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L'IMAGE

Publication details, including open access policy
and instructions for contributors:

<http://imaginations.glendon.yorku.ca>

Critical Relationality: Queer, Indigenous, and Multispecies Belonging Beyond Settler Sex & Nature

July 25, 2019

To cite this article:

Duncan, Sophie. "The (Un)Natural Archive." *Imaginations*, vol. 10, no. 1, 2019,
pp. 61–99. doi:10.17742/IMAGE.CR.10.1.4.

To link to this article:

<http://dx.doi.org/10.17742/IMAGE.CR.10.1.4>



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INTRODUCTION TO THE (UN)NATURAL ARCHIVE

SOPHIE DUNCAN

In herbaria around the world, there are millions of plants pressed flat, mounted, dried, and stored for hundreds of years. Their labels tell a story that in many ways says as much about the humans who collected them as the plants they describe. The narrative that emerges from this natural history archive tells a story about the plant kingdom rooted in racialized and gendered hierarchies. Textbooks, curriculum, and the scientific canon have absorbed this story, repeating these tales until these hierarchies are treated as scientifically true.

I am invested in troubling these hierarchies. They create a science that tells a limited a story about how relating happens in the world. This story in turn deems these hierarchies as natural. Disrupting this narrative using the natural history archive can show how these violent hierarchies became “natural” and reveal ways of relating that disrupt this narrative of naturalized power relations.

As a plant scientist, I have studied how phylogenies (the way organisms are related to each other) and scientific systems of classification are powerful forces that characterize “relatedness” according to a specific set of principles. My exposure to history, critical theory, and social science has shown me how these ways of characterizing and categorizing lifeforms has contributed to how systems of power assign value to racialized and gendered bodies. Although a rich body of work in the humanities and social sciences addresses these legacies, scientists (for the most part) ignore these efforts.

The following images emerged as a part of my efforts to connect these histories of colonial violence to the current toxic cultures that permeate scientific communities and the communities influenced by science.

This project for me has been an entry point into a conversation with scientists, artists, and historians. However, it is limited in its scope and I want to name and acknowledge its limitations so that my project does not continue to erase the stories absent from it. First and foremost, I am a white plant scientist and this shapes the work I do and art I create. Additionally, the image series and accompanying essays do not pretend to be rooted in critical theory or analysis. Rather, they are my reflections as a scientist, shaped by extensive reading, dialogue, and the guidance of mentors.

I developed these images as a way for scientists to see science differently, by embedding the traditional, hagiographic, ahistorical, hero-driven version of science history in its context. I am saying all of this because I am aware of the limitations with which I approach this project, do not claim expertise, and do not want to reproduce the violence I am trying to address. There are glaring absences in this work that I will name. This project began while working in a natural history archive and conducting scientific research, when I began to interrogate standard narratives of science and scientific language. Having the scientific canon and natural history archive as my starting place centers whiteness and colonial power. Although I highlight the problems with legacy of the Linnaean classification system, I do not explicitly discuss specific Indigenous classification systems and nomenclature (see Kimmerer, *Geniusz*). This does not mean to imply that they do not exist.

Through this project I speak to a small piece of a giant story, but I also realize that the absences in my work potentially reproduce elements of the system I hope to change by centering the relationships among whiteness, colonial power, and science. There is significant work that has been done in reimagining futures for science predicated on justice and reparations and documenting this work in the past and there is so much more to do. These images are a tiny and incomplete piece of this puzzle.

This story begins when I fell in love with plants and started asking questions. As soon as I began encountering Latin names in scientific texts I was surprised by the familiarity of the language. I wanted to know why the name of what I knew as the American beech (*Fagus grandifolia*) echoed the Eclogues of Virgil (*fagus*) and Idylls of Theocri-

tus (Φηγός). These etymological roots reveal history that links plants from all over the world back to the Greco-Roman world through these Latin names. I wanted to follow these threads connecting language, places, and plants to understand why *Fagus* became part of the official name for a tree neither Virgil (70-19 BCE) or Theocritus (260 BCE) ever knew, oceans away.

I started asking questions and found myself in the middle of a web of classics, botany, and histories of colonization that led to the creation of the (Un)Natural Archive, a series of images motivated by this quest. As someone who worked in a “natural” archive, an herbarium where botanists store dried and pressed plants as a reference library for plant identification, I wanted to interrogate how this archive reinforced a white-washed natural history, stripped of its context and stored for later. I also wanted to reimagine an archive that tells a true story and makes space to center the stories at the margins of this history. This project does not attempt to decolonize³ but rather draw attention to how colonialism has shaped botany and other scientific practices. My goal is to question the scientific practices that insidiously erase the history of violence associated with “scientific discovery” and “enlightenment exploration” and shed light on how contemporary science perpetuates this historical violence.

OVERVIEW OF IMAGES

These images pave a path through history to illuminate the inextricable links between power, history, and science. Collage features prominently in these images to highlight how different layers of history, words, and languages tell a nuanced and complicated story of how plants touch our lives. I use certain media and processes, such as cut-outs and cyanotypes, to acknowledge the work of women, such as Mary Delany and Anna Atkins, who made contributions to science through these media. However, I also want to recognize the complicity of many of these women, and in particular white women, in scientific imperialism. As a white, female scientist, I am aware of and always trying to find the balance between honouring the overlooked and ignored contributions of these women to science and also recognizing their complicity in colonial science.

Too often, women scientists, particularly those who use visual art, receive the label of hobbyists, amateurs, or artists lacking scientific rigor. The cut-outs (paper reconstructions of plants) honour the work of Mary Delany (1700-1788), who never received the scientific recognition for her anatomically accurate and highly detailed cut-outs of plants, which scientists regularly used as references (see Laird et al., 2009). I also included cyanotypes in my collages to echo the work of Anna Atkins (1799-1871), a botanist and the first female photographer who made photographic prints of biological specimens through cyanotyping, which uses the sun to capture the shadows of objects.

Both cut-outs and cyanotypes require some sort of emptiness. While both capture certain features of plants, such as leaf shape, with perfect accuracy, the process of making each image requires leaving something out. By its very nature, cut-outs require the removal of paper surrounding the desired object. While cyanotypes represent the shadow, they do not reflect the colour or details of the object casting the shadow. This process of making images reflects how the material archive of natural history often featured in museums, curiosity cabinets, and herbaria have gaps and empty spaces in the stories they tell, reinforcing certain narratives about what is “true,” “natural,” and “right” for both humans and nature.

I also constructed many of the images as reinterpretations of herbarium specimens that capture the plants’ social and political context. A traditional herbarium specimen consists of a plant, pressed flat and dried, mounted on white paper with a scientific label in the lower left corner. This label contains the scientific name of the plant, the collector, and location of its collection. The scientific name of the plant consists of the genus and species. Next to the genus and species name is the “author” of the plant, the person first credited with its “discovery” and identification.

The practice of collecting herbarium specimens is based on a method established by Luca Ghini (1490-1556), an Italian botanist. Botanists typically collect plants for pressing in newspaper due to the convenient size. These newspapers capture the historical and social moment in which the botanist collected the plant. However, during mounting, none of this contextual information makes its way onto the white page

that contains the plant and its label. Like the cut-outs and cyanotypes, a mounted herbarium specimen represents context left behind. All of the newspapers (and plants) featured in this project come from either my own personal plant collections or the herbarium where I conducted my research. In addition, keys feature prominently in these images. These keys come from the cabinets of this herbarium.

Finally, I hope that these images draw attention to the margins. Both literal and figurative margins feature prominently in this project. By drawing attention to the margins, I am questioning what is centered on the pages of natural history archives and why. Marginalia frequently appears around herbarium specimens, reflecting the thoughts of different botanists about the specimen at hand. Through these images, I have created my own annotations and questions about the plants I have collected and constructed.

Image One—Introduction by way of a self-portrait

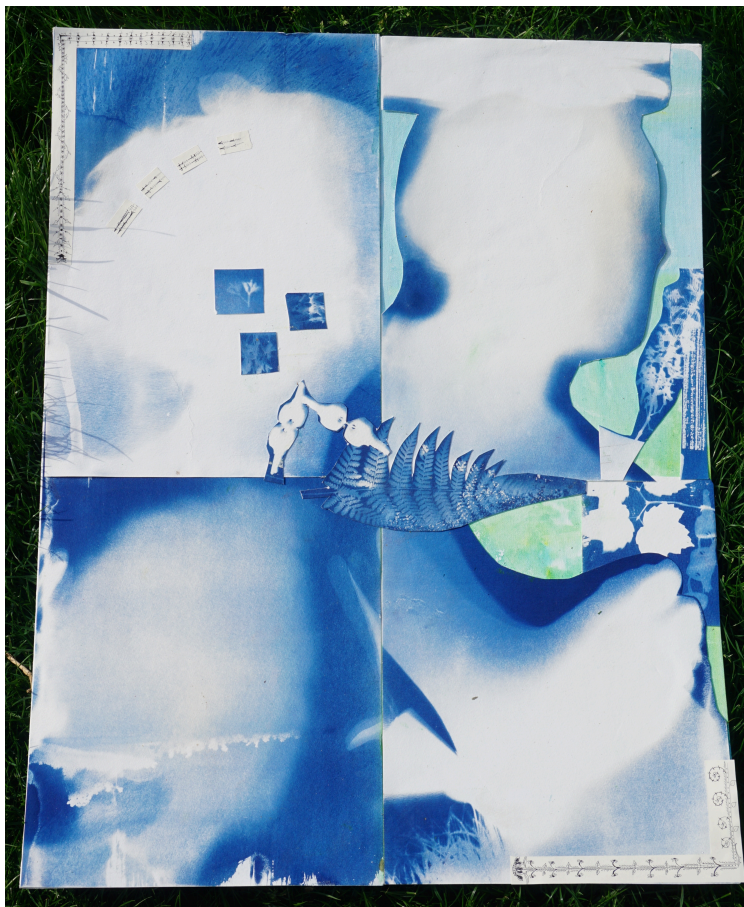


Image One—Introduction by way of a self-portrait

In a 2016 YouTube video and an accompanying *New Yorker* and *New York Times* article, renowned classicist Mary Beard illuminates the link between misogyny in ancient Rome and the cyber-bullying she faces as a female academic in the 21st century: “The gloomiest way of describing the ancient world is it is misogyny from A to Z, really...we have never escaped a certain male cultural desire for women’s silence”

(Women in the World). In a similar vein, I hope to illuminate threads that connect the ancient with the modern and shed light on how the knowledge we inherit shapes the fields that we study and the questions that we ask. The first image in the series is a self portrait, to root my science, art, and writing in my body and self. This self-portrait is the first image in the series to ground this work in my identity and to be upfront about my unconscious biases.

In my own experience, becoming a female scientist has come with challenges typical of women in STEM (Science, Technology, Engineering, and Math), and as Mary Beard's statements indicate, of women in the world. In addition to the individual sexist encounters I regularly experience, the institutionalized culture of STEM makes me, like Mary Beard, ask what cultures of misogyny contributed to the construction of this present-day phenomenon. As a queer, female ecologist, I face additional barriers, which force me to ask why and how this came to be (see Becker). Despite the barriers I have faced as a female scientist, I am a white, settler ecologist who has profited from and is complicit in a field of science that has its roots in colonialism and the Transatlantic slave trade. Through the immaculate record left by natural historians, I can trace their steps backwards—from my experiences today to the invasion of America by colonizers, and even further back to Pliny's (23-79 AD) descriptions of imperial gardens in Augustan Rome.

Image Construction

This self-portrait features shadows of my face and feet. While cyanotypes capture my profile, they do not capture more specific details, so I added cutouts of key features to accurately portray myself. Cyanotyping required me to be outside. I chose to create a portrait using cyanotypes given how much time I devote to being outside as a botanist.

In the top-right quadrant I have my hand above my head and am sniffing a cut-out creosote cyanotype. The lower-left quadrant's portrait is less evocative of a human profile. I chose to include this print to represent how the same thing can appear so differently. As part of my project to reimagine the herbarium specimen and natural history, I wanted to ground my representation of self in this theme of recasting familiar themes and images in new lights.

In the lower-right quadrant I included my foot, as part of my body constantly connecting me to the ground. The print captured the shadows of grass as well. So much of my work is connected to land and the context for my relationship to land as a settler ecologist.

In the *Eclogues* Virgil (70 BC- 19BC) uses the *Fagus* (beech tree) to evoke Northern Italy and the stakes of land ownership (Leigh). During my own fieldwork, I have encountered the genus *Fagus* oceans away from Virgil's terrain. Virgil's *Fagus* operates as an indicator of land ownership and political strife in the *Eclogues*, and also evokes Theocritean uses of the Greek origins of *Fagus*, φηγος (Leigh). When Carl Linnaeus consolidated the system of European classification, producing a Latin system of binomial nomenclature referring to organisms by their genus and species' name, *Linnaeus* introduced *Fagus* into the permanent scientific lexicon: "Latin as the universal language of botany in the eighteenth century, was capable of assimilating names from many other world languages" (Laird and Weisberg-Roberts). Linnaeus' student, Jakob Friedrich Ehrhart, authored *Fagus grandifolia* Ehrh. (American Beech), which is native to the Eastern United states. Authoring plants occurs when a "new" species is "discovered"—the "discoverer" gives the species a Latin, scientific name and the "discoverer's" initials, in this case "Ehrh.," appear as part of the plants' scientific name.

Through these relationships, the plant name that Virgil so heavily imbued with meaning comes in direct contact with a plant that Virgil never saw. Similar to the strife associated with the contestation over land in Italy that Virgil described, in an American context the beech is also a symbol of conflict over land ownership (Go Botany). Daniel Boone, a pioneer on behalf of Manifest Destiny, marked his westward journey on beech trees (Go Botany). Given Boone's active participation in land appropriation from and genocide of Indigenous people, his symbolic etchings on beech trees bring Virgil's interrogation of empire and land ownership into an American context via the word *Fagus*. However, the application of the Latin word *Fagus* to all beech trees, including the American beech (*Fagus grandifolia*), erases, appropriates, and assimilates Indigenous botanical names and knowledge by establishing the universal "scientific" lexicon as Latin and crediting Ehrhart as the author.

This erasure created by the celebrated Linnaean system raise questions regarding whose voices this system represents and why these voices are heard while others are silenced.³ Exploration, the exploitation of people and natural resources, imperial expansion, and profit together form

the underpinnings of the system of binomial nomenclature. The employment of botanists and doctors with an eye for herbal medicine by “exploration expeditions” often for slave-trading companies, such as the Dutch West India Company and the British East India Company, made it possible for botanists to collect plants to take back and use for imperial economic enrichment.⁴

The fact that “few in the eighteenth century agonized over who owns nature,” meant that in constructing his naming system, Linnaeus did not take into account the longstanding practice of appropriation embedded in his system of classification (Schiebinger 17). The establishment of ownership over plants by naming them led to the appropriation of profits associated with those plants claimed by European explorers and settlers. For example, “The genetic resources possessed by peoples and nations in the tropics...were not protected by international agreements until 1992” (Schiebinger 16). While many books have been written on the topic of colonial botany, my goal is not to rehash these arguments but rather to explain them in order to situate the images I have constructed historically and question the ways of relating sanctioned by the natural history archive.

Image Construction

The painted bottom-center image of this illumination is the *Fagus grandifolia* Ehrh., the American beech. The white spaces within the outline of the leaves represent the empty spaces in the archive that the Linnaean system excludes. The illuminations around the edges address these issues; below the *Fagus* painting are the opening lines from Vergil’s *Eclogues* to evoke the *Eclogues* and the relationship between people, power, and land that Virgil addresses with his use of *Fagus*.

The middle cyanotype and top painting are of *Medeola virginiana* L. (indian cucumber root).⁵ The cyanotype of *Medeola virginiana* contains my hand and slides of Medieval and Renaissance imagery. The presence of my hand acts as a reminder that despite the centrality of the plants in this illumination, the identity of the collector and the plants’ context have equal importance. Moving out from the centre, the magazine snippets are positioned to contrast articles about the joys of urban gardening with information about housing segregation and

redlining. The illuminations around the edges introduce some of my guiding themes:

Where this journey begins: I love plants, I love seeds, I love Latin, I need context...Why is Latin used to formalize plant names what does that say about power (and empire)? When I Google 'father of botany' it is recognized as an official term with many men (like Theophrastus and Linnaeus), but when I Google "mother of botany" I get no one. Plants live all over the world. Why do a few men from Europe get the paternity rights to Earth's flora? *Fagus grandifolia* carries through its genus ties to the *Fagus* of Virgil's *Eclogues* and the Theocritean *φηγαύς* (Image Two: Enjoy your garden world).

While subsequent images address either explicitly classical or modern motifs, this image seeks to display the connection between plants and their names over time.

Image Three: A Field Guide to Roman Imperialism in Three Plants



Image Three: A Field Guide to Roman Imperialism in Three Plants

I have reconstructed a garden image from the Villa of Livia—a first century BCE dwelling north of Rome that belonged to the wife of the Roman Emperor Augustus—to represent how Roman culture relied on foreign plants introduced through conquest and trade routes created by imperial expansion. Sources, such as Pliny the Elder, Apicius, or Diocletian’s Edict on Maximum Prices, as well as archaeological and archaeobotanical evidence provide insight into many plants that had a profound influence on the Roman economy, diet, and landscape. To construct my re-representation of the Villa of Livia, I chose to focus on three plants: cinnamon, black pepper, and the balsam tree. Each of these plants provides a window into how Romans interacted with non-Romans through plant exchange, setting the foundation for the xenophobia, language, and gendering applied to plants in modern ecology. Similar to how Mary Beard traces the roots of misogyny in her work as a classicist back to the ancient world, I am tracing the roots of colonial botany to the ancient Greco-Roman world.

There is no coincidence that Latin is the official scientific language and the Roman Empire practiced imperial botany. Romans displayed their wealth in their gardens: “part of the governing class’s income could be used for embellishing cities, temples, and great houses with gardens...cultural traffic between the Classical Greek world and the Middle East brought the idea of the garden to Europe” (Vercelloni, Vercelloni, and Gallo 14). The history of the garden as a foreign concept naturalized in Roman society mirrors the trajectory of many of the plants grown in these gardens. The relationship between Alexandria and Greece, and their ultimate conquest by the Roman empire, reflects the role of conquest in transferring knowledge about the natural world: “It was probably Alexandrian culture that brought the ancient idea of Egyptian and Eastern gardens to Greece, whence it spread to Rome and the rest of Europe” (Vercelloni, Vercelloni, and Gallo 15).

This relationship between war and plants manifests in a multitude of ways: through trade networks established via conquest, the search for plants with economic value, and the integration of spices as a regular part of the Roman diet. Simultaneous to the “discovery” and distribution of exotic spices that accompanied imperial expansion and trade, the Roman Empire enslaved non-Romans people.⁶ The commodification and objectification of people from outside the empire accompa-

nied the introduction of non-native plants and spices. Trade networks both outside of and within the empire ensured that foreign spices could be shared in common among all Romans dispersed across the empire. Their view of these plants as exotic further cemented the distinction they had constructed between themselves and non-Romans: “Ideas about exotic trade goods and their ritual use did not travel intact as far as the goods themselves did. This fall-off in idea exchange explains how Mediterranean trade relations beyond the Roman...contributed to the Roman/Mediterranean center’s association of those spices and places with magic” (Pollard 1). The “magic” associated with unknown cultures is evocative of contemporary exotification and ways of cross-cultural interaction predicated on consumption.

This characterization of Roman encounters with “the other” through plants is not to say that Romans never interacted with or respected non-Romans, but rather is to emphasize the roles that plants and empire played in mediating Roman identity. The incorporation of spices from non-Roman places into the Roman diet allowed Romans to enjoy foreign plant products without interrogating “Romanness” in the context of empire.

These differing attitudes towards plants and people reflect the Roman desire to reap the rewards of conquest without addressing the human cost. Although the “magic” connotation might seem positive, it further disassociates Romans from the sources of these mystical spices and through exotification allows them to maintain a uniformed and nebulous image of the places and people providing the plants. Gardening non-native plants allowed Romans to incorporate the fruits of other cultures into Roman culture without interacting with people from other cultures, echoing modern-day false promises of multiculturalism. Roman gardens filled with non-native plants reflect the cultural exchange facilitated by imperial expansion. The presence of non-native plants provides insight into the exchange that occurred at the frontiers through conquest and at the ports through trade.

Image Construction

I used collage as a way to reconstruct a Roman garden fresco so that I could reflect the different layers of cultural and geographical identity connected to the plants and landscape represented. To build the tree at

the centre of the image I created several cutouts based on the shape of my three focal plants. I cut these shapes from maps reflecting the origin of each plant and primary and secondary sources discussing these plants in their native contexts. I constructed the background behind the tree using Roman images of plants, from the Villa of Livia and House of the Wedding of Alexander (a Pompeiian archeological site with significant botanical frescoes) and maps of the Roman Empire to reflect the Roman backdrop for these plants once they entered the empire.

Through collage, I decided to reconstruct an image from the Villa of Livia because of Livia's ties to Augustus, the first Roman Emperor, and the presence of non-native plants documented in Roman gardens and garden painting. The volcanic eruption at Pompeii left spectacular preservations of garden paintings, including frescoes at the House of the Wedding of Alexander and archaeobotanical evidence providing insight into the floral composition of Roman gardens and botanical art (Ciarallo). Delving into the flora of Roman imperial gardens provides insight into how conquest and exploration shaped the physical landscape of public spaces: "The villa gardens at Pompeii demonstrate that the Romans were willing and able to grow nonindigenous plants on Roman soil, and the city gardens show that conquerors often built gardens to celebrate their conquests" (Pollard, "Pliny's Natural History" 321). Although pepper, balsam, and cinnamon were not necessarily documented in the garden at the Villa of Livia, my intent is to link "foreign" plants (what plants biologists today would call "non-native") used regularly in Roman garden culture.

Balsam

The Balsam tree, scientifically known as *Commiphora gileadensis* or *Commiphora opobalsamum*, exclusively came from Judea. In the late 60's CE, Titus Flavius Vespasian conquered Judea and upon his return commenced celebrations and constructions to commemorate his victory. Pliny the Elder's description of the Balsam tree provides insight into how Romans viewed the Balsam tree after the conquest of Judea: "Pliny states, 'this tree [the balsam, from Judea] now is a subject [of Rome] and offers tribute with its own race [meaning the recently conquered Jews]'" (Pollard, "Pliny's Natural History" 327). Vespasian built

the *Templum Pacis* and outfitted it with gardens and built the *Horrea Piperataria*, a spice market to mediate Roman reception of foreign goods:

The gardens in the *Templum Pacis* would not have been large enough to supply the spice market next door; however, they would have provided a symbolic religious framework for Romans to make sense of their reliance on these luxury items from India—a framework that preserved their own sense of world dominance. Gardens would show that these rarities could be grown Roman soil and that it was Flavian-delivered peace that made the importation of these goods possible. (Pollard 335-336)

Imported plants created a problem for the Roman's belief in a supreme Roman identity: Romans were seeking a distinctly non-Roman object to secure their economic, aesthetic, and culinary happiness.

The Romans described imported plants from conquered territories with submissive and pejorative terms. Totelin examines how Pliny's description of the parade of the Balsam Tree for the triumph over the Jews uses language applied to slaves to describe the plant, particularly since it is an incredibly valuable crop: "But parading the tree was above all an affirmation of power. The language of [Pliny's] passage is political: 'the balsam tree is a slave (*seruit*), conducted in triumph (*in triumpho duximus*), paying a tribute to Rome (*tributa pendit*); it belongs to the race of the Judeans (*sua gente*)" (Totelin 123). Both Pollard and Totelin highlight the connection between the display of conquest and power demonstrated through the display and use of plants. The Balsam tree in particular provides insight into how plants fit into the discourse of submission created by conquest.

Spice Trade: Pepper and Cinnamon

While non-native plants, such as the Balsam tree, became integrated into the empire directly through conquest, imperial expansion also increased the geographical range of contact Romans had with other cultures even if those places never were directly under Roman control. The Romans went to great lengths to obtain valuable and sought after spices: "Cinnamon was extremely expensive and was bought up by the perfume industry and favored in wine and in some sweet and sa-

vory dishes....and Nero supposedly burned a year's supply of cinnamon and cassia at this wife's funeral rite" (Czarra). Nero used cinnamon to reflect his immense power. By burning mass quantities of it, Nero demonstrated that he had the economic and imperial resources to obtain valuable spices and then use them in greater quantities than any other Roman. Cinnamon had other connections to the Imperial throne as well due to its economic significance. Diocletian included both pepper and cinnamon in his Edict on Maximum Prices ("Cinnamon").

In addition to non-native plants in Roman gardens, Roman cooking relied on the trade networks created by the Empire: "90 percent of the five hundred recipes in [Apicius' cook] book called for costly imported spices, especially black pepper" (Czarra). Pepper, described as the "most widely used spice in the Roman world," came from the Malabar Coast of India (Czarra). While two varieties of pepper circulated in the classical world, several varieties of cinnamon came from multiple places, including India, China, Sri Lanka, Arabia, Ethiopia ("Cinnamon").

Archeological discovery has documented an extensive record of pepper at Berenike, an important archeological site in Egypt and "one of many hubs in the extensive Old World economic network...that concatenated east and west" (Sidebotham 1). As both luxury products and plants, pepper and cinnamon traveled throughout the Roman Empire leaving physical and cultural traces from their places of origin in their wake.

My goal for this image is for the viewer to see the complexity of the Roman relationship with plants and plant products and to draw ties to the relationships between botany and imperialism that still exist today. The fact that today these plants have scientific names in Latin reflect the lasting impact that the Roman Empire has had on how plants and plant products are perceived by the world. Although black pepper (*Piper Nigrum*), cinnamon (*Cinnamomum*), and the Balsam tree, (*Commiphora gileadensis*), did not come from within the Roman empire, their contact with the empire and descriptions by Pliny have preserved their names and stories in Latin and through a Roman lens. Rather than using their Indigenous names, science uses their Roman

names. Although Latin scientific names often incorporate parts of plants' Indigenous names, the incorporation of these names into "science" requires them to be Latinized. I hope to use this image to question why that has happened, and in do so link classical natural sciences from the Roman world to the development of botany in Europe and modern botany and ecology.

ILLUMINATED NEWSPAPERS AND GARDENING MAGAZINES

The idea to illuminate newspapers (and the newspapers used in the construction of these images) came directly from the herbarium. Newspapers are the perfect size for collecting plants, so in addition to providing an archive of plant material, herbaria often contain an archive of newspapers reflecting the political, social, and cultural context of the plant collector at the time of collection. My goal in illuminating newspapers was to connect the plants directly to their context. In illuminating these newspapers, I provide space for myself, like the scribes in scriptoria, to make provocative comments in the true spirit of marginalia, allowing me to participate in a long tradition of illustrators attracted to the floral aesthetic with some comments on the content of the page. The content of the articles often deal with the ramifications of colonialism, including oppression based on race, gender, and nationality.

For example, many plants deemed native and invasive are given these designations in America based on their existence in America before and after 1492. Not only does the language of invasion centre Western explorers, but the language "invasive," "introduced," "non-native," "exotic," and "alien" are also common tropes expressed in anti-immigrant, xenophobic sentiments. Bringing plants into dialogue with contemporary issues and the common history that they both share can hopefully pave the way from an ahistorical approach to studying plants to a more nuanced and context-driven understanding of the relationship between plants, people, and knowledge production.

This series of images also addresses the relationship between the system of binomial nomenclature, race, and gender. The Linnaean classifications system helped create a foundation for scientific racism and modern eugenics, implicating plants "authored" by him in this history

(see Garrod). This fact provides context for the meaning carried by the author initial, “L.,” following plant names authored by him.

Linnaeus’ classification system was considered revolutionary because he classified plants based on their reproductive systems. However, in pursuing this end, he perpetuated a longstanding practice of ascribing human gender and sex to plants and embedded this practice within his classification system, such that science formally recognizes plants as male and female. Not only does Linnaeus system render contemporary botanical language complicit in reinforcing the gender binary, but it also conflates plant and human reproduction. I also want to acknowledge that many scholars have done queer readings of the Linnaean sexual system though I do not address that body of scholarship here.

Due to Victorian sexual taboos, this system of classification further inhibited female botanists from participating in the field:

Victorian women botanists were still affected by the fallout from Linnaeus’s creation of a binomial classification system for plants in his *Species Plantarum* of 1753. This revolutionized botany, yet it had turned the singular barrier of Latin language into a double one for female students; not only the difficulty of access to a classical education, but also a problem of sexual decorum. For Linnaeus’s system was based on the claim (originally made in his *Praeludia Sponsaliorum Plantarum* in 1729) that the reproductive parts of plants paralleled the sex organs of animals. Botany became ‘the most explicit discourse, in the public domain, on sexuality during the mid-eighteenth century.’ (Jackson-Houlston 85)

In addition, many women who practiced botany were considered “amateurs,” while men who had other professions but practiced botany (such as Linnaeus, a pastor and doctor) are still celebrated as fathers of botany.⁷

In part, my goal in illustrating my work as a scientist is to honour and recognize the many female *scientists* who dissected, collected, and depicted plants but were (and still are) considered amateurs. Alongside the botanical sexism experienced by European women, male “explorers” such as the celebrated Joseph Banks (1743-1820), a director of

Kew Royal Botanic Gardens who participated in Captain Cook's expedition to Tahiti, exoticized Tahitian women and appropriated their medicinally and culturally significant plants to bring back for the profit of Britain's growing empire (Fara).

I used collage cut-outs and cyanotype to honour two women botanists who used those methods, Mary Delany (1700-1788) and Anna Atkins (1799-1871). Mrs. Delany in particular did not ever get the recognition she deserved: "whereas the natural historians and botanical artist whom Mrs Delany knew and beside whom she worked...are seen as having played an integral role in the advancement of Linnaean botany, Mrs. Delany's gender and amateur status have largely prevented her work from being considered alongside theirs" (Laird and Weisberg-Roberts). In drawing attention to Mrs. Delany, I hope to highlight gaps in the standard botanical narrative.

The cut-outs and cyanotypes draw attention to the gendering of plants. Some of the cyanotypes contain floral lacy underwear and suggestive apples to ask why flowers and fruits are associated with the feminine. In addition, through these images I hope to ask why, in light of cultural associations between plants and gender, scientists must ascribe gender and sex to plants and reinforce violent gender and sex binaries. The keys in the images are from the herbarium where I conducted my research and raise the question of who, historically and presently, has access to natural history and whose history do those keys unlock. In addition, all of the magazine images come from various seed catalogues, *Flower and Garden*, *The American Gardener*, *National Geographic* from the 1970s, 1990s, and from the past ten years.⁸

Image One—Common Culture Problems



Image One—Common Culture Problems

This illuminated cyanotype of *Berberis vulagris* L. (common barberry) introduces the language of invasion and the gendering of plants. In the top and left margins, I included marginalia probing these themes.⁹ The other illumination in the lower-right corner contains *Medeola virginiana* L. (indian cucumber root). While the introduced species is centered in this piece, the native plant exists in the margins. The co-existence of these two plants on the same pages calls into question how we frame the dialogue around native and invasive species.¹⁰ In addition, I have combined the issues of gendering plants and the language of invasion on the same page to highlight how the gendered language used to describe certain plants perpetuates stereotypes, xenophobia, and racism. The exotification of tropical plants and Indigenous women from tropical regions cannot be separated from one another given the history of collectors taking advantage of these women's bodies and their knowledge.¹¹

Image Two—Objectivity is a false god



Image Two—Objectivity is a false god

This illuminated cut-out features *Epipactis helleborine* (L.) Crantz, a non-native orchid named for its similarity to the European hellebore. I collected this plant in Stockbridge, Massachusetts and then used its shape to construct three cut-outs. One of them is solid green to rep-

resent the plant without its context. I constructed the far-left orchid cut-out from a Medieval tapestry postcard to evoke the European history of the hellebore appearing in the *Belluno Herbal*, the relationship between medieval illuminations and the development of European botany, and the classical connections of the Greco-Roman world to imperial aspects of contemporary botany.¹² I used newspapers left over from collecting plants to construct the centre orchid. I highlighted the quote “Objectivity is a false god” to probe methods of science that claim to be free from implicit bias, are ahistorical, or do not appreciate how identity shapes a scientist’s experiments. For the background, I selected a school newspaper article that was used for collecting and features topics of race and gender significant to campus and world affairs. I illuminated the margins with keys and leaves.

Image Three—Rediscovering New York



Image Three—Rediscovering New York

This illumination questions narratives of discovery, particularly as they pertain to settler colonialism in America. Often the words “empty,” “pristine,” and “untouched” describe parks and forests that were once people’s homes. The foundation for this piece was a recent *National Geographic* article that describes New York prior to European colonization. While the article makes a slight mention of the people who lived in the land where New York now sits when Henry Hudson arrived in 1609, the article perpetrates the glorification of the male explorer while glossing over the atrocities that resulted from Hudson’s arrival. I moved the marginalia away from the edges of the page to centre the erasure of displacement and genocide in narratives of discovery.¹³

Image Four—Deadly Play



Image Four—Deadly Play

This illumination continues on the themes introduced in *Rediscovering New York* (the previous image). The plants featured in this include *Hamamelis virginiana* L. (witch hazel), *Carex pensylvanica* Lam. (Pennsylvania sedge), *Ostrya virginiana* (hop-hornbeam), *Fagus grandifolia* Ehrh. (American beech), *Pinus strobus* L. (white pine), and

primacy that science places on native plants but not Indigenous people. The cyanotypes feature vaginal symbols made from apples, the lacy-looking *Athyrium angustum* (northern lady fern), lace floral underwear, non-native *Berberis vulgaris* (common barberry), and herbarium keys. The confluence of these images highlights how objectifying and eroticizing plants translates into the objectification of women and how objectification, eroticization, and exotification are inextricably linked with modern botany and ecology. The surrounding articles contain sexually charged botanical captions that include: “Bodacious brassicas,” “The irresistible Epimedium: Exquisite flowers, delicate foliage, and easy dispositions make them perennials to pant for,” “Ecologically desirable,” and “What I learned of the prostitute orchid forced me to revise my estimation of what a clever plant is capable of doing to a credulous animal.” This image also highlights how the Linnaean sexual system reinforces sex and gender binaries based on the associations between plants and sexualized language in formal botanical science and cultural descriptions of plants. In addition to the sexually charged captions, the image contains many names and descriptions of seed varieties that are offensive and/or essentialize the cultures and people from whom the seeds originated, such as “turban” squash, a “Bali” seed variety described as a “new oriental favorite here,” and a seed variety called “Dixie Queen.”

Image Six—February 6th, 1969



Image Six—February 6th, 1969

The final panel of three illuminations is relatively empty compared to the other illuminations. These illuminations attempt to de-centre the plant by moving them to the margins. The far-right panel in the above three images most resembles an herbarium specimen, with the middle and far-left panels fully decentering the plant while centering its context. I mounted all three illuminations on a newspaper from February 6th, 1969, found amongst dried plants in the herbarium where I conducted research during the summer of 2015. This newspaper contained articles that resonated with more contemporary plant-collecting newspapers from the past 20 years. In particular, the articles in the 1969 speak to articles featured in past illuminations in this series, especially “Objectivity is a false god.”





The first panel in this series of three images features *Athyrium angustum* (northern lady fern) in the centre and maintains the standard centrality of plants. The middle panels contain articles highlighting the threat to liberalism and universities that white liberals perceive

from Black activism. I superimposed seed varieties from Parker Seeds (1997) and Baker Heirloom Seeds (2014) that have racially charged names. While one seed variety is called “Black and White Minstrels,”¹⁴ another is “Black Beauty: The blackest flowers you’ve ever seen.” The far-left panel in the series centres context, featuring articles about Brown University’s relationship to the slave trade (the university where I attended and conducted this research), inclusivity in STEM, and an art exhibit using collage to amplify marginalized voices with plants moved entirely to the margins.

CONCLUSIONS

Words such as “diversity,” “culture,” “exotic,” and “native” appear frequently in gardening magazines and scientific literature. The development of natural history and botany in the context of empire meant that these words were stripped of their human context. By tracing Latin from ancient Rome to the current scientific lexicon via medieval manuscripts, I am interrogating the mythology of the “fathers of botany” to recreate and reimagine ways of relating that the current natural archive masks. How and why we organize plants according to the Linnaean system has consequences for how contemporary scientific practices and communities reinforce certain ways of relating as the right ways of relating. These illuminations reimagine the natural history archive to tell the story of how these state-sanctioned ways of relating became integrated into the scientific canon and how recontextualizing this archive can contribute to reimagining futures for science that disrupt rather than reinforce settler-colonial notions of relating.

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NOTES

1. Despite the shared sound and established etymological link between these Greek and Latin words, classicists have long debated whether Virgil

intended to echo Theocritus' use of Φηγός to mean oak as the Greek implies or to signify a beech tree, which is what the word would have meant in Virgil's time (see Lipka 2002; Jones 2011). Regardless of this lack of consensus, today beech trees bear the name *Fagus*, which, through the linguistic derivation and Virgil's nod to Theocritus, echoes the Greek Φηγός.↵

2. "Decolonization brings about the repatriation of Indigenous land and life; it is not a metaphor for other things we want to do to improve our societies and schools" (Tuck and Yang 1). ↵
3. "A rich diversity of traditional names was funneled in this period through the intellectual straits of Linnaean nomenclature to reproduce standardized naming. Botanical Latin was made and remade in the 18th century to suit naturalists' purposes. If Latin, the language of European learning, was to become the standard language of botanical science, it might have incorporated customary names from other cultures as plants from those cultures entered Europe. It might also have preserved a sense of biogeography of plants by making plants with their places of origin. But plants more often were named for European botanists and their patrons. Naming practices celebrated a particular brand of historiography—namely, a history celebrating the deeds of great European men. It is remarkable that Linnaeus' system itself retold— to the exclusion of other histories—the story of elite European botany" (Schiebinger 20).↵
4. In addition to an intrinsic interest in plants, economic factors motivated Linnaeus: "Now celebrated as the "father of modern taxonomy," the Swedish scholar often saw his taxonomic innovations as secondary to his many economic schemes. The eminent botanist William Stearn has pointed out that Linnaeus' binomial system of nomenclature first developed as a kind of shorthand to aid several of his economic botanical projects, most immediately for cataloguing Swedish fodders in order to enhance animal husbandry" (Schiebinger 6-7).↵
5. "From Greek Μηδεια (*Medeia*), possibly derived from μηδομαι (*medomai*) 'to think, to plan. In Greek mythology Medea was a sorceress from Colchis (modern Georgia) who helped Jason gain the Golden Fleece. They were married, but eventually Jason left her for another woman. For revenge Medea slew Jason's new lover and also had her own children by Jason

killed” (Campbell). In addition, the common name “indian cucumber root” is an example of the racist nomenclature embedded in botanical discourse.↵

6. This not only applies to Rome and the Mediterranean, but also Provincial parts of the empire: “The most striking observation is their [exotic plants] conspicuous absence outside the Roman frontiers, which highlights the prominent role that the Roman Empire played in their dissemination. Interestingly, a prominent military association is apparent for most taxa featuring in Roman archaeobotanical contexts, making a strong case for a connection between the movement of the army and the dissemination, at least initially, of imported plants in northwestern Europe” (Livarda 156).↵
7. “Indeed, it was precisely because of attitudes like these that botany rapidly succumbed to the process of reclassification and dismissal by what Joanna Russ calls “the double standard of content” and “false categorizing.” If women could do botany, then it wasn’t a science, and people who did it weren’t men. (The same was true of flower painting.) In 1828 John Lindley regretted the undervaluing of botany as “an amusement for ladies rather than an occupation for the serious thoughts of man”... John Lindley, a prime player in the relegation of women botanist to the status of amateurs, had his own books illustrated partly by his daughters.” (Jackson-Houlston 88) [Unclear what is a quotation here since the footnote does not begin with a quotation mark (but is it all quotation?)—please fix and use MLA in-text citation.]↵
8. A condensed version of this section, including one of the images, originally appeared on the Free Radicals blog (Duncan)↵
9. “Native, invasive, exotic, introduced, non-native—do these labels refer to plants or people? Who gets to decide? Why are plants labeled as male or female? Just because flowers look vaginal and pollen tubes are phallic doesn’t mean that seeds are ovaries and plants have genders. Male and female are fraught categories for plants and people” (Image One).↵
10. Species are deemed “introduced” if they arrived in North America after 1492: “As usual, the nativist dream of eradicating the interloper is intertwined with a fantasy of restoring the landscape to its ‘original’ condition” (Cockburn). In addition, the language of invasion is racially

coded, referring to “oriental exotics” and descriptions of plants as having agency and being intentionally aggressive and destructive, taking resources away from native plants. These tropes echo anti-immigrant sentiment in the United States. While on a garden tour at a place that prides itself in planting exclusively native plants, I heard the tour guide describe Oriental bittersweet (*Celastrus orbiculatus*) as a “thug plant.”[←]

11. In addition to introducing sexually transmitted diseases, European explorers had sexual encounters with indigenous women. For example, “The female dancers found it advantageous to keep their eccentric visitors [Joseph Banks and Captain Cook] happy...His [Banks’] special flame was Otheothea, the personal attendant of a high ranking woman, Porea- or Queen Oberea as she was mistakenly called by the Europeans, who misheard her name and elevated her rank because they were insensitive to fine social distinctions between people they lumped together as an inferior race. During the *Dolphin’s* visit Porea had taken over Wallis’ social agenda. She distracted him from perpetrating further carnage amongst islanders by entertaining, massaging, and feeding him” (Fara 6-7).[←]

12. Medieval illustrations depict flora and fauna with their utmost detail and these illustrations ultimately led to the development of modern biology (see Hutchinson, Gathercole, Fisher). For example, an illuminated Book of Hours, a collection of religious services, contains detailed paintings of insects in the margins that reveal intimate knowledge of nature by the artists. While the margins of a religious book might not seem like the most intuitive place to begin an exploration of insect and avian anatomical features, these margins became a place for biology to begin. These marginal images commanded the attention and imagination of their viewers prompting them to explore, document, and study the natural world. In addition to illustrating plants in herbals, which were bound books often documenting the medicinal uses of plants, manuscript illustrators illuminated religious texts with plants around the edges of manuscripts as decorative and often meaningful symbols. This tradition of marginal botanical illustration appeared in both medicinal manuscripts and prayer books; regardless of the content of the text, plants appeared on the page: “The marginal decoration on the French medieval manuscripts often completed the portrayal of Nature in the miniatures themselves. Along the margins we discover a wealth of leaves, in particular ivy, oak,

and acanthus foliage...During the Romanesque period, the miniaturists made use of rudimentary plant forms”(Gathercole page number). For example, the grape vine represented communion and Christ’s blood, while ivy was associated with Bacchus, and asters with Athena, Artemis, and later, Mary: “some plant symbolism derived from biblical sources, but a great deal more was inherited from the classical world, both in the form of pagan legend (vine and ivy were both sacred to Bacchus) and from the works of the founding fathers of European botany, Theophrastus (372-257 BC), Dioscorides (c. AD 40-90), and the elder Pliny (AD 23-79), whose writings remained a source of reference for many centuries” (Fisher 6). The cultural significance of these plants and their frequent appearances in the margins of manuscripts carried the symbols of classics into the foundation of botany. Illustrators began depicting plants with more anatomical accuracy due to shifting artistic styles: “the new impetus towards realism in fourteenth-century Italy inspired the illustrators of herbals. This movement started in the medical schools of Salern and owed much to Arabic influence” (Fisher 7). *Circa Instans*, a 12th-century Latin medicinal text, represents an important deviation from past practices, which involved solely relying on classical representations of plants (Fisher 7). The *Belluno Herbal* contains the representation of a hellebore root in a fashion evocative of the herbarium specimen (Fisher 10-11). Alongside these illustrations, war and exploration contributed to the developing significance of gardens in the medieval world: “During the twelfth century, gardens in general assumed an increase in importance in the Western World, since the crusaders came to admire the splendor of Eastern grounds adorned with flowers and would describe them on their return home”(Gathercole page number). This practice, similar to the relationship between conquest and garden cultivation in the Roman and Greek worlds, was the precursor to the age of exploration, in which botany and empire building were inextricably linked. ←

13. The marginalia reads: “Was it a ‘virgin landscape,’ ‘land of opportunity,’ ‘natural wonder,’ ‘wilderness’? Was it ‘wild,’ ‘empty,’ ‘pristine,’ ‘untouched?’” Although these images were produced during 2015 and 2016, it is timely and relevant to note that National Geographic recently published an issue exploring their history of racist coverage (Goldberg). ←
14. The American minstrel tradition included offensive blackface

performances and emphasized racial stereotypes thus, referring to Black minstrels in a seed-variety name is explicitly racist. ←