Rendering Life, Refiguring Diversity from the Highlands of New Guinea

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Introduction

A small black label etched with the words *Diplocaulobium centrale*, *New Guinea* helps people distinguish one orchid plant from numerous others that travelled along various routes from various regions of the world to be reassembled inside the Highland Tropics Gallery at the Conservatory of Flowers. This orchid is blooming. Its pale-yellow lip, the portal to thousands of microscopic seeds, inconspicuously unfurls amidst a simulated montane rainforest environment inside a glass exhibition hall.

The Conservatory is a renovated Victorian-era greenhouse, or living plant museum, that attracts throngs of tourists to San Francisco's Golden Gate Park. Most people are familiar with commercial orchid plants, which have prominent blooms arching upwards, beckoning passers-by to inspect the nuances of their inflorescence. Market-savvy horticulturalists manipulate the texture, symmetry, and exquisite markings of these flowers by hybridizing plants to pique the visual curiosity of prospective buyers with a pageantry of long-lasting color (Koopowitz 2001, 52). The short-lived *D. centrale* flower, to the contrary, with its yellow lip and white petals and sepals, is only slightly larger than a human thumbnail and barely visible to the human eye. This wild plant has not adapted to an anthropocentric world, requiring instead that tourists adjust their tropical expectations.

D. centrale redistributes the human gaze towards its quivering leaves, shapely stem, and epiphytic roots that, with the aid of galvanized wire and sphagnum moss, wrap around a manzanita branch protruding from the gallery wall. Manzanita is not its typical highland host plant, although it is a fine local substitute readily available throughout California. Periodically sprayed by ceiling misters, the base of *D. centrale*'s stem - called a pseudobulb - is appropriately swollen with moisture and a latex whitewash on the greenhouse exterior neutralizes the light intensity of the temperate San Francisco sun. *D. centrale* appears quite comfortable. It is blooming after all.

The Conservatory horticulturalists are not motivated by mass production and market demands. They are not in the business of fabricating curious, new floriferous forms. Instead they prefer to collect wild orchid species, which are intentionally preserved as they were found in nature shaped by natural selection, rather than hybridized and shaped by artificial selection. They join aesthetics with the science of systematics: an ongoing project to discover, document, analyze, and develop a comprehensive system of taxonomy aimed at managing and conserving life on

Earth. However, the effort to prevent hybridization and thereby protect these wild species is hindered by the institutional habitat at the Conservatory.

Inevitably the population of wild orchids inside the Conservatory greenhouse is transformed in relation with its surroundings. Over time the living plants do evolve, although sometimes less perceptibly so, within the artificial conditions of the gallery. When wild plants are initially transported from the rainforest there is a high mortality rate due to shock from uprooting, desiccation, and acclimation. A seed capsule from one of the survivor plants, if carefully cultivated by a horticulturalist, will generate several thousand seedlings, the majority of which would die otherwise. This new generation includes many weak, non-vigorous, and malformed plants ill-equipped for the montane lifestyle (Koopowitz 2001, 93 and 136).

D. centrale comfortably blooms inside the greenhouse, but would likely die were it reintroduced to the wilderness from which it came. Despite the aim of conservation to maintain the purity of nature from manmade culture, mediation persists. The highland tropics are neither simulated nor conserved inside the edifice of the Conservatory. The gallery is a juncture of life forms and technologies that constitute a collective that is neither wholly wild, nor completely artificial.

The Crisis of Modernity

Conservation and other strategies for protecting biodiversity are founded in scientific authority and action. Scientists are authorized to represent nature, or translate the silent and passive behavior of objects that exist apart from themselves. In the seventeenth century, a legendary air pump debate between Thomas Hobbes and Robert Boyle transpired which instituted this epistemological practice (Shapin and Schaffer, 1985). Gentlemanly scientists who witnessed the suffocation of animals and extinguishment of flames rendered the evacuation of air from a glass vessel inside the pump as fact.

[T]he scientists declare that they themselves are not speaking; rather, facts speak for themselves. These mute entities are thus capable of speaking, writing, signifying within the artificial chamber of the laboratory or inside the even more rarefied chamber of the vacuum pump…endowed or entrusted with meaning (Latour 1993, 29).

The pump empirically reduced the universe of complex and perhaps unfathomable relationships - sociotechnological imbroglios - to the ontologically separate powers of nature and culture, with separate rights and conditions of truth. Following this great divide, centuries of purification practices distorted the modern worldview, establishing firm boundaries between humans and nonhumans, constituting two isolated and polarized worlds of objects and subjects.

Empiricism became the fulcrum of modern science with vision exalted as the most enlightening of the five human senses. To see an evolutionary pattern in the morphological features or more recently the DNA within and between species, to capture numerous individual plants from the same place and return to the lab for taxonomic research and interpretation became the means of building knowledge about and managing the natural world. However, contemporary theorist, Bruno

Latour argues that the empirical study *of objects* is an illusion, a mental operation that, while a somewhat effective means of analyzing and governing the systems in which live, is actually a myopic misrepresentation of reality proving to be unsustainable. Latour argues that we have never been modern (Latour 1993, 7 and 100-103).

This is to say that there exists no Reality out there to be objectively studied. Research and representation are worldmaking processes that inevitably churn out tangled "naturecultures" with human *and* non-human actants even as modern humans manufacture knowledge about nature as if separate from culture (Latour 1993, 7, 96, 105-9). Naturecultures evoke a sense of being and practice that accounts for the simultaneity and togetherness of the laboratory, pump, witness, animal, fact, and flame.

By purifying its quite fascinating naturecultures of cultural influence, the Conservatory of Flowers maintains the authenticity of its natural collection. In the 1980s, James Clifford critiqued the authentic value that collectors have imposed on art and artifacts in the West, value that is "guaranteed by a 'vanishing' cultural status" (Clifford 1988, 223). This insight is also salient for the wild orchid species as natural specimens whose value is guaranteed by their vanishing floral status. In both cases, rarity is dependent on the assumption that collecting and conservation help prevent extinction. Museums covet the cultural and natural heritage of Earth's wild landscapes. However, the threat of vanishing organisms, behaviors, genetic information, and knowledge is in direct tension with the threat of proliferating naturecultures. The crisis of modernity parallels and exacerbates the crisis of biodiversity. It is impossible to preserve pure forms in nature. A thorough cross-disciplinary examination of the assumptions that guide museological and other conservation practices is imperative.

The Conservatory certainly recognizes highland orchids for their ethnobotanical value, bridging anthropology and botany. However, their focus is largely on traditional, local, ethnographic, or pre-modern knowledge about and relations to plants. Meanwhile the organic, mechanical, and electrical apparatuses and the horticultural, administrative, and fiscal support for their own botanical exhibitions, their ex-situ knowledge production and conservation efforts, are obscured.

Latour anticipates an ontological and epistemological revolution through which moderns would come to recognize and sustain, rather than purify and conserve their proliferating naturecultures - the Conservatory of Flowers as a living museum with a multitude of constituent parts. Accordingly, Latour together with his colleagues Michel Callon, John Law, and others developed a methodology called Actor Network Theory (ANT) to map the material-semiotic associations that constitute networks of naturecultures. This approach has been controversial and nuanced in its application: the basic premise is that ethnographers might come home from the tropics to confront the discursive purification of nature and culture in the West, and use this method to drive home the point that we have never been modern (Latour 1993, 100-103). Latour honors the foot soldiers of anthropology

who over the last century have studied the non-Western world divided into many cultures, "dealing calmly and straightforwardly with the seamless fabric of…'nature-culture'" internal to pre-modern societies, but he aspires to mobilize a new generation of ethnographers who might study networks of things and people that constitute a collective world with sizeable differences (Latour 1993, 7). The kind of practice he supports is founded on the claim that pre- and post-modern societal distinctions are moot, and that it is imperative to understand the collective world as both humans and non-humans actively compose it.

The Conservatory of Flowers may not recognize its potential role in Latour's revolution, although in 2008 the museum did begin adapting its interpretative framework supported by a grantmaking organization called The Christensen Fund (TCF) that focuses "on the biocultural - the rich but neglected adaptive interweave of people and place, culture and ecology" (The Christensen Fund, 2017). TCF sponsored the development of a cross-institutional education program that draws from the collections of three neighboring museums in Golden Gate Park. The program would lead visitors between displays at the Conservatory of Flowers, M.H. de Young Memorial Museum, and California Academy of Sciences to teach about biocultural diversity in the Highlands of New Guinea. While the physical architecture of each building is separate and designed for a distinctive use - growing plants, showcasing art, and supporting ecosystems - a prospective visitor starting at the Conservatory of Flowers and moving through each museum might refigure an object like *Diplocaulobium centrale* as a tangled web of relations rather than a delicate species housed in a Victorian-era greenhouse, as a dynamic living system rather than an individual organism with a single origin.

In the ensuing experimental ethnography, which I wrote in 2008 while working as curatorial assistant to the Curator of Oceanic Art at the de Young Museum, I adopted this visitor perspective. Understanding that conventional ethnography is an authoritative written account of a particular group of people and their culture (Clifford 1988, 21-54), this experiential exposé instead takes as its starting point the life of *Diplocaulobium centrale*, a New Guinea highland orchid that the Conservatory of Flowers considered acquiring for display, with the support of TCF, and adopts the premise of ANT to follow networks of material-semiotic association across the boundaries of conventional classification systems to interrogate how each of the three museums contributing to the TCF education program understands and conserves diversity from the Highlands of New Guinea. I had never been inside the Tropical Zone of Planet Earth when I began writing, and could not therefore return from it. The result is an inverted ethnographic case study about why the tropics are home, and I regard my composition as one of many potential renderings of this particular cross-institutional terrain.

My ethnography is guided by the trope of rhizome. A rhizome is the biological term for underground, horizontally growing plant stems with small nodes from which shoots and blooms emerge. The rhizomes of a sympodial orchid can extend several meters from one season's growth to the next (Koopowitz 2001, 18-19). Philosophers Gilles Deleuze and Félix Guattari offer this spatial reconfiguration of

growth and diversity in their watershed book *A Thousand Plateaus* to invoke the irreducible multiplicity, movement, and connection of processual life in defiance of arboreal evolutionary lineages and taxonomised units of analysis. In the words of English translator Brian Massumi, the interdisciplinary rhizome is "a fabric of intensive states between which any number of connecting routes could exist" (Deleuze and Guatarri 1987, xiv). This trope is particularly well suited for telling a series of contingent contact (rather than origin) stories extending from a tropical, sympodial orchid into various spatial and temporal locations.

An Experimental Ethnography in Golden Gate Park

The Conservatory of Flowers

The Highland Tropics Gallery at the Conservatory of Flowers shows select species of tropical highland orchids from such geographically distant continents as Oceania and South America. The orchids are defined by their particular provenance and mounted in ways that provide easy access for the nursery specialists, who carefully adjust the foreign greenhouse environment with the aid of organic, mechanical, and electric apparatuses made familiar over time. But visitors are not privy to the complexity of this circulatory system. Interpretive signage at the Conservatory situates the highland orchid plants in a pure tropical context, stressing the survival techniques that South America orchids developed in the wilds of South America. The museum omits discussion about the changing state of those tropical orchids in their passage to and present assemblage in the Mediterranean climate of Golden Gate Park, alongside orchids from Oceania. The processual life of the natureculture institution fades into the fabric of Golden Gate Park, while the exotic highland orchids preoccupy our gaze.

Diplocaulobium centrale is one Oceanic orchid species that the Conservatory is considering for acquisition and display in its Highland Tropics Gallery. Plant taxonomists group this orchid with the sub-tribe, *Dendrobiinae*. Imagine ancestral *Dendrobiinae* emerging nameless millions of years ago. They established an amorphous zone of inhabitance that straddled the equator, extending North-South from Korea and Japan to New Zealand and East-West from Tahiti to India. Indo-Pacific continental plate tectonics and other geologic transformations established the critical regional conditions for growth. Across vast terrains and varied climates, the *Dendrobiinae* mutated and multiplied. The most prolific activity occurred closest to the equator in tropical climates, especially on the island of New Guinea (Lavarack, Harris, and Stocker 2000, 14 and 31-32).

New Guinea is an uplifted island landscape resulting from the collision of the Australiasian and Laurasian tectonic plates and volcanic activity. This tumultuous geologic episode yielded a plethora of ecological niches. Emergent orchids produced millions of tiny lightweight seeds and dispersed throughout these niches with the momentum of light breezes and gusting winds. Year-round precipitation supported a particularly lush ecosystem in the massive mountain ranges spanning the island.

Dense vegetation blanketed its youthful faults, folds, and other limestone distortions.

The orchids that survived in these highlands were highly adaptable, such as the epiphytes readily capable of growing in terrestrial mode. Typically, epiphytes nourish themselves with the decomposing nutrients of other plants in the upper canopies of the rainforest, although some fallen plants successfully root themselves and scavenge for nutrients in the upper strata of soil. Such versatility ensured the survival of one generation of orchid plants, while effective pollination strategies ensured the survival of many.

There are several *Dendrobiinae* orchids that have yet to disclose their pollinator, including *D. central*. However, botanists have reason to believe its relative, *Dendrobium lawesii*, coevolved with the rufous-banded honeyeater (Hunt 1969). They hypothesize this plant attracts this honeyeater with its hanging cluster of trumpeted inch-long magenta flowers, even though the floral receptacles are scentless and without nectar. As early as 1877, Charles Darwin attempted to explain the adaptations of orchids and their reproductive apparatuses (Darwin 1877, 36-38). He observed wavy, spiralling, rippling petals ranging from pale shades of yellow and pink to bright red and even ultraviolet, and he hypothesized that these contrivances were dependent on the perceptive faculties of animal pollinators. Darwin was particularly taken with the way that some orchids allure their pollinators with a reward such as nectar or fragrance, while other orchids lacking nectar and fragrance actually trick their pollinators into carrying their seeds by falsely advertising or mimicking the visual cues of surrounding plants that do offer these rewards. *D. lawesii* attracts rufous-banded honeyeaters by mimicking nearby rhododendron flowers. The birds will flick their bristly tongues repeatedly into visually similar flowers until they locate the rhododendrons that satiate their hunger.

In *The Origin of Species*, published in 1859, Darwin detailed the principles of gradual development and diversification of a species over time, describing how the orchid plants we see in the present, including *D. centrale* and *D. lawesii*, are descended from a common ancestor (Darwin, 1859). In 1980, however, Deleuze and Guattari challenged the principle unity of Darwin's evolutionary biology. They argued that the circulation of intensities between organisms, or transmission of codes beyond the physicality of copulation and genetics, constitutes a world of interconnectedness and multiplicity that is of equal (if not greater) significance with origins and differentiation. How have multi-generational interactions between the orchid, rhododendron, and honeyeater forged an evolutionary relationship between birds and plants measured not by common ancestry, but by a common rhizome (Deleuze and Guatarri, 1987)? In this light, the latex-covered edifice of the Conservatory by no means arrests the evolution and thereby conserves its orchid plants by containing their reproduction.

A captive *D. centrale* plant will successfully reproduce the majority of its seeds under the careful supervision of horticulturalists, whereas amidst the harsh

conditions of the montane rainforest in New Guinea few seeds would germinate. Horticulturalists intentionally breed large populations because the plants are vulnerable to freezes, electrical failures, economic recessions, and political violence, as well as greed and benign neglect. For example, in a historic case at the Conservatory in Golden Gate Park, volunteers routinely divided a renowned collection of rare *Masdevallia* orchids compiled by George Marcopulos and those volunteers accepted some of the divisions as gifts for their personal collections. This gift policy facilitated theft and soon thereafter a change in staff, entrusting the collection to someone far less attentive than Marcopulos. In this time, the *Masdevallia* collection dropped from four hundred to two hundred species (Koopowitz 2001, 94-95). The remaining two hundred became evolutionary building blocks that would transmit their particular interactions with human behaviour and values, technological services and malfunctions into future generations. The elements and events of Golden Gate Park rhizomatically modify the Conservatory's supposedly preserved population of wild orchid species.

The classical taxonomic representation of biodiversity assumes the propagation of discrete life forms - the *Animalia* kingdom as isolated from the *Plantae* kingdom for one. Privileging rhizomatic relationships between heterogeneous organisms, such as the orchid and honeyeater, or human volunteer, instead conjures a limitless interwoven life system that alters our understanding of evolution, diversity, and strategies for survival. Rhizomatic networks and life forms are irreducible. They do not exist out there as a finite number of shoots and nodes to be observed, described, and managed by humans. We are embedded in their proliferation and adaptation. Diversity figured in this way begs the question of how, with what, and with whom we build the future rather than what we conserve from the past.

M.H. de Young Memorial Museum

This rhizomatic reformulation of diversity emerges from and critiques systems of Western knowledge. Deleuze and Guatarri were Parisian intellectuals well versed in European traditions such as philosophy, literature, film, psychology, linguistics, and evolutionary biology. However, it is prudent to recognize that marginalized traditions of representation and worldmaking have existed outside of and in relation with European traditions despite colonial efforts to negate them as primitive (Said qtd. in Sully 2007, 28). The very concept of rhizome was first published in *Naven*, a mid-1930s ethnographic account by British-American anthropologist Gregory Bateson about the Iatmul tribe, who live in the middle Sepik River region of northeastern New Guinea. In a chapter called "The Eidos of Iatmul Culture," Bateson wrote:

I believe that we are concerned with a rather important motif of Iatmul thought. The natives see their community, not as a closed system, but as an infinitely proliferating and ramifying stock. A clan will grow big and it will subdivide; a village will grow big and it will send out colonies. The idea that a community is closed is probably incompatible with this idea of it as something which continually divides and sends out offspring "like the rhizome of a lotus" (Bateson 1936, 249).

Indeed, the rhizome concept emerged from Bateson's interactions *with* the Iatmul, but conventions of the period instead reflected an ethnographic study *of* the Iatmul. Bateson relayed the beliefs of indigenous people in academic English writing, and was thus perceived as the originator of the idea. Recognizing the dynamics of anthropological fieldwork along the Sepik River reconstitutes the idea as authored by many rather than one.

The Sepik River, winding through the densely forested Lowlands of New Guinea, has been a popular destination for anthropologists. However, the Highlands of New Guinea are home to fifty per cent of the total population, nearing four million people. Long sustained by oral stories, songs, dances, rituals, carvings, and designs to transfer knowledge from one generation to the next, Highlanders did not transcribe an ideology or belief system as is customary in the West. But writing has become a vital means of contributing to the discourse on knowledge and power in the postcolonial era, especially as means to challenge primitive stereotypes and articulate indigenous logics. These contemporary forms of indigenous scholarship are circulating internationally, as are the scholars themselves.

Since its inception in 1895, the M.H. de Young Memorial Museum in Golden Gate Park has exhibited selected works of art from Oceania, a region consisting of nearly two thousand island cultures. The founder and namesake of the museum, M.H. de Young, believed "a great museum was not a static collection forever preserved, but a dynamic ever-changing institution with the on-going participation of patrons and volunteers, generation after generation" (Forbes 1995, 7). The Museum's present day Jolika Fellows Program, funded by patrons Marcia and John Friede, provides support for New Guinea artists, scholars, and museum professionals to visit San Francisco and to participate in programs and publications related to the Jolika Collection of New Guinea Art amassed by Marcia and John Friede over four decades, a selection of which is now on view and in the permanent collection of the de Young Museum. Their patronage allows the Museum to continue building a diverse community of people dedicated to arts and culture, in addition to its permanent collection. However, the Museum is still founded on the proprietary assumption that it owns and will therefore protect its permanent collection inside display cases and storage facilities for perpetuity. The primary mode of display is still presenting each beautifully nuanced Jolika art form against a neutral backdrop, which dismisses other vital exchanges occurring in and beyond the Marcia and John Friede Gallery.

One prominent art form that travelled from the Highlands of New Guinea to the Jolika Collection of New Guinea Art is called *noken*, JF-A56. It is a string bag culturally attributed by anthropologist Mouli MacKenzie to the Dani tribe of West New Guinea (MacKenzie 2017, 66). If the de Young Museum displays this *noken* like the two Mountain Ok string bags installed in the inaugural exhibition of the Jolika Collection in 2005, it will appear a supple masterpiece glowing against a monotone fabric background that neutralizes the museum infrastructure. The eucalyptus floors and surrounding cotton-and-linen covered plinths are rendered extraneous. This display focuses instead on the single element looping technique used to create

this aesthetically pleasing and physically strong object, with its interlacing pattern of golden yellow orchid stem and brown bark fibre.

The Dani and neighbouring tribes of West New Guinea often incorporate orchid stems into artwork. Green when alive, certain plants turn bright golden yellow when they die and lose their moisture, including *Diplocaulobium central* (Lavarack, Harris, and Stocker 2000, 44). Artists collect those dried plants intact and string sections of the stems like beads onto necklaces or, using a more sophisticated technique, they split the dried stems into colourful ribbons and then carefully coil the ribbon around two-ply twine to create patterns on string bags. Indeed, string bags continue to be ubiquitous across the island of New Guinea variably used for work, fashion, and ceremony (MacKenzie, 1991). With their expansive fibre loops, these bags accommodate heavy loads of food, valuables, and even babies on a daily basis. This wearable art form also adorns the bodies of tribesmen and tribeswomen during ceremonies, at times draping around their shoulders, contoured to their back, swaying with their movement, and at times resting on their chest, suspended from their neck, safekeeping a smaller value object.

MacKenzie is one of the scholars with whom the de Young Museum worked to produce a lavish 672-page catalogue of New Guinea Highlands art from the Jolika Collection with authoritative essays on a wide range of subjects. Each essay offers a different perspective on how systems of aesthetic value in the Highlands differ from the Lowlands of New Guinea and the West, particularly with regard to the everyday and ephemerality. Anthropologist Terence E. Hays succinctly describes how:

[T]he aesthetic sensitivities New Guinea Highlanders not only were manifest when they decorated themselves for special occasions, but also permeated all of their lives. Nowhere in the Highlands were there full-time specialists producing art for the wider population. Rather, when daily chores and tasks permitted, artisans - some of whom were regarded by their fellows as admittedly better at the task than were others, as dictated by the rules of the division of labor-imbued homely raw materials with a glow in which we [the museum-going public] all now can bask. (Hays 2017, 11)

The Highlanders are recognized for their embodied displays of ephemeral microcosms, while Lowlanders are recognized for the durability of their woodcarving and Westerners for the primarily visual language of their painting, sculpture, and photography. Andrew Strathern and Pamela J. Stewart elaborate on the materials used for adornment in the Highlands, including plant fibre, pigment, bird plumes, marsupial fur, seashells, butterfly pupae, reptile skin, clay, and pig tails. They show that underpinning these collecting and display practices is a cosmos or universe of beings in complex relationship with each other (Strathern and Stewart 2017, 91-105). MacKenzie describes how in Highlands New Guinea string bags function semiotically to identify and differentiate gender roles, levels of cultural knowledge, and clan membership reinforcing various modes of separation. However, she too concludes this anthropological interpretation of social structure with the holism of cosmology and wellbeing, describing how “a simple string bag can, through the power of its fullness, its shimmering brightness, its analogies with completeness and oneness, awaken in the consciousness of its makers and users the

energy of the universal aesthetic experience of connection with all that is" (MacKenzie 2017, 79).

Complex relationships contained within the string bag art form demonstrate what Latour calls the internality of pre-modern indigenous modes of perception and thought. The Museum literally purifies its cultural objects of pests and elevates its artworks from the status of nature to the status of culture, celebrating the diverse ways that humans transform natural materials into masterpieces. The *noken* located inside the Marcia and John Friede Gallery at the de Young Museum is part of a showcase for art and culture, as opposed to the Highland Tropics Gallery at the Conservatory of Flowers, which showcases plants and nature. The artworks appear suspended in ethereal darkness with dramatic lighting to accentuate their depths and curves, whereas the plants appear against a backdrop of simulated rainforest canopy. The Museum and the Conservatory are distinct in their mission and methods of display, yet there are interdependent operations at work in these Golden Gate Park institutions.

A focus on visuality narrows the experience of the Jolika Collection at the de Young Museum, permitting visitors to look closely but not touch. Circulating in the tropical air of Highlands New Guinea, the *noken* in the Jolika Collection would have continued its intimate life cycle with the Dani people and, perhaps, eventually decomposed. In the Highlands of New Guinea "Paraphernalia representing spirits are sometimes left to rot in the bush rather than being preserved in shrines. Such actions recognize cyclicity: the flow of objects among people and the cycles of creation and regeneration of living things" (Strathern and Stewart 2017, 92). Collectors passing through the Highlands in the twentieth century catapulted the bag out of its customary cosmic orbit into a Western value system. While the Dani perceive the brightness of orchid on bark fibre as heightened and ephemeral presence, the de Young Museum now preserves the appearance of two contrasting natural fibres. A once tactile cosmos of exchange has been rendered sterile. The artworks are now isolated as masterpieces, or cultural specimens, used to describe cohesive indigenous groups of people who share certain historically circumscribed characteristics. Museum curators and conservators are dedicated stewards of the *noken*, a rare fabric imbued with meaning and protected from loss inside a controlled museum atmosphere for posterity.

And yet, neither the de Young Museum nor the Conservatory of Flowers is a vacuum. Glowing as the orchid blooms, were the *noken* reintroduced into the Highlands New Guinea ceremonial cycle it will have profoundly changed, as will the indigenous communities from which it came. The Museum is quasi-sterile and the Conservatory is quasi-wild. Both are living systems or microcosms shaped by the ecology and exchanges of Golden Gate Park.

The de Young Museum carries few of the vital signs people immediately associate with plant life at the Conservatory, but it too is living. Not only in the way that it cultivates relationships with contemporary artists, scholars, and museum professionals from New Guinea, but also in the way that living naturecultures run

rampant from the ground level through to the ninth-floor observation deck and laterally into the park. For one: the perforated copper skin of the building, redesigned and reconstructed by Swiss architects Herzog and de Meuron at the turn of the century, is more than a façade and will do more than patina. The four hundred and twenty tons of copper used to construct the new de Young set a precedent for building construction. This skin as the flesh rather than the limit of the new Museum will slowly leach into the ground over time and exemplifies its ever-changing institutional pulse.

To perceive the de Young galleries as junctures of meaning, life forms, and technologies, particularly the installation of ephemeral Highlands art, is to account for decomposition as a part of life cycles, exhibition, and conservation practice. It is to consider how the everyday institutionalization of permanence is contingent on artificially extending the ephemeral and arresting particular kinds of exchange. The artificial is not purely a human production. It involves the collective energies of humidity, temperature, light, and pest controls, curators, conservators, agreements, endowments, and the everyday fluctuations of them all. The *noken* is not a sexually active carrier of genes, but preserved inside the de Young Museum it will be inherited by future generations.

California Academy of Sciences

TCF's sponsorship of a cross-institutional education program that leads visitors between displays at the de Young Museum and the Conservatory of Flowers may signal an important shift in the Museum's mission, or at the very least modify visitor expectations of cohesive indigeneity as the orchids do for tropicality. The program will also invite visitors to explore an array of bird specimens originating from the island of New Guinea and now in the Ornithology Collection at California Academy of Sciences. In following networks of material-semiotic association across the boundaries of classification systems at these three neighbouring museums in Golden Gate Park, a desirable route for this experimental ethnography would be to locate a *Conopophila albogularis*, or rufous-banded honeyeater, in their collection. Highland orchid *D. centrale*, whose life is the starting point of this ethnography, has yet to disclose its pollinator, although botanists hypothesize its relative, *D. lawesii*, coevolved with the rufous-banded honeyeater (Hunt 1969). Unfortunately, this bird is not represented in the Ornithology Collection at Cal Academy. A search of their collection database with identification for 96,000 bird specimens from over 120 countries produces no results. A more generative route exists in identifying the New Guinea bird species that appear in the de Young Museum's Jolika Collection of New Guinea Art. For instance, the Cal Academy is home to a sizeable collection of bird of paradise specimens, the plumes of which feature prominently in Highlands headdresses and ceremonial dance. Is the *Lophorina superba*, or Superb Bird of Paradise, identified as CAS ORN 34633, Accession Number 96, Collector Number 31228, preserved in its state-of-the-art pullout drawer precisely as it was found in the wild?

The taxidermist did attempt to display the skin of *L. superba* in a lifelike way. Its small chest puffs slightly upwards as if the lungs were full of oxygen, and the sheen of its black cape extends from beak to claw in an archival display of its powerful fragility. However, the skin is not at all preserved as it was found in the wild. Forming a trapezoidal shape from *L. superba*'s electric blue breast-shield was an aesthetic choice made after removing all of the bird's muscle fibre and bone, and without knowledge of the male creature's courtship dance. At the time, the taxidermist could not mimic the bird's behaviour because scientists had not successfully documented the dance.

Around the world, an estimated seven million bird of paradise skins are preserved in various lifelike forms with 800,000 at the American Museum of Natural History and over one million at the British Museum of Natural History (Beehler and Frith 1998, 39). Curators at these museums have revered biodiversity within the *Paradisaeidae* family by rendering bird life passive, dissected, and quantified. But museum storage facilities, while behind the scenes, are not stagnant archives of natural history. They too are functioning habitats comprised of feathers and formaldehyde. The meticulously designed entries and exits do not isolate pure bodies of knowledge and preserve unchanged information from the past for the future. They constitute a technologically mediated form of life, a manner of evolutionary historicizing that produces hard scientific data with which to authorize the present and even compose the future.

In his archaeological survey of natural history as a mode of representation that develops between the classical and modern epistemes, Michel Foucault discusses the sterility of things without words:

> *The whole of animal semantics has disappeared, like a dead and useless limb. The words that had been interwoven in the very being of the beast have been unraveled and removed: and the living being, in its anatomy, its form, its habits, its birth and death, appears as though stripped naked.* (Foucault 1970, 129)

Knowledge about living beings produced in this way assumes the autonomy of nature and consistency of natural objects. Collected and transported from around the world, crossing time and space, research specimens maintain the integrity of their origins.

When it opened in 1853, the California Academy of Sciences performed the role of a natural history museum, celebrating the stoicism of the observational gaze. Italian architect Renzo Piano recently redesigned and reconstructed the building in line with the science institution's new approach to educating and exciting the public about the natural world. The new Cal Academy opened in 2008 with worldwide acclaim for its commitment to sustainability, and its efforts to reconcile its historic collecting and display practices (ordering the universe into discrete taxa) with its new environmental agenda (caring for and taking part in living systems of varying scale that constitute the universe). The two-acre living roof of the new museum undulates like the hills of San Francisco and its perimeter, covered with photovoltaic cells, will generate five per cent of the energy necessitated by the building.

The new Cal Academy emphasizes the liveliness of its architecture and programming alongside the legacy of its conventional dioramas and historic collections. Curatorial selection for its four-story Living Rainforest duly accounted for the adaptive qualities of plants and their ability to survive within the conditions of the exhibit. The horticulturalists at the Conservatory of Flowers also consider light levels when installing new orchids in their Highland Tropics Gallery, which is energy efficient by default due to the climatic similarities between temperate coastal fog and cool highland mist. The Conservatory modestly regulates the temperature and moisture of its Highland Tropics Gallery with latex whitewash and ceiling misters, whereas the Academy must diligently maintain its Living Rainforest at 82-85 degrees Fahrenheit and 75% humidity. Is the Academy more sustainable with regard to its curatorial selection when its exhibition technologies consume more energy in order to assist plants less equipped for San Francisco's climate? Does the Living Rainforest celebrate and help restore a threatened ecosystem, or maintain the contrast of environmental wealth and environmental degradation?

The first bird of paradise skins collected from Oceania travelled to Europe aboard Ferdinand Magellan's last exploratory ship in 1522. At that time, Europeans imagined the living birds as fantastical creatures thought to be adrift in the sky, feeding on dewdrops and periodically anchoring themselves to tree branches using their wire like tail feathers (Beehler and Frith 1998, 30 and 149). These skins were not from the island of New Guinea, but from the adjacent Moluccan island of Tidore. Later skins from New Guinea arrived without legs because New Guineans customarily removed the flesh, bone, legs, feet, and sometimes the wings before drying the skins over a wood fire. Unbeknownst to laypersons in Europe, the curiously footless and wingless imports reinforced the fantasy of supernatural flight (Beehler and Frith 1998, 39).

Some New Guinea birds of paradise live in the Lowlands, although the majority of them prefer the lush and rugged conditions of the Highlands cordillera, including the Superb Bird of Paradise. Edmé-Louis Daubenton first illustrated *L. superba* in 1774. Philibert Guéneau de Montbeillard described the bird again the following year, and Louis Jean Pierre Vieillot named him the sole species in his genus in 1816. However, this suite of French naturalists never actually observed a live Superb Bird of Paradise in the highlands. It was not until 1870 that a collecting expedition led by Carl Benjamin Hermann von Rosenberg finally encountered *L. superba* living in the Arfak Mountains (Swadling 1996, 75).

By the nineteenth century, Europeans began mobilizing expeditions of natural historians to survey all the birds of paradise in-situ, having disregarded speculative truths in favour of scientific reason and observation as the cornerstones of knowledge. In 1869, a British contemporary of Darwin named Alfred Russel Wallace published *The Malay Archipelago* detailing his fieldwork in the Indo-Pacific, spanning Malaysia, Singapore, Indonesia, the Dutch East Indies, and New Guinea (Wallace, 1869). Wallace generated international acclaim for the birds of paradise, which he collected as key specimens of evolutionary discourse. He observed that female birds of paradise were generally plain and inconspicuous, while the male

birds of paradise adapted exquisite body modifications over many generations. The morphological diversity in males ranged from *L. superba's* electric blue breast-shield to the serrated plumes of *Pteridophora alberti*, otherwise known as the King of Saxony Bird of Paradise. Wallace was impressed by the skilful use of these avian adaptations during courtship, although he continued to endorse natural selection over sexual selection.

The successive stages of development of the colours and plumage of the Birds of Paradise are very interesting, from the striking manner in which they accord with the theory of their having been produced by the simple action of variation, and the cumulative power of selection by the females, of those male birds which were more than usually ornamental. Footnote: I have since arrived at the conclusion that female selection is not the cause of the development of the ornamental plumes in the males. See my Darwinism*, Chap. X.* (Wallace, 1869)

Meanwhile, the intriguing male birds of paradise proliferated in public and private collections as staples of refined curatorial selection. Difference and classificatory schemata pervaded the consciousness of modern collectors including natural historians and private merchants who sold both tropical orchids and bird of paradise skins, as well as butterflies and dragonflies as exotic tokens from distant islands that contrasted with the urbanity of Europe.

The proliferation of skins along with field surveys, travel writing, and illustrations fuelled the demand for birds of paradise in Europe and the United States. Hand-coloured folios, oil paintings, lithographic prints, and photography of their courtships dances especially heightened interest (Ballard, Ploeg, and Vink 2002, 7). Later on, in the twentieth century, following a series of technological innovations, collectors were thrilled when a natural historian from Britain named Sir David Attenborough led the first filmmaking expedition through the rainforest canopy of New Guinea using high definition moving image and sound to document a variety of these dances (Attenborough, 2007).

In Attenborough's suspenseful filmic narrations, the circulation of intensities between male and female birds of paradise is paramount. Viewers see how, fluttering between tree branches to attract a prospective mating partner, *L. superba*, the Superb Bird of Paradise, utilizes his electric blue breast-shield and lustrous black cape. When a female bird approaches, he begins to twitter and dance side to side, expanding his black feathers into a dark ellipse that frames and accentuates his beaming breast. *L superba* is larger than his cousin, *P. alberti*, the King of Saxony Bird of Paradise. Attenborough shows the King of Saxony evolved a different set of exquisite features: two long serrated plumes that extend from the back of his head. When courting on film, he alternately jitters and bounces with his long plumes flapping steadily. He then flips them skyward in a momentary helicopter-like stance, finally throwing them forward like antennae sensing the readiness of his female mate.

Today ornithologists argue that the strength and extravagance of the male birds of paradise have indeed evolved from female sexual selection or mate-choice (Christidis and Schodde, 1993), and Attenborough's films reinforce this point. He

presents them as discrete, taxonomised species celebrated for their distinctive plumage and bird-to-bird mating patterns, omitting intense transmissions with other organisms, technologies, and support systems such as the carefully rigged climbing ropes and British Broadcasting Corporation (BBC). How do both historical collectors of bird skins and contemporary collectors of moving images participate in complex horizontal systems of worldmaking?

Andrew Moutu, an indigenous anthropologist from the East Sepik Province of Papua New Guinea, understands that "collection is not necessarily an enactment of a classificatory scheme of thinking but rather that the enactment of social relations necessarily summons differentiation" (Moutu 2006, 99). He arrives at this theory by way of field research with the Iatmul people along the Sepik River. According to Moutu, the Iatmul people do not describe things with respect to a predetermined conceptual structure. Rather, meaning develops through spatial juxtaposition. Previously, Bateson explained the rhizomatic Iatmul worldview using a lotus analogy. Moutu introduces this alternative juxtapositional worldview using the shoots of a sago palm and banana plant. His intervention relies on the spatial proximity of things, which produce relational meaning in a mode that is emergent rather than fixed. Things together are productive, active, and alive.

According to this logic, the BBC production equipment, though outside of Attenborough's frame, is significantly located in the field with the film crew and birds of paradise. The juxtaposed bird, camera, and natural historian form a chain of interaction much like the rhizomatic orchid, rhododendron, and honeyeater. This constant flux of creatures, instruments, and representations prompts a reconsideration of the methods used to understand and conserve diversity from New Guinea throughout the world. The socio-technological fields of the New Guinea Highlands and Golden Gate Park are both contact zones teeming with quotidian life. There is something impacting about being in close proximity to the flesh of a bird. Whether in the Arfak Mountains of New Guinea or at the California Academy of Sciences, viewing an *L. superba* or *P. alberti* specimen up close and in person is a significance species interaction.

The California Academy of Sciences counts 77 individual bird of paradise specimens in its Ornithology Collection. Each discrete body carries valuable statistical information about locality, collection date, age, sex, and weight that together might reveal significant patterns within the species, genera, family, or order. This information is valuable. Identifying individual life forms and behaviours has generated fascinating scientific studies and illustrations, but as ecologist Harold Koopowitz says about tropical orchids: "Nearly all attention has been focused on their taxonomy, the distribution of orchid plants or how they are pollinated. We know very little about how they 'fit' into their environment, the way in which these plants manage themselves or their needs in the wild" (Koopowitz 2001, 21). Or in the words of Donna Haraway: "Typological thinking reigns almost unchecked in this universe, and nuanced views of developmental biology, behavioral ecology, and genes as nodes in dynamic and multivectorial fields of vital interactions are only

some of the crash victims of high-octane medical genetic fuels and gene-jockey racing careers" (Haraway 2008, 143).

For decades a 15-inch-large creature from the New Guinea Highlands, with an ebony body accented by brilliant patches of orange around his eyes and on his wings, convinced taxonomists that he was from the *Paradisaeidae* family. The morphological character of his nasal region, beak, and feet exhibited a close affinity with other birds of paradise and became scientific evidence for common ancestry (Beehler and Frith 1998, 174). They named him *Macgregoria pulchra*. However, in the year 2000, a few curious ornithologists equipped with new biochemical tools and methods argued otherwise (Cracraft and Feinstein, 2000). These ornithologists claim that *M. pulchra* is the largest honeyeater on Earth, a magnificent bird amidst its modest brethren rather than a dull example of the flamboyant *Paradisaeidae*.

There is an *L. superba* breast-shield mounted on a ceremonial wig that travelled from the New Guinea Highlands to the Jolika Collection of New Guinea Art. The breast-shield is easily discerned from the cassowary plumes, reptile skin, and marsupial fur entangled in a base of human hair. And the aesthetic presentation of the breast-shield, elongated along a horizontal plane, actually does mimic the bird in pursuit of a female mating partner. This wig is culturally attributed to the Huli people who live in the Southern Highlands Province and who, like the Dani in West Papua, emphasize their "active involvement in the world" through ceremonial dance, song, and adornment.

Highland ranges of golden yellow: the plumes of a Twelve-wired Bird of Paradise and the fruits on which they feed are colored like the dried stems of *Diplocaulobium centrale* interwoven as a *noken* on display inside the M.H. de Young Memorial Museum in Golden Gate Park. The interdisciplinary rhizome is "a fabric of intensive states between which any number of connecting routes could exist" (Deleuze and Guatarri 1987, xiv). In the course of their lifetime, birds interact with countless flowering plants, which interact in turn with countless varieties of fungi, which interact with insects, raindrops, and light rays traveling through vast material-semiotic networks of inter-being on the island of New Guinea and beyond. A rhizomatic approach to diversity recognizes the impossibility of naming all the world's dynamic life forms: flora, fauna, microbes, monoliths, and *Homo sapiens* too.

Conclusion

In this experimental ethnography, I have attempted to refigure the highland orchid, *Diplocaulobium centrale*, through lateral webs of movement, a gesture of diversity as dynamic process. The orchid's lip unfurled and its roots entangled with its tropical New Guinea allies. There are dense networks of material attachments and semiotic associations in Golden Gate Park. Yet, my writing still unwinds according to the linearity of language. While discursive production - written, spoken, and visual language - is important to me as a storyteller, I am not concerned with a true representation of diversity or rendering of life in the highland tropics.

Ultimately, I am concerned with the physicality of language and how representations of the world reverberate in the world. If descriptions of tropical taxa have elicited authoritative and site- or species-specific conservation strategies, I am interested in how descriptions of natureculture networks can refigure conservation as participatory and global.

Participation is not conservation in conventional terms. It is not voluntary. While the island of New Guinea seems distant, the people in San Francisco are fully implicated in the process of conservation: seeing, absorbing, and juxtaposed with the orchids, artworks, and birds from the island in Golden Gate Park. Recognizing this contact as participation, on a local and global scale, reminds us how absolutely interconnected and implicated we are in the constant collective making of the world. We are always already participating, but how and to what effect?

How might museum databases evolve from object profiles to render the activity of computer users and gallery visitors perceptible, growing our ability to perceive microcosms, rhizomes, and networks? What is the potential of heat and motion sensors in conveying how "diverse bodies and meanings co-shape one another" (Haraway 2008, 3 and 205-246)? Database aestheticians are utilizing new media technologies to animate communities of practice in such unprecedented ways (Vesna, 2007).

It is challenging for museums to represent the material-semiotics of collections and display, although they are well suited to explore the interactivity of storage and exhibition spaces as an exploratory model of worldmaking: rendering life. The conceptual division of "nature" and "culture" has manifested in the world as an unsustainable boundary in the politics of land use and resources wherein governmental, non-profit, and even for-profit organizations such as eco-tourism agencies are struggling to protect the Earth's last wild places (Mittermeier et al., 2003). Much art and natural history collecting from New Guinea happened in the span of 400 years. Exploration began in the seventeenth century and finally culminated in 1936 with the glacial summit of Puncak Jaya by Dr. Anton H. Colijn, Frits J. Wissel, and Jean Jacques Dozy who were employed by a Dutch oil company. On this expedition, Dozy happened upon a large deposit of copper ore, which would largely shift the European profiteering impulse away from the accumulation of small-scale specimens towards mining swaths of rainforest (Ballard, Ploeg, and Vink 2002). Since then, some private art collectors and members of the scientific community have continued in their pursuit of material culture, although local and international organizations such as UNESCO keep watch over potentially unethical enterprises.

The movement of material culture continues even as the world establishes heritage sites and wilderness preserves. It just moves in different forms and at a smaller scale, but not necessarily at a lesser magnitude. Today collectors are able to gather material without removing individual specimens from their habitat using technology such as film and video, tissue cultures, and blood sampling. Found in-situ, this information is brought back to study or exhibit ex-situ. But we are always

responding to and managing life in-situ. Today diversity has greater currency as lateralized webs of interaction than as discrete taxon. Diversity figured in this way begs the question of how, with what, and with whom we sustain the future rather than what we conserve from the past.

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