Nicolas, the depot at the Bassin du Carénage, the depot at the Bassin de la Gare Maritime (now Bassin National), and the depot at Major.

The Bassin du Carénage, built in the 1830s, entirely disappears from maps at times. Sometimes it is a no-man's-land—a historical storage area for boating material and later for the clutter that gathered at the terminal of a railroad line, built in 1878. Now it is a much smaller basin. Public authorization would be necessary to take samples.



Top: Bassin du Carénage: Probable ballast site. The highway is part of a centuries old no-man's-land and a likely ballast site. (MTA, 1999.) Bottom: Bassin du Carénage area before the reconstruction for the highway and tunnel. (Archives de Marseille.)

The ballast site known as Depot X was established on the quay of the former Bassin du Carénage near Fort Saint-Nicolas. But at the foot of the fort, there is a possible ballast site, and a sample was taken from a depth of thirty centimeters. This sample was planted in pots number seven, eight, and nine.

The Palais du Pharo guards the entrance to the Vieux Port, on the other side of Fort Saint Jean. Site sampled and placed in pots one, two, and ten. It would turn out to be an unlikely ballast site due to earlier major construction work.

The ballast site known as the depot at the Bassin de la Gare Maritime was established at a southeast angle to the basin, which is named today the Bassin National. Now passenger ships from the Mediterranean dock there. Access to this area is restricted.

The Depot Major is now listed along with three other depots in the *Cahier des Charges* of 1870. In total, they hold seven thousand tons of ballast. This area was later excavated for the construction of the new and massive Cathedral of the Major and later again for a highway. By 1902, perhaps due to a new method of ballasting by use of water, only two ballast depots are in use: Vieux Port and

Gare Maritime (Bassin National). A few years later, solid ballasting operations cease.

The neighborhood that meets the Mediterranean Sea in this area of the port is known as the *panier* or "basket." Residents here are usually immigrants, and their descendants are from the different regions of the world that traded with Marseille, many through colonial ties. The final artwork in the Marseille iteration of *Seeds of Change* was intended to take the form of a ballast garden built on a site near this immigrant *quartier* where local residents, along with the scientific community, could cooperate in identifying the sprouting seeds. Since some immigrants come from rural regions, they could provide expert information on the plants' origins. However, a change in local government with an anti-immigrant agenda meant that the project could not be completed.

Meanwhile, six of the ten pots planted with pilot samples from this first research quietly germinated for one hundred days at the Institute for Ecology of the Technical University in Berlin. Most plants would turn out to be local Mediterranean flora; I needed to have taken deeper samples to go past the emergent flora and its seeds but had not been able to do so sufficiently due to the asphalt and rocky soil. Dr. Jutila had forewarned me that, at times, I would have to ascertain whether previously soil had been moved or added to a site in order to ensure the viability of removing an earth sample.

Top: Fort Saint-Nicolas, a probable ballast site. (MTA, 1999). Bottom: Palais du Pharo, probable ballast site. (MTA, 1999.)

I spent many months self-learning to read handwritten French from the early nineteenth century and nautical terms of the period. It was my first time doing such research and I was seduced by every mention of ballast and would write an entire chronology based on that documentation. Eventually I would disregard most of that early research as I came to understand that I was interested in how that could make sense of not only our past but of the present that becomes active in making a future.

I would like to thank Dr. Herbert Sukopp for his encouragement and support of this work.

The Major Cathedral on the grounds of the former La Major ballast site in the Panier. (MTA, 1999.)

Germinating seeds from samples of probable ballast sites. (MTA, 1999.)

Some weeks later, some plants grew.
(MTA, 2000.)

Where Is the Earth in the Herbarium?

Seth Denizen

In the municipal archives of Marseille, Maria Thereza Alves discovered an argument over ballast. In a letter from 1823, the Captain of the Port, a Monsieur Le Chevalier Ruyter, writes to Monsieur Le Comte to explain that the winds around Marseille are too strong for mariners to dump their ballast in the open ocean before arriving at port. Instead, their ships must arrive at the docks fully weighted. Once the vessels are filled with cargo, the ballast is no longer needed and is, to Ruyter's annoyance, thrown overboard in the dead of night. For the Captain of the Port, this practice poses a navigation hazard, as it fills the harbor bottom with debris. In this letter, Ruyter proposes a solution: Marseille's port needs a ballast depot that would allow for the collection and sale of ballast. The mariners, then accustomed to filling their vessels with ballast for free, lodged complaints about this plan, but nevertheless the depot was constructed in 1824.[1]

In all the tedious administrative haggling over who will run this depot, who will profit from it, and how much will be charged, Alves spotted a silent protagonist in the ballast itself. Aside from being heavy, the ballast is also alive. It contains the seeds and dirt of every colonial trading partner of France. As the seeds germinate, the ballast becomes a living archive of its colonial geography, and a map is drawn in the weeds of Marseille. Monsieur Le Chevalier Ruyter proposed a ballast depot; what Alves found in his letters is an herbarium of empire.

And yet, what kind of herbarium is this? An "herbarium of empire" might conjure other images entirely. For example, we might imagine such a collection to include plants like cacao, vanilla, sarsaparilla, cochineal, cotton, jalap root, sugar, tobacco, or cinchona. These plants are the traditional protagonists of imperial botany. After all, the transport and relocation of plants was not a side effect of empire in the mercantilist period; rather, it was the entire rationale. One only needs to go to the supermarket to find evidence of the lasting, massive reorganization of global plant geography that was already complete by the time Monsieur Le Chevalier Ruyter was demanding a ballast

depot in 1823. In this sense, Marseille's ballast flora is not simply a missing set of entries in the long list of plants that were moved around in the service of empire, nor are these plants simply indexical of the economies that carried them away. These plants are ballast, and ballast doesn't belong to the herbarium of imperial botany. More precisely, it is the missing earth of that herbarium.

Figure One

Consider, for example, the missing earth of Atzitzicaztli, shown in figure one. These illustrations represent the same plant and were completed within decades of each other in the late sixteenth century, both for the Spanish empire as it searched for new botanical commodities. The one on the left is from the Codex de la Cruz Badiano (1552), while the one on the right is from *Historia Natural de la Nueva España* (1577) by Francisco Hernández.[2] This particular plant never made it to the port of Marseille. It was never traded or collected. Atzitzicaztli was just one plant among many thousands of plants to have been considered for its medicinal properties in Spain's quest for new drug monopolies in the sixteenth and seventeenth centuries. Despite the clear differences in the way Atzitzicaztli is represented in these illustrations, these manuscripts are in broad agreement about the plant. They both claim Atzitzicaztli's medicinal value comes from its relation to blood. It is the "blood herb" (*Sanguinaria herba* in the Codex de la Cruz Badiano), whose stinging hairs, according to Hernández, attract the blood (i.e., it gives you a rash).[3] They agree that the plant is a nettle and that it grows by the water. These two texts are in broad agreement on everything about this plant, and yet looking at these two images, one could ask: What happened to the dirt? In the Codex Badiano, the roots of Atzitzicaztli appear clothed in a material that, twenty-five years later, appears missing from the work of Hernández. So, where did it go?

Figure 1. Left: Two illustrations of *Atzitzicaztli: Codex de la Cruz Badiano* (1552), Plate 26. Right: Francisco Hernández, *Obras Completas*, vol. 2. (1570–77.)

The origin of the illustrations sheds some light on this question. The Codex Badiano was written and illustrated by two Indigenous authors educated in Tenochtitlan—the Mexica city sacked by Hernán Cortés in 1521, now Mexico City.[4] The authors are Martinus de la Cruz, a Mexica physician who composed the work in Nahuatl, and Mexican scholar Juannes Badianus, who translated the text into Latin. The Codex consists of one hundred and eighty-five oil color illustrations of medicinal plants, classified according to their medicinal uses. It was published thirty years later and is considered the oldest extant medicinal text in the Americas.

Badianus, its translator, learned Latin at the *Collegio de Santa Cruz*. In 1534, just fourteen years after Tenochtitlan fell to Cortez and the Spanish Empire, the college was established to train Indigenous students to read and write in Latin. Badianus was one of them. However, within a decade, the school lost political and financial support for this project. The origin of the Codex Badiano comes from the school's economic problems in 1536, when the college's directors decided to send it to the King of Spain to convince him to continue funding the school. The case was made precisely through this herbarium of "Aztec" medicine, intended to demonstrate how the college would serve as a tool to appropriate Indigenous botanical knowledge in the service of Spanish imperial interests.

The resulting manuscript is a remarkable document in many ways. Perhaps most striking is that the authors of the text do not make the default ontological distinction in the herbarium between plants (which are alive) and the dirt (which is dead). Nor does the illustrator distinguish between the plant and its constitutive relations with non-plants, like ants, which appear in other illustrations in the manuscript. For the Mexica authors of the Codex Badiano, a plant is not a morphological boundary between tissue and rocks, but rather the broader set of relational boundaries that describe the plant's place in the world.[5] In this sense, what we see in the Codex Badiano is an image of everything about Atzitzicaztli that cannot be put on a boat and taken to Spain or sold in the markets of Marseille.[6] Dirt can become ballast and plants can be transported, but their network of contingent ecological relationships are not portable. They get left behind as the ship leaves port, and what we are left with is the version of Atzitzicaztli we find illustrated in the work of Francisco Hernández.

The second illustration of Atzitzicaztli was produced just twenty-five years after the Badianus manuscript, for the *Historia Natural*

de la Nueva España.[7] In 1570, King Phillip II sent Hernández to New Spain to become Chief Medical Officer of the Indies. His instructions were specifically to find plants that could become new commodities for sale in European markets, but in reality Hernández was a physician at the cutting edge of his discipline. He belonged to a new episteme that would eventually develop into the Linnaean system of classification; in his careful attention to the subtle anatomical and physiological forms of Mexico's flora and fauna, we can see the birth of Western "natural history." As philosopher Michel Foucault describes this transformation in *The Order of Things: An Archeology of the Human Sciences*, the history of the non-human world suddenly merged with the appearance of its form. Plants became a particularly privileged site for natural history because they presented the shortest distance between words and things. Their forms were visible and appeared legible, as if they wore the grammar of their history on the surface of their bodies for all to see.

The "systems" that Foucault identifies with the birth of natural history required the identification of the key "characters" of the plant, through which the differences to other plants would be identified. Those characters then defined the conditions of possibility for historical difference. What is important about Foucault's description of the birth of natural history is that he identifies this process of representing the natural world according to its "characters"—not as seeing more of the natural world, but of seeing less. In these illustrations, "the living being, in its anatomy, its form, its habits, its birth and death, appears as though stripped naked."[8]

This is precisely the nakedness we find in Hernández's illustration of Atzitzicaztli. In comparing it to that of the Codex Badiano, we not only see the disappearance of earth, but more importantly, the disappearance of a botany that does not equate freedom with autonomy. The absence of the earth from Hernández's image of Atzitzicaztli was not a casual omission, but an expression of a cosmopolitical project at the heart of colonization itself. A century later, this would be given its clearest formulation by German philosopher Immanuel Kant. In this conception, freedom is autonomy, and autonomy is freedom from causation. To Kant, the organism (in this case, the plant) is a phenomenal analogue of freedom because it is self-causing. The earth, from which the plant is so carefully distinguished in Hernández's version of Atzitzicaztli, is a slave to causal forces it cannot control. The earth is an endless byproduct of some other plan, some other force, which makes it lifeless, inert, and unmoving. Earth becomes mere

ballast. The plant, by contrast, is capable of ends and, in reproducing, causes itself to exist.

For Kant, to fail to distinguish between a plant and its earth is to give up on freedom as a concept. It is also to give up on some of the most critical foundations of human exceptionalism. In removing the earth from Atzitzicaztli, the power of the earth to have any effect on the moral world is also removed. And we might want to note that without this removal, not very much about the world we live in today is comprehensible. To give an example that might clarify this, we could also say that the ontological commitments that removed the earth from Atzitzicaztli were the same ontological commitments that ended the animal trials. Since we do not believe animals are capable of freedom, they can no longer be tried in a court of law for committing a crime, as they were in medieval Europe.[9] The absence of the earth from Atzitzicaztli is not, therefore, a simple matter of convenience, related perhaps to the requirements of long-distance sea travel. Rather, it is a removal that is at the essence of the European cosmos and the project of colonization itself.

The problem is that this image of the naked and mechanical plant, which is somehow more free than its dirt but less free than you or I, doesn't always tell us what we want to know about the world. Now more than ever, we find ourselves confronted with the importance of the contingent relational networks that construct our empirical objects and blur the apparent boundaries of their visible forms. Invisible carbon dioxide in the atmosphere affects glaciers in Iceland, and bats, it turns out, have the same "ACE2" receptors that humans do.[10] In the harsh light of the COVID-19 pandemic and its attendant environmental crisis, the illustration of Atzitzicaztli in the Codex Badiano begins to appear fundamentally more accurate than the one completed by Hernández. The inclusion of the earth in the image of Atzitzicaztli expands the boundary between plant and non-plant to include all of the contingent living and non-living relationships that mediate Atzitzicaztli's relationship to human well-being.

If we return to the ballast flora of Marseille, what is clear is that the traditional natural historical categories we have inherited from figures like Hernández are simply inadequate to the task of drawing the boundaries of this flora, or showing us its history. If we are to take the term "ballast flora" seriously, then we have to imagine it like the image of Atzitzicaztli we find in the Codex Badiano, somewhere between the *bios* and the *geos*, with forms that are relational

rather than strictly anatomical. Even if the plants were collected in Marseille, the geographic boundaries of the ballast flora cannot be determined solely by where Monsieur Le Chevalier Ruyter decided to put his depot. Its history lies elsewhere. As Maria Thereza Alves shows us, the geography of the ballast flora is mapped instead by the boundaries of empire, the contingencies of the sea, the urbanization of Marseille, and the brutal economics of the transatlantic slave trade. *Seeds of Change* is a project that begins to trace these boundaries. In the painstaking work of reassembling the missing relational network of bare botanical forms and misplaced dirt, Alves produces knowledge in the gaps between natural historical categories that have always tried to appear as natural, inert, and apolitical as the ballast depots of Marseille.

(1) For the full archive of letters see Maria Thereza Alves, *Seeds of Change Marseille Chronology*, Marseille 2001 (archive of the artist).

(2) The Codex de la Cruz Badiano, also known as the Badianus manuscript, or the *Libellus de Medicinalibus Indorum Herbis* (Little Book of the Medicinal Herbs of the Indians) was discovered in the Vatican library in 1902 and published in facsimile in 1940. Meanwhile, Hernández's original manuscripts of Historia *Natural de la Nueva España* burned in a fire in the library of the Escorial, Spain, in 1671. However, pieces of the massive sixteen-volume compendium were published in various editions in the seventeenth and eighteenth centuries. Much of his work remained in manuscript form until the *Obras Completas* were published between 1959 and 1984. For facsimile editions see Martín de la Cruz, Juan Badiano, and Emily Walcott Emmart, *The Badianus manuscript (Codex Barberini, Latin 241) Vatican Library; an Aztec herbal of 1552*, trans. Emily Walcott Emmart (Baltimore: Johns Hopkins Press, 1940); Francisco Hernández, *Obras Completas*, ed. Germán Somolinos d'Ardois, 7 vols., Obras Completas de Francisco Hernández (México: Universidad Nacional de México, 1959). For more on the complex publication history of Francisco Hernández's work, see Hernández, *The Mexican Treasury: The Writings of Dr. Francisco Hernández* (Stanford, CA: Stanford University Press, 2000).

(3) The water nettle Atzitzicaztli is also known as *chichicaste*, and grows throughout the Caribbean and Central and South America.

(4) The Mexica (pronounced *mxihcah*) are a Náhuatl speaking ethnic group that migrated to the Basin of Mexico in the thirteenth century and became the dominant military and political force in Central Mexico. They have since come to be referred to by the generic modern term "Aztecs" (or "Aztecas" in Spanish), which derives from "Aztlan," the mythological homeland of the Mexica people. However, no political or ethnic group has ever referred to themselves as Aztecs. Walter R.T. Witschey and Clifford T. Brown, *Historical Dictionary of Mesoamerica* (Lanham, MD: Scarecrow Press, 2011).

(5) Barbara Williams has described this aspect of the Codex Badiano as the "ecological thinking" of Aztec botany. According to Williams, "It would have seemed quite unnatural to Aztecs to view soils and plants as isolated systems," and this is the image that gets conveyed in the Codex Badiano. See Barbara J. Williams, "Aztec Soil Knowledge: Classes, Management, and Ecology," in *Footprints in the Soil: People and ideas in soil history*, ed. Benno P. Warkentin, International Union of Soil Sciences, and Soil Science Society of America, 1st ed. (Amsterdam and Boston: Elsevier, 2006), 35.

(6) For a fuller explanation of this argument see Seth Denizen, "Five Soils and a Letter: profiles in the political ecology of Mexico City" (PhD diss., University of California Berkeley, 2019).

(7) The Universidad Nacional de México published a facsimile edition. Francisco Hernández and Germán Somolinos d'Ardois, Obras Completas (Mexico City: Universidad Nacional de México, 1959).

(8) Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences*. (New York: Routledge, 2005), 141.

(9) Cf. Edward Payson Evans' 1906 book *The Criminal Prosecution and Capital Punishment of Animals*.

(10) Yushun Wan et al., "Receptor Recognition by the Novel Coronavirus from Wuhan: An Analysis Based on Decade-Long Structural Studies of SARS Coronavirus," *Journal of Virology* 94, no. 7 (2020).

Resurrection Narratives: Seeds, Bodies, and Viruses

Katayoun Chamany

In *Seeds of Change*, Maria Thereza Alves challenges dominant historical, cultural, and political narratives on forced migration across continents. I would like to convey a sense of the radicality of her approach by drawing on my own field of study—the natural sciences and genomics in particular. Through historical and contemporary examples, I tease out parallels to Alves's practice of making that which was previously invisible visible. I do so by illustrating how new understandings of DNA movement and transposition have also altered existing narratives in evolutionary science. In tracing the migration of people, seeds, and soil, Alves deploys her artistic arsenal to launch a distinct set of inquiries related to the construction of human-made landscapes. As I'm dwelling on the artist's *Seeds of Change*, the questions that propel my thinking seem related: What are the social and political factors that trigger movement? Can proximate environmental factors assist in the transition to new locales? How do contemporary local contexts support assumptions regarding provenance and function? How can relocation and manipulation influence which life survives and which does not?

Alves incorporates transaction receipts, port records, and other forms of archival documents into her sweeping, transdisciplinary research creating new kinds of mappings. They speak of the far-reaching impact of forced movement on plants and people who have been violently uprooted, transplanted, and re-inscribed by narratives of those in power. As she engages in this research, she both refers to and refutes the conventions of Western natural history and its origins in colonial exploitation and Linnaean classification systems. By juxtaposing different knowledge systems and epistemologies, Alves offers an expanded notion of "landscape," considering both the contingencies as well as the potentialities of "altered" landscapes. Landscape usually refers to the exterior world: human-made alterations to land, vegetation, and geophysical features of a place. However, I propose that the notion of landscape also applies to the physical world on a

microscale and that phenomena of exploration, exploitation, and adaptation occur on that scale as well. By diving into the history of genomics, I hope to provide a useful lens applicable to Maria Thereza Alves's visionary artwork.

The first scientists to map genes placed great value on DNA sequences and called them directly responsible for defining the physical and behavioral features of organisms. They saw the stretches of genome lying between genes to be irrelevant. The notion that each species holds its specificity in its genes and not in the intervening DNA went unquestioned for much of the twentieth century. Two pioneering scientists, Barbara McClintock and Lynn Margulis, were instrumental in fundamentally revising this dogma that had shaped the Western narrative on evolution and eugenics. McClintock, a botanist studying maize, hypothesized that some of these intervening DNA sequences "jump" from one genomic location to another and thus control the expression of neighboring genes, which contributes to the color variegation of kernels.[1] Notably, McClintock used fraught and provocative analogies to evoke the degree to which one genetic sequence is controlling another and contemplated "master-slave possibilities" in a correspondence with colleague Oliver Nelson.[2] Despite the problematic framing, McClintock's work provided Margulis, an evolutionary biologist, with the necessary mechanism to operationalize her own theory of lateral gene transfer. Margulis argued that DNA from multiple organisms can work together, and that to maintain this collaboration, DNA can mobilize and move laterally across populations and species within a generation.[3] With each genetic transposition, neighboring DNA sequence information can be resurrected, activated, or silenced.

Today, it is no longer acceptable to assume that a genetic sequence is confined to a static location in an organism's genome or even within a single species. The trajectory of DNA migration within a cell's genome, among cells in an organism and across species boundaries, provides historical insight regarding ecological relationships and movement during periods of great duress. When a population experiences an inhospitable climate or threat, these environmental cues trigger the transposition of DNA and thereby alter the genomic landscape to create diverse responses, increasing the likelihood that one individual in the population may survive. As a consequence of these paradigm shifts regarding genetic structure and organization, some species delineations have been thrown into question, and evolutionary constructions in the form of phylogenetic trees have been revised.[4]

The uniform naming and classification system put forth by Carl Linnaeus in *System Naturae* was established nearly two hundred years before botanist Wilhelm Johannsen coined the term "gene" in 1907.[5] Linnaeus's naming system was informed by careful analysis of the morphologies of organisms, not their genetics. The botanic garden was the research hub in which he investigated the relationships of physical form with function and used inference to draw temporal lines of evolutionary connection. For more than three hundred years, colonial expansion exposed naturalists to biodiverse landscapes and Indigenous practices of growing and utilizing plants for medicinal purposes. Yet, as resources were gathered and taken back to Europe, the Indigenous knowledge was detached from the plant, as documented by geopolitical scholar Mary Louis Pratt in *Imperial Eyes*:

> *The landscape is written as uninhabited, unpossessed, unhistoricized, unoccupied even by the travelers themselves. The activity of describing geography and identifying flora and fauna structures as an asocial narrative in which the human presence [. . .] is absolutely marginal, though it was, of course, a constant and essential aspect of the traveling itself.*[6]

A product of imperialism, the botanic garden served as the foundation upon which classification systems were built but lacked ecosystem context. As anthropologist Cori Hayden remarks in her book *When Nature Goes Public*, when organisms and genomes are removed from their social context and tagged for collections, valuable knowledge is lost, and threads of connection severed.[7] The result of this dissociation has been a rapid and continual shift of evolutionary relationships that are illustrated in ever more elaborate taxonomic trees. The detachment enables Western scientists to claim a more "objective" analysis of genetic conservation, yet, in removing the environmental and social context, geographic and functional differences disappear. That is to say, how the plant looks and behaves depends on the environment in which it is viewed. To designate species boundaries out of environmental context is human-made artifice.

Alves's exhibition in Bristol takes up this claim. She argues that such transplantation of genetic information and its analysis—without establishing an environmental connection—begs the very real and metaphorical question: Who has the power to construct meaning when borders do not exist? In the early twentieth century, biologists believed that they could accurately organize species based on morphologic attributes and created early taxonomic trees. Not

surprisingly, because the branches on these taxonomic trees could choose to omit certain relatives, they served as powerful tools for rationalizing human slavery, placing non-Caucasian populations on a different evolutionary branch. However, nature does not recognize these human-made boundaries. Instead, through a variety of mechanisms, DNA moves among species, creating new combinations of genetic information leading to speciation and adaptation. DNA mass is in continual flux and migration.

Like seeds, genetic sequences can be repositioned, migrating through populations and across species, spanning plants, microbes, and animals. Where seeds land influences whether they lie dormant or are resurrected, and the same is true for genes. Thus, gene flux offers potentialities that can be triggered during times of great duress, contributing to resilience or susceptibility to environmental change. Understanding these potentialities necessitates a critical view of genetic determinism and is responsive to Alves's message on the gallery wall, "Deconstruct your construct of my construct."

Deconstruction is hard. In evolutionary biology, the global amassing of genetic information without consideration of ecological context has not always been welcomed. A generation of scientists accustomed to the microscopic, clinical, and morphologic means of categorization was not immediately keen to embrace the revised taxonomic orientation based on new genomic data. The alignments of different microbial genomes, as just one example, revealed that many DNA sequences had been exchanged among microbes that had previously been separated on phylogenetic trees. Given the flux and movement of genes, naming and classification were revised, and it became clear that a new archiving platform was needed to help scientists align historical information under one microbial name with additional information under a different and updated name. Alongside publicly funded efforts, some in the private sector pursued the same goal. One company that has emerged is fittingly called NamesforLife (N4L) and sports the tagline "Bringing meaning to life."

N4L pursues archival and contemporary artifacts that update and correct our understanding of microbial evolution across space and time. In N4L, genomic data supersede physical or morphological data and are accessed for a fee. A quick hover of the mouse on any named object conjures up the archive as a complex web of "authoritative" publications, DNA sequence information, and functional characteristics. It is also of note that N4L also provides information regarding accessibility and location of the microbe

but does not itself house the organism. The microbe may be stored in any number of laboratories across the globe, and thus, like the seed ballast, the microbe is capable of propagation outside its native ecological niche. In this way, N4L is the microbial equivalent of a human recreational genomics company, rewriting origin stories using revised nomenclature that reveals new kinship connections. Meanwhile, the laboratories to which N4L points are more akin to botanic gardens, acting as repositories of living organisms transplanted and propagated for educational, financial, and research purposes.

In *Seeds of Change*, we recognize elements of NL4; both efforts seek to provide a more authentic narrative of provenance by drawing on diverse sources in historical archives. In retelling the story of migration, Alves works backward from the life of plants in European and American settings to the archival material that has long been disjointed from the ballast soil that initially supported their germination. With each new iteration of *Seeds of Change*, the evolution of the site-specific work unveils histories suppressed and "made unknown" by colonial extraction and routing systems. In identifying the country of origin for the ballast, Alves challenges the dogma of the historical record related to the transatlantic slave routes.

A similar phenomena related to African legacies occurred in the field of cell biology. As early as 1953, there were inklings that many human cell cultures were suffering from mistaken identities; the fact that many were established from cancer biopsies may have led to this unfortunate situation.[8] An extensive analysis of the cell cultures revealed that most traced back to a cervical cancer tumor biopsy removed from an African American woman, Henrietta Lacks, in 1951. As was common practice at that time, clinical biopsies were used in cancer research without obtaining informed consent–rules regarding informed consent with identifiable biospecimens were not issued until 1991. During the 1950s, the goal of culturing cells from these biopsies was to establish a cell model for the study of cancer, referred to as a "cell line."

Cell lines involve the clonal propagation of cells from a common origin cultured in a laboratory environment and, thus, represent a lineage to the person from which the cells were obtained. Cancer cells are particularly good starting material for cell lines as their dynamic gene rearrangements result in activation of genes involved in cell proliferation. In sampling current day cell lines stored in various frozen repositories, it was revealed that up to ten percent of commonly used lines are derivatives of HeLa cells. Thus, similar to

the plants that grow from seed ballast on faraway continents, HeLa cells seemed to have crossed boundaries to grow in unexpected places.[9]

In Lacks's case, race, gender, and socioeconomic status contributed to the immortal nature of her cells and their ability to thrive in cell culture. During the Jim Crow era, when Lacks was diagnosed, John Hopkins Hospital was one of only a few hospitals serving African Americans. More significantly, medical experimentation on African American bodies was common knowledge in this community, leaving few willing to take the risk of entering a hospital. In addition to this racial discrimination, Lacks also lacked agency to protect herself from exposure to sexually transmitted infections due to her husband's documented extramarital affairs. As a consequence of a sexually transmitted viral infection, her tumor contained cells with dynamic gene rearrangements resulting in highly proliferative cells capable of growing in non-native environments, such as a laboratory.

In identifying the HeLa genetic signature in certain resilient cell cultures scattered around the world, scientists established that these cultures were, in fact, seeded by the cells derived from the cervical biopsy of Henrietta Lacks. Some have argued that Lacks's cells were defined, controlled, and exploited by those in power, not unlike the bodies of her enslaved ancestors. By providing a fruitful landscape for the study of cancer and the screening of potential drugs to treat disease, HeLa cells transformed the field of biomedicine in the same way that chattel slavery supported the agricultural and textile economies of the United States. HeLa cells have since served as the foundation of life science research and given rise to a commercial industry that includes the American Type Culture Collection (ATCC), a repository that distributes cells to researchers in academia and private industry.

Given the unique genetic features of HeLa cells, evolutionary biologist Leigh Van Valen and Virginia Maiorana claimed that the cell line represents a species distinct from human, a disturbingly offensive conclusion. They went so far as to suggest a new naming convention, *Helacyton gartleri*, and marine biologist Richard Strathmann suggested a reclassification in the kingdom Protista in which single-celled microbes are situated.[10] To suggest that Lacks's cells devolved, moving backward to a more primitive life form could be viewed by those outside of science as racist. It is hard not to view the dehumanizing of Lacks's cells as an echo of the rationale for the enslavement of Africans.

Through work on HeLa cells and other cell lines, it is now

known that viruses are the primary drivers of gene flow, defined as the migration of genetic information from one population to another.[11] With many viral infections, genetic recombination with the host genome is possible. Thus, as viruses move in and out of cells, they may leave behind a bit of themselves and also carry some of the last host's genetic sequence alongside their own. In this manner, genetic sequences are flowing among us, with up to forty-five percent of the human genome made up of DNA sequences distantly related to viral genetic sequences. The ubiquity of these DNA sequences in all organisms suggests that they are important to carry, maintain, and control, with environmental stress being the primary trigger for their relocation and subsequent activation in a genome. The presence and position of these vestigial viral sequences in our genomes also serve as a historical record of geographic migration occurring over millennia. With so much DNA movement, the eighteenth-century classifications and naming systems that depended on genetic stasis no longer hold. Today's biology involves continuously renaming and reclassifying organisms based on this more malleable and fluid map of gene flow.

Like viruses, seed dispersal also contributes to gene flow. By identifying plant species in European ports, Alves tracked ballast back to the African continent from which people were forcibly taken. Her research demonstrates how human technologies blurred boundaries; in this case, traditional biogeological boundaries. As a cell biologist, I was immediately struck by the fact that the seeds in ballast are surrounded by the soil from where they originated. On the one hand, this suggests that the ballast soil provides the most permissive habitat to ensure dormancy in dry conditions and, likewise, germination when seeds are again exposed to sunlight and water. The permissive factors would include specific pH, nutrients, salinity, and bacteria to support root development. Perhaps the stress of the transatlantic passage induced the movement of essential DNA sequences from bacteria to plant genomes, which provided expanded possibilities in confronting the challenges of their new environments.[12] Upon landing in Marseille, on European soil, seeds unaccustomed to the climate and nutrients were afforded the time to germinate in the more familiar setting of the ballast soil from their homeland. Additionally, mobile viral sequences may have been activated or silenced in the new environmental context as part of a stress response and may have contributed to the resurrection phenotype required for adaptation to a new land.

Maria Thereza Alves's *Seeds of Change* teems with the vibrancy of plants growing in greenhouses, galleries, or neighborhood gardens. That the seeds germinate in a range of environmental contexts points to their resiliency. The plants are also a stand-in for another kind of life that was subjected to stress and dislocation. *Seeds of Change* engages us with the beauty of a bountiful garden yet invites us to contend with the reasons for such growth, quite specifically the legacy of the horrific consequences of the Atlantic slave trade. Unlike the seeds that were protected in native soil, the enslaved Africans, who were treated as human cargo, were removed from their ecological and social context. No equivalent of familiarity was provided to the enslaved, no residual "homeland." In the New York exhibition of *Seeds of Change*, one of Alves's text panels states:

> *New York settlers preferred enslaved Africans "seasoned" in the Caribbean to enslaved Africans purchased directly in Angola. Perhaps that is why Caribbean coral sand used as ballast was discarded in the harbor of New York.*

It seems that the colonialists were well aware of the significant role that "place" plays in shaping the health and constitution of an individual. At its very core, *Seeds of Change* provokes us to consider the indelible marks left on Africans subjected to the brutality of slavery. Some epigeneticists have theorized that the stressful conditions of slavery have been imprinted on the genomes of the descendants of enslaved Africans—as has been proposed for the descendants of victims of other forms of intergenerational trauma, such as the Holocaust.[13] These investigations have come under scrutiny by peers and, in some cases, rejected based on faulty methodology.[14] Despite debates in the scientific community, some activists utilize these proposals and studies to advocate for acts of reparations for the present-day descendants of enslaved peoples. They hypothesize that the genomes of African Americans are branded by past violence[15] of the Middle Passage and that chemical imprints impact the topology of the genomic landscape, altering access to mobile DNA sequences. Transformations like these can change responses to the stress hormone cortisol, leading to insulin insensitivity and increased inflammation related to chronic disease. Whether these transformations occurred in the past or are shaped by the present, they are a consequence of four hundred years of oppression that has disproportionately affected the health of African Americans.

Though epigenetics may reveal environmental health disparities, genomics research can also provide missing information to those

searching for genealogical clues to a past severed from its future. In constructing family trees for African Americans, recreational genomics companies attempt to retrace the journeys of enslaved ancestors, following a trail of kinship back to the soil of their homeland. Bearing witness to this evidence is far from recreational, as it reaffirms violence exerted and experienced over centuries. Likewise, in *Seeds of Change*, Alves transforms gardens, traditionally associated with acts of leisure and recreation, into a web of connected human-plant histories that serve as storytellers of traumatic pasts.

(1) Nathaniel Comfort, "The Real Point Is Control: The Reception of Barbara McClintock's Controlling Elements," *Journal of the History of Biology* 32, no. 1 (1999): 133–62.

(2) Ibid.

(3) Michael W. Gray, "Lynn Margulis and the Endosymbiont Hypothesis: 50 Years Later," *Molecular Biology of the Cell* 28, no. 10 (2017): 1285–87.

(4) David Quammen, *The Tangled Tree: A Radical New History of Life* (New York: Simon & Schuster, 2018).

(5) Rachel O'Donnell, "Imperial Plants: Modern Science, Plant Classification and European Voyages of Discovery," *Graduate Journal of Social Science* 7, no. 1 (2010): 59–72.

(6) Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation* (London and New York: Routledge, 1992).

(7) Corey Hayden, *When Nature Goes Public: The Making and Unmaking of Bioprospecting in Mexico* (Princeton, NJ: Princeton University Press, 2003).

(8) John R. Masters, "HeLa Cells 50 Years On: The Good the Bad and the Ugly," *Nature Reviews Cancer* 2 (2002): 315–19.

(9) The United States Office of Health and Human Services provides guidelines and rules for research with human subjects and biospecimens. In response to the Tuskegee Syphilis Trial, in which African American men were subjected to unethical research practices, the National Research Act was passed and signed into law by President Nixon in 1974. This law supported the formation of a commission to guide the development of regulations to oversee research with human subjects and the establishment of Institutional Review Boards. The commission issued the Belmont Report in 1979 and in 1981 the Office of Health and Human Services and the Food and Drug Administration brought their practices into alignment with the guidelines in this report. In 1991, the Federal Policy on Protection of Human Subjects (known as the Common Rule) was adopted by fifteen federal departments. Under these regulations, anonymized biospecimens used in biomedical research do not require researchers to obtain informed consent from the person providing the sample. Informed consent is required for biospecimens with identifiable information. https://www.hhs.gov/ohrp/regulations-and-policy/regulations/45-cfr-46/revised-common-rule-regulatory-text/index.html#46.102 and more specifically for biospecimens https://www.hhs.gov/ohrp/sachrp-committee/recommendations/attachment-c-faqs-recommendations-and-glossary-informed-consent-and-research-use-of-biospecimens-and-associated-data/index.html.

(10) Lori Oliwenstein, "No Longer Human," *Discover*, December 1, 1992, https://www.discovermagazine.com/health/no-longer-human.

(11) SARS-Co V2, the virus responsible for the COVID-19 pandemic, has established a reservoir in animals and humans. These hosts provide the virus with opportunities for genetic recombination resulting in an increasing number of variants and the potential for vaccine escape mutants, as well as new strains of the virus altogether.

(12) Michael F. Seidl and Bart P.H.J. Thomma, "Transposable Elements Direct the Coevolution between Plants and Microbes," *Trends in Genetics* 33, no. 11 (2017): 842–51.

(13) Rachel Yehuda et al., "Influences of Maternal and Paternal PTSD on Epigenetic Regulation of the Glucocorticoid Receptor Gene in Holocaust Survivor Offspring," *American Journal of Psychiatry* 171, no. 8 (2014): 872–80, https://doi.org/10.1176/appi.ajp.2014.13121571, 872–80.

(14) Andrew Curry, "Parents' Emotional Trauma May Change Their Children's Biology. Studies in Mice Show How," *Science*, 2019, https://doi.org/10.1126/science.aay7690.

(15) Élodie Grossi, "New Avenues in Epigenetic Research about Race: Online Activism around Reparations for Slavery in the United States," *Social Science Information* 59, no. 1 (2020): 93–116, https://doi.org/10.1177/0539018419899336.

Migration's Silent Witnesses: Maria Thereza Alves's Seeds of Change, Marseille

Jean Fisher

In a complex work from 2000, *Wake*–created prior to *Seeds of Change*–Maria Thereza Alves identified several construction sites in Berlin that she considered suitable for an artwork based on investigating the botanical history of the earth by way of seed germination. In addition to taking core earth samples and organizing appropriate conditions for germinating whatever seeds had lain dormant in the soil, the artist conducted an extensive investigation of records relating to the history of that part of Germany and the movements of goods, animals, and people, including refugees and soldiers. Among her findings at the Charlottenstraße/Französische Straße site was the link between Berlin and Alsace-Lorraine (from which Huguenots had fled, among them gardeners). Furthermore, as she comments: "During the 1800s, the rise of nation-states also affected the field of botany. Priority was given to national studies of flora." With the successive exchanges of Alsace-Lorraine between Germany and France, "unlike conventional botanical studies, the research from Alsace-Lorraine documents not only the flora but also how political changes affected that flora," the artist added. Species specific to the region had to be added or subtracted from the national inventory.[1] In addition, Alves located lists of flora that included species from all parts of the world, representing seeds not only legitimately introduced by trade but also "piggybacked" into Germany on clothing, shoes, baggage, animal fur and hooves, and so forth. Otto von Bismarck's attempts to create a German national state and identity, to be reflected by the "national" flora of his Minister's Garden once in the vicinity of Alves's Voßstraße/Behrenstraße site, would undoubtedly be thwarted by the lack of respect given by plants to national borders.

That flora do not escape the politics of national identity is signaled by the fact that most nations have "adopted" a flower as a national symbol, as if it were somehow exclusively contained within its borders. But how and by what criteria are flora defined as state-specific?

If there can be said to be a "founding moment" to globalization,

it is the so-called discovery of the Americas in 1492. According to philosopher Enrique Dussel, until then, Western Europe had been a fairly insignificant territory on the periphery of the known civilized world to the East. Following its disastrous Crusades, Europe found its attempts to forge an overland route to this fabulous world of wealth and knowledge blocked by Islam and the Turks, forcing it to seek a sea passage. When Portugal controlled the eastward sea route around Africa, Spain had no alternative but to develop the westward course across the Atlantic, opening the oceans to globalized mercantile shipping. With the increased lucrativeness of the transatlantic trade routes, the eastern trade routes fell into relative decline, leading to the rise of wealth and hence the technological and military power of Western Europe. For these reasons, Dussel describes this era as the beginning of modernity and the first politico-economic "world-system." The major countries to capitalize on this mercantile expansion protected by military sea power were those on the western seaboard of Europe. As Dussel describes it, when Spain—supported by its colonial ports in Flanders—lost its initial advantage, power shifted to the more economically pragmatic (that is, proto-capitalist), predominantly Protestant countries: first Holland, then England, and later, of course, with full-blown capitalism, the United States.[2]

As we well know, this early globalization did not follow a path of equal exchange between Europeans and the peoples they encountered in the "new" territories. New natural resources and markets had to be secured by annexing territories and establishing colonial settlements, as well as by cheap labor organized to work the mineral mines and monocrop plantations. This was all safeguarded by militarized, technocratic infrastructure in which the "Natives," if they could not be coerced, had to be violently subdued or eradicated. With the global extension of European empires, human trafficking (indenture and slavery) became as lucrative as the trafficking of goods and raw materials, eventually displacing peoples to Europe and the Americas, not only from Africa but also from the Indian subcontinent and Southeast Asia. As has often been said by postcolonial commentators, modernity began with the traumas of cultural dispossession and displacement. In the decolonization period following World War II, the majority of immigration patterns into Europe—by then mostly voluntary—retraced the old colonial trade routes.

The growth of European imperialism from the late seventeenth to the early twentieth century cannot be divorced from two further major sociopolitical changes. Firstly, the industrialization of both

agriculture (the sequester of arable land into vast estates) and manufacture, leading to the massive migration or displacement of people from rural to urban areas. Secondly, the rise of the political entity: the nation-state, demarcated and policed by more or less distinct (if sometimes contested) geographical borders, the concomitant demand for a coherent national identity, and the gradual expansion of citizenship rights across a population. These are usually administered by the nation's governing elite as if its residents share the same cultural narratives and descent, language, aspirations, and beliefs (a fallacy even within the small geographic territory of the United Kingdom). But imperialist and nationalist interventions severely altered the relationship between geopolitical boundaries, cultural and ethnic boundaries, and the distribution of power among diverse populations. The assumption of national homogeneity is not sustainable in states that include federated "nations" or "peoples," defined as possessing distinct social organizations, worldviews, and symbolic systems, and hence unique cultural identities and ways of constructing subjectivity. This is especially so when considering the subjugated position of Indigenous nations within settler nation-states. Their early legal status as nations was subsequently reduced to that of one "ethnic minority" among others in a melting pot in which differences, it was assumed, would dissolve into an Anglo-Saxon model of identity, effectively rendering Indigenous peoples as foreigners in their own homelands. Thus, despite the vicissitudes of several hundred years of enforced assimilation and disempowerment, political sovereignty, land and resource rights, educational priorities, and cultural survival remain on the agendas of Indigenous peoples under settler states.

Nor is this assumption tenable in nation-states comprised of culturally and ethnically diverse diasporic populations. While they do not, like Indigenous nations, claim political sovereignty and land rights—since, in their search for a new belonging, they accept the principles of integration—they may come into conflict with the nation-state over minority ethnic rights (the citizen's right of social and political participation without prejudice and discrimination) and familial and cultural affiliations that extend geographically beyond the boundaries of the nation-state.

Boundaries—geographical, cultural, or social—create binary oppositions: inside/outside, native/foreigner, citizen/non-citizen, cultural authenticity/inauthenticity, assimilation/isolation, and so forth. The foreigner is whosoever and does not belong to the defined group; indeed, within the European schema, native and alien are

mutually constituted by the very act of definition. If the foreigner was historically defined according to the *jus soli* (law of the soil) and *jus sanguine* (blood tie) under most modern, democratic nation-states, the right of citizenship has not been dependent on atavistic criteria of belonging, but instead defined legislatively. It has been the general tendency in liberal democracies to grant rights of citizenship under *jus soli* (with the implication that ethnic and religious affiliations were outside the legislative mandate of the state or if an individual accepted the social and political terms of the nation: nationality, or "naturalization" as it is quaintly termed). (One notable exception was Germany's application of *jus sanguine*, which granted citizenship rights to ethnic Germans in Russia but denied them to Turkish settlers in Germany.) Following hundreds of years of human migration, in our "multicultural" societies, specific cultural practices now exist alongside new mixed ethnic urban populations and syncretic cultural processes in which multiple historical trajectories may or may not coincide. Nonetheless, we still confront tensions and disjunctions between what constitutes cultural and ethnic identity and national identity and citizenship, testing the human capacity for hospitality and hostility.

It is the context of these complex issues of migration, belonging, and national identity that the work of Maria Thereza Alves addresses. This is especially the case for the body of works collectively titled *Seeds of Change,* which provides us with unexpected relations between old mercantile shipping routes and the biodiversity of flora adjacent to European ports, several of which were implicated in the slave trade.

Seeds of Change extends the artist's strategies of archival and botanical research into specific sites of interest involving historical research, map referencing, core-sampling of soil, and seed germination, this time in connection with the ballast discharged at mostly designated sites by ships before they entered port. As Alves points out here, ballast represented all kinds of materials picked up by vessels in exchange for unloaded cargo and would therefore contain and transport seeds from the ballast point of origin to the country of deposit. As such, Alves's ballast narratives retrace the shipping trade routes that affected the illegal entry of plants, which, in Europe at this juncture in time, may be so familiar as to blur our concept of what does and does not represent an "authentic" European flora. That is to say, like human immigration, seed immigration problematizes the means by which national identity and belonging are defined. As Alves also points out, the biodiversity of British flora has accelerated

only since the eighteenth century with the introduction of alien plants that, without doubt, subsequently "escaped" the confines of ornamental or "landscape" gardens. Most significantly, Alves points out how this affected the English landscape.

The question of native/alien or inclusion/exclusion, however, remains a controversial political issue, even in botanical terms. On Kew Gardens' website devoted to its Millennium Seed Bank Project, set up to preserve the "rarest, most threatened, and most useful species known to man," the dangers to plants are listed as: "climate change, habitat loss, invasive alien species, and over-exploitation."[3] One might wonder about "invasive alien species." If the rights of citizenship and belonging are to be granted by *jus soli*, then the successfully rooted "alien" literally claims such rights. It goes against the grain of nature's own processes to censure alien species because of their inadvertent dissemination and successful colonization of specific ecological niches. Alas, this is also true for humans; the global movements of humans have ensured that nothing stays securely in one "place." Intercultural exchanges blur the distinctions between inside and outside, and belonging must be a constant process of negotiation.

Alves's artistic practice is itself a form of negotiation. Unlike scientific research, it is not concerned with determining universalizable principles but with uncovering the buried sociopolitical histories and realities of locality; it is about reintegrating "lost" stories into contemporary local narratives. In this respect, her excavation of dormant seeds in layers of soil yields an elegant and surprising "eccentric" reading of the historical archive and the familiar forms and usages of documentation, insofar as the "archive" is as much about what it conceals as what it potentially reveals or is allowed to reveal by its administrators. Throughout this process of excavation, Alves functions less as an "exemplary" authorial artistic subject than as a mediator and catalyst in projects often involving the collaboration or advice of non-art professionals (for instance, the botanists Heli Jutila and Bernd Machatzi), civic officials, and local communities. In Marseille, the site of Alves's first *Seeds of Change* work, the artistic aim was to produce a garden administered by local residents and serve as a reminder of the city's maritime history and its involvement with Africa and the Americas via the slave trade and other colonial practices. The progress of the project was unfortunately thwarted by a change in local government. However, the subsequent *Seeds of Change* project in Pori (Reposaari, Finland) was fully developed and is exemplary in its engagement with the local people and the symbolic role of the

botanical stranger in the circulation and exchange of shared interests among the community.

If the customary role of art is to prompt a dialogue among its viewers "after the event," as it were, around an already prescribed object, in Alves's case, the discussion begins prior to the emergence of the work. Indeed, while the artist initiates the project and controls its final outcome, the work's trajectory is conditioned by the conversations and the various local knowledges brought to the project by its advisers. This approach has been called, among other things, "dialogical aesthetics,"(4) drawing on Mikhail Bakhtin's analysis of certain structural forms of literature capable of simultaneously articulating differing meanings, interpretations, and points of view. At base, this approach aims to disengage art from discourses that maintain its distance from daily realities in order to explore its relation to the wider sociopolitical sphere. By analogy, Alves's *Seeds of Change* projects address the vexing questions of agency and belonging beyond essentialist definitions of race, ethnicity, class, religion, etc. There is an acknowledgment that, while one may speak from positions informed by specific cultural experiences and perspectives, these are modified through the reconfiguration of social and historical narratives. Through these, the "native" and the "alien" may come to balance the relations of hospitality and hostility and recognize a political solidarity in shared experiences, interests, and goals.

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(1) Maria Thereza Alves, *Wake: A Project for Berlin* (Berlin: DAAD/ 4FREE exhibition at BuroFriedrich, 2000), 14–15.

(2) Enrique Dussel, "Beyond Eurocentrism: The World-System and the Limits of Modernity," in *The Cultures of Globalization*, ed. Masao Miyoshi and Fredric Jameson (Durham, NC, and London: Duke University Press, 1998), 13–21.

(3) The Millenium Seed Bank Project is in collaboration with several countries, which select and keep seeds samples for their own banks. A second major seed bank is to be built in a concrete room deep in the permafrost of Spitsbergen Island in a collaboration between Norway and the independent international organization Global Crop Diversity Trust.

(4) Grant Kester, "Conversation Pieces: The Role of Dialogue in Socially-Engaged Art," in *Theory in Contemporary Art Since 1985*, eds. Zoya Kocur and Simon Leung (Oxford: Blackwell Publishing, 2004), 76–88.

Reposaari, Finland

Maria Thereza Alves
Seeds of Change: Reposaari, 2001

At one time, the port of Reposaari in Pori was the largest in Finland. There, merchants traded with Africa, Asia, South and North America, as well as various countries in Europe. Ships even sailed as far as Australia, where wood was taken and, in exchange, wheat and ballast were brought back.

Curator Marketta Seppala commissioned *Seeds of Change* for the town of Reposaari for the exhibit *Empathy* at the Pori Art Museum. The ballast flora in Reposaari, which today is a small village, had already been studied by botanist Dr. Heli Jutila, who cooperated on this project and in Marseille. Jutila originally based her studies on ballast flora growing in Reposaari. Although ballast flora grows all over the town, Jutila explained that due to constriction of time, her own scientific studies were usually conducted in areas of public domain where permission is not necessary. In agreement with Jutila and to complement her research, I therefore concentrated on collecting ballast soil samples in private areas, such as the homes and gardens of the residents of Reposaari. And thus the residents began revealing their ballast plants. These samples later germinated in the well-maintained greenhouse of the University of Turku. The result of these samples on private lands would lead to a co-authored scientific ballast study.

Top: Map of Reposaari.
Bottom: Ballast being unloaded in Reposaari. Drawing by Veikko Andersson, 1998.

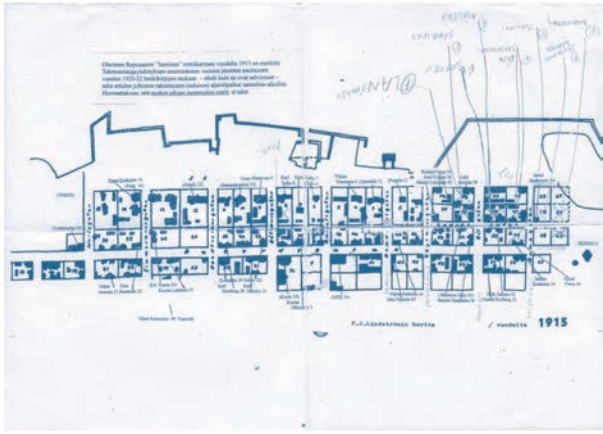
One woman, Soili Tuukki, had several ballast plants growing in her garden. Some sprung up naturally; others were the results of bartering with neighbors. One day, she leaned over the end of her fence at the back of her garden and pointed out an exotic ballast plant growing in the neighbor's garden, which had formerly been the property of Grandel, a ship captain. Tuukki told us that a few years back, she had seen the plant on the far side of Grandel's garden, closer to the water, near the former port where ballast material had been deposited. Over the years, the plant's seeds were whisked along by the wind, and the plant progressed further up the

fence line. She removed one wood stave from her fence to facilitate the arrival of the seed into her garden.

Jyrki Takkunen now owns the Grandel house, where several ballast plants grow around the ample garden. When he purchased the home from the captain's widow, she pointed out some special flowers that had sprung up accidentally after the captain returned from one of his many international trips. In Takkunen's purchase contract, it is stipulated that he is not allowed to remove these accidentally imported plants.

Left: Soili Tuukki and her husband. (MTA, 2001.)
Right: Jyrki Takkunen. (MTA, 2001.)

Jorma Pakkanen has maps of the areas where ballast material was used as landfill to build up the island. The Pakkanens were proud of the variety of ballast plants growing in their garden.



Notes by Alves of local residents and ballast. (Courtesy the artist.)

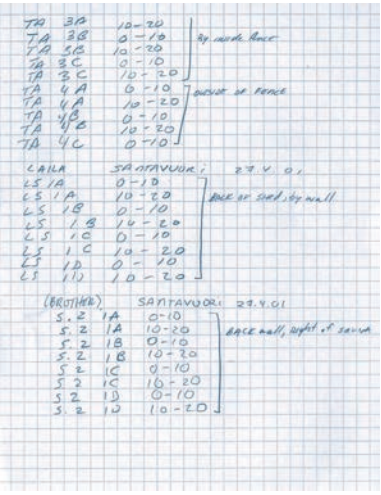
Eero Raesma's house faces the Gulf of Bothnia and what was formerly the harbor area. In the middle of the garden in the front yard, a solitary exotic ballast plant stands majestically. Toward the back, Raesma cultivates large areas with ballast flora. He became interested in these plants as a child after a school teacher asked students to collect about thirty samples of plants and classify them from botany books. He could not identify them in the *Finnish Flora* and soon discovered how special these strange plants were.

Others on the island learned about the ballast plants from newspaper articles, the radio, or neighbors. Today, children from the island only learn about botany when they are in the secondary level of schools in Pori, and not much specific information is passed on about the ballast flora of the island.

When we visited Raesma's home, he emerged from one of the outbuildings carrying a tray of jars containing seeds from these exotic plants. He traded these seeds for cakes.

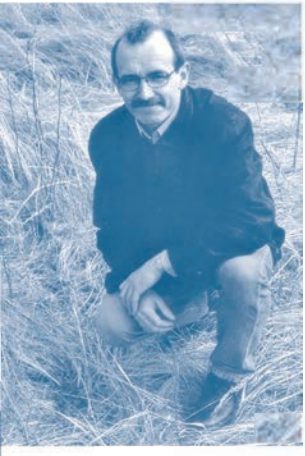
Eero Raesma with his favorite ballast plant. (MTA, 2001.)

Liisa Santavuori's house, and that of her brother, is built directly on an area created from ballast material. Ballast plants grow abundantly around their gardens, from which I took several samples. As a young child, Santavuori became interested in these peculiar looking bright flowers. Her parents warned her not to pluck them, as they were special. Today, in the cellar of her brother's house sits a large pile of ballast sand from a long time ago. I took samples from it, but nothing grew. Among the ballast material, Santavuori has found ceramic pipes belonging to Dutch sailors. This is not unheard of; several households on the island have a place in their homes reserved for unusual objects found in ballast material.



Notes by Alves of depth of ballast samples removed from resident's homes. (Courtesy the artist.)

The home of Mauri Tal, principal of the local grammar school, is too far away from the original ballast area to have any plants. Instead, he collects stones that he has picked up from ballast material throughout the island. Although plants had not yet had the chance to spring up at a newly installed lamppost, dozens of unique stones lying on the surface testified that the soil was ballast material. Just past the church meadow–which had recently had a layer of earth removed by bulldozers and was then deposited in the nearby woods–this newly made mound was flecked with ballast stones. The black flint with white chalk comes from somewhere around Malmo in Sweden. Geographer Karri Jutila has identified one of the rocks as limestone with fossils of a crystallized former tube of a beach worm found in Gotland, Sweden. Even coral has been found.



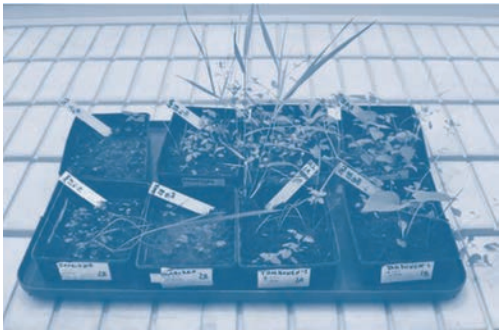
Mauri Tal. (MTA, 2001.)

Resident Salminen Tuulikki said her mother was given a recipe by a relative visiting from America for bread that includes the seeds of cumin, a ballast plant that grows on the island. She now likes to keep track of where her favorite ballast plants are growing around the island and their progress inland. One plant that had first been spotted by the shore had, in just two years, trickled toward the church meadows just across from her house. Soon, it might come into her garden.

Veikko Andersson's house lies along what had been known as the London Road, which leads to London Villa. The venue was built by the owner of a dock in the port of Reposaari; its foundation was leveled with ballast material. A temporary road was made from the pier, which is on the other side of the island, linking it to the villa to

transport the ballast. Along the way, ballast material spilled from the wagons, and plants grew where one would not think to look for them today, far away from the original ballast areas.

Ballast plants especially flourish where some earth has been disturbed, giving seeds previously buried too deep a chance to germinate once they are pushed further up, closer to the sun. Andersson pointed out an area along the edges of the former London Road, where on one side ballast plants grow higher and more abundantly than the other side. Andersson said that the land had recently been dug up to put cables in for the new owners of the villa at this spot.



Plants growing from ballast samples. (MTA, 2001.)

For various reasons, areas of ballast material are extended from their sources. Andersson suggested that I visit a site near the former port, where ground was being removed to lay the foundations for new houses. Andersson reminded me to touch the ballast earth with my hands to feel its difference from the local soil. Workers at one site had piled up the excavated soil to the side several weeks earlier. Ballast stones speckled the ground, and a garden of ballast flora had already sprung up.

On their walks around the island, residents see the damage inflicted on the ballast flora. Visitors sometimes yank out plants with pretty flowers. Others are dug up by tourists who want to add these exotic plants to their collections. Sometimes this results in the removal of the only specimen in the area. Construction companies present another problem. They begin building in the early spring, and their heavy machinery inflicts much damage when it is too early to see any plants.

Contemporary ideas of gardens have also pushed out ballast flora. Older, wild gardens, which were extensions of the nature around them, are being replaced by American-style gardens with pristine lawns and methodical flower beds that disallow wild flora to settle in.

Left: Ballast plants growing in Veikko's garden. (MTA, 2001.)
Right: Ballast growing along road. (MTA, 2001.)

The island's council has taken measures to safeguard ballast

flora. Some sidewalks are not asphalted to allow for as much exposed earth as possible for seedlings to establish themselves. Grass on public lands is cut later than usual in order to disturb flowering plants as little as possible. Signs inform visitors about these unique plants.

Reposaari residents Pirkko Norikuro and Laila Saarikko took me out to the front of their homes, where ballast plants grew best alongside the road. One of the ballast plants growing on the road was *Chelidonium majus*, a plant originally from Europe and Asia. Heli Jutila had explained that as a botanist, she was limited in her investigation because it is not possible to consult historical archives, as it is not her specialty, and there were no funds to hire an expert. It was challenging to acquire shipping records, which in Reposaari are haphazardly kept by individual companies. These records would have been important in her studies to determine the exact ports of call of the ships returning to Reposaari and their returning merchandise (and the weight of these goods). This information would give clues as to whether ballast would be on board. But Andersson, who consulted on the project, was a retired administrator of a shipping company in Reposaari. While on his lunch breaks throughout the decades, he had read through the archives of the company. He has a photographic memory and had memorized shipping lists that included ports of call and types of goods. During the opening of the exhibition, I introduced Veikko Andersson to Heli Jutila.

Soili Tuukki awaited seeds of this ballast flora which was growing in the garden of her neighbor, Jyrki Takkunen. (MTA, 2001.)

In the greenhouse of Turku University in Reposaari, seeds germinated from the two hundred samples of earth I had collected from private gardens and newly discovered ballast sites on the island. The samples, labeled with the name of the person from whose land they were taken, were later placed in a greenhouse in the Pori Art Museum. Images of some of the residents who participated in the work were placed in niches surrounding the conservatory. The greenhouse became a meeting place for sharing information between residents of Reposaari and Pori and the scientific community. Although the infrastructure was inadequate to take full advantage of the scope of the project, it became clear that the port's community retained a unique knowledge of ballast flora and the distribution of ballast soil, making their contributions vital to any continuing scientific study in the area.

Global Routes to Local Miracles

Yrjö Haila

The world of immigrant plants tends to be painted in black and white: "good" native plants versus "evil" alien plants. In general terms, this is understandable because of a fair number of well-known cases of harmful invasions. But in fact, the phenomenon of immigrant plants shines in shades of gray. As such, we must look closer at how plants disperse to new areas, by themselves or helped by humans, and ponder more deeply the consequences. Maria Thereza Alves's project *Seeds of Change* brings this into focus using the example of plants that have spread via the ballast of sail ships.

The question is most concrete when looked at through the lens of a specific place. In this case, Reposaari: an island outside the estuary of the River Kokemäenjoki on the west coast of southern Finland, one of the locations where Alves collected material.

Reposaari used to be an important harbor in the era of sailing ships, approximately from the late eighteenth century until the first decades of the twentieth. For a short time in the 1870s, it was the liveliest export harbor in Finland. The key to its importance is Kokemäenjoki, a major channel draining the big lakes in central Finland into the Baltic Sea and thus a natural waterway to drive timber from the inland to the coast. In earlier times, the river served as a major channel for human settlers to move from the coast to the inland.

The Gulf of Bothnia's expanse opens up on the western side of Reposaari and offers seaways to other parts of the Baltic. On the other hand, the eastern side is well sheltered against storms and has provided a favorable location to load sailing ships with timber sawed from logs that were driven down the river.

However, every place is dependent on a larger sphere of influence. The significant connections from Reposaari extend, on the one hand, toward the inland along the river Kokemäenjoki, and on the other hand, out to the Baltic Sea. This position as a joint is fairly typical of coastal cities anywhere, but local histories are, of course,

variable. Local specificities are best laid out by comparing regions that are similar in some ways but differ in others, like the Baltic and the Mediterranean.

Plants, too, have the ability to colonize new lands. Geographer Jonathan Sauer formulated a simple rule on what factors influence the migration of plants.[1] The interplay of two opposing forces is decisive here: centrifugal or spreading outwards, driven by seed dispersal, and centripetal or withdrawing, caused by various factors of environmental control. When environmental conditions change, the balance between these forces also changes in a complex and nonlinear fashion; identifying unambiguously the causal factors leading to such change can rarely be done; more often, it's a combination of factors.

Different parts of the world have their peculiar features. At one extreme are regions that have undergone drastic disruptions in environmental conditions over large areas. In northwestern Europe, a geological process of cardinal importance has been the Pleistocene ice age over the last two and a half million years or so. The advance and retreat of enormous ice sheets a few miles thick have dominated the ecological conditions all across Europe during this era. The stages of extended glaciations number, perhaps, twenty. These glacial fluctuations have moved plants around. When an ice sheet expands, it causes flora to "withdraw" to the south by going extinct in regions covered by ice. During melting, the flora will root in suitable spots in newly exposed lands. The pattern includes both slow, step-by-step movements and so-called "jump dispersal" over long distances due to various contingent factors.

The Baltic coastline where Reposaari is located has gone through such fluctuations. During the peak of the latest glaciation 22,000 years ago—hardly a blink of an eye on a geological time scale—the whole of northwestern Europe was covered by a continent-wide glacial sheet down to northern Germany and south-central England. Everything alive in this vast region today has arrived from someplace else.

What was there in the region of Reposaari and elsewhere in northwestern Europe before these glaciations? Plant remains—mainly pollen found in soils—offer more or less convincing evidence that conditions have varied a lot from one warm period to the next. The geography of continental Europe has made it difficult for plants to carry through the movements required for survival during the Pleistocene: from north to south and then back north. Major mountain ranges run east to west in central and southern Europe,

which is a major factor explaining the relative impoverishment of forests in western Eurasia compared with the eastern flank of the continent and North America.

The environmental changes have been very rapid. Trees provide most reliable data on plant movements as their pollen can be identified to the species, and data points telling about presence or absence of trees at different sites are numerous enough to allow estimates of rates of dispersal after the onset of the present warm period.[2] Findings vary from a few hundred yards per year (for beech, ash, and lime tree, for instance) to more than two thousand yards per year (for birch). These are coarse average estimates, but they generally indicate amazingly high rates of dispersal.

This history also includes interesting seemingly anomalous cases. For instance, the hazelnut apparently spread to the British Isles via the Irish Sea, not directly across what nowadays is known as the English Channel. Presumably nuts were carried by water currents from the west European coast. Another anomaly is a sudden appearance of the pine in the Scottish Highlands quite early after the retreat of the glazier. Perhaps a flock of crossbills got thrown northwards in a storm and dropped in their feces seeds that luckily germinated.

Another important feature documented in Europe and North America is that different species of trees have traveled independently of each other. A forest is not a unified "plant community" that can travel back and forth as an entity, another factor explaining why forest profiles have varied greatly from one warm period to the next. Of the dozen or so dominant trees forming northern forests around the Baltic today, the spruce is the latest colonizer. It arrived from the east to Finland soon after the retreat of the ice, but expanded to different parts of the Scandinavian mountains as recently as two thousand years ago.

The effects of human-induced change on plant distributions resemble patterns of natural environmental change. Somewhat schematically, permanent settlement and land cultivation prepare the ground for step-by-step dispersal, while communication and transport over long distances increase chances of jump dispersal. Historically, these processes have acted together. Early localized traces of human presence are quite similar everywhere: habitations, yards, paths, latrines, waste disposal sites, and so forth, as well as clearance of areas for cultivation and domesticated animals. No wonder a similar set of species has thrived in human-modified environments worldwide, in

areas where similar "western Eurasian" livelihood practices have been adopted. Historian Alfred Crosby famously dubbed this "ecological imperialism."[3]

Permanent agriculture originated less than ten thousand years ago at several centers on different continents. Permanent settlements spread to Central Europe from the southeast some six thousand years ago and reached Denmark and southern Scandinavia some four thousand years later. It took another millennium or two before agricultural settlements showed up along the northern shores of the Baltic, including the Kokemäenjoki river basin.

Which plants were favored by the spread of human culture has been well-known since old. Cultivated plants were, of course, a major element, and quite a few of them colonized natural and semi-natural habitats in the vicinity of permanent settlements. They were followed by weeds that thrive in fields and gardens, several of them being similar to cultivars and therefore very difficult to keep in check. In addition, a whole range of other plants thrives in environments that typically take shape around human habitation.

In the millennia following what has been called the "original colonization" of northern Europe (often called by the Danish term "landnam"), landscapes were thoroughly domesticated, too.[4] Forests gave way to cultivated lands, and patchworks of land plots with different vegetation changed shape; the profile of landscapes became more "fine-grained" and presented more small-scale variation than was the case in the original prehuman situation. Overall, everything has been molded by historical human influence; there is nothing "primeval" left in any literal sense.

Long-distance trade, particularly maritime, has provided plants with major opportunities for jump dispersal. The global influence that Alves's *Seeds of Change* project is tracing is from the recent centuries, but the historical background has deep roots. A comparison between the Mediterranean and the Baltic is instructive. They both are landlocked seas; i.e., surrounded by land masses except for narrow straits that provide connection to the world ocean; a landlocked sea does not isolate people living along its shores but connects them, provided people learn the skills of seafaring, which is precisely what happened in both regions. Until recent centuries, movement across land was much more difficult and time consuming than moving across water.

Maritime historian Lionel Casson has collected a wealth of evidence on the development of seafaring skills in the ancient world.[5]

To travel across waters, people originally used anything that floats. Reed craft was an early device adopted on the relatively benign waters of the Nile. Early in the third millennium BCE, ancient Egyptians took the important step of making their boats entirely of planks; they needed sturdy boats to transport blocks of stone used for building the pyramids. In the beginning, the boats were replicas of reed crafts in wood, but they gradually acquired novel "woody" shapes.

The earliest evidence of Egyptian seagoing ships dates back to the middle of the third millennium BCE. Also, other Mediterranean peoples learned and adopted Egyptian ship craft skills, building different types of boats for different purposes. These vessels' demand for a skilled crew also grew over time. It is no coincidence that many ancient thinkers used the command of a ship as a metaphor for statecraft.

In French historian Fernand Braudel's words, "The Mediterranean is not so much a single entity as a 'complex of seas.'"[6] Skills needed to move across waters were refined in regions where the rewards were best, like the Aegean archipelago and the Venetian Lagoon. River connections inland were also important; the Nile steered them toward the south and the Po and the Rhône toward the north. However, in general, navigable rivers were of no prime importance in the Mediterranean because of her geography characterized by steep mountains and a hot and dry summer climate.

When comparing the Baltic with the Mediterranean, the first point to note is the enormous difference in the harshness of the conditions. The Baltic is covered by ice for more than half a year in the north and for several months in the south. Also, tilling the lands surrounding the Baltic required new methods, and the productivity of cultivation is lower than in the Mediterranean lands.

But similar to the Mediterranean, the Baltic is a "complex of seas." Original colonists to its shores sustained themselves by hunting and fishing. They must have moved on the waters, too, but the early stages of seafaring have vanished without a trace (while ancient Egyptians, Greeks and Romans left behind inscriptions on wall paintings, vases, coins and so on). The first Baltic era of intensive sailing began with the Vikings, who dominated the northern seas for some two and a half centuries, starting in the late eighth century. Their plundering and trading journeys reached the Mediterranean via a western route along the Atlantic coast, and the Black and Caspian Seas via an eastern route along the big rivers that flow to the Baltic.

The German Hanseatic League took over as the next maritime

power in the Baltic; its heyday lasted from the early thirteenth century to the late sixteenth century, by and large. During this period, the histories of the Baltic and the Mediterranean became closely aligned through a trading network of relatively autonomous cities all over Europe. As historian Robert Bartlett writes:[7]

> *Just like Muslim sea power in the Mediterranean, pagan sea power in the north was checked and rolled back. The dominance of Christian navies was a distinctive feature of the High Middle Ages. [...] The trading cities of Germany and Italy simultaneously expanded and integrated the economy of the west.*

In the Baltic, major cities were established at the deltas of big rivers that offered routes toward the inland. The river Kokemäenjoki belongs in this category, but its physical geography is determined by land uplift, a dominant phenomenon in northwestern Europe. The weight of the glacial ice sheet pressed down the crust of the earth during the last glaciation, and the crust has been slowly pushing up. At the latitude of Reposaari, the rate of uplift has been a bit over a foot and a half per century in recent times. This means that the most suitable location for a harbor moved toward the west—outward—as the sea retreated; the city of Pori, to which Reposaari administratively belongs, is located along the river some twelve and a half miles to the inland.

Overall, it is the nature of landlocked seas such as the Mediterranean and the Baltic that seafaring has created strong ties between the regions and cities along their shores. Human communication has created dense contact networks and whatever can make use of such a network has done so. Plants and other living beings moving about with the help of humans are no exception. Every location in such a network has acquired its own *distributed nature*, maintained by continuous exchange of elements of nature and culture.

Used in sail ships to improve balance when the freight is light, ballast is a fascinating, if not miraculous means for plants to achieve jump dispersal. Since ancient times, ballast has been a necessary device used in ships. Lionel Casson notes that in antiquity, sand and stone were standard materials used as ballast. Some ancient sources note that sand stored in the hold of a ship was occasionally used to keep water or wine fresh, shaded from direct sunshine.

Extra ballast was dumped at ports where bulk materials were loaded on the ship for export. At lively ports the volume of dumped ballast grew prohibitively big; archaeologist Mats Burström reports that the earliest written note on ballast in northern sources was by

Haakon Magnusson in 1313, forbidding dumping at the harbor of what is now Trondheim, Norway.[8] Some of the materials were also reused. A famous example is in King's Lynn, England, where a wall was built of ballast stones over a century, beginning in 1266. In the wall, about three thousand of its fifty-five thousand stones are of Baltic origin.

What was ballast and what was cargo?—a confounding question. Large copper sheets that have been rescued from shipwrecks along the shores of various distant lands provide a partial answer, but it remains ambiguous, too. We simply do not know.

The weight of freight or ballast required for safe passage is estimated to be about a quarter the weight of the whole ship, depending on the height of its reel and mast. The total amount of ballast freighted across the world seas and oceans is in the millions of tons. With steamships gradually overcoming sailing ships after the mid-nineteenth century, water tanks took the place of sand and gravel in balancing the ships.

In most harbors that are located within major cities, ballast dumping sites have largely vanished, built over for other use as port facilities, industrial and storage buildings, traffic arteries, and so on. Reposaari is a rare exception: a considerable proportion of its ballast dumping sites have remained undeveloped. This is because the main harbor was transferred to another location in the Kokemäenjoki estuary when the age of sailing—and trade in Reposaari—came to an end. Consequently, exotic plants are left, both growing in the gardens of local people as a proudly cherished heritage, and occasionally appearing at sites at which the soil is suitably disturbed.[9]

In a quantitative sense, ballast plants are a minor element in local floras of old harbor cities. The situation is, in fact, similar in the case of colonizing plants such as weeds; this fact contradicts the impression produced by the scare of "alien colonists." Botanist Richard Mabey, a specialist on the weed flora of Britain, posits:[10]

> *The serious lesson that I've learned from three decades of stalking alien weeds in Britain is that for most of them life is sweet, but short. For the hundreds of new species that arrive each year, the available niches are small, the climate hostile, the pace of environmental change often faster than even their rapid life cycles, and most of the non-cultivated land surface already occupied by ancient and determined natives.*

Ultimately, however, there is no "correct" solution to how to relate to plants that colonize new areas. My view is that the appearance of new immigrant plants in human-modified environments is an encouraging sign that not everything in nature avoids places modified

by us humans. Plants transported via old trade contacts give fodder for historical imagination. Who else was traveling on the same ships? Some of the shades evoked by such questions are pitch dark as with slave trade, some are deliciously light as with spices and herbs. As Maria Thereza Alves says, *borderless histories* invite us to understand and cherish global interdependence and coexistence, provided we want to learn. Besides, it is good to be reminded that thanks to human influence, the collection of plant species in the whole of modern Europe is considerably richer than it was immediately after the glacial ice cover melted away.[11]

(1) Jonathan D. Sauer, *Plant Migration: The Dynamics of Geographic Patterning in Seed Plant Species* (Berkeley: University of California Press, 1988).

(2) H. J. B. Birks, "Holocene Isochrone Maps and Patterns of Tree-Spreading in the British Isles," *Journal of Biogeography* 16, no. 6 (1989): 503–40.

(3) Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900–1900* (Cambridge: Cambridge University Press, 1986).

(4) Hilary H. Birks et al., *The Cultural Landscape: Past, Present and Future* (Cambridge: Cambridge University Press, 1988).

(5) Lionel Casson, *Ships and Seamanship in the Ancient World* (Baltimore, MD: Johns Hopkins University Press, 1995).

(6) Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II* (London: Fontana Paperbacks, 1975), 23.

(7) Robert Bartlett, *The Making of Europe: Conquest, Colonization and Cultural Change 950–1350* (London: Allen Lane, 1993), 293.

(8) Mats Burström, *Ballast: Laden with History* (Lund, Sweden: Nordic Academic Press, 2018).

(9) Heli M. Jutila, "Seed Bank and Emergent Vascular Flora of Ballast Areas in Reposaari, Finland," in *Annales Botanici Fennici* 33 (1996): 165–82.

(10) Richard Mabey, Weeds: *The Story of Outlaw Plants* (London: Profile Books, 2010), 257.

(11) The Finnish flora includes two thousand five hundred species; depending on the time frame adopted, six hundred to one thousand species are classified as immigrants.

Germinating Seed Bank and Emergent Vascular Flora of Ballast Areas in Reposaari, Finland

Heli M. Jutila

Over the years, I have had the opportunity to cooperate with Maria Thereza Alves in researching a number of seed banks for *Seeds of Change*, a collaboration between the creative and the scientific. It has been inspiring to be involved in the ongoing project, which is based on original research of ballast flora in the port cities of Europe.

I first studied seed banks and emergent (i.e., aboveground) flora of ballast areas in Reposaari, Pori, Finland, between 1993 and 1995, and again in 2001, that time with Alves. The seed bank samples collected in the spring of 2001 were utilized in an art museum exhibition in the summer of the same year, and complementary projects have been developed for Marseille, Dunkerque, Exeter and Topsham, Liverpool, Bristol, and other cities internationally. Ballast seeds have been transported around the globe, originating from any number of ports and regions involved in commerce with Europe, as well as their regional trading partners.

This essay is a revisitation of my scientific paper, "Seed Bank and Emergent Vascular Flora of Ballast Areas in Reposaari, Finland," originally published in 1996 and again in 2001.[1] This abbreviated version points to key aspects of the methodology and findings behind my research and how it has been enriched by my collaboration with Alves for *Seeds of Change*.

In my first study in Reposaari, the seed bank density was 11,205 seeds per square meter. It represented both the transient and persistent part of the bank for other study sites, except for the church meadow, which represented a persistent seed bank. The latter study by Alves and me described both transient and persistent parts of the seed bank. Its density was 3,961 seedlings per square meter and most of the germinating seeds were dicots (73.5 percent) and perennials (62.7 percent). In my original study, seventy seed bank taxa (or taxonomical units) were found, and in 2001, an even higher number—seventy-six taxa—were germinating from the seed bank. This accounted for 13.2 percent of the species in the seed bank, but only 3.2 percent of all

germinated seedlings. In 2001, more ballast species were detected in the persistent seed bank; altogether, seventeen ballast plant species have been detected in the seed bank of Reposaari. In the emergent flora of the study sites, 134 vascular plant species were found, of which thirty were ballast species. The emergent flora and seed bank shared forty-nine taxa, ten monocots (or monocotyledon plants), thirty-eight dicots (or dicotyledon plants), and one pteridophyte. The emergent flora was richer in ballast species than the seed bank (22.4 percent versus 13.2 percent). Despite restrictions, seed banks may provide possibilities for the management of the ballast areas.

BACKGROUND

A seed bank is composed of germinable seeds in and on soil and in litter. Some seeds can germinate immediately, while others have physical or physiological barriers that do not allow for immediate germination. For peas, a thick and strong seed coat can inhibit germination, but if water penetrates the seed coat, the seed starts germinating immediately. Some seeds may stay viable in soil for a long period, even hundreds of years. A typical long-term persistent species is *Chenopodium album*, also known as "white goosefoot," which commonly remains viable in the soil for up to forty years (and in rare situations, perhaps as long as 1,600 years). Seed banks allow plants to respond to disturbances and utilize habitats when they become suitable for germination. Typically, ruderal plants (that is weedy plants growing where the vegetational cover has been disturbed by humans or other agents) rely heavily on seed banks, but other strategists may leave some of their seeds in soil as a reserve and as insurance for future changing conditions.

Ballast plants are species that were distributed within ballast soil to previously uncolonized areas of the world during the sailing ship era from approximately 1400 to 1880. If the exported material was light or if there was no cargo, ballast soil was loaded in the craft's hold to keep it steady. In another harbor, the soil, or part of it, was unloaded if a new, heavier cargo was taken in. The heaps of unloaded ballast were composed of stone, gravel, sand, and earth and included seeds, plants' vegetative reproductive organs, whole plants, and small terrestrial animals like insects and mollusks.[2]

Especially toward the end of the sailing craft era, the total amount of soil moved from harbor to harbor was larger than ever before, allowing overseas migrations for many plant species that were not otherwise capable of spontaneous long-range dispersal. Today, water, rather than soil, is used as ballast. Thus, the amount of ballast plants

has dramatically diminished, since not too many vascular plant species are hydrochores, which rely on water to distribute their seeds.

Reports of alien species believed to have been introduced in ballast to various countries were published, especially between the end of the eighteenth century and World War I.[3] For instance, more ballast soil and plants, as well as animals, migrated from Europe to North America than vice versa.[4]

The ballast plants attracted numerous botanists because the species did not belong to the native flora. The nature of the international trade of Nordic countries, namely exporting heavy wood materials and importing lighter ones (spice and textiles) back, led to the accumulation of large amounts of ballast soil. In contrast, some other countries were losing ballast soil. The shallowness of the Finnish coast fairly quickly led to the forbidding of dumping ballast soil in the sea.[5]

Even though many herbarium specimens have been collected, and the knowledge of ballast flora has been relatively good, surprisingly few studies have been published concerning the ballast flora in Finland or elsewhere.[6] Concerning the ballast flora of Reposaari, the situation improved in the 1980s when a summary of the 140 ballast species found on the island was published.[7] Subsequently, an article, mainly based on this study, was written for a Finnish botanical magazine.[8] In 1996, when my study on Reposaari's seed bank was first published, it was the first and only study of the Finnish ballast areas. My subsequent research aimed to answer unknown queries about the size and species composition of the sites in Finland and their proportion of ballast plants within, the main differences between the emergent vegetation and the seed bank, and the importance of the seed bank for the survival of ballast species and vegetation and how it can be managed.

The aim of the study was to find answers to the following questions: What is the size and species composition of the seed bank of the ballast sites in Reposaari, Finland, and what is the proportion of ballast plants in it? What are the main differences between the emergent vegetation and the seed bank, particularly in reference to ballast plants? And, how important is the seed bank for the survival of ballast species and vegetation, and how should these areas be managed?

Study Area

The area that was the focus of the study is situated on the western coast of Finland by the Gulf of Bothnia and on the island of Reposaari,

which belongs to the town of Pori. At the end of the nineteenth century, Reposaari was one of the most important harbors in Finland, and its ballast areas grew very large: in fact, some of the eastern streets and houses were built on the ballast soil. The historical course of time was different in Reposaari than in most other Finnish harbors. At the beginning of the twentieth century, the main port moved to Mäntyluoto, and Reposaari became an isolated, quiet island until 1952, when the road connected the island to the mainland. Accordingly, the ballast flora had the time and opportunity to become established. In many other Finnish harbors the development led more quickly to asphalted lawns and the invasion of a railway flora, resulting in the extinction of the ballast flora. The harbors were left unused, and the vegetation succession forested quickly.[9] Reposaari remains the single most important refuge for ballast flora in Finland.

The most exotic plants in the ballast came from South America, but the plant material that survived longer was from Central and Southern Europe.[10] In the study, alien species were easily recognized as ballast plants. For species of Finnish native flora, different subspecies or forms, or untypical distribution could hint of a ballast origin. Many neophytes that were readily identified as being of ballast origin have dispersed into and in Finland, similarly to railway flora at the beginning of the twentieth century.[11] Currently, the ballast flora of Reposaari includes between fifty and seventy-five ballast species.[12]

METHODS

Sampling Design and Techniques

In 1993 and 1994, 104 seed bank samples were taken from five different ballast sites in Reposaari: the dock area, London lawn and shore, church meadow, and the old harbor. Samples were taken with a 4.8-centimeter diameter corer to a depth of up to ten centimeters (in some places less than this; n {number of samples} = 86), and where it was possible (mainly in the church meadow; n = 18) even to ten to twenty centimeters. My research found the density of seeds decreased to deeper soil layers. Sampling for the study occurred in spring, and in autumn for the dock area.

The *Seeds of Change* study in Reposaari concentrated on the yards of private landowners, but samples were also taken from dock areas, London meadow, and a graveyard.[13] In total, 185 seed bank samples were taken from 109 sampling points in April 2001, meaning that both transient and persistent components of the overwintered seed bank were studied. Statistical analyses (mainly the Kruskal-Wallis

test and some pairwise t-test) were performed using the Statistical Analysis System.[14]

Treatment of Seed Bank Samples

The samples were spread out in a half-centimeter layer to grow on a fertilized peat and sand mixture. Most were put to germinate as soon as possible after sampling. Samples of church meadow and dock area were kept in a cold room for several weeks, then given a two-week treatment at -10C in a freezer, and finally placed for two more weeks in a cold room before being germinated. The cold treatment ensured that the seeds would enter winter dormancy. In the case of church meadow, samples taken in spring had encountered winter in the field. The additional cold treatment in the freezer meant that for this set, the germinating seed represented only a persistent seed bank. In 2001, seed bank samples were collected in spring again but were not given another cold treatment, meaning they represented both transient and persistent seed banks.

In northern latitudes, it has been evolutionarily reasonable to have a physiological barrier for seed germination, since a good time for germination occurs for many species only in spring. To keep the seed intact and alive in winter, it has been a favorable adaptation to go dormant when temperatures drop. When the spring arrives, the dormancy has already broken for many seeds, and the seeds are ready to germinate. This kind of seed bank, from which seeds germinate in less than a year, is transient. If the seeds stay dormant and germinable for longer periods, a persistent seed bank occurs. Survival of extended periods in soil has some evolutionary advantages since the seeds retain the memory of the conditions and allow more variability, leading to greater adaptive ability.

Greenhouse Methods

The samples were germinated in the greenhouse of the Satakunta Environmental Research Center and given a daily photoperiod of sixteen hours of light and eight hours of darkness. The temperature was programmed for 20oC by day and 15oC by night. A mesh was used in the hatches to prevent seeds from entering the greenhouse, and samples were watered once or twice a day, depending on the temperature. On very hot days, when the greenhouse reached over 30oC, a sprinkler was used to lower the temperature.

All the samples were allowed to germinate for at least 130 days, after which time the germination had clearly slowed down. The first

seedlings emerged in less than a week. Sample pots were observed every week, and an inventory was made at least twice and up to four times during the experimental period, which concluded the study.

Study of the Established Vegetation

The vegetation of the study sites was observed for three years and recorded, especially the growth of ballast plants. A complete list of the vascular plant species in study sites was made in August 1995, and the abundance of species was estimated on the Norrlin scale, named for Finnish botanist Johan Petter Norrlin. This data was, like the seed bank data, divided into systematic and life-history groups.

RESULTS

Seed Bank Density

Altogether, 2,180 seedlings germinated from the 104 seed bank samples.[15] On average, twenty-two (0–119) seedlings germinated per sample. Of these, 5.6 (26.5 percent) were monocotyledon species, and 15.4 (73.5 percent) were dicotyledon species. The average number of seeds in one square meter in the upper ten centimeters was thus 14,235 seeds in one square meter (n=56). The largest seed bank was detected in the old harbor (x=23,739 seedlings per square meter for ten-centimeter sample depth justified) and the smallest in church meadow (x=4,666 seedlings per square meter). The seed densities were, on average, lower in Alves's and my 2001 study (3,961 seedlings per square meter for the whole data and 4,857 seedlings per square meter for the surface layers up to twelve centimeters) than in my initial study. The dicot species dominated the seed bank, accounting for 85 percent of the seedlings.

Seed Bank Flora

In the germinating seed bank, seventy taxa were identified, three of them to genera and the rest to species level. A mean of 5.3 species was found per sample, of which 1.6 were monocots and 3.7 dicots. The richest seed bank flora was found in the London meadow samples (forty species), where the number and the proportion of dicot species were also highest (33 and 82.5 percent, respectively). In the samples, 25.3 percent of the germinating seeds were annuals or biennials, and 62.7 percent were perennials. The most abundant species in the seed bank were *Argentina anserina*, *Tanacetum vulgare*, *Poa trivialis*, and *Festuca rubra*, all represented by more than one hundred seedlings. *Tanacetum vulgare*, *Argentina anserina*, *Poa trivialis*, *Agrostis capillaris*, *Poa pratensis*, and *Festuca rubra* were all found in thirty or more pots.

In addition, *Artemisia vulgaris*, *Elymus repens*, *Plantago major*, *Sagina procumbens*, *Trifolium repens*, and *Urtica dioica* can be regarded as common species in the individual sites.[16]

In my 2001 study with Alves, the most abundant and only species surpassing one hundred individuals was *Uritica dioica*, the common nettle. The next most abundant species in the seed bank were *Plantago major*, *Sagina procumbens*, *Argentina anserina*, *Campanula rapunculoides*, *Linaria ssp.* and *Poa trivialis*, all of which surpassed fifty germinating seeds. The list of most abundant species was quite similar to the list in Jutila 1996 (Fig 1b). Also noteworthy was that *Impatiens glandulifera*, an invasive exotic annual species known as "Himalayan balsam," was found to germinate from the seed bank.

Ballast Species in the Seed Bank

Nine ballast species germinated from samples in my original study; these accounted for 13.2 percent of the species in the seed bank but only 3.2 percent of all germinated seedlings. Of the samples, twenty-four contained ballast plants (23 percent of all samples), altogether sixty-nine individuals. Of the ballast species in the emergent flora, 30 percent had a seed bank, which is less than for the other species.

It appeared that there was a significant difference in the numbers of ballast plant species and seedlings among the sites from the old harbor, where the seed bank was largest and no ballast seedlings germinated. This was also true after considering the influence of depth layer and cold treatment. The seed bank richest in ballast species was in the *Astragalus glycophyllus* site, where six different ballast plant species were found in the seed bank of this site (20 percent of all seed bank species in this site). In pots from the dock area, four different ballast plant species (8.7 percent of all seed bank species in this site) were found germinating. In the seed bank of the London meadow and the church meadow, the proportion of ballast species was less.

In 2001, Alves and I detected more ballast species in the seed bank, in the abundance order: *Campanula rapunculoides*, *Medicago lupulina*, *Erodium cicutarium*, *Lamium album*, *Anchusa officinalis*, *Glechoma hederaceae*, *Melilotus ssp.*, *Cerastium arvense*, *Cirsium arvense*, *Jacobaea vulgaris*, *Medicago falcata*, *Saponaria officinalis*, and *Symphytum officinale*. Thus, in my original study and my 2001 collaboration with Alves, we collectively identified seventeen ballast plant species in the seed bank of Reposaari.

Established Vegetation and Germinating Seed Bank

In the whole emergent flora of the study sites, 134 vascular plant species and thirty ballast species were found.[17] The richest flora, in both the vegetation and seed bank, were detected in the London meadow with seventy-seven and forty species, respectively. Most ballast species were found in the London meadow vegetation, but the highest number of ballast species in a seed bank (six) was found in the *Astragalus glycophyllus* site. In 2000, I reported many vascular plant species, which grew on ballast sites. The emergent flora of ballast sites exceeds two hundred vascular plant species. The flora of the vegetation and seed bank shared 123 species when the data of my previous research endeavors are considered. The total number of species listed in this study was 209. The emergent flora was also richer in ballast species than was the seed bank (22.4 percent versus 13.2 percent).

DISCUSSION

Seed Bank Density

The seed bank density in the ballast area of Reposaari (11,749 seeds per square meter in the upper soil layer) was, in my earliest research, higher than in grasslands on average.[18] The limestone grasslands possess 10,060 seedlings per square meter, and road verges in Sweden house 5,800 seedlings per square meter, but it should be remembered that both transient and persistent seed banks are included in my results, while the cited studies concern only the persistent seed bank.[19] The samples of church meadow had two consequent cold treatments, and thus, the persistent seed bank had 4,666 seedlings per square meter.

The 2001 *Seeds of Change* seed bank study in Reposaari concentrated in the yards of private landowners, but samples were also taken from dock areas, London meadow, and a graveyard.[20] In the 2001 study, seed densities were on average lower (3,961 seedlings per square meter for the whole data and 4,857 seedlings per square meter for the surface layers up to 12 centimeters) than in my initial study. This might be related to the fact that quite often, the organic soil layer is deeper in yards. My first study showed that a thick organic layer diminished the number of viable seeds. It is likely that the seeds have suitable conditions for germination, which empties the bank.

The dicot species dominated the seed bank, accounting for 73.5 percent of the seedlings. This surplus of dicots was even more evident in the study in Reposaari, in which eighty-five were dicots.[21] Forbs—flowering, herbaceous plants—dominate grassland seed banks.[22] Meanwhile, seashore meadows and wet grasslands have

more monocots than dicots in their seed banks.[23] Only in the *A. glycophyllus* site, which is situated immediately by the sea, the number of dicot seeds was not significantly higher than that of monocots. This is because grasses dominate seashore meadows and their seed banks. The sandy site was probably suitable for the seeds of many species to survive, but not so much to germinate. In life history patterns, grasses lean mainly to the perennial strategy, and forbs have more possibilities. Most of the vegetation in a boreal environment is perennial, but still, some annuals and biennials have their place in natural seashore meadows and semi natural meadows.

Proportionally, the most grass seeds were found in the dock area where the succession has, in many places, led to grass-dominated vegetation. It was interesting to observe that the old harbor had the highest numbers of germinating seeds. This site is nowadays mown twice a year.

Seed Bank Flora

Concerning the species' richness, it is more difficult to compare different studies due to varying sampling efforts. The seed bank of Reposaari was quite species-rich (seventy taxa germinated in the original study and seventy-six in 2001) in comparison with some grasslands in the world, or the lawns and ruderate places in the center of Pori.[24] The seed pool was also richer than in arable land (forty-one species in 97.8 cubic decimeters) or in the boreal hardwood forest (eight taxa in 1.1 cubic decimeters).[25]

Of emergent species, 36.8 percent were found to have a seed bank. Dicots dominated the emergent flora and the seed bank of ballast sites in Reposaari. About 72 percent of the seed bank flora was also found in the emergent vegetation, and twenty species were found exclusively in the seed bank.

Ballast Species in the Seed Bank

Nowadays, about fifty-eight to seventy-five plant species can be considered to constitute the ballast flora of Reposaari.[26] In my original study, nine ballast species germinated from the seed bank. All the ballast species found in the seed bank—i.e., *Artemisia absinthium*, *Astragalus glycophyllus*, *Carum carvi*, *Cirsium arvense ssp. arvense*, *Lamium album*, *Medicago lupulina*, *Melilotus albus*, *M. altissimus*, and *Jacobaea vulgaris*—were also growing in the study sites. In the *Seeds of Change* study, more ballast species were detected in the seed bank, in the abundance order: *Campanula rapunculoides*, *Medicago*

lupulina, *Erodium cicutarium*, *Lamium album*, *Anchusa officinalis*, *Glechoma hederaceae*, *Melilotus ssp.*, *Cerastium arvense*, *Cirsium arvense*, *Jacobaea vulgaris*, *Medicago falcata*, *Saponaria officinalis*, and *Symphytum officinale*. Altogether, seventeen ballast plant species have been detected in the seed bank of Reposaari, which is approximately 30 percent of all the still-existing ballast species.

Many seed bank species were leguminous species, which are known to have a hard seed coat. Seeds of *Medicago lupulina*—or "black medick"—for instance, have a strong dormancy that can last for many years. Still, due to the short non-dormant phase in their development, they can germinate rapidly under favorable conditions.[27] The perennial (or biennial) *Jacobaea vulgaris*—or "stinking willie"—which is known as a weed in many areas of the world, has both effective seed dispersal by wind and a persistent seed bank from which it germinates mainly in spring.[28] The small sample size in the studies likely hindered discovering all rare species. The ballast species that were found in the seed bank were also the most common ballast species in the vegetation, like *Campanula rapunculoides* (or the "creeping bellflower"), which certainly has had a chance after the sailing ship period to disperse with other methods.

Still, the seed bank is known to be an important factor for many rare ballast species, and their seeds can be preserved for centuries. In Reposaari, long-term records show that numerous species have germinated from the seed bank. I have recorded the germination from the seed bank after a disturbance, like digging or burning for *Carduus nutans*, *Euphorbia helioscopia*, *Filipendula vulgaris*, *Hyoscyamus niger*, *Papaver dubium*, *Plantago lanceolata*, *Trifolium arvense*, and *Vicia tetrasperma*. *Diplotaxis muralis*, *Malva sylvestris*, *Geranium pusillum*, *Erodium cicutarium*, and *Conyza canadensis* are further ballast species, which are considered to depend on seed bank in the flora of Reposaari (Kalinainen & Lampolahti 1994). At least *Carduus nutans* (Popay et al. 1987), *Erodium cicutarium*, *Hyoscyamus niger* (Roberts 1986), *Papaver dubium* (Odum 1978), *Plantago lanceolata*, and *Filipendula vulgaris* (Milberg 1991) have been shown to have a persistent seed bank. The seed bank of Reposaari is activated now and then by water-pipe construction and different kinds of disturbances. The importance of the seed bank was evident in 1992, for example, when a water-pipe channel was built on the side of the London meadow, one of the richest ballast sites in Reposaari. In the following summer, there was dense vegetation comprised of common ruderates and numerous ballast plants possibly germinating from

the seed bank, some of which had not been seen in the place since the beginning of the twentieth century. *Papaver dubium*, a species of poppy, flowered there vigorously, but by the following summer, it had unfortunately disappeared. *Hyoscyamus niger*, a biennial plant known as "stinking nightshade," lasted in the place for two years, and *Euphorbia helioscopia*, called the "sun spurge," only one summer. It is likely that these plants are now preserved in the seed bank of the site and may germinate when disturbances activate them.

Management of Ballast Areas: Examples and Implications of a Seed Bank

Ballast plants are a vanishing part of cultural history capable of telling the history of vegetation in some harbors where they still hang on, such as Reposaari. Ballast soil remains in the sites, but the seed bank is reduced over time. Studying seed remains will one day help tell the history, but a living history is only in vegetation and germinable seeds. Some of the ballast species have become quite abundant, and it seems that they survive, but some species need management.

In general, it can be argued that moderate disturbance of soil is beneficial for the ballast flora. This was also noticed in one part of the dock area, where a horse pasture was established. After heavy grazing pressure, the area seemed almost plantless, save for some Rumex longifolius ("dooryard dock") growing there. In the following summer, the site was flowering with rich ballast flora, including species like *Carduus nutans*, *Melilotus albus*, *Medicago lupulina*, *M. falcata*, and *Anchusa officinalis*, but also many weed species like *Arctium tomentosum* and *Urtica dioica.*

In the management of ballast areas, one should have a good knowledge of the established vegetation, its succession, and the life strategies of the constituent species. Then one should decide which species should be protected and where they can be cultivated. Mowing (and removal of mown hay) in the late season, when these species have flowered and produced seeds, is good for small and annual species. Places that have lost their ballast vegetation, but still have ballast species in the seed bank, should be disturbed by digging, burning, or heavy grazing. The areas to be managed should be small and mosaic to avoid the expansion of some ruderate species.

A total lack of ballast species in the largest seed bank of the sites, (i.e., the old harbor) would suggest some other management than seed bank activation. Indeed, mowing has continued in the site, and the emergent flora has improved and nowadays also includes ballast species.

I thank Maria Thereza Alves for a multitude of co-operations on seed banks over the years. It has been inspiring to be involved in the Seeds of Change *project, an ongoing investigation based on original research of ballast flora in the port cities of Europe. The seed bank samples collected from Reposaari in the spring of 2001 were utilized in the art museum exhibition in the following summer. Projects have also been developed for Marseille, Dunkerque, Exeter and Topsham, Liverpool, and Bristol. The source of ballast seeds can be any of the ports and regions (and their regional trading partners) involved in trade with Europe. Likewise, it has been interesting to be involved in other projects in Berlin and Brasilia.*

(1) Heli M. Jutila, "Seed Bank and Emergent Vascular Flora of Ballast Areas in Reposaari, Finland," *Annales Botanici Fennici* 33 (1996): 165–82; Maria Thereza Alves and Heli M. Jutila, "Seed Bank of Ballast Sites and Yards in Reposaari Island in Year 2001," 2001.

(2) Karri Jutila, "Reposaaren Painolastinilviäiset," *Kivi* 4 (2007): 12–21; Heli M. Jutila, "Porin Reposaaren Painolastikasvit. Porin Kaupungin Ympäristönsuojelutoimisto [Ballast Plants in Pori, Reposaari]," 2000.

(3) Henry Nicholas Ridley, *The Dispersal of Plants throughout the World* (Ashford: Reeve, 1930), 744.

(4) Carl H. Lindroth, *The Faunal Connections between Europe and North America* (Stockholm: Almqvist & Wiksell, 1957), 344.

(5) Jutila, 2000.

(6) Tore Ouren has published a group of studies, primarily in Norwegian during the 1960s and 1970s, concerning ballast flora. The data on the subject are scattered throughout many publications; for example those by J. Hogg in 1867, Job E. Lousley in 1953, and Carl H. Lindroth in 1957. Some works were not effectively published, but written only in the form of graduate studies.

(7) Pertti Kalinainen, "Reposaaren Painolastikasvit," *Porin Ympäristönsuojelulautakunnan Julkaisu 1*, no. 87 (1987): 1–48.

(8) Pertti Kalinainen and Janne Lampolahti, "Porin Reposaaren Painolastikasvit-Kulttuuriaarre Merten Ja Aikojen Takaa," *Lutukka* 10 (1994): 3–12.

(9) Kalinainen, 1987.

(10) P. Kallio, A. Rousi, and U. Laine, "Painolastikasvit," in *Kasvien Maailma: Otavan Iso Kasvitietosanakirja* (Helsinki: Otava, 1981), 1480–81.

(11) Kalinainen, 1987.

(12) Ibid.; Jutila, 2000.

(13) Alves and Jutila, 2001.

(14) *SAS/STAT User's Guide*, 1st ed. (Cary, NC: SAS Institute Inc., 1988), 1028.

(15–17) Ibid.

(18) K. J. Rice, "Impacts of Seed Banks on Grassland Community Structure and Dynamics," in *Ecology of Soil Seed Banks*, ed. Mary Allessio Leck, V. Thomas Parker, and Robert L. Simpson (San Diego, CA: Academic Press, 1989), 211–30; David J. Graham and Michael J. Hutchings, "A Field Investigation of Germination from the Seed Bank of a Chalk Grassland Ley on Former Arable Land," *Journal of Applied Ecology* 25, no. 1 (1988): 253–63.

(19) Per Milberg and Margareta L. Hansson, "Soil Seed Bank and Species Turnover in a Limestone Grassland," *Journal of Vegetation Science* 5 (1994): 35–42; Per Milberg and Torbjörn S. Persson, "Soil Seed Bank and Species Recruitment in Road Verge Grassland Vegetation," *Annales Botanici Fennici* 31 (1994): 155–62.

(20) Alves and Jutila, 2001.

(21) Ibid.

(22) H. A. Roberts, "Seed Banks in Soils," *Advanced Applied Biology* 6 (n.d.): 1–55.

(23) Heli M. Jutila, "Seed Banks of Grazed and Ungrazed Baltic Seashore Meadows," *Journal of Vegetation Science* 9, no. 3 (1998): 395–408; P. Milberg, "Seed Bank and Seedlings Emerging after Soil Disturbance in a Wet Semi-Natural Grassland in Sweden," *Annales Botanici Fennici* 30 (1993): 9–13.

(24) Rice, 1989.

(25–26) Jutila, 2000.

(27) S. S. Sidhu and Paul B. Cavers, "Maturity-Dormancy Relationships in Attached and Detached Seeds of Megicago Lupulina L. (Black Medick)," *Botanical Gazette* 138 (1977): 174–82.

(28) H. A. Roberts, "Seed Persistence in Soil and Seasonal Emergence in Plant Species from Different Habitats," *Journal of Applied Ecology* 23 (1986): 639–56.

Liverpool, England

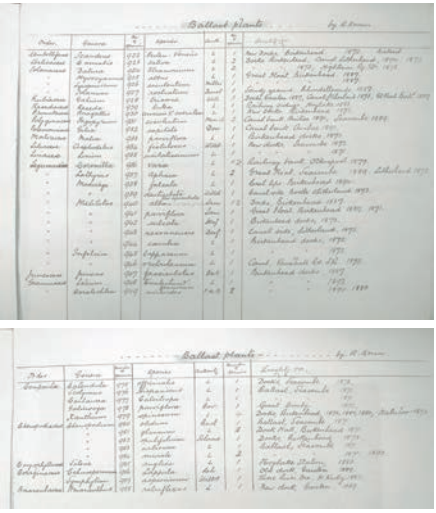
Maria Thereza Alves
Seeds of Change: Liverpool, 2004

Liverpool has been a chartered port city for over eight hundred years. The city has traded with the world through trade routes that formed complex exchanges of cargos by traveling, for example, from Africa to South America, then to North America, and back to Liverpool via the Caribbean.

Probable ballast sites in the Port of Liverpool. (Installation detail, MTA, 2004.)

After the 1740s, Liverpool became the leading slave trading port in the world. Its over five thousand slave trade voyages forcibly transported 1.3 million enslaved Africans. During my research for Bristol, I discovered that ballast was particularly used to balance ships sailing from the colonies in the Americas to Liverpool, the last leg of the Atlantic triangular slave trade. It was far more profitable for traffickers to pick up more enslaved people in Africa and sell them in the colonies than to trade in colonial goods, and thus ships returned to Liverpool in ballast.

Botanists in the nineteenth century found ballast plants from Eurasia, North Africa, the Mediterranean, and North America growing in the port of Liverpool. After an initial search at the Royal Botanical Society revealed only brief references to ballast flora, the botanist who worked with me, Leander Wolfenstone, remembered a herbarium catalogue that had been shelved away from its section because it was oversized. The Brown Collection, compiled by Robert Brown from 1870 to 1889, contained a segment toward the end of the herbarium on ballast flora. (This is the only instance when I have encountered an entire chapter on the subject in a flora.) Brown cites about forty ballast plants growing just around the Birkenhead Docks in the port of Liverpool.



Ballast plants listed in the herbarium compiled by Robert Brown. (Installation detail, MTA, 2004.)

Documents in the archives of the Maritime Museum provide only marginal mentions of ballast. By chance, in a folder for "Maintenance," I found a receipt for the repair of a "ballast crane." A nineteenth-century map of the area shows a 27-ton ballast crane on the Cavendish Wharf in the West Float adjacent to the coal yards in the

Birkenhead Docks, which is on the west bank of the River Mersey and just opposite Liverpool. Berthing fees were less expensive at the Birkenhead Docks than the premium docks on the Liverpool side, and thus ballasting operations were handled there. The ballast crane no longer exists, but its metal base does. A waste area lies in front of it, with wildflowers growing. Soil samples from this area were taken and germinated at the National Wildflower Centre and shown at the *Hortus: Botany and Empire* exhibition curated by Tom Trevor in conjunction with the Liverpool Biennial.

Left: The base of the ballast crane on the original site. (MTA, 2004.) Right: The area in front of the ballast crane. (MTA, 2004.)

Samples were also taken from the Alfred Docks in Seacombe and the Nelson and the Princess Docks on the Liverpool side. (All other former docks have undergone intensive refurbishment and were not sampled.) At the Nelson Dock, a shipment of wood from Sweden had just been unloaded. At the Princess Dock, which originally extended further inland, foundation work for a major new construction had begun. The original ground level of the dock would be accessible for one day only before tons of concrete would seal access to the ground. The architect's office permitted us to take samples of the earth.

Twenty-seven-ton crane on Cavendish Wharf in Birkenhead Docks which is officially noted on the map. (Installation detail, MTA 2004.)

In *The Flora of Cheshire*, its author, de Tabley, mentions *Bromus arvensis* growing on the "ballast-made roads at Claughton and Birkenhead" and says *Asphodelus fistulous* was seen growing on the "new-made road at Oxton," adjacent to Birkenhead.

There had been so much ballast coming into the port of Liverpool, which I would venture to now say as a direct result of the slave trade, that some way of getting rid of it had to be found, including using it as construction material (not only for making roads but also for the foundations of homes and a school). Although ballast flora grows throughout Liverpool, it has become remote from its intimate connection with trade, colonialism, slavery, and the city's history. The project in Liverpool intended to re-establish these complex ballast histories by examining the

apparent randomness of these plants sprouting by roadsides, through cracks in the pavement and in the concrete seams of waste ground.

These are the ballast plants that Lord de Tabley lists as growing in the docks of Birkenhead, Seacombe, and Liverpool [Lord de Tabley, The Flora of Cheshire (London: Longmas, Green and Co, 1899)]:

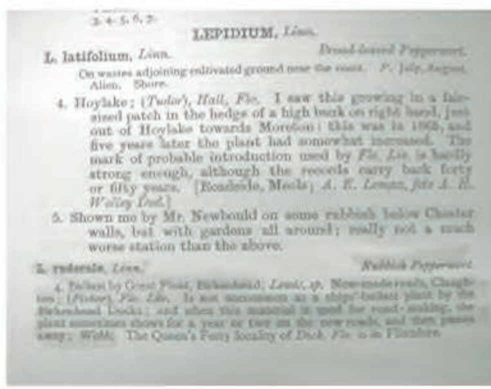
Top: Detail of sampled areas in docks on Liverpool and Birkenhead side of the port. (MTA, 2004.) Others: Probable ballast sites where samples of earth were taken and seeds germinated. (MTA, 2004.)

– *Ranunculacus pensylvanicus*. Ballast near the Birkenhead Docks (Fisher).
– *Erysimum orientale*. A casual on ballast at Birkenhead (Lewis).
– *Erysimum repandum*. A casual on ballast, Birkenhead (Wheldon).
– *Lepidium graminifolium*. Ballast, Seacombe (where the Alfred Docks are) (Lewis).
– *Enarthrocarpus lyratus*. Ballast by the Great Float, Birkenhead (Lewis).
– *Geranium lucidum*. (Shining Crane's bill). Ballast-brought.
– *Melilotus alba*. Reported in 1863 as covering a large tract on the south side of the Birkenhead docks (Webb in Nat. S.B. p. 86). Now, "very fine and large about the coal-years up the Great Float, Birkenhead; in one place quite a forest of it growing three or four feet high" (Brown). Perhaps a little less luxuriant that it was ten years ago, but still occupying the same ground, and has extended its range windward over a long stretch of waste ground (Webb 1873).
– *Ornithopus compressus*. Ballast heaps and waste ground by Birkenhead Docks, 1860–61 (Webb and Fisher).
– *Aethusa Ammi majus*. Ballast casual. Birkenhead Docks, 1864 (Gibson).
– *Centaurea calcitrapa*. (Star Thistle). A common European species found in the South of England Has several times been met with as a ballast

plant in the neighborhood of the Birkenhead Docks (Webb). . . . On ballast, Seacombe (Lewis).

– *Centaurea calcitrapoides*. Native of South-Eastern Europe. About 1860 in considerable quantity as a ballast plant at Birkenhead (Webb).
– *Centaurea melitensis*. Native of Southern Europe. A frequent ballast plant at Birkenhead Docks (Webb).
– *Chrysanthemum coronarium*. A ballast casual. Native of the Mediterranean region. Ballast, Seacombe (Lewis).
– *Artemisia Xanthium spinosum*. A casual. Has appeared as a ballast-plant at Birkenhead, but none of these introductions have held their ground for any length of time in my experience, much less spread abroad from their place of deposit (Webb).
– *Erigeron canadensis*. (Canadian Fleabane). A North-American introduction. Has only been seen with us as a ballast-plant. . . .
– *Chenopodium murale*. (Nettle-leaved Goosefoot). As a ballast plant at Seacombe (Brown).
– *Chenopodium olidum*. (Stinking Goosefoot). Introduced with ships'-ballast, "Has occurred... at Birkenhead, Seacombe..." (Fisher and Brown).
– *Chenopodium glaucum*. (Glaucous Goosefoot). Introduced with ships' ballast. "Was found in 1871 and 1872 in fair quantity intermixed with C. rubrum, on the waste ground outside the Dock walls, near the Mahogany Shed, Birkenhead" (Brown).
– *Mercurialis annua*. (Annual Mercury). Alien. Introduced with ships' ballast. Has occurred at the Birkenhead Docks from 1864 to 1871. Likely, years hence, to be as common round Birkenhead as round London and Brighton; it is one of the aliens "on its promotion."
– *Setaria viridis*. On ballast at Birkenhead in 1871 (Brown and Fisher).
– *Polypogon monspeliensis*. Casual on ballast. Birkenhead ballast, 1871 (Brown).

Probable ballast sites where samples of earth were taken and seeds germinated. (MTA, 2004.)



LEPIDIUM, *Linn.*

1. latifolium, *Linn.* *Broad-leaved Pepperwort.*

On wastes adjoining cultivated ground near the coast. [illegible]

Alien. Shore.

4. Hoylake; (*Tudor*), *Hall*, *Fis.* I saw this growing in a fair-sized patch in the hedge of a high bank on right hand, just out of Hoylake towards Moreton: this was in [illegible], and five years later the plant had somewhat increased. The mark of probable introduction used by *Fis. Lis.* is hardly strong enough, although the records carry back forty or fifty years. [illegible]

5. Shown me by Mr. Newbould on some rubbish below Chester walls, but with gardens all around; really not a much worse station than the above.

2. ruderale, *Linn.* *Rubbish Pepperwort.*

4. [illegible]

One example from several citations of ballast flora growing on ballast-made roads in Flora of Cheshire. (Installation detail, 2004.)

Flora. (MTA, 2004.)

– *Bromus maximus*. A ballast casual. In small quantity on Birkenhead ballast, 1871 (Lewis).
– *Bromus Schraderi*. Ballast casual. Ballast by the Great Float, Birkenhead (Lewis).
– *Bromus lanceolatus*. A Ballast casual. In small quantity on Birkenhead ballast, 1871 (Lewis).
– *Hordeum maritimum*. (Seaside Barley).... a few specimens have recently been picked near Liverpool, introduced with ships'-ballast.
– *Hordeum glaucescens*. In very small quantity on Seacombe ballast, 1871 (Lewis).

Exeter/Topsham, England

Topsham was the second busiest port in seventeenth-century England, while Exeter was the fourth-largest at that time. Gradually, Exeter subsumed the port of Topsham. Perhaps that is why residents in Topsham were trying to escape tax payments on imported goods, as they did not want to give it over to a neighboring lord. Research for *Seeds of Change* was conducted on both ports, as goods destined for Exeter were, at different times in its history, unloaded in Topsham and then taken overland to Exeter. The quays along the port, some private, served as entry points for seeds. Today, inside a local resident's estate at the tip of the Exe Estuary, a replication of a commemorative plaque from 1861 celebrates the arrival of a shipment of hemp from St. Petersburg. As it was unloaded on private property, the excise tax was avoided.

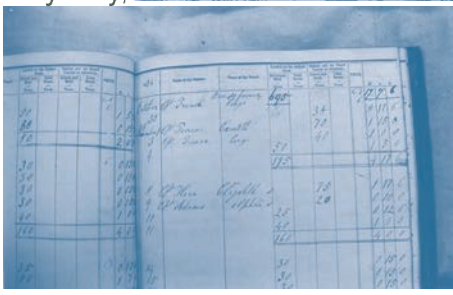
The former ballast depot of Exeter is located in what used to be the Ballast Bank. In 1700, ships arrived in ballast from Lyme, Ferrol, London, Portsmouth, and Milford. In 1765, a ship arrived in ballast from San Sebastián in Spain, and from more local ports such as Cork. In 1785, nine ships arrived in ballast. Although ample documentation exists of ballasted ships arriving into port, botanists pointed out that there are no ballast flora studies of Exeter or Topsham. Exeter exported serge, and at one time, thirty percent of the woolen exports of the entire kingdom. In some documents, mention is made of the difficulty of obtaining return goods to Exeter; those ships would need ballast taken on board ships. Today, the former ballast depot is a storage area for oil; therefore, it was impossible to obtain a sample of earth.

Left: Probable ballast sites sampled. (Installation detail MTA, 2004.) Right: Ballast in ships. (Installation detail, MTA, 2004.)

Probable ballast sites in Exeter and Topsham were located through archival research and interviews with scientists and members of the community. Seeds germinated from samples taken at

these sites were later shown in a *Seeds of Change* exhibition at Spacex Gallery in Exeter.

In the middle of the investigation, the work changed course. While researching in the libraries of Exeter for ballast, I came across the fact that human bones were imported in 1858 and rendered into fertilizer for gardens. This discovery gave a disturbing perspective on the English fascination with roses and all things floral, including those printed on cloth, wallpapers, cups, and linens. I, therefore, included the rose motif in the installation at Spacex. Whose bones were these? In 1858, the British massacred many during what is referred to as the "Indian Mutiny" in India. Cheryl Buchanan, an Aboriginal friend of mine in Sydney, Australia, suggested that perhaps they might have been the bones of her people, as the British might have wanted to eliminate evidence of the massacres carried out against Aboriginals. As a result, in Exeter and Topsham, *Seeds of Change* expanded to include imported cargo such as sugar, tobacco, chocolate, wine, cork, hemp, gold, and human bones. Consequently, the inclusion of the contemporary individual in history became urgent in this work.



Top: Map of ballast bank. (Installation detail, MTA, 2004.) Bottom: Records of departure and arrival of ballast in 1854. (Installation detail, MTA, 2004.)

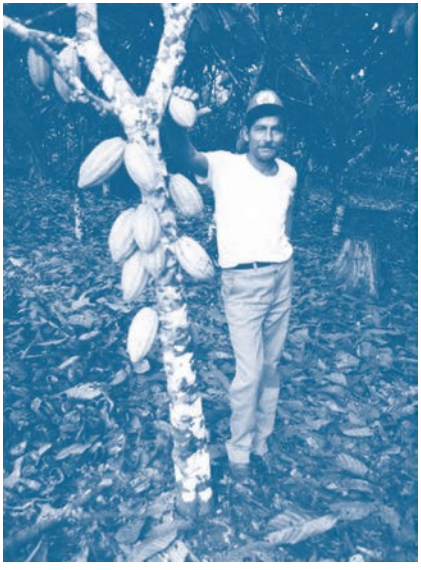
Ballast flora uncovers the comprehensive history of a place, a history that must necessarily expand to include what I call "borderless history." Borderless history must also consider the origins and specific histories of the enslaved and Indigenous peoples working on plantations, as products from the colonies were imported to colonial Europe along with ballast. In 2020, I realized that the concept of borderless history needs to be expanded to include "ara," the Guaraní concept for the entirety of all living beings that accounts for each member of the ara individually. For example, the hummingbird on our terrace in Cuernavaca who liked to sit on a leaf and sip the nectar of purple flowers would be an individual being in the ara, not just a representative of the genus hummingbird.

Bricks used as ballast material. (MTA, 2004.)

SUGAR Chocolate, Coffee, and Tobacco

Tobacco and cotton were grown on farms by Cherokees in the Carolinas before colonization. All of this was taken away forcibly. Samuel Butall, owner of the Sugar Factory in Topsham, had an estate in Carolina.

Top: Site of former Sugar Factory where raw molasses from the British colonies was processed. (MTA, 2004.) Bottom: Homeless Cherokee. (MTA, 1983.)



Ladislau by his cacao tree. He was expelled from a squatted farm by gunmen sent by a powerful landlord. He made his way up to the Amazon, where he heard land was free. A dozen members of a local Indigenous nation, hunted by white farmers, all have bullets embedded in their flesh. Ladislau says, "Now, I can drink milk every day." (MTA, 1984.)

Left: Flora in the Old Port of Marseille, which trades with many other countries (MTA, 1999); Right: The red juice from the Poke plant from North America was used in Italy to color red wine. Indigenous peoples eat this plant. Non-Indigenous Americans do not. (MTA, 2004.)

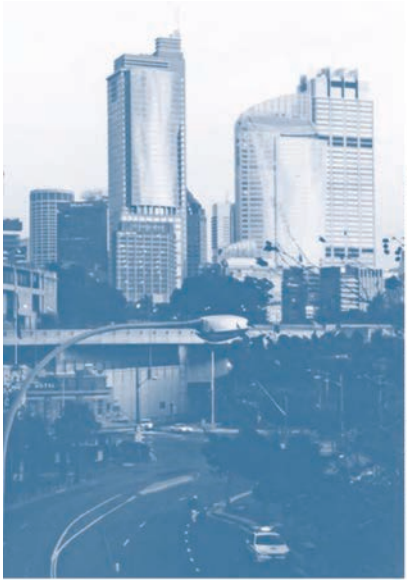
WINE

Imported from France, Portugal, Spain, and Italy

HUMAN BONES

Imported as fertilizer for gardens in 1858
Trade Route: India
The Indian Mutiny of 1858

Oldham's Manure and Chemical Company imported bones, guano, and manure to be used as garden fertilizer. (MTA, 2004.)



Cheryl Buchanan, an Aboriginal leader in Australia, said: "Maybe they are our bones, as England would want to be getting rid of evidence of massacres committed against us." (MTA, 2004.)

HEMP

Everything was unloaded everywhere because everyone was trying to escape taxes.

Marker where hemp was unloaded on the dock of a private estate. (MTA, 2004.)

Most gold in Brazil came from the state of Mato Grosso. (MTA, 1980.)

GOLD

Trade Route: Brazil and Mexico via Portugal and Spain

Tupã-y, an Indigenous leader organizing for the recognition of tribal lands, stands on the limits of present land demarcation and points towards a mountain where tribal land originally extended. He was anxious that the local white landowner who had stolen tribal lands and whose "property" began a few steps from his feet would kill him before he could achieve recognition of the lands. Tupã-y was killed before he was able to accomplish this.

Notes for a Seedy Politics

Radhika Subramaniam

Seedy, adj.: Fruitful, abundant (obsolete). Bearing many seeds.[1]

1. Pack Light

Seedy: Of wool, not cleared of adhering seeds. As in, the wool was inferior in value, seedy and burry.

At souvenir stalls in India, artists accost you, offering to write your name on a grain of rice. They point to examples of their minuscule artistry that are laid out, proffering a magnifying glass to help you see the hymn or poem etched on the seed. As a child, I was intrigued by the claim that epic verses might be written on these grains until a smug adolescent skepticism took over and killed the magic. Who could check, I concluded, to know if this was true? Years later, at an exhibition of Mughal miniature paintings at the Metropolitan Museum in New York, equipped with the magnifying glass on offer, I was stopped short by the folds of the churidar pants worn by a minor courtier in the corner of the frame, each individual bangle-like contour drawn by the artist as if just for this moment of illumination.

Artists like that Mughal miniaturist were employed by the officers of the East India Company as it established itself over the eighteenth century as much more than a trading concern on the Indian subcontinent. Curiosity, all too frequently acquisitive, about the flora and fauna of places visited by European explorers had meant that from early on, scientists were allowed on expeditions to oversee the collection of birds, insects, plants, seeds and other items for research and potential commercial exploitation. An entire category of professional botanical adventurers called plant hunters came into being who traversed the globe bringing their botanical bounty back for the delight of the scientist and gentleman gardener alike.[2] Gardens were becoming the pride of English estates and every gentleman was eager to show off the latest exotic acquisition. At the same time, botanic gardens were being established as clearinghouses for scientific research and plant exchange. Vast collections of living

plants, seeds, and herbaria, as well as drawings, illustrations and prints were integral to such gardens where efforts to systematize collection, experimentation and distribution were underway. The Royal Botanic Gardens at Kew in London, the flagship of a botanical imperium, became one of the key conduits for introducing new species to Britain. In Calcutta, an East India Company army officer, Robert Kyd, suggested that a botanic garden could identify and nurture plants of commercial value.[3] Established in 1787, the garden was to grow into a center for collection, scientific research and dissemination as well as the commercial distribution and exchange of tropical plants. Botany had become a curious mixture of enlightenment science, colonial exploitation and patriotism.

This was a period in which soldiers, diplomats, missionaries, civil servants, company officers and their wives had begun to settle in India. As they encountered the plants, animals and birds, people and their varied customs, garments, monuments and festivals, new landscapes and other features of the country, they commissioned Indian painters to render them in picturesque scenes. The hybrid Indo-European style that it spawned is often called Kampani Kalam or Company School painting. Company artists were schooled in Indian artistic traditions but they adapted their techniques to satisfy their new patrons, specializing in scenes and subjects of interest to Europeans. Gouache gave way to watercolors on imported paper. Traditional modes of making pigment out of vegetable matter, seeds and minerals and preparing handmade wasli paper were also set aside.

Botanical art was a significant subset of the Company School oeuvre. Botany grew rapidly in the shade of the commercial enterprise, feeding and fed by colonial exploration and expansion. Between the late eighteenth and late nineteenth centuries, a singular set of surgeon-botanists, in particular, commissioned Indian painters to document the various plants they had begun to collect, name, study and classify. Mughal, Maratha, Tamil, and Telugu artists, respectively skilled in distinct traditions, were among these painters. They successfully adapted their traditional styles to the conventions of natural history depiction, presenting each item as a specimen isolated from surrounding context. What else they observed of the surroundings or what they could have conveyed about the plants they drew, their uses and environments, is not a matter of record. The Calcutta Botanic Garden, which employed many Indian artists, made no attempt to gain or exchange botanical knowledge or involve local people in intellectual partnerships.[4]

Botanist Sir Joseph Hooker, bosom friend of Charles Darwin, director of Kew Gardens and plant hunter in his own right, commended Kew artists on the illustrations and lithographs for his book on Himalayan rhododendrons as they could "correct the stiffness and want of botanical knowledge displayed by the native artists."[5] Other patrons did value the artistry and contribution of Indian artists who ended up having long careers with them. In recent years, scholars have actively sought to uncover the individual names, style signatures and biographies of this "company" of artists and give appropriate attributions.[6] In 2018, the Royal Albert Memorial Museum and Gallery (RAMM) in Exeter, which houses a collection of eighty-six Company School botanical watercolors, announced that researchers had finally been able to attribute seventeen of these paintings to three renowned eighteenth-century Indian artists: Sheikh Zain ud-din, Bhawani Das and Ram Das. The paintings are of plants used in traditional Indian Ayurvedic medicine.[7]

In the late eighteenth century, around the time that the botanical artists in RAMM's collection were painting their Company commissions, the East India Company was also propping up Exeter's sagging woolen industry. In the previous century, Devonshire wool export to Europe had been a significant component of the port's maritime trade. The Napoleonic and American Revolutionary Wars together with a rise in Yorkshire woolens sounded the death knell of the Devonshire serge trade. Cloth export limped along for a few more years only because the East India Company could afford to dump the cloth in China and recoup its losses from the profits of tea. Many Company men, once they had done with their sojourns in the East, retired to Exeter where they bought comfortable houses that they furnished with the artifacts of their time abroad.[8]

Exeter was not new to global contact and certainly not to botanical discoveries. Over the nineteenth century, the locally based Veitch Nurseries of Exeter, and later Chelsea, transformed the face of ornamental horticulture in Britain.[9] Led by several generations of the Veitch family, the nurseries were responsible not only for introducing an extraordinary variety of plants from all over the world, including some of the earliest hybrids, but also for innovations in nursery and greenhouse infrastructure such as heating. The nursery sponsored a set of energetic plant hunters—among them, the Lobb brothers, William and Thomas, and the tellingly named E.H. "Chinese" Wilson—who, over the years, traveled to North and South America and large parts of Asia in search of desirable exotics, bringing back plants and seeds

to be acclimatized and naturalized. Orchids, rhododendrons, pitcher plants, lilies, monkey puzzle trees, Chinese paperbark maples, deodars or Himalayan cedars, among many others, found their way into, and became familiar denizens of, English gardens. No doubt some of the retired Company men indulged in the pleasures of gardening, cultivating in English miniature the horticultural variety of the world.

You don't always need a magnifying glass to see more clearly. Surendra Kumar Apharya of Jaipur who got into the Guinness Book of World Records for writing the maximum number of characters on a rice grain—1,749—says he couldn't do it without a daily practice of yoga. He has taught himself to hold his breath for up to two minutes so his hand remains steady and he can bring his ultimate focus to the task.[10]

Pack light: you aren't clear of the snags of history.

2. Lie in Wait

Seedy: Morally dubious, disreputable

The Svalbard Global Seed Vault, whose ambition is to safeguard the world's agricultural biodiversity, houses seed from around the world.[11] The location is high in the Arctic permafrost, deep in a sandstone mountain on an island well removed from tectonic activity. Opened in 2008 by the Global Crop Diversity Trust, the Vault is a sort of backup for regional seedbanks, an insurance to be drawn upon in the event of catastrophes such as climate change events. This apocalyptic vision has earned it the name Doomsday Vault. Here in the bank, the seeds lie, like the princess in the fairy tale, packed in foil packages or stored on shelves in conditions expected to slow metabolic activity and induce a sort of deep sleep. This isn't new to seeds, of course, which are well known for staying dormant. But dormancy isn't really a cryogenic stupor awaiting the passing prince of suitable conditions to kiss it awake.

In the bank, the seed is a specimen, shorn of its adhering context. Ex-situ conservation of this kind often turns seeds solely into germplasm manipulatable by private as well as scientific interest. But there is more to us—human, animal or vegetal—than our genetic resources. The world of seeds includes the open air, a winter's chill, highland fog, the moist humus of a forest floor, fungal networks,

bacteria, insects, scurrying rodents, the scents and signals of its neighbors, the crackle of fire or that strange rainfall one year. Crop seeds, in particular, have had a long exchange with humans, with pollinating insects and plowing animals, nitrogen and bacteria, with a wealth of knowledge, skill, language, ritual and culture that binds together a multispecies world. Every seed has an epic etched into it, not only by human hands.

The doomsday drama of banks like Svalbard focuses us on the future in a way that provides a security cover for current crises. The reasons that make the bank feel necessary—loss of genetic diversity in food stocks because of industrial agriculture and agribusiness; the global emissions, deforestation and monocropping that cause climate instability and soil degradation; wars and other crises that disrupt or destroy food supplies; oil, coal and other extractive industries responsible for ecological devastation and losses of habitat—are impacts being felt in the present. If nothing is actually done now to address these issues, there will be no recognizable world in the future into which the seed can enter. There is little insurance here against the destruction of the practiced, responsive and adaptive knowledge systems of small farmers and Indigenous cultivators whose lives are being devastated in the same way as their seeds.

The worlds that seeds know and those who know seeds are under threat. And both of them—seeds and farmers—have been under threat for a long time. Botanical imperialism laid the groundwork for colonial expansion. Scientific research aided the introduction of the non-native plants that were established in the monocrop plantations of the colonies. Plant hunters brought tea to India from China, putting to work in the tea plantations of Assam, Darjeeling, and the Nilgiris the very agriculturists whose lands and skills had been dispossessed to create the so-called tea gardens. The Calcutta Botanic Garden acclimatized cinchona, whose seeds were illegally procured from South America with the support and blessing of Kew. Were it not for the antimalarial quinine derived from cinchona, the settlement of India might have foundered.

And were it not for the seeds that settler John Rolfe most likely smuggled out of the West Indies, the English colonial effort in North America might also have come to a shabby end. In the seventeenth century, merchants from Exeter, Bristol, and Plymouth floated the Virginia Company to exploit the resources of the American East Coast. However, the little settlement in Jamestown struggled to turn a profit. Rolfe introduced his seeds which were that of a tobacco to

which the English palate was accustomed, a sweeter, milder variety than the one smoked by the Indigenous peoples of Virginia. It was to become one of the cash crops that transformed the history of the world.

Those who ensured its harvests also landed on American shores at around the same time, in slave ships. From the outset, the cotton, sugar, tobacco and rice plantations of the Americas and the West Indies were rooted in human bodies—as those of enslaved Indigenous people were laid waste by genocidal acts, the bodies of enslaved Africans took their place, later followed by those of Chinese, Indian, and other indentured laborers. In 2006, archaeobotanist Steven Archer, excavating an old well in Jamestown, found in its watery muck three tobacco seeds along with leaves, nuts, seeds and other organic material.[12] Tobacco seeds are little more than the size of the period at the end of this sentence: a story of violence captured in miniature or perhaps what the three little seeds offer is an open-ended ellipsis.

The Virginia Company didn't last long—its royal charter was revoked—but the fruits of what it seeded were enjoyed by more than the first shareholders. Ships laden with Virginia tobacco and Barbadian sugar needed a pilot to guide them up the shallow channel of the Exe estuary to Topsham, the outport of Exeter.[13] Deep draughted transatlantic ships carrying fish from Newfoundland, timber and other goods had to relieve themselves of their loads, putting goods onto lighters that would carry them upstream to the docks at Topsham and further up the canal to Exeter. To avoid taxes and the additional costs of pilotage and transshipment to lighters, cargo might be unloaded illegally outside the port and ballast dumped as well.

Ballast stabilized ships across the Atlantic on their journeys down the American coasts, to the West Indies, to Holland, Belgium, Germany, Spain, Portugal and down to the Canary Islands before they returned to the ports of the Exe. In the vortex of the transatlantic triangular trade, the gravel and earth of ballast hefted a global movement of commodities and cash crops. Weighted against enslaved Africans, they kept the ships swift and on-keel. Weighed in this balance, the humble seeds mingled with earth and scooped into ballast must bear the historical weight of their violent dispersal, just as the discarded ballast remains in eternal counterpoise to the weight of the enslaved men and women.

Imagine the ballast seed—dark in the ship's hold, tossed willy-nilly amid the earth, gravel, sand, and metal. The seed is nimble, open to the snags and accidents of travel. The mighty oaken timbers

of the ship creak and call. For all its freedom of movement, the seed is a landlubber—it waits for wind, water, animal and human to lead it back to the soil. Most of us are familiar with the various kinds of strategies seeds use for dispersal—riding the wind currents, floating away downstream, being eaten and excreted by birds and animals, or in a definitionally seedy approach, snagging onto animal fur or human clothing and shoes. All of these enable a seed to travel farther in space but dormancy, biologist Thor Hanson notes, allows a seed to disperse over time.[14]

Each seed that falls to the ground feels no inherent need to sprout. Seeds can stay dormant despite favorable conditions, waiting for obligation to come to meet them rather than being propelled by their own inner necessities. Mother plants whisper their secrets to the seed, their memories of seasons, temperatures and environments so that dormancy might have to be "cracked" to persuade a reluctant seed to germinate. The job of the seed is endurance, its skill the ability to wait it out—biding its time to give form to things as yet inchoate, insisting on a world in which it can be.

Lie in wait: silence is a part of speech.

3. Disturb the Ground

Seedy: Shabby, squalid

If there is anything that backyards in Brooklyn have taught me, it's to be open to surprises. This is partly because I'm an erratic gardener, once misguided enough to actively cultivate a weed garden, transplanting every bold interloper sternly pointed out to me into a riotous patch of their own together. But the fact is every gardener knows there's always the danger of an ambush. What would gardening be if you didn't have some reason to putter around every day? Weeds, in general, tend to be pretty seedy. Part of the gardener's daily surveillance is keeping an eagle eye out for the sly sprout putting its head above ground where it isn't wanted. Sometimes I think there must be a sort of seed theater in which we are the clowns on stage performing in a puppet show that they direct. We lop a vine and another tendril pops up. Pull this stalk up only to make room for another. Some weeds, I'm told, actually thrive on weeding. No gardener rests easy.[15]

If you think it's fanciful to imagine a weedy seedy humor, consider

the Datura stramonium. A powerful medicinal plant and intoxicant with a long history of Ayurvedic, Native American and varied folk usages, it goes by different names, one of which is Jamestown (jimson) weed. In the seventeenth century, English soldiers were brought in to Jamestown, Virginia, to quell an insurrection that arose in its entangled internal settler politics regarding trade and war with the Indigenous tribes in the area. The soldiers ate the weed as part of a boiled salad of local greens. It set them off on an eleven-day turn as "fools" in a "pleasant comedy"—blowing feathers, kissing and pawing companions, or sitting stark naked, grinning and grimacing "like a monkey." When they finally came to themselves, they remembered nothing.[16] Disruption comes easily to a weed.

Plants that were once neatly contained in ornamental gardens and greenhouses sometimes hop the fence. The Himalayan balsam, now an unwelcome guest in the UK, was first introduced to Kew Gardens by a Victorian plant hunter. According to the Royal Horticultural Society, this purplish-pink orchid-like plant can produce up to eight hundred seeds. In a sort of botanic blowing the raspberry, it uses a projectile mechanism to disperse them, often as far as twenty-two feet. Another avidly sought-after Victorian debutante, Japanese knotweed, which spreads primarily through a rhizome system, has been banished to the UK's invasive species list, along with the Himalayan balsam.

Other plants and seeds are inadvertent stowaways, carried in cargo and ballast, tracing in their movement the histories of exploration, exploitation and globalization. The seeds that once traveled trade and slave routes found themselves tossed ashore along coastlines worldwide together with the rest of the discarded debris. Ballast has crept into the landscape of many a city, enlarging banks and quays, raising mounds and cobbled into streets, walls and other structures. As cities have grown corpulent with the fruits of such landfill, some seeds within have disturbed this incessant growth enough to sprout. Some have adapted so comfortably to their new environments as to become familiar presences in the landscape.

Ruderal plants grab a foothold in neglected, disturbed environments, coming up through cracks and interstices in places that are abandoned or ignored. Often seen as carpetbaggers in a landscape of dereliction, they are witness to histories of upheaval and degradation. They are also the first budding assurances of new life. These scattered overgrown patches resist the aesthetics of the picturesque; they also resist being shorn of context.[17] But ruderal gardens, if we can call them that, are self-sustaining, abundant, carefree, even tranquil. Unmonumental,

they bear the heritage of disturbance lightly.

Ground-level disturbance isn't limited to edges, embankments and interstices. Over the nineteenth century, the intensification of agriculture in Britain required massive quantities of imported fertilizer.[18] The first of these was guano, the droppings of seabirds, which is high in nitrogen, potassium and phosphorus. The guano boom of the mid-nineteenth century served as little more than a temporary injection for the depleted soils of Europe even as it practically decimated centuries of bird droppings on the Peruvian coast in a matter of decades. Near-enslaved Chinese, Polynesian and other laborers worked in appalling conditions to dig up the stuff, swathed in a toxic haze of bird excreta. Nitrate mining in Chile's Atacama Desert and Peru took over from the guano industry, matching its labor practices torment for torment.

In this period, bones—both human and animal—were also being imported from Europe and India as fertilizers. Biochemist Justus von Liebig complained bitterly about the way in which England's bone lust had turned over the battlefields of Leipzig, Waterloo, and Crimea and looted the catacombs of Sicily. He was himself a proponent of bone fertilizers so his complaint was not particularly squeamish. But England, he felt, was "hanging on the neck" of other countries in Europe and the world, sucking them dry "like a vampire" for its own gain, and robbing them of their fertility.[19]

The derangement of soil's very substance at this time makes a mockery of ideas of belonging rooted in the settled rhythms of cultivated landscapes. Concepts of national identity as well as political and cultural belonging were being expounded upon even as those notional homelands were being built by ravaging others and reinforced by human, animal, organic and material infill. Today's agribusiness practices with their heavy fertilizer and herbicide use continue to rend ecosystems, wreaking havoc on the habitats of fellow species, destroying lives and livelihoods, and polluting soil, water and air. In a world rendered unhomely, no stake can be planted on undisturbed ground.

But what if we ceded this ground of disturbance to the stratagems of seasoned tacticians? What could we learn if we opened the field of meaning and political utterance to the flighty, migrant, tenacious and shoddy seed? Disturb the ground: you rest uneasy.

I would like to thank Pradeep Dalal for our exchanges on Indian botanical illustration.

(1) All definitions are taken from OED Online, March 2020. Oxford University Press. Accessed March 1, 2020.

(2) For a fascinating account of the role of plant hunters in British gardening, see Andrea Wulf, *Botany, Empire and the Birth of an Obsession* (New York: Knopf, 2009).

(3) Adrian P. Thomas, "The Establishment of the Calcutta Botanic Garden: Plant Transfer, Science and the East India Company, 1786–1806," *Journal of the Royal Asiatic Society* 16, no. 2 (2006): 165–77.

(4) Thomas, 177.

(5) Eugenia W. Herbert, *Flora's Empire: British Gardens in India* (Philadelphia: University of Pennsylvania Press, 2011), 168. http://www.jstor.org/stable/j.ctt3fhc3g.

(6) See for instance, "The Weight of a Petal: Ars Botanica," ed. Sita Reddy, special issue, *Marg* 70, no. 2 (December 2018–March 2019).

(7) RAMM, Exeter City Council, "Indian artists revisited," accessed February 1, 2020, https://rammuseum.org.uk/indian-artists-revisited/.

(8) Robert Newton, *Eighteenth Century Exeter* (Exeter: University of Exeter, 1984), 66.

(9) Ibid.

(10) History TV18. "Miniature Writer, Jaipur," YouTube, 3:34 mins., May 11, 2016, https://www.youtube.com/watch?v=rn4cnURrwik.

(11) "Svalbard Global Seed Vault," Crop Trust, accessed Aug. 6, 2020, https://www.croptrust.org/our-work/svalbard-global-seed-vault/.

(12) Steven N. Archer, *Jamestown 1611 Well Archaeobotanical Analysis: Report Prepared for Historic Jamestowne* (Jamestown, VA: Historic Jamestowne, November 14, 2006).

(13) E. A. G. Clark, *The Ports of the Exe Estuary 1660–1860* (Exeter: University of Exeter, 1960).

(14) Thor Hanson, *The Triumph of Seeds* (New York: Basic Books, 2015).

(15) I have derived great pleasure and understanding from Richard Mabey's masterful romp through the character of weeds in Richard Mabey, *Weeds: In Defense of Nature's Most Unloved Plants* (New York: Harper Collins, 2011), Kindle edition.

(16) Robert Beverley, *The History and Present State of Virginia, in Four Parts, Documenting the American South* (Chapel Hill: University Library, University of North Carolina at Chapel Hill, 2006), book 2, chapter 4, 24. Originally published 1705, https://docsouth.unc.edu/southlit/beverley/beverley.html.

(17) In recent years, artist and landscape designer Sarah Cowles has been exploring the meanings and possibilities inherent in conditions of ruderality. See in particular Sarah Cowles, "Ruderal Aesthetics," Ruderal, 2017, http://www.ruderal.com/pdf/ruderalaesthetics.pdf.

(18) Alison Bashford, "Soil and Food: Agriculture and the Fertility of the Earth," in *Global Population: History, Geopolitics, and Life on Earth* (New York: Columbia University Press, 2014), 181–210.

(19) Quoted in Bashford, 191.

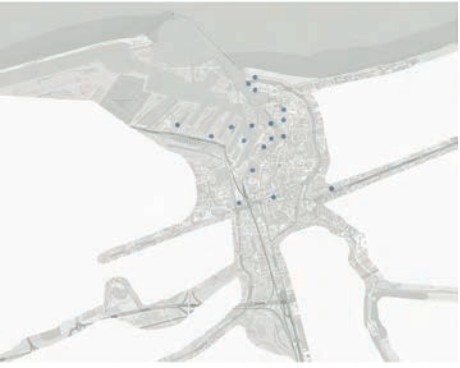
Dunkerque, France

Maria Thereza Alves
Seeds of Change: Dunkerque, 2005

My investigations in Dunkerque confirmed that research into ballast flora discloses unacknowledged historical horizons and adds further complexities to "borderless history."

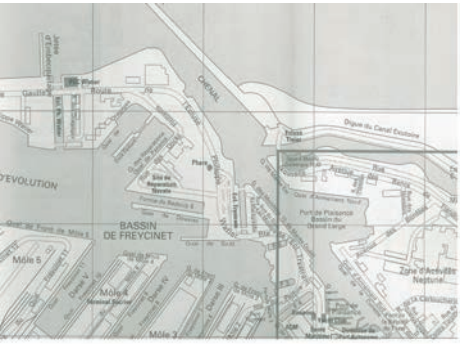
Dunkerque was ruled by Spain, the Netherlands, Habsburg, and England before becoming definitively French in 1662.

After the Middle Ages, Dunkerque was essentially considered a hub for British imports to France. But like in any large port, trading relationships seemingly confined to one country became incredibly complex: For example, a conventional history of Dunkerque cites England as its main trading partner, with ships recorded arriving from over fifty British ports. Further study, however, would reveal the trade routes of these Dunkerque-bound ships and point to sources of ballast flora in Dunkerque that far exceeds England. After all, Britain traded with the entire world.



Map of probable ballast sites.
(Installation detail, MTA 2005.)

By the eighteenth century, Dunkerque was a massive entrepot for colonial products such as tobacco, exotic woods, cotton, sugar, coffee, and spices. Dunkerque, at the time, was trading with: Haiti, Guadeloupe, Martinique, St. Lucia, Tobago, French Guiana, West Indies, Senegal, the Antilles, Canada, Guinea, Madeira, the Canaries, Azores, Barbados, Havana, Cadiz, the Levant, the Americas, Africa, the Netherlands, and Russia. In the case of Spain and Portugal, trade included their thirty-two colonial territories. These complex trading partnerships resulted in ballast seeds arriving from unforeseen places not directly connected to trade with Dunkerque.



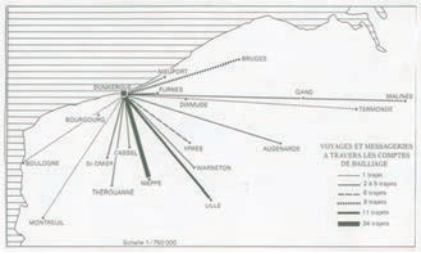
Detail of probable ballast sites.
(MTA, 2005.)

Borderless history must also include the origins of enslaved people, indentured workers, and Indigenous peoples (some of whom were also enslaved), who were transported to plantations and other work sites alongside the produce shipped to Europe. Their histories of displacement add further factors to the analysis of ballast flora in Dunkerque.

The inland network of canals of Furnes

(which, under Spanish influence, was used to connect Brussels to Flanders when the Port of Antwerp was heavily destroyed and closed by the Netherlands), Bourbourg, and Bergues connect Dunkerque to central and northern Europe and the South of France. Through this route, the distribution of ballast plants extended far outside the original entry point of the port.

A railroad system was installed in the port in 1848, linking the quays and distributing the seeds that arrived in Dunkerque to other cities in France, the rest of Europe, and Asia. Ballast flora brought by ships can thus be found growing along railroad tracks.



Canals. (Installation detail, MTA, 2005.)

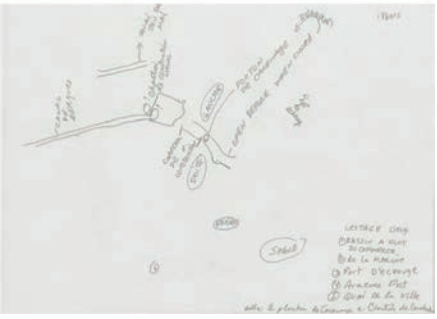
Even countries without a port, such as Austria, were possibly influenced by the spread of ballast flora from Dunkerque in the mid-eighteenth century when it ruled over the neighboring towns of Ypres, Furnes, Nieuwpoort, Ostend, Bruges, and Ghent.

One hundred and sixty-seven ballasted (lege) ships arrived in the Port of Dunkerque between January and April of 1858. They had no cargo and carried only ballast. The vessels transported a total of 11,379 tons of ballast, but details are not available regarding how much was unloaded at the port. These ballasted ships came mainly from English ports. Some ballasted ships came from other European ports including some from France itself. One ballasted ship even arrived all the way from Boston with no cargo. Surprisingly, this was not a rarity; studies by Kenneth Morgan, R.B. Sheridan, and Guillaume Daudin discuss the phenomenon.


Railroad. (MTA, 2005.)

At first, ships were ballasted directly on the quays and a regulation of 1681, the first time that ballast is mentioned in the archives, permits anyone to provide these services.
The first mention of an actual ballast depot in the archives is of the Bassin du Commerce located in the town's pier between the ponton de carénage and a construction site. Today, this would be somewhere between Rue Faulconnier and Rue du Maréchal French on the Quai des Hollandais.

Later ballasting operations could be carried out in the Quai de Hull in the Bassin de la Marine (*l'arrière-port*) or the Port d'Achouge (*l'avant-port*). The area has been heavily renovated, so it has proven



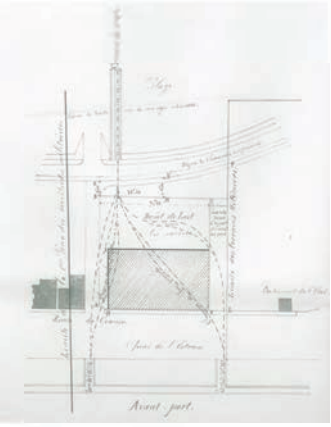
Notes by Alves–Top: List of ships arriving "lege" in ballast in 1873. Bottom: Trying to find the ballast depot. (Courtesy the artist.)

impossible to dig up a sample.

The Quai de Départ could have been a likely ballasting area during the nineteenth century as the Captain of the Port, Noël Juhere, pointed out to me. Later, the pier was used for receiving imported wood from Sweden, Russia, Norway, Finland, and Canada.

In the mid-nineteenth century, the Bureau of Ballasting and Deballasting, which was to become the major ballast depot of the port, was established on the *l'Avant-port* between the Quai d'Estran and a dike, just behind the *huitrière* building. By 1886, eight companies provided ballast services in Dunkerque.

Today, the former ballast depot operates as the working area of local fishers, Quai d'Armement Nord on Port Plaisance. But most of the original area was removed for the building of Port Plaisance. Where did the sand, earth, and ballast seeds go? There is a mention in the archives of rue de Lestage (Ballast Street) in 1867 but it is not on any map.



Bureau of Ballasting and Deballasting on Avant Port. (Installation detail, MTA 2005.)

In the late 1800s, the botanist Dr. Bouly de Lesdain documented plants growing in the Dunkerque area that originally come from Asia, Africa, Australia, the Americas, India, Africa, South America, and the Mediterranean. During my research, I noticed that while English botanists may note specific modes by which plants arrived in England, including ballast, French botanists of the same period, the nineteenth century, usually do not. Concordantly, staff at the ecology center in the city were both unaware and disinterested in the phenomenon of exotic species growing in Dunkerque and skeptical about the category of ballast flora.

Dunkerque introduced me to the necessity to broaden my research beyond ports and study how much further ballast flora could have traveled. The results of the many reconstructions of the port also led me to consider the importance of the movement of building materials in a city and the possibility of setting up an archive of such materials, so

Left: Quai de Hull. (MTA, 2005.)
Right: Quai du Depart. (MTA, 2005.)

that all the layers of its history can be accessible.

On Mole One, wine in wooden barrels was imported from North Africa while sugar was unloaded from the Antilles and Cuba.

Botanist Jean Claude Brunell pointed out two non-native plants growing between these two buildings, one from South Africa and the other from India. How did their histories become connected with sugar and wine?

The grounds of the former Chantiers de France. (MTA, 2005.)

Lesieur on the Canal de Bourbourg imported peanuts from Senegal, the Ivory Coast, Buenos Aires, and India. Botanist Bouly de Lesdain saw *Eriochloa punctata*, a plant from tropical America, growing in the debris.

Wool from Central and South America, Australia, New Zealand, and North Africa, and cotton from the Americas and Egypt were stored in hanger Léon Herbart. Seeds also came along. Today, exotic wood is imported here, and yet more seeds arrive.

Left: Quai d'Armement Nord. (MTA, 2005.)
Right: Quai de Citadelle. (MTA, 2005.)

Just outside the Musée Portuaire, formerly a warehouse for tobacco that was imported from the colony of Virginia and also from Brazil, a trench was opened for new pipes on the Quai de la Citadelle. Guano was also imported and unloaded on this quay. Birds eat lots of seeds. Soil samples were taken in the trench.

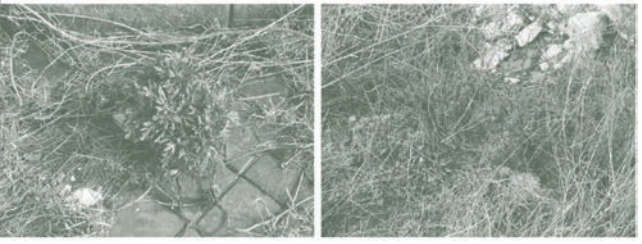
Christine Stroobandt, a historian at the Musée Portuaire of Dunkerque, pointed out that ballast was used as a landfill to build up the area of the now-demolished shipyard of Chantiers de France, constructed in 1898. I took many samples of earth from this site, but a new complexity arose: a school was being built there. The ground was being dug up and new soil and sand were brought in. This heavily ballasted area of the Chantiers de France is truly a monument to the "borderless history" of Dunkerque.

Mole 1. (MTA, 2005.)

Lesieur. (MTA, 2005.)

As a result of the construction site, I made an artist's proposal to the city titled "Seeds of Change: Dunkerque: Where Did It All Go?"

For the Dunkerque project, soil samples were taken from probable ballast sites, germinated, and exhibited on board a historical ship in the Musée Portuaire.



Flora from South Africa and India. (MTA, 2005.)

Hanger Léon Herbart. (MTA, 2005.)

Bristol, England

Maria Thereza Alves
Seeds of Change: Bristol, 2007–2016[1]

"At the end of the last Ice Age, the British Isles were home to only a handful of plants...The majority of these introductions [the plants that came later] occurred over two centuries between 1735–1935."
– Sue Shepard, *Seeds of Fortune*[2]

The Atlantic triangular slave trade consisted of commercial exchange in which manufactured goods from England were taken to Africa in exchange for enslaved Africans, who were then traded in the Americas for colonial products. Since the inception of *Seeds of Change*, I have come across extensive documentation in archives, libraries, and record offices describing ships arriving in ballast. However, no explanation was given on port documents as to why ballast had been loaded onto the ships. When meeting with academics and sometimes botanists and explaining this work, I am regularly challenged about the economic absurdity of any ballast being used in mercantile shipping. Official shipping cargo documents, which list ballast, do not impress these individuals as sufficient historical evidence. During my research on Bristol, I came across academic studies that exposed the fallacy of this accepted economic theory.

Bristol was one of the two leading English ports in the trans-atlantic slave trade (later, Liverpool would operate as the world's leading slave trading port). Contrary to our ideas of mercantile shipping practices, ships frequently returned in ballast to their homeport in Bristol.

Henry Cruger, Jr., a merchant in Bristol, complained in 1772 of this when he relayed the difficulty of one of his ships returning in ballast from Boston because it could not "procure a freight for Love or Money." One might have assumed this to be an uneconomic rarity. However, according to Kenneth Morgan in his study "Shipping Patterns and the Atlantic Trade of Bristol, 1794–1770",[3] by the mid-nineteenth century, sugar production had so diminished or was so monopolized that it was common for ships to "trade in ballast" and return to Britain. Previously, it had been the main cargo exchanged for enslaved people in the West Indies.

In "The Commercial and Financial Organization of the British Slave Trade, 1750–1807," R.B. Sheridan explains that slave

ships frequently returned to the homeports in ballast rather than wait for weeks or months for return cargo as the "triangle trade was feasible only in the early stages of the Caribbean economic development. But delays in collecting colonial produce for the return voyage, or late arrival of ships after the great bulk of crops had been already exported along with a more complex financial system such as the London commission which reduced the volume of sugar sold in the West Indies were all contributing factors for slave merchants' difficulties in finding cargos for the return journey." All this was leading to the situation in the mid-eighteenth century where slave merchants, as Sheridan explains, "who formerly exchanged slaves for sugar in the West Indies, were often forced to order their ships home in ballast." As evidence Sheridan refers to a parliamentary investigation in which "[m]asters of slave vessels, sugar planters and island governors testified that few slavers returned to England with sugar." Sheridan cites the testimony of Captain William MacIntosh "who was asked by the Committee of the House of Commons in 1789, which was investigating the slave trade, 'Do the ships in the African trade generally return from the West Indies fully laden with West India produce?' MacIntosh explained, 'They seldom or never bring any produce home.'"

Detail of installation in Arnolfini Gallery. (Courtesy Arnolfini Gallery, 2007.)

In "Profitability of Slave and Long-Distance Trading in Context: The Case of Eighteenth-Century France," Guillaume Daudin reveals an astonishingly seldom-mentioned economic detail: "Slave cargoes were more valuable than colonial goods cargo. A single slave cargo required four to six direct trade operations with the West Indies to remit its income in colonial goods."[4] It appears that the slave trade resulted in a great deal of ballast crossing the Atlantic to homeports in Europe. Therefore, the formation of the English landscape coincided with a time in English mercantile shipping when ballast was mainly transported as a direct result of the slave trade. Seeds arrived in Bristol as a result.

Probable ballast sites sampled. (MTA, 2007.)

References to ballast in Bristol's port exist from as early as 1543, when Parliament passed an act prohibiting shipowners from casting out ballast onto what were then called Hungroad and Kingroad.[5] The post of Ballast Master was created in 1700. As late as 1918, regulations stipulated charges for ships entering the dry dock in ballast. References also cite a Ballast Wharf and a Ballast Lane in Avonmouth, where several samples were taken for *Seeds of Change*.

Ballast Lane found in the current map of Bristol, but what is its history? (MTA, 2007.)

Hung Road has several citations by botanist Evans of non-native flora growing on ballast. (MTA, 2007.)

Cumberland Basin Lock is a possible ballast site. (MTA, 2007.)

Cumberland Basin. (MTA, 2007.)

Redcliff: Among the water bailiff's fees in 1788 was a charge of 1s6d if a vessel came in loaded with ballast. (MTA, 2007.)

Grove Quay is where *Amaranthus albus*, a plant from North America, was cited growing on ballast. (MTA, 2007.)

Wapping Quay has several citations by botanists of non-native flora growing on ballast. (MTA, 2007.)

Dry Dock: Regulations from 1920 charged dues and rates for ships coming in ballasted here. (MTA, 2007.)

A flora book dating from the 1930s, written by the botanist Cecil I. Sandwith, and the herbarium catalogue of Ivor W. Evans mention sites where ballast plants from North America, Africa, and continental Europe had been found growing in Wapping Quay, Grove Quay, and between Avonmouth and Shirehampton. During my research, I discovered some flora were entwined with histories of trade, colonialism, slavery, the extinction of languages, and Indigenous activism. A *Seeds of Change* installation digesting these findings was commissioned for the *Port City* exhibit, curated by Tom Trevor, at the Arnolfini Gallery.

The following text is a transcript of the two paintings below: *Salsola Kali* from Northern Africa (or Russia) was found on ballast in Avonmouth. *Amaranthus Albus* from North America was found on a ballast tip on Grove Quay.

Salsola Kali and *Amaranthus Albus*. (Drawings by the artist.)

The people of the Susu, Gola, Limba, Mende, and Yalunka tribes were among those enslaved on Bance Island in Sierra Leone and taken by Bristol slave ships to be sold in Jamaica and other islands to replace the Indigenous Arawaks (who had been traders and traveled long distances from island to island in their canoes). None of them survived contact with the Spanish or the English, who came later. These ships would then continue onto the Carolinas to replace the Indigenous workforce there, the Cherokees (two-thirds of whom did not survive contact with the English). Ballast taken from Jamaica (seeds which could have come from any of the islands with which the Arawaks traded) or the Carolinas anywhere along the East Coast where Cherokees traded could mix with seeds accidentally coming from any of the villages attacked by slavers in Sierra Leone.

Among the villagers were the Sasu, who were originally from Guinea and were also traders, nomads, and farmers. The Limba are autochthonous to Sierra Leone. The Gola are from Liberia. The Mende, who were originally from Sudan, traded with neighboring

countries such as Liberia, Ivory Coast, Guinea. (Later, the boys of the Mende were recruited to fight in the diamond wars.) Seeds from any of these places could have arrived in Bristol and been unloaded in the ballast dumps at the Wapping Quay, where the Industrial Museum is.

Slavery was not abolished in Sierra Leone until 1928, but it remained widespread until the 1970s. The country has the world's highest maternal mortality rate, and life expectancy for men is forty-two. The UN has declared Sierra Leone today the least livable country in the world based on poverty and poor quality of life endured by its citizens.

Sebastian Cabot, perhaps a Venetian but anyway he considered himself to be an Englishman from Bristol, was a good friend of the Mayor of Bristol, Robert Thorne, who had a soap factory in Seville and a business of trading enslaved Africans and Canary Islanders. Thorne invested in Cabot's trip to La Plata River in Argentina where, with African slaves, he enslaved some Amerindians (most probably the Guaraní, whose territory also includes parts of Brazil, which the Portuguese colonized as the first Europeans to have a monopoly on the slave trade). Maybe these plants arrived in Bristol because of Cabot?

Colonization forced the Guaranían migration movement in search of "A Place without Evil" to settle in. The Guaraní did not find it, but some ended up in Mato Grosso, where Tupã-Y (Marçal de Souza), a Guaraní who fought for land and Indigenous rights, was assassinated in 1983. Brazil abolished slavery in 1888, but in 1984 my Uncle Antonio was still afraid to travel outside of his village in the state of Parana for fear of being made into a slave. In 2008, the Anti-Slavery Task Force of the Brazilian government freed 4,forty-six hundred slaves.

An incomplete list of some of the Indigenous languages that no longer exist in Argentina: Chané, Güenoa, Chaná, Abipón, Payaguá, Mbeguá, Lule, Manek'enk or Haush, Teushen, Allentiac or Alyentiyak, Toconoté, Millcayac or Milykayak, Omaguaca, Cacán, Kunza or Likanantaí, Comechingon or Henia-camiare, Sanavirón, Het, Yagan, Yámana or Háusi-kúta. There were thirteen hundred languages in Brazil before colonization. Today about one hundred and eighty are spoken, of which one hundred and thirty-three are endangered.

One hundred samples of earth were taken from ballast sites throughout the port of Bristol. They were potted in trays given to residents in the community who reflect the complexity of Bristol's history.

The participants included: Princess Campbell, Louise Walker, Iva William, Gloria Watson, Ms. McFarnlene, Mrs. Lafayette, and Mrs. Downer of the Malcolm X Elders; Sean Atkins, Emma Whitaker, and Caroline Hope of the BTCV (British Trust for Conservation Volunteers); Joss Cole, Jade Laing, Gloria Ojulari Sule, Bunge Adedegi, and Lisa Routley of LAFTA (Looked After Fostered and Transracially Adopted); Vanessa Boyawa, Linda de Landro, Rose Thorn, and Arlene Pilgram of Breathing Fire Theater Group; Vandana Sharma and members of St Paul's Learning Center; Osake Babatunde, Sade Daly, Alyssa Small, Hooda Ali, Nailah Barrett, and Mabon Ali of Full Circle Youth; Valeria Mower, Lance Watson, Jahluke Sellassie, Ismail Ali Ismail, Beryl Clarke, Desmond Henry, Shakini Francis, Patricia Spry, Rashid Mills, Yasmin Abdulaahi, Sonia Fullerton, Kevin Gayle, Kevin Spencer, Zachary Hooper-Baker, and Louise Nicholson of People First; Garthfield Martin of Felix Roas Adventure Playground; Louise Lynas and Rob Mitchell of Firstborn Creatives; Michael Debenham of Easton Community Centre; Sauda Kylambuka of Community Resolve; and Folake Shoga, Mr. Shign and his grandson, Zoe Shearman, Chandra Prasad and Baljinder Bhopal, Snoozie, Martin Hitchcock, and Kassim Hanid.

Plants growing from sampled ballast sites. (MTA, 2007.)

As a result of my work in Bristol, once again, the significance of involving community groups in research of their own communities has been made clear, especially as the community can produce individuals who can approach the research from non-traditional academic perspectives that open up possibilities of research.

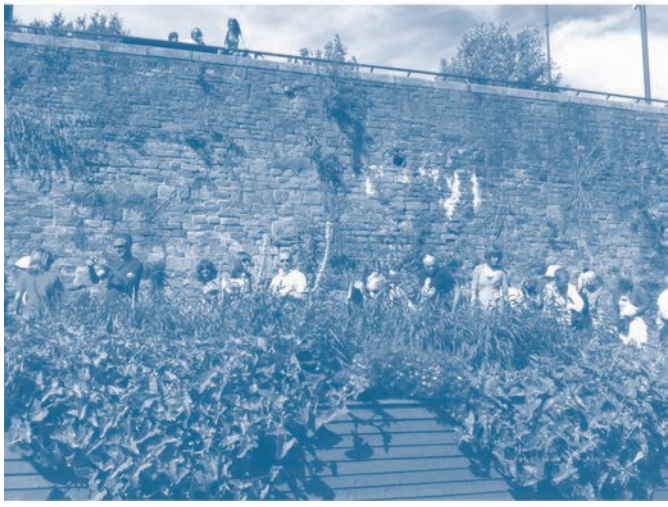
Some participants who grew plants from earth samples: Joss Cole, Jade Laing, Gloria Ojulari Sule, Bunge Adedegi, Lisa Routley of LAFTA (Looked After Fostered and Transracially Adopted). Photo by Kate Tiernan, courtesy Arnolfini Gallery.

In *The Concise British Flora* by William Keble Martin, thousands of plants are listed.[6] England started out only with a

handful, but ship trade contributed to changing and re-defining the "English" landscape. Further, because the English landscape was formed during the country's intense slave trade, which resulted in much ballast and therefore seeds arriving in English ports, I believe it is necessary to create an "English" Landscape Research Institute to promote active participation and investigations between British residents, community thinkers, scientists, and academics about the land, its flora, and the history of Bristol.

Proposal for an English Landscape Research Institution during the exhibit at the Arnolfini. (Courtesy the artist.)

Since Marseille, I have proposed a ballast flora garden as a central element of *Seeds of Change*. It was only in Bristol, four years after the presentation of *Seeds of Change: Bristol* at the Arnolfini in 2008, that one could be made. The *Floating Ballast Seed Garden* was made on a disused barge on Bristol's Floating Harbor. Funding was secured for five years to create an annually curated ballast flora garden as well as to make an extensive program on the garden with artists, writers, musicians, scientists, poets, storytellers, and others. It is a garden of witness-plants, observers of the history and economy of Bristol and the peoples, beings and lands affected by it. At the end, the garden was planted with pollinating flowers to welcome and provide sanctuary for bees.



Maria Thereza Alves, *Seeds of Change: A Floating Ballast Seed Garden*, 2012–2016. Photos © Max McClure. Courtesy of Bristol City Council, Arnolfini and University of Bristol Botanic Garden.

Maria Thereza Alves, *Seeds of Change: A Floating Ballast Seed Garden*, 2012–2016. Photo © Max McClure. Courtesy of Bristol City Council, Arnolfini and University of Bristol Botanic Garden.

(1) *Seeds of Change: A Floating Ballast Seed Garden* was commissioned by the Bristol City Council as part of its public art program. The project was funded by the Ashley, Easton & Lawrence Hill Neighbourhood Partnership, with the kind support of Bristol Harbour Authority, Arnolfini, Ramboll, University of Bristol Botanic Garden, and the Avon and Somerset Probation Trust Community Payback team. *Seeds of Change Floating Garden* team: Lucy Empson, Bristol City Council, landscape architect; Gitta Gschwendtner, designer; Nick Wray, the University of Bristol Botanic Garden, plant curator; Ramboll (Bristol), structural engineering; Mark Harris, Charles Farinia, Anton Goldstein, and Jerry Ortmans, construction; Eudaimon Ltd., solar power and lighting consultant.

(2) Sue Shepard, *Seeds of Fortune: A Gardening Dynasty* (New York: Bloomsbury, 2003), xv–xvi.

(3) Morgan, "Shipping Patterns and the Atlantic Trade of Bristol, 1794–1770," *The William and Mary Quarterly* 46, no. 38 (1989): 506–38.

(4) Guillaume Daudin, "Profitability of Slave and Long-Distance Trading in Context: The Case of Eighteenth-Century France," *Journal of Economic History* 64, no. 1 (2004): 144–71.

(5) I would like to thank Evan T Jones, Lecturer in Economic and Social History in the Department of History of the School of Humanities at University of Bristol, for correcting my original research that had cited 1680 as the earliest reference.

(6) W. Keble Martin and Douglas H. Kent, *The Concise British Flora in Colour* (London: Ebury Press and Michael Joseph, 1965).

Lara Khaldi

We Will Emerge from the Flower of the Grave[1]

In 2002, during the incursions of the second Intifada, a Palestinian political prisoner was said to have called his father from prison, telling him that he had buried weapons in their farmland some years ago.

The father quickly replied: "Are you insane telling me this on the phone? You know our phone is bugged!" and hung up. A few days later, the son called his father again: "So, what happened?" "They were listening to your call, son. They showed up the next day and turned the soil upside down looking for the weapons. They didn't find anything." The son laughed and told his father there weren't any buried weapons. He just thought he'd help out with this season's plowing from prison.

In this essay, I attempt to read some aspects of Maria Thereza Alves's project *Seeds of Change* through my position and experience of living under settler colonialism in Palestine. It is perhaps a reading *with* the artist's project rather than *of* it. I will do so by evoking the structural movements of settler colonialism and Indigenous responses to them. Or perhaps the reading happens through lessons one learns from the work. One of the key points I would like to advance in this essay is that we cannot consider plants as immigrants only and not as settlers, too; doing so would make a distinction between humans from nature—when these movements affect all beings—and obfuscate the structural impetus behind settler colonialism. *Seeds of Change* shows us that we still live the botanical legacy of colonialism, but the possibility of decolonization rises from below. We learn that the arrival of seeds points towards human movement and that not all movement is the same. Someone's arrival can mean the uprooting of another. Planting anew is quite often done through a process of "displanting," which is to say planting on ruins, on burial grounds, or through shifting earth. Yet this displanting cannot be final. As seeds survive and lay dormant for hundreds of years, they bear witness to the continuous structure of settler colonialism and slavery. Their germination points to the possibility of return, which can be read

as a decolonizing structure in which the dismantlement of settler colonialism takes place.

Planting: Not All Human Action Is Alike

The title of Maria Thereza Alves's project suggests that seeds are agents of change. Indeed, by resuscitating and retracing the movement of seeds through ballast, the artist addresses historical and contemporary relationships and changes in ecosystems resulting from this process. The research part of the project usually contains the historical details of the origin of the seeds through tracing the slave trade across the seas. For each city, Maria Thereza Alves establishes how the seeds arrive at that particular location. In fact, this is one of the most critical aspects of the project, that the movements of plants, animals, and humans are not all the same. Botanist Tomaž Mastnak confirms that each plant species' means and ways of arrival are crucial to understanding the concept of botanical decolonization and "native" plants and people.[2]

In the exhibition *Seeds of Change: New York—A Botany of Colonization*,[3] one of the works on paper is a short, handwritten text. In the first person the artist writes that the last remaining native American forest is found in woodlands in Manhattan, where she and her partner saw a Native American family camp. We tend to think that seeds and plants could stand for or function as a metaphor for people or that they represent the displacement of botanical life. Yet, if we consider the entirety of an ecosystem, then plants, humans, and animals form part of an interrelated web of existence or being: the displacement of plants has also contributed to the destruction of an already existing ecosystem that included the human inhabitants of the land, and of which these Indigenous inhabitants depended on for their livelihood.

One year after the 1976 massacre at Tel al-Zaatar, the Palestinian refugee camp in Lebanon, the herb za'atar was added by the Israeli authorities to the protected species list. It was deemed illegal for Palestinians to pick za'atar from their mountains. Za'atar is one of the most emblematic foods for Palestinians and has defined Palestinian culture for centuries. After the ban, Palestinians were prosecuted for picking the herb while Israeli settler farmers started cultivating it. In one of the cases that ended up in court, the Israeli prosecution lawyer accused the picker of having a long experience in picking za'atar, saying that he had confessed that he can fill a whole bag in only three minutes. The evidence, which the prosecutor used against the Palestinian za'atar picker, is the same that affirms the long and binding

relationship between Palestinians and their land. The relationship between the Indigenous and their land is not essential or natural—it is rather an occurrence. It's a relationship that develops over centuries. The colonizer destroys this relationship under the justification of the protection of nature, asphyxiating this very relationship, displacing and replacing it. The categories of cultivated and uncultivated are decided and invented by the colonizer. As Mastnak explains, the settler colonizer's planting means cultivating by making native plants un-cultivated.

Displanting: Terrains of Struggle

The exhibition *Seeds of Change* in New York featured drawings that showed how the earth of New York itself was, in the artist's words, "leveled out"—how the original topography had disappeared and was replaced and displaced so that it looked more like your average flat European city, from where the settlers hailed. Alves goes on to mention that "among the Guaraní in South America it is unfathomable to remove a hill as it would result in a change in the currents of air," which would affect the whole ecosystem. The violent displacement of soil in New York was just one component in the larger settler colonial project there. Colonial invasion reshaped the relationship between place, plants, and people, and new landscapes emerged. This "production of a landscape," as Mastnak calls it, begins with soil, the very basic matter of life.[4] In a text about the life and work of the anticolonial revolutionary Amilcar Cabral, Filipa César writes, "The metonymy is that people are a part of the soil, the soil is a part of the people. Cabral stating that the people are our mountains means that the people themselves are the terrain of the struggle."[5] Not only does one stand for the other, but one is in fact the other. In fact, one of the ships Alves traces as a vessel of ballast that docked in New York in 1881 came from Cape Verde, which was a Portuguese settlement at the time and a stopover during the Atlantic slave trade.

Production of a Landscape

Driving around in Palestinian Occupied Territories, one quickly learns to tell an Israeli settlement from a Palestinian village or town. There is the stark visual difference of how power and financial means manifest in building material and scope. However, the most defining landmark of Israeli settlements is a forest of pine trees. In 1901, the Israeli National Fund commenced planting pine trees, among other trees which were mentioned to have been found in the "holy land" in

the Old Testament. Most of the pine tree species came from eastern Europe and other origin countries of Jewish settlers. And the land slowly began to look like Europe. The trees served to transform the region into a landscape resembling Biblical scenes according to the European canon, but they also hid and protected the illegal settlements. Tree planting is used for land grabbing as well. The many pine parks planted by the Israeli National Fund are cover-ups for destroyed Palestinian villages underneath the trees' roots. According to writer Noga Kadman, of the sixty-eight parks owned by the Israeli National Fund, forty-six are forested on top of destroyed Palestinian villages. Planting is also displanting and displacing. If in California, as Mastnak writes, "The lawn is the domestic epitome of ecological conquest," then in Palestine, the pine tree forest is the public epitome of ecological conquest.[6]

Germination

In almost all iterations of *Seeds of Change*, Alves points out that seeds lie dormant for hundreds of years. Given the proper circumstances, every seed has the potential to germinate. The artist, in a sense, awakens the ballast flora seeds that lie under layers of soil. Often the process of germination is collaborative, with other people or other structures. In Liverpool, ballast is used for road building—accordingly, the seeds sprout from beneath the roads. Seeds can also upend the very material of city infrastructure. After years of dumping the ballast in a new area slightly removed from the port, the seeds awaken, growing out of cracks. This growth tampers with our linear conception of history and opens up new possibilities. It disturbs the soil and provides the possibility of return. In my view, those germinated ballast seeds are the material evidence of the possibility of return. To return is to decolonize.

In Bristol, the garden planted with seeds from Alves's research contained plants that were witness to the history of slavery in the United Kingdom. Indigenous peoples from across Africa were taken by Bristol ships from Sierra Leone to Jamaica as replacements for the Indigenous Arawaks and, some ships continued to the Carolinas where enslaved Africans were to replace the Cherokees. The seeds from the various villages of Indigenous peoples in Africa mixed with those of the Indigenous of the Americas and arrived in Bristol by ship. Plants such as *Sennabiera pinnatifida* from Argentina were found in Bristol, along with *Pisum arvense* from Portugal. The budding plants and their growth in the garden transform the narrative from one that positions

this colonial event in the past to an event that is ongoing and insistent on present and future. Linking ports together and showing us how countries such as the United States and the United Kingdom were displacing earth, people, and botanical life by force emphasizes how not all human movement is alike: traveling in exile is not the same as sailing to colonize and enslave.

We learn from Alves's work that the slave trade in Bristol was closely associated with a few individuals, among them Robert Thorne, a merchant, and Sebastian Cabot, the Venetian explorer. They enslaved Amerindians from the Guaraní people who were forced to keep moving in search of a place without evil, Alves says.[7] We also learn that although slavery was said to be abolished in 1888 in Brazil, the artist's uncle was afraid to leave his village in 1984 from fear of enslavement. Arriving in Bristol as invisible side elements of the slave trade, these seeds are able to tell us something about the Guaraní people. The growth of those plants points to the descendants of those slaves; the immigrants in the UK and their histories and stories. In 2007, Alves gave earth samples from ballast-covered areas to members of the community in Bristol to grow in their homes. As emphasized by the artist, "Some are new immigrants." The germination and growth of those seeds makes the circumstances that brought them to Bristol alive and linked to today. Those plants will keep the stories circulating as otherwise other hegemonic narratives triumph. In 2012, the artist made a permanent ballast garden at the Arnolfini, which functions as a living material monument. In an interview by Salman Rushdie with Edward Said, Said speaks about the unmaking of the hegemonic institutionalized narratives through the repeated telling of stories by the underdog. He says, "There seems to be nothing in the world that sustains the story, unless you're telling it, it's going to drop and disappear; it needs to be perpetually told and retold, whereas the other narrative is there and is institutionalized."[8] One can see the ballast garden as the constant telling of the story of how those plants arrived in Bristol—their constant growing and many returns.

Narratives around native plants and botanical cosmopolitanism have been associated with immigration and anti-immigration discourses. While one could read *Seeds of Change* in this respect, not every port is the same, and we tend to forget the relationship between immigration and colonialism. The ballast seed history in New York presents a stark difference with the ones in Bristol or Antwerp. The volume of the ship ballast arriving in New York is so immense that the artist points to the fact that "in one day seven million tons of ballast

were dumped." As explained above, this destroyed and buried the native flora and its landscape. Over this destruction, the new Biblical landscape was built. Thus, the plants that the artist germinates in the New York iteration are material evidence of this ongoing process of settler colonialism that encompasses destruction, slavery, and burial.

Return

The germination of seeds is the material return of that which has been repressed. I do not refer here to the return to pre-colonial time, impossible as it is. Yet the germination of seeds from former colonies in colonial countries points to the possibility of another form of justice. Plants that grow out of the dormant seeds are the material evidence of this return. This growth is representative of a whole ecosystem that those seeds archive. Plants can change the soil surrounding them and slowly produce a different landscape. To return is to transform. *Seeds of Change* grants us this possibility.

About three hundred years ago, the Palestinian diaspora brought the cactus plant from the Americas to Palestine. It was generally planted for demarcating lands or property and protecting villages from certain animals. In 1948 during the Nakba, Palestinian villages were destroyed, and in their place Israeli parks and settlements were built. The cactus plant became a symbol for the perseverance of the Palestinians. As the cactus returned, it grew back in the areas of the destroyed villages. *Sabr*, the Arabic word for cactus, is also the term used for patience. The cactus has become witness for the destruction of the villages and an embodiment for the patience of the Palestinians and their everlasting hope of return.

The late English anthropologist Patrick Wolfe famously wrote of settler colonialism, "Invasion is a structure, not an event."[9] Recently, for the commemoration of the seventy-second year of the Nakba, historian Mezna Qato wrote on her Twitter account that "return is a structure."[10] Indeed, return is a process of transformation that involves the struggle for the dismantling of colonial structures. The notion of "return" is complex. In some cultures, it holds negative associations; the dead sometimes return as sinister spirits looking for revenge. Specters are seen as pointing to farce and illusion. Return can be perceived as provocation to violence, civil war, or stasis, as by Italian philosopher Giorgio Agamben. Differences arise between interpretations of return by the privileged citizens of nation-states and those by Indigenous non-citizen, for whom return is continuous struggle and whose hope is that one day settler colonialism will be

dismantled. Meanwhile, return can also be used as a tactic. Seeds buried in the earth for years and years are similar to archives—ones which are not yet museologized nor recorded and surveyed. They lurk in the ground, carrying the potential to reawaken.

During the Nakba of 1948, many Palestinians buried their valuable belongings, ranging from photos to gold in their backyards or secret locations, so they would be able to retrieve them once they returned, not knowing that many of them would remain buried for decades. However, the stories of those underground remainders continue to circulate in the diaspora and across generations. In the satirical novel *The Secret Life of Saeed: The Pessoptimist* by Emile Habiby, there is such a story.[11] The tale centers around the strange time of the Nakba aftermath. Chronicling the struggles and transformations of the antihero, Saeed, and his family, the story spans two generations, wherein his son finds and is empowered by the buried objects. Two secrets haunt the novel: the first is that Saeed is a collaborator with the new regime, and the second is a buried treasure box that his wife's family hid in a cave in their village, Tantoura, before they were forcibly expelled in 1948. Eventually, their son finds the treasure box and becomes a *Fida'i*, a resistance fighter. The book's pursuit of the buried treasure follows this form of movement. Throughout the story, the buried treasure functions like a promise of salvation, a reminder of a possible return, the potential for some kind of emancipation. Indeed, the story of the treasure box enables the son to become a resistance fighter. The buried archive produces life.

(1) Mahmoud Darwish, "The Speech of the Red Indian," in *The Adam of Two Edens: Poems* (Syracuse, NY: Jusoor, 2000), 129–45.

(2) Tomaž Mastnak, Julia Elyachar, and Tom Boellstorff, "Botanical Decolonization: Rethinking Native Plants." *Environment and Planning D: Society and Space* 32, no. 2 (January 2014), 36–80. http://doi.org/10.1068/d13006p.

(3) *Maria Thereza Alves, Seeds of Change: New York–A Botany of Colonization*, curated by Carin Kuoni and Amanda Parmer, Vera List Center for Art and Politics, The New School, New York, October–November 2017.

(4) Mastnak, Elyachar, and Boellstorff.

(5) Filipa César, "METEORISATIONS Reading Amilcar Cabral's Agronomy of Liberation," BUALA, February 28, 2019, https://www.buala.org/en/afroscreen/meteorisations-reading-amilcar-cabral-s-agronomy-of-liberation.

(6) Mastnak, Elyachar, and Boellstorff.

(7) Maria Thereza Alves, *Seeds of Change: Bristol*, 2007.

(8) Salman Rushdie, "Edward Said interviewed by Salman Rushdie," TRIPOLI, YouTube, 1986, https://www.youtube.com/watch?v=vAmLNc_4VtE.

(9) Patrick Wolfe, "Nation and MiscegeNation: Discursive Continuity in the Post-Mabo Era," *Social Analysis: The International Journal of Social and Cultural Practice* 36 (1994): 93–152.

(10) Mezna Qato, Twitter post, May 2019, 4:52 pm. https://twitter.com/meznaqato.

(11) Emile Habiby, *The Secret Life of Saeed: The Pessoptimist*, trans. Salma Khadra Jayyusi and Trevor LeGassick (Northampton, MA: Interlink Pub Group, 2001).

Monuments, Important Biographies, and Seeds of Change in Bristol

Richard William Hill

Yesterday in Bristol, protesters inspired by the Black Lives Matter movement pulled down a statue of Edward Colston, hauled it some distance, and threw it in the harbor.[1] At last, Colston's public honoring as a philanthropist has given way to a growing critique of his involvement in the Atlantic slave trade. Although the institution of slavery has been infamous and without mainstream cultural or political support for some time now, it is only relatively recently that monuments to people like Colston have been subject to such a broadly supported critique and rejection. Something has shifted, and for many, such forms of honor are now beyond the pale.

Defenders of controversial monuments worry about the loss of history or heritage that they imagine disappearing along with them, but this is disingenuous on many levels. Among other things, it (perhaps deliberately) misunderstands how public monuments function in relation to history. In his influential book *Defacement: Public Secrecy and the Labor of the Negative*, anthropologist Michael Taussig argues that monuments harbor public secrets and that it is only their defacement—or in this case, their forcible removal—that brings them into active engagement.[2] The role of monuments as keepers of public secrets is what makes them so paradoxical in their public visibility: omnipresent, yet barely noticed. This quasi-visibility creates an aura of generalized authority and respect for the status quo. This is something like the opposite of instructing the public about history. Therefore, the biography being honored only comes to notice during a particular memorialization ceremony or, more likely, when the sculpture's meaning is contested by defacement or removal.

Not far away in Bristol Harbor, from 2012 to 2016, Maria Thereza Alves presented a public artwork that engaged in a competing form of anti-monumental memory work. Her practice honored an unexpected set of biographies: those of plants that began their lives as seeds far away and traveled to Bristol in the ballast in ships carrying colonial cargoes and enslaved human beings. They lay dormant in ballast

dump sites for what may have been hundreds of years before being recovered and germinated. The histories that these plants memorialize may seem distant, but they exist within the lives of some of these plants, which—once germinated—materially bear witness to them.

Alves began investigating ballast flora while she was living in Marseille in the 1990s, after reading botanist Heli Jutila's PhD dissertation on the subject. Although Alves was able to research and grow ballast seeds in several cities for her *Seeds of Change* project, the Bristol project was the artist's first opportunity to realize her ambition for a public ballast seed garden. Now, *Seeds of Change* is her best-known work. However, it took a few decades for the art world to catch up to the artist's boundary-crossing practice to the extent that a major, well-resourced institution would support the project. In this case, it was the initiative of Aldo Rinaldi, the Senior Public Art Officer for Bristol City Council and the Arnolfini gallery, that made the work possible. The institution procured an old barge that was relocated quayside, near Castle Park Landing, and used as the foundation for the garden. Gitta Gschwendtner designed the barge and gardens in consultation with Alves and Nick Wray, a botanist from the University of Bristol Botanic Garden. Such recognition of Alves's work clearly coincides with a growing interest in participatory, research-focused, and documentary artistic practices, as well as rising awareness of ecological issues and the ontological implications of the nature/culture divide in Western thought.

This is not surprising. *Seeds of Change* dexterously straddles disciplinary boundaries, making visible what is wantonly disregarded everywhere else. Inspired by the work of scientists, their support and engagement with the project are crucial to its success. At the same time, it also draws in the knowledge of community members in the Bristol area, focusing especially on immigrant communities whose voyages to England echo the journeys of the seeds grown in the ballast garden. By 2015, eleven schools and five community groups, inspired and informed by the project, created ballast seed gardens of their own.[3]

Time travel, people say, is impossible. However, what they usually mean is not that it is impossible, but that we can only travel through time in one direction and that we don't get to control the speed. I suppose that our everyday time traveling is so familiar and fundamental a part of our experience that we don't tend to be aware of it as such. Our entire material world appears to us, at least, to be along for the ride: all the things and plants and other non-human animals.

We probably speculate and fantasize about time travel for many

reasons. One is surely that our own lives are short; the more conscious we become of the scale of history, the more tempting it is to try to extend our agency beyond the duration of our individual lives. In moderation, this is a touching sign that we are aware of our own finiteness and attempt to deal with the loss that characterizes all human lives. But when extended by power and ideology, such longing can take the shape of grotesque architectures and monuments that impose themselves on us in their own interests. While many of these monuments conceal their ideological intentions behind tributes to individuals, they function within, and in support of, broad systems of political and social power.

We can read the biographies of wealthy slave traders and witness the monuments in sculpture left to them, but the people they enslaved are rarely so specifically remembered. In many cases, as artist Jimmie Durham once wrote, "We, you and I, must remember everything. We must especially remember those things that we never knew."[4] I want to be clear that I am not suggesting a moral equivalency between plants and people, but instead trying to uncover their related histories of invisibility and the ontological assumptions that do or do not give them presence. If we want to think of plants in an ontological category of more significance than they are typically allotted in the Western tradition, we might consider them worthy of biographies. In the case of the seeds that have at last been given the opportunity to become plants through the intervention of Maria Thereza Alves and those who helped her, I will have to speculate a bit to provide them with the kind of stories that will make them present to the humans reading this.

With this in mind, here is a biography that reads a little like a fairytale.

When she was very little, her mother knew that she would have to travel far from home if she was to have the opportunity to flourish. So, although tiny, she was cast out by her mother, into the wind and the wider world, as her mother had been cast out by her own mother before. This was just the beginning of her journey. Months later, before the little one could establish herself, she was relocated deep in the hold of an oceangoing vessel. Being very small, she traveled unnoticed across the sea to a new land. In this new land, she was the only one of her kind. Hidden deep as she was, she waited before making her presence known. She remained dormant for one hundred years as the land around her changed, becoming rich from trade in goods and enslaved humans. She rested one hundred years more, while around her waged wars and social upheaval. Many generations of

people were born and died. And suddenly, she saw her opportunity. The conditions were at last ripe for her to grow and flourish in this new land. When she broke ground, there were attendants devoted to her care. This caste of specialized practitioners had trained for much of their lives to have the skill and knowledge to understand her and provide for her needs. People came from all around to look at her and to learn of her history. Then, before long, she sent off her own children, and as winter approached, she died.

This story, of course, is about the journey of a fertilized seed that began life elsewhere and traveled to Bristol to become part of Alves's ballast garden. The primary reason this biography reads like a fairytale is because of the marvelous potential for seeds to stay dormant for hundreds of years. This makes their lives, if considered in temporal terms, magical and otherworldly; what a superpower to be able to wait so long until the time is right to flourish. This is not a luxury that humans have; often, we are obliged to endure.

The thought of the promiscuous mobility of seeds alarmed some Europeans, including Louis Agassiz, a Swiss-born scientist who immigrated to the United States in the mid-nineteenth century. According to cultural historian Louis Menand, Agassiz "represented the introduction of modern scientific education in the United States" through his work at Harvard University.[5] Agassiz's method was inductive, and he encouraged students to collect data before theorizing about it, an approach that appeared modern and designed to avoid traditional preconceptions. Yet, as Menand writes, "Agassiz had concepts and he had preferences. These were not modern at all, and the manner in which he used to advance scientific practices to reach reactionary conclusions is, in retrospect, the most interesting thing about him."[6] He is interesting, in other words, because of the terrible and entirely unscientific way in which his racism would distort his entire view of his field.

Agassiz was so shaken by his first encounter with African Americans—so shocked by their difference in appearance to himself—after visiting a Philadelphia hotel, that he immediately underwent a hysterical conversion to a belief in polygenism.[7] This is the notion that the different "races" of humanity were each separate acts of creation. In fact, Agassiz's racism was so deeply rooted that he objected to slavery on the grounds that it obliged peoples of African and European heritages to cohabitate in the same geographic area. As he wrote in a letter to his mother, "God protect us from such contact!"[8] He dedicated much of the rest of his career to refuting Darwinism in

favor of an increasingly outdated belief that all plants and animals, including human beings, were created in specific geographic locations and were meant to remain there. As Menand writes, Agassiz "believed that all life forms have been created in the same numbers as currently inhabit the planet, and in the same geographical locations. Nothing had changed since the creation."[9]

Agassiz has often been memorialized in the names of buildings and the erection of public sculptures, but due to his key role in establishing and promoting pseudoscientific racism in academia, there has been a recent movement to remove these tributes. Perhaps the most Dadaesque removal of a memorial to Agassiz occurred many decades earlier during the 1906 San Francisco earthquake. It was then that a marble statue of the man plummeted head-first from Stanford University's zoology building, burying itself to the shoulders in the concrete pavement below. His finger remained raised in mid-lecture, but we can imagine his words muffled by the earth. If the sculpture had been left there, it would have become one of the finest works of public art ever to grace a university campus, the proper way to remember someone whose ideas have fallen so far.

Let me try one last speculative plant biography—this time outside of the fairytale genre.

The plant I would like to provide with a life history is the squirting cucumber, the most theatrical plant in the ballast garden. Native to the Mediterranean, it may have come to the Americas directly from that part of the world, though it possibly journeyed elsewhere first. As a very young seed, it rests in a seed pod on its parent plant. Then, when the time is ripe, something agitates the seed pod—perhaps a passing animal ever so gently causing it to vibrate—and the pod erupts in a gooey stream, jetting the seeds up to thirty feet. Maybe the seeds simply land in soil or rock that is later excavated for ballast, but I would like to imagine additional animal agency. Squirting seeds on passing creatures that disturb it is one of the plant's vital reproductive strategies; I'd like to go further and imagine that the animal was a human attracted by the very theatricality of the plant itself. Who wouldn't want to see a plant like this in action? Maybe it was a child, or perhaps it was a ballast digger taking a break. Does that sound improbable? My uncle George worked on tugboats all his life, and in the 1950s, he would often be gone for weeks or months at a time, towing barges from Vancouver, Canada, to Alaska. He told me that when he and his crewmates got bored, they would sometimes stop at a mountainside and spend hours rolling rocks down the slope for fun.

If this sufficed as entertainment for them, I'm sure they would not have been above triggering squirting cucumber plants for the sheer entertainment value. And, of course, it's a common and cunning trick of plants to convince other creatures to spread their seeds by offering them something—usually food—in return. Every time I eat a raspberry and defecate its seeds uselessly into a toilet, I feel like I am letting my end of the arrangement down. But if you're a plant attempting to seduce humans, perhaps it's not such a bad strategy to offer entertainment as well. It was no doubt this remarkable attribute that won the squirting cucumber a place in the ballast garden.

One aspect of the artistry of *Seeds of Change* resides in our ability to read these plants allegorically or metaphorically in relation to human migration. This is undoubtedly important, but stopping there does injustice to the plants' agency and narrows, rather than expands, our understanding of the transdisciplinary boundaries of creativity. The assumption is that if we address the significance of the plants as such, we will be doing science rather than art. But perhaps the most marvelous thing about this project—which contains many marvels—is how it moves so fluidly across the boundaries between art, science, and everyday curiosity about the world.

A seed or plant used in an artwork is an indexical sign of itself. It is not only a metaphor of human travel and migration, but it is the material evidence of human travel and migration. It is also evidence of the transfiguration of the empire's center: the transformation of its flora or its so-called natural environment. As art historian Jean Fisher put it, "Like people immigration, seed immigration problematizes the means by which national identity and belonging is defined," blurring "our concept of what does and does not represent an 'authentic' national flora."(10)

As the next generation of seeds bides their time, is it too much to hope that they will sprout into a world in which more monuments to human power have fallen, the boundaries and hierarchies of empire and enslavement have waned, and more plants have grown?

(1) This sentence was originally written on June 8, 2020.

(2) Michael Taussig, *Defacement: Public Secrecy and the Labor of the Negative* (Stanford: Stanford University Press, 1999).

(3) Richard William Hill, "Borderless Histories," *Third Text* 32, no. 2–3 (2018): 273–89, https://doi.org/10.1080/09528822.2018.1476048.

(4) Jimmie Durham, "A Certain Lack of Coherence: Pocahontas and the Little Carpenter in London," in *Matoaka Ale Attakula-kula Guledisgo Nhini* (London: Matt's Gallery, 1988), 10–19.

(5–6) Louis Menand, *The Metaphysical Club* (New York: Farrar, Straus and Giroux, 2007).

(7–9) Ibid, 105–6.

(10) Jean Fisher, "Maria Thereza Alves: Migration's Silent Witness," in *Plot: Confluens Three*, ed. Simon Read (London: Middlesex University, 2008), 36.

Antwerp, Belgium

Maria Thereza Alves
Seeds of Change: Antwerp, 2009 / 2019

Although there is historical mention of the Port of Antwerp as early as the eleventh century, its economic rise began toward the end of the 1500s, when two thousand ships arrived there weekly. Antwerp became Europe's most important port in the sixteenth century. Much of the merchant trade of the sixteenth century involved vessels coming in from Portugal's colonies, which used the port of Antwerp as a base for trading colonial spices for silver coming in from Germany. This metal was, in turn, sold by Portugal in India and Africa. Goods from the Spanish colonies in the Americas also arrived. At different times, the city was ruled by the Spanish or French before the independence of Belgium.

Shipping activities in the earlier history of the port were confined mainly to the Werff, a quay located in the castle area, and the canals and moats situated within the city walls. (These were all eventually filled in and are no longer accessible.) Religious wars diminished port activities in the late sixteenth century, and the docks were finally closed for international commercial traffic in 1648 as a result of the Treaty of Munster. The port eventually reopened in 1792. At the beginning of the nineteenth century, Napoleon rebuilt it for military purposes, but by 1815, the port was open only to commercial activities. Records from the nineteenth century reveal that most ships deballasting in Antwerp came from England, which also had extensive trading transactions. Ballast seeds came via these unseen commercial movements.

The Port of Antwerp. (Installation detail, MTA, 2019.)

Port of Antwerp undergoing renovation. Location of the ballast depot site of 1851. Where will the seeds be moved to? (MTA, 2009.)

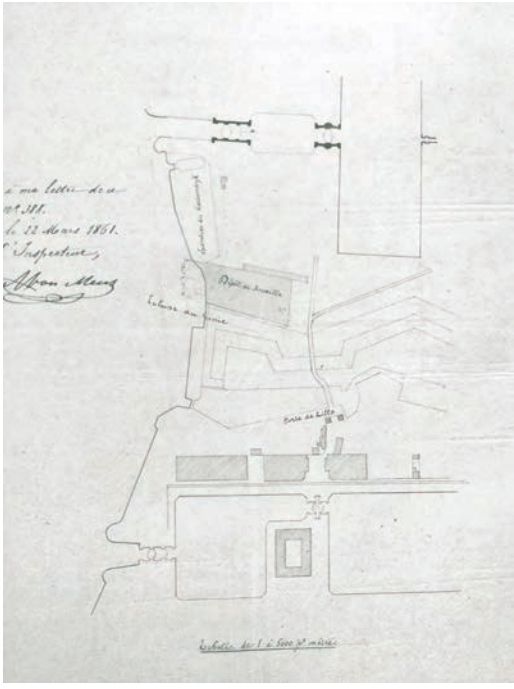
Antwerp's participation in the Kingdom of the Netherlands resulted in the arrival of Dutch colonial goods into the port. It was only in 1839 that free navigation of the Scheldt was guaranteed to Belgium. At this time, a railroad was built that linked Antwerp's port with the German hinterlands. Seeds from ballast could then travel further than Antwerp. In 1864, a dock was built for wood arriving from Mexico. In 1887, an Asia

Dock, Africa Dock (for colonial goods mostly from the Belgian colony of Congo but also northern Africa), and America Dock (for oil and grains), were also constructed. These opened the port to more goods and further possibilities of ballast seeds arriving in the harbor. In the 1870s, Antwerp again became Europe's leading port for a few decades.

Tides shifted places where ships could deballast in the port. (MTA, 2009.)

Although Antwerp imported more than it exported, ballast still arrived and was unloaded in the port. The documentation on ballast and deballasting in Antwerp's municipal archives is far more extensive than I previously encountered in Marseille, Reposaari, Dunkirk, Exeter and Topsham, Liverpool, and Bristol. In 1808, Napoleon decreed the "closing of the Ballast Office on the Werff Quay which had been established by the Captain of the Port." Consistently, the regulations for ballasting and deballasting in Antwerp fail to mention specific legal sites for ballasting and deballasting operations, unlike the guidelines decreed in other ports such as Marseille and Dunkirk.

Some of the docks in Antwerp were tidal. The fluctuations between low and high tides varied greatly, and ships could enter and leave the ports only during a few hours during the day, adding to the complexity of ballasting and deballasting. For example, boats in the Kattendyck Dock had just a couple of hours to leave the dock or else face an additional day and delays in the landing. Under such circumstances, ships were ballasted to the minimum required for their safe operations, and the procedures were continued on the quay of the River Scheldt, or vice versa. Ballast operations in the port, therefore, were never confined to a specific location but were spread throughout the docks of the Scheldt.



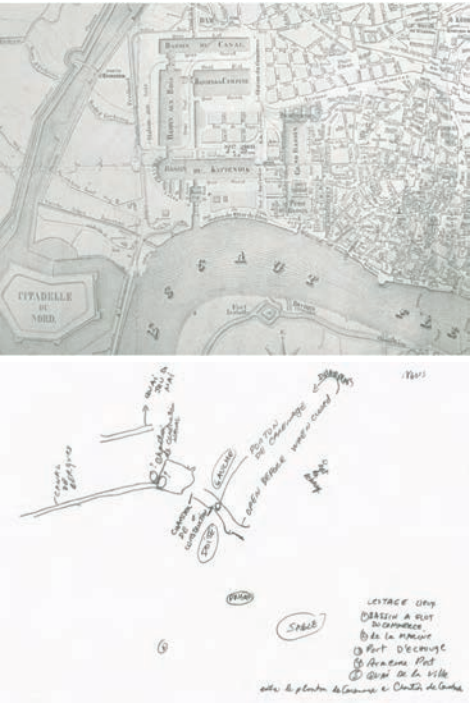
Dark area is the location of the Ballast Depot in 1851. (Installation detail, MTA, 2019.)

Sometime later, the port captain decided that the best place for ballasting and deballasting operations would be in the SAS Dock, which is between the Kattendyck Dock and the Scheldt River, allowing ballasting boats to work more efficiently around the tides. The

Ballast Office established a lower price for deballasting on the river than in the dock or quay. In 1861, a ballast depot was established "between the dike along the Scheldt River, between the ancient and new docks, between the last military lock and the Kattendyck Chantier."

In the mid-nineteenth century, the ballast depot was moved from the south side of Royers Lock to the north, near this area. (MTA, 2009.)

In 1863, the ballast depot's relocation was requested due "to planned construction of the prolongation of the walls of the Rhine Quay," which would facilitate the berthing of ships. In 1865, it was decided that "the best place in Kattendyck for the Ballast Depot is the Glacis de la Place situated to the west of the second petroleum hanger…by the paved road which links the Rhine Quay to the new docks." While conducting the *Seeds of Change* project, with the assistance of Jef Relus of the Maritime Museum, we established that it was previously situated in an area just to the north side of the Royers Lock.



Notes by Alves of probable ballast sites. (Courtesy the artist.)

Ballasting and deballasting in the Port of Antwerp was unlike other ports I have researched. The practice was carried out as a spontaneous response to the tides and the ship's schedules. There is mention in the archives of ships being ballasted or deballasted:

- In the middle of the Kattendyck Dock as well as Quays 19 and 20
- Napoleon Dock (Grand Bassin on map)
- Kampisch Dock (Bassin de la Campine on map)
- East Quay of the William Dock (Petit Bassin on map)
- Special mention was made requiring ballast removed from ships to be deposited along the wall situated in the South Quay of the William Dock.
- Also, when deballasting boats were not available, a harried ship's captain would deballast upon whatever quay his ship would be without correct authorization.
- There is also documentation of ships needing to be deballasted because they were going in for repairs in dry docks, which were just off the Kattendyck Dock.

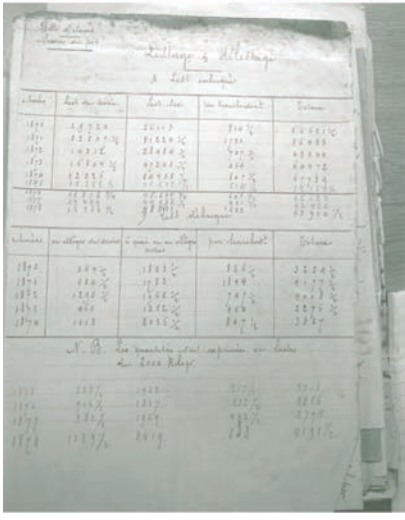
Registers provide specific information on the tonnage of ballast arriving in the Port of Antwerp monthly between the nineteenth and twentieth century from England, France, Norway, Napoli, Prussia, Bremen, Hannover, Hamburg, Spain, Sardinia, Austria, and Denmark, among others. In the early twentieth century, documentation mentions companies such as the Central Ballast Office, R. Van. Can. Co. Ballast Office, and the new Ballast Company, which continued to unload ballast in the port. The Central Ballast Office wrote to the Port Authorities in 1902 for a definitive Ballast Depot on Quay 29 (near where the Ballast Depot of 1861 was situated), but a fixed location for a ballast depot was refused. Ballast and seeds continued to wander throughout the Port of Antwerp.

Probable ballast sites. (MTA, 2009.)

I would like to thank Filip Verloove's text: On an extraordinary collection of alien plants on dredging sludge in Bilzen-Genk (Belgium) in 2017.

Originally, *Seeds of Change: Antwerp* was commissioned by Anselm Franke, the artistic director of Extra City Kunsthal, at the end of his tenure as director in 2010. However, the incoming director had no plans to exhibit the work. Thus, the researched ballast sites—some of which were undergoing extensive renovation at the time and therefore could be easily sampled— were not. No plants grew as witnesses.

At the time of the research, it was still common practice for Belgians to deny their involvement in the Congo's atrocities. Nine years later, *Seeds of Change: Antwerp* was shown in Leuven at the group exhibition *Parallel Crossings* at STUK, curated by Pieter-Paul Mortier. By 2019, there were websites with information on the involvement of Belgian companies and citizenry in the Belgian Rubber Trade. It is no longer necessary to search the flea markets for the



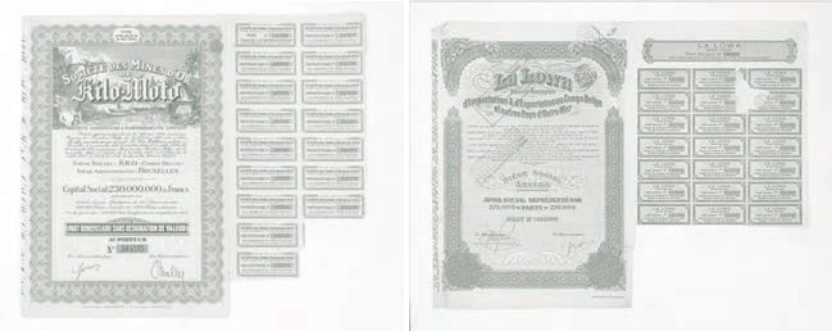
Ballasting and deballasting from 1870 to 1878—figures are not in tonnage but in "lastes," each weighing two thousand kilos. (Installation detail, MTA, 2019.)

stocks and bonds of Belgian companies as proof of the quotidian involvement of not only the Belgian king, but also of Belgians in the Congo.

In our work as artists, some of us are responding to the continuous making-present of the past while thinking about possible futures that our works might modestly speak with. If the work is thwarted, possibilities of aspects of present-making can become fractured, delayed or destroyed.

Earth being removed from the ballast depot site of 1851 in the SAS Dock during renovation works in 2009. The earth can contain seeds that arrived with ballast. Where will it begin to sprout? (MTA, 2009.)

Forgotten piles of earth near the former SAS Ballast Depot with spontaneous flora and micro-marshlands in development–some could be from ballast. (MTA, 2009.)



Belgium Company stocks in the Congo.

The Congo Entrepot. As Taussig says, "The public secret." (MTA, 2009.)

Description of the duties collected for ballasting and deballasting in 1875. (Installation detail, MTA, 2019.)

Ships arriving and leaving with ballast. (lest/lege) (Installation detail, MTA, 2019.)

I would like to acknowledge Filip Verloove's 2017 essay "On an extraordinary collection of alien plants on dredging sludge in Bilzen-Genk (Belgium)," Manual of the Alien Plants of Belgium, *https://alienplantsbelgium.myspecies.info/content/extraordinary-collection-alien-plants-dredging-sludge-bilzen-genk-belgium-2017.*

A Garden of Ballast Flora for *Seeds of Change: Antwerp* was realized at the Groot Begijnhof University Centre of Leuven. The work was commissioned by STUK Leuven (House for Dance, Image, and Sound) and is part of the exhibition *Parallel Crossings* (Artefact Festival), which took place in February and March of 2019 at STUK Leuven.

Courtesy STUK. (© Joeri Thiry, 2019.)

Installation views, courtesy STUK.
(Photos by Kristof Vrancken.)

Recueil Financier 1893 to 1894: Le Recueil Financier (Annual Financial Compendium, published in Brussels) lists the Belgian companies in the colonized-only-by-the-king-Belgian Congo and board of directors and administrators in the colonized-only-by-the Belgian-king-Congo.(https://lib.ugent.be/catalog/ser01:000048158). From 1893 / 1898:

Compagnie du chemin de fer du Congo

Société Anonyme

Siège social : Rue Ducale, 13, Bruxelles.

MM. J. Brian Président. MM. Alph. Nothomb Administrateur.
Ath. Thys Administr.-directeur général. Fr. Philippson »
E. De Becker Vice-Président. Cauchie »
J. Lemaire Administrateur. Rob. Kyrw »
D. de Lovinfosse » M. Renaud-Farilla »
Georges Brunmaert » Ph. Renaud-Farilla »
Comte de Berlaymont d'Attena » Baron Ed. Oppenheim »
Comte John d'Oultremont » Em. Dalcomeau Commissaire.
Ad. du Bruhez » Baron C. Goffinet »
Sir William Mackinnon » M. Mauricius »
Comte Augustin d'Ursel » Sam Wauters »
Armand Rousseau »

Bilan, 30 juin. Comptes : chez MM. Bebey et Cie.

La Chemin de fer du Congo, d'une longueur d'environ 370 kilomètres, est destiné à relier Matadi au Stanley Pool. Le Congo n'étant pas navigable sur cette section de son cours, il en construit à l'heure actuelle le 75e environ.

Le capital est de 25 millions de francs, ainsi réparti :

10 millions de francs en actions de capital ayant droit, pendant la période de construction, à un intérêt de 3 1/2 p. c. sur les sommes appelées et, plus tard, à un revenu de 3 1/2 p. c., sous se participant pas au surplus des bénéfices. Ces actions de capital sont souscrites par le gouvernement belge ;

15 millions de francs en actions ordinaires ayant droit à un intérêt identique de 3 p. c. sur les mêmes sommes appelées et, la construction achevée, à un premier revenu de 3 1/2 p. c. prélevé sur les bénéfices, conjointement avec les actions souscrites par le gouvernement belge, puis à un second dividende de 3 1/2 p. c., en tout 7 p. c. ;

Et à 4e ordre, du surplus. 4,800 parts de fondateur ; 800 de ces parts ont été remises à l'Etat du Congo, qui trouvera ces avantages stipulés dans la convention du 26 mars 1887, qui lui attribuait 40 p. c. des bénéfices au delà de 6 p. c. donné au capital, et les 5,000 parts restantes ont été remises aux souscripteurs en ajoutant des 30,000 actions ordinaires.

En outre, il a été émis 10 tableaux pour l'amortissement de 20 ans des 25,000 actions de capital, au pair de 500 francs et des 30,000 actions ordinaires de 100 francs au taux de remboursement de 1,000 francs.

Après l'alloction à la réserve légale, l'annuité pour le service de l'intérêt et de l'amortissement du capital social était de 1,250,000 francs, chiffre réel, savoir : 962,500 francs, suivant 3 1/2 p. c. de remboursement au pair des 20,000 actions de capital ; 1,087,500 francs suivant le premier dividende, soustraire 7 p. c., sur les 30,000 actions ordinaires et complémentaires de ces actions à raison de 1,000 francs l'une.

Si les produits d'un exercice ne permettaient pas la distribution de cette somme de 1,250,000 francs, l'écart en moins serait réparti sur les intérêts sur les exercices suivants, afin que les deux catégories d'actions aient touché un revenu inégale et aient été amorties conformément au tableau d'amortissement, sauf qu'il soit fait une autre attribution du bénéfice.

La section du bénéfice, après la distribution de l'annuité à demeurée et le capital des marqueurs, sera réparti dans les proportions suivantes :

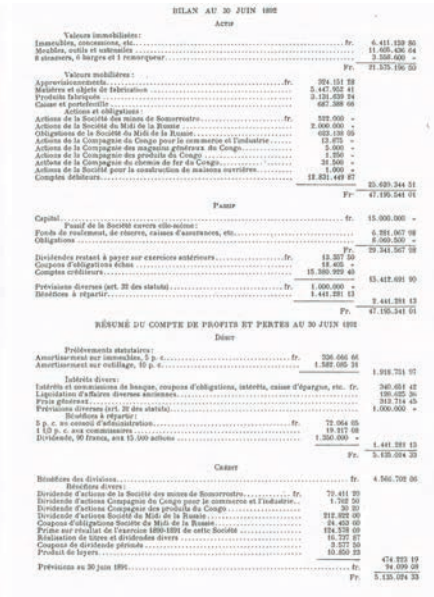
80 p. c. aux actions ordinaires aux conducteurs et aux actions de jouissance, qui remplaceront les actions ordinaires ;

10 p. c. au Conseil d'administration ;

10 p. c. au profit des 4,800 parts de fondateurs.

Au sujet aux recettes produites du chemin de fer du Congo, on lit dans le bulletin de 1889 ce qui suit :

« Nous avons souvent annoncé à conserver dans cette note un tableau et fruit et « nous reflétons à faire satisfaire les chiffres qu'ultérieurement les transports « chemin des « 60,000 kilomètres de rives du haut Congo et de ses affluents navigables amènent au « pool quelques temps seulement ».



BILAN AU 30 JUIN 1892

Actif

Valeurs immobilisées :

Immeubles, concessions, etc.	fr.	6.411.139 80
Meubles, outils et ustensiles		11.408.426 64
6 steamers, 6 barges et 1 remorqueur		3.356.600 »
	Fr.	21.376.166 50

Valeurs mobilières :

Approvisionnements	fr.	324.151 59
Matières et objets de fabrication		5.447.952 41
Produits fabriqués		3.124.439 94
Caisse et portefeuille		687.388 66

Actions et obligations :

Actions de la Société des mines de Somorrostro	fr.	322.000 »
Actions de la Société du Midi de la Russie		2.000.000 »
Obligations de la Société du Midi de la Russie		622.130 05
Actions de la Compagnie du Congo pour le commerce et l'industrie		13.075 »
Actions de la Compagnie des magasins généraux du Congo		5.000 »
Actions de la Compagnie des produits du Congo		1.250 »
Actions de la Compagnie du chemin de fer du Congo		25.500 »
Actions de la Société pour la construction de maisons ouvrières		1.000 »
Comptes débiteurs		12.821.449 87
		25.620.344 51
	Fr.	47.196.511 01

Passif

Capital	fr.	15.000.000 »
Fonds de roulement, de réserve, caisses d'assurances, etc.		6.891.067 98
Obligations		8.060.500 »
	Fr.	29.941.567 98
Dividendes restant à payer sur exercices antérieurs	fr.	12.307 50
Coupons d'obligations échus		18.405 »
Comptes créditeurs		15.380.929 40
		15.412.691 90
Prévisions diverses (art. 32 des statuts)	fr.	1.000.000 »
Réserves à répartir		1.441.281 13
		2.441.281 13
	Fr.	47.195.541 01

RÉSUMÉ DU COMPTE DE PROFITS ET PERTES AU 30 JUIN 1892

Débit

Prélèvements statutaires :

Amortissement sur immeubles, 5 p. c.	fr.	320.666 66
Amortissement sur outillage, 10 p. c.		1.582.085 34
		1.918.751 97

Intérêts divers :

Intérêts et commissions de banque, coupons d'obligations, intérêts, caisse d'épargne, etc. fr.		340.454 42
Liquidation d'affaires diverses anciennes		198.422 36
Frais généraux		313.714 45
Prévisions diverses (art. 32 des statuts)		1.000.000 »
Bonifiers à répartir :		
5 p. c. au conseil d'administration	fr.	72.064 05
1 1/2 p. c. aux commissaires		19.217 08
Dividende, 90 francs, aux 15.000 actions		1.350.000 »
		1.441.281 13
	Fr.	5.435.054 33

Crédit

Bénéfices des divisions	fr.	4.566.708 06
Bénéfices divers :		
Dividende d'actions de la Société des mines de Somorrostro	fr.	70.411 20
Dividende d'actions Compagnie du Congo pour le commerce et l'industrie		1.762 50
Dividende d'actions Compagnie des produits du Congo		30 »
Dividende d'actions Société du Midi de la Russie		212.825 00
Coupons d'obligations Société du Midi de la Russie		24.452 00
Prime sur rivalisé de l'exercice 1890-1891 de cette Société		104.378 09
Réalisation de titres et dividendes divers		16.727 67
Coupons de dividende périmés		2.577 50
Produit de loyers		10.859 23
		474.223 19
Prévisions au 30 juin 1891		94.099 28
	Fr.	5.135.054 33

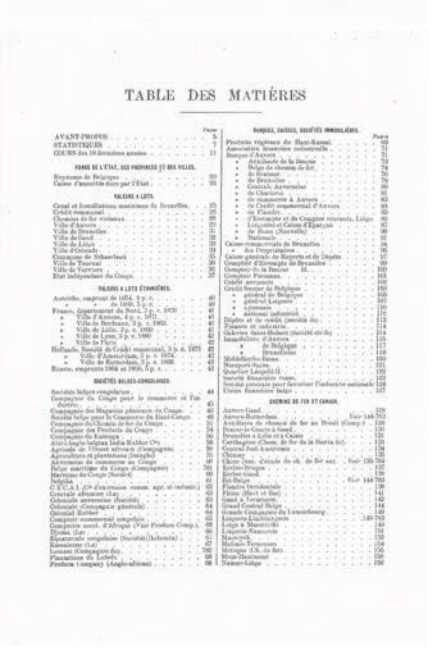


TABLE DES MATIÈRES

SOCIÉTÉS BELGES-CONGOLAISES

Table de Matieres of 1898. (MTA, 2009.)

New York, United States

Maria Thereza Alves
Seeds of Change: New York,
A Botany of Colonization, 2017–2018

Over four hundred species of plants, mostly European in origin, grew on ballast grounds throughout New York and New Jersey. From there, they have since spread further. Ships arriving to the United States with ballast over the last few centuries were responsible for introducing much non-native flora to the East. So much so that botanist Viktor Muhlenbach writes, "Combing ballast grounds [...] for the appearance of new plants was a popular botanical pastime of the late nineteenth and early twentieth centuries."

When New York was a colony of the United Kingdom, British commercial regulations stipulated that commodities could only be imported via England; likewise, ships from the colonies were allowed to sell their goods in just a few foreign ports. Thus, the colonial ships based in New York would return home in ballast rather than plod the seas to England, because only there would they be allowed to pick up goods.

The added complexity of trade along the East Coast expanded the likelihood of ballast flora arriving in New York. Between 1732 and 1763, for instance, the majority of the ships sailing from the Spanish colony of St. Augustine in Florida to British New York left in ballast. Seeds could have arrived via ballast from any point of the vast Spanish colonial empire.

Hundreds of thousands of tons of ballast arrived in New York City monthly. By June 30, 1900, approximately 7,584,000 tons of ballast reached the city's ports from a range of destinations: Colombia, various Caribbean islands, Venezuela, British Guyana, the "Chinese Empire," the Dutch East Indies, Japan, and the British Cape Colony in today's South Africa.

Accumulations and processes between different beings, including the land, make a place specific. Earth itself becomes a witness and provides testimony of the multispecies relationship of place-making. Architect Charlie Hailey observes that "ballast collapses distance: how else can we reckon thousands of miles of geography, terrain, city-states, nations, and natures?"

In New York, topographical particularities, specificities, and relationships were destroyed. Water was banished: rivers, creeks, streams, and ponds were drained, filled in, or covered. Non-linearity

was eliminated with the leveling of hills, nooks, crannies, niches, as well as gullies and ravines. Marshlands and swamps were considered an affront to the settlers and filled in. Among the Guaraní in South America, it is unfathomable to remove a hill as it would change air currents. But in New York City, settlers flattened hills into streets or material to be used to fill in swamps. The river was defined as a set of potential real estate plots, and pieces were sold to be filled in; water was converted into land and then to property. Thinking forests were made dumb as their mycorrhizal networks were severed.

International politics scholar Laleh Khalili writes that "landscapes were harvested of ballast, looted clean of sand and shingle and rock. [...] This resource extraction transformed landscapes in ways that have been forgotten." Hailey further reminds us that "discarded ballast spawned landscapes born of displaced materials from far-flung lands." However, this is not a matter for reconstruction of a lost landscape of purity but of acknowledging the colonial present in which we all find ourselves.

As we walk across New York, we are, at times, thirty-three feet above the land that was once home for many more species than ours. Ballast, river silt, Indigenous relics, household and industrial waste, and ecological wreckage such as hills torn down with earth removed for tunnels have been used to level the city. That began quite early in colonial history, in 1646.

By 1790, New York was the most important port in the country due to its central location in the North American colonies. It connected Europe to the West Indies, and later the Midwest via the Erie Canal, and later still via the railway system passing through the city, today called the High Line.

As first mentioned in the Bristol iteration of *Seeds of Change*, contrary to popular ideas about the Atlantic triangular slave trade, it was often more profitable to return in ballast than wait for sugar, rum, or cotton, especially during the early days of colonization. This freed up the ships to sail to Africa more quickly and pick up more enslaved people—"cargo"—who were four to six times more lucrative than colonial goods. The slave trade was the cornerstone of the New York economy. And the transport of bodies in ships, mainly from the West Indies, required ballast to offset their movement. In New York, ships arrived from England with ballast material such as English flint, iron, and soil, from other areas of the world with ballast consisting of large chunks of coral, volcanic and coral

sands, bricks, stones, and rocks. Much of England—specifically fragments of Devon, Cornwall, Poole, and Bristol—ended up in New York.

By the 1920s, solid ballast was slowly replaced by water in many places, but in New York, earth ballast continued to arrive well into the early 1950s. For instance, during World War II, the US Navy shipped weapons to the Allies, with the boats returning in ballast as no goods were available. After World War II, American ships brought goods to devastated Europe and would sometimes return with war rubble as ballast. Upon arrival in port, the ballast was unloaded, carrying with it seeds from the area where it had been collected. Lots of ballast was used as landfill throughout the boroughs of New York City (hence, for example, the name "Bristol Basin" where East 25th Street meets Franklin D. Roosevelt Drive along the banks of the East River). Along with the rubble of Bristol could also have come bones of Aboriginal people from Australia.

"Displanting humans and plants are elements of the same multispecies colonial endeavor," says philosopher Tomaž Mastnak as he argues for the importance of "botanical decolonization." But in New York, we are also faced with a colonized earth. Let's begin by looking at these plants, which indicate ballast ground and are also witnesses to New York's transformation into colonialized land. They teach us that we are in spaces of colonialism, which must not become the sole defining feature of these places. At the same time, we must acknowledge that these are landscapes of violence.

Mastnak calls for attention to "place-based" relations between plants. People must be placed within the context of how a location, its flora, and its geographic specificity are constituted by settler colonialism. Geographer Omar Tesdell echoes this when he argues "that scholars must examine how wildness, native-ness, and agro-climatic suitability are scientifically constituted with and not apart from colonial conquest." Art historian Wilma Lukatsch reminds us that "things come and have a walking history. And when we think of soil we do not think about traveling soil. There is history in soil."

Colonization is built into the very soil of New York, the traditional lands of the Lenape people. A process of decolonization must begin on the ground.


ALBANY (BALLAST)
YONKERS (BALLAST FLORA)
SOUNDVIEW PARK (BALLAST FLORA)
MOTT HAVEN (BALLAST FLORA)
OAK POINT (BALLAST FLORA)
8 AVE, RIVER - 140 ST (BALLAST FLORA)
107 ST (BALLAST FLORA)
102 - 100 ST (BALLAST FLORA)
LANDFILL (SOME BALLAST)
HUNTERS POINT (BALLAST FLORA)
BRISTOL BASIN (BALLAST)
HOBOKEN RAILROAD DEPOT (BALLAST FLORA)
EAST RIVER PK (BALLAST)
FDR WATER ST (BALLAST)
COMMUNIPAW (BALLAST FLORA)
ELLIS ISLAND (BALLAST?)
RED HOOK (BALLAST)
GOWANUS CREEK (BALLAST FLORA)

BALLAST FLORA CITED FROM ALL OVER

Diplotaxis tenuifolia DC.
Erodium cicutarium L. common
Senecio vulgaris L. common
Atriplex rosea
Verbene officinalis
Mercurialis annua
Chrysanthemum parthenium Pers.

8TH AVE

From 1879:
Ranunculus philonotis Ehr.
Glaucium luteum Scop.
Nasturtium sylvestre R. Br.
Erysimum orientale L.
Alyssum incanum R. Br.
Senebiera coronopus L. Poir
Reseda luteola L.
Reseda phyteuma L.
Malva sylvestris L.
Althaea hirsuta L.
Ononis arvensis L.
Trigonella monspeliaca L.
Medicago sativa L.
Trifolium incarnatum L.
Trifolium hybridum L.
Lotus corniculatus L.
Vicia grandiflora Scop.
Vicia Narbonensis L.
Vicia Peregrina L.
Lathyrus Aphaca L.
Sicyos angulatus L.
Aethusa Cynapium L.
Galium tricorne With.
Eupatorium Cannabinum L.
Aster Tripolium L.
Gnaphalium Luteo-Album L.
Acanthospermum xanthioides DC.
Chrysanthemum segetum L.
Carduus pycnocephalus Jacq.
Carduus Marianus L.
Cirsium arvense Scop.
Centaurea Cyanus L.
Centaurea Calcitrapa L.
Helminthia echioides Gaertn.
Leontodon autumnale L.
Leontodon (Thrincia) hirtum L.
Crepis virens Vill.
Hieracium
Jasione Montana L.
Heliotropium Peruvianum Don.
Heliotropium Europaeum L.
Ipomoea nil Roth.
Solanum miniatum Bernh.
Solanum rostratum Dunal.
Hyoscyamus niger L.
Scrophularia aquatica L.
Veronica anagallis L.
Veronica buxbaumii Ten.
Lycopus europaeus L.
Satureia hortensis Tourn.
Satureia montana L.
Lamium album L.
Galeopsis ladanum L.
Stachys arvensis L.
Stachys palustris L.
Amarantus sanguineus L.
Blitum capitatum L.
Atriplex laciniata L.
Beta maritima L.
Polygonum lapathifolium L.
Polygonum convolvulus L.
Euphorbia peplus L.
Euphorbia exigua L.
Alopecurus agrestis L.
Agrostis spica-venti L.
Dactylis glomerata L.
Bromus racemosus L.
Lolium perenne L.
Holcus lanatus L.
Panicum miliaceum L.
Tragus racemosus Desf.

From 1880:
Ranunculus arvensis L.
Papaver argemone L.
Sisymbrium irio L.
Lychnis diurna Sibth.
Stellaria aquatica Scop. (*Cerastium* L.)
Ononis arvensis L.
Trigonella caerulea Ser.
Anthyllis vulneraria L. (also var. *rubiflora*)
Trifolium maritimum Huds
Trifolium dalmaticum Vis
Medicago minima Lam
Poterium sanguisorba L.
Potentilla recta L.
Heracleum sponcylium L.
Anethum graveolens L.
Galium palustre L.
Fedia olitoria Vahl.
Dipsacus sylvestris Mill.
Senecio jacobaea L.
Onopordon acanthium L.
Carduus acanthoides L.
Carduus crispus L.
Borrago officinalis L.
Digitalis lutea L.
Origanum vulgare L.
Galeopsis angustifolia Ehrh.
Amarantus blitoides Watson
Polygonum ramosissimum Michx
Carex hirta L.
Phleum arenarium L.
Glyceria procumbens Sm
Hordeum murinum L.

From 1881:
Sisymbrium pannonicum Jacq.
Alopecurus geniculatus L.

107TH STREET

From 1880:
Papaver argemone L.
Diplotaxis muralis DC.
Geranium molle L.
Erodium malachoides Willd.
Ononis repens L.
Vicia hybrida L.
Orobanche minor Sutt.
Ajuga genevensis L.
Poa trivialis L.
Festuca myurus L.

HUNTER'S POINT

From 1879
Papaver dubium L.
Papaver somniferum L.
Erysimum orientale L.
Draba verna L.
Senebiera didyma Pers.
Reseda luteola L.
Reseda odorata L.
Reseda phyteuma L.
Silene noctiflora L.
Linum usitatissimum L.
Hypericum humifusum L.
Geranium rotundifolium L.
Geranium pusillum L.
Medicago denticulata Willd.
Medicago apiculata Willd.
Trifolium procumbens L.
Trifolium minus Smith.
Lotus corniculatus L.
Tribulus terrestris L.
Epilobium parviflorum Schrb. — with *E. hirsutum*
Echallium agreste Rchb.
Aethusa Cynapium L.
Galium tricorne With.
Bellis perennis L.
Filago arvensis L.
Gnaphalium uliginosum L.
Xanthium spinosum L.
Bidens triparta L.
Hemizonia pungens Torr. & Gray
Carduus pycnocephalus Jacq.
Centaurea aspera L.
Centaurea calcitrapa L.
Helminthia echioides Gaertn.
Leontodon (Thrincia) hirtum L.
Leontodon hispidum L.
Leontodon pratense Koch.
Crepis virens Vill.
Crepis tectorum L.
Jasione montana L.
Heliotropium peruvianum Don. — From Peru introduced into Europe 1735
Heliotropium europaeum L.
Lycopsis arvensis L.
Nicandra physaloides Gaert.
Hyoscyamus niger L.
Petunia parviflora Juss.
Linaria elatine Mill.
Antirrhinum majus L.
Scrophularia aquatica L.
Veronica arvensis L.
Veronica agrestis L.
Veronica buxbaumii Ten.
Verbena bracteosa Michx.
Mentha arvensis L.
Lamium amplexicaule L.
Lamium purpureum
Lamium album L.
Stachys arvensis L.
Stachys sylvatica L.
Amarantus deflexus L. (*A prostratus* Balb.)
Chenopodium vulvaria L.
Chenopodium polyspermum L.
Chenopodium murale L.
Atriplex patula L.
Polygonum lapathifolium L.
Polygonum lapathifolium var. *incanum*
Urtica urens L.
Urtica dioica L.
Euphorbia heliosccpia L.
Eragrostis purschii Schr.
Eragrostis poaeoides var. *megastachya* (Koeler) A. Gray
Lolium perenne L.
Aira caryophyllea L.
Setaria verticillata, S. glauca and S. viridis with *Crypsis schoenoides* Lam.
Flaveria Contrayerba

From 1880:
Alchemilla arvensis Scop.
Scolymus hispanicus L.

From 1881:
Chenopodium obovatum DC.

From 1878:
Matricaria chamomilla L.
Matricaria inodora L.

GOWANUS CREEK

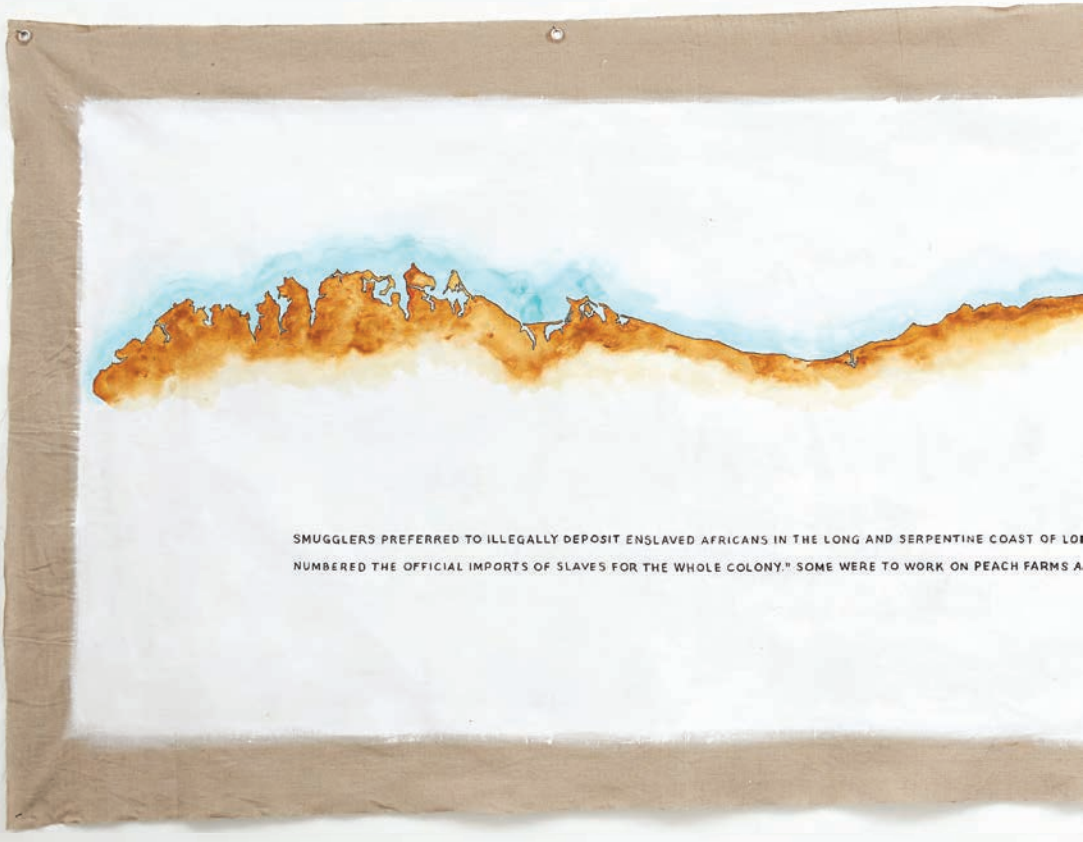
Nasturtium palustre var. *hispidum* DC.
Cakile maritima Scop.
Reseda alba L.
Linaria supina Desf.
Scrophularia aquatica L.
Veronica anagallis L.
Veronica beccabunga L.
Mentha arvensis L.
Lycopus europaeus L.
Ballota nigra L.
Stachys sylvatica L.
Amarantus crispus Braun
Atriplex hortensis L.
Parietaria officinalis L.

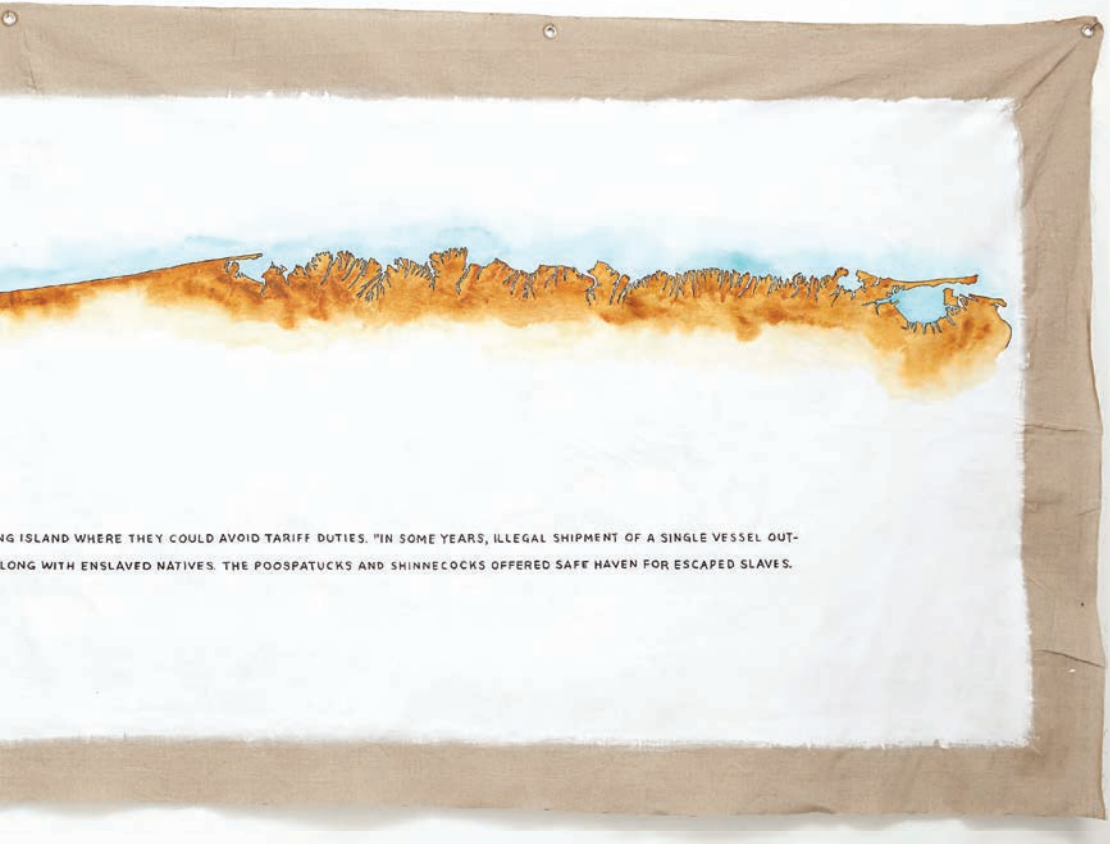
From 1880:
Carduus multiflorus Gaud.
Plantago coronopus L.

From 1881:
Roubieva multifida Moq.

From Smith flora of LI:
Acanthospermum humile Sw.


dandelion
plantain
greater celandine

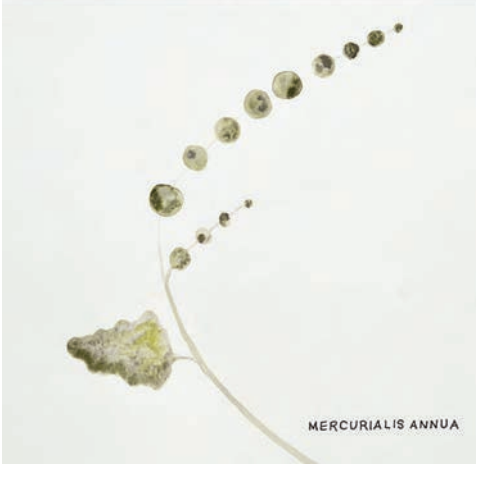

SMUGGLERS PREFERRED TO ILLEGALLY DEPOSIT ENSLAVED AFRICANS IN THE LONG AND SERPENTINE COAST OF LO
NUMBERED THE OFFICIAL IMPORTS OF SLAVES FOR THE WHOLE COLONY." SOME WERE TO WORK ON PEACH FARMS A

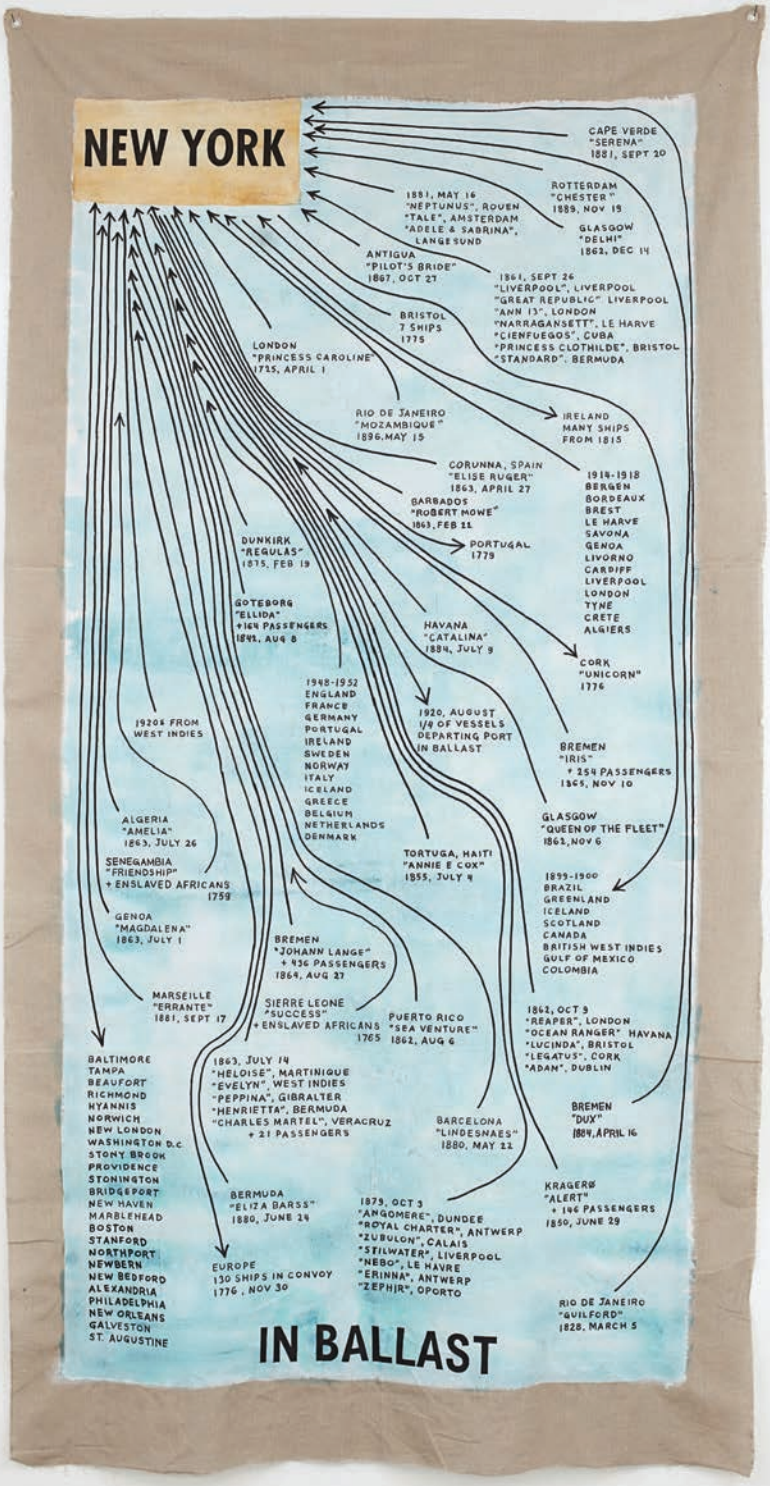

NG ISLAND WHERE THEY COULD AVOID TARIFF DUTIES. "IN SOME YEARS, ILLEGAL SHIPMENT OF A SINGLE VESSEL OUT-
LONG WITH ENSLAVED NATIVES. THE POOSPATUCKS AND SHINNECOCKS OFFERED SAFE HAVEN FOR ESCAPED SLAVES.

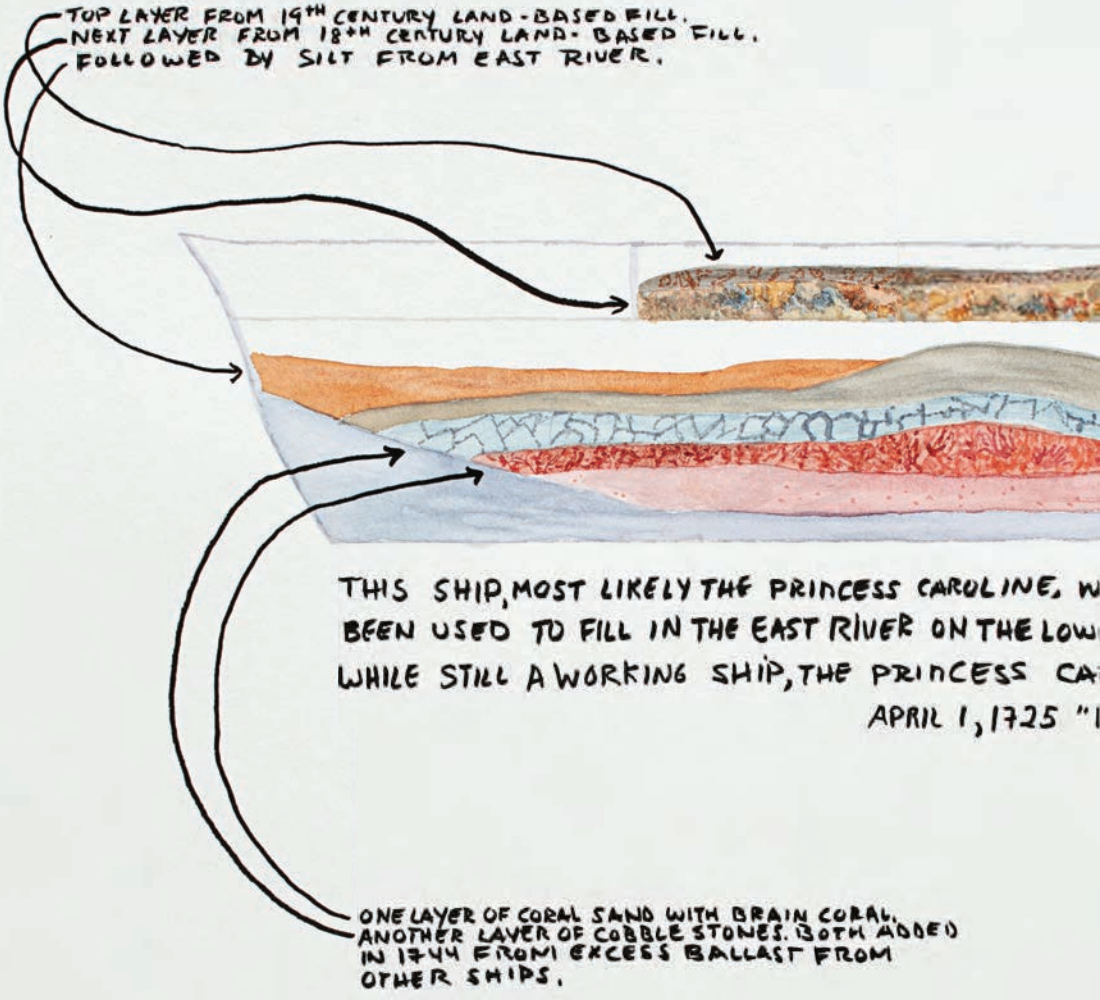

VERBENA OFFICINALIS


ATRIPLEX ROSEA


DIPLOTAXIS TENUIFOLIA


MERCURIALIS ANNUA


NEW YORK
CAPE VERDE
"SERENA"
1881, SEPT 20
ROTTERDAM
"CHESTER"
1889, NOV 19
GLASGOW
"DELHI"
1862, DEC 14
1881, MAY 16
"NEPTUNUS", ROUEN
"TALE", AMSTERDAM
"ADELE & SABRINA",
LANGESUND
ANTIGUA
"PILOT'S BRIDE"
1867, OCT 27
1861, SEPT 26
"LIVERPOOL", LIVERPOOL
"GREAT REPUBLIC" LIVERPOOL
"ANN 13", LONDON
"NARRAGANSETT", LE HARVE
"CIENFUEGOS", CUBA
"PRINCESS CLOTHILDE", BRISTOL
"STANDARD", BERMUDA
BRISTOL
7 SHIPS
1775
LONDON
"PRINCESS CAROLINE"
1735, APRIL 1
RIO DE JANEIRO
"MOZAMBIQUE"
1896, MAY 15
IRELAND
MANY SHIPS
FROM 1815
CORUNNA, SPAIN
"ELISE RUGER"
1863, APRIL 27
1914-1918
BERGEN
BORDEAUX
BREST
LE HARVE
SAVONA
GENOA
LIVORNO
CARDIFF
LIVERPOOL
LONDON
TYNE
CRETE
ALGIERS
BARBADOS
"ROBERT MOWE"
1863, FEB 11
DUNKIRK
"REGULAS"
1875, FEB 19
PORTUGAL
1779
GOTEBORG
"ELLIDA"
+164 PASSENGERS
1893, AUG 8
HAVANA
"CATALINA"
1884, JULY 9
CORK
"UNICORN"
1776
1948-1952
ENGLAND
FRANCE
GERMANY
PORTUGAL
IRELAND
SWEDEN
NORWAY
ITALY
ICELAND
GREECE
BELGIUM
NETHERLANDS
DENMARK
1920, AUGUST
1/4 OF VESSELS
DEPARTING PORT
IN BALLAST
1920s FROM
WEST INDIES
BREMEN
"IRIS"
+ 254 PASSENGERS
1865, NOV 10
ALGERIA
"AMELIA"
1863, JULY 26
GLASGOW
"QUEEN OF THE FLEET"
1863, NOV 6
SENEGAMBIA
"FRIENDSHIP"
+ ENSLAVED AFRICANS
1759
TORTUGA, HAITI
"ANNIE E COX"
1855, JULY 9
1899-1900
BRAZIL
GREENLAND
ICELAND
SCOTLAND
CANADA
BRITISH WEST INDIES
GULF OF MEXICO
COLOMBIA
GENOA
"MAGDALENA"
1863, JULY 1
BREMEN
"JOHANN LANGE"
+ 436 PASSENGERS
1864, AUG 27
MARSEILLE
"ERRANTE"
1881, SEPT 17
SIERRE LEONE
"SUCCESS"
+ ENSLAVED AFRICANS
1765
PUERTO RICO
"SEA VENTURE"
1862, AUG 6
1862, OCT 3
"REAPER", LONDON
"OCEAN RANGER" HAVANA
"LUCINDA", BRISTOL
"LEGATUS", CORK
"ADAM", DUBLIN
BALTIMORE
TAMPA
BEAUFORT
RICHMOND
HYANNIS
NORWICH
NEW LONDON
WASHINGTON D.C.
STONY BROOK
PROVIDENCE
STONINGTON
BRIDGEPORT
NEW HAVEN
MARBLEHEAD
BOSTON
STANFORD
NORTHPORT
NEWBERN
NEW BEDFORD
ALEXANDRIA
PHILADELPHIA
NEW ORLEANS
GALVESTON
ST. AUGUSTINE
1863, JULY 14
"HELOISE", MARTINIQUE
"EVELYN", WEST INDIES
"PEPPINA", GIBRALTER
"HENRIETTA", BERMUDA
"CHARLES MARTEL", VERACRUZ
+ 21 PASSENGERS
BARCELONA
"LINDESNAES"
1880, MAY 22
BREMEN
"DUX"
1884, APRIL 16
BERMUDA
"ELIZA BARSS"
1880, JUNE 24
1879, OCT 3
"ANGOMERE", DUNDEE
"ROYAL CHARTER", ANTWERP
"ZUBULON", CALAIS
"STILWATER", LIVERPOOL
"NEBO", LE HAVRE
"ERINNA", ANTWERP
"ZEPHIR", OPORTO
KRAGERØ
"ALERT"
+ 196 PASSENGERS
1850, JUNE 29
EUROPE
130 SHIPS IN CONVOY
1776, NOV 30
RIO DE JANEIRO
"GUILFORD"
1828, MARCH 5
IN BALLAST


TOP LAYER FROM 19TH CENTURY LAND-BASED FILL.
NEXT LAYER FROM 18TH CENTURY LAND-BASED FILL.
FOLLOWED BY SILT FROM EAST RIVER.
THIS SHIP, MOST LIKELY THE PRINCESS CAROLINE, W
BEEN USED TO FILL IN THE EAST RIVER ON THE LOW
WHILE STILL A WORKING SHIP, THE PRINCESS CA
APRIL 1, 1725 "
ONE LAYER OF CORAL SAND WITH BRAIN CORAL.
ANOTHER LAYER OF COBBLE STONES. BOTH ADDED
IN 1744 FROM EXCESS BALLAST FROM
OTHER SHIPS.

AS UNEARTHED ON WATER STREET IN MANHATTAN. IT HAD
ER EAST SIDE IN THE 1730s IN ORDER TO "MAKE LAND."
ROLINE, ARRIVED IN THE PORT OF NEW YORK ON
N BALLAST."

ORIGINAL BALLAST ON SHIP: CORAL SAND WITH SMALL TROPICAL SHELLS. DEPOSITED IN 1720s AND EVIDENCE OF TRIANGULAR TRADE WHERE GRAIN FROM NEW YORK WAS TRADED FOR MOLASSES AND ENSLAVED AFRICANS IN THE WEST INDIES.

ARCHEOLOGISTS RIELL AND SMITH INVESTIGATED THE DIFFERENT LAYERS FOUND IN THE SHIP.

WE DO NOT KNOW IF THE PEACH TREE WAR OF 1655 IN NEW YORK WAS BEGUN WHEN A NATIVE AMERICAN WOMAN, WHOSE NAME WE DO NOT KNOW, WAS KILLED FOR TAKING A RIPE PEACH FROM A FARM ON THE HARLEM RIVER OF THE DUTCH WOOL WASHER, TOBIAS TENNISSEN. BUT HIS NAME COULD HAVE BEEN HENRY VAN DYCK OR CORNELIS VAN TIENHOVEN.

WHENEVER PEOPLE WERE TRANSPORTED ON SAILING MERCHANT SHIPS BALLAST WAS REQUIRED AS COUNTERWEIGHT IN ORDER TO STABILITE THE VESSEL BECAUSE OF THE MOVEMENTS OF BODIES GETTING ON AND OFF.

ENSLAVED AFRICANS WERE SHIPPED TO THE AMERICAS AND WE HAVE BEEN TOLD EXCHANGED FOR COLONIAL GOODS.

BUT UP TO THE SECOND HALF OF THE 18TH CENTURY THERE WAS NOT YET SUFFICIENT COLONIAL GOODS PRODUCED. THEREFORE IT WAS MORE PROFITABLE TO RETURN "IN BALLAST" TO THE HOME PORT IN ENGLAND THEN WAIT FOR SUGAR, RUM, COTTON, ETC. AS THIS FREED UP THE SHIPS TO SAIL TO AFRICA MAKE QUICKLY AND PICK UP MORE ENSLAVED AFRICANS AS THE PROFIT OF THIS CARGO WAS THE EQUIVALENT OF 4-5 SHIPS OF COLONIAL GOODS.

THERE WAS SO MUCH BALLAST ARRIVING IN LIVERPOOL THAT IT WAS USED IN THE CITY'S INFRASTRUCTURE. LORD OF TARLEY LISTS IN HIS FLORA OF CHESHIRE (1899) BALLAST PLANTS GROWING ON THE "BALLAST HAGS ROADS AT CLAUGHTON AND BIRKENHEAD".

NEW YORK SETTLERS PREFERRED ENSLAVED AFRICANS "SEASONED" IN THE CARIBBEAN TO ENSLAVED AFRICANS PURCHASED DIRECTLY IN ANGOLA. PERHAPS THAT IS WHY CARIBBEAN CORAL SAND USED AS BALLAST WAS DISCARDED IN THE HARBOR OF NEW YORK.

NEW YORK WOULD GROW TO BECOME THE COUNTRY'S MOST IMPORTANT HARBOR AND BY THE 1850s IT DOMINATED THE ILLEGAL INTERNATIONAL SLAVE TRADE TO THE AMERICAN SOUTH, BRAZIL AND CUBA. WHEN I WAS A TEENAGER THERE WERE PEOPLE STILL LIVING WHO HAD BEEN BORN SLAVES IN BRAZIL.

LATER, WITH SO MUCH COTTON BEING SHIPPED FROM THE USA TO LIVERPOOL THE IRISH WERE BROUGHT LISTED AS BALLAST INTO THE PORT OF NEW ORLEANS AS THE RATES WERE CHEAPER THAN LIVE CARGO.

THE AMERICAN SAILING SHIP THE "LIBERIA" HAD BEEN TO SIERRA LEONE, THEN MIGRATOR, JAMAICA, ARRIVING IN NEW YORK ON FEBRUARY 22, 1865 WITH NO CARGO AND "IN BALLAST".

IN A CONFERENCE IN 1819 IN NEW ORLEANS, DELEGATES DISCUSSED BLACK MIGRATION TO THE WESTERN TERRITORIES OF THE USA AND LIBERIA.

IN 1820 THE "LIBERIA" TRANSPORTED 38 IMMIGRANTS MOSTLY FROM NORTH CAROLINA AND MISSISSIPPI AS WELL AS TWO "COMMISSIONERS OF EMIGRATION" (SEARCHING FOR HOMES FOR AFRICAN AMERICANS FROM ARKANSAS) TO MONROVIA IN LIBERIA. A MASS MIGRATION OF FREE AFRICAN AMERICAN PEOPLES ESCAPING VIOLENCE AND RACISM.

THE SOCIETY FOR THE COLONIZATION OF FREE PEOPLE OF COLOUR OF AMERICA (OCCASIONALLY KNOWN AS AFRICAN AMERICANS) HAD FOUNDED LIBERIA AS A COLONY IN 1821 FOR EMANCIPATED AFRICAN AMERICANS.

THE EXODUS MOVEMENT CONTINUED FROM NORTH CAROLINA TO KANSAS FROM TENNESSEE AND KENTUCKY TO KANSAS. THOSE IN LOUISIANA TO OKLAHOMA. COLORADO AND KANSAS FROM GEORGIA TO TEXAS AND ARKANSAS AND THOSE IN ARKANSAS TO LIBERIA. PEOPLE FLEEING VIOLENCE.

TROUBLE WOULD BREAK OUT BETWEEN EMANCIPATED AFRICAN AMERICANS, NOW CALLED AMERICO-LIBERIANS, WHO HELD POWER AND THE INDIGENOUS PEOPLES WHO WERE NOT ALLOWED TO VOTE UNTIL 1946.

MUCH BALLAST ARRIVED IN 1811 AND 1878 FROM NORWEGIAN SHIPS WITH NO GOODS TO TRADE WHO WOULD COME "IN BALLAST" TO THE PORT OF NEW YORK TO PICK UP MANUFACTURED GOODS. THE BALLAST DISCHARGED IN PORT WAS TAKEN TO BE USED AS LANDFILL ON EIGHTH AVENUE FROM JUST ABOVE 155TH STREET TO 168TH STREET, ON 10TH STREET FROM THIRD TO FIFTH AVENUE AND 105TH AND 106TH STREET EAST OF SECOND AVENUE AS WELL AS OTHER LOCATIONS THROUGHOUT THE CITY. SOME LAND FILLINGS WERE 7 TO 10 FEET.

BUT MUCH BALLAST WAS ALSO ARRIVING IN NORWAY. A TRAVELER NOTED THAT WHILE THE FORESTS WERE GONE, THERE WAS "AN ABUNDANCE OF FLOWERS, INITIALLY BROUGHT OVER AS SEEDS IN THE BALLAST OF SAILING SHIPS." NORWEGIAN SHIPMASTERS WOULD SOMETIMES TAKE ENDED BALLAST IF IT WAS EARTH TO USE FOR THEIR GARDENS. OSLO WAS SO DESPERATE FOR BALLAST TO USE AS LANDFILL THAT IT REQUESTED ALL SHIPS IN THE HARBOR TO DELIVER BALLAST TO THE CITY.

PASSENGER SHIPS WITH SO MANY MOVING BODIES ABOARD USED BALLAST TO MAINTAIN THE SHIP STABLE. MANY SHIPS ARRIVED IN NEW YORK WITH IMMIGRANTS (AND THEREFORE BALLAST).

ON MARCH 4, 1892, TOSTEN KLEVEN FROM SILJORD, NORWAY WENT TO GOTEBORG, SWEDEN AND HELPED LOAD BALLAST ON THE SHIP IN WHICH HE WAS TO SAIL TO NEW YORK WHERE HE WENT TO WORK ON A FRUIT FARM. HE THEN MADE HIS WAY TO HIS FINAL DESTINATION IN MILWAUKEE. MILWAUKEE WHERE THE POTAWATOMI LIVED. HE MARRIED AASE KVAALSTETS, A NURSE. THEY PURCHASED 80 ACRES IN DANE COUNTY, WISCONSIN. THEIR GRANDCHILDREN LIVED AND WERE RAINBOW EMPLOYED IN COMPANIES SUCH AS GENERAL MOTORS CORP., BELL TELEPHONE CO., NORTHERN PACIFIC RAILWAY, U.S. DEPT. OF HEALTH AND THE OFFICE OF LAND COMMISSIONER.

SOME SHIPS ACQUIRED THEIR BALLAST FROM THE INTERTIDAL ZONE ESSENTIALLY TRANSPORTING PART OF THESE INTERTIDAL COMMUNITIES ACROSS THE ATLANTIC, A SCIENTIST HAS NOTED.

SPRING HAD COME AND WE HAD DECIDED A MOVE UP NORTH WOULD BRING THE BOY MORE OPEN SPACE AND FRESH AIR THAN WE NOW HAVE ON PEARL STREET. ON SUNDAY WE TOOK THE OMNIBUS TO 81ST STREET AND SECOND AVENUE. THE SQUATTERS AND THEIR HUTS ALONG WITH PIGS AND GOATS HAVE BEEN CLEARED OUT AND NOW THERE IS MUCH LAND. LARGER HOUSES REMAIN, SOME CLINGING TO OUTCROPPINGS OF ROCK IN FORLORN AND ISOLATED CLUMPS FIFTEEN FEET HIGH FROM WHERE WE STOOD. WE PASSED A FEW HOUSES THAT WERE ON LEVEL WITH THE ROAD, BUT MRS. DAFFERN WHO CAME TO BUY SOME MORE OF THE BLUE RIMMED-SHELL EDGED PLATES FAVORED BY HER FATHER OUR HUSBAND WHO WORKS FOR CITY HALL SAID THAT IT WOULD BE UNWISE TO PURCHASE THOSE AS SHE HAD HEARD THAT THE STREET WAS TO BE RAISED TO THE UPPER SURFACE OF THE ROCKS. I IMAGINE THEN THERE WOULD BE THE ADDED EXPENSE OF DEMOLISHING THE HOUSE AND FILLING THE SPACE TO MEET THE NEW STREET 15 FEET ABOVE US. JUST LIKE WATER STREET, WHICH WAS MADE BY FILLING UP THE RIVER UP TO THE STREET LEVEL AND NOW BLOCKS OUR VIEW OF THE RIVER.

DOCUMENTS OF DISTURBANCE

THE DEPOSITION OF BALLAST ROCK BY SAILING SHIPS
CAUSED THE GREAT TRANS ATLANTIC INTERTIDAL SHIFT
IN NEW YORK:
WE NOW WALK ON NORWAY (WHICH GOT ITS BALLAST ALSO FROM
SPAIN, PORTUGAL, ITALY, NORTH AFRICA FRANCE, BELGIUM,
THE NETHERLANDS, GERMANY, SWEDEN AND DENMARK),
PERHAPS ON ANGOLA,
ON DUBLIN AND BRISTOL;
AND NOW ON KINGSTON, JAMAICA.

THE LAST OF THE NATIVE FOREST AND SALT MARSH OF MANHATTAN IS TO BE FOUND IN INWOOD PARK. ONLY A PORTION OF THE MARSHLAND WAS LAND FILLED.

THIS WAS MUNSEE TERRITORY. IN THE 1960s, WALKING WITH MY PARTNER AND PICKING POKE TO COOK FOR SUPPER WE SAW A NATIVE FAMILY SETTLED FOR A TRADITIONAL SUMMER CAMP.

Sites as Citations: New York's Colonial Past in Ballast

Carin Kuoni

> The earth you think you're on is not [what you think it is], it is someplace else, the only way you would know the place is from the flower.
> — Maria Thereza Alves

It all begins with a seed. For Alves, the disavowal of conventional, Western tools of scientific analysis and proof is fodder for pointing to and delimiting modes and spaces for thinking about how and what we know. As she centers the barely perceptible seed, it emerges as the aggregate crossing point of narratives, journeys, histories, and temporalities of vast scales that seem incompatible with its modest size; however, precisely because the tiny seed and, by implication, the flower are evidence of developments of vast magnitudes, they eliminate Cartesian categories such as size or metrics, confound common associations of power, and point to the implications of all human endeavors.

How to bring closure to an art project that spans an entire human generation, a full continent, and histories around the globe? Alves decided that the New York iteration would be an erstwhile cumulation of *Seeds of Change*. At the Vera List Center, we embraced the project's multi-temporalities and multivalence by enacting them on different platforms—through an exhibition, through gardens that spanned all plant stages from seed germination to harvest, through an exploration of flora in the urban terrain, and finally through this publication. All along, seeds accompanied the research: in the summer of 2017, students at The New School and children in a summer camp at Pioneer Works began germinating seeds to be grown into plants for the exhibition at Parsons in late fall of 2017. Through the winter of 2017/2018, the seeds hibernated at Pioneer Works. In the summer of 2018, these plants then made up the Ballast Flora Gardens at Pioneer Works and Weeksville Heritage Center; those at the High Line remained there for another year through summer 2019.

Exhibition

In *Seeds of Change*, Alves considers the movement of ballast soil—material that was used to balance ships during colonial trade and deposited onto the shores of port cities—to steer her research. Working with soil as her interlocutor, she traces the effects, impacts, and distribution of plants that can be seen as ciphers for individuals and communities that were sold as commodities in the transatlantic slave trade. The persistence and survival of these beings form the literal and metaphorical ground of the exhibition.

As a marginal byproduct of colonial and postcolonial trade up to the 1950s, seeds inadvertently carried by ships as part of their ballast have become the focus of Alves's work. She activates the knowledge of botanical experts, historical records, and the "silent archive" Saidiya Hartman speaks of in relation to slavery (Saidiya Hartman, "Venus in Two Acts," *Small Axe*, no. 26 (vol. 12, no. 2), June 2008, 12). In so doing, she decolonizes the ways we know and engage with our surroundings. The exhibition reworked the physical and discursive material that we shape and that shapes us in order to suggest a proximity between human bodies and land, both branded and marked by processes of often violent, sometimes inadvertent migrations. The artist's constellation of markers elicited new modes of recognizing where we are, who we are, where we are from, what we are responsible for, and who we are accountable to. The installation oscillated between the mesmerizing beauty and life force of the plants, and the plastic and wooden hulls containing them, not unlike a boat riding the ocean waves.

To understand this history from a material perspective, Alves researched the stories ballast flora tell us about migration, movement, trade, and valuation. Not surprisingly, the contemporary connection is immediate to issues such as Indigeneity and belonging: Which plants do and do not belong to this land; which plants stand to threaten "native" species and vice versa, and which have the "right" to be here? Rather than provide a comprehensive history of plant migration in the New York area, the artist examined in detail key moments of such encounters. She parsed, for example, the *Bulletin of the Torrey Botanical Club* from 1879 to 1881 and then developed a list of ballast flora sites, including specific locations in New York City, such as 107th Street and Eighth Avenue in Manhattan, Hunters Point in Queens, the Gowanus Canal in Brooklyn, Mott Haven and Oak Point in the Bronx, and Communipaw and Hoboken in New Jersey. The names of ships arriving or departing "in ballast" appear in the painting *In*

Ballast: To and From New York. Another work, T*races from the Past: Some Ballast Material and Flora*, shows ballast flora, ballast, and earlier manmade landfill that may or may not have included ship's ballast. In the largest work of the exhibition, *The Entire Coast of Long Island*, 2017, the focus is on the line of encounter between shore and wave. Rather than an actual map of Long Island, we follow a horizontal (shore)line as it dips in and out of water, soil, and plants.

These maps of land displaced in trade were supplemented by a series of watercolor paintings of ballast indicators and entitled accordingly: *Ballast Indicator: Atriplex rosea*; *Ballast Indicator: Verbena officinalis*; *Ballast Indicator: Mercurialis annua*; and *Ballast Indicator: Diplotaxis-tenuifolia*. Stylistically, these works are akin to those of botanical illustrations produced during the eighteenth and nineteenth centuries that were seen as both appealing and scientifically valid. Alves also included seven text-based works that relay specific narratives from ballast dumping sites in the New York area. These are transcribed by the artist into poetic accounts: "*Peach Tree War*," "*Whenever people were transported …*," "*Spring had come …*," "*The Liberia*," "*Much Ballast arrived in 1877 from Norway …*," "*Documents of Disturbance*," and "*Inwood Park*."

Ballast Flora Gardens

In the New York iteration of *Seeds of Change*, the only one in the Americas, the exhibition scaled between micro and macro installations through a network of partner organizations around the New York area: the High Line in Chelsea, Pioneer Works in Red Hook, Weeksville Heritage Center in Crown Heights, and The New School in Greenwich Village. In the spring of 2017, approximately four hundred individual plants selected from thirty-eight species were propagated at The New School and Pioneer Works. These plants populated the gallery for the November 2017 exhibition at the Sheila C. Johnson Design Center. In the spring of 2018, the same plants were distributed to all partner sites to live on in those spaces as actual ballast flora gardens.

This cultivation and dispersal organically tied together each site's distinct history of trade and the distribution of people, plants, and goods. As Alves observed, "*Seeds of Change* is not a reconstruction of a lost landscape but an acknowledgment that in New York, the traditional lands of the Lenape people, we are faced with a colonized earth. By looking at plants that both indicate ballast ground and are witnesses to the subjugation of New York, a process of decolonization can begin."

Near the banks of the East River in Brooklyn, Pioneer Works is literally built on ballast: in 1851, an Irish immigrant, William Beard, purchased land and gained permission to build the Erie Basin, originally marsh land below the Brooklyn Docks where ships from around the world would drop anchor. Beard invited ships to dump their ballast at the Basin to shore up the space, producing a landmass that is largely made of ballast soil and populated by ballast flora. As a result, ballast flora grows abundantly around the neighborhood today.

The community of Weeksville was founded in 1838 by African American freedmen, and is located between Bedford-Stuyvesant, Crown Heights, and Brownsville, Brooklyn. After abolition, purchasing land at $250 per plot was the only means for freed African Americans to gain both economic independence and the right to vote. Weeksville was named after one of its founders, James Weeks, who also worked as a stevedore in the nearby port, loading and unloading ships (and presumably their ballast), and was thus involved in the site's development both economically and ecologically. By the mid-1800s, Weeksville was a community of five hundred people with their own newspaper, school, orphanage, and housing, the history and legacy of which Weeksville Heritage Center preserves to this day.

The High Line is a private-public partnership park in Chelsea that was opened in 2009 on what was formerly the "West Side Elevated Line" or the "El" elevated train tracks. Here, the story of ballast dispersal shifts from the ports to the Western frontier of this country: As goods arrived at the city's ports, carrying seeds with them, they were loaded onto trains that traveled on what is now the High Line, themselves the carrier of seeds from the West and now inadvertently transporting "non-native" seeds across the United States. Alves's Ballast Flora Garden at the High Line was part of *Agora*, a group exhibition organized by Cecilia Alemani with Melanie Kress.

WeedWalks

The traces of ballast flora create a map of colonization that is deeply embedded yet generally invisible in the landscape of New York City. Selected for their presence at sites around the New York area, the ballast flora in the exhibition set up a key for the map of the city's sites of Indigenous displacement and disruption.

Spawning from the exhibition, over the course of a month we spread out into the urban cityscape to "read" the history of New York through its weeds. Guided by artist and horticulturalist Marisa

Prefer, *Wild plants, queer landscapes* explored the connection between Alves' work and the New York landscape. Prefer took participants and casual passersby to the city's plant communities. Participants went to the Western Railyards in Manhattan to look for self-seeding plants left behind after the trains stopped running in 1980; they visited the former ballast dumping site of the Atlantic Basin and Red Hook, where many salt-loving marshland plants thrive in cracks along sidewalks and beneath the sewers; and, with artists Andrea Haenggi and Ellie Irons, they went on a multisensory exploration of the seedscape in and around the historic Weeksville Heritage Center grounds in Crown Heights, as the artists said, "Seeing with our feet and touching with our eyes, we let the autumn landscape guide us through past and present."

Volunteer plants penetrate ruderal landscapes, thriving under the harsh conditions of poor soil and post-industrial waste. These uninvited plants blanket spaces of transition by creeping into patches of dirt, emerging year after year, far from their places of origin. Wild plants are often perceived as threats or intruders, but they are doing the work of queering the urban landscape.

Historical records and botanical journals cite the plants that have grown out of ballast soil as "non-Indigenous." Outside of botanical gardens and the realm of horticultural expertise, they are often referred to as "weeds" growing out of the cracks in the sidewalks, city parks, and suburban landscapes. Spreading out into the city, *Seeds of Change* familiarized visitors with these persistent and enduring plants and encouraged them to recognize the organisms as keys to knowing an alternative, extra-anthropocentric mapping of the New York landscape and the traces of colonialism that continue to shape it.

Adapted from the essay by Carin Kuoni and Amanda Parmer, "Sites as Citations of New York's Colonial Past in Ballast," Vera List Center Prize for Art and Politics, 2016–2018; Maria Thereza Alves, Seeds of Change: New York—A Botany of Colonization *(New York: Vera List Center for Art and Politics, 2017), 12–14.*

Top: *A Ballast Flora Garden*, Weeksville, 2018.
Bottom: *A Ballast Flora Garden*, Pioneer Works, 2018.

Previous and Above: *A Ballast Flora Garden*, High Line, 2018. Photos: Timothy Schenck.

SEEDS OF CHANGE: NEW YORK, A BOTANY OF COLONIZATION

EXHIBITION

Nov. 3–27, 2017, Aronson Galleries, Sheila C. Johnson Design Center, Parsons School of Design, The New School. Curated by Carin Kuoni and Amanda Parmer. Exhibition design and graphics by Other Means.

CONFERENCE

Nov. 3, 2017, The New School. Organized by Carin Kuoni and Amanda Parmer. Documented at www.veralistcenter.org.

The Ground We're Standing On

Unpacking the co-production of land, plants, and peoples in the research for *Seeds of Change*, this conversation challenged assumptions about how and what we think we know about a site. By looking at human-instigated histories of soil movements—and plants as evidence thereof—we examined radical forms of geography that help uncover obscured histories of sovereignty and oppression and consider the potential of interspecies co-operation.

— Seth Denizen, University of California, Berkeley, Department of Geography
— J. Kēhaulani Kauanui, American Studies and Anthropology, Wesleyan University
— Tomaž Mastnak, Institute of Philosophy, University of Ljubljana
— Moderator: TJ Demos, Director, Center for Creative Ecologies, University of California, Santa Cruz
— Respondent: Kenneth White, Instructor, Whitney Museum of American Art Independent Study Program

Seeds as Storyteller and Witness

In their narrative and expository role, seeds collude with human actors and fertile ground to tell a story, sometimes a different story than expected, about the history of a place. The dormant seeds of ballast have the potential to activate alternative ways of uncovering

buried and obscured histories of oppression that are "flashing up," as Walter Benjamin wrote, in the present.

— Jane Bennett, Department of Political Sciences, Johns Hopkins University
— Marisa Prefer, artist, gardener, Pioneer Works; Horticultural Advisor, Vera List Center
— Radhika Subramaniam, School of Art and Design History and Theory, Parsons School of Design
— Moderator: Lara Khaldi, Curator, Palestine (who had nominated *Seeds of Change* for the Jane Lombard Prize for Art and Social Justice)
— Respondent: Katayoun Chamany, Mohn Family Professor of Natural Sciences and Mathematics, Lang College

Prize Presentation and Keynote Conversation
— Welcome: Mary Watson, Executive Dean, Schools of Public Engagement
— Tribute: Charif Kiwan, Abounaddara
— Maria Thereza Alves and Ruth Wilson Gilmore, Professor of Geography and Director, Center for Place, Culture, and Politics, Graduate Center, CUNY
— Moderator: Carin Kuoni, Vera List Center

LUNCHTIME READINGS

Nov. 3–21, 2017, Aronson Galleries, Sheila C. Johnson Design Center, Parsons School of Design, The New School

Organized in collaboration with Melanie Kress, Eric Rodriguez, Jasmin Chabla, and Andi Pettis at the High Line, the reading sessions drew on a community with elected affinities responding to the exhibition and looking to the future it promises for the summer of 2018 when the plants were re-sited in ballast flora gardens around New York, including the installations at the High Line, Pioneer Works, and Weeksville Heritage Center.

Wendy S. Walters, Nov. 7
Walters, reading from *Multiply/Divide*, has been described by Phillip Lopate as an author who "fearlessly discloses the personal and embeds her individuality in the larger dilemmas of the historical moment."

Patricia Klindienst, Nov. 9
"Freedom" is the title of the chapter Klindienst read from, part of *The Earth Knows My Name: Food, Culture and Sustainability in the Gardens of Ethnic Americans*, which won the American Book Award for 2007.

Melanie Kress and Eric Rodriguez, Nov. 14
High Line Art Assistant Curator Melanie Kress and Eric Rodriguez, High Line Horticultural Coordinator, grounded their conversation in texts by Rosalyn and Vito Acconci.

Jennifer Kabat, Nov. 16
"Rain Like Cotton" was published in *BOMB* in fall 2017. Kabat is the recipient of an Andy Warhol Foundation Arts Writers Grant, teaches at The New School, and is a regular contributor to *Frieze*, *Granta*, *Harper's*, *Virginia Quarterly Review* and *The White Review*.

Alex Smith and M. Téllez, Metropolarity, Nov. 21
Describing Metropolarity as a "DIY sci-fi collective based, bred, and tested in the colliding future-present of Philadelphia," Smith and Téllez read an excerpt of *Style of Attack Report*.

WILD PLANTS, QUEER LANDSCAPES: WEEDWALKS IN FORMER BALLAST DUMPING SITES

Along urban roadsides and beneath the crack of city asphalt, trash collects amid the living. Volunteer plants penetrate waste-places and thrive in harsh conditions of poor soil and postindustrial waste. WeedWalks were led by artist, herbalist, educator, and VLC horticultural advisor Marisa Prefer.

Western Rail Yards, Nov. 5
Marisa Prefer explored the Western Rail Yards of the High Line, where gardeners have left "existing self-seeded plantings, celebrating the urban landscape that emerged on the High Line."

Atlantic Basin/Red Hook, Nov. 12
Wild plants are often coded as threatening, labeled "weeds" or "invasive" but are also opportunists. They are doing the work of queering the urban landscape. At ballast dumping sites at the Atlantic Basin

and in Red Hook, many salt-loving marshland plants thrive in cracks along sidewalks and beneath sewers.

Crown Heights, Nov. 19
Andrea Haenggi and Ellie Irons of the Environmental Performance Agency guided a one-mile walk from the Utica Avenue train stop to Weeksville Heritage Center.

BALLAST FLORA GARDENS

The High Line
April 2018 through summer 2019
Part of the exhibition *Agora*, organized by Cecilia Alemani, Donald R. Mullen, Jr. Director and Chief Curator, with Melanie Kress, High Line Art Associate Curator. Staff members from the High Line Network, Education Department, and Horticulture Department led a series of brown-bag lunchtime reading sessions, featuring texts inspired by Maria Thereza Alves's project for the group exhibition *Agora*.
Education Department, May 23
Horticulture Department, July 25
High Line Network, September 19

Pioneer Works
Organized and curated by Marisa Prefer.
May through October 2018

Second Sundays Family Program
Drop-in family workshops engaging with the Ballast Flora Garden
May 13 and June 10, 2018

Red Hook Ecology Walks
Summer through fall 2018

Red Hook Ecology Roundtables
June, July, and August 2018

Weeksville Heritage Center
May 2018 through October 2019
Organized by Asantewa Archer and Rob Fields, with landscape guidance by Elizabeth Kennedy.

Weeksville's Ballast Flora Student Workshop
Every Tuesday from April through May 2018 for students aged eight to twelve. Curriculum outline: Plant Science; Hands-on Art Making; Experiments; Weeksville's History and Ballast Flora; Ecology of Red Hook; and Gentrification, Race, Politics.

Weeksville Heritage Center's Fiftieth Anniversary and Exhibition
Opening Event, May 12, 2018.

Ballast Flora Gardens
With Maria Thereza Alves and representatives of the High Line, Pioneer Works, Vera List Center, and Weeksville Heritage Center, June 23, 2018.

EXHIBITION CHECKLIST

The Entire Coast of Long Island, 2017. Acrylic and ink on linen, 59 7/8 × 162 1/4 in. (152 × 412 cm). MTA_0104

In Ballast: To and From New York, 2017. Acrylic and ink on linen, 115 3/8 × 61 in. (293 × 155 cm). MTA_0111

Common Ballast Flora on Long Island, 2017. One vase on shelf with a fresh bouquet every week, consisting of dandelion, daisy, buttercups, chicory, plantain, clover, burdock, and wild carrot.

Untitled, 2017. Acrylic and ink on linen, 44 × 32 1/4 in. (112 × 82 cm). MTA_0119

Untitled, 2017. Acrylic and ink on linen, 44 × 32 1/4 in. (112 × 82 cm). MTA_0123

Untitled, 2017. Acrylic and ink on linen, 44 × 32 1/4 in. (112 × 82 cm). MTA_0127

Untitled, 2017. Acrylic and ink on linen, 44 × 32 1/4 in. (112 × 82 cm). MTA_0114

Untitled, 2017. Acrylic and ink on linen, 44 × 32 1/4 in. (112 × 82 cm). MTA_0124

Untitled, 2017. Acrylic and ink on linen, 44 × 32 1/4 in. (112 × 82 cm). MTA_0115

Ballast Indicator: Atriplex rosea, 2017. Watercolor on paper, 11 3/4 × 11 3/4 in. (30 × 30 cm). MTA_0193

Ballast Indicator: Verbene officinalis, 2017. Watercolor on paper, 11 3/4 × 11 3/4 in. (30 × 30 cm). MTA_0191

Ballast Indicator: Mercurialis annua, 2017. Watercolor on paper, 11 3/4 × 11 3/4 in. (30 × 30 cm). MTA_0195

Ballast Indicator: Diplotaxis-tenuifolia, 2017. Watercolor on paper, 11 3/4 × 11 3/4 in. (30 × 30 cm). MTA_0194

"Peach Tree War," 2017. Watercolor and ink on paper, 24 × 18 1/8 in. (61 × 46 cm). MTA_0182

"Whenever people were transported...," 2017. Watercolor and ink on paper, 24 × 18 1/8 in. (61 × 46 cm). MTA_0183

Caribbean Coral Sand in Manhattan, 2017. Watercolor and ink on paper, 18 1/8 x 24 in. (46 × 61 cm). MTA_0190

"Spring had come...," 2017. Watercolor and ink on paper, 24 × 18 1/8 in. (61 × 46 cm). MTA_0185

"The Liberia," 2017. Watercolor and ink on paper, 24 × 18 1/8 in. (61 × 46 cm). MTA_0184

"Much Ballast arrived in 1877 from Norway...," 2017. Watercolor and ink on paper, 24 × 18 1/8 in. (61 × 46 cm). MTA_0186

"Documents of Disturbance," 2017. Watercolor and ink on paper, 24 × 18 1/8 inches (61 × 46 cm). MTA_0187

"Inwood Park," 2017. Watercolor and ink on paper, 24 × 18 1/8 in. (61 × 46 cm). MTA_0188

Traces from the Past: Some Ballast Material and Flora, 2017. Watercolor and ink on paper, 24 × 18 1/8 in. (61 × 46 cm). MTA_0189

All works height × width. Courtesy the artist and Galerie Michel Rein.

A Botany of Decolonization: Countering the Settler Colonial Quest for Indigenous Elimination

J. Kēhaulani Kauanui

In the fall of 2015, a student at Wesleyan University in Middletown, Connecticut, where I teach, came to my office to ask for guidance. At the time, he was working on a project for a studio arts class. He explained that he had zoned in on a construction site near the art complex and wanted to create an installation with a dig, as the water system in that area was being overhauled. Initially, he planned to delve into the meaning of the "unearthing" in relation to his own, as he put it, existential condition. That is, until he learned whose land the university stands on—the Wangunk people. Given the widespread settler colonial erasure of their history and contemporary existence, their very name was news to him. He had learned about it from a student who was enrolled in a new course I was teaching at the time, "Decolonizing Indigenous Middletown: Native Histories of the Wangunk People." Once he learned whose land we were situated on, his art project no longer held together. The land that was being unearthed was no longer abstract in the way he first encountered it; rather, it was a part of a people's homeland. This new awareness prompted a level of self-confrontation and raised a set of ethical questions, and he ultimately decided to scrap the installation altogether.

I open with this vignette for my discussion of the New York iteration of Maria Thereza Alves's *Seeds of Change* project to illustrate the urgency of anti-normalization of ongoing settler colonization and the politics of Indigeneity.[1] My focus draws on some of the themes brought into sharp relief in the exhibit—specifically the observation that ballast flora in Europe is not the same as ballast flora in North America. Here, it is evidence of the economic systems of enslavement in the context of settler colonization. The Dutch systematically enslaved African people, introducing slavery to the continent when they first settled the colony. Both the English and the Americans carried on this system of terror when they superseded the Dutch. For more than two centuries, New York was considered the capital of American slavery.[2] As Alves points out in her essay accompanying the New

York exhibition, "The transport of bodies in ships required ballast to offset their movement."[3] She explains how ships arrived from England with ballast material such as flint, iron, and soil, and from the Caribbean with coral, volcanic sand, bricks, stones, and rocks. Alves unearths historical ballast sites and ballast flora through her careful archival research, scientific investigation, and artistic representation of these complex and multilayered histories. Among many important elements in the New York iteration of the project, we learn that the settler colonists used ballast as landfill to flatten it out to marketable territory that could then be demarcated for commodification. And, as Alves explains in the same publication, "Upon arrival in port, the ballast was unloaded, carrying with it seeds native to the area where the ballast had been picked up. [...] Colonization is built into the very soil of New York. A process of decolonization must begin on the ground."[4] This begs the question: What of the Indigenous peoples who are ontologically rooted in that soil?

This is what I would like to focus on: an examination of the politics of Indigeneity in relation to Maria Thereza Alves's New York City project. The artist has explored ballast flora in other port cities, but about New York, she notes, "The earth of Manhattan is mostly not itself. It has had its millennium relationship between land, water, animals and not animals taken away or buried. To me that is what is very important on the New York iteration that along with the colonization of the people, the culture, the land—the very earth was colonized." I aim to extend her focus, since New York City raises the question of Indigeneity, unlike the European cities she studied—at least when it comes to people of the land (not only the land itself): the Lenape and other Indigenous peoples, including the Canarsie, Shinnecock, Unkechaug, and Munsee Indians.[5] I begin with a focus on distinctions between Indigenous flora and Indigenous peoples defined by their relationship to land. I then briefly examine the implications of the elision of Indigeneity in order to push for sustained engagement with the politics of decolonization, as Alves's New York City exhibit provokes a rethinking of ballast flora in a way that compels the viewers to confront the ethics of relationality as they pertain to enduring settler colonialism vis-à-vis Indigenous people(s). The challenge, then, demands an exploration of what forms of decolonization are possible in this context.

Historian Patrick Wolfe's theory of settler colonialism posits that this social and political model of domination operates by "the logic of elimination of the native."[6] This is because, unlike other forms of

colonialism, land acquisition is its central feature.[7] As Wolfe argued, "The colonizers come to stay—*invasion is a structure not an event.*"[8] This is not to suggest that settler colonialism is permanent (as though it is necessarily a foregone conclusion), but rather that the aim of those upholding that form of domination strive for permanency. When people speak of "the legacy of colonialism," they are casting colonialism in the past. But for Indigenous peoples subject to settler colonialism, the colonial project has yet to end. Understanding settler colonialism as a structure exposes the fact that it cannot be relegated to the past.

The political and cultural terms "Indigenous" and "Indigeneity" emerge in relation to these same social forces. Thus, Indigeneity is the counterpart analytic to settler colonialism. Some people dismiss assertions of Indigenous identity as essentialist, assuming that being Indigenous is grounded in a belief in an underlying and unchanging "essence." But for Indigenous peoples, the question of Indigeneity is rooted in a distinct relationship to land, which has consequences for sovereignty. In addressing "Indigenous" as a category of political subjectivity, one necessarily must wrestle with particular histories of domination rather than fall back to an all-too-common default position of "everyone is Indigenous *to somewhere*, so we're all Indigenous." Alves's work is focused on actual flora and fauna, enabling careful distinctions. The category of "Indigenous" regarding peoples is always already a socially constructed relational category since we are not flora and fauna but are part of (not apart from) the natural world. For some who insist that "everyone is Indigenous to somewhere," they might cite the definition of the adjective from the dictionary to justify their claim. "Indigenous" comes from Late Latin: *indigen-us*, meaning born in a country, native (<*indigen-a*, a native), as in "born or produced naturally in a land or region; native or belonging naturally *to* (the soil, region, etc.)."[9] But, without attention to the history and present forms of social domination, it can be reductive to use the term to refer to anyone born in a particular place, taking the geography of any given country for granted (while also naturalizing nation-state borders).

This emphasis on nativity or birth too often ends up rendering the concept of "Indigenous"—when it comes to humans—meaningless by erasing the political history of specific Indigenous struggles over land claims. In *Firsting and Lasting*, historian Jean M. O'Brien (White Earth Ojibwe) traces the genealogy of the myth of the "vanishing Indian" to white settler assertions that Indigenous peoples had "vanished"

despite their known continued presence.[10] She documents that well into the twentieth century, white Anglo-Saxon nativists dismissed the continued existence of a wide range of Indigenous peoples by claiming themselves to be "native-born." This is a classic example of the "logic of elimination of the native."[11]

The general definition of "Indigenous" as "born or produced naturally in a land or region" is far too simple and cannot account for the diversity of the more than three hundred and seventy million Indigenous peoples who are spread across seventy countries worldwide.[12] The 1986/7 definition proposed by United Nations Special Rapporteur José Martínez Cobo remains the most influential today: Indigenous peoples are "those which, having a historical continuity with pre-invasion and pre-colonial societies that have developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them."[13]

Returning to Wolfe's definition of settler colonialism as a land-centered project that relies on the "logic of elimination of the native," let us consider the question of territory for the Lenape in Mannahatta. Educators at the National Museum of the American Indian have referred to the 1626 "sale of Manhattan" as America's first "urban myth" since there is no known deed of land transfer or bill of sale. Soon thereafter, Dutch Governor William Kieft tried to impose a tax on the Lenape, who refused to pay to live on their own territory. He vowed to force them into submission, resulting in a genocidal massacre during Kieft's War between 1643 and 1645.[14] This history coincides with the construction of a wall by the Dutch that later lent its name to "Wall Street." By 1644, they had erected a wooden palisade to block the Lenape Indians from protecting their own territory from settlement; by 1653, they built a sturdier wall to prevent further encroachment by the English colonists.[15]

The English took over "New Amsterdam" in the 1660s, and by the early 1700s, the Lenape were forced to move from Mannahatta. Through a series of negotiations and treaties, the Lenape were subject to several removals.[16] They were caught between the Dutch and the British, then the French and the British (in the French-Indian War), and later the English who wanted independence and claimed American identity. As sociologist Brice Obermeyer explains, "The tumultuous years surrounding the American Revolution led to a Delaware diaspora that would further define the nucleus of the Delaware Tribe and create the boundaries between the many Delaware-descended groups that exist today. By the eve of the American Revolution, most Delaware

groups were living along the Ohio and Allegheny rivers." Lenape polities are now self-governing in Oklahoma and Wisconsin, as well as Ontario, Canada, while other clans of the Lenape remain in their expansive traditional territory: in other parts of present-day New York, New Jersey, Pennsylvania, and Delaware.

So here we see the violent features of settler colonization—land expropriation and its accompanying "elimination of the native"—through both spatial removal and genocide, constituting what would today be called ethnic cleansing. This history and present demonstrate Wolfe's assertion that within settler-colonial contexts, "invasion is a structure, not an event." And even though the Dutch, British, and Americans pushed out the Lenape and other Indigenous peoples to create New York City for themselves, numerous sites throughout Manhattan reveal an enduring Lenape presence. Given this legacy, we must also critically face the nativism inherent in terms like "Native New Yorker" that contribute to Lenape invisibility and erase the ongoing settler-colonial dispossession of them.

Alves has documented how the introduction of ballast transformed the land of New York City. She notes, "River silt, Native American relics, household and industrial waste, ecological wreckage, hills torn down with earth removed for tunnels, and ballast was used to level New York, and that began quite early in colonial history–1646."[17] As an example, Alves included in her exhibition at The New School an archival sketch, "View of 2nd Ave Looking Up from 42nd set 1861."

As Alves points out, "Topographical particularities, specificities, and relationships were literally crushed … a hill became a street or material to be used to fill in a swamp. The river was defined as a set of potential real estate plots, and pieces were sold to be filled in: converting water to land to property."[18] Notably, the artist found that ballast was continuously imported to New York up until the 1950s. Of course, it is necessary to caution against romanticizing some unsullied precolonial site. As the artist puts it, "However, this is not a question of reconstruction of a lost landscape or purity but of acknowledgement of the present we all find ourselves in."[19] So, that begs the question as to what forms of decolonization are possible in settler-colonial contexts.

In the legal realm, international law bars Indigenous peoples from the United Nations (UN) decolonization protocols, which were codified for franchise colonies. The exclusion is based on the "salt water" doctrine, making eligibility for decolonization based on the presence of "blue water" between the colony and the colonizing

country.[20] As a result, it is countries, not peoples, who are eligible for UN-sponsored plebiscites regarding their political status.

After decades of effort and organizing by the Working Group on Indigenous Populations (later renamed the Working Group on Indigenous Peoples) to address this marginalization, in 2007, the United Nations General Assembly passed the Declaration on the Rights of Indigenous Peoples (DRIP). The aspirational document asserts that Indigenous peoples are "peoples" with the right to self-determination, as embodied in Article I of the Charter of the United Nations: "All peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development."[21] DRIP importantly includes several articles mentioning the principle of "free, prior and informed consent," acknowledging that Indigenous peoples should have the right to give or withhold consent to a project that may affect them or their territories. For example, Article 10 states, "Indigenous peoples shall not be forcibly removed from their lands or territories. No relocation shall take place without the free, prior, and informed consent of the indigenous peoples concerned and after agreement on just and fair compensation and, where possible, with the option of return."[22] Notably, though, DRIP still limits self-determination for Indigenous peoples. Article 46 makes this clear, that nothing in the declaration may be construed as authorizing or encouraging any action "which would dismember or impair, totally or in part, the territorial integrity or political unity of sovereign and independent States."[23] Thus, for Indigenous peoples, although decolonization means limited self-determination (within the states that currently encompass them), land and resource protection based on Indigenous knowledge has bolstered forms of Indigenous resurgence. This turns away from recognition by states, both of which open diverse pathways for reconnecting with their traditional water and land-based lifeways.

In one of her essays on *Seeds of Change*, Alves also reflects on invasion and quotes botanist Heli Jutila.[24] In some places, "like maybe Finland and France," Jutila says, "ballast flora came to enrich the local flora, but in the Americas, many ballast plants oftentimes from Europe have been invasive aliens, and have narrowed the niche of many species of native flora." When thinking about the number of species of plants (over four hundred, mostly European in origin) found by Alves's research to be growing on ballast grounds throughout New York and New Jersey, from where they have spread further since, we can critically explore the concept of "invasive species."

Indigenous environmental studies scholar Nicholas J. Reo (Sault Ste. Marie Tribe of Chippewa Indians) and anthropologist Laura A. Ogden offer an Indigenous perspective on the global threat of invasive species that contrasts with prevailing conservation discourses. Turning to the Anishnaabe, who, like the Lenape, are part of the Algonquian cultural group, they show that dominant (non-Indigenous) approaches tend to portray invasive species as biological entities temporally and politically connected to colonial timelines.[25] But their ethnographic research also makes clear that even while Anishnaabe may describe invasive species as "phenomenologically entangled with colonialism," the ways they think about invasive species "provide alternatives to native–non-native binaries that dominate much of the scientific discourse."[26] As Reo and Ogden point out, the "invasive land ethic" manifest in non-Indigenous governmental and NGO approaches to invasive species management is undergirded by Euro-American property ownership regimes that are "predicated on the separation of people from nature."[27] Reo and Ogden delineate this contrast, finding that for Anishnaabe, "plants and animals are family members and respected as elder siblings to humans." Their interlocutors also explained that "humans have an obligation to figure out the nature of our relationship with new arrivals, which includes careful consideration of their potential gifts and our reciprocal responsibilities."

Furthermore, the Anishnaabe suggested that the ecological impact of introduced species is linked to Indigenous neglect of "responsibilities for longstanding plant and animal relations," and that white American approaches to land management, such as invasive species eradication programs, can create barriers to Indigenous caretaking that may remediate adverse effects. This is not to conflate or confuse the Anishnaabe with Lenape, Canarsie, Shinnecock, Unkechaug, or Munsee Indians (even though all are Algonquian). However, the contrast provides insight into alternative ways to respond to non-Indigenous flora and fauna. Moreover, these Indigenous principles can inform decolonization as a practice in ways that need not negate the non-Indigenous and which can work to negotiate ways of co-existing based on Indigenous ethics and governance.

As Maria Thereza Alves considers decolonization in relation to the flora highlighted in her own project, she turns to the work of philosopher Tomaž Mastnak. In her essay on *Seeds of Change*, she quotes him that "displanting humans and plants are elements of the same multispecies colonial endeavor" and presents his argument for the importance of "botanical decolonization."[28] Alves points

to Mastnak's calls for attention to "place-based" relations between plants and people. "People must be seen within the context of how that place, its flora and the geographic specificity are constituted by settler colonialism." Speaking to US settler colonialism and linking to Mastnak's suggestion, I posit that the primary political and ethical challenge is the demand for accountability towards the Indigenous peoples on whose land we dwell and mobilize. However, the concept of Indigenous nationhood is too often a sticking point for those who may bristle over the abidance to any notion of distinct peoplehood. For Indigenous peoples, the challenge is to survive as peoples given the endurance of colonial domination. Decolonization in a settler colonial context must tend to the Indigenous peoples of the land—and their attendant sovereignty given that relationship to the land—as they contend with the reality that "invasion is a structure, not an event."[29]

Ongoing Indigenous struggles that are specifically grounded in New York—for instance, a range of cases of the Shinnecock and Unkechaug tribes on Long Island and the battle of the Lenape in Manhattan—speak to the same challenge. The Shinnecock Indian Nation has been trying to stop the construction of two homes on Montauk Highway in Southampton on a privately owned two-acre site where some of their ancestors are buried. Tribal leaders "say they had an agreement with the town of Southampton that if development was slated for the site they would be notified so they could monitor construction in case any remains were found," according to local reporting.[30] Meanwhile, the Unkechaug Indian Nation has a lawsuit challenging the state's authority to regulate or restrict the tribe's historic fishing rights at Mastic Beach.[31] Three Shinnecock Indian Nation members filed a similar case.

In another ecological example from Long Island, the Shinnecock Nation has been reckoning with constantly rising waters. They have responded by "moving dredged sand and placing sea and beach grasses, oyster shells, and large boulders in the path of the Atlantic Ocean."[32] As director Shavonne Smith of the Shinnecock Indian Nation Environmental Department notes, the tribe is hoping to increase the oyster reef to dissipate the force of the waves on the shore: "We have an inherent responsibility to protect the homeland," Smith says. "It's not the type of thing where you can work against nature. You work with it."[33] In contrast to the violent flattening of Manhattan achieved by using ballast, here they are using "what experts in climate change adaption call 'nature-based solutions' to

mitigate the damage from the next storm. The wind and water use the grasses, rocks, and shells to sculpt the sand in desired directions, creating rising dunes. In almost four years, the Shinnecock have restored 3,250 feet of beach."[34]

Shoreline erosion—arguably part of climate colonialism—has affected burial grounds of the Unkechaug Indian Nation.[35] In turn, Chief Harry Wallace urged Suffolk County to take action to protect the burial grounds. The county is now working on a shoreline stabilization project in an attempt to end the severe erosion of the point at Indian Island County Park and protect the burials. In November 2019, "the county legislature approved a $1.2 million 'living shoreline' project to stabilize the bluff at the point."[36] The project includes installing rock sills in tidal wetlands, with upland sand placed landward of the rock sills and planted with native, salt-tolerant vegetation. As reported, "The bluff in the tidal wetlands adjacent area will be further stabilized with the installation of a cantilevered bulkhead covered with clean sand and planted with native grasses."[37] These efforts serve as examples of what environmentalists term "nature-based" responses, which can contribute to place-based forms of decolonial practice. Furthermore, all propose explicitly Indigenous approaches to land remediation, thus countering the erasure of Indigenous peoples.

Alves's *Seeds of Change* project advances the work of anti-normalization concerning ongoing settler colonialism—and its changes to the land—through a focus on Indigenous and "imported" flora. In extending her work by centering Indigenous peoples, we can also take up anti-normalization by countering "the logic of elimination of the native." Indeed, this is a prerequisite for enabling practices of decolonization in settler-colonial contexts.

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(1) *Maria Thereza Alves, Seeds of Change: New York–A Botany of Colonization*, curated by Carin Kuoni and Amanda Parmer, Vera List Center for Art and Politics, The New School, New York, October–November 2017.

(2) New-York Historical Society, "History of Slavery in New York," http://www.slaveryinnewyork.org/history.htm. In 2005 through 2006, the New-York Historical Society hosted a two-part exhibit, *Slavery in New York*, from October 7, 2005–March 5, 2006.

(3) Maria Thereza Alves, "A Botany of Colonization," *Vera List Center Prize for Art and Politics, 2016–2018* (New York: Vera List Center for Art and Politics, 2017), 11.

(4) Ibid.

(5) Per the National Museum of the American Indian.

(6) Patrick Wolfe, "Settler Colonialism and the Elimination of the Native," *Journal of Genocide Research* 8, no. 4 (December 2006): 387–409. Wolfe's earlier work also advanced the same analysis. Although Wolfe did not coin the concept of settler colonialism, through his work (including direct intellectual engagement with scholars in Native American and Indigenous Studies), the analytic has gained substantial traction and visibility.

(7) Other forms of colonialism include, but are not limited to, franchise colonialism, mandate colonialism, and internal colonialism.

(8) Patrick Wolfe, *Settler Colonialism and the Transformation of Anthropology: The Politics and Poetics of an Ethnographic Event* (London: Cassell, 1998), 387.

(9) "Indigenous," in *Oxford English Dictionary* (Oxford: Oxford University Press, 2011).

(10) Jean M. O'Brien, *Firsting and Lasting: Writing Indians out of Existence in New England* (Minneapolis: University of Minnesota Press, 2010).

(11) Ibid.

(12) United Nations, *State of the World's Indigenous Peoples*, 2009, ST/ESA/328.

(13) Ibid. See also the 1979 "Written Statement submitted by the International Indian Treaty Council (Category II Consultative Statues). (Agenda Item 22 & 23)" written for the 35th session of the United Nations Commission on Human Rights by Alves as a member of the Council, http://www.mariatherezaalves.org/assets/files/1979_unstatement.pdf.

(14) Steven Newcomb, "A Dutch Massacre of Our Lenape Ancestors on Manhattan," *Indian Country Today*, August 24, 2013, http://www.indiancountrytoday.com/archive/a-dutch-massacre-of-our-lenape-ancestors-on-manhattan; Newcomb, "Our Lenape Ancestors Were Slaughtered At Bowling Green Massacre," *Indian Country Today*, February 6, 2017, http://www.indiancountrytoday.com/archive/lenape-ancestors-bowling-green-massacre-manhattan-island.

(15) Bowery Boys, "Building the Wall: How Wall Street Got Its Name," *The Bowery Boys: New York City History*, February 6, 2017, http://www.boweryboyshistory.com/2017/02/building-wall-wall-street-got-name.html.

(16) Brice Obermeyer, in *Delaware Tribe in a Cherokee Nation* (Lincoln: University of Nebraska Press, 2009); Robert S. Grumet, *First Manhattans: A History of the Indians of Greater New York* (Norman: University of Oklahoma Press, 2011); Russell Shorto, *The Island at the Center of the World* (New York: Vintage Books, 2005); C.A. Weslager, *The Delaware Indians: A History* (New Brunswick: Rutgers University Press, 2007); Evan T. Pritchard, *Native New Yorkers: The Legacy of the Algonquin People of New York* (San Francisco: Council Oak Books, 2007).

(17) Alves, "A Botany of Colonization," 10.

(18) Ibid.

(19) Ibid.

(20) Rudolph C. Rÿser, "The 'Blue Water Rule' and the Self-Determination of Nations," Intercontinental Cry, September 21, 2017, www.intercontinentalcry.org/blue-water-rule-self-determination-nations.

(21) United Nations, *Charter of the United Nations*, 1945, 1 UNTS XVI.

(22) United Nations, *United Nations Declaration on the Rights of Indigenous Peoples*, 2007, A/RES/61/295.

(23) United Nations, *United Nations Declaration on the Rights of Indigenous Peoples*.

(24) Maria Thereza Alves, "Seeds of Change, 1999–Ongoing," n.d., http://www.mariatherezaalves.org/works/seeds-of-change?c=47.

(25) Nicholas J. Reo and Laura A. Ogden, "Anishnaabe Aki: An Indigenous Perspective on the Global Threat of Invasive Species," *Sustainability Science* 13, no. 5 (April 2018): 1443–52.

(26) Ibid.

(27) Ibid, 7.

(28) Alves, "A Botany of Colonization," 2017, 11.

(29) See Alves's "The Entire Coast of Long Island, 2017."

(30) News 12 Staff, "Shinneckock [sic] Indian Nation Seeks Halt to Construction on Sacred Ground," News 12 Long Island, January 3, 2020, http://www.longisland.news12.com/shinneckock-indian-nation-seeks-halt-to-construction-on-sacred-ground-41518075.

(31) Mark Harrington, "Federal Judge Won't Dismiss Unkechaug Fishing Case vs. DEC," *Newsday*, May 6, 2019, http://www.newsday.com/long-island/suffolk/unkechaugs-fishing-shinnecock-tribe-1.30746691.

(32) Marian Conway, "'Using the Natural Things Given to Us' for Protection against Sea Level Rise," *Nonprofit Quarterly*, March 17, 2020, http://www.nonprofitquarterly.org/using-the-natural-things-given-to-us-for-protection-against-sea-level-rise.

(33) Ibid.

(34) Ibid.

(35) Doreen E. Martinez, "The Right to Be Free of Fear: Indigeneity and the United Nations," *Wicazo Sa Review* 29, no. 2 (2014): 63–87. See Martinez's essay for more on shoreline erosion.

(36) Denise Civiletti, "County Looks to Stop Erosion of Indian Island Shoreline, Site of Ancient Native American Burial Grounds," *RiverheadLOCAL* (East End Local Media Corp., February 24, 2020), http://www.riverheadlocal.com/2020/02/24/county-looks-to-stop-erosion-of-indian-island-shoreline-site-of-ancient-native-american-burial-grounds.

(37) Ibid.

The Green Settlers of New York City

Tomaž Mastnak

Dictionaries define the verb "terraform" as denoting a science-fiction vision of shaping the moon or planets in Earth's image to make them able to support terrestrial life forms. I learned the term in Southern California when witnessing the construction of yet another housing project for the University of California at Irvine's faculty. There was a small sandstone hill, invaded by thistle, mustard, and wild artichokes from the roads that circled it, scarred by a small dirt road and littered with paper, plastic, and construction debris. Yet, it gave food and shelter to some native flora and fauna, like snakes, lizards, birds, insects, and rodents, and functioned as a transition corridor for coyotes and bobcats. I knew every little corner of it.

One day, it was fenced, and heavy machinery began to move the soil around, breaking the reddish-colored rocks, crystals, and fossils (some of which were fortunately saved) to shape the terrain for a model settlement. That little piece of earth was completely unformed, deformed, and reformed. All life was erased, so-called pre-historical artifacts were lost, and geological history was crushed to rubble and dust to pave new ground for alien life-forms: wage intellectuals, Mexican gardeners, Eastern European cleaners, cats and dogs, tropic and subtropic plants, and lawns on life support via ever-gushing sprinklers.

Through *Seeds of Change*, Maria Thereza Alves makes us think not only about the extent to which the earth beneath New York City has been terraformed, but also about how much of it has literally been made.

According to Alves's estimate, informed by scientific research before her, the ground under New York City has been so thoroughly terraformed that only a sample of the "prehistoric" *terra* (earth) survives on Manhattan's northwestern tip, in Inwood Hill Park. The ground on Manhattan Island was basically leveled. Leveling, German philosopher Bruno Bauer wrote in the *New York Daily Tribune* in the 1850s, was the spirit of the age, a key characteristic of the new

imperialism that rose to power after the defeat of the 1848 democratic revolutions.[1]

It is even more unsettling to learn from Alves's project that much of the ground, on which today's New York City stands, is made of ballast. This material was transported from Europe to New York on ships as late as the 1950s, meaning the earth of New York is mixed with rubble from European cities bombed during World War II. The quantity of that ballast is staggering. Bits of foreign landscapes and trash, nature and culture, history and stories were built into the foundations of the cosmopolis, where history was to end and only stories are spun.

Mixed with the ballast, fragments of life in the dead matter were imported: "seeds of change." Many of those seeds germinated to become New Yorkers. Just like the human settlers, they began a new life here. They have become an integral part of the New York flora and, thus, of the cityscape and the city's life. They are silent voices of a muted history that should scream injustice.

What are we to think about these plants? How are we to relate to these green New Yorkers? Alves gives us the coordinates: "The very earth of New York is colonized and yet that does not signify that what we might term as settler plants are to be acknowledged as the new normality, for to do so would make us complicit with colonialism and its violence inflicted on land and bodies."[2]

The very soil of New York was colonized. That is the nature of colonization; it is not only a conquest or subjection of a territory, but also the inscription of colonial power into the landscape and into the soil itself. Colonialism is not only a deep historical intervention, but is also an intervention into the deep history. George Perkins Marsh, in his pioneering 1864 study of the impact of man on natural environment, argued that it was the destruction of soil in the mother countries that drove colonial expansion and conquests. That destruction—the soils having been "made barren or pestilential" by man's "follies or his crimes"—created "the necessity of providing new homes for a European population."[3] In the new environment, the colonists continued with their destructive practices. Even worse, they carried them out, as Hobbes would say, with "double iniquity" and "double folly."[4] Settler-colonists overthrow "existing arrangements," Marsh observed: "Indigenous vegetable and animal species are extirpated, and supplanted by others of foreign origin, spontaneous production is forbidden or restricted, and the face of the earth is either laid bare or covered with a new and reluctant growth of vegetable forms, and

with alien tribes of animal life." Soil is degraded and destroyed by industrial agriculture, deforestation, diversion or exhaustion of water sources, and construction.[5]

What are settler plants? Every plant is a "geographical agency," Marsh wrote: "Whenever man has transported a plant from its native habitat to a new soil, he has introduced a new geographical force to act upon it, and this generally at the expense of some indigenous growth which the foreign vegetable has supplanted. The new and the old plants are rarely the equivalent of each other, and the substitution of an exotic for a native tree, shrub, or grass, increases or diminishes the relative importance of the vegetable element in the geography of the country to which it is removed."[6]

As a geographical agency, plants are a settler agency. Planting is an essential part of colonization, even giving it a name: "plantation." But as Francis Bacon wrote in the early period of English colonization, planting also means "displanting."[7] Displanting, uprooting, was the first step in colonizing new lands. In the early seventeenth century, Captain Smith called on England to send to Virginia "diggers of trees, roots."[8] New colonial landscape was built on the destruction of existing, Indigenous landscape. All colonization is unavoidably a botanical colonization, and introducing plants is an integral part of settler violence.[9] An introduced plant meant violence against native soil and growth, which is inherently violence against the Indigenous peoples.

One of the central ideas of the nineteenth century that is still alive today is that history is a "war of man against nature," in the words of the French historian Jules Michelet.[10] Consequently, colonialism is a progressive and civilizational spread of war against nature. It is justified by representing the colonized lands as "nature": uncultivated, uninhabited (or sparsely inhabited) virgin land, or no one's land (*terra nullius*). War against nature, violent and destructive in the European homeland, became doubly so in the European colonies. The "nature" attacked by the colonists was, as a rule, cultivated land, a cultured landscape. "War against nature" was thus compounded by war against the Indigenous cultivators, or caretakers, of that nature and erasure of their culture. Plants that fell victim to that war were part of the Indigenous material and spiritual culture, and plants that replaced them were the green face of conquest. Colonialism literally grew roots.

Foreign plants were introduced, mostly by accident rather than by design; as Marsh pointed out, "man has intentionally transferred

fewer plants than he has accidentally introduced into countries foreign to them."[11] Intentional transfer of plants was of two kinds mainly. One was the transfer from the colonies to the mother country. Some of the imported plants were introduced to agriculture, but all of them were the empire's trophies, used to display the imperial power and glory in aristocratic gardens and, most gloriously, in Royal Botanic Gardens in Kew. In herbaria or gardens, collections of plants were the materialization of the dream of possessing all nature.[12] They were a sign of the successful war against nature. The landscape made with the use of these plants was an imperial one.

The plant material for these imperial landscapes was obtained by imperial methods. The plants were plundered, kidnapped, and—once the settlers established ownership titles—traded. Some pioneer lovers of native Californian plants, too, were engaged in that trade. Carl Purdy was one. While he was selling native plant bulbs to Europe by the hundreds of thousands, he complained that the "Indians" ate the bulbs he hired them to "dig for packing and shipping to Europe."[13] The famed naturalist Lester Rowntree was also pained by the sight of Native Americans eating lily bulbs for their evening meal, observing that one could not scare them off like a California thrasher.[14] Ironically, once in Europe, millions of those precious bulbs died because those who purchased them poorly understood the plants' need for summer dormancy.

Plant material traveled intentionally in the other direction as well. Those were mainly the plants intended for cultivation in the Americas, but some decorative plants came along too, in order to help the settlers feel at home in the foreign land. On the displanted native landscape, they created a "native" land for themselves. Foremost among the new "native" growth, which triumphed after the Civil War, was the iconic American lawn.[15] As the American horticulturalist Andrew Jackson Downing wrote at the time, when a growing population finishes the conquest of "its vast territory" and society becomes "more fixed in its character," the lawn is meant to create "a strong attachment to natal soil."[16] The American lawn, a green dead carpet, is one of the most poignant symbols of colonial domination and culture. I see it as the crown jewel of the colonial—as opposed to the imperial—landscape. The great expanse of the colonial landscape is, of course, made of and by industrial agriculture and settlements.

The same ships bringing agricultural and ornamental plants from Europe to the Americas brought another source of colonial landscape in their bowels: seeds mixed with the ballast. Those stowaways begot

the bastard colonial landscape, which was no less colonial than the lawn and the fields. Coloniality is not defined by the colonist's status within the colonial machinery, but by the power relation to the colonized, to the Indigenous, to the Native.

This "lumpenflora" (I use this word in analogy with the lumpenproletariat) may not have been a planned import, but it was still integral to and inseparable from the colonial power, and its relation to native plants and landscapes was an expression of this power. The lumpenflora not only grew in the colonial landscape, but made it grow. Colonial landscape never existed in an empty space, but in a space made empty of its previous inhabitants.

One would expect that those who oppose colonialism would not accept these inadvertently imported plants as "the new normality," as Alves says. By accepting them, one becomes "complicit with colonialism and its violence inflicted on land and bodies." However, abstract opposition to colonialism does not necessarily translate into a critical stance toward ballast flora. Instead, a certain cognitive dissonance seems to be at play when people reject the idea of colonialism yet welcome its material reality. Some appear to sympathize or solidarize with the ballast flora because of its bastardy, wildness, or subalternity. They imagine it as the other, as the opposite of power. They fail to see that the ballast plants are power plants; they are a face, an arm, a root, or even a flower, of colonial power.

Others still embrace these plants in the spirit of cosmopolitanism, inclusiveness, and xenophilia. They come to the defense of immigrant plants in the name of diversity. How could a "nation of immigrants" not welcome immigrant plants? This is a fallacious assimilation of the issues of botanical colonization to the matters of immigration politics in today's United States. It easily leads to blocking any questioning of imported, often invasive plants, or denouncing advocacy of native plants as anti-immigration, xenophobia, racism, nativism, and even Nazism. Taking ballast plants as one's own in the name of diversity and cosmopolitanism, however, may mean turning a blind eye to the brutal, murderous thrust of American history, and steer toward denying the American holocaust.[17]

So how are we to relate to the ballast flora? Alves mentions that, especially in Europe, there are questions from the audience about her work that attempt to "hijack the work for an anti-immigrant agenda."[18] Typically, such questions relate to invasive plants. In the absence of immigration policy in Europe (except for *ad hoc* dictates from the German government in response to the influx of refugees

from Western wars from Afghanistan to Libya), it is understandable that immigration is a sensitive issue. However, few people question the displacement of refugees by illegal wars on their countries, in which the European Union and its member states are complicit. Invasive plants are hardly an issue in this context, but associations with immigrants invariably arise when they are discussed.

The obverse position has currency in the United States, where the political Left tends to embrace invasive plants as a stance in opposition to anti-immigrant sentiments. The opposition to anti-immigration rhetoric and politics leads to the defensive of the non-native, invasive flora in dismissal of the concerns for native plants. Meanwhile, advocacy of native flora is summarily denounced as "nativist" or xenophobic. These hijackings of Alves's research of ballast flora for immigration agendas tend to lack knowledge about native or colonial plants and can, as such, be of little help for articulating an informed critical relation to the ballast flora.

Another position Alves mentioned, which commands more respect, is opening the question of "re-wilding the land."[19] I see the potential to do good here, but I am skeptical about the premise of the project, as "wilderness" was a concept invented by the American colonists. Moreover, it was an idea central to American colonialism, and it inspired and guided conservation policies, which did little good for the surviving Native peoples.[20] What colonialism destroyed was not wilderness, but tended land, cultivated landscapes, and Indigenous societies.[21] The idea of wilderness was that human hands had not interfered with nature. While it is not a bad idea to protect some of the remaining nature—however damaged it may be—from human enterprising hands, a better response would be to restitute some of the stolen lands to the Indigenous hands who know how to tend to and cultivate them. The answer is not to circle within the colonialist imaginary but to break out of it, to either recover or newly develop epistemologies that allow for a different relationship with the environment: to stop settlements, developments, growth, and "war of man against nature."

How would the ballast flora fare in a re-cultivated, as opposed to re-wilded, land? It is not up to me to say, but it is obvious to anyone who has ever tried to remove invasive plants that one cannot pull them all out. You can weed some, but it is a Sisyphean task. In a less dysfunctional society, one could introduce controls over the intentional or unintentional import of invasive foreign species. Reintroducing native plants seems advisable: restoring habitats not so much for our

human and transhuman selves, but for the surviving insects, spiders, birds, amphibians, and reptiles that are less adaptable to postmodern life than deer, squirrels, or foxes. The best use of the ballast plants in New York City may be to turn them into artifacts for something like an open, city-wide "museum of genocide."

(1) *The New York Daily Tribune* articles were later published as a book in German, which I cite: Bruno Bauer, *Russland und das Germanenthum* (Charlottenburg: Verlag von Egbert Bauer, 1853), 80. (All non-English quotes are translated by the author.)

(2) Maria Thereza Alves, notes from the artist's archive, made available by the VLC.

(3) George P. Marsh, *Man and Nature*, ed. David Lowenthal (Seattle: University of Washington Press, 2003), 28.

(4) Thomas Hobbes, "Behemoth, or the Long Parliament," *The Clarendon Edition of the Works of Thomas Hobbes*, ed. Paul Seaward (Oxford: Oxford University Press, 2010): 107. https://doi.org/10.1093/oseo/instance.00006907.

(5) Marsh, 2003, 36.

(6) Ibid, 53–54.

(7) Francis Bacon, *The Essayes or Covnsels: Civill and Morall* (London: Printed by John Haviland for Hanna Barret, 1625), 198.

(8) John Smith, *The Generall Historie of Virginia, New-England, and the Summer Isles* (London: Michael Sparkes, 1624), 72.

(9) See Tomaž Mastnak, Julia Elyachar, and Tom Boellstorff, "Botanical Decolonization: Rethinking Native Plants," *Environment and Planning. D. Society & Space* 32, no. 2 (2014). I want to acknowledge how much I benefited from working with my co-authors on this article, on which they kindly allowed me to draw.

(10) Jules Michelet, *Introduction à l'histoire universelle* (Paris: Librairie Classique de L. Hachette, 1831), 1.

(11) Marsh, *Man and Nature*, 61.

(12) Richard Drayton, *Nature's Government: Science, Imperial Britain, and the 'Improvement' of the World* (New Haven: Yale University Press, 2000).

(12) Judith Larner Lowry, "Lester Rowntree's Horticultural Legacy," in *Hardy Californians: A Woman's Life with Native Plants*, ed. L.B. Rowntree (Berkeley and Los Angeles: University of California Press, 2006), lxxii–lxxiii.

(13) Lester Rowntree, *Hardy Californians: A Woman's Life with Native Plants* (Berkeley and Los Angeles: University of California Press, 2006), 208.

(14) Mastnak, Elyachar, and Boellstorff, 2014.

(15) A. J. Downing, *A Treatise on the Theory and Practice of Landscape Gardening, Adapted to North America* (New York: George P. Putnam, 1853), viii.

(16) David E. Stannard, *American Holocaust: The Conquest of the New World* (Oxford: Oxford University Press, 1992).

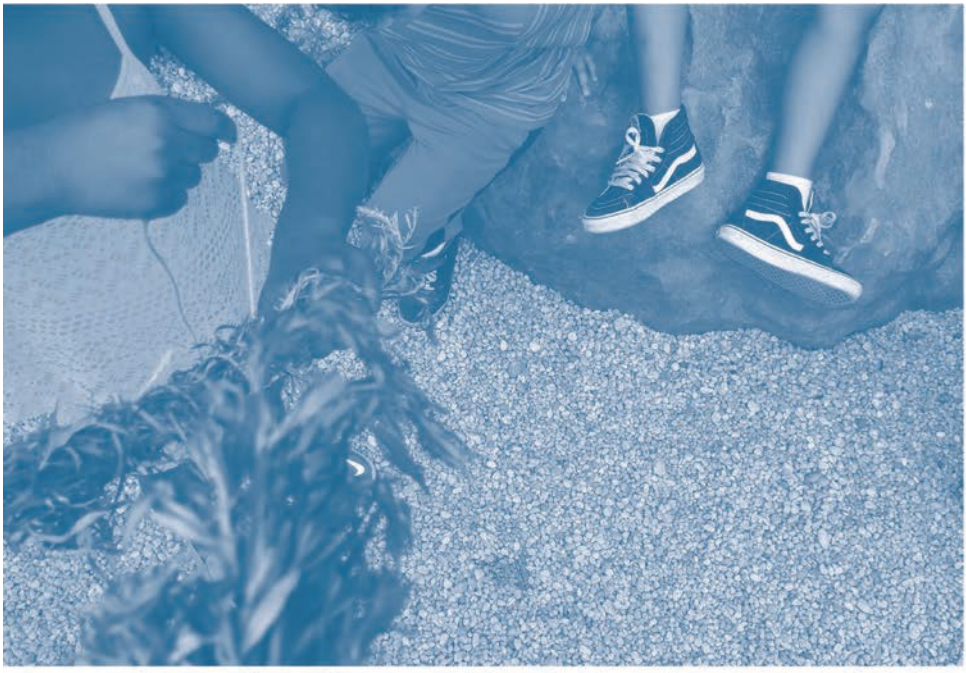
(17) Maria Thereza Alves, notes from the artist's archive, made available by the Vera List Center.

(18) Ibid.

(19) Thomas Blackburn and Kat Anderson, "Introduction: Managing the Domesticated Environment," *Before the Wilderness: Environmental Management by Native Californians* (Banning, CA: Malki-Ballena Press, 1993), 15.; cf. Roderick Nash, *Wilderness in the American Mind* (New Haven, CT: Yale University Press, 1967).

(20) M. Kat Anderson, *Tending the Wild: Native American Knowledge and the Management of California' Natural Resources* (Berkeley and Los Angeles: University of California Press, 2005).

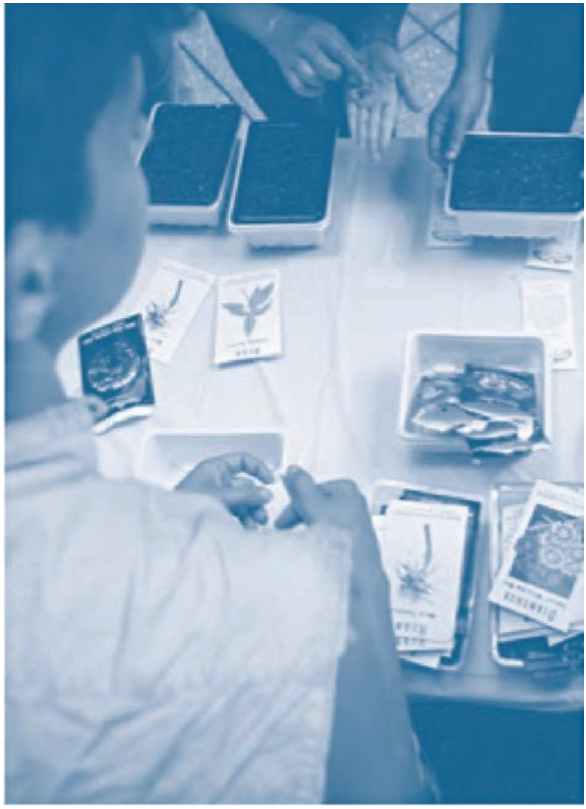
Marisa Prefer



In late summer, the shores of *Ihepetonga*–the Lenape name for Red Hook, Brooklyn–are teeming with worldly vibrance. *Chornobyl Polyn zvychajny* from Ukraine, (Mugwort, or *Artemisia vulgaris* in Latin); *Chenopodium murale* from Greece (Nettle-leaf goosefoot, or "a little foot of the walls" in its Latin name); and *Liu Chuan Yu* from Central Asia and Siberia (Toadflax, or *Linaria supina*) cling to ballast soil beneath ruptured pavement. Winds sweep through chain link fences guarding vacant lots, and seeds of this generation are released. Seeds hold memories in their DNA, carrying information from ancestors about when to germinate in new locations and when to lie dormant. Each generation gains traits by cross-pollinating with nearby related species while providing food for bees and butterflies who gather their pollen and nectar. Winter is a time for storing energy, when seeds gather strength to germinate quickly once exposed to the early spring rains and changing light. Some call these plants weeds, outliers or "invasive"; they are also kin, neighbors and mothers.

"Wild" plants have co-evolved with humans for millions years, providing essential amino acids in our diets while also forming symbiotic fungal and bacterial communities with other kin underground. As *Chornobyl Polyn zvychajnyj* emerges around industrial urban sites, its rhizomatous roots form dense mats that breaking up the asphalt above. *Chornobyl* is a phytoaccumulator, a plant that can absorb toxins and poisonous heavy metals from the soil and store pollutants in its biomass. In traditional Ashkenazi medicine, *Chornobyl* is used as a bitter stimulant for the circulatory and nervous systems and for the relief of abdominal cramping, externally as an anti-inflammatory and also an energetic cleanser when it is tucked underneath a pillow at night or dried and burned.

Brushing past *Kropyva* (Stinging nettle or *Urtica dioica* in Latin), one feels tiny hairs on its stem invite penetration of human skin. *Kropyva* has been used for generations in Ukraine, Poland and Greece in a practice of urtication, or beating of oneself with the plant for the circulation of blood, bringing on simultaneous pain relief and onset of burning symptoms. *Kropyva* grows wild on the banks of rivers in waste places, where detritus and excess nitrogen gather. It is a highly nutritive, tonic plant that has anti-histamine and anti-inflammatory properties, and can help to regulate many human body systems when consumed internally.




100+
Lettuce
serriola

These "wild," "alien" plants cling to the edges, areas full of things we'd rather ignore. Commingling with everything that collects at the shoreline—tiny shards of metal, pet excrement, and errant plastic waste—weeds are opportunists, migrants from across seas, having traveled at the behest of human captors. *Chornobyl* has stories to tell, if we hone our listening skills and make time to hear them. The histories of their migration are embedded in our stories, but plants have a more-than-human access to history. Their languages are of light, breeze and temperature, of abundance and lineage.

MARIA THEREZA ALVES (Brazil, 1961/lives in Berlin) has participated in Quito Panamerican Biennale (2021), the Ural Biennale (2021), Sydney Biennale (2020), Toronto Biennale (2019), Manifesta 12 in Palermo and 7 in Trento, São Paulo Biennale (2016 and 2010), Berlin Biennale 8, Sharjah Bienale (2017), dOCUMENTA (13) in 2012, Taipei Biennale (2012), X Lyon Biennale (2009), the Guangzhou Triennale 3 (2008), and the Second Havana Biennale among others. She has had a solo exhibit at the banks of the Paraguay River between the borders of Bolivia and Brazil in 1992, La Estación Gallery in Cuernavaca, Mexico in 1990, MUAC in Mexico City in 2015, and at CAAC in Seville in 2015 among others. Alves is the recipient of the Vera List Prize for Art and Politics 2016–2018. In 1978, as a member of the International Indian Treaty Council, Alves made an official presentation of human rights abuses of the indigenous population of Brazil at the UN Human Rights Commission in Geneva. Alves was one of the founding members of the Green Party of São Paulo in 1987. Alves's recent books are *Recipes for Survival* published by University of Texas Press, and *Thieves and Murderers in Naples: A Brief History on Families, Colonization, Immense Wealth, Land Theft, Art and the Valle de Xico Community Museum in Mexico* published by Di Paolo Edizioni. In 2018, Alves founded along with Jimmie Durham LABINAC, a design collective, with the dual purpose of designing and making things and supporting the craft works of Indigenous peoples in Latin America.

KATAYOUN CHAMANY, PhD is the Mohn Family Professor of Natural Sciences and Mathematics at Eugene Lang College for Liberal Arts at The New School. As a Leadership Fellow for Science for New Civic Engagements and Social Responsibilities (SENCER), Katayoun supports the transformation of life science curricula utilizing a STREAMD (STEM + Responsibility, Arts, and Design) framework. She is the recipient of the SICB John A. Moore Award for Science as a Way of Knowing, and the SENCER William E. Bennett Award for Extraordinary Achievements in Citizen Science. She holds a PhD in Cell and Molecular Biology from UC Berkeley.

SETH DENIZEN is a researcher and design practitioner trained in landscape architecture (MLA) and human geography (PhD). His work is multidisciplinary, addressing art and design, microbial

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JEAN FISHER (1942–2016) was a UK-based art critic whose research explored colonialism in Ireland, Native America, the Black Atlantic and Palestine. She was a regular contributor to Artforum International, and was editor of Third Text from 1992 to 1999. [TK]

YRJÖ HAILA is professor emeritus of environmental policy at the University of Tampere, Finland. He defended his PhD thesis in ecological zoology, with philosophy as secondary subject, at the University of Helsinki. Later on he focused on ecological changes in environments intensively modified by humans such as cities and commercially managed forests, and more theoretically on the nature–society interface. He has published *Humanity and Nature* (with Richard Levins; Pluto Press, 1992), and *How Nature Speaks. The Dynamics of the Human Ecological Condition* (co-edited with Chuck Dyke; Duke University Press, 2006), and several books in Finnish.

RICHARD WILLIAM HILL is the Smith Jarislowsky Senior Curator of Canadian Art at the Vancouver Art Gallery. From 2015 to 2021 he was Canada Research Chair in Indigenous Studies at Emily Carr University. He also taught art history at York University, beginning in 2007 and leaving as Associate Professor in 2015. As a curator at the Art Gallery of Ontario, he oversaw the museum's first effort to include Indigenous North American art and ideas in permanent collection galleries. Hill's essays on art have appeared internationally in numerous books, exhibition catalogues and periodicals.

HELI JUTILA studied biology, geography, and environmental sciences at the Turku University, where she graduated with an MSc in 1989 and a doctorate in 1999. She achieved an MBA, with distinction, from Swansea Metropolitan University in 2008, and a certificate for environmental sampling in 2014. Jutila worked in the city of Hämeenlinna in environmental planning and inspection from 1991–2019. She has served as Executive Director at Pohjanmaa Water and Environment since 2019. Jutila has also worked in the Finnish Environment Institute, Agricultural Research Center, and the Finnish Game and Fisheries Institute, and has taught at the University of

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J. KĒHAULANI KAUANUI is Professor of American Studies and an affiliate faculty member in Anthropology at Wesleyan University, where she teaches courses related to Indigenous sovereignty, settler colonialism, anarchist history and activism, and critical race theory. Kauanui is the author of *Hawaiian Blood: Colonialism and the Politics of Sovereignty and Indigeneity* (Duke University Press 2008) and *Paradoxes of Hawaiian Sovereignty: Land, Sex, and the Colonial Politics of State Nationalism* (Duke University Press 2018), and editor of *Speaking of Indigenous Politics: Conversations with Activists, Scholars, and Tribal Leaders* (University of Minnesota Press 2018). She is one of the six co-founders of the Native American and Indigenous Studies Association.

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CARIN KUONI is a curator and writer whose work examines how contemporary artistic practices reflect and shape social, political, and cultural conditions. She is senior director/chief curator of the Vera List Center for Art and Politics at The New School and assistant professor of Visual Studies. She has curated numerous transdisciplinary exhibitions, and is editor or co-editor of several books among them *Energy Plan for the Western Man: Joseph Beuys in America*; *Considering Forgiveness*; *Entry Points: The Vera List Center Field Guide on Art and Social Justice*; Assuming Boycott: Resistance, Agency, and Cultural Production; *Forces of Art: Perspectives from a Changing World*; and *Studies into Darkness: The Perils and Promise of Freedom of Speech*.

A writer, editor and researcher based in Berlin, WILMA LUKATSCH (Dr. Phil.) has graduate degrees in Art History, History of Religions and Sociology from the Freie Universität Berlin and the Humboldt-Universität of Berlin. She has since worked with artists and is focusing on developing a dialogue-based writing practice in close exchange and collaboration. She wrote her doctoral thesis on the interrelational practices in works of Maria Thereza Alves and asked for decolonial terms and methodologies to understand and re-vision arthistory, artworks and artists voices in the twenty-first century.

TOMAŽ MASTNAK is an emeritus director of research at the Institute of Philosophy, Research Centre of the Slovenian Academy of Sciences and Arts in Ljubljana. He works on the history of political and social thought. His latest book is *Bonapartism: A Prolegomenon to the Study of Fascism* (in Slovenian).

MARISA PREFER works across disciplines to cultivate care among multispecies communities, serving as a horticultural consultant with artists and cultural institutions to shape exhibitions, curricula, programs and workshops that connect people within their ecosystems. Marisa stewards unceded Canarsie and Munsee Lenape lands (Brooklyn, New York) as the Manager of Sustainability and Environmental Engagement at Pioneer Works, applying skills as an educator and herbalist to projects that are centered around plants, environmental justice and empowerment.

RADHIKA SUBRAMANIAM is a writer and curator with an interdisciplinary practice. Through text, exhibitions, and public interventions she explores the poetics and politics of crises and surprises, particularly human/non-human relationships, cities and crowds, migration and mobilities, walking, and art. She is Associate Professor of Visual Culture at Parsons School of Design/The New School where she was also the first Director/Chief Curator of the Sheila C. Johnson Design Center.

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The Vera List Center for Art and Politics is a research center and public forum for art, culture, and politics. A pioneer in the field founded at The New School in 1992, the center serves a critical mission: to examine, teach, and learn from the intersection of art and politics; to advocate for art as a practice that responds to as it shapes political contexts; and to foster and support vibrant, diverse, and international networks of artists, scholars, students, and policymakers who take creative, intellectual, and political risks to advance social justice in their communities.

Named in honor of philanthropist Vera G. List (1908–2002), the center is the only institution committed exclusively to leading public scholarship on the intersection of art and politics. Along biennial thematic investigations, the center initiates interdisciplinary events and classes, prizes and fellowships, publications, exhibitions and the annual Vera List Center Forum that probe pressing issues of our time. The center is committed to dismantling hierarchies of teaching and learning, nurturing emerging voices, and supporting artists in their crucial work of imagining better worlds.

Seeds of Change is the seventh book in Vera List Center's print publication initiative, following *Considering Forgiveness* (2009); *Speculation, Now* (2014); *Entry Points: A Field Guide on Art and Social Justice* (2015); *Assuming Boycott: Resistance, Agency, and Cultural Production* (2017); *ART, An Index to (see also POLITICS): 25 Years of Vera List Center Fellowships* (2018); and *Studies into Darkness: The Perils and Promise of Freedon of Speech* (2022).

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Seeds of Change is co-published by Amherst College Press and the Vera List Center for Art and Politics at The New School.

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In 1919, a few great minds imagined a school that would never settle for the status quo, one that would rethink the purpose of higher learning. The New School was the result. Today it is a progressive university housing five extraordinary schools and colleges. It is a place where scholars, artists, and designers find the support they need to unleash their intellect and creativity so that they can courageously challenge conventions. We dissolve walls between disciplines to create communities in which journalists collaborate with designers, architects with social researchers, artists with activists. Our academic centers in New York City, Paris, Shanghai, and Mumbai offer over ten thousand students more than one hundred and thirty-five undergraduate and graduate degree programs uniquely designed to prepare them to make a more just, beautiful, and better-designed world.

JANE LOMBARD PRIZE FOR ART AND SOCIAL JUSTICE

The New School's Jane Lombard Prize for Art and Social Justice is awarded by the Vera List Center for Art and Politics to an artist or group of artists in recognition of a particular project's long-term impact, boldness, and artistic excellence. International in scope, it constitutes a unique meeting of scholars and students, the general public, and globally significant artists. The prize initiative unfolds over a two-year period and provides a multilayered platform for artists as agents of social and political change. Key features of the prize initiative include a financial award of $25,000, a limited edition artwork created for the prize by Yoko Ono, an academic residency at The New School, an international conference, an exhibition of the winning project, multimedia resources offered to artists, scholars, and the public around the world, and a publication.

The prize has been awarded five times. Theaster Gates was the inaugural recipient, recognized for *Dorchester Projects*, an examination of racism, belief, and objecthood in Chicago's South Side, during the 2012–2014 cycle. Abounaddara, an anonymous film collective documenting the crisis in Syria, was awarded the prize during the 2014–2016 cycle. Berlin-based Brazilian artist Maria Thereza Alves was awarded the prize during the 2016–2018 cycle in recognition of her long-term project *Seeds of Change*, which explores the myriad ways in which colonialism, commerce, and migration have shaped our modern

world. The 2018–2020 prize was awarded to Chimurenga for their Pan-African Space Station, a virtual and material space that reflects on political histories and memories in the Pan-African communities. Avni Sethi was the 2020–2022 prize recipient for Conflictorium, a museum of conflict in Ahmedabad, India.

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Maria Thereza Alves for *Seeds of Change*

Jury Citation

"The jury unanimously awards Maria Thereza Alves the Jane Lombard Prize for Art and Social Justice for her boldness in addressing through art urgent questions of resistance to the homogenization of life itself. By reimagining the historical geographies of the contemporary world, she practices globalization from below to understand the planet as a holistic ecology. *Seeds of Change*, since 2002, tracks the routes of transport of goods and people while making visible the dormant potentialities of soil, seas, and people. Artistic excellence is expressed across mediums and Alves's critical practice inside and outside of the art world is key to the precise forms of impacts her projects achieve."

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Maria Thereza Alves: Seeds of Change documents and expands on twenty-two years of Maria Thereza Alves's groundbreaking visionary project *Seeds of Change*. We are delighted to present this publication on occasion of the third biennial Jane Lombard Prize for Art and Social Justice, which was bestowed on the artist for this project and accompanied by the exhibition Maria Thereza Alves, *Seeds of Change: New York—A Botany of Colonization*. Curated by the Vera List Center, the exhibition was presented at the Sheila C. Johnson Design Center, Parsons School of Design, The New School, in November 2017.

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This book is dedicated to Jimmie Durham.

Maria Thereza Alves:
Seeds of Change

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