Codely Phytographia: An Artist's Material History of Writing Code with Trees

PROPHET, Jane

10

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Jane Prophet

Introduction

In the sunlit green highest reaches—flames!
A morning in early June the outer islands and clouds
pass and we turn into your yielding rows,
and you demand seeing beyond genus and species.
[…]
How does something simply change colors?
Must green always mean tolerance? Red
revolution? No. Symbols
are mostly limitations. I must avoid categorizing.
The longer I look at you, the more I want to see.
Do your green tangles go on sacrificing red-orange blossoms, wide open, to white clouds, or do your stamens and pistils also laugh till they shake
at the unending games of creeping branches and flirting leaves?
This until, in mid-gaze, my bus
turns the corner and the scene alters
into yet another way of seeing you and your world.

("The Flame Tree" by Leung Ping-kwan, 1991; Leung 2012: 143)

This chapter began as a reflection on the development of an app, *Pocket Penjing*, that simulates the growth of a tree to express air quality and pollution. I made the initial prototype for *Pocket Penjing* (see Figure 10.1) with my long-term collaborator, software developer, Mark Hurry, when I lived in Hong Kong in 2012–2016 and worked at City University in the School of Creative Media. We iteratively developed that prototype through a research practice that later included a co-design process facilitated by my Singaporean colleague, Yong Ming Kow (Kow and Nardi 2010) with over sixty Hong Kong and Chinese students. Elsewhere, I have described the co-design process through which the app emerged (Prophet, Kow, and Hurry 2018b) and discussed how it was designed to engage publics with science (Prophet, Kow, and Hurry 2018a). *Pocket*

Figure 10.1 Left, the app's opening screen; middle, the simulated globe players spin to "plant" their virtual tree; right, a simulated tree grows from the graphic marker laid on top of a real flowerpot. *Pocket Penjing*, 2016. Courtesy the author. CC4r.

Penjing takes its name from "penjing," or "penzai," artistically formed miniature trees and landscapes, planted in shallow trays, that originated in China and predate bonsai.

Leslie McCall, writing on intersectionality, notes that research practice "mirrors the complexity of social life, calling up unique methodological demands" (McCall 2005: 1772). To account for the complexity of social life in works like *Pocket Penjing* I reflected on some of the intersecting frameworks of multiple, interacting forms of oppression that are part of *Pocket Penjing*'s co-design process and these became the new focus of this chapter. In a paper on intersectionality, identity politics, and violence against women of color, Kimberlé Crenshaw wrote, "[t]hrough an awareness of intersectionality, we can better acknowledge and ground the differences among us and negotiate the means by which these differences will find expression in contracting group politics" (Crenshaw 1990: 18). Crenshaw's intersectionality was developed in the context of anti-Black racism in the US. Race, colorism, and intersectionality play out differently in the UK and Hong Kong in the co-design process and my work with trees in significant ways. I start by looking back on my childhood and my older artworks to situate myself and the works in intersecting frameworks of multiple, interacting forms of oppression.

My Life in Trees

My lifelong entanglements with plants and trees, both virtual and real, are best situated via a preamble, a relaxed walk amongst trees and plants, with my younger self. The saying "the apple doesn't fall far from the tree" seems appropriate because as a baby

I was immersed in plants. My mother laid me in bushes of lavender to surround me with scent, and placed me down for naps in clumps of yellow flowers (see Plate 25), convinced that immersing me in the scent and color of plants would enrich my world. I grew up loving our gardens, my mother's suburban greenhouse (Plate 25), and, later, the expansive gardens at the large house we moved to in the Cotswold countryside. To write this chapter I asked my mother, who spends most of her time with plants, how she would describe her background and her movement between social classes. She grew up in a working-class family in Birmingham, an industrial city in the UK. An autodidact, her lifelong passion for plants and garden design prompted her to learn Latin to better understand plant names. Her later (and relatively brief) upper middle-class life afforded her beautiful landscapes and these are what she misses most about that time of privilege: she renovated a neglected Gertrude Jekyll garden and went to horticultural college when she was fifty, though she still identifies with her working-class roots and values.

I was raised in an economically privileged family that lived in a rural area and later fell on hard times. In the 1970s, I spent hours in the countryside near my home, climbing trees, wading through ponds, swimming in rivers, sometimes with a dog or pony, usually with no humans in sight. My adored maternal grandfather, a retired metallurgist, had a stroke while doing a yoga headstand and, as a result, came to live with us when I was five. We spent a lot of time together and, although uneven garden paths were tricky for him to navigate after his stroke, he would walk slowly with me and point out plants, always telling me something about their healing or poisonous properties; "that small yellow flowering plant is aconite, used to make the homeopathic remedy of the same name. And *that* is belladonna, which means 'beautiful lady', because women used it to dilate their pupils, but it can be poisonous." My fascination with plants' forms and chemistry flourished through his explanations, our scrutiny of plants (sometimes with a magnifying glass), and the hours we spent together reading plant entries in *Encyclopedia Britannica* while we waited to watch the Saturday afternoon wrestling match on TV.

In her opening to *Through Vegetal Being* (Irigaray and Marder 2016), Luce Irigaray talks movingly and eloquently of her love of the vegetal world from infancy onwards, recounting times she sought refuge in the vegetal world. After writing *Speculum of the Other Woman* (Irigaray 1985), she describes being rejected both professionally and by many of her friends, and how she found sanctuary in nature, "I was outside, and I could attempt to recover my breathing first to survive and, then, to discover how to cultivate life" (Irigaray and Marder 2016: 20). As a tween and teenager, my family life was fractured by domestic violence and increasingly our house felt unsafe. I took sanctuary outside in our garden and the surrounding countryside.

Despite the threat of violence having gone, I remained an insomniac after my father's death when I was sixteen. I often crept out of the house if I was still awake at 4 a.m., and walked a mile across fields, navigating by moonlight or with a torch, to the top of a hill. Those were psychologically dark days and lack of sleep made me despondent and jumpy, but I felt better being outside. Irigaray describes the vegetal world as a "mothering place" and the air as "placental" (Irigaray and Marder 2016: 21), which is different from my experiences which were characterized by a physical

and sensory shift, away from my racing thoughts to a heightened awareness of all outside me. I did not experience boundary-blurring blending with the myriad of vegetal beings, nonhuman animals, and weather but I became more aware of myself in the world. This may be closer to Irigaray's comment that breathing also reminded her of "the difference between the outside and the inside … the difference between the other and myself" (Irigaray and Marder 2016: 23) For me, being there was therapeutic, in keeping with findings that the health and well-being of young adults improves if they have increased access to wooded landscapes (Milligan and Bingley 2007). For Irigaray, breathing in nature, drawing the air of nature in, and breathing while-in-nature are acts of universal sharing from vegetation, especially trees that give the "gift of breathable air by releasing oxygen in the process of photosynthesis" (Irigaray and Marder 2016: 130). On the one hand, I empathize with Irigaray's feeling of finding solace in nature, while, on the other hand, I balk at presenting trees and the vegetal in terms of what they afford humans, such as oxygen. The belief that trees are the earth's dominant oxygenators is speciesism, a misconception that places trees, easily sensed by humans, above phytoplankton. These microscopic marine plants are less apparent to humans but produce roughly 80 percent of the world's oxygen ("World's Biggest Oxygen Producers Living in Swirling Ocean Waters" n.d.). During my difficult teenage years, it is certainly true that my breathing often deepened when I was outside, but as significant as my visceral breathy experience were the feral adrenaline rushes in response to the movement of a swooping owl or a sudden rustle in the undergrowth. I spent many pre-dawns sitting against a tree, sensing the night, soothed by watching the silhouettes of branches against the night sky, black on black. In winter I observed branching structures as the light gathered, in summer I watched leaves move. The reduction in stress I felt, sitting against one tree, gazing at the silhouettes of others, is supported by research showing that even experiencing virtual environments modeled on everyday urban natural environments reduces stress (Hedblom et al. 2019). In the hours before dawn, when my sight was weakest, sound and touch were the primary senses through which I experienced the world around me: the occasional startling call of a screech owl, the more common rustling of mice and insects, the feel and sound of wind through foliage and wheat, the cold ground beneath me. As dawn started to break my eyes discerned more definition and color, and, once again, sight became my dominant sense. Those nights, sitting with trees at the edge of a field, gave me a feeling of belonging that I could find almost nowhere else, certainly not amongst humans. These embodied experiences of trees are part of my sensibility that led to the production of the app, *Pocket Penjing*.

Pocket Penjing grew from the affinity I feel with trees, imprinted through the ones I climbed as a tomboy and my sharpened observation of them through insomnia. However, I realized that the gritty virtual soil in which *Pocket Penjing* is planted was created over eighty years ago, from the ground-down traces of my father and paternal grandparents and their colonial connection to Hong Kong, the city where I worked on *Pocket Penjing*. My father was born in Hong Kong in 1937, the son of a Scottish accountant and a Devonshire physical education teacher who met there. He left with his mother as a six-year-old, just before the 1941 Japanese invasion. My paternal grandfather stayed behind, a soft-handed white accountant with little military training, who joined the

Hong Kong Volunteer Defence Corps and numerous Hong Kong Chinese, British, Indian, and Canadian soldiers who fought the powerful Japanese army. Discussing his war experience was taboo in our family but I learned he had fought in Hong Kong's wooded subtropical hills, been captured, and spent three years and eight months in a prisoner of war (POW) camp at Sham Sui Po, and survived, though severely damaged. One of the few stories he told was that Japanese guards took the prisoners' Red Cross food parcels, leaving them with almost nothing but the tinned tomatoes that they did not like to eat. From 1943 until they were liberated, the prisoners were allowed to garden and planted tomato seeds from those tins and improbably grew scraggly plants that bore fruit. Their communal gardens supplied almost the only fresh vegetables they had and were fertilized with their feces (Schwarzkopf 2019). My grandfather believed the tomatoes' vitamins were one of the things that saved the prisoners who survived. But it may equally have been the therapeutic effect of creating these "defiant gardens" (Helphand 2006). Kenneth Helphand details numerous examples of "barbed wire gardens" that are still created by internees, POWs, and refugees held in camps. At the end of the Second World War my grandfather returned unexpectedly on a hospital ship to the UK, emaciated and diseased, and testified in the subsequent war crimes tribunal ("Hong Kong's War Crimes Trials Collection," n.d.). As soon as he was fit enough, he and my grandmother returned to live and work in Hong Kong for another decade, leaving my father in a British boarding school. They returned to the UK before I was born, but that family history played a part in my decision to relocate there sixty years later. I hoped that being in Hong Kong would help me better understand my tough-as-nails, paternal grandmother whose house was full of Chinese mementos, and the grandfather who died when I was too young to remember him.

Phytography: Vegetal Writing with Trees

I mainly wrote this chapter during COVID-19, inside, working at my computer in Michigan, looking at urban trees on the street. Nevertheless, this chapter is what Irigaray terms a feminist vegetal writing—it emerges from the author's ongoing encounters with plants and trees. Patricia Vieira, scholar of comparative literature, postcolonial studies, and ecocriticism, expands Irigaray's concept of vegetal writing, offering the term "phytographia," combining the Greek words "phyto," meaning "plant," and "graphia," meaning "writing or drawing," in her focus on human cultural productions. In Vieira's phytographia the vegetal has more agency in processes of inscription. She defines phytographia as "the encounter between the plants' inscription in the world and the traces of that imprint left in literary works, mediated by the artistic perspective of the author" (Vieira 2015: 205). As a visual artist, the activity of *writing* something like this chapter is not "an intransitive activity, a variation on breathing, an end in itself" as Rosi Braidotti (2014: 163) describes writing in her life; however, coming up with ideas and writing/drawing them into artworks using computer code is an end in itself for me. Like Vieira, I write/draw beside plants, specifically trees, and so I have found it useful to borrow Vieira's term, phytographia, and expand the idea of writing to include writing-code-beside-trees. Over the last thirty-five years I have made a series

of artworks beside trees. This began when, as a first-year undergraduate, I composed abstract images with tiny pieces of detritus from the forest floor using tweezers to arrange them between the panes of 35 mm glass slides (Plate 26). I then projected the results onto piles of leaves and hanging texts.[1]

Now, thirty years later, I use text differently, creating art inscribed through writing computer code with human and arboreal collaborators. This, I suggest, extends Patricia Viera's idea of vegetal *writing with plants*, her "phytography," to *computer coding with plants*. For me, phytographic writing with code "is an affective and geometrically rigorous mode of inscription into life" (Braidotti 2014: 163). Since the mid-1990s I have created idealized fractal landscapes and trees (Plate 27) with computer programmer Gordon Selley, using variations of his algorithms that simulate trees (Selley 1991). For Viera, plants' inscription "depends primarily on their physical configurations that shape both the contours of a landscape … and of their relation to animals" (Vieira 2015: 208). Selley and I took a similar approach as we researched the morphology of English oak trees and their location in landscapes, amongst animals who often impacted their branching structures. The resulting artworks owed a lot to the time we spent walking and driving around the UK observing trees, especially after the oaks lost their leaves in the autumn and we could see their branching structures. The artworks we created were a kind of biotechne that emerged as part of an "active, technical process," a matter of techne, or mattering through techne (Walters 2002) in relation with biology. The mundane and largely ignored practices that enabled us to inscribe these trees, to simulate these realities, included reading scientific papers and consulting with arborealists to understand how location, animals, weather, and injury impact oaks' forms, or as Vieira might say, how they were inscribed and concurrently how they inscribed. We used those practices to develop a formal model, a description written in plain English, of how oak forms grew, which Selley translated into mathematical rules—an algorithm, a numbering. The rules controlled our computer code to form virtual 3D computer models of oak trees. Writing with the computer code we produced images (Plate 27) and 3D-printed objects (Figure 10.2) that approximated the look of oak trees, specifically, *Quercus robur*, the English oak. Braidotti says, "writing is the visualization of ethical relationality through the in-depth critique of Power" (Braidotti 2014: 165) and our choice to computer code with plants with *Quercus robur* enabled an exploration of how the English oak inscribed, and was inscribed by, power. The projects are not inscriptions *of* trees *by* humans, instead each is a phytographic *computer coding with plants*, a co-constituted, co-evolutionary process. Co-constituted processes are not necessarily equitable, though a vegetal writing of human lives can offer a freer, less oppressive, relationship with the landscape. These artistic inscriptions with trees are entangled with the gauging, or numbering, of landscapes to draw attention to the trope of relating to them as resources; for example, instrumentalizing oak trees by focusing on what they afford, from oxygen to aesthetic pleasure.

England's national tree, *Quercus robur*, is significant to me beyond my English identity. It is the species that I most often climbed, that I sat against during many of those pre-dawn interludes on the hill, the same species under which Druids gathered.[2] At school I was taught that, by the mid-sixteenth century, hundreds of thousands of English oaks had been felled and used to build the Royal Navy fleet (Richards 2003).

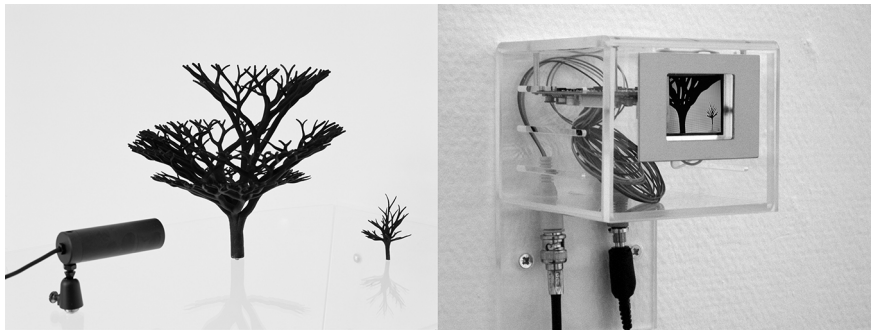

Figure 10.2 Left, 3D printed tree form generated from code with a small camera pointed at it; right, camera image of the same model seen in a miniature screen, both from *Model Landscapes*, 2004. Courtesy the author. CC4r.

The oak became integral to both Britain's ongoing independence and its colonial expansion. From the 1660s onwards British landowners were urged to plant oaks as a patriotic duty for future shipbuilding, including ships that Britons forced enslaved Africans onto (Glickman 2015). In the late eighteenth century, huge numbers of oaks were planted by landowners like Colonel Thomas Johnes, legendary for planting 3 million trees between 1782 and 1813 on his Welsh estate in Ceredigion (Linnard 1971). Landowners benefited from oak's commodification and folklore inscribed oak woods as sites of class war. Like many woods, Sherwood Forest was taken from common ownership, closed off for elite and royal sport, and used by rebels as a base from which to rob the rich. The ongoing association of oaks with power drew national attention in 2006, when the British right-of-center Conservative political party scrapped their thirty-year-old flaming torch logo and replaced it with an oak tree to symbolize traditionalism, strength, endurance, renewal, and growth. But the new logo confused voters, with many associating it with an eco-consciousness that they felt was at odds with Tory branding (Pich and Dean 2015). Welsh and Scottish Conservative party members, mindful of the association of the oak with England, called for different regional logos with other trees better suited to their national identities. The Conservative Party's deployment of the oak as a cultural artifact problematically conflated Englishness with Britishness. The logo was read as inscribing centralized power, a phytographia of English privilege.

Co-constituted Landscapes in China and Britain: Garden Designers Phytographia with Painters

While I was artist-in-residence at the National Trust (Prophet 2001), foresters and parkland custodians shared a lot about the design and production of eighteenth-century pleasure gardens. Through archival research at the National Trust Slide Library, I noticed that pleasure gardens in different places in England looked similar. A distinctive genre had emerged in the 1700s, through the redesign of many English parklands and

gardens to look like the scenes depicted in paintings that often incorporated oak trees as key compositional elements. English oaks were inscribing privilege as designers either deliberately placed them in the English landscape or privileged some mature oaks by leaving them in place while felling other species. The enduring inscription of the elite's taste and their power through materializing scenes from paintings in actual landscapes became clear in 1999 when I visited the Holkham Hall estate, designed by Humphry Repton. Paintings in the aptly named Landscape Room, after which I named my subsequent series of photographs, include twenty-two Old Master pictures hung in the eighteenth-century manner, one above the other. The poet George Mason attributed the contemporaneous innovation of English pleasure grounds' designs to Claude Lorraine's landscape paintings that had been seen by wealthy English tourists, who "Bring back to Britain; there give local form/To each Idea" (Mason 1783: 68–9). I stood in Holkham Hall's Landscape Room and looked at seven Claude Lorraine paintings, then turned 180 degrees and opened a wooden shutter to see a very similar scene instantiated in the Repton-designed parkland, a picturesque phytographia, that inscribed privilege and power with landscapes and trees. Contemporaneous plans reveal that creating painterly views across landscapes might be violent inscriptions of power, removing "unsightly" hills and workers' villages, or planting woodlands to obscure visual evidence of a neighbor. This "view-borrowing" is often misattributed as a British approach, but view-borrowing originated in China (Liu 2003). *Pocket Penjing* depends on view-borrowing as, using augmented reality, each simulated tree seen on the mobile device running the *Pocket Penjing* app is seen over the top of the live view of whatever the player's camera is pointing at, as seen in Plate 28. To borrow from the scenery means, as Ji Cheng says in his famous seventeenth-century gardening book,

> that although the interior of a garden is distinct from what lies outside it, as long as there is a good view you need not be concerned whether this is close by or far away … Wherever the view within your sight is vulgar, block it off, but where it is beautiful, take advantage of it.
>
> (Ji Cheng 1988: 39–40)

As I looked for an appropriate tree species to write code with to create *Pocket Penjing*, I learned that the influence of Chinese painters and paintings on Chinese garden designers predated the picturesque movement in Britain by over a hundred years. Working in the late Ming dynasty, Zhang Lian (b. 1587), also known as Zhang Nanyuan, created gardens for wealthy landowners (Hardie 2004). His designs were co-constituted with contemporaneous avant garde landscape painting (Dunzhen and Wood 1982). The poet Wu Weiye, Zhang's close friend, wrote a biography of Zhang, in which he emphasized Zhang's relationship with leading art critic, Dong Qichang (1555–1636) and the painter Wang Shimin (1592–1680), for whom Zhang "designed or renovated several gardens" (Hardie 2004: 137). During the late Ming period there was a more self-conscious discourse on how creators of gardens take their models and inspiration from paintings and poetry. In 1631, the Chinese garden designer, Ji Cheng (b. 1582), wrote in the preface to his treatise, *Yuan Ye* (*The Making of Gardens*), "Since my youth I have been known for my paintings. By nature enamored of seeking

out the wondrous, I especially love the style of Guan Tong and Jing Hao [both of the tenth century], often upholding them as models" (Liu 2018: 317). In the design of these gardens and in Chinese paintings, blossom trees appeared again and again and, following discussions with Chinese students, I was prompted to simulate the cherry blossom tree in *Pocket Penjing*. The British cultural appropriation of Chinese painting and gardening was piecemeal, for example, focused on the beauty depicted in ink paintings of cherry blossom, and studiously ignoring other key elements of Chinese garden design, notably Chinese designers' habit of introducing the terrible and damaging aspects of nature into their gardens:

> Their scenes of terror are composed of gloomy woods, deep vallies [*sic*] inaccessible to the sun, impending barren rocks, dark caverns, and impetuous cataracts rushing down the mountains from all parts. The trees are ill formed, forced out of their natural directions, and seemingly torn to pieces by the violence of tempests.
>
> (Chambers 1773: 39)

Chambers had many discussions with the Chinese painter and garden designer, Tan-Chet-Qua who visited England in 1769–72. Tan-Chet-Qua suggested that English gardens could be greatly improved by adopting the more superior Chinese approach, noting that:

> England abounds with commons and wilds, dreary, barren, and serving only to give an uncultivated appearance to the country, particularly near the metropolis: to beautify these vast tracts of land, is next to an impossibility; but they may easily be framed into scenes of terror, converted into noble pictures of the sublimest cast, and, by an artful contrast, serve to enforce the effect of gayer and more luxuriant prospects.
>
> (Chambers 1773: 131)

During the participant design sessions we ran as we developed *Pocket Penjing*, a number of the participants suggested modeling violent typhoons and the damage they might cause to the simulated cherry trees.

Privileged Inscriptions: Economy, Colonialism, and Gardens

Vegetal writing takes place at the intersection of species with human privilege so profound and multilayered it is impossible to account for it fully, as in every written account humans speak for plants. If, as I do, one believes in the observer effect—that an observed system is disturbed by the act of observation whether the observation is by human or an instrument—then even phytographic experiences with no touch, where humans "only" observe, are impacted by the act of human observation, mediated or not, and observation is intersectional. Writing/drawing with Hong Kong plants, and observing them, is a process entangled with British colonialism very differently from the colonial entanglement when writing with the English oak. In the UK, working

with the oak, the intersection of gender and class were most profound, especially in relation to the disparities that women and all people of lower and middle classes lived under in the eighteenth century. As a middle-class woman artist working with computation, the privilege of my class and education intersected with the relative lack of privilege afforded by being a first-generation graduate and my gender, though with the advantages of being cis-gender and heterosexual. In Hong Kong intersectionality played out differently for me. I occupied a place of multiple intersecting privileges afforded to me unearned through my whiteness, Britishness, English being my first language, my UK passport, and my well-paid job as a full professor. My place at the intersection of race, color, gender, nationality, and class were all part of my relations with the local vegetation.

Pocket Penjing emerged at a very significant time in Hong Kong, during times that were troubled and cloudy (Haraway 2016), both literally and metaphorically. *Pocket Penjing* was inspired by the daily habit of gauging the meaning of clouds over Hong Kong: were they formed of wet tropical air, or pollution particulates, or a combination of the two? Should I wear a mask or just carry an umbrella on my commute? In his nuanced ethnographic writing on environmentalism in Hong Kong, Timothy Choy has said, "Air mattered powerfully in Hong Kong. It mattered in deeply felt, variegated, and variegating ways" (Choy 2011: 142). When he first lived in Hong Kong in 1999, two years after Britain "handed over" Hong Kong to China, Choy observed that it was predominantly "expatriate businesspeople from the United States" (ibid.: 141) who complained about poor air quality and therefore he largely kept quiet about his own concerns to avoid aligning himself with them. A comparative study of about one thousand Hong Kong people randomly selected from a telephone directory showed 93 percent Hong Kong respondents rated the problem of air pollution as serious or very serious in both 2000 and 2008, about twice the percentage of other Asian societies (Wong and Wan 2011). These findings exist at the same time as the othering of pollution and of Hong Kongers by white American foreigners that Choy flags up. In Choy's discussion of positioning air pollution in relation to the local economy and to China, he draws attention to another othering, this time of China, seen in his description of people's tendency to deflect attention from local causes of pollution towards polluted air coming from China's industrialized Pearl River delta. The American expats to whom Choy refers, speaking from the intersection of multiple intersecting elite migrant privileges, explicitly or implicitly criticized and othered mainland China, connecting Hong Kong's air quality to airborne pollutants from the mainland beyond Hong Hong's border. Such verbal inscriptions of pollution perpetuate a superior colonial attitude towards so-called "newly industrialized" countries like China. Towards the end of the period that I lived in Hong Kong, when we were co-designing *Pocket Penjing*, residents' concerns over pollution were superseded by demands for a fully functioning electoral democracy and resistance to the People's Republic of China's (PRC) colonization of Hong Kong. Resistance was expressed through street protests, art, and the reworking of the Hong Kong flag. The political movement that emerged during the Hong Kong democracy protests of 2014 demanded the right for more citizens of the territory to pick their leaders and was known as The Umbrella Movement, named for the umbrellas that protesters used to protect themselves from tear gas.

Flags as Phytographia

In 1997, after governing Hong Kong as a colony for one and a half centuries, Britain handed Hong Kong over to China. In its controversial deal with Britain, China promised Hong Kong a fifty-year period as "One Country, Two Systems," agreeing to govern Hong Kong as a Special Administrative Region (SAR) of China, with Hong Kong people ruling and, in the early days of One Country, Two Systems, enjoying a high degree of autonomy in comparison with other regions in mainland China. However, "colonial consciousness" persists (Leonard 2010) after colonizers depart and the design of the Hong Kong flag can be examined as a phytographic writing that reflects changing relations to the colonialisms perpetuated by Britain and China on Hong Kong. The British Conservative Party's choice of an oak tree as its logo was a phytographic inscription of English privilege and, similarly, Hong Kong's postcolonial flag, featuring the five-petaled flower of a Hong Kong orchid tree as its central emblem, shows the persistence of colonial consciousness. The phytographia that is the current flag (Plate 29, left) was intended to inscribe "One Country, Two Systems." Its petals mimic the five stars of the Chinese national flag that supposedly represent the Communist Party and the four social classes outlined by Mao Zedong. The flag's architect-designer, Tao Ho, arranged the petals in a clockwise motion, "The stylized flower is asymmetrical, and therefore its form implies movement, alluding to Hong Kong's democratic energy and economic vitality … The red background represents China and the five stars … hint at the integration of the 'one country, two systems' policy" ("Taoho Design Art Design—Graphic Identity of Hong Kong" n.d.)

The Hong Kong orchid tree's Chinese name is "洋紫荊," but it was renamed in the 1960s after seventeenth-century French-Swiss botanists Gaspar and Jean Bauhin and Sir Henry Blake, Governor of Hong Kong from 1898 to 1903. While the orchid tree predates British colonialism, this particular hybrid is most commonly referred to by its Latin name, *Bauhinia blakeana*. Scholars of toponymic research, who analyze placenames and how they change to reconstruct the way successive societies leave their cultural imprints on a place, provide insights to the renaming of 洋紫荊 as *Bauhinia blakeana*. The name change canonizes a British colonist in a biopolitical act that claimed the tree species using Linnaeus's system that treats climatic, soil, and ethnographic environments as irrelevant and whereby plants are examples of "[a]ll natural bodies [that] form as it were an extended Empire, governed by the unalterable laws imposed on them by the Creator" (de Ortega and y Verdéra 1785 in Lafuente and Valverde 2005: 136). There were numerous other indigenous trees that could have been chosen to adorn Hong Kong's new flag that retained their precolonial names. The attention paid in postcolonial Singapore to naming streets and using symbols shows an alternate decision-making that could have taken place in Hong Kong. Singapore took a clear stance against canonizing prominent public figures, especially colonists, through naming streets and places after them (we can usefully extend that thinking to naming plants), noting that prevalence in colonial days (Yeoh 1996). While acknowledging the power relations at play in taxonomy, Timothy Choy reminds us that the process of naming by one botanist in respect of another is entangled with friendships, "beneath their explorer surface lie expressions of intimacy and expert care" (Choy 2011: 54).

Blake and his wife were keen botanists, and this tree embodies colonial botany—every known *Bauhinia blakeana* is believed to be a clone descended from a single, sterile specimen "discovered" around 1880. Molecular biologists such as Kwan Hoi-shan, a core member of the Bauhinia Genome Project, have said it is not even a species (Lo 2019). Taking this as her cue, Hong Kong artist Ellen Pau mapped the genome of a *Bauhinia blakeana* and turned its DNA into sound to make "a positive identification of the first segment of its genome that becomes physical evidence of its less than complete form" (Lee 2019). The choice of a non-native tree's sterile hybrid as a national emblem has been described as awkward and inauspicious (Ku and Pun 2011). Despite this, it was chosen reportedly because its hybrid nature best reflected the mixed colonial heritage of the colony itself, the taxonomic inscription of British colonialism in the tree's renaming balanced as it went through a graphic hybridization with the Chinese flag, taking on that flag's colors and incorporating its five-pointed star pattern. The precursor to Taoho's flag design was the Hong Kong Urban Council logo that used the same flower on a magenta background similar to the flower's actual color, rather than Taoho's red background, which is the same color as that used on the PRC flag, reflecting the mixed heritage and "two systems" of contemporary Hong Kong. But what is this mixed heritage that is so poorly represented in this choice of tree as an emblem?

When we designed *Pocket Penjing*, we did not model the tree species *Bauhinia blakeana*, instead, following conversations with Hong Kong and Mainland Chinese students, we decided to model a different non-indigenous tree, the cherry tree, because of its local popularity and its prevalence as a subject of numerous artworks going back thousands of years in Chinese cultures. It is notable that none of the sixty local participants who co-designed the second version of the app suggested modeling the Hong Kong orchid tree. While the cloned Hong Kong orchid trees that flower today are in effect the same trees from colonial Hong Kong, 2019 saw the rise of the Black Bauhinia flag (Plate 29, right). This variant of the flag of Hong Kong replaces the flag's PRC red background with black, and the modified white flower often has wilted or bleeding petals to represent the erosion of freedoms and rights. The new Black Bauhinia flag has become synonymous with the Hong Kong pro-democracy movement and gained popularity during the 2019–2020 Hong Kong protests, after I had left Hong Kong.

Hong Kong Phytographia

In July 2012 I took a taxi from Hong Kong airport to my apartment to start my new job at City University on the mainland part of Hong Kong. In those first minutes, I was physically struck by the differences, in comparison to the UK and east coast US where I had been living, in both my immediate and the larger environment. I experienced the immersive sensation of hot humid air that enveloped me like a blanket and filled my lungs as I left the airport with my bags. Sociologists describe this sort of experience as the embodiment of foreignness—the visceral differences felt by newly arrived, in my case white British, workers—that unsettle and disrupt our sense of "self-control and superiority" (Walsh 2006: 116). Looking outside, I saw many exciting and unsettling

unfamiliar tree species in formations that were reminiscent of British civic planting, interspersed with familiar favorites that grow smaller, indoors, in the UK.

In Hong Kong, importing "native" English gardening ideas and planting was both frontier cultivation and enculturation. British colonial rule included over a decade of intense afforestation, with over a million trees a year planted from the early 1870s through to its peak in the 1880s (Dudgeon 1996) to green Hong Kong's so-called "barren rock." Not all colonists viewed Hong Kong as barren, as this picturesque description by English architect and topographical illustrator, Thomas Allom reveals:

> Few areas so limited include so many scenes of sylvan beauty as the sunny island of Hong-kong. The country immediately behind Queenstown is peculiarly rich in romantic little glens, or in level tracts, adorned with masses of rocks, in the fissures of which the noblest forest-trees have found sufficient soil for their support.
>
> (Allom 1843: 33)

The predominant view of landscape as separable, commodified, in terms of what it affords humans, is exemplified in the colonial gaze and in unacclimatized colonists' use of the "barren rock" descriptor. They wanted trees for shelter from unsettling strong sun and monsoon downpours. Planting trees also imprinted colonial aesthetics onto the rocky landscape, obscuring its existing beauty according to feng shui that appreciates the mineral alongside the vegetal world. Most of this multi-million colonial tree planting of one native pine species, *Pinus massoniana* (Dudgeon 1996) were cut for fuel during the Japanese Occupation and the hard post-war years. After the Second World War fast-growing non-natives were planted to replace those losses (Zhang and Jim 2013) and non-native planting continued with 16.5 million trees planted over the last thirty years. The enculturation of Hong Kong through planting in the European style reflected the tripartite colonial and Enlightenment attitudes towards nature: as picturesque, or sublime, and as the ground for improvement, against which inferior figures, defined according to race, socioeconomics, and taste, were set. Enculturating Chinese land extended to garden city designs and to private gardens that "were evoked as enclaves of peace and domesticity in an otherwise sterile and hostile land" (Peckham 2015: 1185). City University's faculty housing, where I lived for the first year I was working in Hong Kong, is located on the mainland portion of Hong Kong in Kowloon Tong. Once known as Kowloon Tong Garden Estate, it was founded as a garden city in 1922 by the Briton, Charles Montague Ede, who wanted to develop Kowloon Tong into a high-class residential area. Toponymic analysis reveals the power of renaming Hong Kong's streets by British colonial immigrant groups (Hsieh 1980) that extends to retaining politically sensitive canonizations even after the Chinese handover. Elgin Street (伊利近街) in the Central district honors James Bruce, the eighth Earl of Elgin and the British High Commissioner to China, responsible in 1860, during the Second Opium War, for the order to loot and destroy the Summer Palace in Beijing and for extending Hong Kong Territory by persuading China to add the Kowloon Peninsula (which includes Kowloon Tong and the adjacent area occupied by City University) to the British crown colony of Hong Kong. Subsequent post-British colonial mutations of Anglicized names, by Hongkongers,

is "an ideological tool to divest the landscape of its colonial associations and achieve political legitimation" (Yeoh 1996: 299) but far fewer streets have been renamed in Hong Kong than, for example, in postcolonial Singapore. Colonial-era street names that persist after Hong Kong's reunification to China in 1997 include seventeen streets in Kowloon named after trees like ash, beech, elm, or oak, trees common in the UK but which do not grow in Hong Kong (Dewolf 2016).

After my first year in faculty housing, I moved to Fo Tan (火炭), a light industrial area interspersed with artists' studios. It was full of concrete multistory industrial units, with car repair shops and recycling centers on the ground floor, a few remaining textile producers (though most had relocated to China) and food preparation and distribution units higher up. The streets had almost no litter but were dirty, there was little water-based cleaning of the pedestrian areas, nor civic beautification in this largely non-residential area. But everywhere I looked there were plants. Local shop owners and workers cared for shrubs and small trees planted in all sorts of vessels (Figure 10.3 and Plate 30). Upside-down traffic cones, discarded cooking oil cans, chemical drums, and plastic buckets filled with soil became plant pots, lined up on the pavement, stacked outside garage doors, and clustered around lamp posts. These residents and workers reordered space with the plants they loved, to create a new ecology. If Hong Kong's forestation and planting "illuminates the social and political processes taking place in the 'contact zone,'" where colonial and native Chinese subjects were "constituted in and by their relations to each other" (Peckham 2015: 5) then such plantings around Fo Tan instantiate a contact zone that resists the legacy of colonial order. Might the unsanctioned street plantings in Fo Tan be a form of contemporary

Figure 10.3 Street planting in Fo Tan (火炭), Hong Kong, 2015. Courtesy the author. CC4r.

penjing where nature thrives in recycled containers refashioned as *penjing* planting trays? Their idiosyncratic placement is a new equation of a "green" landscape with economic (re)production and postcolonial order that blurs simple differentiation between public and private space.

Conclusion

In this personal account of the situated material histories of phytographia I have tried to shift what we might understand phytographia to be. These histories grow from, and rot down to be part of, the compost of colonial oppressions, inscribed with and by plants and gardens. Inscribing one version of my history here, I then dug in to expose some of its roots, looking at some of the history of British and Chinese gardens design that each differently inscribe power relations with plants. Phytographia is a colonial practice, an intersectional writing/drawing, and I explored my part in that by extending Patricia Vieira's exciting definition of writing with plants, to coding with plants, reflecting on my own work and lived experience. While *Bauhinia blakeana* is named after botanists, it is not simply the Latin renaming of this tree, after a colonist, that is loaded with colonial power disparities; every sterile cloned tree is itself a phytographic invention of colonial privilege. Through the codely phytographia of *Pocket Penjing* and this account of them, 洋紫荊, the Hong Kong orchid tree, *Bauhinia blakeana*, has become as potent for me as the English oak.

Notes

1 "Summer 84, … Was teaching in art college in Hull (1st time in his life in art college), watched a female student (Jane Prophet) doing performances in front of slides projected on the wall, but she put rubbish from her pockets (scrapings of charcoal) in the slide mount, light passing through; it was very beautiful, incredibly powerful incredible random black marks with white light around them projected on the wall; reminded me of Ian McEver pictures (Show at Arnolfini): simplicity of passing of light through almost nothing. Why not try?" Gary Fabian Miller interviewed by Mark Haworth-Booth and Martin Barnes.

2 "In Irish the word for oak is 'daur,' and in Welsh 'dar' or 'derw,' probably cognate with the Greek 'drus.' Some scholars consider this the origin of the term 'Druid,' since Druids have always been associated with sacred groves, and particularly oak forests" (The Order of Bards, Ovates & Druids, n.d.).

References

Allom, T. (1843), *China, in a Series of Views, Displaying the Scenery, Architecture, and Social Habits of that Ancient Empire*, Vol. 1, Frankfurt am Main: Fisher.

Braidotti, R. (2014), "Writing as a Nomadic Subject," *Comparative Critical Studies*, 11(2–3): 163–84. doi: 10.3366/ccs.2014.0122

Chambers, W. (1773), *A Dissertation on Oriental Gardening. The Second Edition with Additions to Which is Annexed An Explanatory Discourse by Tan Chet-Qua, of Quang-Chew-Fu, Gent*., London: W. Griffin. Available online: https://www.google.co.uk/books/edition/A_Dissertation_on_Oriental_Gardening/kupDwgEACAAJ?hl=en&gbpv=0 (accessed April 6, 2023).

Choy, T. (2011), *Ecologies of Comparison: An Ethnography of Endangerment in Hong Kong*, Durham, NC: Duke University Press.

Crenshaw, K. (1990), "Mapping the Margins: Intersectionality, Identity Politics, and Violence against Women of Color," *Stanford Law Review*, 43(6): 1241–99. Available online: http://www.jstor.org/stable/1229039 (accessed April 5, 2023).

Dewolf, C. (2016), "Solving the Mystery of Hong Kong's Foreign Tree Streets." Available online: https://zolimacitymag.com/solving-the-mystery-of-hong-kongs-foreign-tree-streets/ (accessed April 6, 2023).

Dudgeon, D. (1996), "Anthropogenic Influences on Hong Kong Streams," *GeoJournal*, 40(1–2): 53–61.

Dunzhen, L. and F. Wood (1982), "The Traditional Gardens of Suzhou ('Su zhou gu dian yuan lin')," *Garden History*, 10(2): 108–41. doi: 10.2307/1586743

"Flag, Arms and Graphic Identity of Hong Kong" (n.d.). Available online: https://taohofoundation.org/portfolio/public-commercial/hong-kong-flag/ (accessed April 6, 2023).

Glickman, J. (2015), "A War at the Heart of Man: The Structure and Construction of Ships Bound for Africa," *Open Access Master's Theses.* doi: 10.23860/thesis-glickman-jessica-2015

Haraway, D. J. (2016), *Staying with the Trouble: Making Kin in the Chthulucene*, Durham, NC: Duke University Press.

Hardie, A. (2004), "The Life of a Seventeenth-Century Chinese Garden Designer: 'The Biography of Zhang Nanyuan,' by Wu Weiye (1609–71)," *Garden History*, 32(1): 137–40. doi: 10.2307/1587318

Hedblom, M., B. Gunnarsson, B. Iravani, I. Knez, M. Schaefer, P. Thorsson, and J. N. Lundström (2019), "Reduction of Physiological Stress by Urban Green Space in a Multisensory Virtual Experiment," *Scientific Reports*, 9(1): 1–11. doi: 10.1038/s41598-019-46099-7

Helphand, K. I. (2006), *Defiant Gardens: Making Gardens in Wartime*, San Antonio, TX: Trinity University Press.

"Hong Kong: Population Breakdown by Language 2018" (n.d.). Available online: https://www.statista.com/statistics/329051/hong-kong-population-breakdown-by-language/ (accessed October 21, 2020).

"Hong Kong's War Crimes Trials Collection" (n.d.) [Archive]. Available online: https://hkwctc.lib.hku.hk/exhibits/show/hkwctc/documents/item/61 (accessed August 22, 2022).

Hsieh, C. M. (1980), "Sequent Occupance and Place Names," in R. G. Knapp, *China's Island Frontier: Studies in the Historical Geography of Taiwan*, 107–14, Honolulu: University of Hawaii Press.

Irigaray, L. (1985), *Speculum of the Other Woman*, Ithaca, NY: Cornell University Press.

Irigaray, L. and M. Marder (2016), *Through Vegetal Being: Two Philosophical Perspectives*, New York: Columbia University Press.

Ji Cheng (1988), *The Craft of Gardens: The Classic Chinese Text on Garden Design*, trans. A. Hardie, London: Yale University Press.

Kow, Y. M. and B. Nardi (2010), "Culture and Creativity: World of Warcraft Modding in China and the US," in *Online Worlds: Convergence of the Real and the Virtual*, 21–41, Berlin and Heidelberg: Springer.

Ku, A. S. and N. Pun (2011), *Remaking Citizenship in Hong Kong: Community, Nation and the Global City*, Abingdon, UK and New York: Routledge.

Lafuente, A. and N. Valverde (2005), "Linnaean Botany and Spanish Imperial Biopolitics," in L. L. Schiebinger and C. Swan (eds.), *Colonial Botany: Science, Commerce, and Politics in the Early Modern World*, 134–47, Philadelphia: University of Pennsylvania Press.

Lee, C. (2019), "In Hong Kong, What is Home? Ellen Pau Tackles the Question in Her 30-Year Retrospective." Available online: https://zolimacitymag.com/hong-kong-home-ellen-pau-tackles-the-question-in-her-30-year-retrospective/ (accessed April 6, 2023).

Leonard, P. (2010), "Work, Identity and Change? Post/Colonial Encounters in Hong Kong," *Journal of Ethnic and Migration Studies*, 36(8): 1247–63. doi: 10.1080/13691831003687691

Leung, P. (2012), *City at the End of Time* 形象香港*: Poems by Leung Ping-kwan* 梁秉鈞詩選, Vol. 1, Hong Kong: Hong Kong University Press.

Li, D. C. S. (2018), "Two Decades of Decolonization and Renationalization: The Evolutionary Dynamics of Hong Kong English and an Update of its Functions and Status," *Asian Englishes*, 20(1): 2–14. doi: 10.1080/13488678.2017.1415517

Linnard, W. (1971), "Thomas Johnes (1748–1816)—Pioneer of Upland Afforestation in Wales," *Forestry: An International Journal of Forest Research*, 44(2): 135–43.

Liu, Y. (2003), "The Importance of the Chinese Connection: The Origin of the English Garden," *Eighteenth-Century Life*, 27(3): 70–98.

Liu, Y. (2018), "The Real vs the Imaginary: Sir William Chambers on the Chinese Garden," *The European Legacy*, 23(6): 674–91. doi: 10.1080/10848770.2018.1470382

Lo, Z. (2019), "How Did the Bauhinia, a Sterile Flower, Become the Symbol of Hong Kong?," Available online: https://zolimacitymag.com/how-did-the-bauhinia-a-sterile-flower-become-the-symbol-of-hong-kong/ (accessed April 6, 2023).

McCall, L. (2005), "The Complexity of Intersectionality," *Signs*, 30(3): 1771–1800. doi: 10.1086/426800

Mason, W. (1783), *The English Garden: A Poem*, London: A. Ward, in *The English Garden: A Poem*, Classic Reprint, London, Forgotten Books, 2008.

Milligan, C. and A. Bingley (2007), "Restorative Places or Scary Spaces? The Impact of Woodland on the Mental Well-Being of Young Adults," *Health & Place*, 13(4): 799–811.

Peckham, R. (2015), "Hygienic Nature: Afforestation and the Greening of Volonial Hong Kong," *Modern Asian Studies*, 49(4): 1177–1209.

Pich, C. and D. Dean (2015), "Political Branding: Sense of Identity or Identity Crisis? An Investigation of the Transfer Potential of the Brand Identity Prism to the UK Conservative Party," *Journal of Marketing Management*, 31(11–12): 1353–78.

Prophet, J. (2001), [Artwork] *Decoy*, London: Film and Video Umbrella. Available online: https://www.fvu.co.uk/read/shop/decoy (accessed April 6, 2023).

Prophet, J., Y. M. Kow, and M. Hurry (2018a), "Cultivating Environmental Awareness: Modeling Air Quality Data via Augmented Reality Miniature Trees," in *International Conference on Augmented Cognition*, 406–24, Berlin and Heidelberg: Springer.

Prophet, J., Y. M. Kow, and M. Hurry (2018b), "Small Trees, Big Data: Augmented Reality Model of Air Quality Data via the Chinese Art of 'Artificial' Tray Planting," in *ACM SIGGRAPH 2018 Posters*, 16: 1–2. doi: 10.1145/3230744.3230753

Richards, J. F. (2003), *The Unending Frontier: An Environmental History of the Early Modern World*, Vol. 1, Oakland: University of California Press.

Schwarzkopf, M. (2019), "The Second Mission: Canadian Survival in Hong Kong Prisoner-of-War Camps, 1941–1945," PhD, Université d'Ottawa/University of Ottawa. Available online: https://ruor.uottawa.ca/bitstream/10393/38898/1/Schwarzkopf_Matthew_2019_thesis.pdf (accessed April 6, 2023).

Selley, G. (1991), "TWIGS—Trees and Woods Image Generation System," PhD, Coventry (Lanchester) Polytechnic. Available online: https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.305956 (accessed April 6, 2023).

So, A. Y. (2011), "'One country, two systems' and Hong Kong-China National Integration: A Crisis-Transformation Perspective," *Journal of Contemporary Asia*, 41(1): 99–116.

The Order of Bards, Ovates & Druids (n.d.), Available online: https://druidry.org/druid-way/teaching-and-practice/druid-tree-lore/oak (accessed April 6, 2023).

Vieira, P. (2015), "Phytographia: Literature as Plant Writing," *Environmental Philosophy*, 12(2): 205–20.

Walsh, K. (2006), "'Dad Says I'm Tied to a Shooting Star!' Grounding (Research on) British Expatriate Belonging," *Area*, 38(3): 268–78.

Walters, W. (2002), "The Power of Inscription: Beyond Social Construction and Deconstruction in European Integration Studies," *Millennium*, 31(1): 83–108.

Wong, T. K. and P. Wan (2011), "Perceptions and Determinants of Environmental Concern: The Case of Hong Kong and its Implications for Sustainable Development," *Sustainable Development*, 19(4): 235–49.

"World's Biggest Oxygen Producers Living in Swirling Ocean Waters" (n.d.). Available online: https://eos.org/research-spotlights/worlds-biggest-oxygen-producers-living-in-swirling-ocean-waters (accessed January 20, 2022).

Yeoh, B. S. A. (1996), "Street-Naming and Nation-Building: Toponymic Inscriptions of Nationhood in Singapore," *Area*, 28(3): 298–307. Available online: https://www.jstor.org/stable/20003708 (accessed April 5, 2023).

Zhang, H. and C. Y. Jim (2013), "Species Adoption for Sustainable Forestry in Hong Kong's Degraded Countryside," *International Journal of Sustainable Development & World Ecology*, 20(6): 484–503.