

Robert Zhao Renhui

SEEING FOREST



La Biennale di Venezia

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d'Arte

Partecipazioni Nazionali

Volume 1 of 2



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Robert Zhao Renhui

SEEING FOREST

Singapore Pavilion
at the 60th International
Art Exhibition –
La Biennale di Venezia

Volume 1 of 2

Edited by
Anna-Sophie Springer
& Etienne Turpin

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Singapore Art Museum,
2024

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The 60th edition of the International Art Exhibition—La Biennale di Venezia (Biennale Arte)—is testament to the important role of the arts in our lives. Art has the power to connect and foster collaborations and conversations within the global arts community and beyond.

Singapore's 11th participation at this year's Biennale Arte marks a significant milestone in our commitment to support and create internationalization opportunities for our artists. The Singapore Pavilion showcases *Seeing Forest* by artist Robert Zhao Renhui and curator Haeju Kim. *Seeing Forest* is an evocative exploration of secondary forests—forests regrown from deforested land due to human intervention such as development and plantation—and the intricacies of human and non-human co-existence and belonging.

Robert Zhao Renhui's thought-provoking and multi-disciplinary practice delves into the complexities of the natural world, human-animal interactions, and the impact of human activities on the environment. His works challenge viewers to contemplate the inextricable relationships between human and nature, prompting reflections on our roles as stewards of the planet. The National Arts Council (NAC) is honored to support Robert Zhao Renhui at this significant juncture of his artistic career as he showcases his years of research and practice at this prestigious international platform.

Curator Haeju Kim's focus on ecological perspectives, locality, planetary connections, and coexistence in her research aligns with the themes explored in *Seeing Forest*. This collaboration offers us a chance to rethink the relationship between human-in-nature and human-as-nature, and the evolving and multifaceted intersections between human and natural worlds in an urbanized city.

In this edition, the Council has commissioned the Singapore Art Museum (SAM) as the organizer of the Singapore Pavilion. As one of the leading contemporary art institutions in Southeast Asia, SAM's role in expanding the discourse on Singapore contemporary art has been

instrumental in strengthening Singapore's position as a key arts and culture node in the region. We are confident that our presence at the Biennale Arte will continue to strengthen Singapore's contemporary art at the global stage. Following this, SAM will also present *Seeing Forest* in Singapore, offering our local audiences the opportunity to experience and engage with the artwork.

Lastly, the Singapore Pavilion would not have been possible without the generous support and commitment of the numerous individuals and organizations involved. The Council deeply appreciates the contributions of the Commissioning Panel, the Singapore Art Museum, the La Biennale di Venezia office, all production and artistic collaborators, and the many others who have devoted their time and effort to make the Singapore Pavilion a reality.

Low Eng Teong

Chief Executive Officer,
National Arts Council, Singapore
Commissioner, Singapore Pavilion
Co-Chair of the Commissioning Panel

It is with immense pride and honor that Singapore Art Museum (SAM) has been given the opportunity to organize the 11th Singapore Pavilion at the Biennale Arte 2024. This privilege serves not only as an accolade, but also as a reflection of SAM's role to champion and to develop contemporary art practices in Singapore and the broader region through our engagement with artists and communities to nurture their creative pursuits. This commitment is exemplified in our partnership with the Artistic Team—Robert Zhao Renhui and Haeju Kim—and the remarkable collaborators involved in the creation of *Seeing Forest*.

Among the figures in Singapore's contemporary arts scene, Robert is recognized for his interdisciplinary approach that investigates the intricate relationship between humanity and the natural world. *Seeing Forest* is a testament to Robert's ability to weave together numerous observations, gleaned from countless field trips and his artful skill of noticing—even from the windows of his own apartment. Combining documents, objects and video, the immersive nature of *Seeing Forest* marks a development of Robert's practice, which has heretofore centered on photography and installations. His prolific participation at various international arts events puts him in a good stead to represent the country.

Seeing Forest also assumes a timely and crucial role in a world grappling with climate exigencies. A condensation of history and ecologies, it invites viewers to peel back the layers for glimpses into the worlds teeming around us that often go unnoticed. The issues that *Seeing Forest* engages tie in with SAM's vision to inspire humane and sustainable futures through meaningful everyday encounters. Fittingly, Biennale Arte 2024's theme of "Foreigners Everywhere," which celebrates the foreign, distant, outsider, and Indigenous, resonates profoundly with Robert's exploration of beings coming together in liminal spaces. In the midst of multiple global crises, *Seeing Forest* serves as a poignant commentary on the movement and existence of people and other beings across countries and territories.

This project would not be possible without the dedication of the Artistic Team. I would also like to extend my gratitude to our sponsors and supporters, including the National Arts Council and the Ministry of Culture, Community and Youth, for their unwavering belief in our mission. Looking forward, SAM eagerly anticipates bringing the exhibition back to Singapore next year.

Eugene Tan

Chief Executive Officer & Director,
Singapore Art Museum
Co-Chair of the Commissioning Panel

The Symbols of the Divine Show Up in Our World Initially at the Trash Stratum II, 2023
Robert Zhao Renhui



01.05.2019

In 2019, Singapore experienced one of its warmest and driest years. In the secondary forest surrounding Gillman Barracks, buckets and pots left by humans filled up with rainwater and became important watering holes for various animals, including native and migratory birds. *The Symbols of the Divine Show Up in Our World Initially at the Trash Stratum II* documents many of these creatures populating the same barrel at different days during several months in 2019.

01.07.2019





02.05.2019, 03.05.2019

02.07.2019, 03.07.2019





04.05.2019

04.07.2019



SEEING FOREST:
CURATOR'S INTRODUCTION



05.05.2019

05.07.2019



A lush forest of tall trees, revealed through the fog; against this backdrop, we see skyscrapers, soaring even higher. A bulldozer pushes a tree out of the way and its crown of leaves shakes as if in a gale. Various household items discarded by migrant workers who once sheltered among the trees have now become watering holes for owls and lizards; frogs lay their eggs there. A monitor lizard drags a scavenged pig's head through the trash, washed downriver by the currents. Wild boar and sambar deer follow the boundary of the forest, demarcated by a road. They are shifting their habitats and trajectories of movement to accommodate the shifting location of the forest itself, transformed by development. After nightfall, two unidentifiable people walk through the forest. The image—reduced to colors and silhouettes by the thermal camera—renders their appearance even more abstract. They appear lost, or perhaps they are finding their way somewhere. They walk, urinate, look closely at the ruins of a building, then talk about the ghosts of the forest and what remains after death. Then they list what exists in the forest.

“Who’s watching?” asks Yazid.

Umi answers. “All of them lah.”¹

1 This introduction references scenes and/or quotes from Robert Zhao Renhui, *The Owl, The Travellers, and The Cement Drain* (2024), a video piece in the exhibition *Seeing Forest*. The script of Umi and Yazid was written by Joel Tan.



06.05.2019

06.07.2019



FACE TO FACE

The first chapter of John Berger's *About Looking* is titled "Why Look at Animals?" In it, Berger reflects on the significance animals hold for humans, and how mankind's perspective on animals has changed over time, inviting the reader to rethink the relationship between humans and animals once again. To Berger, the birth of the zoo commemorated a new impossibility of natural encounter between human and animal, following a fundamental shift in the way humans view animals. As the longstanding relationships among independent human and animal life were dismembered by fledgling forms of development, more and more humans came to view animals almost entirely as objects.² With the advent of the modern city, humans began dividing up and designing locations according to the various social needs and functions. Along the way, nature writ large—including animals—became objects requiring management that were best kept apart from prioritized human activities. Humans razed forests to the ground to make way for housing and building complexes, then planted new trees to create parks. Singapore is a country where the concept of nature management was clearly articulated from the earliest stages of city planning. In 1967, the vision of a "Garden City" drove the creation and management of green spaces within the city; by 1988, the policy was reframed as "City in the Garden," ensuring the management of urban nature remained a priority within the government's agenda. Of course, the island's complex relationship with nature had already been framed by colonial affairs in the nineteenth century. Famously, the history of Singapore's Botanic Gardens and Zoo can be traced back to Sir Stamford Raffles, a British colonial administrator and avid collector of flora and fauna.³

As the massive destruction of the natural world caused by industrialism and capitalism has come to be understood as a root cause of the ongoing climate emergency, ecological perspectives that engage this reality are garnering more and more interest. Robert Zhao Renhui, however, was incorporating ecological perspectives into his praxis long before such discourse became an established feature in the world of contemporary art. Starting in the mid-1990s, as a young student curious about flora and fauna, Zhao has been observing nature and its various phenomena through

2 John Berger, "Why Look at Animals?" [1977], *About Looking* (New York: Pantheon Books, 1980), 3–28.

3 Upon his return home, Sir Stamford Raffles founded the Zoological Society of London in 1826 and established the London Zoo in Regent's Park in 1828. At the time of its founding, the London Zoo was the first modern facility of its kind to be located in the city center that was both open to the public and served as a scientific institution. It also constituted a symbol of colonial power.



07.05.2019

07.07.2019



his work, questioning the way humans view nature and even founding a semi-fictional research organization, the “Institute of Critical Zoologists,” to further explore the various “spectatorships” of nature.⁴ Beyond considering how to see and treat nature from a human perspective, Zhao’s efforts have been geared toward practicing different methods of observation to better see and hear how nature chooses to reveal itself—using photography, video, and installation to try and unpack the sheer complexity of the relationship between humans and nature.

The primary subject of the “seeing” in *Seeing Forest* is both human and nature, at the same time. But how, then, to recreate nature’s own act of “seeing”? Zhao’s main medium is the camera, and the camera necessarily starts from the position of human technology. And yet, simply imagining or presenting the biological gaze of animals in the name of reproducing the gaze of “nature” is itself an anthropocentric proposition. As such, with the caveat that any exploration of the natural world’s perspective is definitionally mediated by humankind, and therefore interpretive, the question becomes: so how, then, do we bring humans and nature face to face?

The term “seeing” here includes not only the act of visually perceiving or observing something, but also the actions and reactions that follow from such physical perception and understanding. In other words, what is captured is not just the “seeing” of any physical eye (be that of the human or the natural world) but also the observation of human interference with nature (resulting from the perspective of human society on nature), and how nature, in turn, reacts to such interference; by observing and recording both from a third-party remove, the artist seeks to uncover the kinds of complex events that lead to seeing as well as perspective and action. These interactions, of course, are unpredictable and revealed only gradually over a long period of time, making them impossible to capture in advance, or, indeed, illustrate in just one or two short scenes. Therefore, the artist is required to observe and record over the long term.

The scenes that make up *The Owl, The Travellers, and The Cement Drain* (2024), a two-channel video, were selected and edited from a vast pool of footage collected over the long term using a range of different cameras in various situations, including moments from the artist’s own forest visits to captures from a zoom lens used to shoot

4 Founded in 1998 by the artist, the “Institute of Critical Zoologists” is both a “research lab” that blends fiction and reality and a website that catalogues his work. Under this name, Zhao sometimes borrows from scientific language and methodologies to use natural history as a critical frame in his own work. On the website, the ICZ is described as follows: “The institute of Critical Zoologists

is the first interdisciplinary scholarly centre dedicated to promoting critical dialogue on the principles and practices of animal spectatorship and animal-related policies in the fields of social sciences, ecology and the arts. The institute employs a variety of methods to pursue its mission—engaging in research, classification and exhibition.” See criticalzoologists.org.



08.05.2019

08.07.2019



from his twenty-sixth floor apartment, not to mention motion and body temperature cameras he installed in the forest. As most are a combination of scenes shot with very little camera movement, viewers are able to take their time observing the movements that occur deep within each scene as they unfurl against a fixed background. This is video, yes, but the viewing experience has the pacing of flipping through a deck of still slides, generating a quiet rhythm somewhere between stillness and movement. The juxtaposition of the two screens, meanwhile, showcases the contrast and interaction between the natural world and the kind of events generally caused by humans. For example, when the screen on the left shows a pack of wild boars passing a hill, the screen on the right shows a crew of workers before they start construction, surveying the same location. When one side shows the forest being dug up, the other shows the animals fleeing the area for another part of the forest, or perhaps a time-lapse of a growing plant; culled from hundreds of hours of footage, these stories of mutual interference between nature and human society play out in a nonlinear fashion.

NEW FOREST⁵

For *Seeing Forest*, Zhao zeroes in on the edge where the interference and response between human society and nature is most evident: namely, Singapore's secondary forests.⁶ Secondary forests, which cover about 4 percent of the island nation, are living testaments to the vitality and resilience of nature, taking over neglected plots of bare land where original tree growth was cleared for development or cultivation. Though the artist has frequented these secondary forests for nearly a decade, he has come to pay particular attention to the changes wrought by development around the Woodlands neighborhood, directly facing his high-rise apartment, and the forests adjacent to Gillman Barracks, where he held an artist's residency at NTU CCA, finding himself intrigued by the fact that these new forms of life were emerging in spaces so close to the sphere of his own daily life.⁷ Over the course of countless visits spent observing the minute details of what goes on within, Zhao has found, too, that the formation and transformation of these forests is intertwined with the history of Singapore since the nineteenth

5 *New Forest* is also the title of a two-volume artist book published by Robert Zhao Renhui. *New Forest 1: A History of Cows* (2020) compiles records of wild cattle herds found in Singapore, while *New Forest 2: Wild Worlds* (2022) juxtaposes footage of ongoing deforestation against the process of a wild boar giving birth, filmed from the artist's apartment during the pandemic.

6 "Consider, indeed, the question of what's left. Given the effectiveness of state and capitalist devastation of natural landscapes, we might ask why anything outside their plans is alive today. To address this, we will need to watch unruly edges." Anna Lowenhaupt Tsing, "The Arts of Noticing," *The Mushroom at the End of the World: On the Possibilities of Life in Capitalist Ruins* (Princeton University Press, 2015), 20.

7 Built in 1936 under British colonial rule, Gillman Barracks was a military installation. During World War II, it and its surroundings saw battle against Japanese forces. After Singapore's independence, the site was used as a training facility for the Singapore Armed Forces before finally becoming a contemporary art cluster with art galleries and events in 2012.



09.05.2019

09.07.2019



century. Note, for example, the fact that so many of the plant and animal species that make up the secondary forest were introduced to the island relatively recently.⁸ See, too, how the tents and detritus left behind by migrant workers who once sheltered among the trees of Gillman Barracks—not to mention the cracked remnants of English colonial waterways—are now utilized by these same animals. The fact that different forms of migration have so shaped the formation of this forest demonstrates how secondary forests both mark and manifest key connections between society and nature.

Zhao is particularly struck that so many rare birds seek out the secondary forest. The secondary forest around Gillman Barracks is a stopover site on established East Asia-Oceania routes followed by millions of migratory birds, and the artist discovers that human traces left in the forest, like abandoned drain and trash bins, are actually useful to the birds as they rest. Along with these migratory birds, we rediscover the value of the secondary forest as both a space that preserves the memories of the past and a space of ecological diversity where native flora and fauna mix with other species more recently introduced to the Singapore ecosystem. To document this secondary forest, currently at immediate risk of development into yet more apartments and other buildings, is to create an archive of an improbable place where urbanization and semi-wild nature intertwine.

Trash Stratum (2024), which takes the appearance of a crumbling cabinet, is an anti-monumental monument set in response to the combination of human history and new forest. The form of the structure itself, made of stacked wooden boxes, is intended to include a paradoxical take on the *Wunderkammer* (“Cabinet of Curiosities”) method of collecting, categorizing, and organizing. Many of the objects themselves are empty: empty albums used to collect postcards from the British Empire’s various colonies, empty bottles and objects left behind by the Japanese soldiers who occupied Singapore between 1942 and 1945 and found themselves stationed at this former military installation, and broken brick fragments are jumbled up in this so-called cabinet alongside screens showing footage of animals coming to drink from empty trash cans left behind by migrant workers. These objects were either collected over the course of the artist’s research or are literal traces of the past discovered during his explorations of the forest, entangled in the exposed roots of a

8 The *Albizia* tree, in particular, is believed to have been introduced to Singapore from South America in the 1870s. Due to its rapid soil adaptation and growth, it soon became the main tree in these secondary forests, as well as a nesting site for eagles. Because they have thin roots and tend to

fall rather easily, those once planted along city streets have even been removed for safety issues. From 31 August to 3 September 2023, Robert Zhao Renhui created and performed *Albizia*, a theater performance about Singapore’s secondary forests, at the Esplanade Theatre in Singapore.



10.05.2019

10.07.2019



fallen tree. Indeed, the horizontal spread of the cabinet itself resembles a tree's roots as well—an intimation of the deeply tangled nature of the transformations in human time and place that have occurred throughout the forest's own reconstitution. Here, the secondary forest is recreated as a tangled deposit of different time periods and histories that is simultaneously a living space, sought out by an endless stream of animals.

NATURE'S OWN WAY, AND, WHAT LIES BEYOND THE VISIBLE

Moving away from a gaze that actively objectifies nature does not necessarily mean moving away from any artificial techniques and methods to try and reduce the natural world to some primitive state. As Bruno Latour says, "There is nothing on earth that is precisely 'natural,'"⁹ and indeed, considering the ostensibly "primitive" state of the natural world to be an ideal of harmony that humankind should strive to achieve is itself a rather romantic and anthropocentric interpretation. In place of such restorative ecological lenses, Zhao himself appears to lean more towards the viewpoint of scholars like Fred Pearce, who posit that the natural world has its own life cycles and powers of resilience.¹⁰ Where restorative ecology focuses on quick fixes, leaning on scientific and technological methods, the artist's explorations instead tend to pose more fundamental questions about the complex relationship between humans and nature. He strives to understand the dynamics of natural ecosystems from the past to the present, as well as the various interdependencies, paradoxes, and tensions with human society that have sprung up, and then gives expression to this process within the frameworks of visual art.

Based on his own empirical knowledge, gained from years of observation and exploring the forest, Zhao understands that nature does not reveal itself easily. The symbol of the eagle owl with its back turned¹¹ is an expression of the old adage: "Nature loves to hide."¹² Whether it is hundreds of parakeets wheeling through the air every evening at the same hour, gathering to perch on a particular tree in the Choa Chu Kang neighborhood; or, a tapir, one day, swimming over from the Malay Peninsula all the way to Singapore;

9 "On Earth, nothing is exactly 'natural' if we take that term to mean that which has not been touched by any living being: Everything is raised, put together, imagined, maintained, invented, intricately linked by agencies which, in a way, know what they want, or in any case aim at a goal that is exclusively their own, each agency for itself." Bruno Latour, *After Lockdown: A Metamorphosis* (Cambridge: Polity, 2021), 20.

10 Fred Pearce, *A Trillion Trees: How We Can Reforest Our World* (New York: Granta, 2021).

11 A reference to *Buffy* (2019/24), an installation work in *Seeing Forest*; see also the very last page in this book.

12 The phrase, originally "*phusis kruptesthai philei*," is attributed to the Greek philosopher Heraclitus.



11.05.2019

11.07.2019



or, the beautiful lace-like “crown shyness”¹³ that regularly occurs among *Albizia* trees—to Zhao, the many scientific hypotheses are always counterpointed by many persistent unknowns. Life in the secondary forest is not always friendly to outside intervention, nor—as the artist noted after one actual near-death experience, when a huge tree came crashing down mere inches behind him—can it be called a safe space. Even behind his camera lens, zooming in and out, so committed to seeing all that can be seen, he also always asserts that yet more still lies beyond what is visible.

Seeing Forest reveals that life not only exists behind the everyday of this city so known for its urban development, but that these lives are in motion, dynamic; it shows us that these various actors spend their own life force to divide up and utilize the full scope of this island. And it is the very diversity of these entanglements and disjunctions, as the exhibition asserts, that enriches all life on the island of Singapore—and beyond. Zhao conveys the importance of learning to listen with care and observing closely when it comes to the natural world, reaching beyond notions of protecting and managing it to consider how human society might fully coexist with the wide-ranging and unknown life forms that are already among us, or well on their way.

Lives at the demarcation line between city and nature find themselves mutually transformed, even as unintentional organic orchestrations change the landscape itself. Nature selects for relationships over independent entities. Can human society follow in kind, surrendering its insistence on control to join the broader rhythms of natural communication as another participant in an interdependent network? Can we—rather than constructing our own safety nets and drawing ever more boundaries—actually build community together with bodies that are wildly different from our own?

Robert Zhao Renhui's exhibition showcases the unique coexistence of city and nature in Singapore's secondary forests, presenting it not as an example of a scenario where nature is destroyed by human intervention, but rather a point of entry into the symbiosis and harmony to come; that is, if we were to commit to acknowledging and allowing the chaos and complexity involved, including those things and beings unknown and unknowable.

Translated from Korean by Maya West

13 Observed in certain trees, this is a phenomenon where the branches of the canopy do not actually touch each other, leaving a certain amount of space. It usually occurs between trees of the same species, but it can also occur between different species. The exact reason for “crown shyness” is unknown, but one hypothesis suggests it may be intended to prevent the spread of pests, or avoid potential physical damage caused by collisions between branches.



12.05.2019

12.07.2019





13.05.2019, 14.05.2019

13.07.2019, 14.07.2019





15.05.2019

15.07.2019





16.05.2019

16.07.2019



HIDDEN IN PLAIN SIGHT:
ON RUDERAL TRAJECTORIES
AND THE FORMATION
OF ALTER-ONTOLOGICAL
POSSIBILITIES

(some introductory notes for this book)

Anna-Sophie Springer



17.05.2019

17.07.2019



[...] it is a question of seeing how we are forests. Forests that are not so much a piece of “wilderness” as a certain alliance, a special composition of links, of living beings, of magic. Not something spread out, but a growing strength, both in its heart and at its edges.

Forests are a sensitive reality, not so much a “tree-covered space,” as its common definition suggests, as a singular way of arranging the world, of imagining it, of becoming attached to it. [...] In any case, it is a question of the forms we give ourselves and the materials will follow.

— Jean Baptiste Vidalou, *We Are Forests*¹

[...] as if it were in the wild forest, or in the garden of a regal place. The woods: The garden. For her, the wild and the cultivated were equal and yet separate, together and apart. This wasn't as clear to me as I am stating it here. I had only just learned to read and the world outside a book, I did not yet know how to reconcile.

— Jamaica Kincaid, “The Disturbances of the Garden”²

Framed by two often stupendously noisy metal yards in an industrial zone in former East-Berlin, the backside terrace of our K. Verlag publishing atelier happens to look out over one of the city's few rainwater overflow basins. Except for an environmental chemist occasionally taking precipitation and pollutant probes, and cohorts of men in heavy-duty workwear, who on a couple weekends in spring learn to swing electrical scythes for forthcoming public mowing jobs, this 200×70-meter, fenced-in patch of mini forest is otherwise never entered by people. It is our building's near-private window for pausing and taking note of the other-than-human life that also makes their homes in urban settings. Over the years, we've observed foxes, squirrels, moles, herons, woodpeckers as well as many types of pollinating insects and large families of raccoons, crows, geese, and falcons. In a city quarter not zoned for human residence these undomesticated animals might embody our homeliest kind of neighbors.

This publication is born out of a decade-long friendship and ongoing collaboration with Robert Zhao Renhui, the artist whose

¹ Jean-Baptiste Vidalou, *We Are Forests: Inhabiting Territories in Struggle*, trans. Stephen Muecke (Cambridge: Polity, 2023), eBook, n.p.

² Jamaica Kincaid, “The Disturbance of the Garden,” (2020), reprinted with permission in the volume, 189–98.



18.05.2019

18.07.2019



eponymous exhibition *Seeing Forest* now takes place at the Singapore Pavilion of the 60th International Art Exhibition at La Biennale di Venezia. As we've been finalizing this companion book, flocks of newly arrived migratory birds have started to announce the February days. The overlapping, swiftly changing songs of robins, wrens, tits, blackbirds, and chiffchaffs resounding from the trees growing in the basin makes the strangely oceanic drone of old cars being crushed on the periphery of our compound considerably less dominant. With vigor, these birds seem to insist on the possibility of life among the debris amassed through the human dwellers' rituals of consumption and disposal. Though inseparably part of cityscapes, the sudden or unexpected appearance of non-domesticated animals in your neighborhood sometimes lets one wonder what other-than-human life takes up residence in urban settings—in what forms, and perhaps after arriving from where.

Zhao—an artist from Singapore trained in photography, and the founder of the Institute of Critical Zoologists (ICZ)—is known for his artistic investigations of the representation of Asia's and South-east Asia's nature, history, and culture in the scientific and colonial archive, and his research often focuses on the evolutionary pressure exerted on other-than-human species by urbanization, global transportation, and the built environment. His installations and numerous publications explore places through found objects, historical images, and his own forms of recording, and they combine materials and methods of natural history with storytelling, enactment, and scenography. He employs tongue-in-cheek humor, fabulation, and collage to reframe the authority of modern regimes of representation, putting into question common assumptions about nature, culture, and universal and objective knowledge. Ever since he was a schoolboy, Zhao spent time closely observing and documenting the socioecological and infrastructural transformations of Singapore—a postcolonial, tropical metropolis located on an island that is also a nation state.

His current project *Seeing Forest* is the fruit of several years of careful visitations to a terrain of secondary woodland that has proliferated on the grounds of a former, mid-twentieth century military camp and which is encompassed by high-rise apartment blocks, multi-lane roads, and numerous construction sites in the district along Alexander Road. Littered with the detritus of previous human



19.05.2019

19.07.2019



use and inhabitation, this patch of ruderal forest also conceals the collective and improbable habitat of myriad wild species of vastly different origins. As the artist learns to be quiet and attune himself to these creatures' chrono-diverse rhythms and improvised rituals of survivance, urbanization is recalibrated as a relational refuge for heterogeneous trans-territorial, temporally cadenced, and unexpected encounters. Notwithstanding the camera traps being placed to reveal glimpses of these events, the work espouses an exciting and, as I will argue in what follows, a highly generative intersectional politico-ecological imaginary.

If putting the emphasis of city life on the more messy, multi-species dimensions of more-than-human affiliations may appear counter-intuitive to the traditional image of the urban, it is because certain abstract theories of architecture and the built environment have so thoroughly privileged the role of management and planning in the production, occupation, and governance of urban space. This is particularly the case for the "civilizing" ideals inscribed in the design of the modern and the colonial metropolis. As James C. Scott and others have memorably shown, in such conceptions it is especially the "forest," and even more so the *tropical forest*, that is painted as this rationale's unwelcome, disorderly, even dismal counter-realm.³ More recently, however, urban theorists and geographers, landscape architects and more-than-human ethnographers, postcolonial ecologists and practitioners, such as artists, filmmakers, writers, among many others, have helped to promote different, radically more diverse and more ambulant notions of city life.

One of the most original voices writing about the urban and its myriad surrounds is AbdouMaliq Simone. His image of the "surrounds" begins with the conceptualization of urban settings as actualized by the ongoing shapeshifting of multiple, co-constitutive, never fully anticipated, and thus often marginal relations. As Simone states in the introduction to his book of the same title: "[...] maintaining peripheries as spaces of compressed livelihoods, maneuvers, and backgrounds [...] does] not only offer a possible hedge against the bulldozing regimes of shopping malls,"⁴ rather, *[...] the invocation of the surrounds [is] simultaneously the spaces, times, and practices within and beyond capture, where experiences of detachment from the predominant*

3 James C. Scott, *Seeing like a State How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 2008); Robert Pogue Harrison, *Forests: The Shadow of Civilization* (University of Chicago Press, 1992).

4 AbdouMaliq Simone, *The Surrounds: Urban Life Within and Beyond Capture* (Durham: Duke University Press, 2022), iiiv.



20.05.2019

20.07.2019



*forms of accumulation and dispossession enable the specification of dispositions in ways that ward off being apprehended in any definitive sense [...]. The surrounds can function as a literal type of territorialization possible when extensive and extended urbanization is no longer rooted within the city form, and thus dependent upon multiple articulations of different ways of doing things and different logics of settlement and production.*⁵

While Simone does not primarily address other-than-human species in his writing, “settlements” here can nevertheless be understood as going far beyond the agency and dwellings pertaining to diverse and often migratory human inhabitants. For, as planetary rural landscapes are increasingly stratified, poisoned, and homogenized for the production of food, fuels, and other resources used by the growing populations increasingly concentrated in urban and suburban territories, cities have also become the cosmopolitan, fugitive, and at least temporary niches for many other-than-human species potentially uprooted or displaced from “elsewhere”—and with these “elsewheres” notably existing in both space *and* time.

For instance, when Zhao invited me to Singapore in 2022 to co-lead a week-long artistic workshop entitled “The New Forest,” taking place within the framework of the Singapore International Festival of Photography, Robert guided our group into the ruderal woods of Gillman Forest—now the central protagonist of his current work. I had the opportunity to peep through the enormous zoom lens installed at his family’s twenty-sixth-floor living room window and indeed spot a deer roaming nocturnally across a triangle of green left over between an asphalted motorway and a railway. One episode of *Seeing Forest* tells the story of a pregnant boar making her nest near there to give birth, presumably after facing eviction-by-deforestation not too far off in the vicinity. Wild boars have been endemic inhabitants of the island and the greater region since long before the city of Singapore was founded. And though colonists, eager to control local nature, saw them as a nuisance, they still tarry around; in contrast to the legendary tiger, they have, so far, resisted a full expulsion.⁶

As Simone writes,
[The] surrounds is a tremulous, provisional interstice among disparate forms of spatial development that often concretely

5 Simone, *The Surrounds*, iiiiv, ix.

6 On the local extinction of the tiger in Singapore, see Marcus Yee’s essay “Wild Worlds, Patchy Planet” in this volume, 247; also, Etienne Turpin, “Why were there tigers?” in *Textures of the Anthropocene: Grain, Vapor, Ray*, ed. Kathrin Klingan et al. (Cambridge: MIT Press, 2014), 302–21.



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*sit right next to each other, that physically overlap but do not touch completely, that do not have a settled relationship. As such, the surrounds comes to embody a more generalized process of unsettlement, a maximizing of exposures, which like the apertures of cameras, fundamentally disturb the image of something that may have otherwise been taken as “for sure.”*⁷

In cities everywhere in the world, a multiplicity of processes driven by heterogenous actors continuously structures and necessitates different forms and repertoires of relationships, including those which put into question what is familiar and those which rebel against what is dominant. An ambulant rearrangement of power is invoked in *Natura Urbana*, the must-see documentary by urban geographers Matthew Gandy and Sandra Jaspers, which traces plants from all over the world that took root in the rubble and bombed-out lots of post-WWII/Cold-War Berlin, transforming death zones and urban lands laid to waste into spaces of new life and non-nativist ecologies.⁸

Another film not to be missed is Shaunak Sen’s documentary *All that Breathes* (2022), the intimate portrayal of two brothers’ tireless work to rescue sick and injured black kites and other avifauna in their makeshift bird hospital run in the garage of their family home in New Delhi’s Chawri Bazar area. As I observed last year, “this, in itself, is absolutely remarkable, but the camera under Sen’s direction also allows the brothers and the birds to join a multitudinous chorus by situating their struggles within a city literally teeming with life—where all that breathes is indeed much more than first meets the eye. The shared rhythms of so many creatures, documented with such an overwhelming and poetic attentiveness, relays a commitment to amendatory practices that we also hold close to our hearts in these imperiled times.”⁹

Interestingly, forests have also been conceptualized through rational notions of management, planning, and control. The forest, if understood as “natural resource,” constitutes a forceful representation of other-than-human forms of agency and meaning-making. As Amitav Ghosh states in a passage in *The Nutmeg’s Curse*, “It may

7 Simone, *The Surrounds*, 6–7.

8 *Natura Urbana: The Brachen of Berlin*, UK/Germany, 2017, 72 mins, dir. by Matthew Gandy, co-written by Sandra Jasper; also, Gandy and Jasper, eds., *Botanical City* (Berlin: Jovis, 2020); and Sonja Dümpelmann, *Seeing Trees: A History of Street Trees in New York City and Berlin* (New Haven: Yale University Press, 2019), a book which also includes sections about ruderal forests growing on post-war rubble and urban debris.

9 *All that Breathes*, India/UK, 2022, 91 min, dir. by Shaunak Sen; quote is from the preface in K. Verlag’s preview booklet 2023.



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seem obvious to humans that their ability to destroy trees and forests endows them, and them alone, with the capacity to act. But intentional action can also unfold over completely different scales of time.”¹⁰ Indeed, forests have neither evolved with the purpose of producing a definitive material (such as wood), nor do they form a single species or homogenous organism. Rather, forests come into existence through the exposure, interplay, and exchange processes occurring among myriad lifeforms, bodies, and dynamics acting across scales and timespans that range from the micro to the planetary. This is how Ghosh continues:

*Trees have inhabited Earth much longer than human beings, and their individual life spans are, in many cases, far greater than those of people: some live for thousands of years. If trees possessed modes of reasoning, their thoughts would be calibrated to a completely different timescale, perhaps one in which they anticipate that most humans will perish because of a planetary catastrophe. The world after such an event would be one in which trees would flourish as never before, on soil enriched by billions of decomposing human bodies. It may appear self-evident to humans that they are the gardeners who decide what happens to trees. Yet, on a different timescale, it might appear equally evident that trees are gardening humans.*¹¹

In *How Forests Think* Eduardo Kohn has also approached the reciprocal processes happening in, as, and through forests as ways of being in the world that have an ontological and sensual capacity to make and *remake* worlds. At the very outset of his book appears one of the encompassing and transformative questions, which the combined attentiveness to biosemiotics and multispecies cosmology help to provoke. Considering Kohn’s passage gives a crucial twist to *Seeing Forest*:

How other kinds of beings see us matters. [...] That other kinds of beings see us changes things. [...] Such encounters with other kinds of beings force us to recognize the fact that seeing, representing, and perhaps knowing, even thinking, are not exclusively human affairs.

*How would coming to terms with this realization change our understanding of society, culture, and indeed the sort of world we inhabit?*¹²

10 Amitav Ghosh, *The Nutmeg’s Curse: Parables for a Planet in Crisis* (University of Chicago Press, 2022), 198.

11 Ibid. Another highly recommended book that makes exactly this argument with regards to the deep-time evolutionary past is Roland Ennos, *The Wood Age: How One Material Shaped the Whole of Human History* (London: HarperCollins, 2021).

12 Eduardo Kohn, *How Forests Think: Toward an Anthropology Beyond the Human* (Berkeley: University of California Press, 2013), 1.



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Such a reflection should entail the consideration that the act of making visible other-than-human life for wider audiences through the employment, for instance, of wildlife surveillance technologies does not per se challenge or transform existing sets of asymmetrical, speciestic, and often extractive separations. For, while the often-hidden creatures we *human animals* do share the world with are now seen, this alone is not automatically something that also reorganizes the—potentially distant and temporary—perspectives of seeing as an enactment of objectification.¹³ Instead, we need to ask, what could be other, more generative and more reciprocal ways of looking and formations of relating, especially with regards to the more-than-human enlivenment of urban settings?

One of the interventions of Zhao's *Seeing Forest*, in my reading, is precisely that the work uses photographic and documentary strategies to compel such a different aesthetic, biopolitical, and ecological imagination. Rather than simply capturing images of animal life in the city, the work invites us to see ourselves through the ontological complexity that is compelled by the recombinant emergence of the urban as both a human-disturbed and a more-than-human surrounds.¹⁴ By encouraging us to see how we see (and don't see) the forest, Zhao's ensemble imaginatively opens to other quotidian dimensions of reading the urban jungle. And, as such, it restores more intimate possibilities for sensing what it might mean to collectively inhabit a refuge, a quarter, an island, or a state with innumerable other creatures, every one of whom—no matter their respective provenance, tenure, or duration—belongs indelibly to countless shared worlds, which is to say, forests.

In addition to conceptual sequences of Robert Zhao Renhui's images and curator Haeju Kim's essay, this companion publication gathers an assemblage of texts from various times, authors, contexts, and sources. Organized in the Reader section at the center of the volume, these archival pieces range from publications going as far back as 1883 to being as recent as 2020. Juxtaposing scientific and philosophical analyses with artistic interventions, storytelling, and critical reflection, the selection echoes and reverberates an interest in different ways of knowing mobilized by Zhao's

13 Deborah Lupton, *The Internet of Animals* (Cambridge: Polity, 2023).

14 On "recombinant urbanisms," see Maan Barua, *Lively Cities: Reconfiguring Urban Ecologies* (Minneapolis: Minnesota University Press, 2023). On "enlivenment," see Andreas Weber, *Enlivenment: Towards a Poetics for the Anthropocene* (Cambridge: MIT Press, 2019).



24.05.2019

24.07.2019



Seeing Forest exhibition. Two newly commissioned essays, by environmental historian Marcus Yee and writer Jeffrey Kastner, offer in-depth meditations specifically on the artist's practice and current intervention. As a special treat, in the concluding piece, Zhao interviews his friend and long-standing collaborator Yong Ding Li about their respective and shared experiences of working across art and ecology in Singapore.

Conceptualizing and realizing this publication has been a great pleasure. As co-editor and co-publisher, I would like to foremost thank Robert Zhao Renhui, as well as Adeline Chia, for their trust and this formidable opportunity of continuing our dialogue. I would also like to thank exhibition curator Haeju Kim, my co-editor Etienne Turpin, and our K. Verlag design partners, Wolfgang Hückel and Katharina Tauer, for the flawless and stimulating collaborations. At K. Verlag, we are grateful for the enthusiasm and support of our colleagues at Singapore Art Museum, this book's co-publisher, especially Lam Yong Ling, Luke Mathew Tan, Melissa Wong, and Sherlyn Wong. Thank you also to National Arts Council Singapore for the possibility to make a book that reaches reader-viewers free of charge—it is a gift for us all that we value greatly.

Last but not least, I am delighted to announce the second volume of this publication project, *Seeing Forest, Volume 2 of 2*, to be released in bookshops internationally in January 2025, when *Seeing Forest* travels and reopens in a new instantiation at SAM. While mirroring the structure of *this* publication, in *Seeing Forest 2* you will encounter the eloquent voices of additional writers and thinkers carefully invited to compose other throughlines among forests past, present, and future.



25.05.2019, 26.05.2019



27.05.2019, 28.05.2019

25.07.2019, 26.07.2019



27.07.2019, 28.07.2019





29.05.2019, 30.05.2019

29.07.2019, 30.07.2019





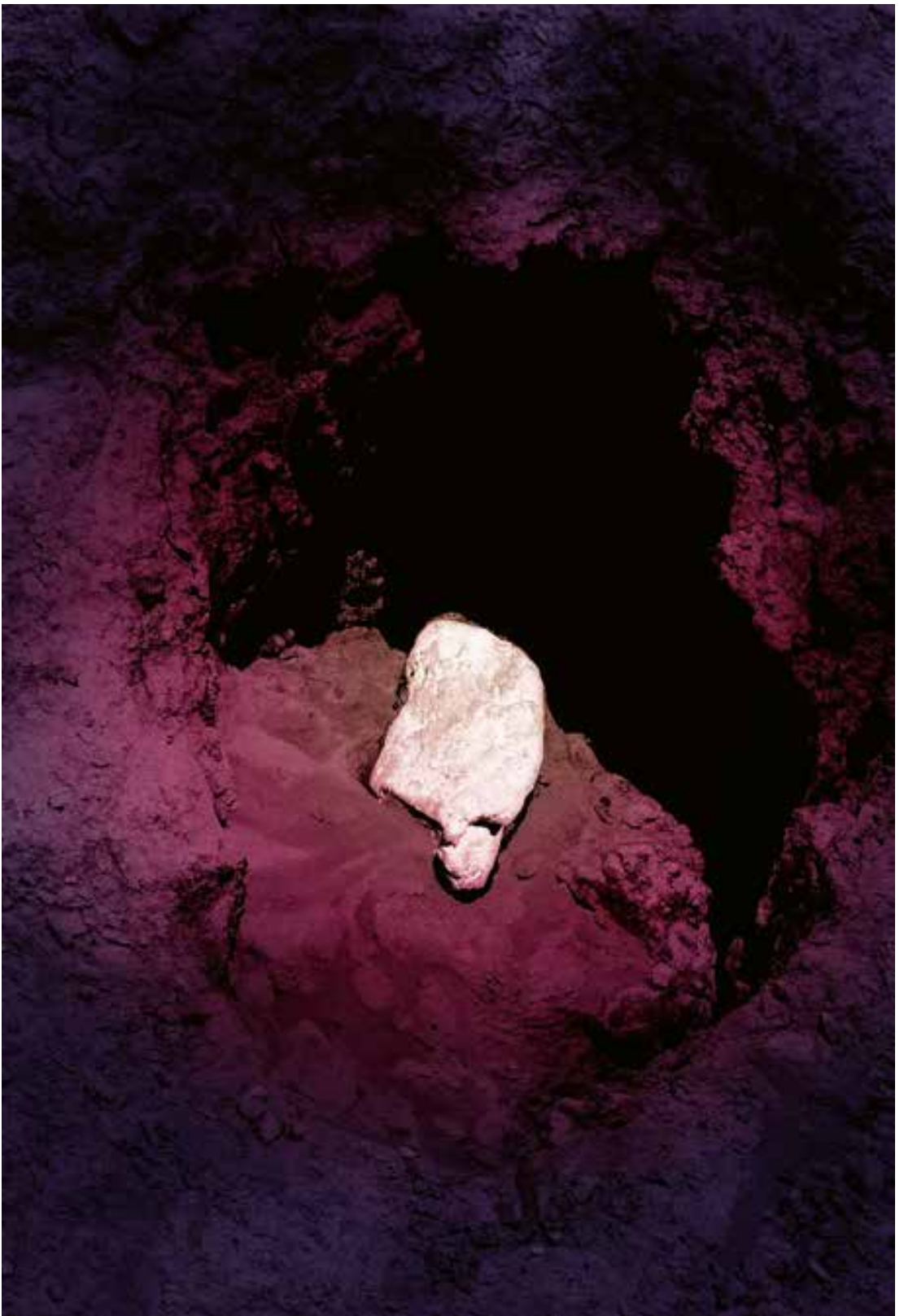
31.05.2019

31.07.2019



The Symbols of the Divine Show Up in Our World Initially at the Trash Stratum III, 2023
Robert Zhao Renhui

A list of objects by the side of the road near a secondary forest, formerly Queen's Own Hill, collected between 2016 and 2019.

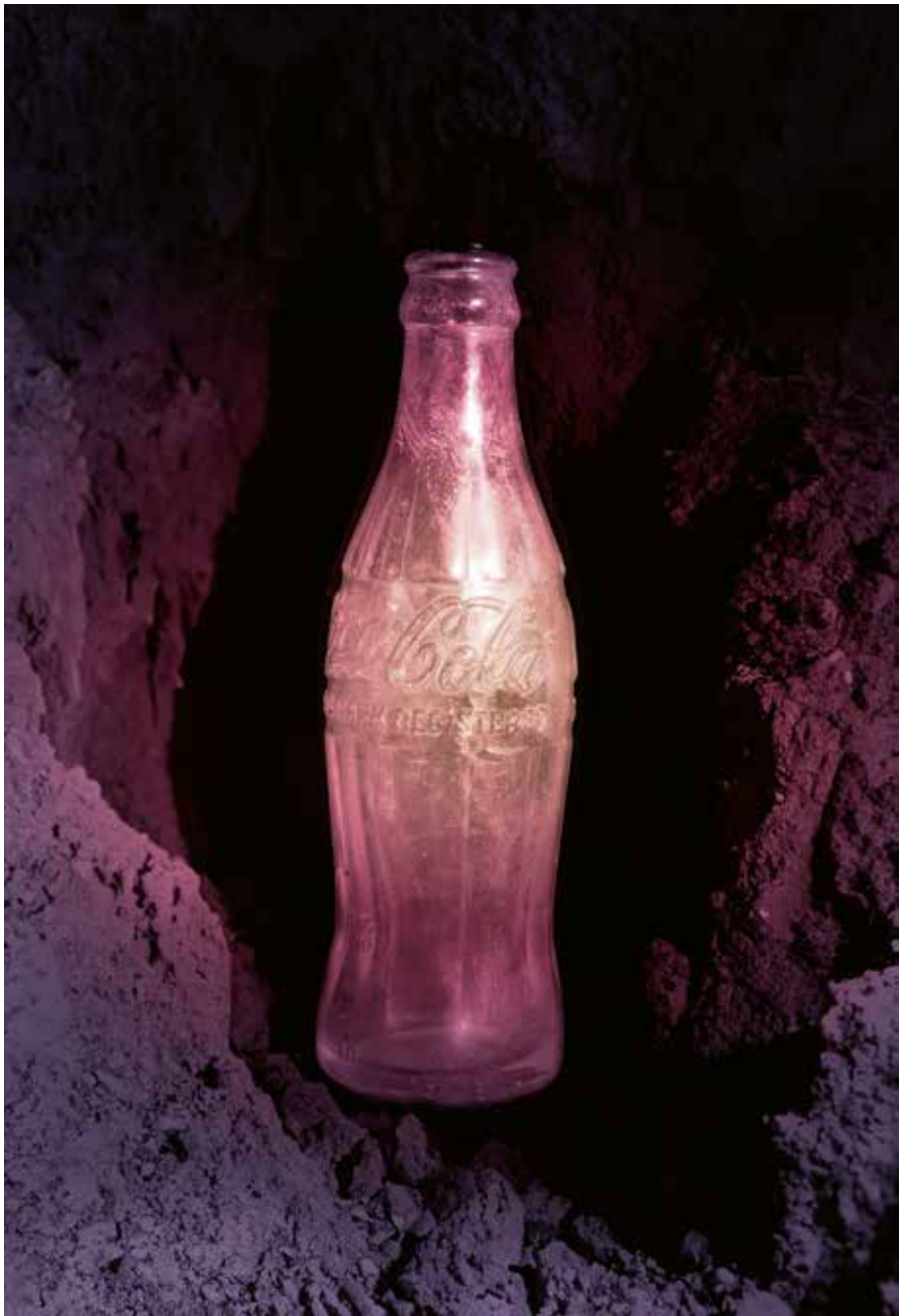


Item: Unidentified brick
Year/Period: Unknown
Region: Unknown
Measurement: 5 × 6 × 3 cm



Item: Shard from a stoneware cup used for rubber tapping
Year/Period: 1900s
Region: Singapore
Measurement: 7 × 3 cm

This stoneware cup of tapering form has a thick, grayish-green glaze inside and out. Utility wares such as this were mass produced at dragon kilns in the region. This sturdy cup would have been tied to the trunk of a rubber tree to collect the sap.



Item: Glass Coca Cola bottle
Year/Period: 1950s
Region: Singapore
Measurement: 20 x 5.8 cm



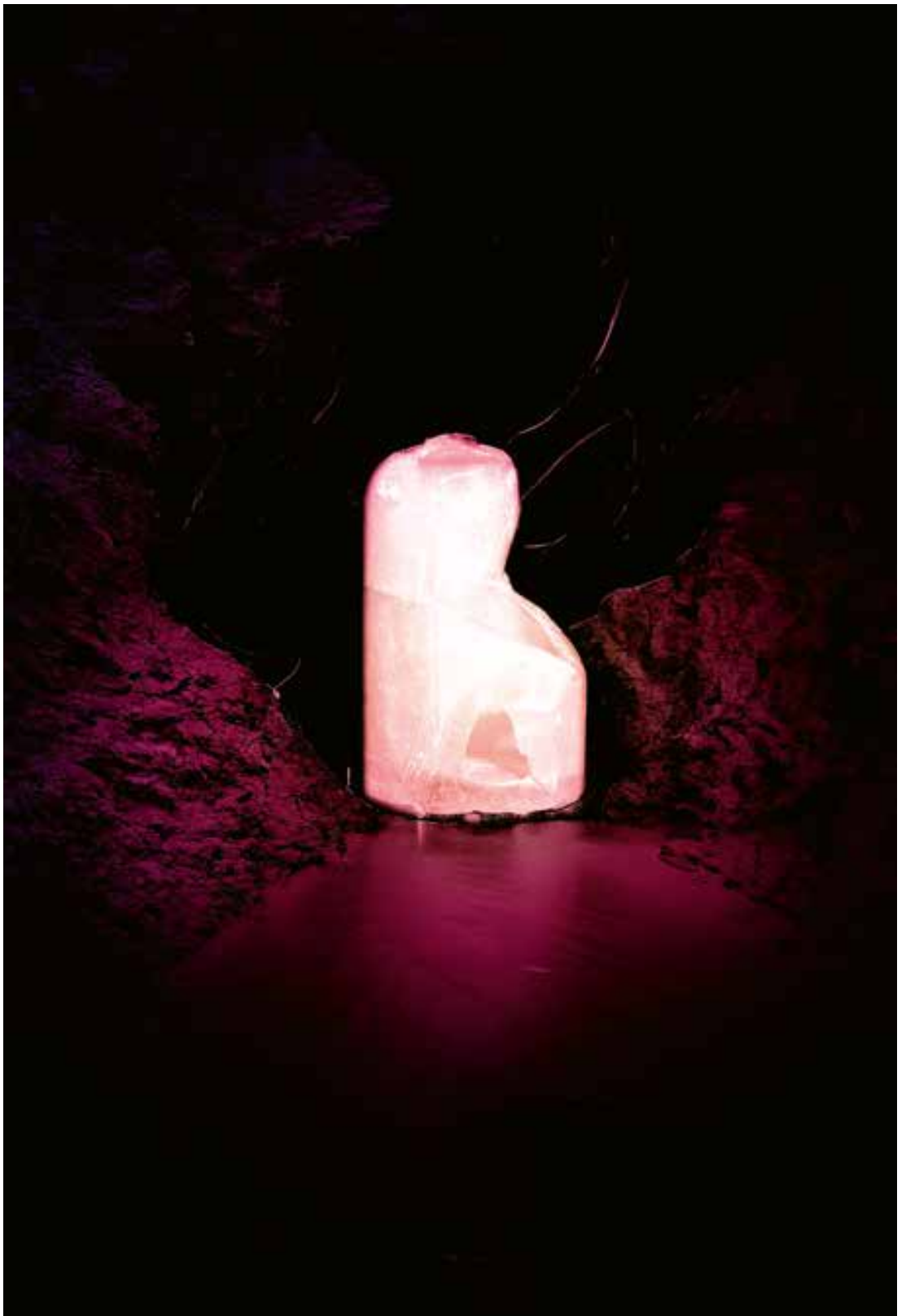
Item: Coca Cola glass bottle
Year/Period: 1960s
Region: Singapore
Measurement: 18 x 4 cm



Item: Gordon's Dry Gin glass bottle
Year/Period: 1940s
Region: London
Measurement: 33 × 10 × 6 cm

This gin bottle was found together with several milk bottles. They probably belonged to British soldiers staying in Gillman Barracks between 1935 and 1960.

This glass bottle was found with many other medicinal bottles used by the Imperial Japanese Army during World War II. Featuring Japanese inscriptions, these bottles were likely to have been issued to soldiers.



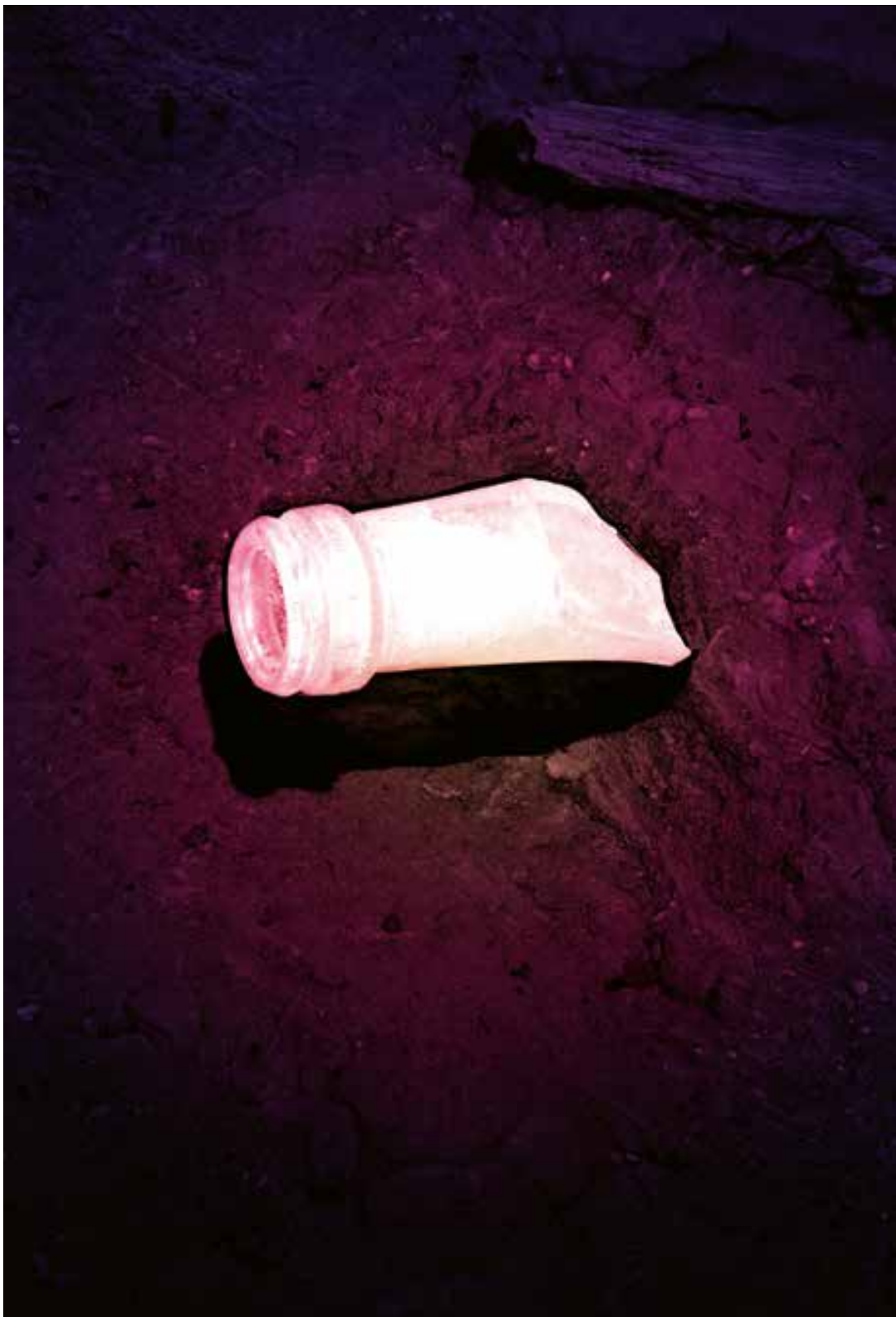
Item: Glass medicine bottle
Year/Period: 1940s
Region: Japan
Measurement: 6 × 4 cm



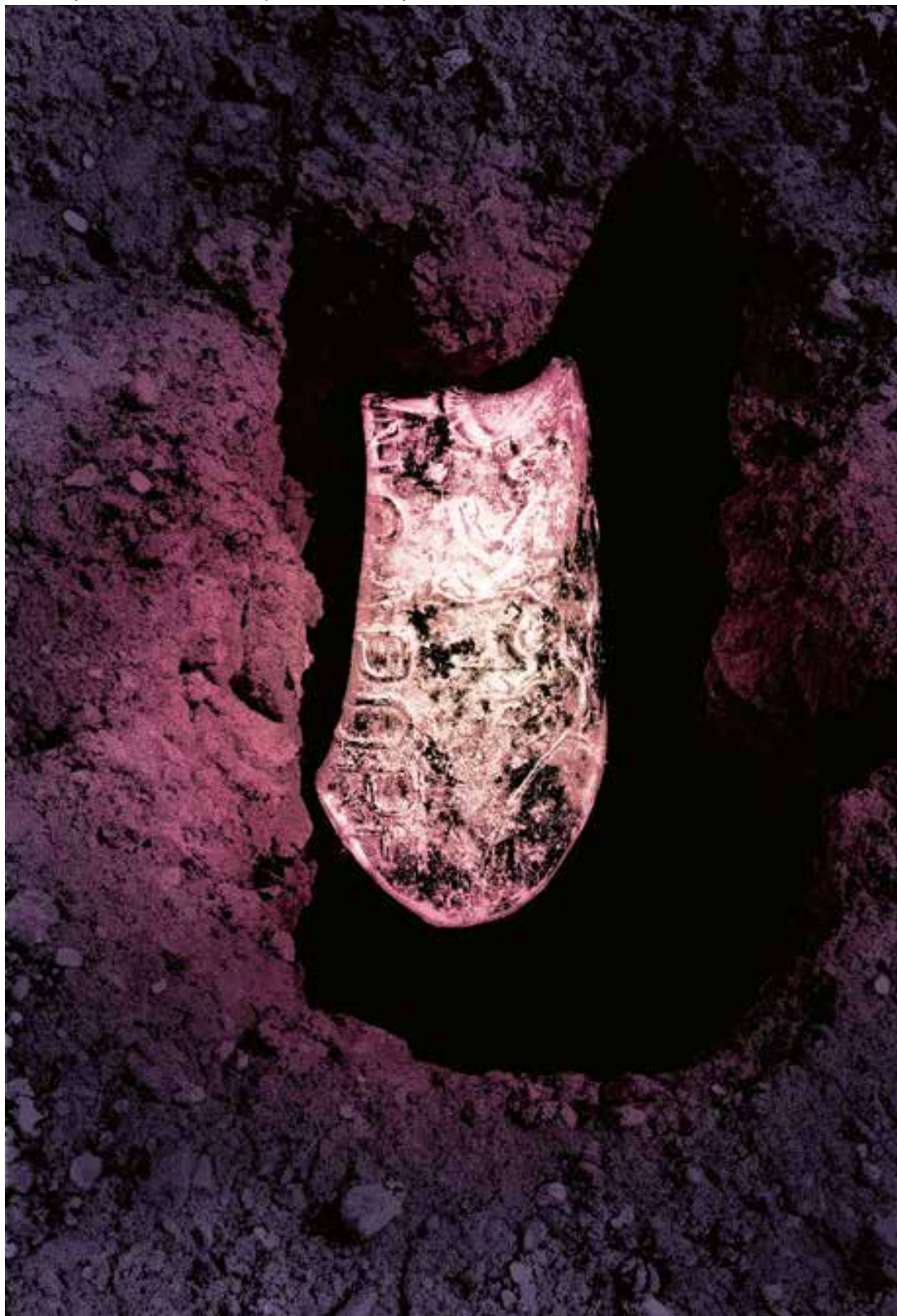
Item: Ceramic shard of a sake cup
Year/Period: 1940s
Region: Japan
Measurement: 5 × 4 × 3 cm



Item: Shard from a porcelain saucer
Year/Period: Late twentieth century
Region: Singapore
Measurement: 10 × 6 cm

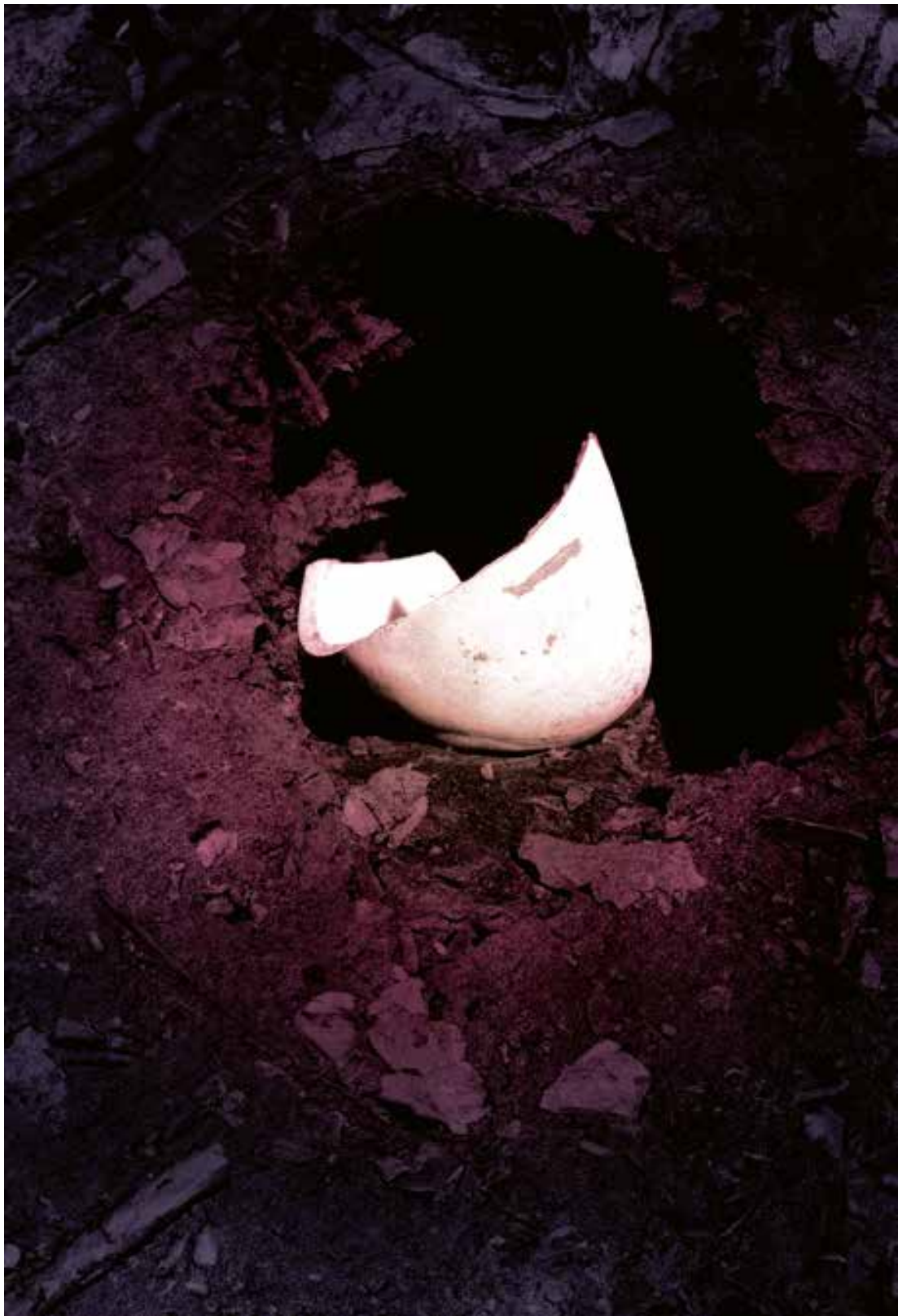


Item: Shard from a Japanese beer bottle, Dark Amber
Year/Period: 1940
Region: Japan
Measurement: 6 × 3 × 3 cm

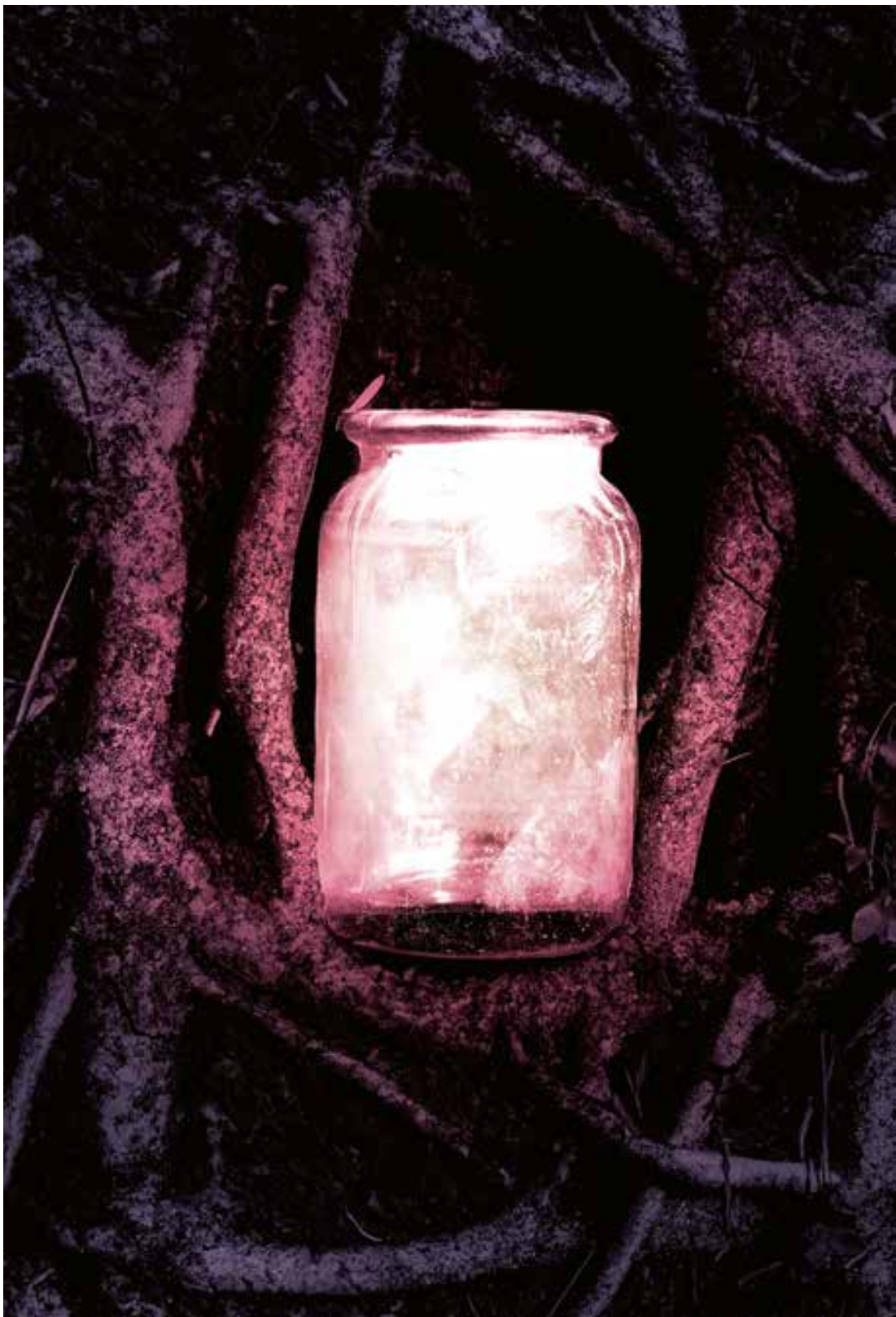


Item: Shard from a Fraser and Neave glass bottle
Year/Period: 1920s
Region: Singapore
Measurement: 11 x 7 cm

The first aerated water business in Southeast Asia, Fraser and Neave was founded by John Fraser and David Neave in 1883.



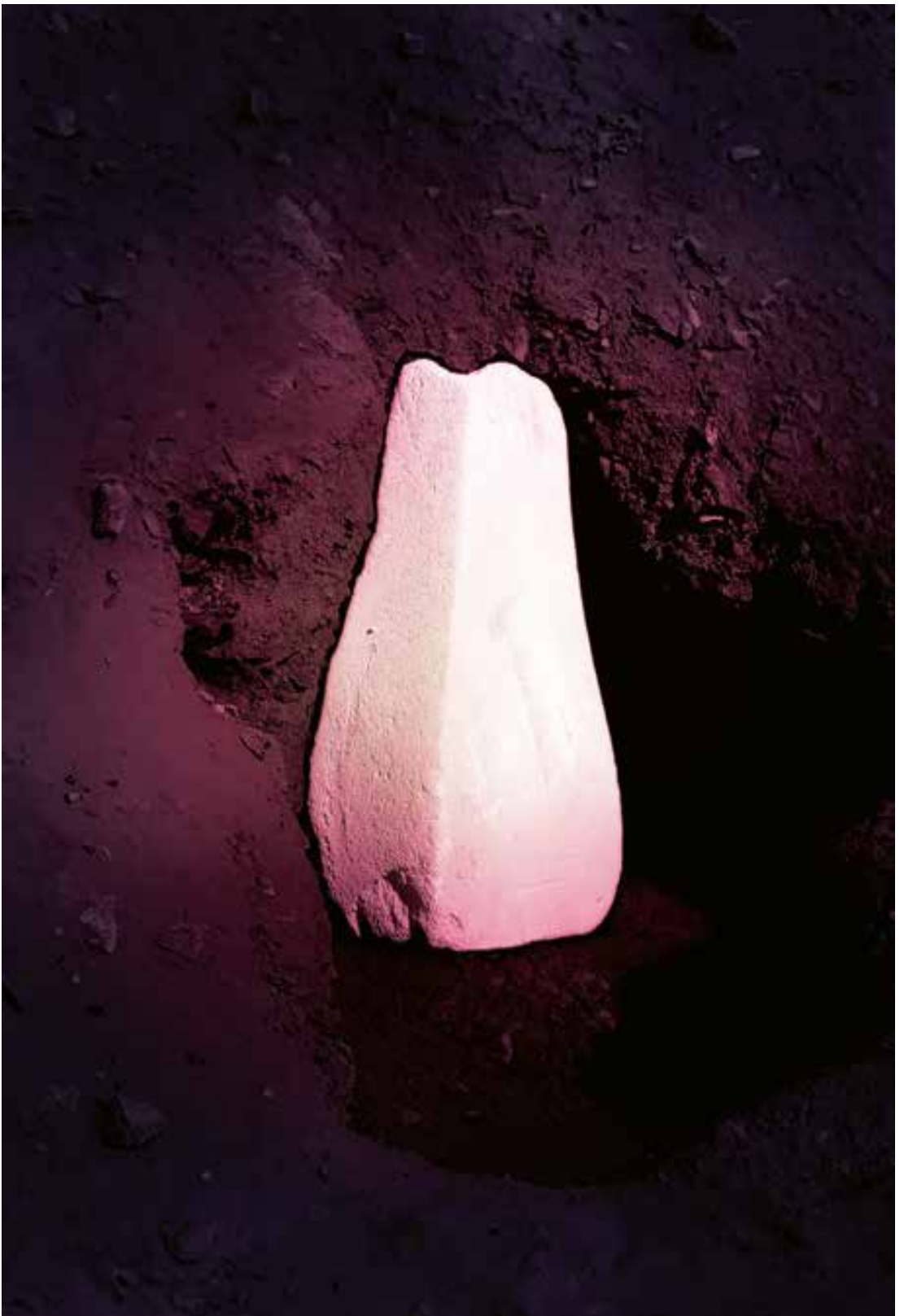
Item: Rice bowl shard
Year/Period: 1940s
Region: Japan
Measurement: 10 × 8 cm



Item: Japanese glass bottle
Year/Period: 1940s
Region: Japan
Measurement: 10 × 6 cm



Item: Japanese glass bottle
Year/Period: 1940s
Region: Japan
Measurement: 10 × 6 cm



Item: Stone axe
Year/Period: Unknown
Region: Unknown
Measurement: 12 × 5 cm

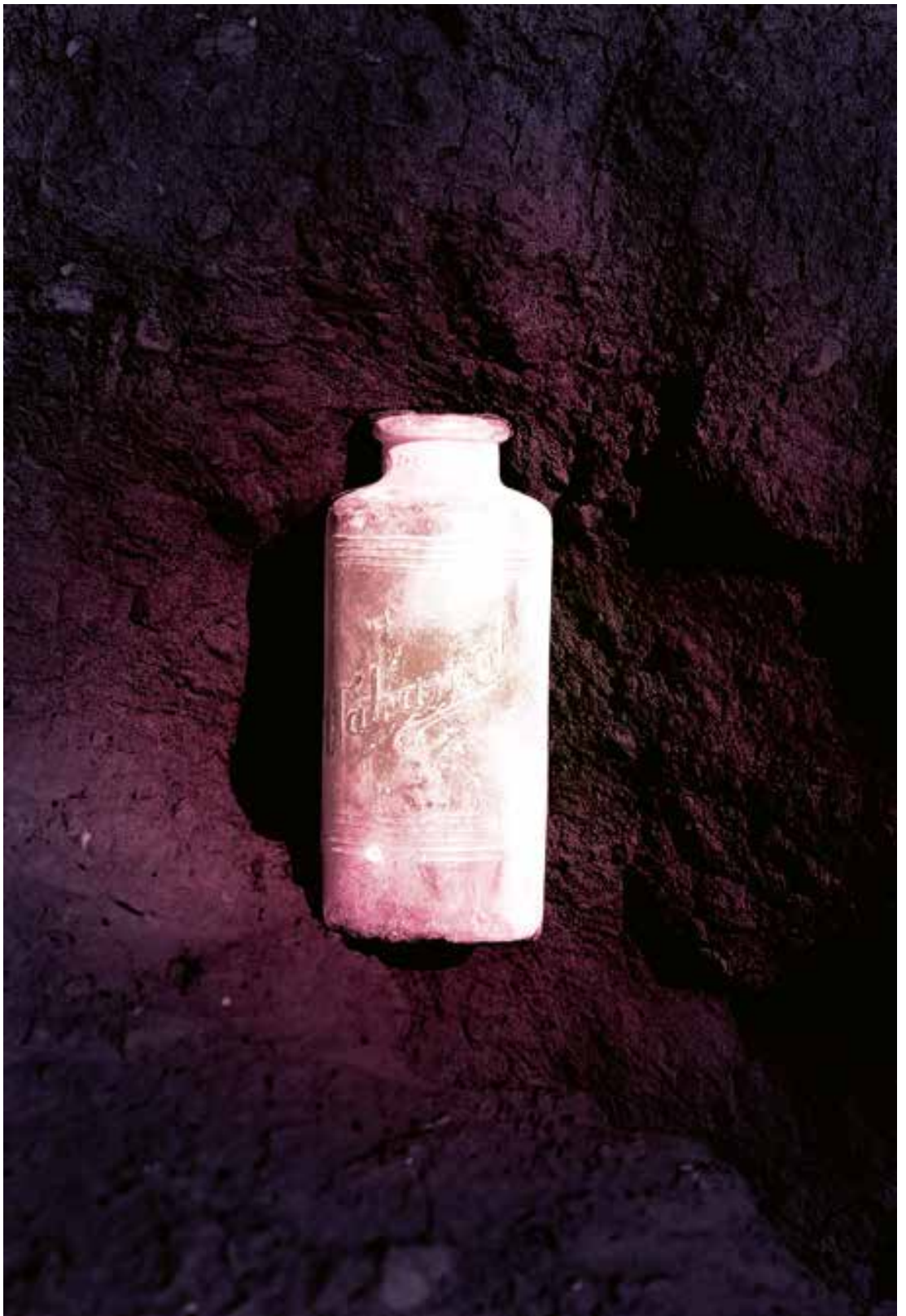


Item: Partial brick from Jurong Brickworks
Year/Period: 1940s
Region: Singapore
Measurement: 16 × 8 × 8 cm

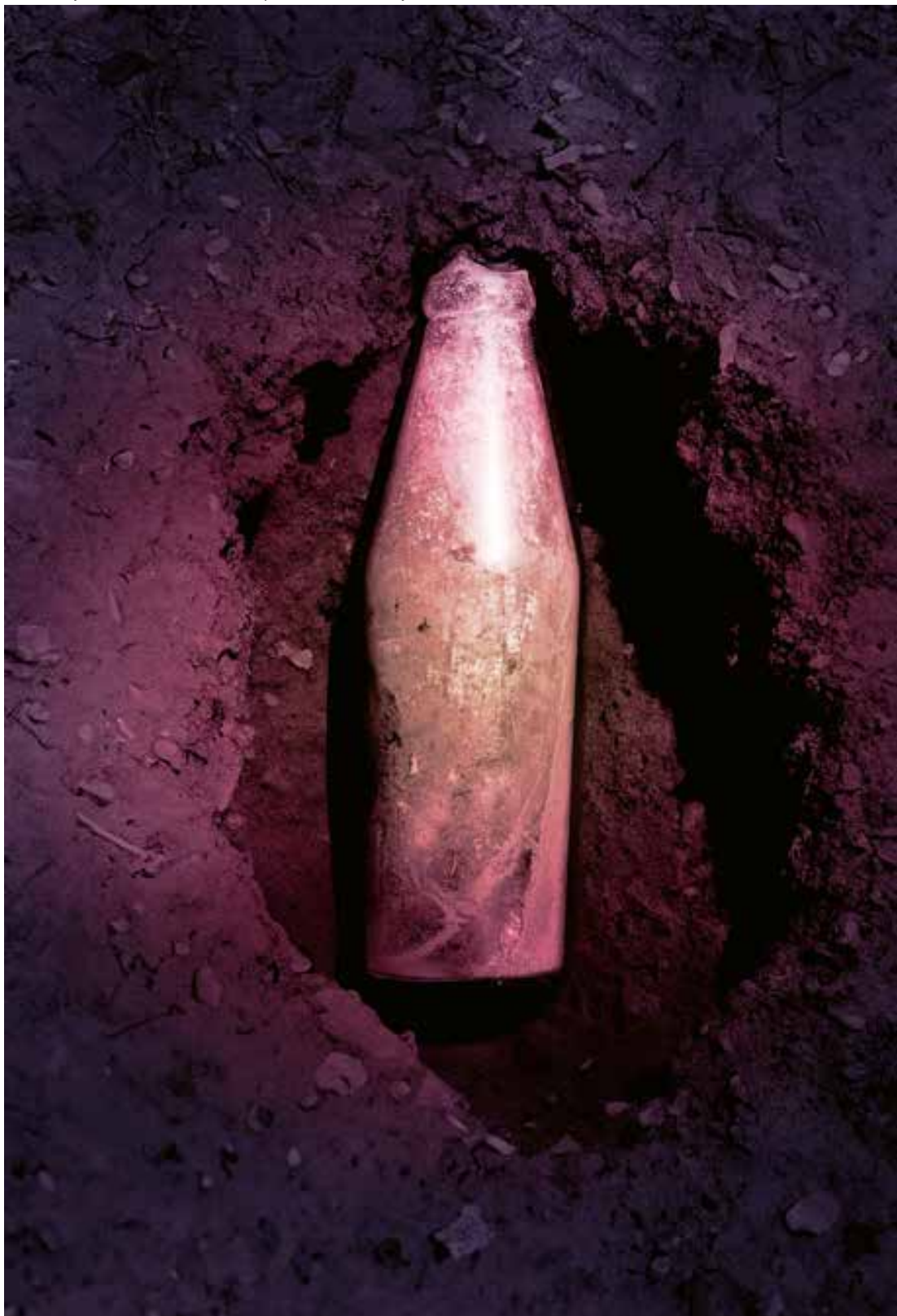


Item: Partial brick from Alexander Brickworks
Year/Period: 1940s
Region: Singapore
Measurement: 16 × 8 × 8 cm

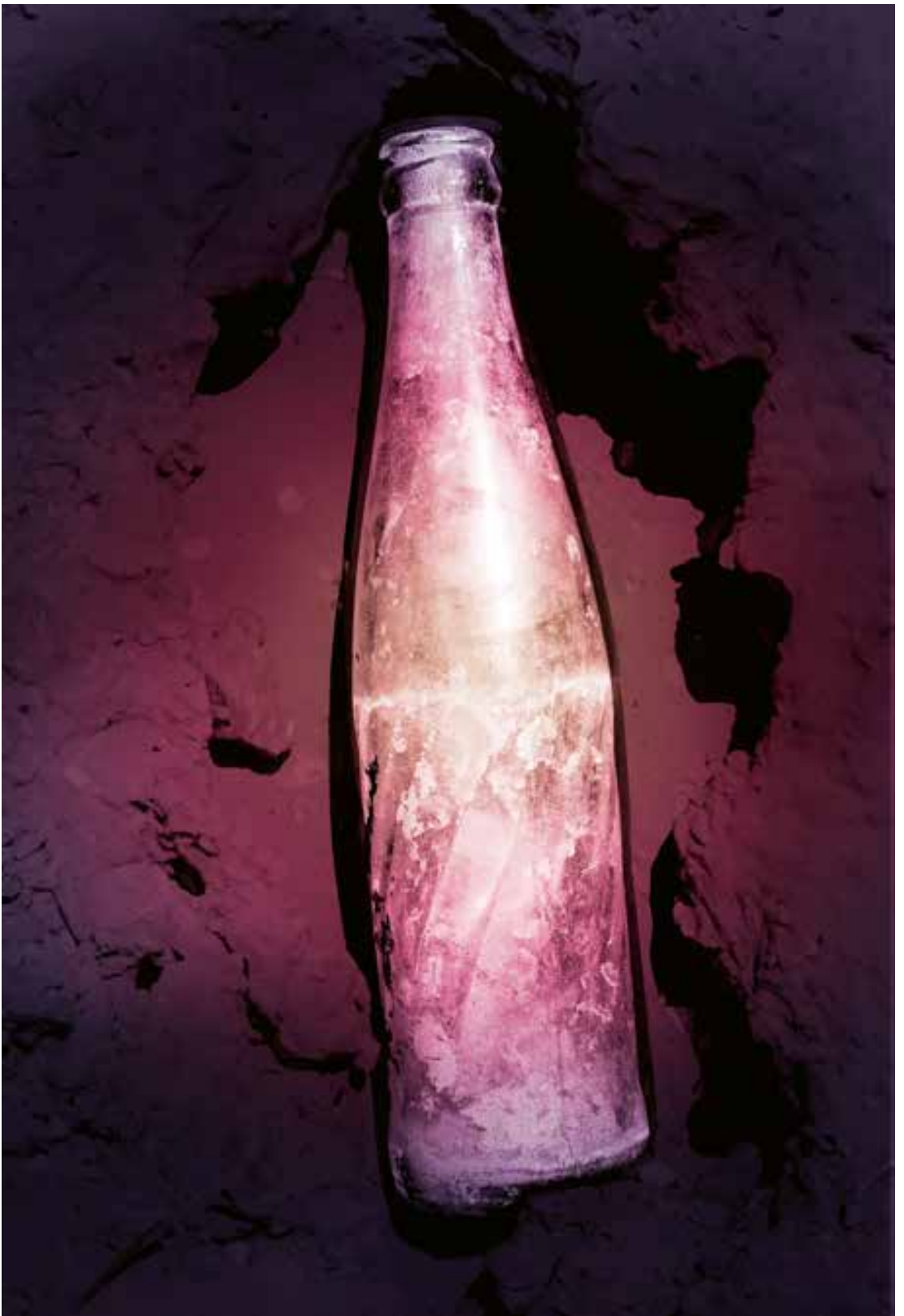
The Wakamoto Company began production of this medicine and marketed it as the "Source of Youth," a gastrointestinal supplement infused with vitamin B, in 1929. According to scholarly research done by Kali D.V. Oliver of the University of Idaho, during the years in Japan that this bottle was produced, the country was undergoing a heavy emphasis on Westernization which accounts for the English inscriptions with the Japanese *hiragana*.



Item: Wakamoto amber bottle
Year/Period: 1940s
Region: Japan
Measurement: 10 × 5 × 5 cm



Item: Unidentified Japanese beer bottle
Year/Period: 1940s
Region: Japan
Measurement: 13 × 5 × 5 cm



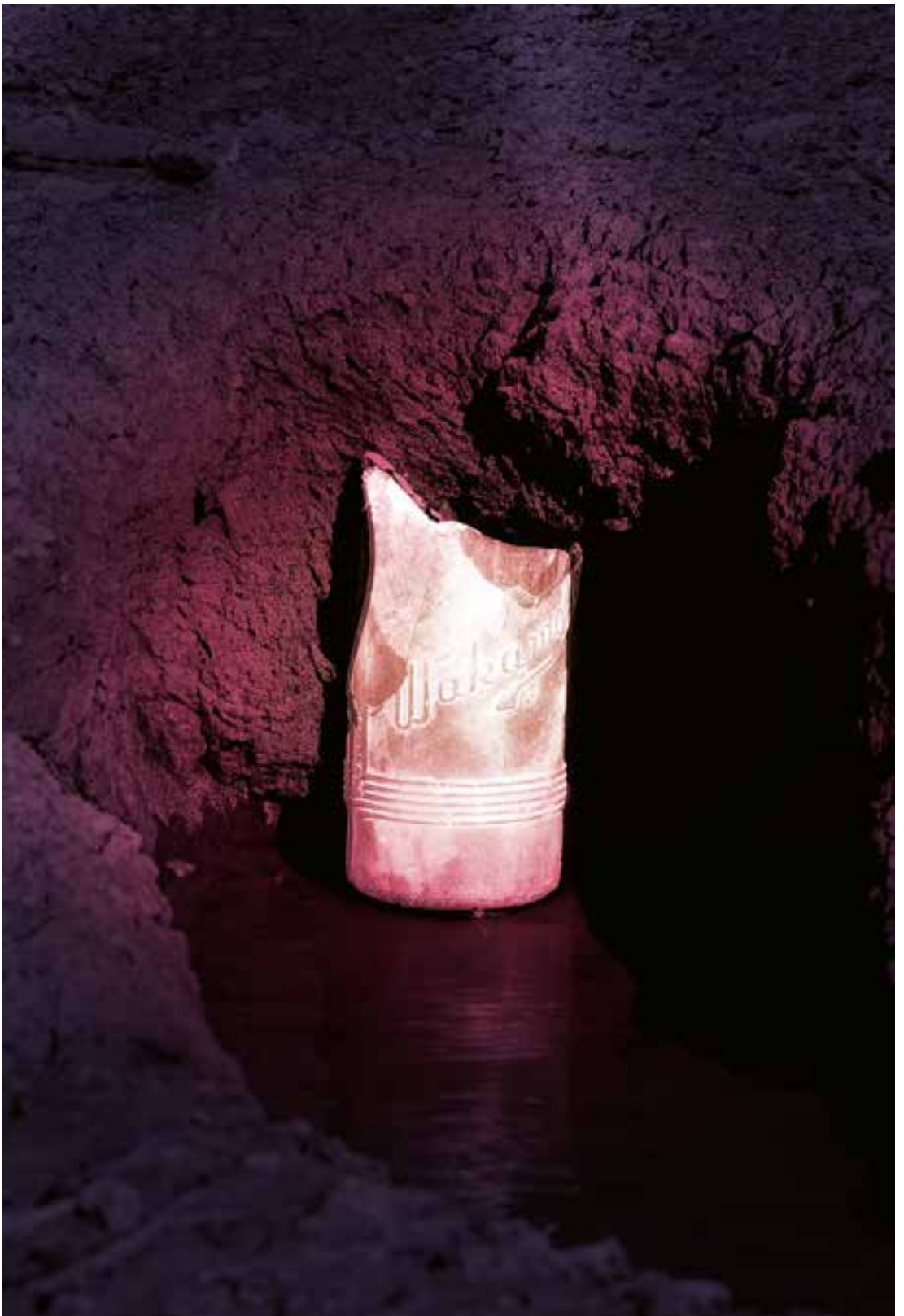
Item: Mirinda glass bottle
Year/Period: 1970s
Region: Singapore
Measurement: 16 × 5 × 5 cm



Item: Glass shard
Year/Period: 1950s
Region: Probably Singapore
Measurement: 9 x 5 cm



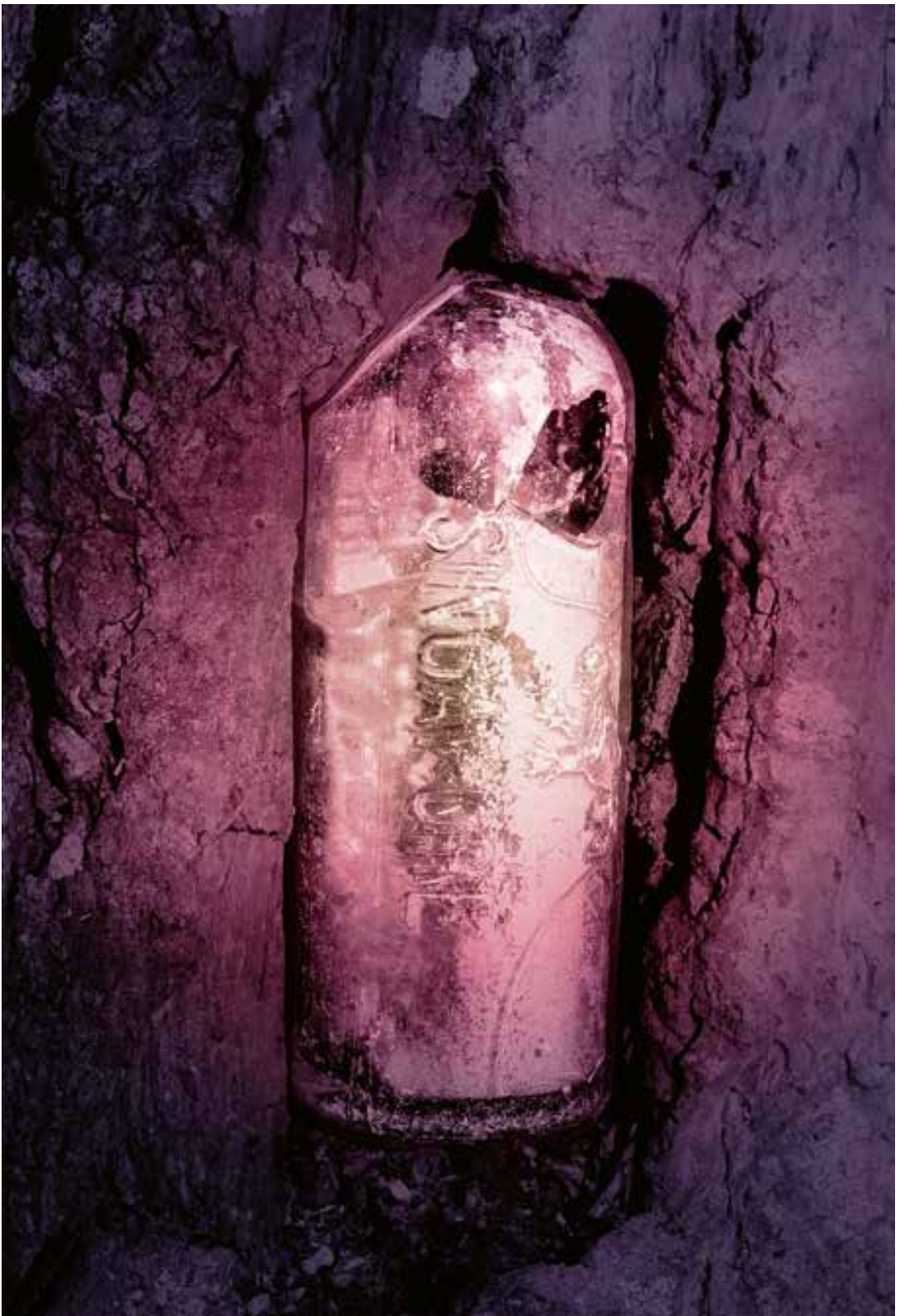
Item: Miniature medicine bottle, probably Japanese
Year/Period: 1940s
Region: Japan
Measurement: 7 × 4 × 4 cm



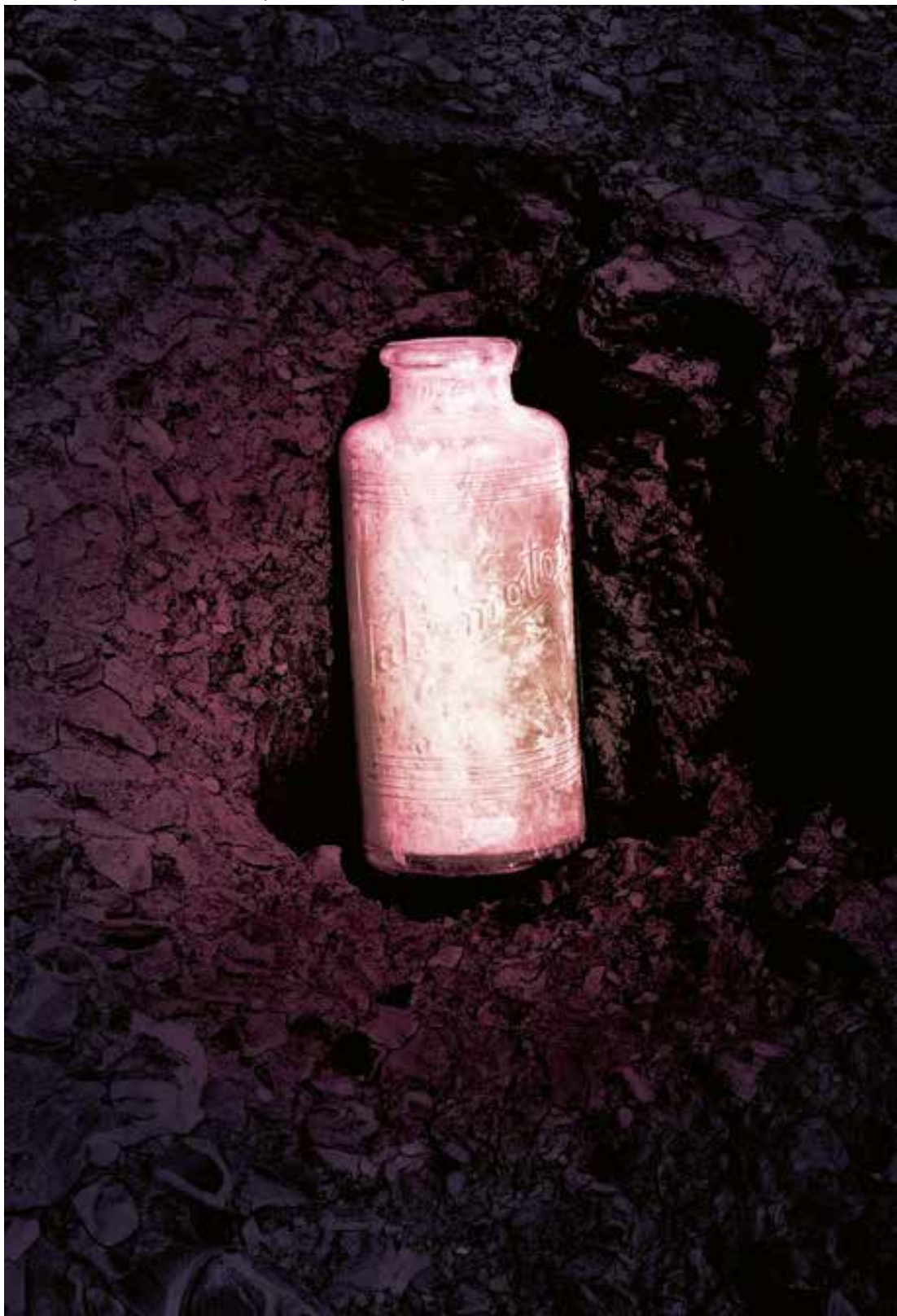
Item: Part of a Wakamoto amber bottle
Year/Period: 1940s
Region: Japan
Measurement: 9 × 5 × 5 cm



Item: Mirinda glass bottle
Year/Period: 1970s
Region: Singapore
Measurement: 16 × 5 × 5 cm



Item: Part of a Fraser and Neave glass bottle
Year/Period: 1920s
Region: Singapore
Measurement: 18 × 7 × 7 cm



Item: Wakamoto amber bottle
Year/Period: 1940s
Region: Japan
Measurement: 9 × 5 × 5 cm

SEEING FOREST:
A READER

Nathaniel Cantley, *Report on the Forests of the Straits Settlements*. Singapore: Singapore Printing Office, 1883.

REPORT ON THE FORESTS
OF THE STRAITS
SETTLEMENTS

Nathaniel Cantley

Paper, to be laid before the Legislative
Council by Command of His Excellency
the Governor.

Nathaniel Cantley (1847–1888) was a British botanist, tropical horticulturalist, and forestry expert who first served at Kew Gardens, then the Royal Botanic Gardens in Mauritius, and in 1880 became superintendent of the Singapore Botanic Gardens. His text and species lists, reprinted in excerpts across the following pages, are considered one of the first forestry assessments of Singapore as a colonial project of the nineteenth century. Reflecting many of the views on humans and nature typical for colonial science and settlements at the time, what is particularly noteworthy is that Cantley introduces the concept of the “wasteland” to describe stretches of vegetation on the island that were neither primeval forests populated by majestic hardwood species, nor areas used for agricultural cultivation. It was through writing like his that secondary forests and grassy areas first became associated with notions of inferiority, disorder, and an overall uselessness. Among the many interesting details regarding the species lists is the fact that the scientific names are presented alongside the local Malay names, suggesting the ongoing importance of local botanical knowledge at the time. Alongside many of the birds and mammals that play a central role in *Seeing Forest*, the Albizia tree, which features as the main arboreal protagonist in Robert Zhao Renhui’s work in Venice, is also mentioned in several sections, such as the one on trees “suitable for road-side planting.”

INTRODUCTION.

1. Having received instructions from His Excellency the Governor to draw up a Report on the Forests and Forest Lands of the Colony, and make recommendations for their better management, I commenced, in March 1882, a tour of inspection of the various districts comprised within the Settlements in order to make myself fully acquainted with the special circumstances and conditions prevailing in each.
2. With a view to giving a clear idea of these conditions, I have divided my Report into two parts; in the former will be found detailed the present state of the forests and circumstances which affect forest growth; and the latter contains my recommendations.
3. It is apparent that no sufficient attempts have been made to conserve the Government forest lands, and that nothing has been done towards utilising the extensive grass wastes that are to be seen throughout the Settlements. The present state of affairs is the result of a reckless, migratory cultivation carried on by the Chinese, and this extensive deforestation has brought with it its attendant evils. Our Timber supply has fallen far short of the demand, and the climate of the Colony is becoming sensibly affected.
4. It is not contended that the total Rainfall of the year has decreased, but owing to the removal of the tree covering that great equaliser of Rainfall—showers have become less frequent and more local than formerly; and droughts of unprecedented length have occurred, thereby increasing the possibility of epidemics. Those fertilising showers which once watered the whole surface of the Settlements are now confined more frequently to the hill tops and higher elevations, the soil and the prospects of agriculture being thus impaired, and the temperature of the plains being raised. The hill streams run with greater irregularity and many of the smaller streams have become entirely dried up.
5. It has been said that, at home as well as in their Colonies, other nations pay earlier attention to the conservation of forests, than the English; and it is hard to conceive a

more short-sighted policy than that which has suffered these Settlements to drift into, their present condition of scarcity of forest and forest produce.

6. It has, however, remained for His Excellency the Governor to propose the inauguration of those remedial measures which have proved effectual in other countries where similar evils have been dealt with, namely, the formation of plantations of forest timber, the re-wooding of waste lands, the establishment of well defined Reserves, and the protection of such patches of forest as are now existing.
7. It will be by these means that in years to come the climate and soil of the Colony will be improved; that a supply of Timber will be provided when those sources of supply now open are closed to us; and that the Settlements, through afforestation, will present a totally different aspect.
8. Many foreign species of trees have been recently introduced which, it is hoped, will prove to be admirably adapted for the reforestation of waste lands, and the collection and cultivation of these, together with the best of the indigenous species, will form plantations all over the Settlements.

DESCRIPTIVE.

[...]

FORESTS.

29. The primeval forests of Singapore belong to that class known as evergreen tropical forests, which chiefly lie within the tropics and in countries subject to heavy annual rainfall, and a high state of atmospheric moisture. Many of the trees contained in these forests are, nevertheless, deciduous for a very limited period, which, in most cases, extend over a few days only. The island appears to have been covered with forests of this nature till quite recently.
30. From what can be judged from some old trees which still remain on the island, and from what I have seen of

the primeval forests in the adjacent territory of Johor, the forests of the island must have been very fine. Some of the old trees have trunks several feet in diameter, straight as arrows, and 60 to 70 feet to the first ramification of the branches. It is also observed that many of the districts of the island have derived their names from the abundance of the valuable kinds of timber found in them. Serayah-wood was abundantly produced, a species which always finds a ready market. In Australia its excellent qualities have obtained for it the name of "Singapore Cedar," and in Mauritius, where it is annually imported to the value of about £10,000, it is known as "Bois de Singapore," and for house-fitting and constructive works generally, where not exposed to the weather, it is one of the most easy to work and most durable of woods. This with most other valuable kinds is only to be found in very diminished quantities on the island,

31. Those species which are chiefly to be met with in the patches of forest remaining on the island, I have divided into lists, according to their importance or peculiarities. Where the systematic name is not given, I have not met with a tree in blossom, and where the local name is omitted, it is owing to none of my guides being able to furnish me with the name. *See Appendix, A.*
32. Such Crown forests as remain uncut are widely distributed in isolated patches over the island. These forest patches or clumps are of various sizes, from half an acre or so to about twenty-five acres, and of no particular shape; their distance from each other may average a quarter of a mile, though often exceeding a mile. The interspace is generally waste grass land which supports, as a rule, only strong-growing grass locally known as "*lalang*" (*Imperata Koenigii*), which chokes any seedlings of forest trees which might otherwise spring, and ultimately reforest such lands. The area of forest of this description is difficult to estimate, but I think that 5,000 acres would be about the proper figure to be termed approximate. Little timber of any particular value remains in the Government forest; some patches contain a few trees of fair size, but they produce

wood of indifferent quality. Frequently, however, a tree of *serayah* or *meranti* may be met with in the larger forest clumps, where they have been spared owing to their occupying inaccessible positions, or to accident.

33. Around such trees may be found seedlings of the same kinds in limited numbers, and also at some little distance to which the winds have wafted the seed, but these constitute only a small proportion of the Codlings to be found in these forests; the majority being inferior species, and as these are preparing to form the forests of the future, it need hardly be said that they will not be very valuable when grown, unless assisted by regeneration cuttings, or, where that is likely to prove ineffectual, by artificial sowing or planting to the requisite extent.

WASTE LANDS.

34. This condition of things is not, I believe, generally understood in the Colony, where the opinion prevails that the waste lands only require attention; but much of the secondary growth which forms the greater proportion of the present forest of the island is, from a Forester's point of view, nearly as worthless as the waste lands themselves.
35. It is indeed difficult to properly account for the degenerate state in which the remaining forests of the island are found, and I can only surmise that the valuable trees which once covered the surface of the island must have been removed before they had made provision for reproduction by seed-shedding, and that the condition of the land when denuded must have been unfavourable to the growth of their progeny. I observed in one forest a band of men eagerly searching for young trees of *Tampinis* which were believed to grow there, and a little later I saw several trees cut over close to the ground. These were small plants not more than three inches in diameter, a fact which would seem to show that the destruction of the saplings in this way by natural selection, has been, perhaps,

- the chief agent in bringing about the present unsatisfactory condition of growth.
36. The trees, some of which are only now made known to science as growing in the Straits Settlements, and which compose such forest as remains uncut on the island, are given; but some are now so scarce that they may be looked upon as extinct for any useful purpose they now serve. There is yet another class to describe, viz., auxiliaries. These are the small trees and shrubs which form the undergrowth, and which, though of little commercial value, are nevertheless important as keeping the forest in a compact state, and thereby preventing an over free circulation of air, which would be injurious to the germination of seeds, and even to the proper growth of the trees themselves. This undergrowth also assists in keeping the forest floor in a proper state for the reception of seed, and maintains the general humidity of the air by preventing too rapid absorption, and those species peculiar to the forests of the Settlements, so far as they have come to my notice, I have added to the Appendix with the names of the principal palms and plants of the fern tribe met with during my forest tour. *See Appendix A.*
 37. I also give a list of creepers and other plants injurious to forest growth. The first of these which I will mention are those most commonly found, the stronger of which climb to the tops of the highest trees, and ultimately cover and kill them. Others grow less strongly, and are dangerous to the trees only during the first ten or twenty years of their existence. Others, again, are found chiefly on the outskirts of woods where they hang only to the lower branches. Others are peculiar of finding their way quickly upon land, which has been cultivated and lately abandoned. These latter generally give most trouble, as they lay hold of the young trees which spring from seed or such as are planted, and soon choke and kill them if not speedily removed by the Forester. *See Appendix A.*
 38. There is also a tribe of plants very common in the forests of the island which are sometimes epiphytal, but more often parasitical, the roots of which penetrate the branches

of the trees and feed upon the sap intended for the nourishment of the legitimate leaves and branches. I noticed some trees covered with these parasites in the forests of the island, sometimes to the exclusion of every leaf except those of the parasite itself. Trees so covered soon die. It is curious, too to witness the great rapidity with which parasites of this nature travel from tree to tree; their rapid distribution is said to be facilitated by birds which feed upon the seeds and drop, them undigested upon the branches. *See Appendix A.*

39. Having already made mention of the area of waste lands and the nature of their distribution, I refer to them here only to show how far protection without artificial planting is likely to be effectual in the afforestation of them. A list of the young trees found to have crept into some waste lands abandoned about five years ago is given, but I may mention that of the species enumerated only two kinds are worth protecting, and these occur but rarely. The only thing which seems to grow freely for sometime after gambier cultivation is simply grass (*lalang*), and the result is that there is hardly to be found any land, the forest growth on which would grow into a serviceable plantation with the aid of protection only. This is a great drawback, and shews the sad condition into which a wild and unrestrained cultivation has brought the island. But on the other hand, I have further examined these waste lands with a view to finding out the depth to which the impoverished soil extends, and found it to be only the surface covering of a depth of about a foot or so. Below this, the soil is of ordinary good quality, and when turned up grows crops satisfactorily, and there is, therefore, every hope of forests being established on such lands, and of the plants growing with their usual vigour, after the roots have penetrated beyond the surface covering, and with such a mode of cultivation, as would turn down the exhausted surface soil, and turn up that which underlies it, as is done in Europe, ordinary agricultural crops might be grown much longer on the same spot than is now the case; nor is the *lalang* grass so formidable an opponent of cultivation, as it is generally considered to be. It is easily

destroyed by the shade of plants taller than itself when planted sufficiently near each other, and may, if desired, be grubbed out altogether. This grass may be looked upon as a valuable provision of nature in shading and protecting the waste lands which it covers from the deteriorating influence of the sun until suitable crops can be planted on them, or they are otherwise stocked by nature.

DISEASE. INSECT AND ANIMAL LIFE.

40. The forest trees of the Island are remarkably free from fungoid disease and fungi generally. The climate seems unfavorable for the development of this tribe of plants, and I have no recollection of having met with any tree which could be called diseased, although many were attacked by insects.
41. Insect life is very numerous in this part of the world, the family of beetles and boring insects specially so; but white ants, with which some lands swarm, are perhaps the most destructive, and seem to prefer wood of a light open-grained nature. In the Botanical Gardens of the Colony they have shown a decided preference for pine trees and Australian trees generally. In the forests I have noticed trees of *Litsoea*, *Camptospernum*, *Quercus*, *Castanopsis*, &c., eaten over by them. It is most difficult to suggest a remedy for their ravages, but, in this direction I have used gas tanks with most success. They dislike any strong-smelling thing, and I have known them frightened away by a dose of guano water. There are, indeed, many substances and liquids which will kill them, but the difficulty is to get one that will destroy the ants without destroying the tree also, and one that will prevent their returning, and I believe no such remedy is at present known.
42. The Forests of this Colony are, as has been often remarked, singularly devoid of animal life; but of those animals and birds enumerated in the Appendix, all, except the Deer, which are not plentiful, are the cause of much injury or annoyance to the Forester. *See Appendix C.* [...]

APPENDIX A.

I.—List of large Indigenous Trees, a few of which are still to be found in Singapore.

Local Name.	Systematic Name.	
Tembësu	} <i>Fagraea peregrina</i>	Used for piles and foundations.
Temüsu		
Damar laut	<i>Canarium dichotomum</i>	" Constructive purposes.
Dürían Bürong	<i>Durio oxleyanus</i>	" Masts from ships.
Merbau	<i>Azelia</i> sp.	" For furniture
Jelutong	<i>Dyera constulata</i>	" Constructive purposes.
Sēnā	<i>Pterocarpus indicus</i>	" "
Būnut	<i>Urostigma</i> sp.	" "
Kayu kūlim	<i>Scorodocarpus Borneensis</i>	" "
Kayo kâpor	<i>Dryobalanops camphora</i>	" "
Klédang	<i>Artocarpus</i> sp.	" "
Berangan	<i>Castania</i> and <i>Castanopsis</i>	Not much used.
Changi	<i>Daphniphylopsis capitata</i>	Used for constructive purposes.
Kweng	<i>Dipterocarpus</i> sp.	Produces wood oil.
Katapang	<i>Terminalia catappa</i>	Constructive purposes.
Smarum	<i>Mimusops indica</i>	" "
Jambu utan	<i>Eugenia</i> sp.	" "
Teréntang	<i>Castanospermum auriculatum</i>	" "
Tengau	<i>Brugueira parviflora</i>	" "
Bâlau	...	The best wood for sleepers.
Pētāling	<i>Strombosia Javanica</i>	For constructive purposes.
Rēsak	<i>VatixxxxRussah ?</i>	" "
Tampīnis	<i>Saexxxx sideroxylon</i>	Used for nearly all purposes

II.—List of small Trees, very few of which now remain in Singapore.

Local Name.	Systematic Name.	
Meranti	<i>Hopea Meranti</i> and <i>Shorea</i>	Used for constructive puposes.
Serāya	<i>Shore</i> sp. and <i>Hopea</i> sp.	do.
Glam Tikus	<i>Eugenia</i> sp.	Constructive purposes.
Brūas	<i>Garcinia</i> sp.	do.
Rēngas	<i>Gluta velutina</i>	Furniture, &c.
Penāga	<i>Calophyllum inophyllum</i>	Masts and spars of ships.
Kemūning	<i>Murraya exotic</i>	Used by turners.
Kelat	<i>Eugenia Zeylanica</i>	Constructive purposes.
Klédang	<i>Artocarpus</i> sp.	"
Pāsal	do. <i>Echinatus</i>	"
Nīpis Kulit	...	"
Pūlei	<i>Alstonia scholaris</i> var.	"
Rumania	<i>Bouea macrophylla</i>	"
Medang Sereī	<i>Litsaea lancifolia</i>	"
Srian	<i>Canariopsis hispida</i>	"
Jambu-Jambu	<i>Inocarpus edulis</i>	"
Daru-Daru	<i>Sideroxylon lanceolatum</i> var.	"
Tampang	<i>Artocarpus rigidus</i>	"

Chèmpedak Ayer	"	varians	"
Mahang Wangi	...		"
Bakau		Rhizophora mucronata	"
Tèngau		Heritiera littoralis	"
Lèban	...		"
Rambei daun	...		"
Médang Kunyit	...		"
Médang Lèlin	...		"
Klapa laüt	...		"

III.—List of Trees found growing on Hilly ground.

Local Name.	Systematic Name.	
Kayu Kèlat	Eugenia zeylauca	Rare.
Seräya	Shorea, Hopea, Vatica, &c.	do.
Meranti	Hopea Meranti	do.
Mèrbau	Azelia sp.	do.
Rèngas	Gluta velutina	do.
Klédang	Diospyros fruticosus	do.
Pásal	Artocarpus echinatus	do.
Changi	Daphniphylopsis capitata	do.
Médang Sèrei	Litsæa laucifolia	do.
Kayu Kùlim	Scorodocarpus Borneensis	do.
Résak	Vatica Russah	do.
Kemüning	Murraya exotica	do.
Kayu Manis	Cinnamomum of sorts	do.
Jelutong	Dyera costulata	do.
Pülei	Alstonia scholaris var.	do.
Minyak Jantan	Dipterocarpus sps.	do.
Brangén	Castania and Castanopsis	Common.
Bèlutu	Randia anisophylla	do.
	Artocarpus sps.	...
	Elæodendron glaucum	do.
Langut	Rhodamnia trinervia	Very common.
Tiup-Tiup	Canarium rufum	Common, fruit eaten by Chinese.
Damar Utan	Canarium parvifolium	illegible
	Cratoxylon polyanthum	Very plentiful.
	Evodia Roxburghiana	do.
Mapaga?	Ixonanthes icosandra	do.
	Dillenia scabrella	Rare.
	Dillenia indica	do.
Jèring	Pithecolobium lobatum	Common, fruit eaten.
	Phyllanthus superbus	Very plentiful.
Nasi-Nasi	Buccharia sapida	Common in Malacca.
	Aperosa lepidostachya	do.
	Aperosa sp.	...
	Vitex pubescens	Very common.
	Meliosma lanceolata	do.
	Cupania fuscidula	do.
	Antidesma pubescens	do.
Pulut	Barringtonia racimosa	Rather rare, cultivated.
Mahang Utan	Rottleria montana	Very plentiful.

Makapas	<i>Xanthophyllum obscurum</i>	Somewhat rare fruit eaten by
Sĕnā	<i>Xanthophyllum vitellinum</i>	do. [Chinese.
Māta Kĕli	<i>Gynotrches axillaris</i>	Very plentiful.
Marbau Pāsir	<i>Sindora Siamensis</i>	Rare.
Blalang	<i>Pithecolobium angulatum</i>	Very plentiful.
Mampat	Hypericaceæ, sp.	do.
Mĕrbau Pāsir	<i>Gironniera celtidifolia</i>	do.
Simpon	<i>Kurrimia paniculata</i>	do.
Katāpang	<i>Terminalia catappa</i>	Rare fruit much esteemed by
Mĕsāwa	<i>Symplocos pedicellata</i>	Very common. [natives.
Mongol	<i>Gordonia Singaperiana</i>	Common.
Trentang	<i>Castanospermum auriculatum</i>	do. on Bukit Timah.
Mĕrambung	<i>Nuclea cadamba</i>	Rare.
	<i>Commersonia platyhylla</i>	Very common near chief town.
Satebal	<i>Phyllanthus surperba</i>	do. do. everywhere.
Rando Kapok	<i>Eriodendron anfractuosum</i>	Common.
Merapal	<i>Mæsa</i> sp.	...
Berangan Utan	<i>Cratoxylon</i> sp.	Common on hilly ground.
Meranti Utan	<i>Aromadendron elegans</i>	Very rare.
Jĕlei	<i>Elaeocarpus</i> sp.	Several kinds very common.
Gĕtah Percha	<i>Dichopsis gutta</i>	Very rare.
Bĕrangan Bābi	<i>Quercus</i> sps.	Very common.
	<i>Bignonia</i> sp.	Common, leaves eaten.
Mĕdang	<i>Tetranthera Roxburghii</i>	Common.
Kayu Darah	<i>Myristica fatua</i>	do.
	" <i>sesquipedale</i>	Rare.
Būta	Euphorbiaceæ sp.	Common.
Sapetei	<i>Albizzia</i> sp.	Rare.
Sāga Laut	<i>Adenanthera bicolor</i>	Rather rare.
Mĕdang Jāti	<i>Pithecolobium confertum</i>	Very rare.
	<i>Dysoxylon binectariferum</i>	Rare.
Kāyu Arang	<i>Maba ebenus</i> , <i>Diospyros fruticosus</i>	Common.
	<i>Alstonia macrophylla</i>	do.
	" <i>scholaris</i>	do.
	<i>Pittosporum ferrugineum</i>	do.
Pĕnaga Purga	<i>Adinandra dumosa</i>	do.
Mahang	<i>Macaranga hypoleuca</i>	do.
	<i>Macaranga</i> sp.	do.

[...]

VI.—List of Trees chiefly used as Fuel.

Local Name.	Systematic Name.	
Bākau	<i>Bruguiera</i> and <i>Rhizophora</i> .	} Common as small trees in the swamps along the coast.
Lĕnggādei	...	
Mĕrbātu	...	
Chĕndĕrei	...	
Api-Api	<i>Lumnitzera coccinea</i> . do <i>alba</i> .	
Cajeputi or Kāyu Pūteh	<i>Melaleuca leucodendron</i>	...

VII.—List of valuable Trees, very few of which still remain in Singapore.

Local Name.	Systematic Name.	
Tampinis	Slætia sideroxylon	...
Kayu Kulim	Scorodocarpus Borncensis	...
Meranti	Hopea Meranti and Diptero- carpeæ generally.	...
Tëmüsu	Fagræa peregrina	...
Smarum	Mimusops Indica	...
Medang Sérei	Litsæa lancifolia	...
Klêdang	Artocarpus sp.	...
Gétah Jelutong	Dyera costulata	...
Pênâga	Calophyllum inophyllum	...
Bëntangor	Callophyllum [sic] spectabile	...
Pâsal	Artocarpus Ehinatus	...
Kimyan puteh	Mabba buxifolia	...
Kayu kèlat	Eugenia Zeylanica	...
Pulei	Alstonia scholaris var.	...
Klêdang	Diospyros sp.	...
Jambu-jambu	Inocarpus edulis	...
Serâya	Shorea and Hopea	...

VIII.—List of valuable Indigenous Trees believed to be extinct in the Forests of the Straits Settlements.

Local Name.	Systematic Name.	
Bâlau	...	I know of no wood so durable as this under all circumstances and that can be used for more general purposes.
Kranji	Leguminos	Wood close-grained, heavy and durable.
" hitam	...	
" darah	...	
Kweng or Minyak Jantan.	Dipterocarpus sp.	Yields the kruing oil of commerce. One or two trees observed.
Médang lebar daun	...	House posts, &c.
Kayu Laut	...	Used in making masts and spars for vessels, paddles, &c.
Dûrian bûrong	Durio oxleyanus	...
Kayu chichan	...	
Nangka Pipit	...	
Bélian Wangi	...	As beams for house building boat planking, &c.
Médang Kunyet	...	
Daru Daru or Dêdâru	Sideroxylon lanceolatum var.	For building purposes; One tree seen.
Chêmpêdak ayer	...	For boat building.
Kayu Kâpor	Dryobalanopsis camphora	Do. constructive purposes.
Pêtâling	Strombosia Javanica	Wood close-grained of a light colour; used for general purposes.

Rèngas	Gluta velutina	...
Nîpis Kulit	...	
Merambong	...	
Rambei Daun	Dichopsis Gutta	Yields gutta-percha.
Tèmbèsù	...	Used by natives for rafters.

[...]

XIII.—List of Parasites, Singapore.

Loranthus chrysanthus.
 Do. sphærocarpus.
 Do. tetragonus.
 Do. lepidotus.
 Viscum compressum.
 Do. ramossissimum.
 Ficus, several species.

About 20 more species are said to occur of the first named, among which are Loranthus formosus and Loxanthera speciosa.

XIV.—List of spontaneous growth on Waste lands, Singapore.

Cinnamomum platyphylla.
 Rottlera montana.
 Ficus sp.
 Eugenia several sp.
 Maesa do.
 Adinandra dumosa.
 Myristica furfuracea.
 Fagraea peregrina.

And as undergrowth the following.

Clerodendron velutinum.
 Melastoma malabathrica.
 Mimosa sepiaria.
 Solanum, several species.

XV.—List of spontaneous growth on Waste lands, Malacca.

Rottlera montana.
 Eugenia zeylanica.
 Simplicoc lucida.
 Ficus Sps.
 Rhodammia trinervia.
 Macaranga hypoleuca.
 Do. Sp.
 Artocarpus achinatus.
 Ixonanthes icosandra.
 Alstonia scholaris var.
 Aralia Sp.

And as undergrowth the following.

Melastoma malabathrica.

Lantana mutabilis.

Solanum species.

XVI.—List of Exotic Trees, Singapore.

Local Name.	Systematic Name.		
Jâti	Tectona grandis	India	
	Dammara robusta	Australia	This has grown to a large size in the Colony. Young plants look well.
Rain tree	Inga saman	S. America	Very fair progress.
	Inga dulcis	India	Grows well.
Sênâ	Pterocarpus indicus	Do.	Do.
Flamboyant	Poinciana Regia	Madagascar	Said to grow in the Peninsula.
	Casuarina sumatrana	Sumatra	Grows well.
Mahogany	Swietenia Mahogani	W. Indies	Do.
			Very rapid growth, should be planted extensively.
Gum tree	Eucalyptus piperita	Australia	Make fair progress.
	E. rostrata		
Tecoma	Tecoma leucoxyton	India	
Green heart	Nectandra Rodicei	Demerara	Looks promising.
Gétah sudek	Ficus sp.	Perak	Only lately planted.
Para rubber	Hevea brasiliensis	America	
Panama do.	Castilloa elastica	Do.	The growth made promises well.
Ceara scrap do.	Manihot Glaziovi	Do.	
	Adenantha p[xxx]-niana.	India	
Queensland nut	Macadami [xxx]nifolia	Australia	Grows slowly. Not long introduced.
Nutmeg	Myristox [xxx]oschata	Moluccas	Cultivated.
Brazil nut	Bertholletia excelsa	Brazil	Grows well. Lately introduced.
Satin wood	Swietenia chloroxyton	India	Very fair growth.
Pongam	Pongamia glabra	Do.	Grows well said to be indigenous in Penang.

APPENDIX B.

I.—List of valuable Indian Timber Trees recommended for planting in the Straits Settlements.

Local Name.	Systematic Name.
Chickrassia tabularis	
Pongamia glabra	Considered native in Penang.
Heritiera macrophylla	
Mesua Coromandelina	
Patranjiva Roxburghii	
Tectona grandis	Introduced, doing well.
Bassia latifolia	Do.
Bassia longifolia	
Terminalia chebula	
Terminalia arguna	
Terminalia tomentosa	
Albizzia Lebbek	Introduced, growth satisfactorily.
Albizzia stipulata	
Albizzia amara	
Xylia dolabriformis	Said to be found in the forests of the Settlements, but I have not met with it.
Hardwickia binata	
Anogeissus acuminata	
Pterocarpus marsupium	
Ptero carpus santalinus	
Dalbergia latifolia	
Dalbergia sissoo	
Soymida febrifuga	
Michelia champaca	
Nuclea cadamba	Introduced, grows well.
Nuclea parvifolia	Do. do.
Stereospermum chelonoides	Do. do.
Adenathera pavoniana	Do. do.
Podocarpus latifolius	Do. do.
Cedrela serrata	
Ougeinia dalbergioides	

II.—List of valuable Burmese Trees.

Local Name.	REMARKS.
Pinus longifolia	
Fraxinus floribunda	
Cedrela Toona	
Afzelia bijuga	Said to occur in the forests of the Settlements.
Gmelina arborea.	Introduced.
Schilecheria trijuga	Do.

III.—List of Valuable Australian Trees.

Local Name.	REMARKS
Castanospermum Australe	Introduced and doing well.
Casuarina equisetifolia	Do. do.
Dammara robusta	Do. do.
Eugenia eucalyptoides	...
Eucalyptus calophylla	Do. do.
Eucalyptus rostrata	...
" amygdalina	...
" piperata	...
" marginata	...
" xorymbosa	...
Pinus australis	...
" edluis	...
Grevillea robusta	Introduced.

IV.—List of African and Mascarene Trees.

Names.	REMARKS
Vatica africana	...
V. seychellarum	...
Barringtonia speciosa	...
Diospyros bicolor	...
Imbricaria maxima	...
Stadtmannia sideroxylon	Introduced and doing well.
Elæodendron orientale	...
Canarium colophania	...
Sideroxylon grandiflorum	...
Fœtida mauritiana	...
Diospyros mauritiana	...
Oldilaia africana	...
Noronhia Broomiana	...
...	

V.—List of American Trees.

Names.	REMARKS
Swietenia Mahagoni	Introduced and doing well.
Nectandra Rodiæi	Do.

VI.—List of Trees suitable for Road-side planting.

Ficus religiosa
Pterocarpus indicus
Sterospermum chelonoides
 Do. suaveolens
Eugenia densiflora
Lagerstroemia reginae
Ficus nitida
 Do. terebrata
Elaeodendron Roxburghii
Poinciana regia
Tecoma leucoxyton
Sindora indica
 Do. siamensis.
Kurrimia paniculata
Albizzia malacciana
Aromadendron elegans
Rhus sp—a large tree found in Singapore
Vatica grandiflora
Eugenia—several sps.

APPENDIX C.

List of Birds observed to feed on Forest Fruits.

Large Fruit Pigeon	Carpophasia sylvatica.
Imperial Fruit Pigeon	Carpophasia Cœnea.
Lesser do. do.	Osmobeiron olax.
Java Sparrow	Loxia Ovygiorra.
Bul Bul	Ixos analis.
Tree-fare	Calorris chalybæus.

Bats.

I must not forget the Bat tribe. These nocturnal birds or winged-rats are most destructive to fruits, and are very numerous in the Straits, living more abundantly on the Johor side, whence clouds of them may be seen in the evening proceeding towards Singapore.

Pigs.

The Hog tribe, too, do incalculable mischief. There is, perhaps, no country in the world, in which, looking at the size of the place, so many of these animals are to be found as in this Colony; every little jungle swarms with them. They eat everything, but show a decided preference for acorns, which fall in great plenty from the numerous varieties of oaks (*Quercus*) with which the forests abound. The Malays name these nuts "Barangan Babi," or pigs' nuts.

Deer.

Local Name.	Zoological Name.	
Rusa	Rusa Tunjuc	Common Java Deer.
Sambur	Sambulo rufus	Of large size.
Kangil or Plandok	Moschus Javanicus	The Napu Musk Deer.

The two first named do much harm to young trees at the season when they shed their horns, to get rid of which they rub them against stout saplings and destroy the bark, but deer are not sufficiently numerous on the island to be reckoned among forest exterminators.

Monkeys.

Local Name.	Zoological Name.	
Brök	Cynocephalus	Large Grey Monkey
Monyet	Macacus Cynomologos	Small do. do.
Lotong	Macacus	Do. Black do.

Squirrels.

Local Name.	Zoological Name.
Small Brown Squirrel	Tamias Lysteri.
Large two-coloured do.	Sinrus bicolor.
Do. Yellow. do.	... (?)

Max Ernst, "Les mystères de la forêt." *Minotaure*, vol. 1 no. 5 (12 May 1934), 6–7.

THE MYSTERIES
OF THE FOREST

Max Ernst

Newly translated from French
by Mona Schäfer

Symbolizing fecundity, the unconscious, and the relationship between humans and nature, forests have been a primordial theme for poets and visual artists around the world for millennia. One of them was the surrealist and Dadaist Max Ernst (1891–1976), who once stated that the woods near his home town in southern Germany had left a deep and lasting impression on him since he was a child. In the late 1920s, Ernst created a group of works entitled *Histoire naturelle* that employed the technique of frottage to depict a spectrum of metamorphosing forms reminiscent of plants, birds, and other animals. It was followed by *Forests*, which is considered the more monumental and epic of the two groups, not least through its apparent affinity to the cosmic landscape paintings by Caspar David Friedrich. A more comic note is struck in Ernst's short textual vignette, "Les Mystères de la forêt," which was published in *Minotaur*, an art magazine edited and published in Paris in the 1930s with the involvement of André Breton, among others. Reproduced here in facsimile and a new English translation, this little piece of experimental writing alludes to, on the one hand, the enigma and dreamlike experience often associated with visiting the forest, while, on the other hand, refusing to take its cosmological force so seriously as to prevent its sensual and playful enjoyment.

What is a forest? A marvelous insect. A drawing board.
 What do the forests do? They never go to bed early.
 They are waiting for the tailor.

What is the good season for the forests? It is the future;
 the season when masses of shadows will be able to transform
 themselves into speech, and when beings gifted with speech
 will have the pride to seek midnight at x o'clock.

But that belongs to the past, it seems to me. Perhaps.

In this bygone era, did the nightingales believe in God?

In this bygone era, the nightingales didn't believe in God:
 they formed friendship bonds with the mysterious.

And man? What position did he find himself in? The man
 and the nightingale were in the most favorable position to
 imagine: they had, in the forest, a perfect dream conductor.

What is the dream? You're asking too much of me: it is a
 woman felling a tree.

What is the forest's purpose? Making matches to give to
 children as toys.

So, is the fire in the forest? The fire is in the forest.

What are plants nourished by? By mystery.

What day is it? Shit.

What will be the fate of the forests? The day is coming
 when a forest, hitherto a friend of dissipation, will resolve
 to frequent only teetotal places, walk on asphalted roads and
 consort only with Sunday strollers. He will feed on canned
 newspapers. Allowing himself to be touched by virtue, he
 will correct the poor habits acquired in its youth. He will
 become geometric, conscientious, laborious, grammatical,
 legal, pastoral, ecclesiastical, constructivist, and republican.
 He will be boring.

Will the weather be good? You bet! We will go on a
 presidential hunt.

Will this forest be called *Blastule* or *Gastrula*? It'll be
 called *Mme de Rambouillet*.

Will the forest be praised for his new conduct? Not by me.
 He'll find it very unfair, and one day, unable to stand it any
 longer, he'll deposit his waste in the heart of the nightingale.

What will the nightingale say? The nightingale will be



FRONT. MOD. « FORESTIÈRE », PAR J. MIDDLE (1881)

Les Mystères de la Forêt

par MAX ERNST

Qu'est-ce qu'une forêt? Un insecte merveilleux. Une planète à dessin.

Que font les forêts? Elles ne se couchent jamais de bonne heure. Elles attendent le taillieur.

Quelle est la belle saison des forêts? C'est le futur; ce sera la saison où les masses d'ombres seront capables de se transformer en paroles et où des êtres doués de la parole auront l'orgueil de chercher minuit à x heures.

Mais c'est du passé. Il me semble. Peut être.

À cette époque passée, les rossignols croyaient-ils à Dieu? À cette époque passée, les rossignols ne croyaient pas en Dieu; ils faisaient très d'amitié avec le mystère.

Et l'homme, dans quelle position se trouvait-il? L'homme et le rossignol se trouvaient dans la position la plus favorable pour s'aggraver; ils avaient, dans la forêt, un parfait conducteur du rêve.

Qu'est-ce que le rêve? Vous m'en demandez trop; c'est une femme qui abat un arbre.

À quoi servent les forêts? À faire des allumettes qu'on donne aux enfants comme jouets.

Le feu est donc dans la forêt? Le feu est dans la forêt.

De quoi se nourrissent les plantes? De mystère.

Quel jour se marieront-elles? Merde.

Quelle sera la fin des forêts? Viendra le jour où une forêt, amie jusqu'à la disparition, prendra la réductrice de ne plus représenter que les endroits sages, les heures goudron

nées et les promeneurs du dimanche. Elle se nourrira de journaux en conserve. Se laissant toucher par la vertu, elle se corrigera des mauvaises habitudes contractées dans sa jeunesse. Elle deviendra géométrique, consciencieuse, besogneuse, grammaticale, juridique, pastorale, ecclésiastique, constructiviste et républicaine. On s'y amigra.

Ce sera le beau temps; Tu parles! On ira à la classe présidentielle.

Cette forêt s'appellera-t-elle Bastula ou Gastrula? Elle s'appellera Mère de Rambouillet.

La forêt sera-t-elle louée pour sa nouvelle conduite? Pas par moi. Elle trouvera cela très injuste, et un jour se privant plus y tenu, elle ira déposer ses ordures dans le coin du rossignol.

Qu'en dira le rossignol? Le rossignol sera écorché. « Ma amie, répondra-t-il, vous valez encore moins que votre réputation. Allez faire un petit tour en Océanie, et vous verrez ».

Y ira-t-elle? Trop férre.

Existe-t-il encore des forêts là-bas? Elles sont, parait-il, sauvages et impénétrables, loines et rouses, extravaganterich, séculaires, fourmières, diamétrales, négligentes, féroces, ferventes et aimables, sans hier ni lendemain. D'une de l'autre, par dessus les volcans, elles jouent aux cartes avec des jeux déparillés. Nées, elles ne se parent que de leur majesté et de leur mystère.

MAX ERNST.

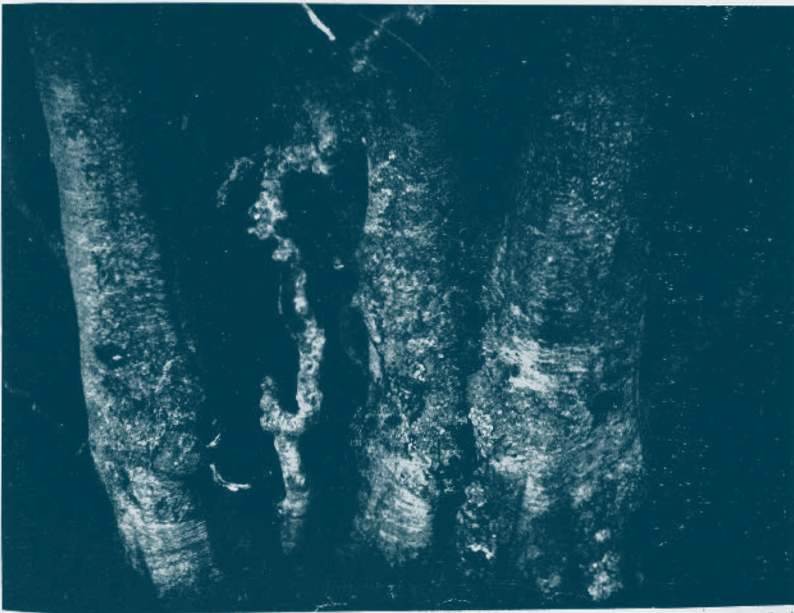
flayed. "My friend," it'll reply, "you are worth even less than your reputation. Go take a little trip to Oceania, and you'll see."

Will he go? Too proud.

Do forests still exist out there? They are, it seems, wild and impenetrable, beary and russet, extravagant, secular, anthill-esque, diametral, negligent, ferocious, fervent and lovable, with no yesterday nor tomorrow. From one island to another, over the volcanoes, they play cards with mismatched decks. Naked, they adorn themselves only with their majesty and their mystery.

MAX ERNST.

Newly translated from French by Mona Schäfer



Trunk

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THE ECOLOGICAL
TRANSFORMATION
OF SINGAPORE,
1819–1990

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When in 1819 the British East India Company acquired the right to set up a trading post on the island of Singapore after a treaty was signed between Hussein Shah, the Sultan of Johor, Temenggong Abdul Rahman, and the British representative Stamford Raffles, it was sparsely populated and almost entirely covered in rainforest. In this article, tropical ecologist and botanist Richard T. Corlett traces the ecological transformation that ensued with the birth of modern Singapore. Considering the effects of deforestation, cash crop cultivation, and urbanization, the author reflects on the loss of primary forest biodiversity, types of habitat manipulation, and the replacement of native species with other adventive, as well as culturally introduced, flora and fauna. Offering a detailed retrospective that dates back to the early 1990s, Corlett's study ends at around the same time that Robert Zhao Renhui's practice of studying secondary forests in Singapore as a young teenager first began. Especially because so much has continued to change in the biogeography of this city, country, and island ever since, the text is a testimony to the unique biological and regional character of this place when thinking about how the contemporary relations of humans to nonhuman animals and plants are configured in the Malay world and beyond.

INTRODUCTION

Large areas of the humid tropics are currently being transformed by deforestation, agricultural expansion and, more locally, urbanization and industrialization. The ultimate impact of these changes on tropical biota is unknown. One approach to predicting the effects is to look at areas, such as Singapore, that have undergone this transformation already. When modern Singapore was founded in 1819, the island had a settled population of about 150 people and was almost entirely covered in rain forest. Today, Singapore is a thriving city-state with a population of 2.7 million and one of the highest standards of living in Asia. The aim of the study reported here was to investigate the history of environmental change in Singapore from 1819 to the present and to examine the consequences of this ecological transformation for Singapore's biota.

The Republic of Singapore lies just north of the equator at the southern tip of the Malay Peninsula, from which it is separated by shallow straits, 0.6 km wide at the narrowest point. These straits were probably first inundated about 7000 years ago. The main island has an area of 574 km², of which 35 km² has been added by recent land reclamation. There are also about sixty smaller islands with a total area of 52 km². The highest point on the main island is only 165 m above sea-level. There is regional evidence for Holocene sea-levels 5–6 m above the present level (Geyh & Kudrass, 1979) which would have considerably reduced the island's area. Singapore has a typical equatorial climate with a mean annual rainfall of 2375 mm and no month with a mean rainfall of less than 100 mm.

ENVIRONMENTAL HISTORY

Pre-European Human Impact

The antiquity of human occupation of Singapore is unknown but there is considerable evidence for a significant settlement before the rise of Temasik at the mouth of the Singapore River, in the fourteenth century (Miksic, 1985). Temasik and its predecessors were probably largely coastal trading settlements with little impact on the forested interior of the island. After Temasik's decline in the early fifteenth century, some sort of settlement seems to have survived until the arrival of Raffles in 1819. There were also populations of riverine boat-dwellers in the Kallang and Seletar estuaries, and perhaps elsewhere around the coast (Logan, 1847; Thomson, 1848). These people grew no crops but must have had some impact on the forest through their hunting and collection of forest products for subsistence and trade. Pre-European human occupation may thus have contributed to the extinction of large vertebrates in Singapore but significant deforestation is unlikely.

Singapore in 1819

Apart from the area of the settlement at the mouth of the Singapore River, the main island was covered in forest in 1819. Permanent open habitats were confined to coastal cliffs and beaches. Most of the coast was lined with man grove forest which made up an estimated 13% of the forest area (Corlett, 1991). Further inland, in low-lying areas subject to freshwater flooding, freshwater swamp forest may have covered

an additional 5%. The remainder of the main island was apparently under lowland dipterocarp forest, which would also have occupied the interior of all but the smallest of the offshore islands.

The flora of Singapore is an extension of the lowland flora of the Malay Peninsula. There are no convincing endemic species and, although many plant species found in the southern part of the Peninsula have not been recorded from Singapore, the explanation is most likely the much greater variety of habitats available on the mainland than a result of isolation. Lowland dipterocarp forest in Singapore is apparently as diverse as similar forests on the mainland (Wong, 1987). In contrast, the recorded non-volant mammalian fauna (Harrison, 1974; Medway, 1978; Yang, Yong & Lim, 1990; Table 1) is definitely depauperate in comparison with the mainland. Singapore, in historical times, has had no gibbons, tapirs, rhinoceroses or wild cattle and has fewer species in most families than comparable areas in the Malay Peninsula. The missing mammalian species are presumably the result of extinction after Singapore was isolated by rising sea levels.

Transformation

Land use changes in Singapore (excluding the offshore islands and land reclaimed from the sea) between 1819 and 1989 are summarized in Fig. 2. The first reliable estimates of land use on the island are those of the first Government Surveyor, J. T. Thomson, in the 1840s (Thomson, 1850). Another detailed survey was reported by Moniot (1861) and land use figures of varying detail (usually excluding forest) appear from the 1870s onwards in the annual Straits Settlements Blue Books, Straits Settlements Annual Departmental Reports, and their later equivalents (under various titles). These are too numerous to cite individually. Cantley (1884) reported

on the state of the island's forests. All these figures suffer from omissions, errors, inconsistencies and the lack of explanation of the categories used. Interpretation and extrapolation to fill in the gaps in the quantitative record is aided by qualitative descriptions of land use changes in both official and unofficial publications from the period. Some of the most useful early accounts are collected in Buckley (1984). The final graphs are thus a synthesis from a large number of quantitative and qualitative sources. Individual data points are shown only for the early records.

When Sir Stamford Raffles landed in 1819, the island had a human population of around 150, excluding boat dwellers (Jackson, 1965). The foundation of the colony led to a rapid and sustained rise in population. From the beginning, Singapore was principally a trading centre but, as the town grew, cultivation of cash crops spread into the interior of the island. The most important crop in the nineteenth century and the one with most impact on the forest was gambier (*Uncaria gambir* Roxb., Rubiaceae), which was usually grown in association with pepper. The history of gambier cultivation in Singapore is described in detail by Jackson (1965). Gambier grows best on virgin soil, newly cleared of forest, and each plantation required a roughly equal area of forest to provide the firewood needed to boil the gambier leaves. Within 15–20 years the soil was exhausted and the firewood supply no longer sufficient. The Chinese cultivators, who rarely had any legal title to the land, then moved on to repeat the process in a new area. Abandoned plantations were invaded by the grass *Imperata cylindrica* (L.) Beauv. or by secondary scrub.

While gambier and pepper planters destroyed the inland forest, the cultivation of coconuts was expanded on the sandy soils along the southeast coast, destroying the coastal forest. Meanwhile the surviving primary forest was exploited for firewood, timber and other forest products.

Oxley (1847) records the almost complete elimination of large trees of *Palaquium gutta* (Hk.f.) Baill. from Singapore between 1843 and 1847. The trees were felled for their latex, used to make gutta percha, a natural thermoplastic polymer which was then in great demand as a covering for submarine telephone cables. Other valued species were similarly selectively overexploited, for instance, Kranji (*Dialium laurinum* Baker), in great demand for coffins both in Singapore and for export to China (Anon., 1893).

Reduced prices for gambier in the late 1850s and 1860s led to a decline in cultivation and in the rural population. Prices improved again in the late 1860s and continued high into the 1880s, with gambier cultivation now concentrated in the north and west of the island. Other crops, such as tapioca (*Manihot esculenta* Crantz) and indigo (*Indigofera tinctoria* L.), increased in importance during this period. Gambier cultivation declined rapidly after 1890 but the area devoted to other crops continued to increase. The production of pineapples, in particular, expanded rapidly after the introduction of canning in 1888. Although they were largely grown on land that had once borne gambier, many of the remaining patches of forest were also cleared.

A new crop, rubber (*Hevea brasiliensis* (HMK) M.A.), had the greatest impact on Singapore's landscape in the first half of this century. First planted on a commercial scale in 1903, there were 12,000 ha in 1911. Rising demand and prices encouraged further planting until, by 1935, a maximum of 22,500 ha was attained: almost 40% of the total land area. Both pineapple and rubber plantations were clean-weeded, leading to severe erosion on slopes. The area under cultivation declined sharply after 1935, except for a temporary increase in food production during the Japanese occupation (1942-45). After the war, agricultural land was increasingly lost to urbanization and industrialization.

Mangrove Forest

Early exploitation of the extensive mangrove area (c. 7500 ha) is undocumented but it is likely that the mangrove forest supplied much of the firewood and charcoal needs of the expanding city. By 1883, most mangrove areas were badly degraded by overexploitation (Cantley, 1984). After the introduction of prawn farming (chiefly of *Penaeus indicus*) in the 1900s, large areas of mangrove were cleared and banded off to form brackish water ponds. Reclamation of mangrove areas for building had started as early as 1822 but did not become significant until the 1960s. There are no separate figures for land reclaimed from mangrove, but a total of 35 km² has been added to Singapore's land area in the last 20 years. Finally, since 1970, the principal factor resulting in loss of mangrove area has been the barraging of all major non-urban estuaries for the creation of freshwater reservoirs.

Protection

The forest on the highest hill, Bukit Timah, received at least partial protection from the 1840s (Corlett, 1988b) but it was not until 1884 that forest reserves were formally established. These soon incorporated 11% of Singapore's land area but only part of this area was actually forested and most of the protected forest was degraded mangrove. Initial plans for extensive reforestation were soon abandoned and most of the reserves were eventually worked for timber, handed over to squatters for growing vegetables, and otherwise developed. The only reserves saved from total clearance were at Bukit Timah and Chan Chu Kang (Nee Soon). In addition, several small areas of rain forest escaped clearance by inclusion in a protected area established around Singapore's first major reservoir (now called

MacRitchie Reservoir), some time before 1890. In the period 1899–1909 the protected water catchment area was expanded to include about 1600 ha of former agricultural land in the centre of the island, as well as the remains of the Chan Chu Kang forest reserve and part of the forest on Bukit Timah hill. Although initially plagued by grassland fires, the previously cleared parts of the catchment area eventually became covered in secondary forest.

In 1936 the forest reserves were abolished, except for Bukit Timah and parts of two mangrove reserves, which were retained 'on grounds of amenity and ... botanical interest'. After the war, new legislation was enacted and Bukit Timah (66 ha), the central water catchment area (1622 ha), two areas of mangrove forest (totalling 239 ha), and an area of cliff face (6 ha) at Labrador, on the south coast, became Nature Reserves. The mangrove reserves were subsequently reduced in area and finally deleted but a small area of mangrove and abandoned prawn ponds at Sungei Buloh, on the northwest coast, has recently been made into a bird sanctuary.

Outside the reserve system, fauna! protection has been provided, at least in theory, by a series of ordinances. All birds, except pests and 'legitimate game birds' have been protected since 1884. The Sambar Deer (*Cervus unicolor*) and Barking Deer (*Muntiacus muntjak*) were given protection in 1923, followed by the Pig-tailed Macaque (*Macaca nemestrina*), Banded Leaf-monkey (*Presbytis femoralis femoralis*), Slow Loris (*Nycticebus coucang*), Pangolin (*Manis javanica*), and both species of Mouse Deer (*Tragulus javanicus* and *T. napu*) in 1947. Today, the Wild Animals and Birds Act protects all animals except the House Crow (*Corvus splendens*), anywhere in Singapore.

Singapore in 1990

Today, more than half the main island is urbanized and most of the offshore islands have been developed for industry or recreation. Primary rain forest, disturbed to varying extents, is confined to the 71 ha Bukit Timah Nature Reserve (Corlett, 1988b, 1990) and scattered patches of various sizes totalling about 50 ha in the adjacent water catchment area. The largest of these patches are in the two parts of the catchment which received protection before the end of the nineteenth century, around MacRitchie Reservoir and at Nee Soon. This latter area includes about 15 ha of disturbed freshwater swamp forest.

These primary forest remnants still have extremely rich floras, although they have lost much of their original vertebrate faunas. In contrast, the 50 to 80-year-old secondary forest which occupies most of the catchment area, although species-rich by global standards (thirty-five to sixty-four species >2 cm dbh in 0.1 ha plots (Corlett, unpublished)) is both floristically and structurally much simpler than the original forest. It is dominated by relatively small-seeded, bird and bat dispersed species in the families Clusiaceae, Lauraceae, Myrtaceae and Elaeocarpaceae, and completely lacks the large-seeded, wind-dispersed family, Dipterocarpaceae, which dominates the upper canopy and emergent layers of the primary forest. There are also areas of younger secondary forest and scrub, mostly less than 40 years old, scattered around the main island and on several offshore islands. These younger forests have a very uniform flora, dominated by a dozen woody species.

Spontaneous herbaceous vegetation in Singapore is usually dominated by exotic species (Corlett, 1988a), as is the vegetation planted by man. Less than 1000 ha are now used for intensive vegetable production but the Parks and Recreation Department

and Housing Development Board maintain a turfed area of 5300 ha while other public and private agencies are probably responsible for at least as much in total. Golf courses alone occupy more than 1000 ha. Very little unmodified coastline remains and only a few hundred hectares of mangrove survives as scattered patches (Corlett, 1987). The coastal forest has entirely disappeared but part of its flora survives on coastal cliffs at Labrador and on some offshore islands.

The last century has also seen major changes in the physical landscape of Singapore. In addition to coastal land reclamation, inland swamps have been filled, hills levelled, reservoirs and lakes created and drainage patterns altered. Former forest streams now flow through concrete-lined channels. Most streams and rivers outside the catchment area are also heavily polluted although, in the last decade, a major effort has been made to clean up the Singapore and Kallang Rivers.

The physical environment of the urban half of Singapore is as different from that of rural areas as that is from the rain forest both replaced. Urbanization has affected the climate, with urban-rural temperature differentials of 5°C or more on some evenings (Singapore Meteorological Service, 1986). The soil conditions have also been changed during repeated cycles of construction. The original soil profile has been destroyed, the top soil removed or buried, waste building materials incorporated, and the soil is usually severely compacted. Furthermore, large areas are covered in impervious surfaces and most runoff is channelled directly into the drainage system without entering the soil. Although the widespread planting of, mostly exotic, trees, shrubs and climbers justifies Singapore's 'Garden City' image, the habitat available for the spontaneous flora and fauna in urban areas is limited. In the older parts of the city, in particular, epiphytes adorn trees and pre-war buildings,

and herbaceous weeds occupy cracks in the pavement. Impermeable surfaces, although rarely completely sterile, support a highly specialized and limited flora dominated by algae and lichens. The fauna of urban areas is also highly depauperate and largely exotic.

CHANGES IN SINGAPORE'S BIOTA

Since 1819, Singapore's flora and fauna has changed as a result of the extinction of native species and the introduction of exotics. The study of both processes is hampered by the variable quality of the records available. Although sporadic collections of the flora and fauna were made during the early years of the colony they were incomplete, inadequately and often wrongly localized, and many have been lost subsequently. Collections from this century are generally more complete but rapid development means that many important collecting areas have gone and the current status of many species recorded a few decades ago is uncertain.

Extinctions

Flora. Raffles and William Jack made some botanical collections in 1819, largely in coastal and disturbed habitats, and Nathaniel Wallich made more extensive collections in the vicinity of the town in 1822. Others collected plant specimens in the following decades. However, the first comprehensive collections were made by Ridley, who arrived in 1888, when most of the forest had already been cleared. The rich flora (c. 2000 angiosperm species) and rapid changes in land use make it impossible to construct a reliable species list for any period in Singapore's history. Ridley (1990) stated that, although he could find most of the species recorded by Wallich in 1822, others had vanished with the forest in which they were

collected. Many of Ridley's own collections were made in primary forest patches that have subsequently been cleared and at least 20% of the known forest flora has only been collected in areas where forest no longer exists, although this does not necessarily mean they do not occur elsewhere (Corlett, unpublished). On the other hand, there are likely to have been extinctions from the surviving forest areas as a result of both stochastic processes and environmental deterioration. Most definite extinctions are coastal. The coastal forest has gone with its flora and, while most mangrove tree species survive, the old trees with their rich flora of epiphytic orchids have disappeared.

The available evidence is insufficient for quantifying floristic extinctions accurately. I estimate that 10–30% of the known flora is extinct. At least as many species were probably lost between 1819 and the start of intensive collecting. These figures may seem very low, considering that 99.8% of the original forest cover has been cleared, but the remaining areas are very rich and, to some extent, complementary in their floras. At Bukit Timah alone, more than 850 species of vascular plant have been recorded in the past century (Corlett, 1990) and the combined flora of the Nee soon and MacRitchie primary forest relics is probably similar.

Fauna. The birds are undoubtedly the best-known group in Singapore's biota but, even then, the first reliable records come from the 1870s, after most of the forest have been cleared (Gibson-Hill, 1949). Older collections probably include skins wrongly localized in Singapore. Excluding definite exotics but including rare vagrants, 383 species have been recorded from Singapore. Of these, 106 are apparently extinct, including eighty-seven forest specialists (Hails, 1987). The losses include all the trogons (Trogonidae), hombills (Bucerotidae) and broad-bills (Eurylaimidae), all but one barbet (Capitonidae),

more than half the babblers (Timaliidae) and woodpeckers (Picidae), and a variety of other species. Although large species are overrepresented in the extinction list, it includes species from the full range of sizes, habitats, and diets represented in the inland forest. For many species, hunting pressure rather than habitat loss *per se* was probably the immediate cause of extinction. Additional forest bird species are found in adjacent parts of Malaysia but it is impossible to be certain if the absence of these species in Singapore is a result of insularity or the effects of habitat destruction and hunting before reliable records began.

The nineteenth century mammal records are even more difficult to interpret. Some skins attributed to Singapore were undoubtedly acquired in the market and are of unknown origin. There are also doubts about what species still survive. There has been no recent survey of bats and the escape or deliberate release of pets and domestic animals causes additional problems. The past and present status of the viverrids, in particular, is uncertain. Table I shows the probable changes in the terrestrial mammalian fauna (excluding bats) since 1819. The definite extinctions are all large forest mammals and, as with many birds, the immediate cause of their demise was probably hunting rather than habitat loss. The definite survivors are mostly the smallest species in their family and most are able to live in secondary and cultivated vegetation. The largest bat, *Pteropus vampyrus* (L.), no longer seems to be resident in Singapore, but small numbers still visit from time to time. The dugong, *Dugong dugon* (Muller), which was once common in Singapore waters, may now have disappeared, although Sigurdsson & Yang (1990) suggest that a breeding population still survives in the Johor River estuary, just north of Singapore.

The records of amphibia and reptiles are insufficiently complete for extinctions

to be recognized but fish have been better studied. A total of fifty-two native freshwater fish species were recorded in 1934, of which only twenty-nine survive today (Lim & Ng, 1990). Eighteen of these are considered endangered. Fish records before 1934 are very incomplete so the known extinctions must certainly be an underestimate of the true total.

The only invertebrate group with sufficient early records is the butterflies. Extensive collections were made from the 1850s but again there is the problem of doubtful localization of some specimens. Corbet & Pendlebury (1956) report that out of a total of 368 species recorded from Singapore, fifty-six—almost all of which were forest species—had not been taken again within the previous 30 years. Unfortunately, there has been no more recent survey.

Species Introductions and the Origin of the Open-Country Biota

Flora. The naturalized flora of Singapore is described in Corlett (1988a). At least 138 exotic vascular plant species have become naturalized in Singapore. This is certainly an underestimate because of the difficulty in recognizing exotics of Asian origin that were established before the late nineteenth century. The naturalized flora continues to increase at a rate of about one species per year, although a few previously-established species may now be extinct. Exotics dominate most areas kept open by human activity but are eliminated during succession. The only species that has significantly invaded primary or secondary forest is the shade-tolerant *Clidemia hirta* (L.) D. Don, which is found in tree-fall gaps at Bukit Timah. The native component of the open country flora seems to have originated in permanent open habitats which, in Singapore, are entirely coastal, and usually no rain forest species

become established until a closed woody canopy is formed. The only exception is the epiphytic and hemiparasitic flora of roadside and parkland trees which consists largely of species whose natural habitat is the exposed upper branches of rain forest emergents. The few native species that are commonly planted are, again, almost all coastal in origin.

Fauna. At least eighteen species of birds have become well-established in Singapore since the nineteenth century (Hails, 1987). Twelve of these are apparently escapes from captivity while the others were probably spontaneous range extensions in response to forest clearance. Several other exotic species exist in small populations. One previously established introduction, the Sooty-headed Bulbul (*Pycnonotus aurigaster* (Vieillot)), has apparently died out. The number of range extensions is certainly underestimated as there are many additional species confined to open habitats of a kind that would not have existed in Singapore before 1819. Some of these, including the commonest bird in Singapore, the Yellow-vented Bulbul (*Pycnonotus goiavier* (Hume)), may have come from the extensive beach scrub on the east coast of Malaysia (Hails, 1987). None of the definite exotics enter the forest interior although several species sometimes feed in the forest canopy (Corlett & Lucas, 1989). Only four species of the present-day open country bird fauna appear to have originated in the inland forest. Three of these, the Long-tailed Parakeet (*Psittacula longicauda* (Bodd.)), Rufous Woodpecker (*Celeus brachyurus* (Vieillot)) and Flyeater (*Gerygone sulphurea*), are birds of the upper canopy. Several other species have apparently spread from the mangrove forest (Hails, 1987).

Excluding semi-feral cats and dogs, the only definitely exotic mammals that have become established in Singapore are the house shrew, *Suncus murinus*, and four commensal rodents, *Mus castaneus*,

Rattus exulans, *R. norvegicus* and *R. rattus diardii*. These five species are probably introductions from outside the Sunda Shelf region (Musser & Newcomb, 1983). Several native forest mammals have also adapted to disturbed, more or less open habitats. The most successful species are all arboreal: *Cynocephalus variegata*, *Tupaia glis*, *Callosciurus notatus*, *Sundasciurus tenuis* and *Paradoxurus hermaphroditus*.

The common open-country amphibia, *Bufo melanostictus* Schneider, *Kaloula pulchra* Gray, *Rana limnocharis* Gravenhorst and *Polypedates leucomystax* (Gravenhorst), most probably also spread down the peninsula with man from more seasonal areas to the north. The same is probably true for some or all of the house geckos, most of which are absent from the forest. More recently, a lizard, *Calotes versicolor* (Daudin), native in more seasonal parts of Asia, has become established in many open habitats and the Chinese Soft-shell Turtle, *Trionyx sinensis* Wiegman, farmed for food in Singapore, has escaped to form feral populations (Lim & Chou, 1990).

Non-forest streams, reservoirs, ponds, canals and drains in Singapore support a depauperate fauna of air breathing native fish species and at least twenty exotic species (P.K.L. Ng, pers. comm.). Undisturbed forest streams, in contrast, are often free from exotics (Lim & Ng, 1990). Most of the well-established species are native to the seasonal tropics to the north, but others have come from tropical America (at least four poeciliids and *Hypostomus* sp.) and Africa (*Oreochromis mossambicus* (Peters)) (Lim & Ng, 1990). Most exotics were introduced through the aquarium trade but some were brought in as food fishes or for mosquito control.

Tropical invertebrate faunas in general are too little known to identify introductions consistently. Conspicuous examples in disturbed open sites in Singapore include: the commonest earthworm (*Pontoscolex*

corethrurus (Millier)) from tropical America (D.H. Murphy, pers. comm.); the commonest snail (*Achatina fulica* Bowdich) from Africa; the commonest urban cockroach species (*Periplaneta americana* (L.)) and at least five other species, from Africa (Teo, 1990); the commonest freshwater prawn (*Macrobrachium nipponense* (De Haan)) from Japan (Ng, 1991); a freshwater gastropod (*Pomacea lineata* (Wagner)) from America (Ng, 1991); Singapore's only freshwater bivalve (*Pseudodon vondembuschianus* (Lea)) from Thailand; and an estuarine mussel (*Mytilopsis* sp.) from South America. Murphy (1990) says of the arthropods which live on the water surface, that man-made habitats are 'favoured by a few widespread species whose origin is uncertain'. The same could probably be said of the invertebrate fauna of most man-made habitats in Singapore.

DISCUSSION

The ecological transformation of Singapore in the last 170 years has involved two major landscape changes. The first and most important for the native biota was deforestation, essentially completed by the end of the nineteenth century. The second, which still continues, is urbanization. The resulting ecological landscape of Singapore has three major elements: the primary forest remnants (0.2% of the total area), with a largely intact native flora and invertebrate fauna but a simplified native bird and mammal fauna; the secondary forest (4%), with a depauperate native flora (and invertebrate fauna?) but a similar vertebrate fauna to the primary forest remnants; and the open areas (>95%), with a depauperate and largely exotic flora and fauna.

Over much of inland Singapore there are probably no plant or animal species that occurred there 170 years ago. The 'native' component of the open country biota seems

to be mostly coastal in origin: in many cases probably the more varied and open coastal habitats of Peninsular Malaysia rather than Singapore itself. Very little of the native forest biota has adapted to man-made habitats. The major reason is undoubtedly the extreme environmental contrast between the rain forest interior and large open areas. Significantly, the major exceptions are epiphytic plants and, to a less extent, mammals and birds, of the forest canopy, where the physical environment is most similar to that of open areas. The use of the forest canopy by some of the introduced birds of open habitats can be explained the same way.

Rates of extinction of native species probably peaked in the late nineteenth and early twentieth century, as the last forest was cleared from most of the island and hunting activity was at a maximum. Extinctions still continue, both as a result of small-scale habitat destruction and, presumably, stochastic processes and environmental change within the now isolated primary forest remnants. However, bird and, possibly, mammalian species richness in the forest may be below equilibrium, as a result of past hunting pressure (C.D. Hails, pers. comm.). This can only be tested by attempted reintroduction of the extinct species.

The major biological communities present in Singapore in 1819 undoubtedly differed in their response to human impact but these differences have been largely obscured by the uneven pattern of development. The communities of the coastal and estuarine zone are expected to be most resilient because they consist of species adapted to an exposed, unstable environment, typically with good powers of dispersal. However, development in Singapore has been concentrated in the coastal zone and, as a result, the proportion of floristic extinctions has apparently been highest there. In contrast, the biota of inland rain forest is characterized by limited dispersal ability and dependence

on a protected, forest interior environment. As a result, primary rain forest communities are essentially 'unrecreatable' after clearance, at least on a human timescale, and it is only the survival and protection of several primary forest remnants that has saved most of the flora and fauna.

The high proportion of native species that have survived the drastic reduction in their original habitats is surprising. As far as I can determine, the majority of recorded native species in all major taxonomic groups for which I have information can still be found today. There are two caveats, however. Firstly, massive extinction in many invertebrate groups might easily have been missed. Secondly, many more species are probably 'ecologically extinct': tree species represented by a few, long-lived but nonreproducing intervals, plants and animals with population sizes way below the minimum for long-term viability. The real 'ecological crunch' may be still to come.

In contrast to the forest, the flora and fauna of open habitats continues to increase in diversity, with new introductions outnumbering extinctions. Diversity in all groups is low compared with natural open areas in the seasonal tropics so this process can presumably continue for a long time. Open habitats are now continuous between Singapore and the seasonal areas of continent Asia, so this is likely to be the source of many future immigrants, as it has been the major source in the past. International trade, an active ornamental plant introduction programme, the aquarium fish industry, and the legal and illegal importation of animals for pets, will also continue to bring new species from further afield. The one factor that may halt this increase in diversity is the continued spread of urbanization. Although this can never entirely eliminate habitats for the spontaneous open-country biota, it will eventually reduce their extent and variety.

CONCLUSIONS

The ecological transformation undergone by Singapore is exceptional for the humid tropics only in that it is relatively well documented. Many major tropical cities occupy land covered in rain forest a few decades earlier and vast areas have been and continue to be transformed by agriculture. To what extent can the consequences of these changes for tropical biotas be extrapolated from Singapore's experience? The major problem in generalizing from Singapore to other parts of the wet tropics is the importance of scale and isolation. Local extinctions from Singapore's biota may be of little regional importance but a similar transformation of a larger area, or of an oceanic island with high endemism, would have more serious consequences. The following four conclusions from Singapore's experience seem most likely to have general application.

1. For tropical forest biotas, it is deforestation which is the important step: subsequent land-use changes are of much less significance.
2. In contrast to the northern temperate zone, where traditional agricultural landscapes can support a diversity of native plant and animal species, the deforested tropical landscape is dominated by exotics.
3. Although the loss of large vertebrates appears inevitable under intense human impact, even small, disturbed remnants of primary forest can retain a large fraction of their original non-vertebrate diversity long after isolation. Such remnants should have top priority for conservation.
4. Secondary succession can be rapid even on highly degraded land with protection from fire and cutting, but the limited dispersal ability of much of the tropical forest flora means that recovery of the original diversity will be extremely slow. Secondary forests cannot substitute for the loss of primary forest remnants.

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THE CULT OF WOOD

While the Malay world is known for its unique aesthetic achievements in several artistic fields—silver working, goldsmithing, weaving and embroidery, steel and weaponry, and architecture—in this essay, Malaysian historian Farish A. Noor focuses on woodwork and wood carving to draw out the connections between wooden Malay artifacts and the broader natural and spiritual worlds which they convey; Noor goes on to provide an encyclopedic overview of the types of wood used in these practices, as well as a comprehensive synopsis of the Malay procedures and modes of care that render wood from trees, and subsequently artworks from wood. As Noor contends, Malay civilization developed a veritable “cult of wood” by investing the diverse materials of the living forest with a plethora of hidden, esoteric meanings and values; as the historian meticulously unpacks these layers of significance, readers are drawn further and deeper into the forests of the Malay world.

Malay civilization has produced countless artefacts and works of art that are now part of the common inheritance of humanity. For centuries, the craftsmen and artists of the Malay world have created not only works of art of unsurpassed beauty and aesthetic value, but have also developed an aesthetic canon that is uniquely theirs. The world of Malay art and culture is therefore one that has to be understood through a lexicon of its own. Understanding the principles of Malay art requires knowledge of a specific semiotics, linguistics and philology that help us decode the hermeneutics of Malay art and culture.¹

That such a hermeneutic approach is required in order to fully comprehend the depth of meaning found in Malay art is hardly surprising given that most developed civilizations have evolved a complex matrix of symbols, ideas, beliefs and values that have become ingrained in the rubric of societal relations commonly referred to as “culture”. Malay art, which has evolved since the pre-Islamic period and which has absorbed elements, forms, ideas and values from a number of civilizational and cultural sources, ranging from paganism, animism, the Hindu–Buddhist era, the philosophy and culture of Islam, as well as influences from Europe, China and India, is itself no stranger to cultural innovation and development.

Despite the unending process of cross-cultural borrowing and interpenetration, Malay art still retains elements and features that are exclusive and unique to itself. Scholars such as H. Ling Roth (1910) have remarked on the particular symptoms and traces of Malay art which are not found elsewhere. This specificity is rooted in an internal logic that is confined to the Malay universe of meanings and values, and finds its expression time and again in Malay artistic work. Continuity is evident in the evolution of Malay art, and this testifies to the presence of a local genius at work.

The local genius of the Malay artist has manifested itself in a number of forms and mediums. The Malay world is known for its achievements in several artistic fields, including silver working, goldsmithing, weaving and embroidery, steel and weaponry, architecture and last, though not least, woodwork and woodcarving. All of these artistic developments occurred in the context of a society that evolved close to nature and lived in harmony with it. The development of Malay art, particularly after the coming of Islam, was very much focused on the relationship between human beings and the natural world around them. With the consolidation of Islam, there emerged the growing belief that through a deeper comprehension of the workings of nature, human beings could have a better understanding of themselves, their place in the universe and their station vis-a-vis their creator. Malay-Muslim art therefore relied heavily on natural materials and motifs and symbols that were derived from the flora and fauna around artisans. Rejecting the humanism and animism of the earlier pagan age, Malay-Muslim artists from the fourteenth century onwards began to focus their attention beyond the human form to the external world of nature.

The relationship between the human being and the other living elements of creation served as the new metaphor for humankind's existential condition and people's desire to acknowledge the “other” in their lives. One of the first living entities to be incorporated into this existentialist drama was the tree. In this respect, the tree was a crucial element that stood between human beings and the natural world, and it served as the bridge that linked these two spheres.

1 The author would like to acknowledge Nik Rashiddin, Nik Hussein, and Henry Brownrigg for their helpful comments and suggestions during the writing of this chapter.

BETWEEN NATURE AND CIVILIZATION: THE TREE AS A LIMINAL ENTITY

For the pagan Malays of the ancient past, the tree was literally the core of their universe. They believed that at the centre of the world was a great ocean, and in the middle of this ocean grew a gigantic tree called *Pauh Jangi*—the original, primordial tree of life that had stood since the beginning of creation. At the root of this enormous tree was a cavern called *Pusat Tasek* (Navel of the Great Lake). In this cavern lived a gigantic crab that emerged once a day. The movement of this gigantic creature caused the ebb and flow of the tides, the shifting of the winds and other atmospheric changes (Skeat, 1900). But it was the great tree *Pauh Jangi* that kept this pagan cosmos together, serving as the gravitational centre to this mobile and erratic universe.

Although such beliefs gradually lost their grip on the Malay mind-set, the respect and reverence for trees endured for much longer. With the coming of other religious systems, the Malay universe underwent several radical changes and revisions. The tree was gradually displaced and relocated to the margins of the Malay world, but it remained a crucial element in the cosmology of the Malay people. With the coming of Hinduism, Buddhism and, finally, Islam, the Malays began to view the world differently. But the tree remained fixed in their perennial mind-set.

The tree belonged to nature, and by extension, to the rest of creation. It cannot be understood in isolation, as it has always been part of a greater, harmonious whole that extended beyond its immediate form. The Malays viewed the tree as one of the fundamental symbols of life, creation and nature, knowing that it was one of the axial points in the cosmic drama that was played out before them. Trees were therefore an element of nature that played a crucial role in the development of Malay society as well as its aesthetics, philosophy and

pseudo-sciences. But it also had to be well understood before it could be brought into use. This, however, was not such an easy or straightforward process, for the tree was not like any other element of nature that could be easily domesticated and utilized at whim. To the mind of the traditional Malay, the tree was also a liminal entity that stood in between two worlds—that of nature and that of human civilization.

The scholar Clifford Geertz (1993) once remarked that the moral and epistemological universe of the peoples of the Malay archipelago was divided into two mutually exclusive realms. On the one hand, there was the outer world of nature and natural forces, the environment of *liar* (wild) and *kasar* (rough). Conversely, there was the *batin* (inner) world of civilized human beings, the realm of *halus* (refined) and *sopan* (cultured). The division between the world of *raen* and the natural world without was drawn along the lines of this frontier between agonistic, primal nature and the civilized,² the wild and the cultivated, the amoral and the ethical.

The Malays understood that their civilization was an artificial social construct that had to be protected and reproduced. Order in society was maintained through a complex network of social values and norms, and kept in check by the hierarchical mode of government that was typical of feudal communities. Yet the fabric of this fragile social drama could be torn asunder should the forces of nature be allowed to intervene in the affairs of men. The introduction, cultivation and reproduction of social, political, moral and aesthetic order was therefore of primary importance in the setting of traditional Malay settlements. One of the ways this sense of order was maintained was via the incessant struggle of keeping the forces of nature at bay. For the Malays of the archipelago, the forests that encircled their riverine and coastal settlements were actually barriers to their movement and

3 Two of the most popular tales in the region are, of course, the Malay rendition of the *Mahabharata* epic, the *Hikayat Pandawa*, and the Burmese-Thai rendition of the Buddhist *Jataka* tale, the *Jataka Wetsandon*. In the *Hikayat Pandawa Lima* (The Epic of the Five Pandawas), the five Pandawa brothers are forced to go into exile in the forest after losing their kingdom to the dastardly Korawas in a dicing match. Ultimately, the family of bad gamblers

2 See Clifford Geertz, *Local Knowledge* (New York: Fontana Press, 1993).

freedom. While the sea was the open plain where they roamed and ruled, the forest was the insurmountable obstacle that kept the Malays perpetually corralled by the forces of nature. This geographical factor explains why the Malays viewed the forest in the way that they did.

The forest that surrounded the Malay world was an unknown, mysterious and at times impenetrable space. In its dense, humid and dark undergrowth, the forces of nature ran riot. Demons and ghosts lurked within the forest, inhabiting the trees and swamps, forever on the lookout for wandering human beings who had strayed too far from the protective confines of their homes and villages. For the people of the archipelago, the forest was, at best, a place where one's character could be put to the test, and, at worst, an infernal green hell where one ultimately became the meal of predators and foul spirits. Southeast Asia abounds with tales of heroes who had to undergo their trials in the middle of the foreboding forest.³

What was worse, the natural environment of the forest also tended to encroach onto the world of men and their civilization at every given opportunity. Should the borders of civilized Malay society recede, the creeping tendrils of the natural forest would immediately advance to fill the void. The forest was a stark contrast to the orderly world of the Malays, which was governed by norms and protocols of religion and civilized society, and the Malays could not help but wish to keep these natural forces at bay. George Maxwell (1907) described the Malay view of the forest thus: "The forest envelopes their homes and their lives; but the more they explore it the more they know that it is a world apart. That it is so near and extends so far adds to its majesty and terror".

The Malays knew that whenever they entered the forests they were trespassing into another realm which they were not the masters of. Therefore, they prepared

themselves with all manner of charms and esoteric knowledge (*ilmu*) that would be used to keep the hidden forces of the forests at bay. When they ventured into the jungle in search of wood or provisions, they were careful to begin their expedition by first hailing the spirits of the forests. They would read out certain time-tested charms such as the one below. Such charms or mantras were designed to ensure that no harm would come to the individual or his family and community as a result of this act of transgression into the unknown. Yet, between the known world of men and the unknown world of the jungle, there stood one common element that was shared between the two: the tree.

It was, in fact, the tree, one of the most vital elements in the natural environment, that kept the forces of nature in check. The tree was magical, but far from sinister. For it was the tree that provided the Malays with the defences and fortifications that protected their settlements and towns. The walls and palisades that were made from the trunks of trees and from bamboo were the barriers that kept out the numerous threats from the world of men and nature. Both invading armies and wild beasts (not to mention ghosts and forest spirits) were thus kept at bay.

Assalamualaikum,
 Aku datang ini
 bersahabat sahaja,
 Sahaja nak mencari
 hat kebidupan,
 Janganlah engkau
 mengharu-hara aku,
 Dan anak isteri aku,
 Dan rumah tangga aku,
 Dan segala kampung
 halaman aku,
 Aku yang nak
 tumpang sababat ini,
 Mintalah selamat
 pulang balik.

Assalamualaikum,
 I have come in peace,
 and friendship,
 Come to seek my
 livelihood,
 (O ye spirits) please
 do not harm me,
 Or my family,
 Or my home,
 Or my village and
 community,
 For I count on
 your good will,
 And may you let
 me return safely.

regain their ancestral rights and privileges after enduring and surviving numerous trials and tribulations in the forest. In the *Jataka Wetsandon*, Prince Wetsandon (Vesantara), is sent into exile in the forest along with his family after he decided to give away the kingdom's prized sacred white elephant to the wandering Brahmin. This move, though motivated by Prince Wetsandon's desire to renounce worldly power, incurs the wrath of the people as well as the king,

who promptly sends his wayward son into the unforgiving wilderness. After surviving numerous ordeals, Prince Wetsandon is reunited with his father and ultimately assumes the throne and crown. It is clear that in both these stories, the forest serves as purgatory for the central characters who are forced to brave a number of dangerous encounters in the woods before they can assume their rightful place in society once again.

The tree was also the vital source that provided so much material for the daily maintenance of civilized Malay life. Wood was the natural element that kept Malay society together, literally. It provided them with houses, and within those houses, walls. (Thus the tree not only kept out the forces of nature, it also served to ensure that the existing social relations within this compartmentalized society could be maintained as well.) Trees provided the Malays with tools to work with, to farm with, to write with, to eat with and to fight with. It was, in short, the singular natural element upon which all of Malay civilization depended. Civilization, as the Malays knew it then, was almost impossible without this natural element. However, the Malays never forgot the fact that the tree also came from that chaotic and uncontrollable world of natural forces. Its presence in the midst of human society signified the penetration of nature into the world of men. As such, its status and role in the context of Malay civilization was always an ambiguous one.

The tree was the boundary marker that denoted the distinction between the *kasar* and the *halus*, the jungle and the settlement, the chaos without and the order of things within. It was therefore accorded the respect and awe that was due to it. And even when it was brought within the purview of human civilization as a resource and tool, it maintained its aura of mystery as something that was originally beyond the pale of humanity. Like that other vital natural element, fire, the tree was something that was necessary for human survival, but it needed to be kept under control. Thus the tree became, and remains, a curious totem or fetish of some unknown and mysterious force of nature. The belief in the *semangat*, or "vital force", of nature and of trees, in particular, ensured that the Malays' attitude towards trees and wood was a carefully regulated and circumscribed one.

The tree was so highly esteemed because it provided the Malays with one of the most indispensable elements used to build the Malay world: wood. Malay kingdoms, as we have seen, were dependent on wood in every respect. Thus, the possession and utilization of wood, and good wood, in particular, became part of the Malays' expression of largesse, power and civilization.

In the use of trees for wood and woodcarving, however, the Malays were particularly careful not to upset the natural equilibrium that maintained the balance and harmony between the world of men and nature. Malay woodcarving thus evolved a complex and advanced code and hermeneutics of its own, and eventually reached the status of a fine art that ranked as high as any philosophical system that had been developed by the Malay mind.

THE SPIRIT OF WOOD IN MALAY COSMOLOGY

For the Malays, trees and wood have never been mere commodities. Throughout the centuries, the Malays have developed a great respect for trees in general, and there are many recurrent motifs and symbols still in circulation in the Malay world that testify to the importance of trees to the Malay mind-set. Prior to beginning any performance of shadow puppet theatre (*Wayang Kulit*), the audience is presented with the static image of the great tree of life itself, the *pohon budi*, which represents the primordial tree that has stood from the beginning of time and whose branches and roots reach out into the infinite. To the left and right of the tree stand the opposing ranks of characters, good and bad. The drama that follows takes place within a moral and epistemological universe that is understood by the Malay mind-set: one where the forces of good and evil are constantly

in conflict with one another, yet bound in a cosmic equilibrium where nature finally reigns supreme. The image of the great tree of life that is seen in carvings, shadow puppets, weavings and the like all indicate the extent to which the cult of trees had become deep-rooted in the Malay world.

On the exoteric level of life in the profane world, wood was an invaluable material that the Malays could not do without. The success or failure of their kingdoms depended on it, and the Malay world was necessarily one that was integrated with the rest of nature. But this reliance on wood as an enabling, empowering and life-sustaining resource was not merely a relationship that was acted out on a profane and material level. The cosmology of the Malays has always been one that was predicated on the division between the seen and the unseen, the material and the metaphysical, *zahir* and *batin*. This duality is reflected in the Malays' understanding of everything that came into the orbit of the Malay universe, which included the natural world as well. As Malay civilization developed, so did its understanding and appreciation of wood itself. By and by, Malay civilization evolved what can be termed a "cult of wood", which invested the material with a plethora of hidden, esoteric meanings and values. One of the most important concepts in this unseen universe was the notion of *semangat kayu*. Today, there are several obstacles hindering our understanding of this complicated term. Foremost, we live in a modern age where rationality and positivism hold sway and where all things metaphysical are deemed as mythical, fantastic, preposterous or, at best, incomprehensible. How, then, can we understand the world of the Malay woodcarver, for whom the *semangat* of *kayu* was a perfectly tangible, sensible and comprehensible phenomenon?

The concept of *semangat* serves as our starting point. *Semangat* has been (sometimes erroneously) translated as "spirit", "life

force", "soul" or "essence". None of these translations is entirely correct. An understanding of the concept of *semangat* first requires an understanding of the cardinal concepts of Malay cosmology itself. Scholars like Skeat (1900), Maxwell (1907), Endicott (1970) and others have attempted to construct a rational typography of concepts and values found in Malay metaphysics. Although there remains much work to be done to fully enumerate and classify the components that make up this manifold universe, we are now better able to speak about the hierarchy of concepts and values that make up the order of knowledge in the Malay metaphysical system at least.

From the Malay point of view, the universe is made up of a myriad of elements and objects that all come from one common source, the Creator itself. Mere existence in the world is already a miracle that testifies to the presence of a Creator and the link between creation and its Creator. Even a speck of dust owes its existence to this point of origin and prime mover of all things. Everything that exists, living or inanimate, bears the mark of the Creator in some way or other. This understanding of the process of creation, and of the link between human beings and the Creator, had existed even in the pre-Islamic era, but with the coming of Islam it was revised and developed further under the rubric of the concept of *Tauhid*, or the Unity of God.

The most rudimentary trace of this link to the Creator is what Malays refer to as the *semangat* or the "vital force" of all things. It is a form of primal energy and vitality, invested in all things that are created as a result of the act of creation itself. It resides in all things that exist, and it disappears only when the object it belongs to is finally reduced to non-existence or non-being. At the most fundamental level, all things possess *semangat* to some degree or other.

Semangat is, in turn, linked to two other vital forces: *nyawa* (breath of life) and *run* (spirit of life). Living things possess the latter two elements while inanimate objects possess at least *semangat*. Human beings possess *semangat*, *nyawa* and *ruh*, the combination of which bestows man with rational agency, reflective intellect and creativity. It is also this that allows man to think and to realize his station in the universe, and through this knowledge to try to come to a better and more direct understanding of his relationship with creation and the Creator. Other living things may possess *semangat* and *nyawa*, but lack the intellectual and emotive capacities of human beings that allow for reflection and moral consideration. In the universe of the Malays, there are numerous lesser evolved spirit entities that may well react and interact with human beings, but without the moral considerations and deliberation of rational agents. At times they appear as naively benevolent, while on other occasions they manifest themselves as amoral malevolent forces bent on mindless destruction and violence. Endicott (1970) has noted that for the Malays, living trees are of particular importance as they often serve as an abode for such spirits, good or bad.

The living tree is therefore of particular importance to the Malays. In the past, they regarded trees as being hosts for spiritual entities and forces that were capable of interacting with the world of men. Trees were the homes of spirits, and they became the focal point of devotional rituals (*puja*) which were directed to the spirits contained within them. Malays regarded some trees as being particularly powerful and endowed, and the cult of trees and wood emerged as a result of this deeper understanding and appreciation of the tree as a key element in the configuration of the esoteric and exoteric Malay world. There evolved an *adab* of trees—a correct way of dealing with them—and Malays learnt

how to speak, communicate and relate to trees in a way that was unique to them. Boys, from the time they were young, were taught to recite special prayers (*doa*) when entering a forest, to ensure that the trees would protect them and that they would not be accosted by any malevolent spirits that might be lurking in the wilderness. Up until today, these beliefs endure and there are still many of those who feel that certain trees such as the *kemuning* (*Murraya paniculata*) and the *waringin* (banyan) host powerful spirit entities that should not be provoked or offended unnecessarily.

Wood, on the other hand, possesses only *semangat*. After the death of the tree, the spirit force of the living organism often leaves it for good in search of other hosts. (Only in rare cases does the spirit choose to remain in the wood, in which case it becomes highly prized, revered and, at times, feared for its inherent spiritual power.) Yet the *semangat* of the wood endures, as it still bears the traces of its Creator and the miraculous event of creation itself. This *semangat* of wood also happens to be the one element that is shared in common with human beings and, in particular, the wood-carver, who seems to understand the wood he works with. It therefore serves as the crucial bridge that brings together the woodcarver and the wood he prizes.

The *semangat* of wood is therefore of prime importance to the Malay woodcarver as it is the sole element that is intrinsic to the wood itself. It is a crucial element to both the existence and use of wood. Traditional woodcarvers of the past believed that it is the *semangat* contained within the wood that determines its beauty, the grain and lustre being directly related to the *semangat* forces contained within. (The stronger the *semangat*, the more lustrous, beautiful and flamboyant the grain.) Different types of wood have different types and levels of *semangat* contained within them.

Both the *kemuning* (Chinese myrtle, *Murraya paniculata*) and the *nangka* (jackfruit, *Artocarpus heterophyllus*) are considered to have a high spiritual quality (*semangat*). Wood from the root and lower trunk of the *kemuning* is highly valued for its coloration and grain, and is used for *keris* hilts and sheaths. The *nangka* is light and resonant and is often used for musical instruments.

It is also the *semangat* of the wood that determines the proper use and utility of the various types of wood. Some with particularly strong *semangat* contained within them are better suited for nobler tasks, and are thus used to carve *keris* hilts, ceremonial objects, gates and doors, while lesser woods of lower *semangat* are kept for everyday use. The Malays' world of wood and woodcarving is therefore circumscribed by what can be called "the economy of *semangat*", a complex system made up of the various factors that determine the accumulation, reproduction and loss of *semangat* of the wood itself.

The *semangat* or vital force of trees is directly related to their place in the natural order of things. All trees and all types of wood possess *semangat*. But different trees have different levels of *semangat* simply because they grow in particular places where *semangat* forces may be high or low. Like human beings whose *semangat* depends on the food they eat, the place they live in, the work they do, the *semangat* of wood is very much linked to external environmental factors as well. The environment has always been a crucial factor in the economy of *semangat*: The *semangat* of trees and various woods is directly related to the way in which the trees grow. Some types of environment and climate are thought to be particularly good for trees, and add to the *semangat* of the wood:

- Certain types of soil are important in determining the level of *semangat* found in wood. Black soil with some traces of sand was, and still is, thought to be

particularly good for certain types of trees, such as the *kemuning*. Plots of land that were close to the sea and human settlement, with hills or mountains in the background, were also thought to be particularly good areas for harvesting wood harbouring strong *semangat* properties. This was because the trees were growing in areas where life forces were being generated (from human settlements and human activity) and this, in turn, nourished the *semangat* in the trees themselves.

- Hills and mountains are also regarded as being particularly good for producing trees imbued with strong *semangat*. Trees that grew on slopes and at higher altitudes were thought to have stronger *semangat* than those growing on the flat. In the past, Malay rulers and nobles would often reserve certain plots or areas on hillsides for their private cultivation of certain trees for their own specific ends.
- The sun, which is a source of vital light, heat and energy, is also a major source of *semangat*. The rays of the sun are thought to strengthen the *semangat* of a tree. The earliest woodcarvers believed that the best part of the tree was the one that faced the rising sun (that is, the part of the trunk that faced eastwards). The wood on this side of the trunk was thought to be of better quality and have stronger *semangat*, for the simple reason that it had received more early morning light that was purer and stronger.

Certain types of trees and wood also possess stronger *semangat*. Woods with strong and pronounced grains (*coreng*), stripes (*jalur*), ripples (*kerinting*) and colours (*pela*) are said to have stronger *semangat* properties. Such grains are often found in woods that have a core (*teras*) in them; indeed, trees with cores in their trunks are regarded to be of particularly strong *semangat*. It is evident that for the Malay wood-carver, it is the *semangat* of

the wood itself that determines the particular characteristics of each type of wood, and not the other way round.

TYPES OF WOOD USED IN MALAY WOODCARVING

Literally hundreds, if not thousands, of types and species of trees are found throughout the Malay archipelago. But while all trees produce wood, not all wood is of value or use to the traditional Malay woodcarver. Despite the variety of material found in abundance all around him, the woodcarver does not have complete freedom to determine the design of his work. Ultimately, he is merely a servant (*abdi*) to his art and its rules and norms. He is not the one who will decide what the finished product will look like, despite his initial plans and his good intentions. It is the wood itself that determines how it will be used. This has always been the case in the woodcarving tradition in Southeast Asia. Similar philosophies are apparent in the woodcarving traditions of East Asian countries such as Korea and Japan, and are also prevalent throughout the Indian subcontinent.⁴

The form, pattern and grain of the wood will ultimately decide how and where it will be employed. This is because each type of wood has a character of its own, and it is this character that determines how it will best be used. Some patterns and grains are better suited for carving three-dimensional objects such as *keris* handles, while others are more suited to two-dimensional surfaces such as walls, decorative panels, furniture, doors and gates. (Even within a house, different types of wood will be used for different parts, depending on the latter's importance.) In classical Malay wood-carving, one often encounters unique pieces where the carver has deliberately ornamented his work in such a way as to enhance the grain and pattern of the wood, at the same time relegating

his own carvings and adornments to a secondary status.

The most popular types of wood that were, and still are, commonly used by Malay woodcarvers include a number of hardwoods:

- *Kemuning* (*Murraya paniculata*, sometimes known as Chinese myrtle), a honey yellow hardwood endowed with a beautiful flame-like, luminescent grain running through it. *Kemuning* is also blessed with stripes as well as the quality of chatoyance (*renek*), or the ability to change its lustre. This is the king of woods for most Malay woodcarvers of the traditional school. It is highly prized in Malaysia, in particular, where its colour is thought to complement the gold brocaded cloth known as *songket*, another artistic tradition of the east coast states of the Malay Peninsula. This wood is often used for sculptures and *keris* sheaths and handles, and is so highly prized that it is never used for furniture or construction. Antique *keris* sheaths made of *kemuning* were rarely covered with silver or gold for additional decoration, as the beauty of the wood was regarded as being impressive enough by itself.
- *Kenaung* or *kemung* (*Diospyros ebenum*), often referred to as ebony, an extremely expensive black wood which is used for making *keris* handles. Its black tones add a touch of elegance and nobility to the *keris* handles that are made out of it. It remains a favourite among *keris* collectors who prefer the unstated elegance of monochromatic woods to the more outlandish and exuberant patterns found in wood elsewhere in the archipelago. This wood is becoming increasingly rare.
- *Angsana* or *sena* (*Vterocarpus indicus*), a deep orange-gold hardwood, which is sometimes used for making *keris* sheaths, but never *keris* handles. Woodcarvers regard it as the most suitable wood for

4 For a discussion on how traditional Indian woodcarvers approached their work, see Bruno Dagens (trans.), *Mayamata: An Indian Treatise on Housing Architecture and Iconography* (New Delhi: Sitaram Bhartia Institute for Scientific Research, 1985). Dagens points out that traditional Indian woodcarvers had very strict codes

and rules which determined which types of trees and wood could be used for particular ends. The material used for religious and sacred architecture and sculpture, in particular, had to come from sources that were not "contaminated" by negative spiritual or moral influences, such as violence, abnormal and unnatural environmental conditions, etcetera.

traditional Malay furniture and it is also quite popular for house construction. Other woods known for their particularly strong *semangat* include *medang hitam* (*Litsea myristicaefolia*) and *nangka* (jackfruit, *Artocarpus heterophyllus*). These woods were often employed in the construction of the ceremonial *Burung Berarak*, a mythical giant bird which was often paraded during important festivities and state rituals in the northern kingdoms of Pattani and Kelantan. They were also used in the production of masks (*topeng*), another important cultural totem in the world of Malay art and cultural performances. Similar requirements held sway in other parts of the Malay archipelago, especially in Java and Bali, where masks and other sacred objects for public rituals were deemed important enough to be given individualized treatment and were made of special materials.⁵

Malay architects and builders have also always harboured preferences. Their favourite woods include *jati* (teak, *Tectona grandis*), *cengal* (*Neobalanocarpus heimii*), and *merbau* (*Intsia palembanica*). All are black to brownish in colour and so dense that they can blunt even the hardest of carving instruments. These woods are thought to be particularly good for constructing the beams and pillars of Malay houses as they are extremely durable and resistant to infestation. The other parts of the house are often made from different types of lesser woods, such as *balau* (*Shorea* spp.), *resak* (*Vatica* spp.), *perah* (*Elateriospermum tapos*) and *sepetir* (*Sindora* spp.).

Other popular and commonly used woods include:

- *Gaharu* (aloe wood, *Aquilaria malaccensis*), a pitch black, shiny wood which is often thought to have both spiritual and medicinal properties. It is often used for *keris* handles in the other parts of the archipelago.

- The *merbau* (*Intsia palembanica*) is a reddish hardwood often used instead of *cengal* in building. The *halban* (*Vitex* spp.) is a small tree commonly found growing next to rice fields. Its wood, which is dense, heavy and resistant to rot, is widely used for making domestic artefacts.
- *Cendana* (sandalwood, *Santalum album*) which is prized for its fragrant scent and is often used for both sculptures and carvings, as well as for medicinal purposes.
- *Gemia* (*Bouea microphylla*), a reddish hardwood which is often used for making *keris* handles and sheaths but is not used for furniture.
- *Setar* (*Bouea macrophylla*), a reddish-brown hardwood that is used for *keris* handles in the Malay Peninsula but for little else.
- *Celagi* (*Tamarindus indica*), known locally as *asam jawa*, often used for the handles of *parang* (cutting knives).
- *Halban* (*Vitex pubescens*), a brownish to dull grey wood.
- *Vauh hutan*, a dark red wood that is sufficiently hard to be used for *keris* handles.
- *Bongor* (*Lagerstroemia speciosa*), which is reddish-brown in colour.
- *Ketengga* (*Memillia caloxylon*), a yellowish-brown wood which, like *bongor*, is only used for making *keris* sheaths but never *keris* handles or furniture. Nor is it used in the construction of houses and other buildings.

In other parts of the Malay archipelago we come across other woods, such as the deep brownish *tajuman* (*Cassia laevigata willa*), the *sawo* (*Achras zapota*), the *trembalo* (*Djsoxylum acutangulum*) and the *tomoho* or *pelet* (*Kleinhovia hospita*). These woods are very popular in Java, Bali and Sumatra. Needless to say, like their counterparts in the Malay Peninsula, the woodcarvers of Indonesia have evolved their own complex

5 See Fred B. Eiseman, Jr., *Bali: Sekala & Niskala, Essays on Society, Tradition and Craft*, Vol. 2 (Singapore: Periplus Editions, 1990), 212–13. Eiseman notes that traditional mask makers in Bali used wood from the *punyan pule* tree, which was found in Bali as well as some parts of Oceania. The tree has always enjoyed a specially revered status as a sacred wood. So important is the *punyan pule* tree that Balinese woodcarvers even have a specific ritual that they need to

perform before felling it. The masks that are made from the tree are also thought to have sacred properties and energies. *Barong* masks that are made from the same *punyan* tree are thought of as “brother” *barongs*, and considered “relatives”. In cases where the wood is felled to make particularly sacred and powerful masks, it is first taken to the Balinese temple where it is consecrated and “purified” by the priests before it is carved.

(and at times confounding) belief systems surrounding these woods. The most important observation that needs to be made is that the woodcarvers of the Malay world share a common understanding and respect for the material they work with. For the wood-carvers of the archipelago, there are a number of cardinal rules and protocols to be observed and one of these is the belief that the best wood should be reserved for the carving of sculptures. It goes without saying that the best sculpture in the Malay world is found in the carving of *keris* hilts (*hulu keris*).

While woodcarvers in Java or Bali seem to favour woods of contrasting colours and flamboyant grains, among them *tomoho/pelet* and *trembalo*, Malay woodcarvers of the peninsula are more partial to woods such as *kemuning* and *kenaung* because of their subtler coloration and patterns.

All of these Malaysian woods are thought to possess *semangat* properties in various degrees. The magnificent *kemuning*, in particular, was thought to have strong *semangat*, and the *adab* of finding, cutting and working the *kemuning* wood formed a universe of its own.

In the past, the *kemuning* was regarded as the tree of the Dewi (Primordial Goddess), and it was reserved for the use of kings and nobles. It was so highly sought after that it was almost impossible to find the tree growing naturally near any human settlement, for its discovery meant that it was almost certain to be cut down. The tree was sometimes referred to as “the tree with a hundred and one uses”. Woodcarvers would wax eloquent about its merits: its grain did not destroy the quality of their work and did not distract the eye of the admirer; the wood was hard enough to be used for the hilts of weapons, yet light to the touch and easy to work. Many varieties of *kemuning* were used, including the *kemuning limau* (lemon yellow *kemuning*), *kemuning buah lada* (peppercorn *kemuning*) and *kemuning buah kekut* (cherry fruit *kemuning*).

The best *kemuning* wood came from trees that had died naturally. Woodcarvers might spend weeks, or even months, in search of such treasure in the deep jungles of the peninsula. A find in the forest was the woodcarver’s equivalent of discovering a gold mine, and the whereabouts of such a prized hoard would be a closely guarded secret. (This is hardly surprising when we consider that in the past samples of the best *kemuning* were thought to be more valuable than gold.)

After the discovery of a stand of *kemuning*, the leaders of the community (often the Raja himself and his ministers and religious functionaries) would engage in long periods of consultation. If they felt that the trees could not be protected from poachers or thieves, they would then decide to cut the trees down themselves. They would begin by identifying a suitable time for felling them. They would also take into consideration criteria such as the location of the trees before felling began. Woodcarvers preferred *kemuning* trees that were growing in hilly areas where there were plenty of rock formations, as it was believed that this would force the roots of the tree to bend and twist in a number of ways, thereby creating the grain that the woodcarvers so desired. Sometimes the trunks of the trees would be “scarred” by hacking them with cleavers (*parang*) and then left to “mature” for a few years before the trees were actually cut down. This process of scarring the tree trunk was deemed necessary not only to check on the quality of the wood but also to make the wood “react” to the scarring process. It was thought that such deliberate scarring would cause the trunk to grow in a more erratic and confused manner, thereby adding to the flame-like grain of the wood itself.

It can thus be seen that the relationship between the woodcarver and the tree was a long and complex one that began with the process of identifying the trees he required

for his work. By the end of the process, the woodcarver would have probably spent anything between five to ten years (in some cases, even more) with each particular tree, cultivating it, preparing it before it was cut down, carefully dissecting it piece by piece to find the best parts, preserving it, and finally putting it to use.

FROM TREE TO WOOD: TRADITIONAL WOOD CARE AND STORAGE

Wood that had been cut from the forest was usually treated with great care and respect. The Malay woodcarver realized that the wood that was now in his possession was no ordinary material. It had come from a tree, which was a living thing endowed with *semangat* and *nyawa*, vitality and life, and thus had an identity and character of its own. In some parts of the Malay archipelago, respect for the living tree was so great that woodcarvers would perform specific rituals prior to felling the tree in the hope that they would be pardoned for their audacity in turning it into lumber.⁶

Woodcarvers in the past would also store their most prized pieces of wood in the *rumah padi* (rice storehouse), along with their supply of *padi*. This was a special privilege bestowed on particularly fine, and small, pieces of wood that were singled out to be carved into *keris* handles. The reason for this choice of location was simple enough: the *rumah padi* was thought to be particularly suitable because it had the right temperature and humidity levels. The air was never too damp, the ventilation was good, and the building was also free from vermin and other pests.

But there were other reasons as well, reasons that had more to do with the esoteric dimension of the *semangat* of wood. For it was thought that *padi*, being a life-giving

and life-sustaining food source, was particularly endowed with strong *semangat* of its own. To maintain the *semangat* of wood, it was thought that the *rumah padi* was the best place to keep it, as it would ensure that the *semangat* of the wood remained at a high level. Thus, the connection between the *semangat* of wood and the *semangat* of *padi* was a strong one. (It is important to note that in the past, other items and objects of strong *semangat* were stored in the *rumah padi* as well. This included the blades of *keris*, spears and other weapons or ritual objects.

Having stored the wood in the *rumah padi*, the woodcarver would leave it there to dry for several years. Some woodcarvers have been known to keep the wood in their *rumah padi* for dozens of years, until it had reached the required levels of dryness and hardness that gave it the strength and resilience that the woodcarver desired. During this prolonged period, the store of *padi* would be changed and replenished time and again, while the wood in the *rumah padi* would merely accumulate the *semangat* that was being stored in the same place.

Larger pieces of wood would be kept under the house of the carver himself, which was raised on posts above the ground. Before storing, woodcarvers often cut these pieces into lengths of about two feet (60 cm). These would then be left under the house, often for years, allowing them to age naturally and to dry out. It was important to store them in a place where they would not be exposed to direct sunlight as this could damage the grain of the wood.

While the wood was being stored in this way, it was also important that it should not be moved for any reason. Traditional woodcarvers believed that while the wood was being dried, its orientation should not be altered. If this were to happen, they believed that the colour and grain (*pela* and *coreng*) of the wood might be adversely affected and might change dramatically. The woodcarver

6 Eiseman notes that in parts of Indonesia such as Bali, the wood that was used for building and sculpture was taken from trees that were living. It was therefore necessary to "sacrifice" the tree by killing it before its time. Balinese woodcarvers regarded this as the most critical and complex stage of their work, and called on the priests to help them. "Offerings are then made to the tree and only then can it be 'sacrificed' for lumber" (p. 195). After the purification

of the wood, the woodcarver works on his material. When his task is completed, he calls upon the priests to help him "reanimate" the wood again so that it can regain its energy and life-sustaining force. This is particularly true for wood that has been used to make buildings, where a specific ceremony known as *melaspas* is called for in order to bring the building back to life before it can be inhabited by human beings (p. 199).

would therefore check his wood periodically, observing it for the smallest changes that would indicate to him when a particular piece was mature enough for use.

Another curious way of keeping wood for future use was to utilize wood that had been used for other purposes elsewhere. It must be noted that this practice cannot and should not be compared to modern modes of recycling, for the wood in this case had not been simply discarded or deemed unfit for use. What the woodcarvers were doing was simply working on wood that was already in everyday service around them. An example of such a practice can be found in the way that some woodcarvers used wood that had come from parts of their houses, such as the beams or the foundations. Having decided that a particular section of the wood was mature enough, the woodcarver would simply remove that piece and replace it with a newer piece. The wood that was removed was then cleaned, cut and treated before it was put to other uses such as *keris* handles or sculpture. (Some present-day woodcarvers continue this practice of obtaining wood from old houses and palaces that have been dismantled or have simply been left to deteriorate.)

Once again, there are both simple and complex explanations for the process of using old wood. On the simpler level, one could explain this as a straightforward process of replacing wood and utilizing material that had been already put to use and was thus tried and tested. But the esoteric dimension of the process provides us with a more complex explanation. Traditional woodcarvers justified the practice on the grounds that it was a good way to prepare wood that would be endowed with strong *semangat*. Having already put it to use in a human habitat, such wood would have “fed” on the life forces or *semangat* that was surrounded it and grown even more potent over the years. To put it simply, such wood had

become “accustomed” to human beings and was thus better able to “serve” them.

The storage of wood was therefore not a simple process for the Malay wood carver. He was not merely keeping the wood aside for future use, but was preparing the wood for higher ends. Prior to working with the wood, the woodcarver was slowly growing accustomed to it and trying to uncover its hidden mysteries. The Malays learnt that in order to have a proper relationship with wood, they had to first discover its secrets.

Knowledge of *semangat* was thus critical for the proper use and work of wood, and one could only bring out the best of any kind of wood if one possessed the appropriate knowledge of its particular *semangat*. Higher woods were—and still are—used for higher, nobler ends, while lesser woods were reserved for common usage. This then is the *adab* (custom) of wood and woodcarving.

FROM WOOD TO ART: THE ADAB OF WOODCARVING

Classical Malay woodcarving was never an industry. It was a vocation with a credo and *adab* all of its own, and rules that were then known only to a select few.

The preparation of the wood itself was half the task. As we have seen, the wood-carver would spend years preparing the wood that he was going to work with in order that there would be a perfect match (*jodoh*) between himself and his material. Traditional woodcarvers believed that they could produce their best work only if they were working with wood that was compatible (*serasi*) with their own personalities. When making pieces that were intended for the personal use of others, such as *keris* hilts, the woodcarver also had to ensure that the wood he chose was compatible with the person the object was intended for, thereby complicating his task even

further. This kind of intimate knowledge was known as *ilmu falak*. It was only when these conditions had been met, that the woodcarver could even contemplate the task that lay before him.

Prior to embarking on a carving, the Malay woodcarver would first carry out several rites and rituals of preparation. He would wake up early in the morning, before dawn, and begin his day with devotional prayers. His body had to be cleansed in every respect, because no traces of pollutants or contaminants were permitted. He had to purify himself, not only physically but also mentally and emotionally.

The world of the woodcarver was also circumscribed by many self-imposed routines and other rituals of work. He had to ensure that he was always in a position to do his best work at the right time of the day. Thus, time and energy would be spent on finding the right materials from which to make his own tools. Knowledge of his habitat and the environment around him helped to ensure that he would always have the necessary materials to hand, since knives and sharpening tools were made from locally found material by the woodcarver himself.⁷ Knowledge of and sensitivity to the local flora and fauna also provided him with inspiration for his work and motifs for his carvings.

These preparations were not entirely for private or individualistic ends, for the carver's true intentions were to prepare himself to be in such a state that he would be able to attune himself to the characteristics of the wood he was working with. This had to be done so that he could work intuitively, basing his judgements and decisions on the intuitive feelings that came to his heart (*sentuhan hati*) while he worked.

Before setting knife to wood, the woodcarver needed to vacate his ego, so that he would be in an ideal state to begin. He needed to ensure that his emotional and

physical instincts (*nafsu*) were entirely under his control and kept at bay before he could start. He was, in a sense, relocating the centre of his consciousness on the level of *semangat*. Then, at the right moment, the *guru asal* (the primordial teacher, or teaching impulse) would appear, and the hands of the woodcarver would jump to life, animated, carving out traces and forms that have been passed down from generation to generation. This was the *adab* of woodcarving.

The woodcarver also had to ensure that specific and exacting conditions had been met before he began his work. The wood he was working with was accorded the respect due to it. If it was a particularly high quality of wood, it would be treated with great care. In some parts of the Malay archipelago, such as Bali, certain woods were even accorded divine or semi-divine status, as gifts from the gods or as incarnations of divine powers. In such cases, the rituals surrounding the working of such woods bordered on the religious.

The place where the woodcarver did his best work also had to be specially chosen. The woodcarver took pains to find the appropriate place to carry out his labours, to ensure that he would not be interrupted and that all his energy and attention could be focused on the wood that he was trying to transform and whose secrets he was trying to uncover. He might prefer to work in the cool of the early morning, when the light was not too harsh and where the depth and volume of his carving could be clearly seen without straining his eyes. He might also feel the need to work in isolation in order to distance himself from the world of humanity and domestic happenings around him. This ascetic approach reflected the woodcarver's own belief that the wood he was working with was a liminal entity that was literally from the margins of humanity and civilization. The encounter between carver and wood was therefore a complex

7 There are at least five main types of cutting and carving instruments commonly employed by Malay woodcarvers till this day. These include the *gergaji* (saw), *pisau hiris* (cutting/carving knife), *pahat* (chisel blade), *kikir* (hasp) and *pengokok* (a tool used for scraping and refining carved surfaces). Most of these tools were made by the carvers themselves. In the early days, the

blades for these tools often came from rocks and stone formations found close to the woodcarver's habitat. These days imported throatcut razors are usually used. Other tools like the *kapak* (axe), *cetar* (adze) and *ketam* (plane) were also made locally. The different types of sharpening stones were also collected on hillsides by the woodcarvers themselves.

and precarious one that took place along the interface between human civilization and the state of nature.

The woodcarver would also identify the right circumstances for him to begin his work. He would find the right days, known as the *hari-hari dewasa*, where his artistic abilities would be at their peak and when he could attune himself to his work and the material he was working with. These were the days when the *guru asal* might inspire him with new ideas and designs, or when the secret of the wood might be revealed to him. Some days were also better suited for specific types of work. The carvers of *keris* hilts and sheaths, for example, would make sure that they did not do both kinds of work on the same day. Hilts were carved on certain days while sheaths were reserved for others.

Other norms and restrictions (*petua kerja*) included:

- Not working on certain days when one's social obligations should come first. For instance, the woodcarver should never put his work before his obligations to the community around him, such as attending family gatherings, circumcision ceremonies, weddings and funerals.
- Not working when one was either too tired or too energetic. There had to be harmony not only in the work but also in the worker himself. Balance was crucial for the woodcarver and he tried to maintain it before, during and after his work.
- Not working for the sake of work alone, or worse still, for purely commercial reasons. The *adab* of woodcarving and the strong tutelary bonds between wood-carvers and their pupils, if they had them, ensured that the woodcarver's labours were always part of his vocation and an expression of his artistry, rather than mere work for commercial ends.

It was only when these conditions were met that the woodcarver could produce his best

work. These *lingkungan kerja*, or prerequisites of the working environment, were of crucial importance for carvers who were particularly sensitive to the needs of certain woods and knew how to bring out their hidden properties and qualities.

When the carving was finally completed, the woodcarver would round up his work by putting the final, finishing touches (*sentuhan terakhir*) to it. The finishing touches would be applied with the *daun mempelas* (*Petrea volubilis*), a shrub often found close to village dwellings and settlements. Sometimes the skin of the stingray (*ikan pari*) would also be used, after it had been treated by soaking it in lime juice and left to dry in the sun. The carved object would then be polished for the last time by the woodcarver.

To seal the wood and to bring out the colour of the grain, the woodcarver would traditionally coat the article with a layer of lacquer made from the resin of the *getah sapan* or *keruing* tree (*Dipterocarpus* spp.). Collecting the resin was a complex and ritualistic process. The woodcarver would cut the tree in the middle of the night, and wait for the resin to flow from the trunk naturally. By morning, it would have solidified into a hard, amber-coloured lump, which was then boiled to make the shellac. Once the object has been shellacked, it was considered finished. The woodcarver's relationship with his work had come to an end.

To sum up, classical Malay woodcarving was a symbiotic process whereby the woodcarver was directly in communication with the medium that he was working with. It was a unique relationship in which the vital energies of the woodcarver and the wood itself would interpenetrate and overlap, creating a closed economy of *semangat* forces. The *semangat* of wood played a direct role in determining the quality of the work that was produced by the woodcarver himself. Woodcarvers believed that the *semangat* of the wood would emanate from

it and that it would determine the quality of the work they did. Wood with particularly strong *semangat* would arouse the interest and enthusiasm of the woodcarver himself, and would in turn add to his own *semangat* (*semangat kerja*).

In the past (and even among today's artisans), Malay woodcarvers believed that pieces of art that possessed particularly strong *semangat* would guarantee their appeal for generations. The *semangat* of a completed work is something that cannot be equated with the quality of the workmanship or the beauty of the design in the wood-carving. It is a property that somehow animates the work and gives it a vitality and appeal of its own, much like a "magnet" which attracts others to it. Traditional wood-carvers believe that some antique pieces maintain their appeal for the present and future generations not only because of the beauty of their design and the quality of their workmanship, but also because of the *semangat* contained within the object itself. Connoisseurs in the past believed that their love for their objects was due to this intrinsic connection between human beings and other objects that share the common bond of *semangat*.

For the traditional woodcarver, it was always necessary to seek out the best wood, wood that was endowed with strong *semangat*, for wood of low *semangat* would dampen the spirit of the woodcarver, thereby diminishing his interest (*hilang semangat*) and in the end leading to the production of work of average quality. Furthermore, wood of low *semangat* would sap away the *semangat* of the woodcarver himself, thereby causing a loss to the economy of *semangat* that governed the process of classical wood-carving.

Having understood the hidden dimension of the *semangat* of wood, we now have a better understanding of the esoteric principles that underlie woodcarving and wood use in

the Malay world. Bearing in mind the cardinal rules that determine the way wood is produced and employed in the Malay world, we can see that the exoteric dimension of woodcarving is balanced out by the esoteric codes and norms that guide the process of woodcarving itself.

MALAY CARVING IN ARCHITECTURE

Practically every wooden object that was produced in the Malay world in the past was made according to strictly regulated and policed rules and standards. The traditional Malay house, for example, was not merely a construction of wooden posts, beams and trusses and timber walls and floors. The choice of woods and timber was always deliberate and the design of the Malay house was such that it brought together the most potent and propitious woods in a powerful matrix of vital forces that maximized the *semangat* of the house as a whole and all those who resided in it. Far from being a mere constructed assembly, the Malay house, with its combination of woods of varying degrees of *semangat*, was in reality a "generator" that reproduced vital *semangat* energy designed to maintain harmony and balance in the domestic milieu of its inhabitants. Poorly designed houses made up of woods of different, or possibly conflicting, *semangat* forces, were considered to have the reverse effect of creating an unbalanced environment characterized by chaos and disorder.⁸ The interconnectedness of houses and their occupants was further reinforced by the performance of appropriate rituals during the tree-felling process as well as the traditional system of measuring house timbers based on proportions of the human body prior to construction (Gibbs, 1987). One "rule" specified that the main posts of a house were supposed to be cut from a single trunk and arranged in the same relation to each other that they had

8 The belief that the wooden house was a living entity endowed with natural forces and energy is not unique to the Malay Peninsula but applies also to much of the Malay archipelago. This belief system has been studied by scholars like Eiseman and by Waterson, who have dubbed the Malay house as the "living house" of Asia. See Roxana

Waterson, *The Living House: An Anthropology of Architecture in South-East Asia* (Singapore: Oxford University Press, 1990). Further afield, similar beliefs can be found in the tradition of woodcarving in Thailand, Korea, Japan and the Indian subcontinent.

in the tree. Another was that house posts should not be inverted, but “planted” with the base or trunk end down and the tip up.

Other objects made by the woodcarver were also designed to play their appointed roles in the complex network of social relations and the value system of the Malays. Within the constructions built by the Malay woodcarvers were many everyday props and architectural features that were endowed with meaning and social purpose. Walls and partitions constructed by the woodcarvers had to fulfil a host of socio-cultural needs and requirements. On the exoteric level, they were merely devices used to create enclosed and private spaces within the Malay home, reflecting—and reproducing—the compartmentalized social universe of traditional Malay society. But beyond that were other esoteric demands and expectations. The beauty and quality of the carvings found on walls and partition panels as well as on window, grilles, air vents, doors, railings, bargeboards, fascia boards and gates were meant to serve as visual indicators of the social rank and status of the occupants and owners of the dwellings themselves. Thus, the social ordering within the enclosed space of the Malay home spilled over into the broader social space of Malay society without through the medium of architecture and carving.

At the peak of this social hierarchy was the traditional Malay palace (*istana*), with its own norms and standards of aesthetics and construction. The Malay palace stood as a solid, material expression of Malay identity in the profane space of the here and now. Its design (usually far more ornate, complex and elevated than that of other Malay dwellings) reflected the ordering of the Malay social cosmos in allegorical form. The choice of woods used in its construction, and the choice of carved motifs employed in its decoration and adornment, were never accidental. All were intended to mark the boundary and

hierarchical relation between the ruler and the ruled, the Raja and the *rakyat*, of civilization as government and nature as chaos.

As for political and public architecture, carvings for religious and spiritual establishments such as mosques (*masjid*) and smaller religious buildings (*surau* and *madrasah*) also had to meet certain standards and requirements in the choice of wood and the carving patterns in order to effectively delineate the boundaries between sacred and profane spaces. This is a tradition that goes back to the roots of pre-Islamic Malay woodcarving, when the carving of sacred totems and symbols was steeped in an arcane and obscure cosmology of its own.⁹

In sum, the quality of the carvings and the wood used in the construction of Malay settlements also played an important role in the construction and reproduction of social space, governed as it was by a complex social hierarchy and its order of status and rank. Malay architecture and woodcarving were responsible for keeping the Malay world together in an organized and organic whole in more ways than one. It brought these settlements together within a geographical and terrestrial space that was also shaped by a common social milieu governed by norms and taboos that were cultural in nature. In the shape, form and content of Malay woodcarving and architecture can be seen the hermeneutic code of Malay civilization itself.

PATTERNS AND SYMBOLS OF MALAY WOODCARVING

The scholar Anjum Rehmani has pointed out that “art constitutes an attempt to depict the phenomenal aspect of reality in a way that we may be able to grasp the deeper or inner meaning behind the piece of art itself.” Art therefore “has a symbolic significance, and the symbols in art play an important role in the creation of art. By having a proper

9 For the production of *Manora* masks, for instance, the woodcarver would look for wood that had come from a tree where three branches used to grow. For the construction of the *Burung Gagak Sura*, the ceremonial bird used in state festivals and celebrations, woodcarvers would look for wood from a tree where a sapling has taken root from

a seed deposited by a squirrel or a bird. These arcane and obscure requirements have more to do with the symbolic internal universe of the pagan Malays of the pre-Islamic past than with the rigid social universe of the traditional Malay-Muslims of today, but their influence lives on among traditional woodcarvers.

understanding of the significance of these symbols we can have an insight into the reality underlying them".¹⁰ This holds true for an understanding of Malay art, shaped as it is by the complex hermeneutics of Malay civilization, as it does for the "great art" of any other civilization in world history. The hermeneutic code of Malay civilization and cosmology is evident in the patterns, symbols and forms found in Malay woodcarving and architecture till today. Malay scholars have discussed at length the significance of natural symbols such as the lotus (*bunga teratai*), the seed (*benih*), and the leaves and petals of particular flowers and plants that continue to appear in the compositions of both traditional and contemporary carvers.¹¹

The configurations and compositions found in most works of Malay art (but particularly in woodcarving) tend to revolve around the dominant themes of creation and regeneration, order and hidden meanings, and the unseen presence of the divine in the terrestrial world of men and animals. It is hardly surprising that Malay wood-carvers have been at the forefront of the elaboration of these complex philosophical concerns when we consider that the medium with which they work occupies such a pivotal position and revered status in the cosmological pageant of the Malays.

The lover of Malay woodcarving and architecture would therefore come to expect certain arrangements and configurations of motifs and patterns in works of quality. The recurrent motif of the seed, bursting forth with life and energy (often depicted in the form of flowering tendrils and/or roots); the ambiguous image of the open lotus which reveals its beauty and grace before us while concealing its true hidden nature; the reversed image of flowing vines (sometimes called *awan larat*, meandering clouds), which is often reflected upon itself, forming a twin couplet that symbolizes both the beauty (*jamal*) and majesty (*jalal*) of the divine—

these are all popular and recurrent themes in Malay art.

At the hands of the traditional Malay woodcarver, the profound understanding and beliefs of the Malays have found their expression in elaborate and at times even confounding patterns and compositions that astonish the viewer. Here, then, lies the local genius of the traditional Malay woodcarver as the artist who interprets the human condition around him. His claim to fame is his ability to translate the philosophical and religious beliefs of his culture into an art form. In Malay woodcarving, we encounter the existential drama of the Malay people objectified.

It can be seen that the process of woodcarving and woodwork in the Malay world was a holistic enterprise that absorbed the physical, mental, emotional and spiritual energies of the woodcarver. But this was hardly surprising considering the fact that in the traditional Malay world the relationship between human beings and the tree was a holistic one as well as one that occurred on a number of physical and metaphysical levels. The tree was never a mere object or living organism for the Malays, even after it had been reduced to wood and that wood had been put to the use of human beings. It remained, from the beginning to the end, an indispensable resource that was endowed with properties, forces and secrets of its own, which the Malays endeavoured to master and understand in the hope of understanding themselves and their place in the cosmos. Today, these secrets and knowledge are all but lost except to a handful of experts and masters of the ancient arts. There remains only the question of what the future might bring to this tradition that has until recently been thought to be verging on the edge of extinction.

10 See Anjum Rehmani, "The Significance of Traditional Cosmology for Contemporary Arts", in Wan Abdul Kadir and Hashim Awang Ar (eds.), *Seni dan Kosmologi, Akademi Pengajian Melayu* (University of Malaya, 1997), 29.

11 See Abdullah bin Muhammad (Nakula), "Penggunaan Simbol-Simbol dalam Kosmologi dan Kesenian", in Wan Abdul Kadir and Hashim Awang Ar (eds.), *Seni dan Kosmologi, Akademi Pengajian Melayu* (University of Malaya, 1997).

Joshua Comaroff and Ong Ker-Shing, "Paramilitary Gardening: Landscape and Authoritarianism." Paper presented at *City Axioms: Urban (In)security*, Department of Social Anthropology. Stockholm University, Sweden, April 2012.

PARAMILITARY
GARDENING:
LANDSCAPE AND
AUTHORITARIANISM

*Joshua Comaroff
& Ong Ker-Shing*

In their paper “Paramilitary Gardening,” cultural geographer and landscape architect Joshua Comaroff and architect Ong Ker-Shing (both of Lekker Architects, Singapore) contend that while the *terrain vague* that characterizes landscape architecture makes many assume it is a neutral site of curiosity, or perhaps even a space of promiscuous transgression, upon a closer inspection, the land and its design has been and continues to be enjoined in reactionary and restrictive projects and thus remains weaponized by state power and its planners. According to Comaroff and Ong, all Singapore urbanism begins with landscaping because each and every inhabitable space must first be wrested from a largely impenetrable secondary jungle that emerged in the decline of the island as a productive agricultural landscape. This extraction, prosecuted by the state, is the precondition of civic life and national discipline. As the authors demonstrate throughout their attentive review of the official landscape of the island state, such a heavily interventionist project requires extensive maintenance to prevent political sovereignty from being swallowed up by the “jungle.” As a result, the national landscape cannot survive without a constant gardener—the administrative state—that tends to the tangles of this “anti-sustainable” experiment with a vigilance that is—literally—paramilitary.

*“To stop the sea to flood the land,” Ogawa imagines,
“is ancient war.”*

*“‘War’ is the word... Had Nature blessed us with high,
fertile ground like our neighbors, what need to invent
the Amsterdam Bourse, the Joint Stock Company, and
our empire of middlemen?”*

— David Mitchell, *The Thousand Autumns of Jacob de Zoet*¹

TERRAIN VAGUE

How might landscape architecture be deployed as a form of warfare? Or, more specifically: how might it operate, in an urban setting, as a substitute for more police, or barricades, or instruments of surveillance?

This question may seem counter-intuitive. Especially given the fact that “landscape,” as both a substance and a practice, is haunted by a presumption of softness and vaguery. At least, “nature” itself is not easily squared with technologies of authority and coercion. Quite the opposite: it is an historical site of ambiguities, of stumbling and refuge, of promiscuous exchanges and questionable liberties. The hard-edged *nomos* of the polis, its conduct and rigors, have always been somewhat lost among the parallax of trees.² Perhaps for this reason, the *terrain vague* of landscape has often been associated with a counter-culture, with a progressive spirit that would temper the uptight Cartesianism, and the official paternalism, of state power and its planners.

But the land, and its design, continues to be enjoined in reactionary and restrictive projects. In fact, its perception as amorphous, as *incorrigibly imprecise*, allows it to exert a unique brand of social force. Contemporary examples show a sort of “weaponized” organicism, a paradox of discipline exercised through the soft, the slow, and the unclear. This is worth considering, in particular, against the backdrop of a changing professional practice. Landscape has assumed a more central

1 David Mitchell, *The Thousand Autumns of Jacob de Zoet* (London: Sceptre, 2010).

2 Simon Schama famously discussed the “greenwood” as a site of refuge from the law, in *Landscape and Memory* (New York: Vintage, 1996). However, this is also a common element of English popular mythology, Robin Hood not least.

and authoritative role in the authorship of buildings and cities. This is particularly the case in the many new conurbations that, by necessity of population pressure and internal migrations, are being pushed to completion in China, India, and Africa. Fervor over the amorphous notion of sustainability—and a new emphasis on the role of natural systems at the urban scale—has pushed greenery suddenly to the fore.

Many of those places that appear most serious about landscape—where the planters, as much as the planners, are in charge—are those where the greenspace has assumed a paramilitary aspect. We would like to briefly describe these against promissory writing about “eco-cities,” or liberating innovations of landscape-led urbanism. Singapore is one example: a context where landscape provides an instrumental set of operations and practices that (as much as architecture or hard infrastructures) have been used to form a nation, and to structure its envelope of social possibility. Hereabouts, “gardening” is not merely a basis for urban design, but the defining ethos of an entire political culture. This island republic illustrates the famous comment of philosopher Sheldon Wolin that “the political emerges, in the literal sense, as a “culture,” that is, a cultivating, a tending, a taking care of beings and things.”³ This “tendency” is intimately related to the manner in which a society would construct biophysical conditions, for its plants and its people. In Singapore, planting is not merely an “expression” of power, but its direct extension into the biology of a public.

The landscapers are in charge, here. And in a very muscular way. This city-state has quite literally been hacked from voracious equatorial forest; its geo-body has been “reclaimed” from the sea, fogged and trimmed and cooled into submission. It is a society that has explicitly gone to war with its own natural environment, much as one would with an insurgency or destabilizing threat. This condition of constant insurrection, by nature itself, provides an external pressure by which the technical capacities of the state are sharpened, exercised, and extended. But equally, this republic has gone to war *through* its own environment. As we will see, landscaping in Singapore fits the definition of

3 Quoted in Robert Boyers, “This Way, Not That: Nadine Gordimer Does as She Pleases,” *Harper’s Magazine*, February 2008, 89.

“paramilitary” at a number of levels. Most explicitly, it extends the work of the Singaporean government, as a force against civil unrest, beyond its formal armed services and into new areas of environmental administration. The landscape becomes both a means and an ethic of social control, as well as a planning method for containerizing “civic” populations. Even more, it involves the articulation of a broad bureaucratic and military-technical apparatus. Singapore’s “Garden City” is produced by landscape architects and by planners—but also by bureaucrats, horticulturalists, environmental engineers, architects, planners, policemen, former professional soldiers, tropical disease specialists, and housing policy experts.

Against this backdrop, recent emphases upon environmental crisis have only added urgency to an authoritarian landscape urbanism. It is a convenient discourse for government, combining ecology with emergency. In Singapore, “virulent” nature has been placed alongside ethnic violence, communism, criminality, and radical Islam—but also resource scarcity, flooding, fire, and insect pests. This complex of ideas structures a number of creative approaches to exception and delimitation. Such an example is not intended to sap the youthful enthusiasm associated with “green” urbanisms, of various kinds. We don’t doubt that landscape is a potentially redemptive force in the production of cities. But as we have seen in history, the unique character of the “natural” may be very quickly yoked to doubtful purposes. In fact, planners of places like (formerly) apartheid Cape Town and Abuja, Nigeria have, for many years, been according a central role to landscape. In the former, the complex geomorphology of mountain and flatlands has been instrumental in spatializing inequity and risk. In Abuja, it is the desert-ified scrub, and the problem of water, that has been used to criminalize the “informal sector.” In such cases, the staging of the natural has been instrumentally tied to other agendas, where ecological strategies couple those of social control. Landscape is dangerous stuff. And not least in its affable vagueness—that pliability of concept and material—which is so often draped over rigid and unyielding things, like fences and ideologies.

CLEARING

In Singapore, all urbanism—and with it, everything political—begins with an act of landscaping. Space that is inhabited must first be wrested from nature. That is, it must be cleared from a largely impenetrable secondary jungle that has emerged in the decline of the island as a productive landscape. This extraction is prosecuted by the state itself, and is no minor undertaking. It is the pre-condition of civic life and national discipline. The reality of the clearing can be set against the beguiling fiction of Rem Koolhaas's *tabula rasa*. This famously posited Singapore as a “laboratory” in which all things are possible, because history—enshrined elsewhere in Western notions of *genius loci*, “heritage” or “context”—is not an obstacle. Koolhaas' take is not wrong, but nor is it the full story.⁴ The *tabula rasa* is ground for the creation of new urban substance, but only after it has first been anxiously and laboriously beaten from the bush. This distinction, between *tabula rasa* and clearing, is significant. The making of the latter is a major technical campaign. It requires a genuine violence, and is considered (contra the antiseptic notion of blank surface) as the original act of Singaporeanization. Every inch of the city is understood to have been seized via a directed, militaristic exercise. It has been hard won, alienated from tropicity, “reclaimed” from thicket or sea.

This has much to do with the historical ecology of the island: the relationship between the intensive energies of an equatorial climate and the extirpation of its dominant species. As late as 1869, Alfred Russell Wallace had described Singapore as a largely uncultivated landscape, with only a small area of the island surface dedicated to crops. This was to change radically in the subsequent century, however, and by national independence a major transformation had taken place. At the eve of industrialization, much of the former forest had been replaced with nutmeg, gambier, and rubber. Even within nature reserves declared by the Forest Ordinance of 1908, sizable areas were denuded by granite quarrying. In 1965, relatively few significant native

4 Rem Koolhaas, “Singapore Songlines,” in *S,M,L,XL* (New York: Monacelli, 1995).

populations remained. Yet more disruptive was the British policy of “acclimatization,” in which plants were exchanged among far-flung colonies. As one might expect, many exotics integrated well into the equatorial environment. Others—such as Resam Bracken (*Dicranopteris linearis*) and lianas such as Trumpet Vine (*Thunbergia grandifolia*)—were invasive, and responded to ample sun and humidity with alarming growth. In particular, these thrived after the island-wide collapse of agri-business. A variable “secondary jungle” sprang to life on many of the grounds inherited by the newly independent Singapore government. This thicket is what must be cleared before a new building, or other piece of the Garden City, can be created. Like any ethno-genetic act of violence, clearing is a fraught process, and is shadowed by a range of cultural nightmares. For example, in this society—which is commonly said to be intensely haunted—the clearing of sites is thought to provoke the interference of spirits inhabiting trees and shrubs. Builders, developers and architects offer many different iterations: machinery that will not start; operators who suffer sudden strokes, nausea, and heart attacks; the collapse of cranes and other heavy site machinery. As one developer observes,

*“contractors, because of their work, they disturb a lot of things. They disturb the ground and entities get upset. This happens a lot, a lot. They want to go and chop down some tree, they can’t do it... everyone who gets close gets sick.”*⁵

The director of a Japanese construction corporation similarly recounted how the plan of Queenstown, one of the nation’s pilot public housing schemes, was forced to change as a result of a mature Tembusu tree that refused destruction. On another site, where he was foreman, a worker was nearly crushed by the collapse of a well-secured concrete vibrator. Shortly after, an engineer fell under the spell of a strange automatism, unwillingly performing dance-like motions. For this reason, elaborate site rituals are held to placate pre-existing spirits, in which negotiations occur to determine the required price—in Taoist “spirit money” and offerings—for

5 The supernatural issues occurring on construction sites are the subject of Joshua Comaroff, *Vulgarity and Enchantment: Religious Movements and the Space of the State*, doctoral dissertation, Department of Geography, University of California Los Angeles (November 2009).

potentially vengeful energies to leave. It is assumed that sites are always-already possessed, and that legal sale is only part of their acquisition. As a well-known local geomancer and spirit medium recounts, most sites have an “original owner,” who must be asked to leave using ritual negotiations. He warned,

“When you want to buy a site; you want to develop, they got laws. Must go to authorities... get license, all of this. Site also got laws. These laws are not the same. You can follow Singapore laws, also have to follow site laws.”

Failing to follow these regulations, and building on land that is already occupied, is expected to provoke retaliation from the ghost world. As such, the production of the clearing—even in the service of modern, highly technological undertakings—can quickly become an elaborate process. To clarify: the clearing is not merely a prerequisite for the *tabula rasa*, but its conceptual opposite. Vegetation as a negating aboriginal presence (in effect, as the Other of space) is imagined as the case against which Singapore’s urbanism is made. Here is where Koolhaas’s assertion of an easy vacancy becomes strained: in the mind of its people, as well as its state planners and technocrats, the city remains a jungle *ad esse*. The multivalent natural threat never goes away, never sleeps, and is never rendered extinct. Urbanism is only borrowed, held by force as floodwaters are restrained by a dike.

Certainly, the clearing is a perpetual campaign. Surrounding greenery continually threatens the aperture; the negativity of the jungle is always ready to assert itself. Pioneering flora encroach at the edges, and airborne weeds take root in the closely-cropped lawns and planting beds of the Garden City. The threat to humans is more than aesthetic—including pests and disease vectors, such as mosquitoes and dengue fever, which opportunistically enter those areas that have become neglected.

The clearing is a Sisyphean object. It must be perpetually re-cleared, held open, in order for urban life to continue. Nature “abhors a vacuum”; the breach can remain only so long as great numbers of gardening crews are dedicated, daily

and weekly, to its subjugation. Turf must be trimmed with great frequency to stem the incursion of weeds, which can re-colonize a tidy lawn in less than 48 hours. Site perimeters of shrub and vine tend to contract, and must be pushed back. Likewise, pest control sweeps are required on a weekly basis, or more. In this, there is a preference for heavy machinery: mechanical trimmers and blowers, chain saws and atomizers for fogging oils and gasses. Trucks of migrant laborers arrive to carry out this service, dressed in orange cloaks and bound in head-scarves, masks and sunglasses. To the uninitiated, their appearance can be alarming: in applying its discipline, Singaporean gardening takes on an overtly sinister aspect.

JUNGLE

An intentional accumulation of secondary forest provides a planning mechanism that complements the clearing. Where the latter makes life possible, the former posits nature as an impossibility. The jungle is the opposite of architecture. Through a kind of benign neglect, a Malthusian landscaping, areas of the national fabric are rendered inaccessible to the public. Clearing is necessary because this tropical secondary forest is dangerous, or at least very uncomfortable, to enter. It might seem strange, then, that pockets of “jungle” are present throughout the city-center and outlying districts. While much of the national surface is defined by intensive pruning and trimming, other areas remain in an anthropogenic tangle—their edges cut to avoid expansion into tidy neighboring areas. As found today, this local overgrowth is a dense compact of canopy trees, understory shrub, and choking lianas. Passage into the interior is not advisable for the uninitiated. It is teeming with hazards: mosquito populations, stinging insects, and snakes.

This “primordial” forest—which is, in reality, as recent as the collapse of local plantations and kampung gardens—figures in national mythology as an intelligence. Stories of former soldiers and national servicemen describe their

encounter with nature in terms of a vegetal patience: an assumption that nature awaits the recrudescence of the city's modern, conjectural surfaces. This composure is punctuated by acts of spasmodic brutality. Popular stories feature servicemen flung great distances overland, or found disemboweled among roots. Stands of jungle thus have an intimidating or admonitory aspect. Preserved among the gardens and clearings of the contemporary order are zones of fear, which many would rather avoid.

The tactical location of over-growths, around military sites, or potentially unruly areas in the public sphere, creates invisible regions within the national landscape. Overgrowth simply takes sectors off the map. The appearance of "tropical" vegetation has the peculiar effect of making this removal seem natural, and obscuring its artificiality. A study of public land use documents by the Urban Redevelopment Authority shows clearly where the cataracts of national space are located. "Camps" and areas for military exercises occupy the outlying regions in particular, and are in all cases bounded by a cordon of forest, designated as "green buffer." Likewise, sites earmarked for future development are allowed free reign for growth. The latter clearly avoids the burden of maintenance, but it likewise prevents squatting or unsanctioned activity—as has happened in marginal spaces such as the former Malaysian KTM railway tracks that run from the north of the island to the Keppel district.⁶

Singapore's collection of many invasive species has made such a bio-condensing strategy easy—in fact, largely passive. Rather than a proactive gesture of occlusion, the collapse into jungle appears simply as nature taking its course. This is akin to picturesque techniques of hidden enclosure, or the containment strategies of the Singapore Zoo. The landscape is militarized; the forest perimeter is reinforced by lacerating wire and armed patrols. But ironically, this threat is so quickly over-grown as to require signage warning the potential trespasser. The duality of clearing and jungle, inhabitability and its opposite, forms a very powerful technology of control. Together, these ensure that activity will happen where it is desired:

6 This railway corridor was a center of worship of the "homeless" god Muneeswaran, but is also a site of small-scale agriculture and areas for sleeping and eating. See Vineeta Sinha's *A New God in the Diaspora?: Muneeswaran Worship in Contemporary Singapore* (Singapore University Press, 2006).

where the technical capacity of the government has been deployed to make space available. Zones of occupation are carefully delineated, and there are few gray areas— no greenwood pockets that would allow for informal or unscripted modes of occupation. This is a point worth considering. The planning of greenery, its removal or tactical over-growth, is the principal means by which Singapore's national surface is made available or impassable. It is a literal shaping of the island's "natural" body, one bolstered by threats of physical violence, that directs the flows of human traffic into deliberate channels.

In the war against possible disorder or mass action, the absence or presence of jungle is a major asset. The nation is precisely *not* understood as a collection of abstracted surfaces. On the contrary, it is something akin to a hedge-maze: a complex of living barricades that direct the populace among cellular housing estates and shopping or working districts. Such a structure operates like the extension of a police action. It does the preemptive work of civil defense in a state that, in spite strict regulations on behavior, operates with a famously limited police presence. The visibility of forest-pockets at locations near Orchard Road and the city center is also a pointed warning about what happens in the absence of governance. The convulsive jungle reminds the public of what will happen if the state fails, or decides to no longer perform its duties as tender and gardener. Each tangle is a miniaturized apocalypse: a surrender of the equatorial city to an unyielding external threat.

GARDEN

Clearing and jungle are paramilitary operations. But the opposition between jungle and urban life extends to become a broader political ethos, a philosophy of social administration which cannot be separated from a way of making, or thinking about, the landscape. It is a managerial culture in which "untamed" landscape and urban life are considered within a zero-sum equation: where one exists, the other cannot. The

resolution of this opposition is the garden. It is the synthesis of the wild and the cultivated, the natural and the technological, jungle and city—unruly subject and authoritarian *nomos*. Singapore is the “Garden City,” with all the intensity of micro-administration that this concept would imply.⁷ It may include manifold configurations of hardscape and planting, and engineer degrees of physical comfort—and with these, varying possibilities of action.

This was the case, for example, at the National University of Singapore (NUS), which embodies many of the principles of landscape used elsewhere in the nation’s civic spaces. Here, heat and the steep topography of Kent Ridge were employed by campus planners in the Public Works Department as an enervating technology. Built in the aftermath of the 1968 unrest, its designers placed patches of openness—baking plateaus of lawn and paving—to set the various disciplines apart and discourage foot traffic between. Areas of the campus are, in effect, designed to be uncomfortable. This was used, in particular, to cordon off the technical skill of the engineering students from everyone else, divorcing theory from practice.⁸ This is achieved through relatively simple means: the location and density of Rain Trees (*Samanea saman*), for example, which allows more or less solar gain to specific areas. Likewise, with the placement or removal of shrubs and understory planting, which could provide shelter and visual cover for unsanctioned activities. Covered gathering spaces, such as amphitheaters, are provided within the various “faculties,” but there is little connective tissue between them.⁹

Such strategies use design to minimize the possibilities of unwanted interaction, certainly. But the state of the Garden City, its kempt and clean appearance, also plays other pragmatic roles. It is an index of the managerial capacity of the state, and its ability to maintain its grasp on the environment. Here, the landscape is not merely a “representation” or “expression” of power, but part of a chain of metonymic practices and operations: the survival of the planting beds, their well-tended aspect, is a test which indicates whether the state is functioning. In an interview from 2009, Lee Kuan

7 The idea of Singapore as tropical Garden City has been discussed in great detail, both via critical and official channels. The unsustainability of the concept is something that has been observed only recently. Prior to this, the notion of the “garden” was simply equated with a vague notion of green-ness, cleanliness and tropicality. The origin of the concept can be found in Edmund Waller’s *Landscape Planning in Singapore* (Singapore: NUS Press, 2001), 45ff.

8 This is discussed in greater detail in Comaroff, *Vulgarity and Enchantment*, chapter 1. Details and principles of the planning of NUS Kent Ridge campus were provided in interview by a former planner at the Public Works Department, now CPG Corporation.

9 Ibid.

Yew confirmed that the role of the “garden” was to show how well everything was under control. As Lee himself noted,

*“you can’t just plant a tree and walk away. The tree will die... you need tree doctors, you need to understand what how much sunlight it requires... it’s a very complex thing that all people who run big organizations will understand.”*¹⁰

The maintenance of each plant on the island is considered an important task, and Lee wanted investors and foreign leaders to “see well-maintained lawns and shrubs” when they “visited him in the Istana.” As such, the landscape is a “secret weapon,” and its micro-administration has formed an index and instrument of the nation’s transition “from third to first world.”¹¹ For this reason, National Park chief executive Tan Wee Kiat noted that he is “the only gardener in the world who reports directly to the Prime Minister’s Office.”¹² Along similar lines, political analyst Victor Savage has argued that “Singapore landscape reveals absolute planning,” that “practically every tree and dustbin is in a designated public place, a product of overall design and conscious policy making.”¹³

These attentions form a very particular approach to the creation of national space. But there is yet more to this. The garden becomes much more than a technology, a medium of order. It comes to embody a much broader political ethos concerning the natural environment, and how it relates to the management of human society. This is where landscape urbanism extends past the bounds of an instrumental practice, to directly engage ideology. Politics is seen, here, to equate to the total calibration of the natural environment. The garden provides a living system to test and verify the capacity of the political organism, as well as—like the canary in the coal mine—an early indicator of weakness. This is truly a city in which landscape is the medium *par excellence*. It provides not only the means for the creation and control of space, but also a living feedback loop that gauges the broader “tending” of the state.

The scale of nationhood is not seen to eclipse attention to detail; an interesting aspect of Singapore is that nothing is too small to escape the care of the state. Lee’s own interest is

10 Clarissa Oon, “Singapore’s green trump card,” *The Straits Times*, 7 May 2009, page A8.

11 Ibid.

12 Ibid.

13 Victor Savage, “Human Environment Relations,” in *Imagining Singapore*, ed. Ban Kah Choon, Anne Pakir, and Tong Chee Kiong (Singapore: Times Academic Press, 1992), 214.

known to be drawn to individual plantings. Journalist Cherian George has written of one such instance, during Tree Planting Day in Esplanade Park in 1990. Lee was seen to kneel down to the pavement and, with some dissatisfaction, take note of the ambient temperature a few inches above the ground. George recounts that Lee “looked increasingly agitated.” While concerned for the sapling that he had just planted,

*“it was the park’s micro climate that he was most concerned about. Unceremoniously taking leave of the parks officials, he and Mrs. Lee took an unscheduled walk along the Esplanade, with security officers and reporters hovering...He noted that although the sun had nearly set, one could feel the heat through the soles of one’s shoes. He squatted suddenly and placed a palm inches off the ground. He could sense the heat radiating from the pavement, he said.”*¹⁴

This effectiveness is heightened by the character the medium itself, a strange and highly artificial form of invented tropicality. The plantings of the “garden” model, as executed by the National Parks Board, do not really form ecological unities. The planting beds of the roadsides and public areas are, as we have described in detail elsewhere, crypto-ecological fantasy. They only exist, as communities, where they have been placed. The official landscape is a heavily interventionist one, requiring a great deal of maintenance to keep from receding into “jungle”, to prevent certain species from driving out weaker competitors, to stanch the perpetual drift of “weeds” into the careful compositions. The city features arrangements of plants that, not being assembled from common ecological communities, were unlikely to exist in prolonged stability as designed. This was a national landscape that could not, by definition, survive without a constant gardener, the administrative care of the larger state. It is “anti-sustainable”: and thus its very survival is a daily testament to the competence of the state in controlling destabilizing elements, as well as a dangerous fertility, both vegetal and human.

This is, quite literally, paramilitary. We have argued, elsewhere, that the logic of such gardening extends, also, to the

¹⁴ Cherian George, *Singapore, The Air-Conditioned Nation: Essays on the Politics of Comfort and Control* (Singapore: Landmark Books, 2000), 14.

populace—for example, in housing policy (as regards ethnic grouping) and the planning of peaceable neighborhoods.¹⁵ The nano-managerial approach to landscape demonstrates a felt need to place a range of “non-native” species in careful distributions, and to continually monitor their interactions; that is, to place them in a planned spatial order. The environmental method of Singapore’s administrators is to put all agents, vegetal and human, into orders that establish apposite place. In so doing, parts of the overall system come to represent the logic of the whole. This is a form of *realpolitik*: Lee’s party sees possibilities of both human and ecological chaos, race-riots and unkempt planter-boxes, and accounts for them within a common stabilizing framework. Thus, the creation of gerrymandered demographic housing distributions, as well as codified garden plantings, is merely the common outgrowth of a system: Wolin’s “tendency” toward tending. Replication, proportion, order, and sequence, are its conceptual underpinnings.

This “environmentality,” the mapping of Singaporean governance onto its landscape, and vice versa, is a highly complex relation. Its primary ideological tenet, which again echoes the techniques of clearing and overgrowth, is the notion of *the tropical climate as a state of siege*. This recalls a famous argument of the sociologist Charles Tilly, in which the external pressure of warfare was shown to have a galvanizing effect on state capacity. Simply put, countries that have battled more have tended to develop effective bureaucracies and infrastructures. As unseemly as this might be, war appears to be good for the organization of managerial discipline.

In a similar fashion, Singapore figures the crisis of landscape, the threat of a “return to nature” (and thus to pre-modernity) as a perpetual state of emergency. Here are echoes of the United States, in the penchant for wars of abstraction: on “terror,” on poverty, on drugs. Or those other useful conflicts ongoing in Mexico, Israel-Palestine, or Brazil, where internal unrest has emerged as the new technology of state-making. Singapore merges social risk and crisis ecology within a powerful new strategy to develop and to administer.

15 For more on the cellular planning of the Singapore state, see Comaroff, *Vulgarity and Enchantment* (note 4).

Going to war with nature is not new. After all, the Dutch did so at precisely the moment in which their nascent state achieved economic ascendancy. The polders and the *Nederlandse* mode of capitalism expanded together. Many large-scale national projects in agriculture or irrigation have operated similarly. The American westward expansion, and the conversion of new territories into an agricultural hinterland had much to do with the organization of a federal bureaucratic infrastructure. We have noted, above, how the mobilization of species across global space became integral to the British colonial project. In a similar fashion, Murray Bail's *Eucalyptus* (1998) describes precisely how multifarious the roles of certain species have been within larger imperial programs. Analogously, in *The Great War and Modern Memory* (1975), Paul Fussell noted the way in which landscaping became a way of transforming the trenches from brute technology to ideological instrument. More recently, in the wrangling over Israeli "war landscapes," the determination of planting becomes crucial in a context where "the tree is the enemy soldier."¹⁶ All warfare, they would tell us, is "biological" warfare.

The clearing, jungle, and garden follow a similar logic. Despite its much-bruited speed and efficiency, Singapore wages some national struggles at an almost glacial pace, and with enormous gentility. In the mindset of its "soft" illiberalism, the languid unfolding of each flower is a burst of policy, each tree an explosion of ideological materiel. Every absent weed represents, by the same logic, the seeds of disorder averted.

Here, the ambiguities of landscape—its ability to obscure, to enfold, to blur boundaries and put angularities out of view—are placed in the service of the peaceable society. This is a clear case of what we have elsewhere termed "Unclear War": the tendency of modern nations to wage campaigns against abstractions. The indeterminacy of these find a ready medium, and analogue, in nature itself.

16 See Irus Braverman, "The Tree Is the Enemy Soldier: A Sociolegal Making of War Landscapes in the Occupied West Bank," article first published online, *Law and Society Review*, 2 September 2008.

Matthew Gandy, "Unintentional Landscapes." *Landscape Research*, vol. 41 no. 4 (2016): 433–40.

UNINTENTIONAL LANDSCAPES

Matthew Gandy

In the history of the European colonial occupation of foreign territories it was sometimes argued by the colonizers that the land they encountered was “unclaimed” or inadequately made use of by the people already found living there and could thus be appropriated. New, biased property rights were formulated on the basis of Eurocentric and utilitarian understandings of settlement, cultivation, and the “bounty” of nature. Today, related ideas still resonate in the conventional concepts of “landscape” and “landscape design” itself, especially when their meanings are considered through contrasting concepts such as the “wasteland” or the *terrain vague*.

In this essay, renowned geographer and urbanist Matthew Gandy explores the more marginalized and improbable types of spaces where “nature” can be found to emerge in the city. By coining the concept of the *unintentional landscape*, the author looks at areas beyond the official neighborhood park, public flower bed, or registered and numbered street trees, turning his attention instead to the (other-than-human) life occurring in cities’ various interstitial, abandoned, and everyday spaces—including unbuilt lots between buildings, on the grounds of former businesses and unused infrastructures as well as the so-called weeds growing on and along sidewalks. Noting that areas like this, though usually well-appropriated by diverse uses and lifeforms, continue to be associated with pejorative concepts such as “emptiness,” or “disorderliness,” Gandy asks what exactly we mean when we speak of so-called “landscapes” and how this concept could be expanded—and subverted—by a better understanding of the associations connected to the alleged “non-landscape.”

What is there in these theoretically empty spaces? What phenomena have been judged too vague or complex for cartographic representation?

— Philippe Vasset, *Un livre blanc*¹

In this article, I want to consider spaces that are not ordinarily regarded as landscapes. These alternative spaces might include a flower-rich vacant lot or an overgrown roadside verge. Or at a larger scale, we might encounter an abandoned industrial installation, the vivid green foliage contrasting with the deep red colouration of rusting metal structures. There has certainly been a tension in the pages of this journal concerning not just what landscape is but also what landscape is for: there is a recurring sense that landscape should be “useful” or least perform some kind of identifiable cultural, social or even psychological role.² Yet on what terms are landscapes to be defined? And what analytical tools might enable us to open up the question of landscape to a wider range of voices and perspectives? Drawing on recent reflections over the meaning of urban nature—ranging from the botanical microcosmos of the sidewalk to the metabolic dynamics of urban space—I want to explore what we might characterise as the “constitutive outside” to the conventional understanding of landscape.³ In other words, what are we to make of any putative distinction between landscape and “non-landscape”? And how is any space that is conceptually enframed as a landscape related to its constituent cultural, historical and material elements? I am especially interested in cultural and scientific discourses that appear to work against the grain in relation to more narrowly utilitarian approaches to marginal spaces. The idea of landscape is presented as a series of intersecting material and conceptual terrains that can promote wider reflection on the meaning of spatial ambiguity, complexity and multiplicity.

An unintentional landscape can be defined as an aesthetic encounter with nature that has not been purposively created. It is a space that has nonetheless undergone some form of sensory enframing, perhaps only momentarily, as a focus of attention. It is not necessarily a space associated with visual delight or even disorientation, in a narrowly aesthetic sense, but something much less easy to categorise or define. In an urban context, this might include an array of spontaneous spaces of nature that hold cultural or scientific interest as part of an explicitly counter-utilitarian discourse even if such spaces can be designated a putative role in terms of “ecological services” or as a vernacular form of public space. These sites seem to exemplify the *Zwischenstadt* phenomenon that the German architect Thomas Sieverts first used in the 1990s to describe a proliferation of spaces that lie outside conventional urban topologies and typologies (Sieverts, 2013 [1997]; see also Vicenzotti, 2011; Winter, 2015). In many cases, these are hitherto unnoticed or overlooked spaces that have nevertheless been transformed into a focus of interest. The presence of unintentional landscapes connects with a myriad of zones of neglect that have proliferated alongside human activities at a global scale. The unintentional landscape is not a primal landscape in the sense of “wild nature” serving as an object of aesthetic contemplation, it is not an idealised landscape that conforms to some pre-existing conception of the innate relations between nature and culture, and it is not a designed landscape allied to particular social or political goals. It is a landscape in spite of itself; a focus of intrigue or pleasure that has emerged irrespective of its anomalous or redundant characteristics.

The Swiss sociologist and landscape theorist Lucius Burckhardt reminds us that to notice a landscape is “a creative act brought forth by excluding and filtering certain elements” (Burckhardt, 2012 [1979], p. 133).

1 “Qu’y a-t-il dans ces lieux théoriquement vides? Quels phénomènes ont été jugés trop vagues ou trop complexes pour être représentés sur une carte?” Vasset (2007) p. 10. Author’s translation.

2 Recent articles in *Landscape Research* that explore the significance of wastelands or interstitial spaces as a focus for analysis or critical interventions include Kirchoff, Trepl, and Vicenzotti (2013), Jorgensen and Tylecote (2007), Thompson (2012) and Unt, Travlou, and Bell (2014).

3 The notion of a “constitutive outside” is first articulated by Jacques Derrida and has subsequently been adopted across a range of disciplinary contexts where prima facie ontological categories or etymological assumptions are held under critical scrutiny. See, for example, Roskamm (2015) and Staten (1984).

Burckhardt's insistence that the experience of landscape is an encounter between preconceptions and material elements is useful in the context of marginal spaces since their appreciation or recognition involves an active process of "unlearning" dominant perceptions of cultural worth. The idea of landscape is difficult to disentangle from European cultural traditions (although certain parallel developments towards idealised natures can be discerned within fields such as art or garden design in East Asia and elsewhere).⁴ The shift in the meaning of the word "landscape" from a form of legal demarcation to an aesthetic tableau encompasses several interrelated sets of processes: the enhanced technical possibilities for the modification of erstwhile "natural" environments; the emergence of new tastes for cultural artefacts or experiences; and changing attitudes towards nature itself as a focus of both control and pleasure (see, for example, Andrews, 1999; Ellison, 2013; Fechner, 1986; Schama, 1995).

A recurring theme for the study of landscape is the relationship between aesthetic experience, the modification of nature and the exercise of power. The geographer Denis Cosgrove, for example, sought to uncover the ideological significance of landscape in order to trace the interrelationships between aesthetic representations of nature and the social production of space. In the preface to the second edition of his influential book *Social Formation and Symbolic Landscape*, however, Cosgrove acknowledged the implicit universality of the human subject lurking within his earlier neo-Marxian analysis. The initial wave of critical writing on landscape had yet to engage with the challenge of feminist or post-colonial insights.⁵ The question of subalterity, for example, posed challenges for cultural Marxism à la Raymond Williams, whilst the feminist critique of ocularcentrism extended our understanding of the embodied experience of space, and its cultural and historical

specificity, beyond the existing phenomenological literature.⁶ The Marxist challenge to formalism in art history and other fields would in turn develop into a more polyvalent theoretical terrain within which the ontological status of the human subject could no longer be taken for granted.

In a parallel line of critical reflection, the architectural historian Antoine Picon has sought to de-centre the idea of landscape from narrow conceptions of aesthetic pleasure through his response to "anxious landscapes" based on observations of the transitional zone between New York City and its sprawling post-industrial hinterland. Picon's interest in contemporary ruins traces a cultural lineage to the unsettling aesthetic of the sublime and its extension into the technological landscapes of modernity: these are spaces in which the scale of human artifice—whether active or moribund—supplants that of geological and meteorological phenomena or other facets of 'nature' in a conventional sense of the term (notwithstanding the ever closer entanglement of nature and culture under modernity). It is a troubling landscape where "wild grass exists only between strips of asphalt, where abandoned warehouses and rusty carcasses replace Poussinesque ruins" (Picon, 2000, p. 68). In a similar vein, the British writer James Lasdun, in his tale of fractured identity in *The Horned Man* (2002), recounts the academic protagonist's journey between Manhattan and the upstate liberal arts college where he works:

I sat by myself in one of the reversible plastic seats, crouched down and gazing out of the window at the poisoned creek oozing along past the crumbling habitations that lined the track. I wondered what it was that so fascinated me about this spent landscape. Ugly as it was, it had something compelling about it—a strange, fallen beauty that held one's gaze in spite of one's horror. (p. 185)

For these spent landscapes, there is a distinctive chromatic dimension that is reflected

4 See, for example, Ikegami (1991), Ito (1972) and Yang and Kaplan (1990).

5 See Cosgrove (1998). This initial wave of neo-Marxian scholarship, especially in relation to eighteenth-century English culture, also includes works by John Barrell, Ann Bermingham and Stephen Daniels.

6 On developments within phenomenology see, for example, Martin Alcoff (2000), Ströker (1987) and Waldenfels (1985). On subalterity and the limits to cultural Marxism see Prakash (1994).

in cinematic encounters such as the industrial wastelands of Ravenna in Michelangelo Antonioni's *Red Desert* (1964) or the outskirts of Tallinn in Andrei Tarkovsky's *Stalker* (1978) (see Gandy, 2003). The aesthetics of toxicity range from iridescent puddles of oily water and vivid fragments of plastic to clumps of rust-coloured vegetation that can withstand high levels of soil contamination. For some commentators, such reviled spaces can be refashioned, recycled and rehabilitated (see Bargmann, 2006; Storm, 2014), whilst for ecologists exploring former industrial sites these toxic spaces produce unique botanical assemblages that can serve as a focus for scientific research (in a similar fashion to earlier interest in ruderal biotopes produced by wartime destruction) (see Khan, Kuek, Chaudhry, Khoo, & Hayes, 2000).

These devalorised spaces clearly unsettle the organisational telos of modernity. The jumble of dilapidated structures and rank vegetation appears to represent a late modern reprise of the romanticist ruin aesthetic. Yet as Andreas Huyssen has pointed out, there is something particularly unsettling about contemporary ruins as a kind of "utopia in reverse" (Huyssen, 2006, p. 7) where connections between memory and authenticity appear to have been broken. The idea of the wasteland or unintentional landscape can be defined as much by its emotional or psychological effects as any recourse to material distinctions: though situated in the present it is connected nonetheless to the eighteenth-century emergence of the "anti-picturesque" in relation to art and landscape design (see Di Palma, 2014). Given the close association of the word "wasteland" with desolate, remote or uninhabited places, there is something especially poignant about reflecting on forms of spatial abandonment or neglect within the context of modernity. There is a distinction to be made here between ruins as cultural artefacts, including the effects of time in allowing technolog-

ical structures to be absorbed or reconciled with their physical setting, and the process of "ruination" under which places experience dislocation, disinvestment or even violent destruction. The question of how these spaces came into being connects with the etymological ambiguities of the word "waste" that incorporates both the Latin *Vastus* meaning "unoccupied" or "uncultivated" but also the old French verb *wasten* and the action of "laying waste" as well as later meanings derived from "excess", "loss" or "wastage". In John Barr's book *Derelict Britain* (1969), for example, it is not merely the aesthetic characteristics of destroyed or abandoned places that concern him but also the political interests and forms of land ownership that lie behind the despoliation of the landscape and the devastation of communities.

The recognition of unintentional landscapes can be contrasted with the utilitarian import of the term "brownfield" or the pejorative deployment of "wasteland" as a prelude to the erasure of ostensibly empty sites (see Gandy, 2013b; Harms, 2014). The term "open mosaic habitat", for instance, has been recently introduced by urban ecologists, especially in the UK, in order to counter perceptions that "previously developed land" has no scientific value (see, for example, Macadam & Bairner, 2012; Maddock, 2008). The German word *Brache*, which roughly translates as waste or fallow land, has seen its meaning evolve into something more interesting in relation to post-industrial landscapes, tinged with a diversity of cultural and ecological connotations (see, for example, Genske & Hauser, 2003). In the English language alone, there are many different words we might use to refer to non-designed elements of urban nature ranging from "edgelands" and "interstitial spaces" to the increasingly frequent adoption of the French term *terrain vague*.

The origins of the term *terrain vague* are somewhat uncertain. It is used to describe

uncultivable ground in the Ardennes in the late 1860s, it appears in Isabelle Eberhardt's novel *Yasmîna* (1902) to describe the location of a mosque on the outskirts of an Algerian city, and it also serves as the title of Marcel Carné's film from 1960 depicting disaffected youth culture on the edge of Paris. In the mid-1970s, the term is adopted by the French writer Jean-Michel Palmier for his *Berliner Requiem* (1976), in order to evoke anomalous elements within the urban landscape and his listless search for traces of the Weimar era. More recently, the expression *terrain vague* has gained prominence through its elaboration by the Spanish architect de Solà-Morales Rubió (1993), who locates the idea within the history of urban photography:

Empty, abandoned space in which a series of occurrences have taken place seems to subjugate the eye of the urban photographer. Such urban space, which I will denote by the French expression terrain vague, assumes the status of fascination, the most solvent sign with which to indicate what cities are and what our experience of them is.

The word *vague* is deployed on account of its "triple signification" as "wave", "vacant" and "vague":

Unincorporated margins, interior islands void of activity, oversights, these areas are simply un-inhabited, un-safe, un-productive. In short, they are foreign to the urban system, mentally exterior in the physical interior of the city, its negative image, as much a critique as a possible alternative.

And then a few paragraphs later we find the crucial sentence that seems to capture the essence of *terrain vague* as a riposte to utilitarianism:

When architecture and urban design project their desire onto a vacant space, a terrain vague, they seem incapable of doing anything other than introducing violent transformations, changing estrangement into citizenship, and striving at all costs to dissolve the uncontaminated

magic of the obsolete in the realism of efficacy.

In this sense, aesthetic judgements are inseparable from the political dynamics of urban space where the term "empty" is often juxtaposed with "unsightly" to denote those spaces that are perceived to be threatening or lacking in any cultural or economic value. An unintentional landscape implies an unsettling of the association between landscape and specific vantage points. There is a degree of detachment from pre-existing aesthetic or cultural expectations. Urban and industrial wastelands can be spaces of aesthetic discovery including acoustic, olfactory and tactile dimensions that are routinely overlooked by a narrow sense of landscape as a purely visual experience. These spaces can also serve as surrogate forms of public space, especially where there is limited provision of parks, constituting an element of the "urban commons" as set out in the classic exposition by the Sheffield based ecologist and lichenologist Oliver Gilbert (see Gilbert, 1992). The re-enchantment of urban space as a focus of "play" in its broadest sense is a profound challenge to an increasingly commodified, controlled and denuded public realm (see Larsen, 2014).

Being in a landscape as opposed to regarding it at a distance also has methodological implications. In his cultural history of concrete, the architectural historian Adrian Forty notes how he avoids writing about places or spaces that he hasn't seen or directly experienced in a methodological lineage to Reyner Banham:

Yet this strict attention to the observation of the physical need not limit us to the earth-bound world of pure matter that the medium's French name, béton, might lead us to suppose is the extent of its existence (béton, like bitumen, comes from the Old French betum, a mass of rubbish in the ground). On the contrary, cursory inspection of even

*the most debased lump of concrete rapidly takes us into a fugacious world of beliefs and counter-beliefs, hopes and fears, longings and loathings.*⁷

Forty's focus on the material characteristics of space can be extended to the effects of weathering, along with the presence of lichens, mould and other living elements. These observations underscore the blurring of the distinction between organic and inorganic realms, so that marginal spaces and their accumulated material clutter can take on the character of impromptu sculpture parks or other kinds of field installations.

As we move from architectonic to ecological encounters, the emphasis on direct contact becomes more systematic. The practice of urban botany, for example, brings the city to life through the elucidation of ecological patterns and surface complexities. The slightest differences in substrate or microclimate can produce a bewildering range of ecological possibilities. The study of urban nature, often involving multiple sources of amateur and professional expertise, provides detailed insights into the distinctiveness and heterogeneity of urban environments ranging from phenomena such as the "urban heat island effect" to new combinations of fauna and flora drawn from multiple origins.

We can see how unintentional landscapes, as represented by ruderal and post-industrial biotopes, have unsettled "plant sociology"—the study of distinctive species assemblages—through the need to create new appellations and explore different ways of incorporating the human impact into ecological analysis (see Lachmund, 2013). The scientific use of the ecosystem concept as a spatially identifiable assemblage of biophysical relationships is challenged by the complexity of urban biotopes and their multiple socio-ecological entanglements. In particular, the concept of an urban ecosystem lies in tension with a more diffuse understanding of urban space that is not

contained within clearly defined administrative or material boundaries. Furthermore, there is an evident tension between the use of terms such as "urban ecology" or "urban ecosystem" as loose metaphors, exemplified by the recent remodelling of "landscape ecology" as an adjunct to earlier design formulations such as "landscape urbanism", and the systematic application of such concepts within the biological sciences. In some cases, for instance, the term "ecological design" is invoked as little more than an adjunct to the exigencies of real estate speculation or is attached to an intellectual project that lacks any critical relation to the historical dynamics of capitalist urbanisation.

There is a reflexive relationship between scientific methodologies and modes of urban exploration. The "urban transect", for example, provides a connection between botanical survey techniques and a variety of ways to engage with transitional elements of the urban environment. A closer engagement with "in-between" spaces revealed by journeys through Berlin, Paris and other European cities reveals many distinctive ecological features such as extensive stands of the tree-of-heaven, *Ailanthus altissima*, a species which originated from China and northern Vietnam and has gone through several different stages in its use and interpretation. Originally planted as an ornamental curiosity, with a tolerance for dry conditions, and then used as a versatile street tree, the species had slipped into relative obscurity by the 1960s, only to resurface as a ruderal species ideally adapted to urban environments (see Shah, 1997). Various characterised as an invasive weed or symbol of "cosmopolitan ecology", the tree-of-heaven illustrates the ideological ambiguity of "invasiveness" in an urban context since the environmental characteristics of cities, and their flora and fauna, are often very different to that of other types of cultural landscapes (see Kowarik & Säumel, 2007; Patrick, 2014; Pyšek, 1998).

7 Forty (2012), 11.

Processes of urban and industrial restructuring, along with geopolitical factors, have generated a huge variety of marginal or redundant spaces. In some cases, the aesthetic and ecological characteristics of “wild urban nature”, or *Stadtwildnis* to use the German expression, have been directly incorporated into landscape design (see Gilbert, 1981; Jorgensen & Tylecote, 2007; Kühn, 2006; Le Roy, 1973). The concept of the “park” has shifted from the labour intensive municipal landscapes of the past towards a different kind of cultural synthesis with urban nature. We can find examples of marginal spaces being transformed into parks, especially from the 1980s onwards, as ecological arguments became more prominent within land use planning. In the case of Berlin, there are several instances where parks have been partly or completely modelled around scientific insights from urban ecology. The Südgelände, for example, which opened in 2000, is constructed on the site of abandoned railway yards and has been preserved in the form of a nature park with statutory protection for its biodiversity after a long political campaign won partly in recompense for environmental damage elsewhere. More recently, the prize-winning Park am Nordbahnhof, completed in 2009 along a former “death strip” adjacent to the Berlin Wall, and the Park am Gleisdreieck, completed in 2013, have also incorporated elements of spontaneous urban nature as well as various forms of biotope mimicry that can foster a wasteland aesthetic. An earlier plan from the 1980s, however, to allow an interconnected space of urban nature within the former West Berlin, the so-called Grüne Mitte (“green middle”), based on scientific recognition of the unique ecological characteristics of many so-called Brachen, was never realised as the post-unification emphasis on redevelopment took precedence over other social or environmental goals (see Lachmund, 2013). Elsewhere,

examples of parks that incorporate elements of abandoned landscapes include Toronto’s Downsview Park, emerging from a former industrial and military site, and New York’s proposed reclamation of the vast Fresh Kills landfill site scheduled for completion in the year 2036. Yet in these and many other cases, the relationship between urban design and the material characteristics of existing sites remains uncertain, even if selective fragments of the original landscape persist in a modified form.

In addition to these attempts to incorporate pre-existing spaces of spontaneous urban nature into park design, we can also find an increasing range of ecological simulacra ranging from examples such as Manhattan’s High Line, which mimics aspects of the original vegetation on the abandoned elevated railway, to various types of green roofs that provide flower-rich micro-environments suitable for bees and other thermophilous insects. The use of a “wasteland aesthetic” lies in tension, however, with discourses of “ecological restoration” and “re-wilding” where these are rooted in nativist conceptions of ecology that differ from the cosmopolitan characteristics of actually existing urban nature (see, for example, Del Tredici, 2010; Gandy, 2013a). The interest in “ecological restoration” has been especially focused on the re-engineering of river systems as part of a changing relationship between water, urban design and metropolitan nature. In the case of the Los Angeles River, we could argue that one kind of cultural landscape—the concrete network of levees and spillways with their adventive vegetation—is being replaced by another equally artificial cultural landscape as part of an ecologically oriented process of urban redevelopment (see Gandy, 2014). In other cases, the historic associations between wastelands and the use of fallow land in agriculture have been revived in an urban context to promote the production of food as an alternative

utilitarian ethic emerging alongside other land uses (see Hauser, 2011).

The tensions between meaning and materiality become even more acute in the cities of the global South. In India, for example, fast-growing metropolitan regions incorporate several different types of non-designed urban nature: cities are typically intersected by interstitial spaces produced by railway lines, water pipes and other technological networks; fragments of “old urban nature” may persist as private gardens held by institutions or individuals within the fabric of the city; and larger areas, especially on the urban fringe, have occasionally been set aside as nature reserves such as the Sanjay Gandhi National Park in Mumbai dating from 1974. Severe pressures on space combined with extreme poverty mean that many so-called “wastelands”, including even the most precarious sites alongside poisoned creeks, busy roads or railway lines, are zones of human habitation. Parks or more conventional forms of public space, where they exist at all, are often the focus of intense conflict over different patterns of human use or entitlement. In many cities of the Global South, we encounter virulent forms of “bourgeois environmentalism”, to use Amita Baviskar’s term, where the ideals of urban beautification are used to underpin land speculation and the forcible eviction of human and non-human nature alike (see Baviskar, 2002). A similar dynamic has been observed at the metropolitan fringe of Ho Chi Minh City, for example, by the anthropologist Erik Harms, who introduces the expression “knowing into oblivion” to describe how systematic data collection presages the elimination of marginal spaces (Harms, 2014). The unintentional, the spontaneous and the makeshift are often the rule rather than the exception, and political conflict over rights and definitions has tangible and frequently violent consequences.

The presence of unintentional landscapes unsettles existing spatial categorisations

and even the idea of “landscape” itself. By re-examining the question of landscape, and the complex historiographies of its different meanings and manifestations, we can move from narrowly ideological constructs of the “cultural landscape” towards a different set of conceptual vantage points. Marginal spaces of urban nature have engendered a variety of responses ranging from delight or indifference to various forms of fear and hostility. If we consider the scientific dimensions of unconventional landscapes, the city can serve as a laboratory in a material rather than metaphorical sense, which can help to elucidate the distinctiveness of urban space. The different forms of urban vegetation glimpsed from a moving train, for example, comprise a rich tapestry of cultural and ecological history. But these are never landscapes without human presence or meaning: just as the wilderness ethic has tended to erase cultural or historical dimensions to “wild nature” so we find that some of the more romanticist or rarefied responses to “urban wilderness”, or the abandoned spaces of modernity, tend to overlook the full complexity of their human interactions, both in the past and the present. If our analytical starting point for marginal spaces is reframed in relation to a closer engagement with spontaneous traces of nature, and their social and cultural significance, this can serve as a basis from which to develop a wider terrain of critical reflection over the concept of landscape itself.

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Jamaica Kincaid, "The Disturbances of the Garden." *New Yorker*, 31 August 2020, [newyorker.com/magazine/2020/09/07/the-disturbances-of-the-garden](https://www.newyorker.com/magazine/2020/09/07/the-disturbances-of-the-garden).

THE DISTURBANCES OF THE GARDEN

Jamaica Kincaid

Jamaica Kincaid is an Antiguan-American gardener, novelist, essayist, and writer of short-stories that often focus on the changing roles of the garden in cultural and colonial history, more-than-human conviviality, and Black and feminist imagination. She is a professor of African and African American Studies at Harvard University, and among her many critically acclaimed books are *My Garden* (1991) and *Among Flowers: A Walk in the Himalaya* (2005). In 1978, her first short-story, “Girl,” was published in the *New Yorker*. Consisting of roughly 650 words arranged in one long list-like sentence, the story portrays the kind of regulatory advice a Caribbean mother might give a daughter, including how to grow vegetables, prepare certain dishes as well as herbal remedies. In 2020, the *New Yorker* published another story by Kincaid, “The Disturbances of the Garden,” the text reproduced with permission from the author in this section. Originally the introductory chapter to her book *Among Flowers*, this essay also begins with the memory of a daughter regarding her mother’s knowledge of plants and remedies. But descentance, in this storyline, is moreover contemplated by thinking about the historical and physical relationships and the pleasurable as well as violent legacies, without which current botanical assemblages would not exist. By considering how Pacific plants were trans-shipped to the Caribbean in the context of imperial “plant hunting” and in parallel to the enslavement of non-European peoples, Kincaid draws attention to the negotiations of care and coercion, as well as refuge and extraction, which we can discover as constitutive of almost any garden.

In the garden, one performs the act of possessing.

My obsession with the garden and the events that take place in it began before I was familiar with that entity called consciousness. My mother taught me to read when I was very young, and she did this without telling me that there was something called the alphabet. I became familiar with words as if they were all wholly themselves, each one a world by itself, intact and self-contained, and able to be joined to other words if they wished to or if someone like me wanted them to. The book she taught me to read from was a biography of Louis Pasteur, the person she told me was responsible for her boiling the milk I drank daily, making sure that it would not infect me with something called tuberculosis. I never got tuberculosis, but I did get typhoid fever, whooping cough, measles, and persistent cases of hookworm and long worms. I was a "sickly child." Much of the love I remember receiving from my mother came during the times I was sick. I have such a lovely memory of her hovering over me with cups of barley water (that was for the measles) and giving me cups of tea made from herbs (bush) that she had gone out and gathered and steeped slowly (that was for the whooping cough). For the typhoid fever, she took me to the hospital, the children's ward, but she visited me twice a day and brought me fresh juice that she had squeezed or grated from fruits or vegetables, because she was certain that the hospital would not provide me with proper nourishment. And so there I was, a sickly child who could read but had no sense of consciousness, had no idea of how to understand and so make sense of the world into which she was born, a world that was always full of a yellow sun, green trees, a blue sea, and black people.

My mother was a gardener, and in her garden it was as if Vertumnus and Pomona had become one: she would find something growing in the wilds of her native island (Dominica) or the island on which she lived and gave birth to me (Antigua), and if it pleased her, or if it was in fruit and the taste of the fruit delighted her, she took a cutting of it (really

she just broke off a shoot with her bare hands) or the seed (separating it from its pulpy substance and collecting it in her beautiful pink mouth) and brought it into her own garden and tended to it in a careless, everyday way, as if it were in the wild forest, or in the garden of a regal palace. The woods: The garden. For her, the wild and the cultivated were equal and yet separate, together and apart. This wasn't as clear to me then as I am stating it here. I had only just learned to read and the world outside a book I did not yet know how to reconcile.

The only book available to me, a book I was allowed to read all by myself without anyone paying attention to me, was the King James Version of the Bible. There's no need for me to go into the troubles with the King James Version of the Bible here, but when I encountered the first book, the Book of Genesis, I immediately understood it to be a book for children. A person, I came to understand much later, exists in the kingdom of children no matter how old the person is; even Methuselah, I came to see, was a child. But never mind that, it was the creation story that was so compelling to me, especially the constant refrain "And God saw that it was good." The God in the Book of Genesis made things, and at the end of each day he saw that they were good. But, I wondered, for something to be good would there not have to be something that was not good, or not as good? That was a problem, though I didn't bother myself with it at the time, mainly because I didn't know how to, and also because the story had an inexorableness to it: rolling on from one thing to another without a pause until, by the end of six days, there were a man and a woman made in God's image, there were fish in the sea and animals creeping on land and birds flying in the air and plants growing, and God found it all good, because here we are.

It was in the week after this creation, on the eighth day, that the trouble began: loneliness set in. And so God made a garden, dividing it into four quarters by running water through it (the classic quadrilinear style that is still a standard in garden design) and placing borders, the borders being the eternal good and evil: the Tree of Life and the Tree of

Knowledge. One tree was to be partaken of, the other forbidden. I have since come to see that in the garden itself, throughout human association with it, the Edenic plan works in the same way: the Tree of Life is agriculture and the Tree of Knowledge is horticulture. We cultivate food, and when there is a surplus of it, producing wealth, we cultivate the spaces of contemplation, a garden of plants not necessary for physical survival. The awareness of that fact is what gives the garden its special, powerful place in our lives and our imaginations. The Tree of Knowledge holds unknown, and therefore dangerous possibilities; the Tree of Life is eternally necessary, and the Tree of Knowledge is deeply and divinely dependent on it. This is not a new thought for me. I could see it in my mother's relationship to the things she grew, the kind of godlike domination she would display over them.

She, I remember, didn't make such fine distinctions, she only moved the plants around when they pleased her and destroyed them when they fell out of favor.

It is no surprise to me that my affection for the garden, including its most disturbing attributes, its most violent implications and associations, is intertwined with my mother. As a child, I did not know myself or the world I inhabited without her. She is the person who gave me and taught me the Word.

But where is the garden and where am I in it? This memory of growing things, anything, outside not inside, remained in my memory—or whatever we call that haunting, invisible wisp that is steadily part of our being—and wherever I lived in my young years, in New York City in particular, I planted: marigolds, portulaca, herbs for cooking, petunias, and other things that were familiar to me, all reminding me of my mother, the place I came from. Those first plants were in pots and lived on the roof of a diner that served only breakfast and lunch, in a dilapidated building at 284 Hudson Street, whose ownership was uncertain, which is the fate of us all. Ownership of ourselves and of the ground on which we walk, ownership of the other beings with whom we share this and see that it is good, and ownership of the vegetable kingdom are all uncertain, too. Nevertheless, in the garden,

we perform the act of possessing. To name is to possess; possessing is the original violation bequeathed to Adam and his equal companion in creation, Eve, by their creator. It is their transgression in disregarding his command that leads him not only to cast them into the wilderness, the unknown, but also to cast out the other possession that he designed with great clarity and determination and purpose: the garden! For me, the story of the garden in Genesis is a way of understanding my garden obsession.

The appearance of the garden in our everyday life is so accepted that we embrace its presence as therapeutic. Some people say that weeding is a form of comfort and of settling into misery or happiness. The garden makes managing an excess of feelings—good feelings, bad feelings—rewarding in some way that I can never quite understand. The garden is a heap of disturbance, and it may be that my particular history, the history I share with millions of people, begins with our ancestors' violent removal from an Eden. The regions of Africa from which they came would have been Eden-like, and the horror that met them in that "New World" could certainly be seen as the Fall. Your home, the place you are from, is always Eden, the place where even imperfections were perfect, and everything that happened after that beginning interrupted your Paradise.

On August 3, 1492—the day that Christopher Columbus set sail from Spain, later having a fatal encounter with the indigenous people he met in the "West Indies"—the world of the garden changed. That endeavor, to me, anyway, is the way the world we now live in began; it not only affected the domestic life of Europeans (where did the people in a Rembrandt painting get all that stuff they are piling on?) but suddenly they were well-off enough to be interested in more than sustenance, or the Tree of Life (agriculture); they could now be interested in cultivating the fruits of the Tree of Knowledge (horticulture).

Suddenly, the conquerors could do more than feed themselves; they could also see and desire things that were of no use apart from the pleasure that they produced. When Cortés

saw Montezuma's garden, a garden that incorporated a lake on which the capital of Mexico now sits, he didn't mention the profusion of exotic flowers that we now grow with ease in our own gardens (dahlias, zinnias, marigolds).

The garden figures prominently in the era of conquest, starting with Captain Cook's voyage to regions that we now know as Australia, New Zealand, New Guinea, and Tahiti, its aim, ostensibly, to observe the rare event of the transit of Venus. On this trip, in 1768, the first of Cook's three voyages around the world, he brought with him the botanist Joseph Banks and also Daniel Charles Solander, a student of Carolus Linnaeus. The two took careful notes on everything they saw. Banks decided that the breadfruit of the Pacific isles would make a good food for slaves on British-owned islands in the West Indies; the slaveholders were concerned with the amount of time it took the enslaved people to grow food to sustain themselves, and breadfruit grew with little cultivation. And so the Pacific Islands came to the West Indies. Banks also introduced the cultivation of tea (*Camellia sinensis*) to India.

Then there is Lewis and Clark's expedition from the Mississippi River to the Pacific Northwest. On that adventure, which was authorized by President Thomas Jefferson and was inspired by Cook's scientific and commercial interests, the explorers listed numerous plant species that were unknown to John Bartram, botanist to King George III, who ruled the United States when it was still a colony. Bartram's son, William, a fellow-botanist, later wrote a book about his own explorations, which is said to have influenced Wordsworth, Coleridge, and other English Romantic poets.

There now, look at that: I am meaning to show how I came to seek the garden in corners of the world far away from where I make one, and I have got lost in thickets of words. It was after I started to put seeds in the ground and noticed that sometimes nothing happened that I reached for a book. The first ones I read were about how to make a perennial border or how to get the best out of annuals—the kind of books for people who want to increase the value of their home—but

these books were so boring. I found an old magazine meant to help white ladies manage their domestic lives in the nineteen-fifties much more interesting (that kind of magazine, along with a copy of “Mrs. Beeton’s Book of Household Management,” is worthy of a day spent in bed while the sun is shining its brightest outside). But where did plants, annual and perennial, pristinely set out in something called a border, and arranged sometimes according to color and sometimes according to height, come from? Those books had no answer for me. So one book led to another, and before long I had acquired (and read) so many books that it put a strain on my family’s budget. Resentment, a not unfamiliar feeling relating to the garden, set in.

I began to refer to plants by their Latin names, and this so irritated my editor at this magazine (Veronica Geng) that she made me promise that I would never learn the Latin name of another plant. I loved her very much, and so I promised that I would never do such a thing, but I did continue to learn the Latin names of plants and never told her.

Betrayal, another feature of any garden.

How did plants get their names? I looked to Linnaeus, who, it turned out, liked to name plants after people whose character they resembled. Mischievous, yes, but not too different from the doctrine of signatures, which attempted to cure diseases by using plants that resembled the diseased part of the body. I was thinking about this one day, stooped over and admiring a colony of *Jeffersonia diphylla*, whose common name is twinleaf. *Jeffersonia diphylla* is a short woodland herbaceous ephemeral whose leaf is perforated at the base so that it often looks like a lunar moth, but the two leaflets are not identical at the margins, and each leaf is not evenly divided: the margins undulate, and one leaflet is a little bigger than the other. But isn’t Thomas Jefferson, the gardener, the liberty lover and slaveowner, often described as divided, and isn’t it appropriate that a plant such as the twinleaf is named for him? The name was bestowed by one of his contemporaries, Benjamin Smith Barton, who perhaps guessed at his true character. It was through this plant that I became interested

in Thomas Jefferson. I have read much of what he wrote and have firm opinions about him, including that his book “Notes on the State of Virginia” is a creation story.

It was only a matter of time before I stumbled on the plant hunters, although this inevitability was not clear to me at all. Look at me: my historical reality, my ancestral memory, which is so deeply embedded that I think the whole world understands me before I even open my mouth. A big mistake, but a mistake not big enough for me to have learned anything from it. The plant hunters are the descendants of people and ideas that used to hunt people like me.

The first one I met, in a book, of course, was Frank Smythe. No one had ever made me think that finding a new primrose—or a new flower of any kind—was as special as finding a new island in the Caribbean Sea when I thought I was going to China to meet the Great Khan. A new primrose is more special than meeting any conqueror. But Smythe gave me more than that. I noticed, when reading his accounts, that he was always going off on little side journeys to climb some snow-covered protuberance not so far away, and then days later returning with a story of failure or success at reaching or not reaching the peak, and that by the way he had found some beauty of the vegetable kingdom on the banks of a hidden stream which would be new to every benighted soul in England. But his other gift to me was the pleasure to be had in going to see a plant that I might love or not, growing somewhere far away. It was in his writing that I found the distance between the garden I was looking at and the garden in the wilderness, the garden cast out of its Eden which created a longing in me, the notion of “to go and to see.” Go see!

I end where I began: reading—learning to read and reading books, the words a form of food, a form of life, and then knowledge. But also my mother. I don’t know exactly how old I was when she taught me to read, but I can say for certain that by the time I was three and a half I could read properly. This reading of mine so interfered with her own time to read that she enrolled me in school; but you could be enrolled in school only if you were five years old, and so she told me to

remember to say, if asked, that I was alive. My first performance as a writer of fiction? No, not that at all. Perhaps this: the first time I was asked who I was. And who am I? In an ideal world, a world in which the Tree of Life and the Tree of Knowledge stand before me, before all of us, we ask, Who am I? Among the many of us not given a chance to answer is the woman in the library in St. John's, Antigua, two large rooms above the Treasury Department, a building that was steps away from the customs office and the wharf where things coming and going lay. On that wharf worked a stevedore who loaded onto ships bags of raw sugar en route to England, to be refined into white sugar, which was so expensive that we, in my family, had it only on Sundays, as a special treat. I did not know of the stevedore, the lover of this woman who would not allow her children to have much white sugar because, somewhere in the world of Dr. Pasteur and his cohort, they had come to all sorts of conclusions about diseases and their relationships to food (beriberi was a disease my mother succeeded in saving me from suffering). Her name was Annie Victoria Richardson Drew, and she was born in a village in Dominica, British West Indies.

For three weeks in August 2019, a changeable hawk eagle was one of the daily visitors coming to drink at the same water-filled barrel already proven popular with other migratory and native animals in the Gillman secondary forest.

01.08.2019







01.08.2019



02.08.2019



03.08.2019, 04.08.2019



05.08.2019, 06.08.2019



07.08.2019, 08.08.2019



09.08.2019, 10.08.2019



11.08.2019, 12.08.2019



13.08.2019, 14.08.2019



15.08.2019, 16.08.2019



17.08.2019, 18.08.2019



19.08.2019



20.08.2019

Things from the Heat, 2023
Robert Zhao Renhui

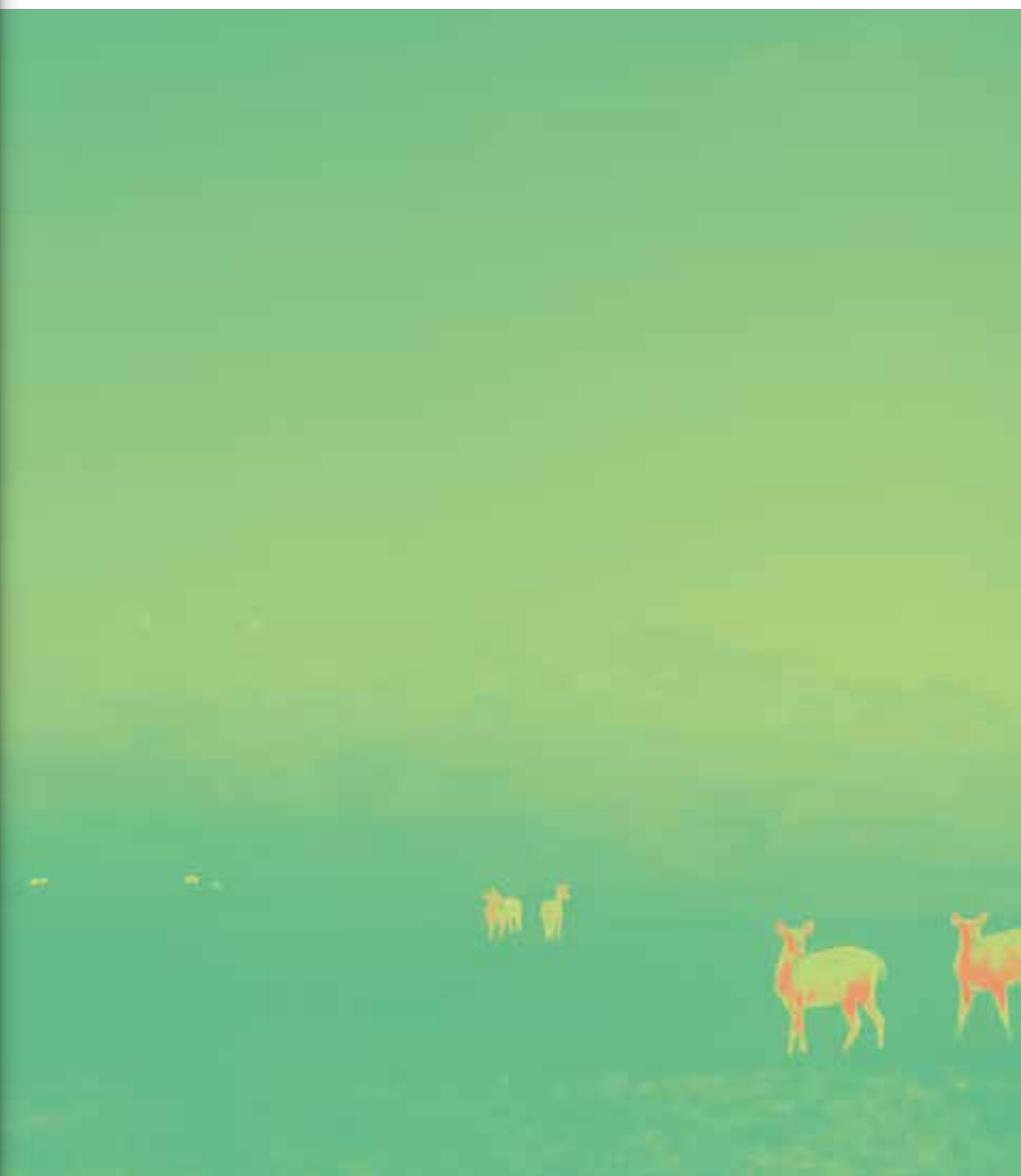
In the following pages are thermal images of animals that live on the edge of the city, and move from forest to urban areas, in the cover of darkness. Hundreds of parrots roost in a single tree every evening in a public housing estate in Singapore, presumably attracted to the urban heat that the neighborhood provides. In the West of Singapore, a small but growing herd of Sambar deer graze on a green patch near a carpark at night, and leave before dawn, when the city comes alive. The Sambar deer, once thought to be extinct in Singapore, has somewhat mysteriously returned.

02.01.2022



18.02.2022







21.02.2022





24.02.2022





01.02.2023

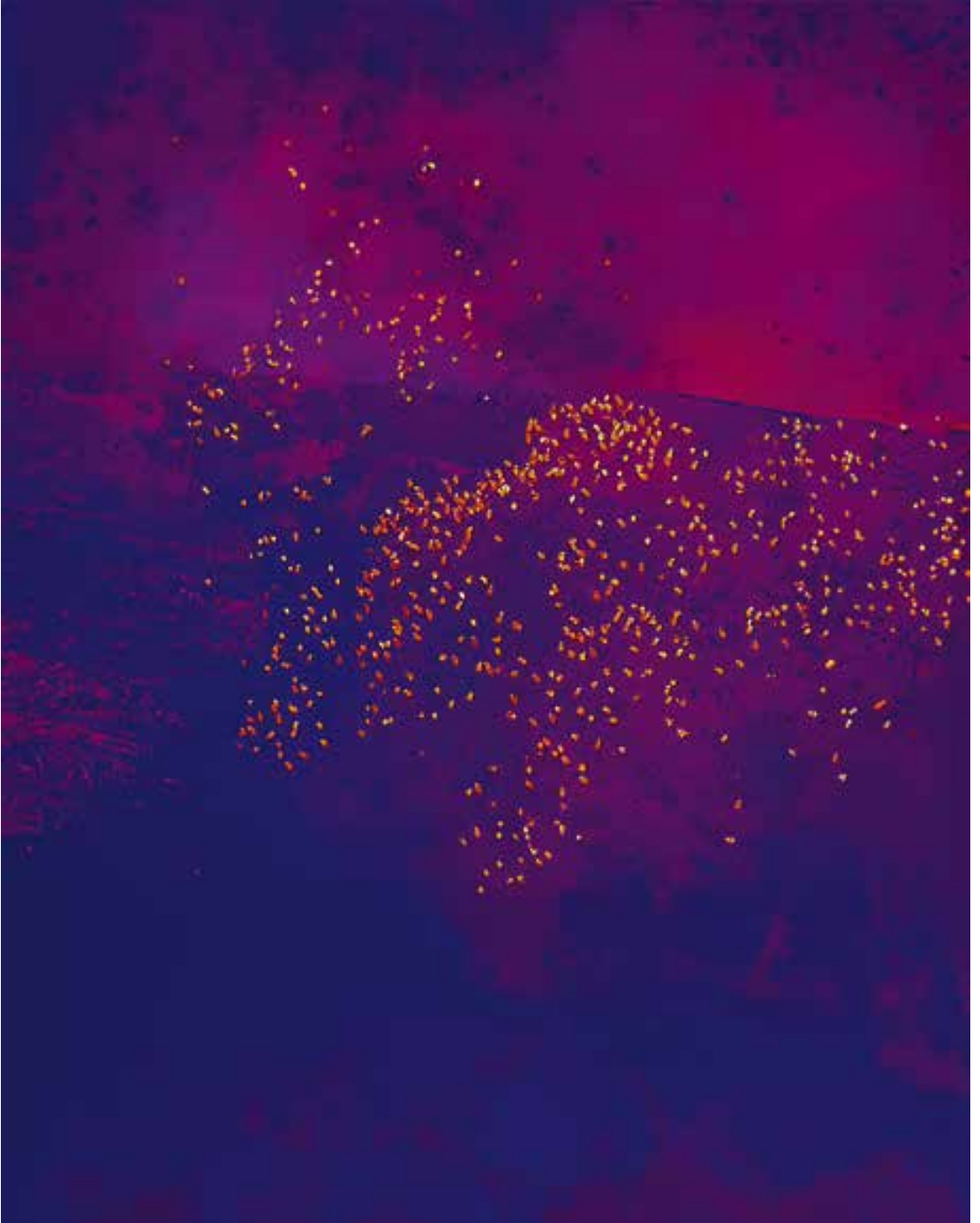


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06.02.2023



01.12.2019

From the window of my high-rise flat, I can see several green spaces. One of them is a small and lush green island bordered by several roads, and further away, a larger secondary forest. During Singapore's Covid-19 lockdown, I spent a lot of time looking at them. In December 2020, the secondary forest started being cleared.

At around the same time as noticing the deforestation, I spotted a wild boar in the green island building a nest, preparing to give birth. She must have been evicted from the secondary forest, and her journey to her new home would have involved crossing several roads. In the end, this mother pig gave birth to six piglets. The secondary forest is now mostly gone. In the green island, I occasionally see the odd wild boar appearing from the sides of the greenery.



02.12.2019



03.12.2019



04.12.2019



05.12.2019

WILD WORLDS,
PATCHY PLANET

Marcus Yee



06.12.2019

Pavilion lights scorched across the moist concrete boulevard leading towards the 1938 Empire Exhibition. A light evening rain sprinkled over Bellahouston Park, Glasgow. Tucked into the corner of the park was the Composite Colonial Pavilion, housing curios and crafts from the British Empire's mottled assortment of colonies, protectorates, and dependencies: Malaya, the West Indies, Cyprus and Malta, Ceylon, British North Borneo, the Falkland Islands, Somalia, Bechuanaland, St. Helena, and Hong Kong. "Beneath a frieze of tropical vegetation and against a background of electric blue appear mammoth mahogany and cedar trees, coconut and sago palms, and the slighter cocoa, rubber, clove and orange trees."¹ The damp summer air became transport.

Rubber was the showpiece of the Malayan section. Four rubber trees were planted indoors, tapped and drained of its sap as a sign of their malleable reality. A diorama showed a plantation estate, forests and workers made docile. In this exhibition, "Tamil tappers" were casted as "life-size plaster models."² Tin, oil, pineapple, weapons, mat-work, basketry, migrants, diseases, and pottery formed a colony in composite.

Photographs of the "jungles of Malaya and its malarial swamps" became windows into how the British have conquered unruly wilderness and ordered it into industry.³ Malaya became sustenance for a rapacious world. One diorama in particular depicted the filling of a swamp in Singapore into "the most modern airport in the Far East."⁴ Earth-moving, earth-draining, earth-filling lifted the colony towards unreachable heights, while bounding it to a rapacious world.

Almost a hundred years later, Singapore would boast one of the finest airports in the world. The land it stands on was once sea. Tropical wilderness is once again put on display. The emphasis now is not on its clearance but its sequestering into an indoor forest-garden. Like a world's fair of plants, 120 species are assembled from Australia, Florida, Spain, Thailand, Indonesia, and Malaysia.⁵ Water in endless abundance is channeled through a vortical centerpiece, the climate-controlled air, gentle and damp, recalls wet Glaswegian summer evenings. The workers have only slightly disappeared, curated in peripheral vision as they are called upon to maintain the trees and shrubs during the afterhours. A technotropicalist script unfurls: a sky train emerges from dense foliage, your eye following its creep back into the manicured jungle.

1 *Bellahouston Park, Glasgow: Empire Exhibition, Scotland, 1938: Official Guide* (Glasgow: McCorquodale & Co., 1938), 157. worldsfairs.amdigital.co.uk/Documents/Details/HMLSC_guide_EXP938a-4#.

2 *Bellahouston Park, Glasgow: Empire Exhibition, Scotland, 1938: Official Guide*, 158.

3 *Bellahouston Park, Glasgow: Empire Exhibition, Scotland, 1938: Official Guide*, 159.

4 *Ibid.*

5 *Jewel: After Hours*, Channel News Asia, channelnewsasia.com/watch/jewel-after-hours-changi-airport.

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Exhibits of a rubber tree and rubber products during British Empire exhibition held in the Malaya Pavilion, 1924. Image no. 19980006213-0016. Courtesy of National Archives Singapore.

The empire's crystal palaces and the nation's jewels are architectural riffs of the world interior of capital: part shopping mall, part world fair, part airport, part garden. Within these glasshouses and their "atmosphere of eternal spring," exhibition-goers drift through sight after sight, ideological passions evaporate into a somnambulistic humidity.⁶ Wilderness on display signals the conquering of a mythical exterior, if not its absorption into the

6 Timothy Mennel, "Victor Gruen and the Construction of Cold War Utopias," *Journal of Planning History* 3.2 (2004): 129.

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hegemonic interior. Such ecological simulacra, of which “biophilia” and “sustainability” are today’s new products, veil over the marshalling of land, labor, carbon, and capital to further its operations. Placebound natures give way to airborne spectacles, as though there is no outside.

ONE OR MANY WORLDS

World’s fairs have always posited the world as a question. These spectacles coalesce the world into a singular, monolithic unity, but fracture at the same time in its conjoining, allowing other worlds to peek through the cracks.

With the 1851 Crystal Palace exhibition at Hyde Park, Britain inaugurates such a discrete world. The fair was an indomitable symbol of Britain’s global Victorian influence and liberal-capitalist might, an interpretation that can be gathered from the fair’s actual name: The Great Exhibition of the Works of Industry of All Nations. The world’s fair was a species of the departmental store.⁷ A gaggle of empires and nations naturalized under a liberal world order. Through the lens of Fyodor Dostoyevsky’s visit to Britain, philosopher Peter Sloterdijk posits the “crystal palace” as a metaphor for the “final ambitions of modernity,” where both capitalist and socialist aspirations come to converge towards consumerism leaving us in a state of “post-historical boredom.”⁸ What Sloterdijk calls “the capitalist world interior” is dramatized by the “near-encounter” between Rainer Maria Rilke (“the poet of the Great Interior”) and Adam Smith (“the thinker of the global market”).⁹ The plastic topology of this world interior is vertiginously horizontal, “a comfort installation with the character of a hothouse,” where base and superstructure, interior and exterior fold into each other.¹⁰ But this totalizing critique of the capitalist world interior is hinged on an equally totalizing gaze, the position of a philosopher-king that is nowhere and everywhere at the same time.

For some fairgoers, the world was much less composited. Despite the great historical confidence with which world’s fairs and great exhibitions presented “the conquest of the world as picture,” there was something indubitably strange about the way in which the exhibition bled into the world while only claiming to be its representation.¹¹

7 Timothy Mitchell, *Colonising Egypt* (Cambridge University Press, 1988), 15–7.

8 Peter Sloterdijk, *In the World Interior of Capital: For a Philosophical Theory of Globalization*, trans. Wieland Hoban (Cambridge: Polity, 2013), 169, 172, 176.

9 Sloterdijk, *In the World Interior of Capital*, 198.

10 Sloterdijk, *In the World Interior of Capital*, 193.

11 Martin Heidegger, “The Age of the World Picture,” in *The Question Concerning Technology, and Other Essays*, by Martin Heidegger, trans. William Lovitt (New York: Harper & Row, 1977), 134; Mitchell, *Colonising Egypt*, 13.



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Historian Timothy Mitchell demonstrates how for colonized subjects, specifically nineteenth-century Egyptian fairgoers, it was not easy to tell where the exhibition ended and the world began. Under the spectacular British colonial order, “the real world beyond the gates turned out to be rather like an extension of the exhibition.”¹² The strangeness of world’s fairs therefore laid less in the artificiality of the real, than the exhibition’s claims towards objective reality that became more real than representation. This alienation is doubled by the detachment of the observer from the observed. This defamiliarization built into the “world-as-exhibition” makes Sloterdijk’s capitalist world interior less all-encompassing than it seems.¹³ Instead, the exhibition becomes a “labyrinth which includes in itself its own exits.”¹⁴

Sloterdijk’s formulation of the capitalist world interior builds on a critique of Rilke’s romanticism, particularly the compound *Weltinnenraum* (world-interior-space) as evidence of “primary narcissism.”¹⁵ Disparaging Marxist critiques of commodity fetishism and historical reinterpretations of Smith’s thought, Sloterdijk instead casts aspersions towards poetic interiority as an operation of capitalist animism.¹⁶ But even with Sloterdijk, there remains a pregnant gap: Rilke is *almost* approaching Smith, it is a *near*-encounter rather than an encounter face on. This expectant, anticipatory almostness can be drawn from Rilke’s own poem, “es winkt zu Föhlung aus fast allen Dingen” [Almost all things beckon us to feeling], from which *Weltinnenraum* is derived.

*The same space spreads through all existences:
world-inner-space. Through us, tranquilly,
birds fly unswerving. O, I who would grow
look outward, and within me grows the tree.*¹⁷

Nature permeates this pregnant gap between Rilke and Smith. Sloterdijk’s perverse reading of expansive interiority as premonishing capitalist feeling could only be achieved through an erasure of nature, where birds and trees are slotted as mere sentimental signifiers. With Rilke, nature and the “exterior” world are subjects that move through and within us, rather than objects of distant and empirical contemplation. This entanglement between us and nature is an injunction to discover ourselves anew, “not simply from within *ourselves*, but rather from within the *things* in the world about us.”¹⁸ Contoured by the flight of birds, outlines of an exit from the labyrinth come faintly into view.

12 Heidegger, “The Age of the World Picture,” 9–10.

13 Heidegger, “The Age of the World Picture,” 13.

14 Heidegger, “The Age of the World Picture,” 10.

15 Sloterdijk, *In the World Interior of Capital*, 197.

16 For historical revisions on Smith, see Emma Rothschild, *Economic Sentiments: Adam Smith, Condorcet, and the Enlightenment* (Cambridge: Harvard University Press, 2001).

17 Rainer Maria Rilke, “Almost all things beckon us to feeling,” *Selected Poems: With Parallel German Text*, by Rainer Maria Rilke, trans. Susan Ranson and Marielle Sutherland (Oxford University Press, 2011).

18 Emphasis in original. Mark S. Burrows, “‘The Poet Alone Unites the World’: The Poetics of Praise in Rainer Maria Rilke’s *The Duino Elegies*,” *Literature and Theology* 29.4 (2015): 423.



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AT WORLD'S END

*What we call the beginning is often the end.*¹⁹ The seeming near-collapse of the world has always already happened elsewhere at another time. The Crystal Palace's consolidation of a world depended on the end of other worlds. After seven decades of British colonialism, only 6 percent of Singapore's primary forests remained.²⁰ In this period, Singapore is estimated to have experienced an extinction rate of up to 73 percent of all species.²¹ Of 383 bird species recorded, 106 is said to have gone extinct by the 1980s.²² The end of the world, at fin-de-siècle Singapore, looked like semi-ordered gambier and pepper plantations, exhausted fields of *lalang*, thickets clamoring to find another light.

Much of the early changes to the island were brought about by Chinese agricultural pioneers supported by Malay nobles in Johor and Riau as early as 1790. This early plantation system hosted a population of about 1,000, concentrated around the mouth of the Singapore river, and ballooned under the British.²³ As the British inserted themselves into the regional trade by founding a factory on Singapore in 1819, taking advantage of war and strife in the Malay world then, the island became bound up with the rest of the global imperial economy.²⁴ Colonial Singapore's ascendance in the imperial economy was in part enabled by the weakening of the traditional economic and political base of Malay aristocrats and in part due to the British abolishment of trade tariffs in 1835 towards gambier—a substance used in leather tanning.²⁵ Up until the 1890s, gambier continued to be the bulk of Singapore's economy.

In a classic story of colonial environmental anxiety, British officials began to notice the desultory state of forests in Singapore in the 1880s and made arrangements for the demarcation of protected Crown Forests.²⁶ This led to the classification of forests as coastal, interior, and town forests, along with another shadow classification: *wastelands*—part of the colonial glossary of “scrub,” “poor jungle,” “useless,” and “swamp” used to describe nature without value outside of state efforts in conservation and replanting.²⁷ This glossary takes root in English liberal discourses of “wastelands” to morally justify the colonial occupation of Bengal, and continues to echo the colonial and postcolonial governance of land in Singapore.²⁸ By

19 T.S. Eliot, “Four Quartets,” in *Collected Poems, 1909–1962*, by T.S. Eliot (London: Faber, 1974).

20 Timothy Barnard, ed., *Singaporean Creatures: Histories of Humans and Other Animals in the Garden City* (Singapore: NUS Press, 2024), 7.

21 Barry W. Brook, Navjot S. Sodhi, and Peter K.L. Ng, “Catastrophic Extinctions Follow Deforestation in Singapore,” *Nature* 424.6947 (2003): 420–26.

22 Barnard, ed., *Singaporean Creatures*, 8; Christopher Hails and Frank Jarvis, *Birds of Singapore* (Singapore: Marshall Cavendish Editions, 2018).

23 Barnard, ed., *Singaporean Creatures*, 6.

24 Carl A. Trocki, “The Origins of the Kangchu System 1740–1860,” *Journal of the Malaysian Branch of the Royal Asiatic Society* 49.2 (230) (1976): 132–55.

25 Trocki, “The Origins of the Kangchu System 1740–1860,” 139–40.

26 Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860* (Cambridge University Press, 1997).

27 Barnard, ed., *Singaporean Creatures*, 9.

28 Vinay Krishin Gidwani, “‘Waste’ and the Permanent Settlement in Bengal,” *Economic and Political Weekly* 27.4 (1992): 39–46; Jennifer Baka, “The Political Construction of Wasteland: Governmentality, Land Acquisition and Social Inequality in South India,” *Development and Change* 44.2 (2013): 409–28.



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the end of the century, gambier and pepper plantations had shrunk drastically; they clustered around the northern and western edges of the island leaving behind a trail of deforestation and exhausted land.²⁹ Blame for deforestation was pinned on “the Chinese” and their “reckless, migratory cultivation.”³⁰ Seen in another way, it was not the recklessness of plantation laborers (that included Chinese workers alongside Indian convict workers and Malay workers as well), but desperation under a pyramid of debt peonage that drove these workers to transform the land while having their own bodies transformed.³¹ In clearing the jungle, workers suffered broken skin, splinters, ulcers and tiger attacks.³² Under this “ecology of poverty,” Malayan tigers were also driven to attack workers laboring at the edges of the forest due to diminishing habitats and food sources, only to be met with a bounty on their lives. The last tiger on the island was killed in 1930.

With rubber, the ruins of gambier and pepper plantations were given a new lease of life. Para rubber, a native of South America, was first hotheaded in the Singapore Botanic Gardens in 1877. Imperial botanic gardens, another species in the world interior of capital, were experimental spaces for extracting, ordering, distributing botanical knowledge to conquer the flora world, transforming lucrative plants into commodities that could be produced at the scale and command of monocrop plantation agriculture. The Wardian Case, a miniature glasshouse invented to keep plants alive across transoceanic journeys, was one architecture of extraction and transplantation that simplified thick ecologies into modular landscapes. The violent story of rubber was the story of many other plants and people that came before. After a series of planting experiments and the development of the herringbone method, a tapping method that would keep rubber trees alive while being sapped, planters began to plant rubber along the same extent of retired pepper and gambier plantations.³³ In the age of the automobile, rubber was a windfall for planters who saw their profits transfigure into “golf courses, tennis courts, bigger clubs, and huge bungalows.”³⁴ Capital furthered the creep of the plantation system across peninsular Malaya to the extent that one aviator remarked that, “the vegetation of the peninsula did not change much as far as Penang [but] from that point to Singapore the wild country had been tamed and given over to rubber plantations, laid out with the regularity of

29 Tony O’Dempsey, “Singapore’s Changing Landscape since c. 1800,” in *Nature Contained: Environmental Histories of Singapore*, ed. Timothy P. Barnard (Singapore: NUS Press, 2014), 28.

30 Tony O’Dempsey, “Singapore’s Changing Landscape since c. 1800,” 32. Eds. Note: See the excerpted passages of the 1883-report with such statements by Nathaniel Cantley, one of the earliest colonial superintendents of the Singapore Botanic Garden, reproduced in this volume, 99–117.

31 Miles Alexander Powell, “People in Peril, Environments at Risk: Coolies, Tigers, and Colonial Singapore’s Ecology of Poverty,” *Environment and History* 22.3 (2016): 455–82.

32 Powell, “People in Peril, Environments at Risk,” 468.

33 O’Dempsey, “Singapore’s Changing Landscape since c. 1800,” 42–3.

34 Lynn Hollen Lees, *Planting Empire, Cultivating Subjects: British Malaya, 1786–1941* (Cambridge and New York: Cambridge University Press, 2017), 179.

35 Sunil S. Amrith, *Crossing the Bay of Bengal: The Furies of Nature and the Fortunes of Migrants* (Cambridge and London: Harvard University Press, 2013), 127.



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carefully kept gardens.”³⁵ Rubber hotheaded Singapore too, where its port turned into a key node for its processing and transshipment. Financial infrastructures grew and dug in its roots to keep up with the ballooning global rubber trade. By 1918, the city’s rubber auction accounted for a quarter of the global rubber exports.³⁶

The prosperous world brought about by rubber was built on cheapened lives.³⁷ Rubber recomposed Malayan society. After the abolition of slavery in the British empire, planters tapped into indentured labor markets largely from South India. In the late 1880s more than 20,000 people arrived in the ports of the Straits Settlements from South India annually, but by 1911, the annual number rose to over 100,000.³⁸ Compared to the blossoming of cross-cultural, largely ungovernable frontier towns in the peninsular as a result of the plantation and mining economies, the plantation itself was governed by strict work-discipline and a hierarchical segregation of class, race, and gender.³⁹ It was a place “defined by boundaries whose crossing was strictly forbidden.”⁴⁰ The “infernal conditions” suffered by the Indian indentured workers were not just disease and other threats emanating from the foreign Malayan environment, but also brutality and torture by plantation managers, at times equaling the conditions of slave plantations in the Caribbean.⁴¹ But in the Plantation, humanity stubbornly persisted in the face of perpetual dehumanization, evinced by a sacral landscape of tree shrines, songs, and memories that Indian laborers planted to make one of these bellies of the world their own.⁴² As Martinican philosopher Édouard Glissant reminds us: “the place was closed, but the word derived from it remains open.”⁴³ One could misread the word for world.⁴⁴

ELSEWHERE

I became a cut-up, a rubber tree at the center of the world. A skillful knife entered v-shaped into my trunk, gentle hands slung a band holding a pail over me. A milky sap turned into a flood, the pail overflows. A flow that congeals into a connective tissue joining continents together in awkward intimacy. *Malayana*: palm tree pillars, pneumatic weavers, rattan baskets, taxidermy rhinoceros and tigers, bison skin splayed, plaster fish, attap rooftops, a statue of a colonizer. A pyramid of rubber blocks extolled primitive

36 One example of a financial infrastructure that emerged alongside the rubber trade was the Overseas Chinese Banking Corporation, meant to facilitate the circulation of Chinese capital. Pei Ying Loh, “Seeded in Singapore,” *Kontinentalist*, kontinentalist.com/stories/how-the-rubber-plant-hevea-brasiliensis-and-latex-changed-singapore.

37 Raj Patel and Jason W. Moore, *A History of Capitalism in Seven Cheap Things: A Guide to Capitalism, Nature, and the Future of the Planet* (London: Verso, 2018).

38 Amrith, *Crossing the Bay of Bengal*, 118.

39 Lees, *Planting Empire, Cultivating Subjects*, 62–100, 129.

40 Édouard Glissant, *Poetics of Relation*, trans. Betsy Wing (Ann Arbor: University of Michigan Press, 1997), 64.

41 Amrith, *Crossing the Bay of Bengal*, 126, 129.

42 Amrith, *Crossing the Bay of Bengal*, 125–26; Glissant, *Poetics of Relation*, trans. Betsy Wing, 65.

43 Glissant, *Poetics of Relation*, trans. Betsy Wing, 75.

44 Ursula K. Le Guin, *The Word for World Is Forest* (New York: Berkley Publishing Corporation, 1976).



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accumulation: *arte povera* in poor imitation. Ontological anarchy, a cry of freedom, reason for conquest.

Dreams of escape sit at the heart of the world interior. In this perfect circle, ecological, a chorus of riotous hearts boil over only to evaporate away into an eternal spring. Runaways were allowed to escape and recaptured. I (a chorus) romp and drift along the psychogeographic skeins in search of stillness. A quiet place that would lead me somewhere else, somewhere outside, beyond. Beyond these hanging gardens strung into endless renovation. Taste of coconut as inscrutable transport.

A million underbellies upturned as I scour through dilapidated bungalows, en-bloc aftermaths, forgotten shopping malls, weedy woodlands, vacant carparks, highway hideouts, cemeteries and columbariums, desirelines, outmoded shopfronts, crossborder train-tracks, guerrilla gardens, in-between botanicals, fluorescent-lit galleries, drying *longkangs* to collage an altar from the center of the heart, for any outside. How many more urban archaeologies in a complicit, shimmering world. I am left to ooze: everything would eventually be found, but what is found was never lost.

GARDEN, NATION, WORLD

Taming tropical wilderness was a well-established colonial project. Display and destruction were bedfellows. In 1822, Stamford Raffles conducted one of the earliest colonial environmental projects in Singapore, ordering the reclamation of swamps and mangroves along Boat Quay using earth cut from surrounding hills in order to make a showpiece of imperial commerce.⁴⁵ Other colonial environmental projects were more subtle, like the reservation of higher, more forested latitudes for British settlement due to European settler anxieties over tropical climates.⁴⁶

Beneath the surface of imperial grand strategy, British officials on the ground knew well that governing a colonial port city meant governing an ecological crossroads that stirred with microbes, creatures, people, and plant matter. The port city itself was an environmental project. As early as the 1860s, the Singapore Municipality was responsible for planting roadside trees along key thoroughfares across the island, even though the Straits Settlement

45 Tin Seng Lim, "Land From Sand: Singapore's Reclamation Story," *Biblioasia* (Apr – Jun 2017), 4 April 2017, biblioasia.nlb.gov.sg/vol-13/issue-1/apr-jun-2017/land-from-sand.

46 O'Dempsey, "Singapore's Changing Landscape since c. 1800," 29.



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administration was known to be parsimonious with public spending.⁴⁷ One reason for tree-planting was climatic: the provision of shade for the weather-obsessed British striving under the tropical sun. Another reason was that street tree-planting was becoming a municipal norm in other colonies in Asia: Hong Kong, Batavia, Malacca, and Penang.⁴⁸ Tree-planting was the planting of colonial rule against a climate of regional political instability and local resistance, not unlike the monumental high-European architectures planted in the city center by Indian penal labor.⁴⁹ Natives from other tropical regions such as India, Indonesia, or Madagascar such as the Angsana tree (*Pterocarpus indicus*), Albizia (*Falcataria moluccana*), Flame of the Forest (*Delonix regia*) began to composite Singapore's roadside ecologies, resembling the buzzing cosmopolitanism of its port.⁵⁰ The Albizia, as its Latin name suggests, is native to the Maluku islands, the once-mythical Spice Islands that drew Europeans to the region in the sixteenth century, who initiated a long period of massacres, wars, and unequal treaties in its path towards imperial ascendancy. These trees migrated along timeworn oceanic trade routes but their very migration was facilitated by imperial worldbreaking and worldmaking.

Tree-planting and other early colonial environmental projects should be understood within the matrix of liberal self-interest, rather than seen as "public goods" that have come to be assumed today as part of Singapore's verdant urban landscape. While the 1822 Jackson Plan projected a grid onto the island's shoreline placing Europeans at the colonial and commercial center, the same wealthy merchants and government officials moved from the city center to the suburbs a decade later.⁵¹ This suburbanization exacerbated contrasts in living conditions in the colony: the working population in the city lived in "dark airless houses," shophouses understood as "regular rabbit-warrens of living humanity"; the wealthy in the suburbs lived in high-ceiling bungalows with airy verandas and manicured lawns to match, evoking nostalgia for the sprawling English countryside.⁵² Under the civilizing mission of "improvement," the colonial administration institutionalized municipal interventions in the early twentieth century and embarked on the colony's first experiments in the provision of public parks and recreational spaces, island-wide urban planning, and public housing by the 1950s. The postcolonial Singapore government under the People's Action Party,

47 Tin Seng Lim, "The Greening of Singapore: Parks and Roadside Trees from Colonial Rule to the Present," *Journal of the Malaysian Branch of the Royal Asiatic Society* 91.2 (2018): 80.

48 M.R. Pryor, "Street Tree Planting in Hong Kong in the Early Colonial Period (1842-98)," *Journal of the Royal Asiatic Society Hong Kong Branch* 55 (2015): 33-56.

49 Anoma Pieris, *Hidden Hands and Divided Landscapes: A Penal History of Singapore's Plural Society* (Honolulu: University of Hawaii Press, 2009).

50 Tin Seng Lim, "The Greening of Singapore," 82.

51 Norman Edwards, *The Singapore House and Residential Life 1819-1939* (Oxford University Press, 1990), 53; Anoma Pieris, *Hidden Hands and Divided Landscapes*, 46-7.

52 Brenda S.A. Yeoh, *Contesting Space in Colonial Singapore: Power Relations and the Urban Environment* (Singapore University Press, 2003), 149, 165.



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incumbent since separation from Malaysia in 1965, have inherited these colonial environmental projects but accelerated and intensified them under the rhetoric of Fabian redistribution. Nationalist world-making was propelled under the sign of ineluctable progress.

In post-independence Singapore, the garden has become an emblem of the simultaneous socialization of public goods and the social engineering of the masses. The postcolonial garden city was where a waxing tropical modernity could be enjoyed by a wider population, rather than a privileged few under colonialism. In turn, this tropical modernity laid out another condition—this enjoyment is premised on the self-cultivation of clean, orderly, and docile national subjects. Unsparingly, the government weeded out grassroots resistance to clean-up and resettlement projects conducted across the newly independent city-state.⁵³ In place of secondary forests, mangroves, vegetable gardens, and urban *kampungs* were manicured estates and lawns. One of the earliest reasons for park building by colonial officials was such that “youth [would not be] side-tracked into all forms of vice” if they played sports in parks.⁵⁴ Metaphors that equate governance and gardening continue to be abound in Singapore political discourse, perhaps one of the most pernicious was former Minister for Information and the Arts George Yeo’s allusion to “weeding” in the arts industry. Speaking to art teachers-in-training, Yeo cautioned that, in “tending this garden, which is Singapore, we must not see all plants as healthy. In any garden, there are weeds whose growth we have to curb.”⁵⁵ At a time of political liberalization in the 1990s, the state figures as the judicious gardener, hothousing freedoms and retaining the power to uproot them at their discretion.

The garden city sutured the island to the world, a kin in the taxonomy of roadside trees, botanical gardens, and plantations. One explicit impetus behind the post-independence greening of Singapore was a desire to display to overseas investors, tourists, and dignitaries that the city-state was worthy of foreign investment and attention. The curation of the city was not only limited to the “instant trees” that flanked its highways, but also the exemplification of people like cultivars as a disciplined, industrial workforce under the new international division of labor.⁵⁶ Recall the bromide that people are the nation-state’s only “natural resource.” The cultivated image of Singapore as an exceptional “oasis” within the Southeast Asian

53 Kah Seng Loh, *Squatters into Citizens: The 1961 Bukit Ho Swee Fire and the Making of Modern Singapore* (Singapore: NUS Press, 2013); Stephen Dobbs, *The Singapore River: A Social History, 1819–2002* (Singapore: NUS Press, 2003).

54 *Master Plan: Report of Survey* (Singapore: Government Printing Office, 1955), 34.

55 “Speech by George Yeo, Minister for Information and the Arts and Minister for Health, at the Opening of the National Institute of Education (NIE) Festival of Arts on 1 September 1995 at 10.15am,” National Archives Singapore, 1995.

56 Tin Seng Lim, “The Greening of Singapore,” 92.



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region reflects the state's hawkish desire for Singapore to become a continent, to carve itself from its archipelagic condition.⁵⁷ It bears reminding that the territory now known as Singapore, once containing seventy-seven islands, continues to be an archipelago amidst other archipelagos. Archipelagic seas of forests, *kampung*s, and surrounding islands were relegated to nostalgic remnants under the sign of national progress, at a scale nothing short of a "territorial revolution" and at a speed that achieved in decades what the colonial administration attempted in centuries.⁵⁸ Emblematic here is the moment where former deputy prime minister Goh Keng Swee took an axe to a Flame of the Forest, breaking ground for Shell's first petroleum refinery in 1960, and without irony, serving as guest-of-honor for yet another tree-planting day in the months to come.

Under the city-state's current rebranding as "the city in nature," the world-as-exhibition becomes the world-as-garden. This supposed turn towards biophilia, biodiversity, and climate-consciousness has not entailed disidentification from the garden but rather the perfection of social control. The round-the-clock pruning, trimming, and manicuring of urban greenery follows a militarized schedule and employs the cheapened labor of largely South Asian migrants, to the tune of what two architects have termed as Singapore's "paramilitary gardening."⁵⁹ If the garden city entailed a separation between urban and nature, the state doubles down on the full reach of its gardening might with "the city in nature"—the garden spans the scale of the nation and the interiorities of its citizens. In the minds of the gardener, wildness only happens in the transitive, wildness is allowed to happen, permitted, and monitored. As geographer Matthew Gandy observes, even efforts towards "re-wilding" often only provide an ecological simulacra grounded on "nativist conceptions of ecology" rather than "the cosmopolitan characteristics of actually existing urban nature."⁶⁰ Although the unintentional return of smooth-coated otters, oriental pied hornbills, wild pigs and many other fauna species previously thought to be extinct in Singapore have been celebrated (even as new human-animal conflicts flare up), other nonnative species such as the *Albizia* have been deemed as the "bad boys of trees and the scourge of local roads" because of their branches that break and fall during storms.⁶¹ With these returning fauna domesticated within the silo of the nation state, what is often obscured but obvious to ecologists and conservationists is

57 Kuan Yew Lee, *From Third World to First: The Singapore Story, 1965–2000: Singapore and the Asian Economic Boom* (New York: HarperCollins Publishers, 2000), 58, 62;

Lily Zubaidah Rahim, *Singapore in the Malay World: Building and Breaching Regional Bridges* (London: Routledge, 2009).

58 Creighton Connolly and Hamzah Muzaini, "Urbanizing Islands: A Critical History of Singapore's Offshore Islands," *Environment and Planning E: Nature and Space* 5.4 (2022): 2172–92; Rodolphe de Koninck, *Singapore's Permanent Territorial Revolution: Fifty Years in Fifty Maps* (Singapore: NUS Press, 2017).

59 Joshua Comaroff and Ong Ker-Shing, "Paramilitary Gardening: Landscape and Authoritarianism" (2012), conference paper reprinted in this volume at pp. 159–75.

60 Matthew Gandy, "Unintentional Landscapes," *Landscape Research* 41.4 (2016): 433–40; reprinted in this volume at pp. 177–87.

61 Walter Sim, "Storm-Vulnerable *Albizia* Trees to Get the Chop," *The Straits Times*, 27 July 2013.



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Singapore's broader connectivity to a regional biogeography, the archipelagic enmeshment of the garden with the plantation and the (secondary) forest that crosses nation-state boundaries.

The Singapore example offers another story of wildness. One not about disordering desire and desiring disorder, but a story of overflows, excesses, and over-attachments with the "orderly impulse of modernity."⁶² One that absorbs the colonial orders of being and reified racial categories of "wild things" while becoming-wild in the process.⁶³ Recent outcry over the clearing of Albizia forests, whether planned or illegal, hint at the state's cultivation of modern environmental subjects as perhaps *too* successful.⁶⁴ Attachments towards the landscape spill beyond the edges and closed worlds of gardens and plantations, the contradictions embedded in Singapore's "city in nature" begin to fall apart, the exit routes to the labyrinth reveal themselves and wildness might reign again.

THE PATCH AND THE PLANETARY

Colonial and postcolonial displays of nature have been marshalled as scalar assertions: the coherence and givenness of nation, empire, and world. World's fairs and garden cities hint that scales are neither nested within each other nor are they incommensurable—they depend on each other for scalar coherence. In the world's fair, empire coheres a world as nations cohere empire.

In a time of generalized ecological crisis, scholars have invoked another scale: the planetary, a scale that decenters the human.⁶⁵ With the globe rather than the planet in mind, discussions of freedom since the Enlightenment have not considered humans as geological agents, forgetting that freedoms are "energy-intensive."⁶⁶ But the planetary, for all its promises to urgently rethink the world along more-than-human dimensions, risks recapture along scales that reflect a winnowing political imagination.

The efflorescence of projects situating Singapore in the Anthropocene has emphasized that the city-state is not only the proposed epoch's casualty but also potentially one of its guiding forces.⁶⁷ Although this wave of scholarship avoids reifying the planetary scale into another grand narrative by emphasizing the local and shines light on previously overlooked histories in the historiography

62 Jack Halberstam, *Wild Things: The Disorder of Desire* (Durham: Duke University Press, 2020), 7.

63 *Ibid.*, 4, 7–8.

64 Hairianto Diman, "The Big Story: Netizens Slam Unauthorised Clearing of Kranji Woodland," *The Straits Times*, 17 February 2021, [straitstimes.com/multimedia/the-big-story-netizens-slam-unauthorised-clearing-of-kranji-woodland](https://www.straitstimes.com/multimedia/the-big-story-netizens-slam-unauthorised-clearing-of-kranji-woodland); [Doverforest.sg](https://www.doverforest.sg), accessed 14 February 2024, [doverforest.sg](https://www.doverforest.sg).

65 Dipesh Chakrabarty, *The Climate of History in a Planetary Age* (University of Chicago Press, 2021), 4.

66 Chakrabarty, *The Climate of History in a Planetary Age*, 32. For Chakrabarty however, the planetary can only be accessed through science, which "alone offers no moral compass." See also Victor Seow, "Decentering the Human in the Human Epoch," *Journal of Asian Studies* 83.1 (2024): 212–16.

67 See for example Barnard, *Singaporean Creatures*; Matthew Schneider-Mayerson, ed., *Eating Chilli Crab in the Anthropocene* (Singapore: Ethos Books, 2020); Miles Powell, "Harnessing the Great Acceleration: Connecting Local and Global Environmental History at the Port of Singapore," *Environmental History* 27.3 (2022): 441–66.



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of Singapore, it implicitly naturalizes the accidental nation state and its prescribed borders. Notwithstanding broad sensitivities to cosmopolitan, border-crossing ecologies, thinkers of Singapore in the Anthropocene have yet to point out how the material conditions of knowledge and artistic production that Singapore affords as a wealthy nation state has led to the continual inscription of the nation state as a self-contained, natural entity over regional landscapes that run contiguous across national borders. From another perspective, it is the same logic of *planetary statism* that structures the annual Conference of the Parties (COP) meetings and its glacial pace of intergovernmental action in the face of climate emergency.

Rather than jettisoning these scalar categories altogether, as some globalization scholars have suggested about the fate of nation states in the nineties, planetary ecologies call upon us to notice the patchiness of these normative scales, acknowledge their social construction, *and* critique their hegemonic consequences. “Patches,” a term borrowed and modified from the ecological sciences, can reveal to us heterogeneous landscape structures, the uneven assemblages of human and non-human interactions.⁶⁸ They reveal all-too-human histories of “genocide, displacement, exploitation, and oppression,” while illuminating the “feral proliferations” that exceed, and indeed spring out from, the geometries of power.⁶⁹ The patch is not in diametric opposition with the planetary, a problem of universals and particulars, but rather a mode of “attending to specificity without being parochial.”⁷⁰ Seen as patches, for instance, world’s fairs were not only modes of European imperial consolidation, but also opportunities for disempowered polities such as Malay sultanates to reclaim prestige, even if on a world stage that is tilted against them.⁷¹

Perhaps then we can reckon with the patchy strangeness of the island of Albizia forest standing amidst a grassy field, as more than a future garden under the national imperative of progress, more than real estate under the sign of the world interior of capital, and even more than its statistical potential to sequester carbon and support biodiversity under planetary statism. This patchwork, ruderal scrub holds all of these precarious scales together and more: the affective investments of nature lovers, flightpaths of migratory birds, a shallow but sprawling rhizosphere, outbreaks of leaf rust, archipelagizing relations, wild pigs, and overripe fruit, unsettled and unsettling histories drawing us closer towards feral futures.

68 Anna Lowenhaupt Tsing, Andrew S. Mathews, and Nils Bubandt, “Patchy Anthropocene: Landscape Structure, Multispecies History, and the Retooling of Anthropology: An Introduction to Supplement 20,” *Current Anthropology* 60.S20 (2019): S188.

69 Tsing, Mathews, and Bubandt, “Patchy Anthropocene,” S189.

70 Tsing, Mathews, and Bubandt, “Patchy Anthropocene,” S186.

71 Wong Lee Min, “Negotiating Colonial Identities: Malaya in the British Empire Exhibition, 1924–1925” (Thesis, National University of Singapore, 2013), scholarbank.nus.edu.sg/handle/10635/122768?mode=full. See also Faris Joraimi, “Johor at the 1893 Chicago World’s Fair,” *Biblioasia* (Oct – Dec 2022), biblioasia.nlb.gov.sg/vol-18/issue-3/oct-dec-2022/johor-chicago-world-fair.



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MORE THAN NATURAL:
ROBERT ZHAO RENHUI'S
ECOSOPHY

Jeffrey Kastner



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As I had to go on my daily round anyway, I decided to combine the useful with the interesting, and went into the forest with Boros. With his help, the tree trunks revealed their secrets to me. The most ordinary stumps turned out to be entire kingdoms of Creatures that bored corridors, chambers and passages, and laid their precious eggs there. The larvae may not have been beautiful, but I was moved by their sense of trust—they entrusted their lives to the trees, without imagining that these huge, immobile Creatures are essentially very fragile, and wholly dependent on the will of people too. [...] Boros' hands did conjuring tricks, drew mysterious signs, and lo and behold, an Insect appeared, a larva, or some tiny eggs laid in a cluster. When I asked which of them are useful, Boros was outraged.

"From nature's point of view no creatures are useful or not useful. That's just a foolish distinction applied by people."

—Olga Tokarczuk, *Drive Your Plow over the Bones of the Dead*¹

With almost nine thousand people per square kilometer, Singapore is the second most densely populated nation in the world, behind only the tiny city-state of Monaco. It's typically thought of as an epitome of high-tech metropolitanism—the World Bank includes the country among the handful around the globe that are statistically considered to be 100 percent urbanized—but according to the last detailed large-scale environmental mapping study of the country, conducted in 2011, vegetation covers roughly half of its 735-square-kilometer landmass, with spontaneous, non-managed growth accounting for almost 30 percent of that total.² And its nearly six million human residents share the island, situated at the southern tip of the Malaysian peninsula, with more than five hundred species of amphibians, birds, reptiles, and mammals, as well as thousands of different species of plants.³

At the time of modern Singapore's founding in 1819, more than 80 percent of the country's vegetation was lowland dipterocarp forest, but less than one percent of that total remains today.⁴ The arboreal constitution of present-day Singapore is overwhelmingly given over to so-called secondary forest, natural environments that have emerged in places where the original land has been disturbed

1 Olga Tokarczuk, *Drive Your Plow over the Bones of the Dead*, trans. Antonia Lloyd-Jones (New York: Riverhead Books, 2019), 154–5. Unconventional capitalization scheme in the original.

2 See A.T.K. Yee, et al, "The Vegetation of Singapore—An Updated Map," *Gardens' Bulletin Singapore*, no. 63, vols. 1 & 2, 2011, researchgate.net/publication/280601159_The_vegetation_of_Singapore_-_An_updated_map/link/55bf32cc08aed621de1223c6/download?_tp=eyJlb250ZlXho1jp71mZpcnNoUGFnZSI6InB1YmxpY2FoaWgu1iwicGFnZSI6InB1YmxpY2FoaWgu1i9.

3 See the National Parks Board Singapore, "4th National Report to the Convention on Biological Diversity," September 2010, cbd.int/doc/world/sg/sg-nr-04-en.pdf.

4 See Ryan A. Chisholm et al., "Two centuries of biodiversity discovery and loss in Singapore," *PNAS (Proceedings of the National Academy of Science of the United States of America)*, 120.51 (19 December 2023), n.p.



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in one way or another by human activity. Though Singapore's small size and population density makes the notion of remote places there difficult to imagine, these conglomerations of ruderal flora (the word comes from the Latin *rudus*, or rubble) are truly places apart, unexpectedly wild and isolated zones—or *ulu*, in the Malay language—necklaced through the highly developed built environment that characterizes the majority of the nation's landscape.

Over the last two decades, Singaporean artist Robert Zhao Renhui has built his artistic practice around the unique cohabitation of nature and culture that epitomizes his native country. Poised between science and storytelling, between physical details empirically close at hand and the more distanced dispassion of the laboratory and the archive, his work proposes itself as a kind of latter-day natural philosophy, one that unites close observation and diligent scholarship with a penchant for productive mischief and the occasional dose of generative analytical elasticity.

It was in the latter guise that I first encountered Zhao's work when, in the autumn of 2009, I received a submission from him to *Cabinet* magazine, where I've served for many years as an editor. In his email, Zhao explained that he had recently been invited by an organization called the Institute of Critical Zoologists (ICZ) to join it as a resident artist on a research trip to a place called Pulau Pejantan, a tiny island located in the Java Sea roughly equidistant from Singapore and the large Indonesian islands of Sumatra and Kalimantan. Zhao wrote that the island was characterized by extremely unique geographical features and extraordinary biodiversity, including a range of endemic species, and attached some very beautiful, and admittedly rather perplexing, images he said he had taken while on the trip.

Since *Cabinet* is a magazine not only of art but also of science, my colleagues and I began to more closely research the specific creatures Zhao's images purported to depict as we considered the project: Wallace's greater black cormorant, the Pacific lantern fish, the long-tail paradise crow; the minute owl, the cliff potter; ocean munias, dark doves, glow worms. It quickly became clear that while certain aspects of Zhao's story were factually accurate—the island exists and he had in fact visited it—the vast majority of his tale, and especially the faunal particulars, were part of a complex, ingeniously realized parafictional scheme.



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“Parafictioneers produce and manage plausibility,” writes Carrie Lambert-Beatty, the influential theorist of the artworld’s embrace of strategic disingenuity. “But plausibility (as opposed to accuracy) is not an attribute of a story or image, but of its encounter with viewers, whose various configurations of knowledge and ‘horizons of expectation’ determine whether something is plausible to them.”⁵ That was the brilliant trick of Zhao’s project—my encounter with the fantastical world that he offered in those early images worked magic along my particular horizon of expectation, teaching me not about the world as it was, but rather cracking open something crucial in my sense of the possibility of new things not even yet imagined potentially waiting to be discovered.

In the decade-plus since our first encounter, I’ve watched as Zhao has routed and rerouted his interests through an increasingly intricate mixture of quasi- and fully factual projects. A look at the website of the ICZ—which was all along a fictive institutional alter-ego designed by the artist to lend the early work a certain sort of authoritative coding—demonstrates the breadth of his interests: whales and birds, insects and plants; the jungle and the Arctic; animal traps and engineered food. One can also begin to trace the arc of his practice that led to his current project for the Pavilion of Singapore here in Venice: one that leads from a secluded island teeming with improbably exotic cryptozoological specimens to a patch of overgrown waste land populated by everyday animals and viewed by Zhao with fascination, intent, and a palpable bit of longing.

There’s an anecdote involving the French writer and sociologist Roger Caillois and the Surrealist theorist André Breton that provides an illustrative window into the sorts of productive tensions between scientific and poetic relationships with nature that animate so much of Zhao’s own practice. The story goes that one evening the two men were examining seed pods of the large spurge shrub *Sebastiania pavoniana*, known colloquially as “Mexican jumping beans” because the activity of the moth larva that often colonizes and inhabits the pods makes them move under certain conditions. For his part, Caillois argued that they should cut the

5 Carrie Lambert-Beatty, “Make-Believe: Parafiction and Plausability,” *October* 115 (Summer 2009), 72–73. direct.mit.edu/octo/article-pdf/doi/10.1162/octo.2009.129.1.51/1753215/octo.2009.129.1.51.pdf.



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beans open to see what was causing the curious locomotion. But Breton resisted, because, as the former recounted, such an operation would have destroyed “the mystery.” The differences between the men’s methodologies caused a falling out, with Caillois sufficiently stirred by the experience that he wrote a letter to Breton the following day explaining how it spurred his decision to break from the Surrealist project:

Recently, the types of gratification I encountered while reading [Breton's essay collection] Point du jour made me definitively resign myself to seeing you with a foot in both camps: research and poetry (I am putting it crudely, of course, with no concern for nuance or overlap). After all, it was quite understandable—and considering your intellectual approach from the outset, I am tempted to write: it was all too understandable (meaning that Surrealism stems from a literary milieu)—that you should be inclined to strike an equal balance between the satisfactions offered by the first and the jouissances [pleasures] offered by the second, to use the two words arising almost simultaneously to our lips last night. Given our conversation, however, it is clear to me that in your case there never was and probably never will be any equilibrium between the two spheres.⁶

Though it was what Caillois considered to be his older colleague’s overindulgence of the poetic that was the precipitating factor in the rupture, the former was by no means an unyielding rationalist. Indeed, as Claudine Frank has written, Caillois’s subsequent work did not “confirm the dichotomy of poetry and science, dismissing the first for the second. Inspired by German phenomenology and, closer to home, by [Gaston] Bachelard’s *New Scientific Spirit*, Caillois was calling instead for a new, more imaginative science.”⁷ Caillois—who wrote in the same letter of his desire for a “a form of the Marvellous that does not fear knowledge but, on the contrary, thrives on it”—himself would adopt the evocative modifier “diagonal” to describe the unity of imagination and enquiry he wanted to find and foster:

[Diagonal sciences] bridge the older disciplines and force them to engage in dialogue. They seek to make out the single legislation uniting scattered and seemingly unrelated phenomena. Slicing obliquely through our common world,

6 Roger Caillois, “Letter to André Breton,” in *The Edge of Surrealism: A Roger Caillois Reader*, ed. Claudine Frank, trans. Claudine Frank and Camille Naish (Durham: Duke University Press, 2003), 84. *Jouissance* should not here be understood in the psychoanalytical register in which Jacques Lacan later deploys it, but rather in the more basic context of “enjoyment” or “pleasure.”

7 Claudine Frank, introduction to *The Edge of Surrealism*, 10. Also see Margarite Yourcenar’s introduction to what is perhaps Caillois best-known work, *The Writing of Stones*, in which he considers a wide range of minerals (he himself had a significant rock collection) in terms both of their aesthetic conditions and their summoning of pareidolic readings. Describing his “mysticism of matter,” the novelist writes: “I gradually gave up regarding man as external to nature, its end,” said Caillois. Far from disparaging what is human, as has been alleged, he found it all along

a scale ranging from molecules to the stars. Because he claimed to observe the presence throughout the universe of a sensibility and a consciousness both analogous to our own, he has been accused of anthropomorphism. But Caillois himself has argued passionately that on the contrary he advocated an inverted anthropomorphism in which man, instead of attributing his own emotions, sometimes condescendingly, to all other living beings, shares humbly, yet perhaps also with pride, in everything contained or innate in all three realms, animal, vegetable, and mineral.” It’s an assessment that would seem to conjure in equal parts Bergsonian *élan vital* and the more contemporary object-oriented ontological investigations of speculative realist philosophers such as Graham Harman and Quentin Meillassoux. Yourcenar, introduction in Roger Caillois, *The Writing of Stones*, trans. Barbara Bray (Charlottesville: University Press of Virginia, 1985), xi–xii.



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*they decipher latent complicities and reveal neglected correlations. They wish for and seek to further a form of knowledge that would first involve the workings of a bold imagination and be followed, then, by strict controls, all the more necessary insofar as such audacity tries to establish ever riskier transversal paths. Such a network of shortcuts seems ever more indispensable today among the many, isolated outposts spread out along the periphery, without internal lines of communication—which is the site of fruitful research.*⁸

Bachelard, in his introduction to *The New Scientific Spirit*, observed that “the phenomenology of science divides, according to one set of epistemological polarities, into two realms, that of the picturesque and that of the comprehensible,” a related distinction that Zhao himself seemed to address in a wide-ranging 2022 interview with the late Singaporean curator Tan Boon Hui.⁹ Tan asked Zhao about the importance of the written word, and specifically his mobilization of scientific language, in his project:

TAN *I realize that the text is very important [in your practice], and it always has a particular kind of tone. The words you use, the authority of scientific writing and scientific research [...] Sometimes the text is not there to explain the imagery. The text is like an artistic production in itself. So it's interesting to hear you say that actually in terms of process, the imagery [often comes] last.*

ZHAO *For me a lot of science articles, actually they are quite bizarre, what scientists have discovered. And the images make it more absurd. I like to play with that relationship in the work. The text and the image. The tone of the language of science is very objective [...]*

TAN *Yet it's not.*

ZHAO *Yes.*

TAN *A lot of it is actually very emotional. What's fascinating is that you seem to seize upon [the fact that] most of us who are not specialists in science ascribe a certain kind of believability to scientific writing. Because this type of writing is written to actually suppress a lot of emotion; because you must be objective.*

8 Roger Caillois, “A New Plea for Diagonal Science,” in *The Edge of Surrealism*, 347. For the quote “A form of the Marvellous...” see Caillois, “Letter to André Breton,” 85.

9 Gaston Bachelard. *The New Scientific Spirit*, trans. Arthur Goldhammer (Boston: Beacon Press, 1984), 4.

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ZHAO *It's only recently that I realized that maybe objectivity, like as you said that science comes with, doesn't actually bring us closer or make our connections with nature more obvious. In fact, objectivity gives us a good distance. It makes us, like: now we understand, we can dissect you [...]*

TAN *I mean, that's science right? You must taxonomize and put things into compartments.*

ZHAO *The strange thing is when you fully understand something, it doesn't actually mean that you will like or appreciate it more. That's the thing about Western science and objectivity: it lets you have less emotional connection, because when you understand [a thing], it can be controlled and conquered.¹⁰*

Zhao has been focusing his artistic attention on the secondary forests of Singapore for nearly a decade, and the recent pandemic lockdown only intensified his interest in these islands within his island, precincts where what might at first appear to little more than environmental marginalia actually reveal themselves on closer inspection to be thriving tandem worlds, not simply pendant to but rather deeply intertwined with the country's developed spaces. What I had initially encountered as a practice rooted first and foremost in a space of exotic, imaginal remoteness had circled back very close to home.

I remember checking the ICZ website some time ago—as I occasionally do to catch up on what Robert is working on—and seeing the documentation for a 2021 project called *Trying to Remember a Tree, V. (Watching a Tree Disappear)*. The fifth iteration of a series of so-named projects Zhao had begun a few years earlier, the work's page on the ICZ site contained among other things a YouTube video that begins silently on a black screen with the caption “A fallen tree, live” in the upper left hand corner. Twenty or so seconds in, the sounds of a nighttime forest begin to ring and up comes a video image of two small lizards skittering across the trunk of an enormous downed tree, an *Albizia* that fell after a storm in 2018.

The *Albizia* (*Paraserianthes falcataria*) was introduced to Singapore in the early 1870s for its ability to grow quickly—it can

10 See “State of the Arts—SAW 2022—Robert Zhao and Tan Boon Hui,” [youtube.com/watch?v=jnDv2YfTBw](https://www.youtube.com/watch?v=jnDv2YfTBw). This portion of the conversation, which has here been modified in transcription for clarity, occurs between 9:15 and 11:20 in the video.

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add as many as five meters a year—and quickly became one of the country's most ubiquitous trees, to the point where it is now considered an invasive species. The flipside of its rapid flourishing is that its branches are fragile and its roots shallow, often causing the trees to topple and shatter as this one did. For the project, Zhao had rigged up a camera to monitor the fallen tree, one that was able to record movement in and about the trunk as video clips, and arranged to have these videos broadcast live via Twitch to an exhibition site.

Like the iconic subject of Warhol's *Empire* horizontalized, the Albizia became in Zhao's work the silent unmoving subject of spectatorial inquiry, one devoted to the Cageian project of seeing "time go by."¹¹ (Bruce Nauman's nighttime infrared film of his "empty" workspace, *Mapping the Studio I—Fat Chance John Cage*, 2001, is another touchstone for this sort of approach, which embraces the stochastic potential in superficial monotony of the sort famously explored by its titular subject.) Going through the rich collection of recent ICZ projects, it became clear that the strategy employed in *Trying to Remember a Tree, V*—a kind of personless watchfulness that partakes of an almost Buddhist relationship between the individual and the world—had by then been in development across a number of recent works.¹²

Take a pair of projects entitled *Evidence of Things Not Seen I* and *II*, for example. In the first, from 2019, Zhao installed 20 remote sensing cameras on a 180-hectare track of land in the Shunde district of the Chinese megacity of Guangzhou. As the artist relates, a man named Xian Quanhui, who owned a construction business, had originally leased the land to harvest bamboo for creating scaffolding. But when he discovered that numerous migratory birds were building their homes amid the forest, he stopped taking the bamboo and instead began the process turning the area into a sanctuary and place for observation, going so far as to build a moat around it to provide a barrier against the surrounding urban fabric. Zhao's cameras were a kind of extension of Xian's gesture, opening up this improbable natural space within one of the world's largest cities to a larger audience.

The second *Evidence* project, from 2020, concerned itself with a Paulownia tree growing inside an abandoned home in the city of Busan, South Korea. Like the Albizia, the Paulownia is an incredibly

11 Andy Warhol quoted in Karen Rosenberg, "A Controversy over *Empire*," *New York*, 21 May 2005, nymag.com/nymetro/arts/art/10422. Warhol's 485-minute film consists of one single view of the Empire State Building shot overnight from the 41st Floor of New York City's Time-Life Building on 24–25 July 1964.

12 "Watchfulness is the path of immortality; unwatchfulness is the path of death. Those who are watchful never die: those who do not watch are already as dead." See *The Dhammapada*, trans. Juan Mascaró (London: Penguin Books, 1973), 38.

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fast-growing species that thrives in disturbed environments, and as with the star of *Trying to Remember a Tree, V*, it become the subject of Zhao's remote spectatorship, with strikingly similar results. "Based on initial observations and conservations, we know that someone once tried to kill the tree but failed," he wrote of the project. "The tree persists. The tree also houses thousands of insects. Ants, beetles and moths. A single sparrow comes often in the afternoon to feed on the insects. It comes without fail, almost at 2pm every alternate day. [...] One of my abiding interests as an artist is in non-human actors in human environments, and the unseen relationships between the natural and the manmade. When the video plays out, a sense of 'tree' or 'plant' time is evoked, a deeper, slow one than time seen and felt on a human scale."¹³

Beginning in 2020, the conditions that accompanied the Covid-19 pandemic dramatically affected what, for our senses, constituted "human" time; it also influenced Zhao's work, refining both its conceptual and affectual shape. In the same 2022 interview with Tan, seated in front of two rows of small photographs set one above the other on his studio wall, Zhao described his feelings of being "trapped" during the public health lockdowns:

The only thing I could do was to start to observe my surroundings, and I found myself looking at a secondary forest outside my window—as well as an island when you exit the highway, just a little one. One day I saw a wild boar come into this little island—there was just this little tiny dot moving in the forest, but because it kept moving in circles I realized something was wrong, as usually I see them just running across and that's it. But this one kept repeating itself. And I realized it was actually building a nest at a specific spot in the forest that didn't have a canopy, so I could see it from my apartment twenty-six floors up. And I thought, "Wow this must be something quite rare." I watched her for a period of about ten days, and the babies arrived on the fifth or sixth day.

At the same time, just another hundred meters further from my window I saw they had started to clear the forest. Naturalists have said that human-wildlife conflict often happens when original habitat is being destroyed, cleared out for whatever reason—for new housing, or in this case for



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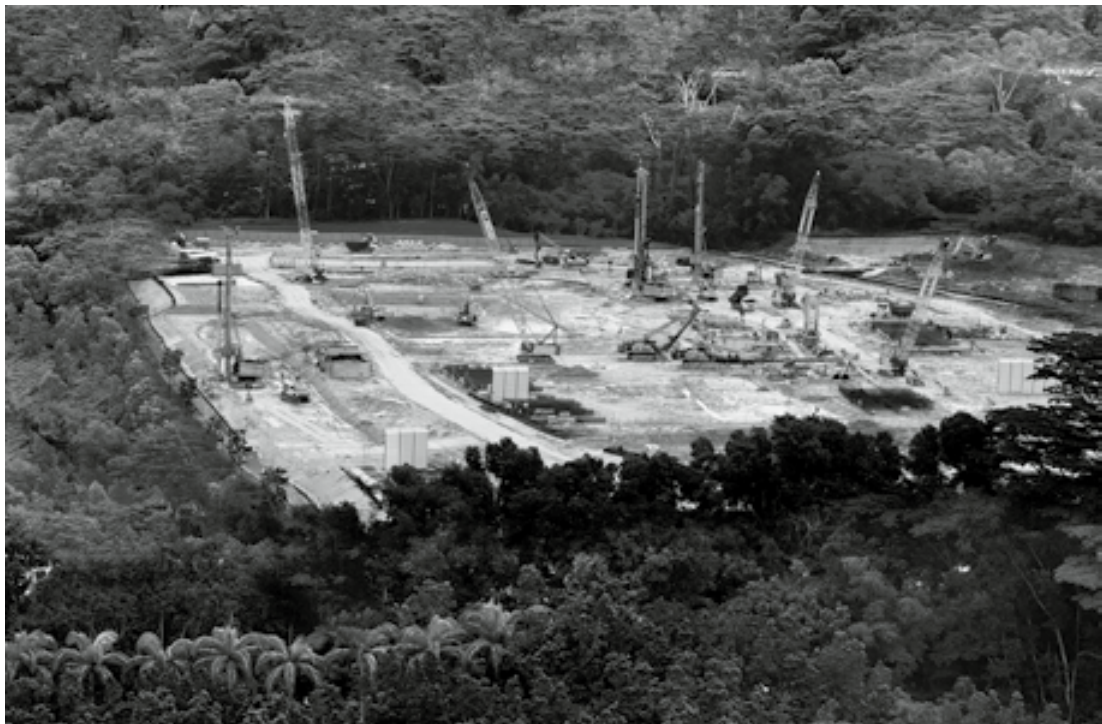
a new bus depot—and so there's nowhere for the animals to go and they venture to our housing areas. And I wondered if it was the clearing of this forest that caused the wild boar to come over to this place to give birth. It turned out that I could study the behavior of the boar at the same time I could see what was happening with the forest clearing, and I thought: Both are making worlds.¹⁴

This intersection of species-specific worldmaking—at once correlative and causal—represents a particularly apt instantiation of Zhao's overall project, and of the organizing principle that has governed the gathering of materials that constitute *Seeing Forest* in Venice. Across his practice there has always been a sense of the artist as an observer who recognizes that his presence in a natural place—both as an individual and as a stand-in for the human animal writ large—is by definition ambivalent: at once a visitation and an intrusion, a respectful attempt to understand and a kind of colonizing act. This is also of course by extension a tacit acknowledgment of the human position here deep in the Anthropocene, the epochal stage in which we find ourselves, increasingly aware that the costs of human activity—anthropogenic climate alterations, water scarcity, decrease in biodiversity, and the like—are sufficiently significant that they should be understood to represent an entirely new stage in the history of the planet.¹⁵ Yet, if Zhao clearly recognizes the stakes, he also embraces the complications and ambiguities, the unexpected enmities and alliances, that he finds amid the trees.

Zhao's selection for the Pavilion of Singapore was announced in June of 2023, and in August of that year he presented *Albizia: An Immersive Performance Installation* at the Esplanade, Singapore's national performing arts center. Returning to the ubiquitous tree as a symbol of the ecology of the country's secondary forests, *Albizia* wove together, as does *Seeing Forest*, video, photography, and sound, and served as a kind of testing ground for some of the ideas and tactics explored in the current work. An introductory text published in the show's brochure beautifully frames the complex of issues that guide the project:

¹⁵ There is of course a great deal of scientific debate around the use of the term, with some arguing that the current period should be understood to have begun with the rapid development of the human species beginning with the end of the last glacial period some 11,700 years ago, making it effectively coextensive with the Holocene. Advocates for the term say that its use has an important political function, insofar as it emphasizes that humanity is at an important inflection point in its development where the deleterious effects of its conduct on the global ecosystem might yet still be arrested. See for instance one debate in the pages of the journal of the Geological Society of America, available at rock.geosociety.org/gsatoday/archive/18/2/ and rock.geosociety.org/gsatoday/archive/22/7/article/i1052-5173-22-7-60.htm, respectively.

¹⁴ See "State of the Arts—SAW 2022—Robert Zhao and Tan Boon Hui," [youtube.com/watch?v=jnDv2YfFTBw](https://www.youtube.com/watch?v=jnDv2YfFTBw). This portion of the conversation, which has here been modified in transcription for clarity, occurs between 0:48 and 2:30 in the video.



17.12.2019

A plantation fails. A kampung is relocated. A colonial military barrack is demolished. The land is laid to rest.

The simpoh ayer plant is one of the earliest plants to move in to clothe the landscape. It flowers and fruits every day, trying its best to attract birds and insects to come. Slowly, other plants start growing over the rubble and disused paths. Rainwater cracks the concrete banks of an abandoned drain, widening it into a river. A forest grows over the land, providing food and shelter to various denizens and activities. An owl, a monitor lizard, an illegal migrant, a rave party.

A secondary forest is a forest that has emerged from a landscape that has been disturbed by human activity. They can be as old as a century or as young as 10 years old. The host of species that is found in the forest is a mix of native and alien species.

Albizia trees are often the tallest trees in a secondary forest, providing food and home for many species.

The secondary forest is often seen as a poor cousin of the primary forest, because the primary forest is an older more revered being than its unruly counterpart. A forest researcher suggested that secondary forests be viewed as a second chance, rather than a second-tier forest. They are also zones of hybridity, where traditional hierarchies and categories get blurred. They do not differentiate between native and alien species, legal or illegal inhabitants, human-made or natural.¹⁶

Hybridity is similarly a crucial linchpin of Zhao's current project. The forests he examines are by definition amalgams, sites of intersection—between different kinds of animals, including human ones (here represented by a pair of “explorers,” a man and a woman, both abstracted into figural infrared heat wells as they travel through the foliage among their nonhuman counterparts, their hands leaving ghostly infra-thin markers of their warmth wherever they meet a surface); between different kinds of objects, both natural and human-made; between the historical and contemporary identities of Singapore. The show's centerpiece, *Trash Stratum*, brings all of these things together in a multimedia installation involving seven video screens showing recordings

16 See esplanade.com/whats-on/festivals-and-series/series/the-studios/events/albizia-an-immersive-performance-installation#synopsis. A *kampung* is a traditional Malay village.



18.12.2019

of different animals—croaking frogs with their vocal sacs extended like bubble gum balloons; a large watchful monitor lizard; songbirds and birds of prey—who come to visit an abandoned garbage can that's become a central watering hole. (The human figures gather there as well, one plunging its glowing yellow-orange hands beneath the dark purple surface of the pool.) These screens are arranged around a kind of ad hoc cabinet of curiosities whose loose, deconstructed form suggests a certain way of systematic knowing beginning to melt and spread into new and more elastic modes of knowledge production and categorization, ones less interested in control and conquest than in generative juxtaposition.

The founding thinker of “deep ecology,” the Norwegian environmental philosopher Arne Ness, advocated across some eight decades of writing and thinking for a different way of thinking about both environmentalism and the biosphere. He said of his ecosophy that it rejected “the human-in-environment image in favor of *the relational, total-field image*: organisms as knots in the biospherical net or field of intrinsic relations. An intrinsic relation between two things *A* and *B*,” he wrote, “is such that the relation belongs to the definitions of basic constitutions of *A* and *B*, so that without the relation, *A* and *B* are no longer the same things.”¹⁷

A recognition of these intrinsic relations underpins all of Zhao's work, the idea that the traditional ideas of contradistinction, grounded not just in Enlightenment thought but also implicated in a range of pernicious notions associated with the propagation of a kind of social and intellectual colonialism, can and should be reevaluated. As Michel Foucault writes of Baudelaire's “Painter of Modern Life”:

Just when the whole world is falling asleep, he begins to work, and he transfigures that world. His transfiguration entails not an annulling of reality but a difficult interplay between the truth of what is real and the exercise of freedom; “natural” things become “more than natural,” “beautiful” things become “more than beautiful,” and individual objects appear “endowed with an impulsive life like the soul of [their] creator.” For the attitude of modernity, the high value of the present is indissociable from a desperate eagerness to imagine it, to imagine it otherwise than it is,

17 Arne Naess, “The Shallow and the Deep, Long-Range Ecology Movement: A Summary,” *Inquiry* 16 (1973), 95.



19.12.2019

*and to transform it not by destroying it but by grasping it in what it is.*¹⁸

This sort of modernity “is an exercise in which extreme attention to what is real is confronted with the practice of a liberty that simultaneously respects this reality and violates it.”¹⁹ It’s an “ontology of the present,” as Foucault elsewhere describes it, that lies at the heart of Zhao’s practice.²⁰ It’s what allows him—like his subjects, and more than any single parafictional/parafactual tactic—to be a maker of such extraordinary worlds.

18 Michel Foucault, “What is Enlightenment?” in Foucault, *Ethics*, ed. Paul Rabinow, trans. Robert Hurley et al. (New York: The New Press, 1997), 311.

19 Ibid.

20 Michel Foucault, “What is Revolution?” in Foucault, *The Politics of Truth*, ed. Sylvère Lotringer, trans. Lysa Hochroth and Catherine Porter (New York: Semiotext(e), 2007), 95.

SURPRISED BY BIRDS

*A conversation between
Robert Zhao Renhui & Yong Ding Li*

Yong Ding Li is a conservation biologist with a keen interest in the conservation of migratory species, wetlands, and tropical birds. He works widely across the region to develop and implement projects that protect ecosystems and species, including some of the world's most threatened wildlife, including the Spoon-billed Sandpiper. He has written extensively on biodiversity and species conservation in the Asia-Pacific, including guide books to the birds of Singapore, Malaysia, and China. He is the recipient of the Society of Conservation Biology's Early Career Conservationist Award of 2023. He has been friends with Robert Zhao Renhui since they were sixteen, and has acted as a frequent collaborator and consultant on Zhao's projects. What follows is a conversation in which they discuss their friendship, their mutual influence, and the significance of secondary forests in Singapore.

ROBERT ZHAO RENHUI Do you remember when we first met? It was 1999, the last day of secondary school. You were in the academically strongest class in our level and I was in the worst, so we never really spoke to each other. But that day, you were running an exhibition at the school library, called *Surprised by Birds*, featuring your drawings of birds and natural spaces in



Tengah Forest along Bukit Batok Road, Singapore, 2003

Singapore. I was especially fascinated by a little baby python that you had preserved in alcohol in a bottle. At that time, I also had preserved a python, a piece of roadkill, as well as other sorts of interesting animals I picked up. So, because of your preserved python, I spoke to you, and we became friends. When we were teenagers, we spent most of our time exploring various natural spaces. At that time, you were already a very

serious birdwatcher, and I liked taking photographs of Singapore landscapes that did not look like Singapore. I was also an avid collector and, like you, collected taxi-dermy specimens. I think we had conversations about the pressures of nature adapting to Singapore's urban landscapes. Most of the roadkill I found were near newly developed neighborhoods near secondary forests.



Tengah Forest along Bukit Batok Road, Singapore, 2003

We spent a lot of time exploring natural spaces that were on the edges of the city, and shared information with each other. I guess we mutually influenced the direction of each other's work a lot of times. I remember calling you in 2004 to tell you about a wild boar piglet roadkill I found on a road in Lim Chu Kang (it's still in a jar of alcohol in my old house). Six years later, you wrote a research paper about the population of wild boars increasing in Singapore, and advocated for further research and conservation management for the species. It was one of those early wildlife management papers as no one had written about them those days. I then referenced your research in *The Quieting and the Alarming* (2013), my body of work about our relationships with wild boars in Singapore.

After that, I always kept you in the loop about my projects. I think I am most inspired and intrigued by the relationship you had with forests. I remember that

you would simply lie down on the ground in the rain-forest and gaze straight up for hours into the canopy just to look at birds. It taught me about being attentive and quiet in observing nature, and I had gradually learnt how to look at it as well. It also helped that when I was exploring these spaces that I had a nature expert who knew how to identify species and knew interesting things about their natural history—I myself learnt a lot about identifying birds by their calls through you. Did collaborating with me on my art projects change your mind in any way?

YONG DING LI Let's see. Your work made me ponder and reconsider the importance of secondary forests for wildlife. In our early explorations, we did spend some time in many areas of secondary forests. In 1997, we went birdwatching in a patch of forest near Bukit Batok Road, now cleared, as well as a huge plot of reclaimed land in Changi that we used to call Tanah Merah. We took the bus from Tanah Merah MRT—simply because of its proximity to the ferry terminal. We didn't know much about ecology, but the main reason why we went there was to look at rare birds that we were hoping for and had been spotted by other birdwatchers.

Then I learned more about primary or old growth forests like Bukit Timah Nature Reserve, and the diversity of plant and animal species in these places. Old growth forests eventually became the focus of my nature walks, research, and documentation, and I must admit that I did not pay much attention to secondary woodlands afterwards.

Preconceived notions about what secondary woodlands (as straggly, ecologically boring, filled with common invasive species) got the better of me. Or maybe the obsession with primary forests just made me not think too much about secondary forests and woodlands. I've actually never been to Gillman forest until your art projects there. First impressions were: "Just another *Albizia* and *simpoh air* [tree shrub growing on swampy ground] woodland with a few Tembusu trees here and there." At that point, I didn't know much about the history that is buried under the forests here of course, nor the migratory birds that you have documented!

RZR Yes, I started exploring Gillman Forest in 2016 during my residency at NTU Centre of Contemporary Art. I asked you along to explore the space with you. Do you remember your first impressions of the forest?

You said rather dismissively that I wasn't going to find anything interesting. We were also attacked by a drongo that swooped down to peck our heads the moment we stepped in. We had to carry umbrellas to protect ourselves. For the rest of the year, whenever we entered the forest, this bird would swoop down to attack—then it stopped. I often wonder why it stopped. Romantically, I think it was because of a mindset shift in me that perhaps the bird sensed. It was only after one year that I came to respect the forest as a home, an independent entity, rather than a project space I could mine for art. I was more interested in going inside to understand and feel it than to make any specific artwork. That was why I set up all the camera traps in the forest, to know more about what goes on in there when people are not around.

Does Gillman feel any different from the rest of the forests you know, after so many years?

YDL Not at first glance. From afar, it looks like just another woodland with a few tall trees sticking out! Many woodlands look like that, Dover Forest, Lentor, Bukit Batok forest, and elsewhere.

RZR Ecologists like you tend to take a particular view on so-called invasive species like Albizias but I think they are beautiful trees! Because they are tall I always see them against the bare sky and their lacy silhouettes are very striking. Anyway, I remember you finally ventured into the Gillman forest alone after I told you about the rare birds that visited the drain.

YDL I was quite surprised by your camera trap images of the animals that visited the drain. There were migratory birds like a Von Schrenck's Bittern, the Black Bittern, and a regularly visiting Japanese Sparrowhawk; pittas, thrushes. I definitely did not expect to see these relatively rare birds in such a small patch of woodland just a few hundred meters from a busy road, and with lots of walkers.

Basically, Gillman forest is one stop of thousands of migratory birds on the East Asian–Australasian Flyway, which millions of birds use in their migration. The flyway stretches from Russia to across much of Southeast Asia. On the way, they stop by wetland habitats to rest and recharge. After numerous visits to Bidadari, another secondary forest, I'm beginning to believe that the smaller forests and woodlands in Singapore, especially the secondary forests, are conducive stops for migratory birds. Gillman easily hosts ten to twenty

migratory bird species, and there are probably others we have not seen. Gillman is also an oasis for adventive birds from faraway lands. So, Gillman is unique in that way. It is more hospitable than we thought. It has a mix of migratory species, foreign species that originally did not belong to Singapore ecosystems, but have established themselves here, and native species like tree shrews—again not something I expected.

RZR There is a sense of this ecological diversity that I am trying to capture in my work. I feel that secondary forests are resilient and adaptable spaces for wildlife in Singapore. They absorb elements from everywhere and some kind of quasi-natural equilibrium is achieved. They don't discriminate against who belongs and who doesn't, and many of its spots that are most conducive to wildlife—watering holes in the form of abandoned dustbins and broken cement drains—are actually remnants of human habitation and development...

YDL That's a good point. I have also come to realize something: in Singapore, forests can retain memories much more so than developed land. When apartments are built over a forest land as it has recently happened in Tengah, the forest is lost, most certainly irreversibly so. At the same time, the memories of the land and the structures that existed below are also lost forever. In Singapore, most secondary forests probably existed over land that was once used by people for something else, such as farms, plantations, and even military barracks. Singapore is an interesting case study. When you destroy a secondary forest today, you are no longer just destroying the nature that is above the ground. You may well also be erasing the history that is buried under it forever, and the soil. When you build a block of apartments over a forest, you have to dig deep to put in the foundations of those buildings. You need to remove lots of soil, which contains fragments of who and what once lived there. And once the buildings are built, you may never be able to access what lies under them unless you can remove those buildings one day and dig deep into the ground.

These little patches of secondary forests don't just preserve nature, rare species, and ecological processes, they also inadvertently preserve bits of history and memory that may have been from the last century. In Gillman forest, you found ceramics in the streams. In the soil, you found bits of bricks, glass, and other containers, which evidently came from the Japanese occupation years.

Essentially, nature's takeover is comparably "gentle" on history. Letting nature run over a landscape, as it has happened here and other parts of the world, actually allows the history of a place to be preserved. I fear the day that Gillman is built over, because once that is done, the landscape here will be changed forever and what remains of the memory of this place will just be documents and a few photographs in the archives.



Tengah Forest along Bukit Batok Road, Singapore, 2003

RZR That's an amazing observation. It's something that I've tried to capture in my video work, the feeling of sedimentation and coexistence of different timescales and histories. In the secondary forest time is somewhat thicker than in other places—there are layers upon layers of stories of animals, plants, humans, and being quiet and attentive might reveal something of these hidden worlds. The world is much richer and more mysterious than we might think.

YDL I feel that there are quite a few things that art can do that conventional science has repressed. Art can provide a platform to tell stories that make us reflect on our values and relationships with nature.

RZR Some people like to ask about the conservation angle to my work. Actually, I don't necessarily have a specific conservation angle. My angle is that we should just respect the variety and diversity of things and places in the world and tread very gently in our actions.

*List of species observed in a one-hectare secondary forest in
Gillman, Singapore from a single random spot measuring 1×1 meter
behind an old colonial building, between 2016 and 2022:*

- | | | |
|---------------------------------------|-----------------------------------|----------------------------|
| — Smooth Coated Otter | — White Throated Kingfisher | — Rufous Woodpecker |
| — Crab Eating Macaque | — Orange-headed Thrush | — Tit Babbler |
| — Common Tree Shrew | — Black Throated Laughing Thrush | — Banded Woodpecker |
| — Plantain Squirrel | — Red-billed Blue Magpie | — Olive-Backed Sunbird |
| — Reticulated Python | — Japanese Sparrow Hawk | — Blue-winged pitta |
| — Cobra | — Changeable Hawk Eagle | — Malaysian pied fantail |
| — Painted Bronzeback | — Oriental Honey Buzzard | — Racket-tailed Drongo |
| — Oriental Whip Snake | — Brahminy Kite | — Pink-necked Green-Pigeon |
| — Water Monitor | — White Belly Fish Eagle | — Pin-striped Tit-Babbler |
| — Land Monitor | — Brown-chested Jungle Flycatcher | — Asian Glossy Starling |
| — Common Sun Skink | — White Rump Sharma | — Javan Myna |
| — Buffy Fish Owl | — Siberian Blue Robin | — Red Jungle Fowl |
| — Collared Scops Owl | — Greater Coucal | — Common Emerald Dove |
| — Black Bittern | — Great Whiskered Bulbul | — Oriental Magpie Robin |
| — Von Schrenk Bittern | — Large-tailed Nightjar | — Tiger Shrike |
| — Malayan Night Heron | — Straw Headed Bulbul | — Chestnut-winged Cuckoo |
| — Black-crowned Night Heron | — Asian Koel | — Common Flameback |
| — Red-legged Crake (Breeding) | — Yellow Rumped Flycatcher | — Crimson Sunbird |
| — White Breasted Water Hen (Breeding) | — Crow-billed Drongo | — Asian Brown Flycatcher |
| — Common Kingfisher | — Tiger Shrike | — Mugimaki flycatcher |
| — Collared Kingfisher | | — Brown Shrike |
| | | — Crested Goshawk |

*List of birds observed from the exterior of a secondary forest (Gillman)
for an hour, starting from 7:45 am to 8:45 am on 13 November 2022
on the occasion of the Singapore Bird Race:*

- | | | |
|-----------------------------|--------------------------------|--------------------------------|
| — Spotted Dove | — Laced Woodpecker | — Olive-winged Bulbul |
| — Zebra Dove | — Tanimbar Corella | — Red-whiskered Bulbul |
| — Pink-necked Green-Pigeon | — Rose-ringed Parakeet | — Yellow-vented Bulbul |
| — Asian Koel | — Red-breasted Parakeet | — Arctic Warbler |
| — Plume-toed Swiftlet | — Long-tailed Parakeet | — Swinhoe's White-eye |
| — Swiftlet sp. | — Blue-crowned Hanging-Parrot | — Pin-striped Tit-Babbler |
| — Changeable Hawk-Eagle | — Ashy Minivet | — White-crested Laughingthrush |
| — Brahminy Kite | — Black-naped Oriole | — Asian Glossy Starling |
| — White-bellied Sea-Eagle | — Greater Racket-tailed Drongo | — Common Hill Myna |
| — White-throated Kingfisher | — Large-billed Crow | — Javan Myna |
| — Blue-tailed Bee-eater | — Common Tailorbird | — Scarlet-backed Flowerpecker |
| — Dollarbird | — Dark-necked Tailorbird | — Ornate Sunbird |
| — Lineated Barbet | — Pacific Swallow | — Crimson Sunbird |
| — Common Flameback | — Barn Swallow | — Cinnamon Bittern |

ROBERT ZHAO RENHUI

(b. 1983, Singapore) is an interdisciplinary artist who explores the complex and co-mingled relationships between nature and culture. Working in installation, photography, video, and sculpture, Zhao is interested in the multifarious beings and objects that constitute the living world, and whose experiences and knowledge enrich our collective existence.

MARCUS YEE

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coordinates BirdLife International's work on migratory birds and wetland conservation in the Asia-Pacific region. A lifelong bird-watcher, his interest in biodiversity and its conservation was piqued during a year-long field project in the rainforests of Tasik Kenyir, Malaysia project during his university days. After a stint as a high school teacher in Singapore, Yong went on to pursue a doctorate in conservation biology at the Australian National University in Canberra. He has a particular interest in the conservation of migratory species and has worked with the Convention on Migratory Species, the Asian Development Bank, Arctic Council and the East Asian-Australasian Flyway Partnership to develop new projects to protect migratory species, alongside collaborations with researchers across the region to study the ecology and migration of threatened species, such as the Nordmann's Greenshank and Masked Finfoot.

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co-founded and directs the publishing atelier K. Verlag in Berlin. Through a versatile research-led and collaborative practice, she interrogates forms of cultural retention and creates interventions, which aim to contribute to the strengthening of a more vibrant, feminist, and ecologically-responsible world. In addition to her work with K., together with her partner Etienne Turpin she initiated and organized the international exhibition-led research project *Reassembling the Natural* (2013–23) as well as well as edited the *intercalations: paginated exhibition* series (2015–23). She received her PhD from the Centre for Research Architecture, Goldsmiths, University of London and, since 2023, holds a Verwaltungsprofessur in Transformation Design at the Institute for Design Research, Academy of Visual Arts, Braunschweig, Germany. That same year, K. Verlag was again a recipient of the prestigious Deutscher Verlagspreis, which is awarded annually to honor outstanding small and independent publishers. Springer has known and collaborated with Robert Zhao on different occasions since 2014.

JEFFREY KASTNER

is a New York-based writer and the senior editor of *Cabinet* magazine. His books include *Land and Environmental Art* (Phaidon), *Nature* (MIT/Whitechapel), and (with Claire Lehmann) *Artists Who Make Books* (Phaidon/PPP). His writing has appeared in publications including *Artforum*, the *Economist*, *frieze*, the *New Republic*, and the *New York Times*, and in books and exhibition catalogues on artists such as David Altmejd, Ragnar Kjartansson, Tomas Saraceno, and Sarah Sze.

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Robert Zhao Renhui
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Singapore Pavilion at the 60th International Art Exhibition
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