

The background of the book cover is a photograph of a conservatory. Large glass panes are separated by dark grey frames. Through the glass, various tropical plants are visible, including ferns and a large, textured, brown plant trunk in the lower left. The lighting is bright, suggesting natural light from outside.

CULTIVATING COLONIALISM

The musealisation of natural objects in the Hortus
Botanicus, Amsterdam, and the Royal Botanic
Gardens, Kew

EVIE EVANS

CULTIVATING COLONIALISM:

The musealisation of natural objects in the Hortus Botanicus, Amsterdam, and the Royal Botanic Gardens, Kew.

A thesis presented by

Evie Evans

11200642

Submitted to the Faculty of Humanities

University of Amsterdam

In Fulfilment of the Requirements for the degree

Master of the Arts

Heritage Studies: Museum Studies

January 2021

Thesis Supervisor: Ihab Saloul

Second Reader: Dos Elshout

TABLE OF CONTENTS

ABSTRACT	4
ACKNOWLEDGEMENTS	5
INTRODUCTION	6
<i>Preface</i>	6
<i>The Colonial History of Botanical Gardens</i>	7
<i>Botanical Gardens as Heterotopias</i>	9
<i>Musealisation and Narratology</i>	11
<i>Decolonial Methodology</i>	13
<i>Hortus Botanicus, Amsterdam and Royal Botanic Gardens, Kew</i>	14
CHAPTER ONE	19
"To name and know": the scientific and colonial musealisation of plants	19
<i>The botanical garden as imperial debris</i>	20
<i>The Three-Climate Greenhouse as imperial debris</i>	23
<i>Scientific narratives in the Three-Climate Greenhouse</i>	25
<i>The Temperate House as imperial debris</i>	32
<i>Scientific Knowledge in The Temperate House</i>	33
CHAPTER TWO	39
"The ever present": the modern/colonial representation of time in botanical garden greenhouses	39
<i>Representations of time and imperial debris</i>	40
<i>Representations of time: the ever-present</i>	45
<i>Representations of time: the accumulation of time</i>	46
<i>Living fossils, stuck in time: the representation of cycads</i>	49
<i>"Flux": a slippage into the past, present and future of botanical gardens</i>	53
CONCLUSION:	58
The colonial future of botanical gardens	58
APPENDIX	62
WORKS CITED	63
IMAGES CITED	70

ABSTRACT

This Master's thesis analyses botanical gardens from a museological perspective, as subject to similar processes of collection and exhibition, and decolonial critique, as museums. The process of musealisation - the collection of an object and its insertion into an exhibition narrative - occurs differently for plants as living objects. By considering both plants and the greenhouses of European botanical gardens as forms of "imperial debris", this thesis explores how the colonial history of botanical gardens inform their contemporary methods of display and the narratives which are communicated to visitors. As historical gardens in the capital cities of the Netherlands and London respectively, the Hortus Botanicus, Amsterdam, and Royal Botanic Gardens, Kew provide a lens in which to investigate how the trade and exploitation of botanical networks are made visible through the representation of plants. Additionally, as a type of "heterotopia" inspired by Foucault, botanical gardens are unique spaces that produce and legitimise knowledge as well as representing an accumulation, or blurring of time. Analysing the combination of showing and telling methods within glasshouses as part of these two themes of scientific knowledge and the representation of time, this thesis reveals how plants act as forms of both natural and cultural heritage and a new way of representing colonial history.

Key words: botanical gardens, musealisation, heterotopia, imperial debris, narrative, decolonial, modernity, temporality, time, natural and cultural heritage

ACKNOWLEDGEMENTS

I would first like to thank my supervisor Ihab Saloul for his support and advice throughout the writing of my thesis. It seems like a long time since our first bachelor's class together. I have greatly appreciated your guidance towards this Master's and throughout it.

I would like to give special thanks to my friends who were supportive in both academic encouragement and welcome distractions. Thank you to my new found friends who enabled the inspiration for this work and provided listening ears this past year. Thank you to my steadfast best friends for keeping me sane. Whether you realised or not, you have given me constant love, comfort and reassurance throughout this process.

As always, I would like to acknowledge my family for the support they have provided in all its forms. Thank you for not only making my Master's degree a reality but being enthusiastic about all its elements. Without you this thesis would not have been possible.

INTRODUCTION

Preface

"Museums and botanical gardens show us ways of organising, categorising and defining an unknown world from colonial times to the present."

Framer Framed, *On the Nature of Botanical Gardens*, Exhibition Catalogue, 2020, p. 2.

"Garden history can and must tell us something that other histories don't."

John Dixon Hunt, "Approaches (New and Old) to Garden History" from *Perspectives on Garden Histories*, 1999, Dunbarton Oaks, p. 90.

"...gardens are the loci of doubt, scepticism, ambiguity, even chaos...the garden [modern artists] insist, is nothing like what the gardening magazines tell us; beautiful untouched swathes of natural scenery are still the site of horrendous human violence."

John Dixon Hunt "Introduction", *A Cultural History of Gardens in the Modern Age*, Bloomsbury, 2016, p.7.

This thesis can be traced back to the Framer Framed contemporary art exhibition, *On the Nature of Botanical Gardens* in 2020, curated by Sadiah Boonstra. Whilst working as a Production & Public Program Intern at Framer Framed, a non-profit art gallery in Amsterdam, I organised an interventionist tour of the botanical gardens, de Hortus Botanicus, to connect the current exhibition to the local city context. *On the Nature of Botanical Gardens* presented contemporary art from nine Indonesian artists which addressed the colonial history of nature between Indonesia and the Netherlands in order to decolonise botanical knowledge (Boonstra, Framer Framed). When trying to organise this tour, the Education Department at de Hortus informed me that the botanical gardens were undergoing the registration process in order to be recognised by the International Council of Museums (ICOM). This required them to follow specific ethical codes in relation to living collections, as well as considering diversity in their collections. The botanical gardens in Amsterdam and Leiden already permit entry with an ICOM Membership Card, implying their similar status to a museum. Before learning this I had never considered plants as part of a collection, at least not in the same way as museum collections. However, much of the thought and processes of collecting, and presenting, must be the same; there

are always methods of curation and organisation to form a narrative for the visitor. I began to wonder: How can I approach an analysis of a botanical garden the same way I would for a museum?

More recently, too, museums have come under heavy criticism for not addressing their colonial origins, and their failure to represent a diverse audience - yet botanical gardens do not often come under the same scrutiny. In June 2020, after this idea had taken root for me, the Professor of Biodiversity and Director of Science at the Royal Botanic Gardens, Kew, published an article entitled "It's time to decolonise botanical collections". Professor Antonelli acknowledged that much of Kew's legacy is rooted in nineteenth century British imperialism and called for a re-examination of their "scientific and curatorial practices". Much has been said for the colonial history of botany, especially at Kew¹, but Antonelli also made commitments concerning their present and future practice under the shadow of Kew's colonial past. For me, this declaration highlighted that closer attention should be paid to botanical collections, and how they are treated rather than a simple comparison between museums and gardens as public institutions. Therefore, it became a question of how to approach botanical garden from a museological perspective, which is an important distinction. My main focus is on the process of musealisation and what modes of display are used for these plants to reveal a certain narrative about their own colonial history. Throughout this thesis, my own understanding for botanical gardens has been completely altered. That is not to say I cannot enjoy their experience anymore. In fact I have a greater appreciation for the immense amount of history and heritage contained in a bounded space, as well as the work and care that goes into maintaining a garden and its collection. The aim of my thesis is to offer a new perspective of botanical gardens and the stories they are trying to tell us.

The Colonial History of Botanical Gardens

Gardens are not only full of contested meanings, but maintain a continuum between the past and present, influenced by their particular histories even today. Notions of human violence in gardens referenced by John Dixon Hunt, quoted at the start of the introduction, could refer to practices of colonialism embedded in the landscape such as aggressive cultivation and the ownership of land. Botanical gardens encompass the illusory relationship between man and nature; the contradiction of the garden as romantic, as a site of leisure for the public, and the truly contested nature of gardens which must constantly be revisited. I consider botanical gardens as living museums only in the sense of the comparisons Timothy Hohn makes (2004). Like museums, botanical gardens are

¹ Lucile Brockway wrote about the role of British botanical gardens in science colonial expansion as early as 1979.

defined by their collections and role as public institutions (5-6). In *Gardens of Empire* McCracken also makes this connection of the Victorian botanical garden which “was meant to be a museum of living and dried specimens from the plant kingdom”(ix). The botanical collection consists of “physical objects and conceptual entities” such as curatorial practices and educational programs (Hohn 6), although presenting a living collection changes how we understand these objects and practices. Historically, modern botanical gardens have a similar origin story to museums related to Enlightenment ideals of classification (that can be linked to scientific justifications for racial categorisation) and colonial expansion. Although they were additionally connected to a search for the Garden of Eden and acquiring knowledge about nature in order to be closer to God (Prest, Grove). Botanical research was, in part, a result of orientalism and the Western imagination of an idealised landscape (Said). As historical institutions, however, botanical gardens are entangled with the history of colonialism, its violent epistemologies, economies and systems of oppression. Lucile Brockway argues that botanical gardens were scientific institutions which played a major role in the expansion of empire by generating and disseminating knowledge, particularly for crops with economic value (450). Modern European gardens have their roots in the hortus medicus, medicinal gardens often associated with institutions of higher learning, and set the trend for acquiring knowledge for plants that could be useful or profitable. From the Middle Ages onwards, botany expanded beyond medicinal and nutritional research into a systematic study and detailed investigation of plants (van Andel, Morton). In the Netherlands, the botanical garden in the University of Leiden in particular, became an intellectual centre for European botany by the 1730s (Johnson 103, Morton 237-260). However, it was European expansion and exploration thereafter which rapidly advanced botanical knowledge and the transport and cultivation of plants across the globe. These voyages, which began in the fifteenth and sixteenth century, introduced in 100 years more than twenty times as many plants in Europe than in the 2000 years prior (Morton 118) which also aided in the transfer of knowledge (Grove 7). It is important to recognise this relationship between plants, knowledge and power.

For both Morton and Schiebinger, modern botany is marked both by the rise of systems of classification, such as taxonomy and nomenclature, and the economic motivation to cultivate plants for colonies and plantations (Schiebinger 5). Naming and classifying plants created a sense of “permanent knowledge”, enabling plant collectors and botanists to act as a new “Adam”, discovering nature and making it so. According to MacLeod, too, “science accompanied transoceanic colonisation...” (2), and was a distinctly a political and economic endeavour (Schiebinger and Swan). These practices were intertwined with botanical gardens as institutions which acted “in service to the empire” (McCracken 83). European botanical gardens became unique sites which

consolidated and organised this knowledge, aided by their contact with gardens established in colonies as well. Baber argues that “botanic gardens constituted one of the key sites – physical, intellectual, social and cultural – in which colonial power was literally rooted” (676) which is why it is crucial to recognise the discourse of scientific knowledge in botanical gardens today in Chapter One. In the United Kingdom, the context in which Baber writes, the history of botanical science is inseparable from imperial and national institutions of botanical gardens, and most notably the role played by London’s Royal Botanic Gardens. As an aside, the change from botanical gardens as solely sites of research into places of leisure is a reasonably recent shift, dating back to the last 200 years (Baber 675), yet that did not deny its proximity to imperialism. Whilst many scholars highlight the relationship between colonial botany, imperialism and commercial interests, there appears to be a striking gap between the colonial history of botanical gardens and their present day practice. I am interested in the ways these relations - colonial botany and the botanical garden as an institution and type of museum - are reflected in the choice of display and representation of their collection which will be aided through the concept of “heterotopias”.

Botanical Gardens as Heterotopias

From a museological perspective, I consider botanical gardens as institutions that work as a kind of living museum. Botanical Gardens, most notably in Western Europe, are often emphasised as being historic institutions as well as places of scientific research and education. Rethinking plants as ‘living objects’ invites us to reconsider gardens as types of exhibition spaces and botanical collections that are subject to the same concerns and practices of museums (Hohn). This comparison between the space of the museum and garden was emphasised to me through Michel Foucault’s concept of the “heterotopia”. Foucault does not offer a general definition of heterotopias but rather six principles and specific examples of spaces in society that are heterotopias. They are all each context-dependent (375). For Foucault, one of the main characteristics of heterotopias is that they are “capable of juxtaposing in a single real space several spaces, several sites that are in themselves incompatible” (376). Foucault explicitly mentions that “...perhaps the oldest example of these heterotopias taking the form of contradictory sites is the garden”, which is meant to represent a “small parcel of the world” (376). However, one of the most important principles of heterotopias for my work is Foucault’s fourth understanding of the heterotopia being “linked to slices in time” (377). In heterotopias, like museums and libraries, time accumulates indefinitely, “constituting a place of all times that is itself outside of time (377) under the guise of the collecting of objects and knowledge unique to nineteenth century Western culture. For the fifth principle, heterotopias “presuppose a system of opening and closing that both isolates them and makes them penetrable”, and

generally not freely accessible public places (378). To enter, visitors must make certain “gestures”, according to Foucault. The potentially exclusionary character of museums and botanical gardens is suggestive of Barbara Kirschenblatt-Gimblett’s conclusion that the museum visitor engages in a kind of performance or cultural practice due to the immersive nature of the space. In fact, even a private garden itself is an open natural space that is closed to others. In gardens, as I expand on in Chapter One, its open and closed nature may emerge from the parallel wide open garden spaces to the bounded sites of greenhouses and glasshouses, gardens within the botanical garden.

The concept of a heterotopia is a productive lens which invites us to consider the botanical garden as a specific type of space, with particular orderings of time, in relation to other spaces. It is a socially and historically constituted site that, at the heart of their purpose and processes, are comparable to museums. Furthermore, the botanical garden as a heterotopia highlights the often contradictory nature of gardens whose representations may, at first, seem incompatible. Foucault’s ambiguity and the adaptability of his ideas works favourably to the integration of botanical gardens into an interdisciplinary museum studies approach by rethinking the relationship between power, knowledge and space in the botanical garden. However, the malleability of the concept of “heterotopias” also runs the risk of cherry picking to emphasise an argument which is why I turn to Tony Bennett for a more contemporary interpretation of Foucault’s work, especially in relation to museums as heterotopias. Bennett begins *The Birth of the Museum: history, theory, politics* with Foucault’s claim of the museum as a heterotopia, and traces the emergence of this unique, other space in the nineteenth century. Whilst Bennett is more concerned with Foucault’s ideas of surveillance within the “exhibitionary complex”, he highlights that, as a heterotopic site, the museum began as a space of representation, accumulating and “diffusing...conceptions of time” (4). He argues:

“For the process of fashioning a new space of representation for the modern public museum was, at the same time, one of constructing and defending that space of representation as a rational and scientific one...” (1).

Bennett’s argument is useful to bring to the analysis of a botanical garden as a heterotopia, because of its history as a public institution. As a social construction, the museum - and by virtue the botanical garden - is legitimised *with and for* the meaning it produces. The botanical garden also functions as a scientific institution, a theme of Chapter One. What is important, too, is not necessarily the handling of their collection but its exhibition and how it is represented to a visitor. As mentioned before, for Bennett, the museum presents a distinctive conception of time, which he suggested is connected to the modern episteme

of classification, again inspired by Foucault. Taxonomy inserted people, animals and objects “within a flow of time” (24) and contributed to the emergence of new knowledges such as biology and botany. He raises this point because the history of classification - which is also emphasised for botany in Chapter One - is inseparable from the birth of the museum. Furthermore, the notion of time in the heterotopia is exciting to explore in the garden, and something we will return to in Chapter Two, as the representation of time through the objects on display changes our interpretation of their narrative and the meaning of the institution itself. How, then, are narratives produced and recognised in the botanical garden? I argue that the comparison between botanical gardens and museums should not be completely centred around their role as public institutions but instead is due to the processes at work within them; a museological lens for botanical gardens. As Hohn argued, it is the collection of the garden and processes involved with managing, categorising, presenting, and interpreting its objects within a space of representation which is what informs their relation to museums.

Musealisation and Narratology

Just like museum objects, plants are subject to musealisation (Maranda); inserted into the narrative of a collection or exhibition, their origins obscured, and their meaning completely altered. Mieke Bal highlights that collected objects “are inserted into the narrative perspective when their status is turned from objective to semiotic...” and stripped of their inherent value to become representative (“Telling Objects” 97). However, this conceptual framework also serves as a reminder that because plants are alive this process is not exactly the same as museum objects, which fundamentally changes how they are presented and perceived. Whilst botanical gardens could be simply compared to museums, my work focuses on the processes of musealisation of natural objects in botanical gardens, which differs from other collections and narratives. By “musealisation”, a central theme in this work, I refer to the processes by which an object is acquired, and is transformed into a source of knowledge and given representational value (Maranda). These include processes of collecting, handling, classifying, exhibiting and more. Lynn Maranda claims that the museum is only one manifestation of musealisation, and as a concept it is valuable for botanical gardens, too. As soon as a plant is thought to be taken from its original context with the intention of its cultivation or classification in the botanical garden its meaning has changed. This meaning is changed again through its presentation and curation in European botanical gardens. Plants as living objects become multifaceted with multiple meanings “so long as the object exists, the musealisation processes are ongoing” (256), with no fixed beginning or end. Having said that, Maranda goes on to claim that musealisation is a universal human desire to give object permanence and transfigure them into “static spheres of scientific knowledge” (258). I disagree with such an essentialising

statement though Maranda's claim unknowingly connects musealisation with the modern scientific revolution, and consequently Western colonial discourses of science. Significantly for Mieke Bal, and I would argue for musealisation, the transformation of an object is the new meaning assigned to it through syntagmatic relations with other objects, in a collection or narrative of an exhibition. The botanical garden becomes a unique space due to the original desire to collect exotic plants and represent the world, and as John Prest argues botanic gardens "are the most perfect examples of the attempt to collect the whole world in a chamber" (47). Prest highlights that sixteenth and seventeenth century gardens were organised into sections to represent continents, or to re-create an Edenic paradise (6-9), which calls to attention the representative nature of gardens. Gardens were "metaphors of the mind" (Grove 14) and are, by themselves, "at the same time presentation and representation" (Jakob 161). Therefore, the forms of classification and representation at work in botanical gardens contribute to our contemporary understanding of - and relationship to - nature. A museological approach, informed by the processes at work within botanical gardens, requires an analysis of the display, presentation, and therefore representation, of plants as a type of exhibition.

Combined with the idea of the garden as a heterotopia, the garden represents a fascinating space of relations – between the plants themselves and all the space that remains – as well as between living objects and the meaning-making capacity they can have. Drawing on James Clifford's postcolonial approach and the Marxian notion of fetishism, Bal argues that these processes are acts of violence when an object is inserted into a narrative as the act of collecting is a form of subordination or appropriation (1994). Botanical gardens, specifically as public institutions, create narratives as part of this presentation and representation within gardens. Environmental historian Richard Grove points out that, historically, "the garden thus rigidly defined modes of perceiving, assessing and classifying the world" (1994: 13), which is also a characterisation of exhibitions in the opinion of Stephanie Moser (2010). She argues that the detail of exhibition design is also a process of meaning-making, contributing to the creation of knowledge within museum exhibitions. Consequently, the way plants are collected, classified and therefore musealised gives them new meaning. Yet, then it remains to be explored how plants are subject to processes of musealisation in the botanical garden as living objects. I refer to the plants in botanical collections as "living objects" for several reasons. The first is to maintain the analytical connection of botanical gardens to museums and the consideration of the garden as a type of exhibition space. Conversely, this concept acts as a reminder that plants are also not the same as museum objects precisely because they are alive, fundamentally changing how they are presented and perceived. How, then, are plants as "important natural and cultural artefacts" (Schiebinger 3) treated within

displays? With these ideas in mind, I work from methodologies informed by Mieke Bal, mentioned previously, and cultural analysis. As a narratologist, Bal's work presents the possibility of analysing the narrative of exhibitions, reading them as a text. In *Telling, Showing, Showing Off*, cultural analyst Mieke Bal reads the museum as a text to explore how the narrative of an exhibition can unfold in space and time. She focuses on methods of museum display as its own kind of sign system – through showing and telling – and how the visitor is addressed through text and spatial representation to produce their knowledge and meaningful interpretations (1992). Grove, too, highlights the importance of recognising the garden as both a physical landscape and a metaphor or representation, as well as the garden as a collection or archive. Practices of 'showing and telling' in both the museum and the botanical garden communicate particular cultural meanings (Bennett 6). Analysing spaces in the botanical garden as a "physical and textual garden" (Grove 13) reveals how the musealisation of natural objects is a multilayered process, from their initial abstraction to their insertion into a narrative, and it is exactly this narrative in the contemporary botanical garden which is informed by the institutions particular colonial history.

Decolonial Methodology

With all these concepts as a foundation, one way to investigate the colonality of botanical gardens is with Ann Laura Stoler's notions of "imperial formations". Stoler uses this term rather than empire because colonial histories are still acting in the present in ongoing processes and imperial temporalities (56). Imperial formations "cling to people, places and things" ("Duress" 20). Stoler is another Foucauldian scholar who provides a perspective on colonial history which is often lacking in his own writings. Using Foucault's method of "genealogy", Stoler highlights how colonial histories remain present and inhabit language, concepts and social and political structures across a variety of countries and contexts. She invites us to question which of these processes are still at work, and the ways in which "colonial histories matter in the world today" ("Duress" 3). I believe this position encompasses a decolonial approach. A productive way to understand this methodology is through cultural theorists Walter Dignolo and Catherine Walsh's use of the compound expression "modernity/coloniality" because "coloniality is constitutive, not derivative, of modernity" (4). Walsh argues that the concept "coloniality" is shorthand for the complex structures and relation of a translated from sociologist Aníbal Quijano, or the "colonial matrix of power". As a historical process, the colonial matrix of power transformed lives through interstate relations such as political and economic power – similar to thinking through imperial formations – and the invention of the concept of nature, most relevant to this work (10, 198). This is why I disagree with Melanie Nakaue's conclusion of gardens as postmodern experiences (69). I am reluctant to even acquiesce that, within the present,

gardens are postcolonial heterotopic sites. Postcoloniality indicates a marker of time, past the explicit methods of colonial domination, yet still requires a recognition of colonial history. Just as Mieke Bal argues the museum is a “product of colonialism in a postcolonial era” (“Telling Showing” 558), botanical gardens are distinctly connected to colonial endeavours and emerged under the same logic and time period as modern thinking. Even in the description of modern botanical gardens, as we understand them today, we must also engage with a history of colonialism. For Mignolo and Walsh, decoloniality is also defined by relationality; the ways specific local histories “cross geopolitical locations and colonial differences, and contest totalising claims and political epistemic violence of modernity” (1) which has already underlined my brief historical background of botanical gardens. Moreover, this thinking and doing recognises that the representation of objects and plants produced by their musealisation, or perhaps their ontology, is shaped by an epistemology (196). The knowledge and meaning produced within and by the botanical garden is not, in fact, the totality of the world; it has presupposed a Eurocentric and Western point of view that can determine a visitor’s relationship with nature. Museums and botanical gardens represent colonial networks of trade and knowledge always in relation to other people and places. My aim with a decolonial approach is to think through the botanical garden as a site with a colonial narrative and undo the thought which creates such representations of systems of violence.²

Hortus Botanicus, Amsterdam and Royal Botanic Gardens, Kew

In order to analyse how the colonial science of the botanical garden influences its contemporary presentation and representation, it would be productive to consider two different gardens with a different colonial histories and how that may alter their interactions with it. I speculate that these differences changed the way plants were collected and transported although has this influenced the arrangement, presentation and representation of plants in the gardens today. In the Netherlands there is no main national garden in the same way as in Great Britain. Due to this, I will compare botanic gardens in the two capital cities of the UK and the Netherlands as main transport hubs, and Amsterdam is the local choice.³ The Hortus Botanicus Amsterdam, or more commonly stylised as “de hortus” was established in its current location around 1682 as a medicinal garden, training doctors and pharmacists, though it was previously established in 1638 at another site in the city (Abrahamse). During these first years in the Plantage district of Amsterdam, the collection

² Part of decolonial practice, as opposed to postcolonial theory, according to Rolando Vázquez, is undoing these modern Western constructions and violent claims. Rolando Vázquez, *Errant Journal Launch*, 12/09/2020, *Framer Framed*, Amsterdam.

³ Amsterdam and London were both also the few, and most productive, choices still accessible for me in 2020. See the Appendix for more information.

of the garden expanded rapidly and was distinctly situated in the city as an urban space of development (van Proosdij). In contrast to other botanical gardens in the Netherlands, the Hortus was unique as a non-university garden in comparison to the Hortus Botanicus Leiden, though they both obtained plants through VOC trading (Johnson 103). The Hortus initially collected exotic plants for commercial, scientific and leisure interests and their success in cultivation led to the gardens becoming an intermediary point in the 1700s for tropical crops such as coffee, cinnamon and nutmeg. In the nineteenth century, the Hortus became open to the public and from 1828-98 there was a great deal of construction, especially of greenhouses. During this period there were many publications and catalogues of the garden's collection and research (van Proosdij). Today, the Hortus Botanicus is focused mainly on educating the general public and maintaining their connection to the University of Amsterdam.

In contrast, the Royal Botanic Gardens in the United Kingdom (hereafter referred to as Kew Gardens) has a vast amount of documentation and is intertwined with Britain's colonial past. As UNESCO World Heritage Site, and still one of the forerunners in plant conservation and research, the royal garden at Kew was also intimately connected to the expansion of the vast British empire. In fact, Kew Gardens became an unofficial hub for the global exchange of plants and assisted the cultivation of many plantation crops throughout the empire (Brockway, Baber). These essential links "enabled the mobility of plants, people, power, profit and patronage that were the indispensable ingredients of the emergent science of botany" (Baber 668). Furthermore, this network is extremely important for thinking about how exotic plants travelled from far flung places for our viewing pleasure today, and the processes occurring behind the scenes of the garden. The Royal Botanic Gardens began as a private garden for the royal family in 1759 and received seeds and plants from collectors travelling in South Africa and Australia (Payne). In 1840, after the royal residences in the surrounding area were connected, Kew was transferred from the Crown to the government and opened to the public as a national institution. However, the garden remains closely linked to the royal family. For example, the Board of Trustees that oversee the gardens are still appointed by the Secretary of State and Her Majesty the Queen. In the nineteenth century the Palm House and later the Temperate House were built to house the growing collection of tropical plants – most of which are now rare or endangered (Royal Botanic Gardens, Kew). In fact, in 1898 the then Secretary of State for the Colonies, Joseph Chamberlain appealed to Parliament for the importance of Kew for the functioning of the colonies, and the role of Colonial Secretary had a botanical advisor until 1941 (The Temperate House at the Royal Botanic gardens, Kew Souvenir Guide). There are also two art galleries on site dedicated to historical and contemporary botanical art. Additionally, to limit the frame of this thesis and create a



Figure 1 (above). The Palm House at Royal Botanic Gardens, Kew. Illiff, 2009.

Figure 2 (below). The Temperate House at Kew Gardens, London. Evans, 2020.





Figure 3 (above) *The Three-Climate Greenhouse. Hortus Botanicus. 2019.* Figure 4 (below) *The Palm Greenhouse at the Hortus Botanicus, Amsterdam. van Amelsfort, 2019.*



focused close reading, I chose to explore the bounded space of the greenhouses in each botanical garden. This is partially because, as Johnson argues, the construction of glasshouses were fundamental to the development of botanical gardens as institutions and housed plants brought from colonies and across the world (105). They represent a balance between civil engineering, colonial relationships, plant agency and public expectation and experience. Originally developed at the height of colonial botany, greenhouses also emphasise a separate space, an exhibition space which also acts as a heterotopia which I expand on in the first chapter. In the case of Kew Gardens, for example, the Palm House (figure 1) and Temperate House (figure 2) are symbolic of the gardens, often being featured in promotional material as the image of the Royal Botanic Gardens, Kew; if you search botanical gardens online, the most common picture is often that of a glasshouse. Therefore, this thesis is concentrated on the Three-Climate Greenhouse (figure 3) and Palm Greenhouse (figure 4) in the Hortus Botanicus, and the Temperate House and Palm House of Kew Gardens.

Chapter One explores what kind of scientific narratives are present in the two botanical gardens of the Hortus and Kew, and how the musealisation of plants creates this knowledge which cannot be separated from the site's colonial history. Chapter Two follows on from the first chapter which establishes botanical gardens as scientific institutions to delve into their methods of presentation as historical institutions, too. In this section, we return to the notion of gardens as heterotopias and more particularly the representation of time within the botanical garden. These questions - of the scientific narratives and the temporal narratives - are only two directions with which to analyse the exhibitions of botanical gardens in what is already a narrow lens of European gardens. However, they bring together a decolonial relationality between space, time, power and the presentation, representation and production of knowledge surrounding living objects. These avenues are also all subject to the process of musealisation in conjunction with the garden as a heterotopic space. Additionally, the metaphor of the title, *Cultivating Colonialism* is more than a play on words. Botanical Gardens, at their roots, are colonial institutions and it is this history which has grown and developed into their present methods of display. Their narratives are not constructed out of thin air but are built upon their histories, how they want to appear in the present and their goals for the future. What is at stake is understanding how this process consolidates the power and meaning-making of the botanical garden as a modern/colonial institution; and - dependent on how and what these narratives tell us - what does that mean for decolonising botanical gardens and their knowledge for the future?

CHAPTER ONE

“To name and know”: the scientific and colonial musealisation of plants

“In my own field of research, you can see an imperialist view prevail. Scientists continue to report how new species are “discovered” every year, species that are often already known and used by people in the region – and have been for thousands of years. Scientists have appropriated indigenous knowledge and downplayed its depth and complexity.”

Alexandre Antonelli, Director of Kew Science from “It's Time to Decolonise Botanical Collections”, 2020.

“The story of colonial botany is as much a story of transplanting nature as it is of transforming knowledge.”

Schiebinger and Swan, *Colonial Botany: Science, Commerce and Politics in the early Modern World*, 2005, p. 16

Today, botanical gardens are important contributors to the creation of scientific and botanical knowledge. Historically, botanical gardens were intellectual hubs for advancements in botanical science, diffusing ideas across the world through a vast network of gardens in colonies and the metropole (Brockway, Grove, Morton, Weber). As mentioned in the Introduction, what is important for a more comprehensive garden history, is the analysis of the musealisation of plants, specifically as part of a narrative - be it an exhibition narrative in one space or an overarching narrative of the botanical garden itself as an institution. One aspect of my own visit to the Royal Botanic Gardens, Kew in London which struck me was the emphasis on their current research practices, as if to distance themselves from the traditional view of the botanical garden as a site of leisure. Particularly for plants as living objects, regulated to objects of knowledge rather than history, too, the sense of abduction and separation for exotic plants emphasises the relationship between musealisation and the modern production of scientific knowledge, as the practice of botany was closely associated with colonial endeavours. For the history of Kew Gardens Brockway emphasises their focus on economic botany in the nineteenth century which, in turn, meant colonial botany. Londa Schiebinger and Claudia Swan define colonial botany as “the study, naming, cultivation, and marketing of plants in colonial contexts – [which] was born of and supported European voyages, conquests, global trade, and scientific

exploration...(2). Schiebinger and Swan draw attention to the fact that colonial botany involved many processes and affected everything from how a crop was taken, transported, grown and then communicated to new actors. Additionally, colonial botany includes these practical elements but was a way of thinking and producing knowledge, too as the Schiebinger and Swan quote from the beginning of this chapter clarifies. Many scholars have already argued in favour of the connection between botanical gardens and empire building (Baber, Brockway, Johnson, McCracken, Schiebinger et al, Weber) but there seems to be a missing link with how these histories – the origins of plants, how they were collected, classified and for what purpose – would influence the botanic collections and their presentation to visitors today: how can we reconcile botanical gardens as both living, scientific museums and imperial formations?

The botanical garden as imperial debris

Ann Laura Stoler's concepts of imperial ruination offer a way to bridge the gap between the imperial history of botanical gardens and their contemporary production of knowledge by considering plants as forms of imperial debris. According to Stoler, debris is the material remains of imperial formations, processes and relations of force which exert material and social effects in the present (2008, 2016). Historically, existing in the metropole and connected to the colony ("Imperial Debris" 198-200), botanical gardens represent an imperial formation linked to colonial expansion. As a scholar greatly influenced by Foucault, Stoler's "imperial debris" adds another layer of complexity to examine the structures and relationship between power, knowledge and space in the botanical garden. Plants are visible and tangible reminders of botanical exchange and labour (Weber); and a single plant holds a layered and contested history. As Laurie Cluitmans argues, plants can be considered 'living archives' that offer us insights into historical blind spots, subversive stories and collective traumas (2016). To regard the botanical garden as an imperial formation is to recognise the institution as a "process of becoming" rather than a unified notion of "empire" (Stoler, "Imperial Debris" 193). It has a political life, extending across long periods of time, the living objects in the botanical garden being only one example of an imperial formation's material remains. Additionally, the notion of "ruination" (194), for Stoler, can also involve epistemological remains and colonial botany was also practiced through forms of representation (Schiebinger and Swan); nomenclature being just one example. Therefore, remnants of this colonial and scientific history must remain in the presentation, and representation, of exhibitions in botanical gardens today. There are scientific narratives in the botanical garden by virtue of displaying natural objects; and by "scientific narratives" I refer to both a classical and modern image of science as related to empirical data inspired by Foucault's concept of

"epistemes" from his 1966 book, *The Order of Things*⁴. According to Foucault, an episteme is a distinct period defined by a certain foundation and ordering of knowledge (1989: xxiv). For Foucault, the classical age from 1650-1800, is characterised by an assumption that a sign contains a connection to the thing represented and structures of classification, such as taxonomy (64), which is entangled with modern botany. From 1800s onwards, the Modern Age featured a shift in focus on how things develop with each other, and over time, and the new idea of man as a subject and an object of knowledge. Within a history of botanical science, "pure" systems of science such as the Linnaean taxonomic system, according to Londa Schiebinger, only worked by disregarding local knowledge and material culture (2004, 2005). These ideas are also supported by Thomas Kuhn argument of "scientific revolutions" in which periods of "normal science" aims to refine and extend existing paradigms of knowledge before leading to anomalies and a complete overhaul of a world view, or revolution (122). In the case of botanical gardens, I hypothesise that the narratives in the gardens support ideas of modern, "normal" science, diachronically. Such an archaeology of scientific knowledge highlights how Enlightenment philosophy and ideals related to both the scientific production of knowledge and justifications for colonialism. The Director of Science at Kew, Professor Antonelli acknowledges that imperialist views that informed scientific methods hundred of years ago prevail today, through both language and practice. A key point for imperial debris is that ruins are made, not found and ruination "is also a political project that lays waste to certain peoples and places, relations, and things" (Stoler: 196). I propose a way of understanding the "making" of debris in the botanical garden is through the musealisation of plants and the creation of their new narratives. The concept of imperial debris allows us to rethink how botanical gardens, as living museums and imperial formations, represent the colonial musealisation of natural objects through a scientific narrative.

In botanical gardens the most visible form of material remains, or imperial debris, exists in the form of greenhouses. Inside the planned space of the botanic garden, greenhouses and hothouses are wonderful examples of the 'perfect', other space that Foucault defines for heterotopias. Established in the theoretical framework, the role of the garden as a heterotopic site according to Foucault "is to create space that is other, another real space, as perfect, as meticulous, as well arranged as ours is messy, ill constructed, and jumbled" (378), and represent the totality of the world. Cultural historian David Heatherbarrow considers the garden as a bounded space, individual but connected to a whole. Heatherbarrow argues that cultural significant gardens "establish meaningful connections to the larger landscape by means of the very elements that posit their separation" (181-2). Gardens, he argues, maintain cultural continuity by virtue of their

⁴ An English translation was first published in 1970, according to Routledge.

separation, and exist in a type of frame – the framing of which for a glass house is a physical demarcation for visitors. Moreover, analysing the display in glasshouses as exhibition spaces are relevant for the colonial narrative of the gardens as they were purpose built to present exotic and foreign plants from colonies to the public. Professor of Nature and Built Environment, Nuala Johnson argues that for visitors of botanical gardens in the nineteenth century heated glasshouses may have been the closest they ever came to experiencing a tropical location, and “to some degree, [the glasshouse] became a synecdoche of that nature” (105). The glasshouses today act as forms of imperial debris in the botanical garden, as relics of a colonial era and heterotopic sites through their relation to other spaces - as well as the attempt to represent the world within them. As a scientific institution, Kew specialises in global research such as fungal diversity and conservation of rare species - and the history of their scientific achievements began entangled with imperialist ideologies (Brockway 452). In 2003, Kew was officially inscribed as a UNESCO World Heritage Site due both its historical buildings and plant collection. According to Brockway, from the nineteenth century onwards:

“Kew Garden and its colonial affiliates emerge as a vital capital asset, transforming knowledge into profit and power for Great Britain. The Dutch Botanic Gardens played a similar role for the Netherlands, helping the nation to remain a strong commercial power long after its political power had waned” (Brockway 461).

Brockway draws a comparison between the botanical gardens of the United Kingdom and the Netherlands whilst indicating their differences in maintaining that power. Kew was successful in propagating crops outside of their native climates in hothouses in the UK and in colonies, such as cinchona and rubber, and transferred important knowledge of how to cultivate when it was connected to profitability. Schiebinger and Swan highlight the difference between the UK and the Netherlands through the Dutch East India Company (VOC). The VOC was a conglomerate, an amalgamation of trading companies and only had ties to the government through individual relationships. The Dutch initially maintained trade through individual seaports and trade monopolies rather than outright colonisation (Schiebinger and Swan 4). Andreas Weber accounts for this difference with the historical establishment of botanical gardens in the Netherlands as pertaining to the domain of the university as opposed to a national garden (172). For the Hortus Botanicus, Amsterdam, the majority of their initial collection came from the Cape of Good Hope in South Africa due to extensive correspondence from the directors and free transport offered by the VOC. With an emphasis on collecting for commercial interests, medicinal research, and scientific records, the plant collection in the Hortus Amsterdam grew rapidly throughout the eighteenth century until the end of the VOC in 1798. Therefore the focus of their

Three-Climate Greenhouse and Palm Greenhouse is mainly on plants from South Africa. Similar to Kew, the Hortus Botanicus also began an intermediary station for many tropical crops such as cinnamon and nutmeg, owing to their cultivation success (van Proosdij). In comparison to Kew, which is in Richmond and slightly on the outskirts of London, the Hortus is – and historically always has been – closely linked to central Amsterdam. De Hortus often work with the municipality who were previously an important source of the garden's income (van Proosdij). The comparisons of two botanic gardens, and their greenhouses - with distinctive histories and connections - can provide an insight into how the context specific particularities of a botanical garden can affect their contemporary narratives.

The Three-Climate Greenhouse as imperial debris

In the Hortus Botanicus Amsterdam, it is the Three-Climate Greenhouse, advertised as part of the 'Crown Jewels' tour of the garden, which represents a heterotopia that juxtaposes floral kingdoms from around the world in a single space, and exists by virtue of its simultaneous connections and isolation from other environments. In fact, according to the Crown Jewels leaflet: "In this Greenhouse, one can find three different zones with different climates, representing the subtropics, the desert, and the tropics. This is the Hortus on a small scale..." (de Hortus). The bounded space of the contemporary Three-Climate greenhouse is both at once separate and other but related to the Hortus as a microcosm of the whole world, which is reflected in its visual design and organisation. The architecture of the glass and metal Three-Climate Greenhouse changes the epistemological significance of the plants' presentation, and representation. The purpose-built greenhouse, designed by architects Zwarts and Jansma and completed in 1993, lends a contemporary feel to the landscape (Moser 24) lending to the blurring of the history of the plants within the greenhouse. The natural light pouring in through the windows and the temperature change of warm air grounds the visitor in the present of the greenhouse. The visitor physically encounters the plants not just visually, but also through the sounds and smells in the greenhouse. Environmental researcher and landscape architect Wybe Kuitert designed the landscape of the subtropical greenhouse. With his own expertise in East Asian landscape design, Kuitert has taken inspiration from Japanese traditions (Kuitert) with the main use of pathways and water in the Hortus Greenhouse. The Three-Climate Greenhouse is arranged geographically, with the first subtropical area presenting plants from South Africa, Australia and New Zealand. The first climate features winding, uneven stone paths that circle around central cultivation areas with lower grasses and shrubbery, which is then surrounded by taller trees. The garden itself traces narrow stone paths and features a small pond and flowing tributaries. Stones, large and small, mark boundaries between the pavement, the paths, the water, and other enclosed plant beds

Figure 5. View of the subtropical zone in the Three-Climate Greenhouse from the treetop walkway. Evans 2020.



which can be seen from above (figure 5). His immersive design and method of display is created through the sound of babbling water and overgrown shrubbery which forces the visitor to duck or weave if they want to stick to the path. The use of levels, with a spiral staircase and treetop walkway, offer a sense of exploration for the visitor as well as a better view of the design below (figure 5). A sliding metal door from the upper walkway leads in the tropical rainforest with a humid and sticky atmosphere. Here, the trees and plants fall into paths carved out by footsteps which are also much smaller. A visitor must physically weave through the darker landscape. The taller trees in this gallery forest completely fill the space and obscure the glass walls (figure 6). The tropical zones leads into the desert climate, a greenhouse with more empty space and demarcated displays for the plants. As a living museum, there is a claim from the Hortus of how extensive their collection of plants is. And it is precisely this suggestion, perhaps unbeknownst to all visitors, that creates the narrative paradox of various geographic spaces which is also one of the Netherlands' vast navigational colonial history.

Scientific narratives in the Three-Climate Greenhouse

In the bounded space of the Three-Climate Greenhouse the narrative demonstrates biodiversity and the construction of nature. For the subtropical climate, the first port of call for the visitor is the South Africa zone, a “specialisation of the Hortus” due to their trade relationship with the VOC. Even as the smallest floral kingdom the Cape has some of the most varied species, 70% of which are endemic to that area (de Hortus). Through the distinction between climates and the map of floral kingdoms, the arrangement of the greenhouse is geographical and therefore emphasises the difference between these multiple spaces. The term “floral kingdom” was coined by British botanist Ronald Good in the mid-twentieth century to distinguish between geographical areas and to aid the systematic study of plants (Carruthers), and is the focus of the first climate in the greenhouse. This terminology is presented as fact and works to justify exhibiting far-flung plants, some vegetation of which is endangered in South Africa. Although there is no direct link in the text to the display seen behind it, such as a reference to how many Cape species there are in the Hortus; there is an inferred connection due to their proximity and the visual environment of the greenhouse as a form of imperial debris. For example, in the desert zone, the main information panel specifically calls for visitors to “observe the difference and similarities” between species from different geographical origins. In this sense, the introduction to the first climate encourages visitors to look more closely, to become modern botanists, enquiring into nature and investigating the species on display (Schiebinger 6). It is explained that: “In the 17th and 18th centuries, the Dutch East India Company (VOC) brought back many plants, seeds, and bulbs from South Africa, including many of our present-day indoor and garden plants”, alluding to the colonial narrative of the bounded garden. Notably, the smaller information panels for each plant tell the visitor of their common name, the latin scientific name, and the location in which it originated. There is also a short paragraph with information - usually about how it grows or its possible uses - that differs from plant to plant. For the African plants, however, most of the panels make a reference to the etymology of the plant’s indigenous name. For example, the Aloe Bergalwyn (figure 7) states that the plant has many local names referring to the fact that it grows in the mountains but that the scientific name, *aloe marlothii* refers to German born-South African botanist H.W. Rudolf Marloth who worked in the early 20th century (de Hortus, Emms). The Rooikanol (figure 8) “grows in wild and humid places along streams and marshes. The African name rooikanol is based on the red sap that comes out of the tubers when they are damaged. The red pigment is used to make a paint.” Judging from the rooikanol’s bright green leaves, the text reveals a historical exchange of local knowledge about its use. Using the latin name, and Marloth’s influence would obscure the local name, knowledge, and traditions that were often violently destroyed in order to

establish Western dominance (Vásquez). Yet the inclusion of the African name of these species offer the possibility to reclaim the indigenous past as a site of experience through the plants. The idea of encountering new worlds and species in the Hortus Botanicus, Amsterdam invites a new way to consider the scientific discourse in the botanical garden. The language of using names and terms, as well as timelines and the landscape design reveals a spatial epistemology of science. Botanical knowledge is connected to space and the relation between a plant's original site and its placement in a botanical garden which emphasises the biodiversity of their collection.

Throughout the entire Hortus, there is an 'Evolutionary Route', tracing a history of the earth's environment through specific plant species. But for a visitor this is quite difficult to follow in the correct order throughout the garden. In interest of bounded space, I will explore the information for the route which appears in the Three-Climate Greenhouse. This overarching narrative is one of plants as historical objects, travelling through time. The beginning of the Evolutionary Route, "from water to land", does not come at the start of the garden but rather in the desert zone of Three-Climate Greenhouse. The plants in this section are intended to replicate early developments of species with waterproof epidermis some 600 million years ago (de Hortus). There is also a timeline to the present of when these plants grew into being. This area of the greenhouse is the only one with a wall partition not made of glass. The painted rust colour, perhaps intended to mimic desert colours, makes the juxtaposition between the sand coloured layout, the plants themselves, and the glass and metal greenhouse (figure 9). The choice of display has the species planted at a lower level on slightly raised islands, making the visitor weave between them, and drawing the eye up to taller cacti and the glass ceiling. This design situates the visitor and the greenhouse within the landscape of the city. Yet, in the desert greenhouse, the introduction panel reads: "In this exhibition, African and American desert plants are placed on opposite sides of the greenhouse. Each of the six islands contains plants from one of these areas. Wandering along the paths you will find yourself standing between both worlds....". Again, the idea of biodiversity and the garden representing the totality of the world is present, but this time with the visitor in the middle. As a heterotopic site, the Three-Climate Greenhouse as a single space represents more than one 'world', according to the Hortus. As an imperial formation, the greenhouse represents a long history of collecting and exhibiting exotic plants. The African and American desert plants are simultaneously opposite to each other - materially and metaphorically - and working together to represent the relations between spaces. The musealised plants in these displays, removed from their context and assigned representational value in the greenhouse, only work due to their relation between all the other living objects in the same space, plus their relation with the space itself. Additionally, it could be argued that

there are parallel narratives of having many worlds in plural, and the biodiversity of a single world that is a collective 'ours' to know and protect. However, I am more inclined to insist that the Three-Climate Greenhouse produces an imperial narrative of 'other' worlds and spaces which are constructed to be "foreign" and "exotic".

The Evolutionary Route number 2, "the earth turns green", appears in the tropical climate. As the climate grows hotter and more humid, plants become more sophisticated and grow taller in search of light. In fact, throughout the tropical zone visually and in the informational text, light is a main focus or rather its lack thereof in the tropical rainforest. According to the Tropical rainforest panel, "light is the limiting factor" which is replicated in the greenhouse. This area of the greenhouse is told to the visitor as having been expressly "designed as a gallery forest". As mentioned before, the larger trees try to obscure the light from the glass walls and, in combination with the intense humidity, form a tunnel for the visitor to interact with as they move through the greenhouse (figure 10). In both the tropical and subtropical areas there are water features, ponds and running water creating a microcosmic landscape. The tangibility of the visual display in the Three-Climate Greenhouse would appear to suggest an attempt to present the plants in their "natural" state, seemingly without human intervention. On a first visit to the tropical greenhouse in the Hortus, I interpreted its arrangement to be a discourse of exploration of foreign lands through the creation of an exotic atmosphere and landscape. However, the architecture of the glasshouse contradicts such a narrative. In fact, the main introduction panel to the Three-Climate Greenhouse draws attention to its "hidden technology" and design. In the Hortus' narrative there is an implicit contrast made between the binary of "nature" and technology, or culture. The climates are controlled and measured by computers and the glass walls are seemingly at odds with the landscape design. However, I am inclined to take a constructionist approach which treats "nature as an intensely socially constructed phenomenon", considering both the politically economic constructions of nature and the cultural 'way of seeing' the environment that has been shot through with symbolic meaning (Johnson 100-101). As the figures of the greenhouse imply, the landscape of the Three-Climate Greenhouse is imagined and materially constructed in a way that means it actually makes no sense to discuss its design as a type of 'natural'. That is to say "nature here is constituted and imagined at the level of representational practices" (Johnson: 100) where it is, in fact, impossible to design a nature without 'culture'. As contemporary material culture, the Three-Climate Greenhouse also represents how the imperial debris of the hothouse is carried through to the present day, influencing how we present and represent nature.



Figure 6 (top left) View of the subtropical greenhouse from the treetop walkway in the Three Climate Greenhouse. Figure 7 (top right) Aloe Bergalwyn. Figure 8 (left below) Rooikanol. Figure 9 (right below) The Desert Zone of the Three-Climate Greenhouse in the Hortus Botanicus. Evans 2020.





Figure 10 (left) and Figure 11 (right) show the metal poles and structure of the Three-Climate Greenhouse.

Figure 12 (below). A terrarium, or Wardian Case, in the tropical zone of the Three-Climate Greenhouse. Evans 2020.



For example, in figure 10 in the subtropical climate, the metal pole cuts through the trees in the eye-line of the visitor, disrupting the foliage and drawing the visitors gaze above to the treetop walkway and glass ceiling similar to the desert climate in figure 9. A type of palm tree is contorted and bent towards the upper level, pulled and supported by a wire connected to the ceiling of the greenhouse. Whilst this creates different visual shapes in the garden, pairing the vertical lines of the trees with the circular bushes and shrubbery, it also adds a tension to the subtropical greenhouse. The visible wires and construction highlight its deliberate artifice and its distortion represents the transformation of nature that is inherent to planting. In figure 11, the same effect is created with the metal beam that follows upwards from the text panel of the tree in the centre and the water pond below. The vegetation surrounds the metal, spilling out into each other, filling out the space and reaching the border of the glasshouse. In the tropical climate, figure 12, plants grow inside a glass box inside the greenhouse, layering the fabrication. Although there is no further information given, this box is reminiscent of a Wardian case, a kind of terrarium designed by Nathaniel Ward in 1829 which was used to transport plants around the world (McCracken 1997: 104). For McCracken, the Wardian case is “a symbol of imperial botanical endeavour” (107), meant as a way to keep specimens alive on long journeys. The glass box itself refers to the colonial history of its tropical plants as a type of imperial debris even within the greenhouse. Here, we may also return to Heatherbarrow’s notion of gardens and larger landscapes that began our chapter. He details that distance and separation between other landscapes is created in four ways: horizontally, vertically, geographically, and technologically. Horizontally, the subtropical Greenhouse is situated within the city, along the canal seen through the glass and as the border of the Hortus Botanicus. Vertically, the greenhouse holds different levels for the visitor, including a treetop walkway; geographically it contains discontinuous and displaced territories. The technologically distanced is produced by the glass and metal framing of the greenhouse itself, and the hidden technology of automatic mist installations, fans and windows. Therefore, the presentation of plants in the glasshouse exemplifies the cultural construction of nature and “otherness” not of the plants but of the greenhouse itself. Just as garden historian John Dixon Hunt writes, gardens are places of paradox (2016, xii), the subtropical greenhouse is physically separate from other spaces but is connected to another environment, namely tropical environments. Thus, both visually and textually, the subtropical greenhouse works to present and represent multiple other spaces. Consequently, with the Evolutionary Route in the Three-Climate Greenhouse, the Hortus Botanicus falls into the trap of offering a linear timeline and narrative. However, the very arrangement of this route undoes its linearity as the numbered route is spread across the garden - with only 1 and 2 in the Three-Climate Greenhouse. Instead, the very design and arrangement of the objects in the greenhouse emphasises the present of the plants and



their cultural continuity by virtue of separation. Scientifically, the narrative of the greenhouse represents a heterotopia; one space bringing together multiple other geographical spaces within it. Discursively, all this also works to deconstruct the notion that science is “discovered”, only ever observed and named. The scientific knowledge of the botanical garden is produced, systematically structured and constructed in the same way as its displays.

Figure 14 (left). The spiral staircase in the Temperate House at Kew. Evans 2020.

Figure 13 (below) The walkway to the central open space, and New Zealand display, of the Temperate House in Kew Gardens, London. Evans, 2020.



The Temperate House as imperial debris

Comparatively, in the same way as the Hortus, the Temperate House's architecture creates a balance between its nature and the cultural history of botanical gardens. The Temperate House at Kew Gardens was first opened to the public in 1863 but took an additional 36 years to finish. Designed by Decimus Burton, the Temperate House is the world's largest surviving Victorian glasshouse featuring a cast and wrought iron structure (Payne 2018). Closed in 2013, the Temperate House underwent a costly renovation to be re-opened in 2018. According to the Kew website, "the Temperate House tells the story of how Kew and partners all around the world are working to rescue plants that are rare or already extinct in the wild" and contains 1,500 species from 5 continents. Again, there is a rhetoric of the glasshouse connecting other spaces beyond the botanical garden and across the world as both the structure and the plants it contains represent imperial debris. The main building and its wings are separated into square temperate zones – Australia, Africa, Islands, the Americas, New Zealand, the Himalayas, and Asia - representing other spaces like the Three-Climate Greenhouse. Each area is coloured coded and plants are categorised for visitors through icons whether they are used for cultural purposes, food, or poisonous as a few examples. Wherever you stand in the greenhouse you are never out of sight of windows to Kew Gardens outside, or the criss-crossing metal bars of the triangular glass ceiling above, creating a vertical and technological distance similar to the Hortus. In the New Zealand Zone there is a fabricated water feature with a miniature waterfall seen through a copse of trees (figure 13). However, the position you must stand to view this area is the largest, and central, open space in the glasshouse (figure 13). Similar to the Three-Climate Greenhouse's subtropical area, any immersion in nature is disrupted by the physical reminder of the hothouse situated in a European botanical garden represented through figure 14 of the spiral staircase crawling with vines. The Weston and Wolfson Octagons, seen on the floor plan, break up a visitors journey through the glasshouse and are emptier spaces with only plant boxes and general textual information about the garden whilst the light colour of the walls and metal beams contrast with the extensive greenery of the plants. In the Three-Climate Greenhouse there are general information panels but their colour and glassy texture and positioning makes them less visible to the inattentive visitor. Both gardens have smaller black markers to identify the scientific name of a plant and its catalogue number but the Temperate House, perhaps owing to its recent renovation, information is far more visual and eye-catching. I mention this only to submit that information presented in a new way for visitors of botanical gardens implies that the information is also new and different. This method of display, along with the design and architecture of the Temperate House mean there is no doubt that the glass house represents a cultural construction of nature for the visitor.

Scientific Knowledge in The Temperate House

In the Temperate House of Royal Botanic Gardens, Kew, the scientific knowledge is centred around naming plants, genetic families, and how these practices support Kew's environmental conservation work. In the Weston Octagon - dedicated to describing the state of the world's plants, giving information about Kew's current and future conservation work - a plant box filled with bark and a small shrub with information panels all under the heading "To name and to know". According to Kew, "Just like people, plants have first and last names. This is thanks to the 'father of modern taxonomy', Swedish-born Carl Linnaeus (1707-1778)...His system revolutionised the way scientists classified living organisms and shared their knowledge. It has provided a lasting, standardised way to keep names consistent." It is implied that names should be kept consistent despite the use of more commonly used names as the titles for each main display in the greenhouse rather than the Linnaean name which appears in smaller writing. "To name and to know" is also linked to Kew's classification of plant families and determining genetic relationships. Linnaeus' binomial nomenclature is equated with successes of botany throughout the Temperate House exhibition. A similar version of the "Naming Plants" text also appears at the beginning of the Africa greenhouse with the South African bush lily display as a way to "avoid confusion". Here, the lily which is unclearly indexed is accompanied by a map, photo of its flowers in bloom, a description of its history and Kew's current research of its seeds. "Despite being one of South Africa's most iconic plants, clivia is named after Lady Charlotte Florentia Clive (1787-1866)." The specimen she collected was the first of its kind to flower in the UK. Londa Schiebinger tracks the cultural history of Linnaeus' classification and nomenclature which was rooted in racist and linguistic discourses of civilization versus barbarism (2004: 200). Linnaeus' system, which became standard across Western Europe in 1905 (205) both detached plants from their cultural context and meanings, and celebrated their associations with colonial rule. She argues that "naming practices in the eighteenth century assisted in the consolidation of Western hegemony" and embedded "a particular historiography" which celebrates the nomenclature and deeds in elite European botany (2004:198). A visitor to the Temperate House is absorbed into such a historiography and underlies the visual presentation and representation of its plants. The presentation of the bush lily also highlights that its naming practices, whilst culturally significant, are completely arbitrary. The scientific name clivia needs no connection to the plant itself, only a social conventional agreement; priority and discovery take precedence. In addition, for the Angel's trumpet presentation there is a smaller panel declaring "a taxonomic victory" (figure 15). According to Bente Klitgård, senior research leader in Kew's Americas team, until recently different species of the brugmansia or angel's trumpet were believed to be a single genus in a "big mess of names". Kew's publishing of the specimens determined their differences, "discovering" seven new species and

concluding “that’s what taxonomy is for.” This story of the angel’s trumpet genus works to celebrate and legitimise modern/colonial botany and systems of classification. Local knowledge about plants did travel to Europe and contribute to the development of botanical gardens (van Andel 2020), though the implication “to name and to know” suggests this knowledge was only transportable once it was translated into a vernacular communicable to elite Europe. Being able to distinguish between these species also commemorates the Linnaean system. The false neutrality of standard scientific nomenclature in Kew reinforces the notion that science is discovered, and created, by European individuals. This type of nomenclature can also be considered as an imperial formation because it is entangled with imperial politics and is still in-process, continually being enforced and justified. As part of the scientific narrative and musealisation of plants, the very same “linguistic imperialism” which appears in the narrative of the Temperate House today was vital in advanced European colonisation and global expansion (195).

Furthermore, in the main narrative of the Temperate House, the botanical garden is framed as a saviour to plants and environments in their role as a scientific institution - unlike the Hortus. The mission of the Royal Botanic Gardens, Kew is stated in the Westin Octagon to be the global resource for plants and fungal knowledge. The temperate South Africa zone in Kew begins with a brief aside about the *Erica* species. According to the smaller orange panel, tilted below the main text for “Africa”:

“Kew has worked in Africa since 1772 when our first plant hunter, Francis Masson, arrived there with Captain Cook. Masson sent back 500 plants species including many Cape heaths (*Erica*), which became all the rage in Victorian England. Kew’s work continues in the region as showcased by the plants on display in this wing.”

The sentence construction implies that the first species Masson brought to Britain became all the plants available to people in the Victorian era for domestic use. With the understanding that the Temperate House is also a Victorian greenhouse through the visual display, the text infers how meaningful the past – the historical moment for Masson as a plant collector - is for the present of the glasshouse. However, this ambiguous time gap also works to purposely omit however many years of British colonial oppression in South Africa missing and connect it to the space of the greenhouse. The vague phrase “worked in” does not offer any specific forms of labour such as cultivation, nor does it give any idea as to an organisation or the number of people Kew directly employed. Moreover, this wording occludes the structures of violence and process of colonisation at work in South Africa by the British. Likewise, Captain Cook is symbolic of conquering nature and the colonial language fundamental to the Western self-image of scientific discovery (MacLeod

2000: 3). Cook's voyages are not overtly part of a colonial mission but there were the first steps which allowed it to happen later on. It is also an example of how scientific epistemology, due to the successes of navigation and cultivation, was utilised for political control and economic gain (Brockway 1979: 451). Perhaps what is most telling in this narrative of the Temperate House is what is missing. There is an information panel for the St. Helena Olive in the "Islands" display despite it being extinct and no longer on display in the glasshouse. The *nesiota elliptica* died in the wild in 1994 and Kew's cuttings succumbed to a fungal infection in 2003. With a backdrop of healthy greenery a map, normally coloured for a species' native origins, is blank and grey (figure 16). However, the blue panel reveals that in the face of such a "devastating loss" Kew has frozen its DNA for future use. In addition, Grove argues that modern conservatism is entangled with European and colonial encounters, with its history in the search and recreation of an Edenic paradise (1994: 3-4). The absence of the St Helena Olive as much as its presence represents Kew's efforts to conserving nature as well as implying their many successes. It also draws attention to the fact that many species which could be significant for indigenous people groups, may be absent from their original locations despite surviving at Kew. There is an implicit suggestion that Kew, as a Western institution, is one of the sole custodians of the world's nature and is responsible for its conservation. The process of musealisation continues even though the object is no longer in the garden's collection. The narrative is a contemporary one which situates Kew's history only ever in relation to its present and future, concealing its imperial foundations. Overall, the spatial and textual arrangement of the Temperate House has a meta-narrative which refers to its own history of Kew Gardens.

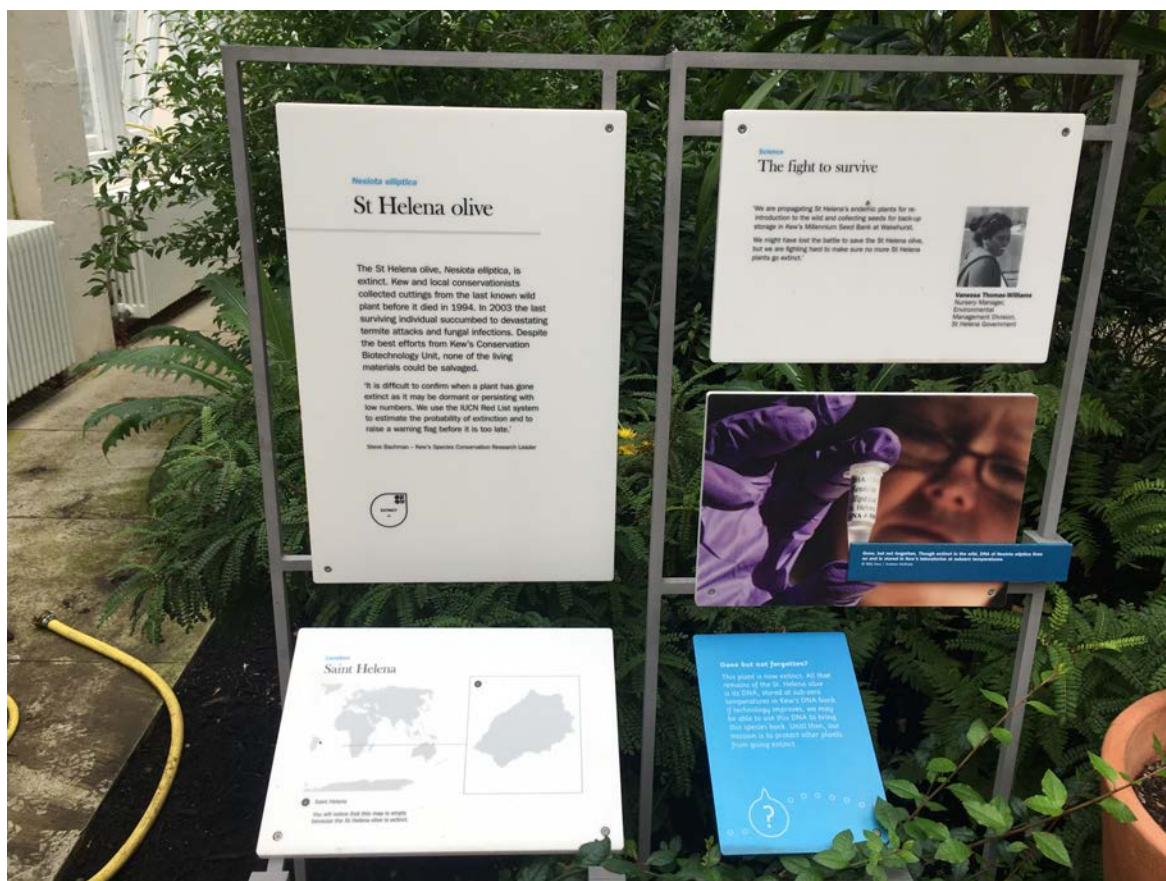
Discourses of scientific practice, with imperial roots, are constantly reproduced in the greenhouses of the Hortus Botanicus and Kew Gardens. In conclusion, botanical gardens, especially greenhouses, by their very nature are relics of colonial botany and the modern scientific revolution. By presenting plants as they do, it is precisely the musealisation of natural, living objects that calls attention to their important cultural history that a contemporary scientific narrative may attempt to obscure. In the Three-Climate Greenhouse, the visual presentation of natural objects is at once imitative of "undiscovered rainforests" in the case of the Tropical Zone and emphasises this constructed nature of the greenhouse, and by extension, the botanical garden. From the colonial period onward, botanical garden making intentionally mimicked a romanticised idea of untouched nature (Grove: 13, McCracken: 112) which informs the method of display in greenhouses in the present, one of the factors of imperial formations according to Stoler. Yet the display of the glass and metal structures, its walkways and paths more than anything represent the botanical garden as a form of imperial debris because it

exposes the way these ruins have been intentionally made. By presenting nature and natural objects, botanical gardens end up representing the very opposite; they represent a cultural history of plants and globalisation, as well as social constructions of science and colonialism. The architecture of both the Three-Climate Greenhouse and the Temperate House dominate the exhibition design and emphasise to the visitor how these plants have been musealised - removed from any previous context or meaning and assigned new value as part of the narratives of each garden. Through its written narrative and discontinuous spatial representations, both the Three-Climate Greenhouse and Kew function as heterotopic sites which represent multiple spaces and meanings. As these unique and privileged spaces, the greenhouses in Amsterdam and London combine a distinctive cultural construction of nature and a cultural history of natural plants. The plants' presence in the greenhouses, as representative of other regions, and other spaces, they have been musealised as objects. Although Batram & Shobbrook argue, "musealisation has no firm beginning and no fixed ending" (2000: 257) it is a process which is constantly happening as long as the objects are within the collection of the botanical garden. By virtue of their very construction, the plants in greenhouses are given new meaning through their representational relationship with each other, as representative of other spaces and the time of a colonial era. Moreover, the musealisation of living objects in the garden - their complete abduction from context and indigenous meanings - cannot remove the traces of their past, and their future as living plants. Both experiences, in the Hortus and Kew, are layered with imperial debris which, according to Stoler, means to argue that as ruins they "draw on residual pasts to make claims on futures" (Stoler 2016: 366). This layering occurs more particularly in the verbal display of the greenhouses. Any reference to a plant's Linnean or indigenous name, or even its location of origin calls upon imperialist social, political and economic processes that still have value today. Furthermore, unlike museums, plants are living objects which represent imperial debris themselves, as material remains which actively shape the botanical garden and its means of presentation, and its future as an institution.

In regards to their relation to the botanical garden as a scientific institution, the Hortus is focused on the historical development of plants and their collection whereas Kew Garden narrates its scientific successes and future of conservation. However, in the Hortus, the "showing" of biodiversity and the "telling" of the evolutionary route leaves a gap, a disconnection, between the colonial history of the collection with plants from South Africa and Suriname, and the present day role of the botanical garden. As Stoler claims in the case of imperial formations, their colonial past characterises our way of seeing and understanding these ruins today. According to Roy Macleod, modern science "became, in turn, both a colonising ideology and an agency of colonial self-identity" (2000: 11) which is



Figure 15 (above) The information display for the Angel's Trumpet in the Temperate House, Kew and figure 16 (below) The display for the St Helena Olive, which is now extinct. Evans 2020.



reflected in the narrative of the Temperate House. For Kew, the showing and telling suggests that this imperial debris is the reasoning for the garden's current role as a leader in botanic research for the future. Their accumulation of scientific knowledge which was aided by Britain's colonial expansion and domination has resulted in the advancements in research and conservation. Subhadra Das, curator at University College London's historical science collections, argues "In the case of natural history museums, a tradition of sticking to what are considered objective, "scientific" facts - and the resulting lack of consideration of the historical and cultural contexts of the natural sciences - is a lie by omission", a lie which perpetuates Enlightenment systems of science inextricably bound with racism (Lotzof 2018). The musealisation of plants in a botanical garden, which can both be a heterotopia and imperial formation, can be simply boiled down to the reminder that everything at work in the garden is symbolic and constructed - even our understanding of botanical science. It is a historically situated phenomenon intertwined with notions of empire and the accumulation of knowledge, not unlike the heterotopic museum. In fact, by exploring the display and narratives of these glasshouses - for example through the architecture of the Temperate House in relation to its narrative as a hub of future scientific discovery - a conclusion can be drawn that, here, the botanical garden is representative of both natural and cultural heritage in the way that David Lowenthal characterises it (2005). The figure of the greenhouse, historically and through its contemporary presentation highlights the ways in which "the heritages of culture and nature come to be viewed as interconnected, indeed, indivisible" (Lowenthal: 85) and the relationality between the natural and cultural history of botany. Perhaps both of these different narrative methods in the Temperate House and the Three-Climate Greenhouse embody what Lowenthal concludes about contrasting approaches to natural and cultural heritage. He argues that "for example, we admire nature as previous to history, yet at the same time as part of the present" (2005:86). Through a process of cultivation and musealisation, plants as living objects, and natural heritage, also represent the cultural heritage of each botanical institution in the Netherlands and the United Kingdom. Chapter One has invited us to reconsider the important relationality between these representations of scientific facts and the cultural history of plants as natural objects. Yet still, what is at stake in the narratives of botanical gardens and their greenhouses is not only how they represent their own colonial past, but also their present and future as institutions, too; and all the slippages in-between that it entails.

CHAPTER TWO

“The ever present”: the modern/colonial representation of time in
botanical garden greenhouses

“Why should I mind, Simon? Doesn’t one always think of the past, in a garden with men and women lying under the trees?”

Virginia Woolf, Kew Gardens, 1921, pg.11

“The gardener digs in another time, without past or future, beginning or end. A time that does not cleave the day with rush hours. Lunch breaks, the last bus home. As you walk in the garden you pass into this time – the moment of entering can never be remembered. Around you the landscape lies transfigured. Here is the Amen beyond the prayer.”

Derek Jarman, Modern Nature, 1994, p.30.

In Chapter One, the scientific narratives of the Three-Climate Greenhouse and the Temperate House were explored in relation to the presentation and consequent musealisation of plants as living objects. Whilst drawing attention to the impossibility of completely abstracting plants as natural objects from the cultural history of botanical gardens, the scientific narratives within the greenhouses also indicated how the gardens operate and present themselves as historical and scientific institutions. Significantly, this musealisation can occur due to the institutional framework, a position that has been cemented throughout the years as an imperial formation, much like museums which justify their power through the classification, presentation and musealisation of objects. According to botanist Stephen Forbes, botanical gardens are perceived to be institutional collections by their attempts to “‘fix’ objects in time and place” (245). It is precisely the process of musealisation, the removal of plants from their original context and meaning into a new history and narrative which creates the botanical garden as an institution. The institutional character of botanical gardens is further aided by a botanical language, courtesy of Linneaus, and founded by visible structures (249). This supports the notion that the combination of visual and verbal elements are extremely important for presentation in botanical gardens; and lend legitimacy to their narratives. The suggestion of “fixing”

plants in time is reminiscent not only of my understanding of musealisation, but also of Foucault's claim that heterotopias, like museums and libraries, are spaces of accumulating time, constituting a place of all times. It is, itself, outside of time, under the guise of the collecting of objects and knowledge unique to nineteenth century Western culture (377). Additionally, according to Stoler and her argument of imperial formations, colonial histories occupy multiple historical tenses, making themselves known in the present through imperial debris ("Duress" 348). In that sense, time is extremely important for heterotopias and consequently our interpretation of botanical gardens: Foucault emphasises the significance of time in the heterotopias of Western modernity and their "fatal intersection of time and space" (371) which offers a new approach for the potentially colonial narratives in the botanical garden. Taking all these concepts into account, as well as the analysis of Chapter One, it remains to analyse the botanical garden as this particular type of space. Without forgetting their institutional character, spaces such as greenhouses are fundamentally exhibition spaces, lending themselves well to Mieke Bal's reading of the museum exhibition as a narrative text which addresses the visitor with a temporal and spatial representation and produces knowledge and meaningful interpretations (1992). Therefore, Chapter Two focuses on the temporal unfolding of the exhibition rather than simply a historical narrative as slippages between multiple temporalities pervaded Chapter One, too. In the institution of the botanical garden, how do the displays unfold in time? Unlike "To name and to know", to examine the relationship between time and space, I look to other areas in Kew Gardens and the Hortus Botanicus, including their other Palm Houses in addition to the Temperate House and the Three-Climate Greenhouse. Moreover, my decolonial perspective includes a critic of modern/colonial representations which are often teleological, detaching people from their understanding of the past and favouring the idea of the future. If gardens are, according to Forbes and Foucault, "a new way of making history" (Forbes 254) how is this colonial history represented, and therefore meaningful for a visitor, in relation to our present and future.

Representations of time and imperial debris

Firstly, I would like to expand on the Evolutionary Route of the Hortus Botanicus, Amsterdam mentioned in the previous chapter. This narrative in the Hortus is essentially six information panels spread throughout the garden. Site number one in the desert zone of the Three-Climate greenhouse tells a story of how life on earth began. Plants in each section are explicitly representative of particular ages millions of years ago. In fact, the desert climate actually features replicas of extinct plants (figure 17), and the other plants which have, according to the text panel, survived today. In section two in the tropical zone of the Three-Climate greenhouse "you will find some of the plants that turned the world green". Just with the first two stages of the Evolutionary Route, the visitor is encouraged

to walk through time in the botanical garden, from the past to the present of the living plants. Even more so, the visitor is implicitly asked to use their imagination and suspend a certain amount of disbelief as the plants growing in the Hortus today stand in for the same nature from millions of years ago. These panels, along with their visual display and proximity to the living objects, musealises the plants and by separating each stage of this route, the narrative relegates spaces to certain time periods, creating the relationship between a single space, and a single time period in a linear historical narrative. However, as we know from Chapter One and the understanding of heterotopias, the garden represents multiple spaces and could therefore indicate multiple senses of time. In addition, the Evolutionary Route perpetuates an idea of universal natural heritage for which the institution of the Hortus is merely a custodian of, a rhetoric that Lowenthal points out (85). In contrast, some trees throughout the Hortus are presented in a way that refers to their own particular past as objects and provide access to colonial representations of space and time. Although a majority of plants are only assigned names and classifications to visitors, the Iron Tree and the Katsura Tree (figure 18 and 19) are given more extensive text panels which reference their arrival in Europe, and plantation in the Hortus. The Iron Tree from the forests of northern Iran and Azerbaijan offers an exact date, “planted in 1895”, for when it was brought to Amsterdam. The Katsura Tree’s panel states that the tree “was first introduced in Europe in 1829 by von Siebold. He cultivated the trees in his nursery and put them on the market in 1856. This specimen is probably from the von Siebold nursery. Age: circa 110-120 years.” Even the simple addition of when a tree was planted drastically alters how it is framed in the garden. There is an immediacy to the new meaning and representation it can offer to a visitor in combination with the visual, material tree; you are aware that it was brought over and planted by someone, making forms of labour and trade visible, and the date highlights the lifespan of the tree. These are living objects that have survived through multiple human lifetimes. Even for plants that are not directly linked to former Dutch colonies they are framed in networks of trade and modernity/coloniality. In his article, *Out of Time: temporality in landscape gardens*, cultural landscape historian Luke Morgan claims that “to visit the museum is to step back into multiple pasts and places” (222), whether these are actual or imagined pasts. This would appear true for the historical garden, too. As already established with the garden as a heterotopic site, the Hortus Botanicus and the Three Climate Greenhouse represent multiple places within one. For its layered pasts, the contested histories of botanical trade, systems of oppression, and indigenous traditions related to plants are all accessible, though, concealed in the garden - not to mention this is different for the context of each site in the Three-Climate Greenhouse.

Without the Evolutionary Route, for the history of the living objects themselves, there isn't a clear order of time, only fragments - imperial debris - offered to the visitor in passing. In the tropical greenhouse, too, the history of the oil palm, on the physical and cultural periphery of the Hortus exposes the importance of the colonial botanical network in relation to time and space. Tucked away to the edge of a side path, the showing and telling of the oil palm produces its narrative of trade and exploitation (figure 20). Though the oil palm is native to West Africa, the visitor is told that "in the first half of the 19th century, seeds from Mauritius and R union arrived at the Hortus in Amsterdam. In 1848, two seedling plants were shipped from the Hortus to the Buitenzorg in Indonesia.

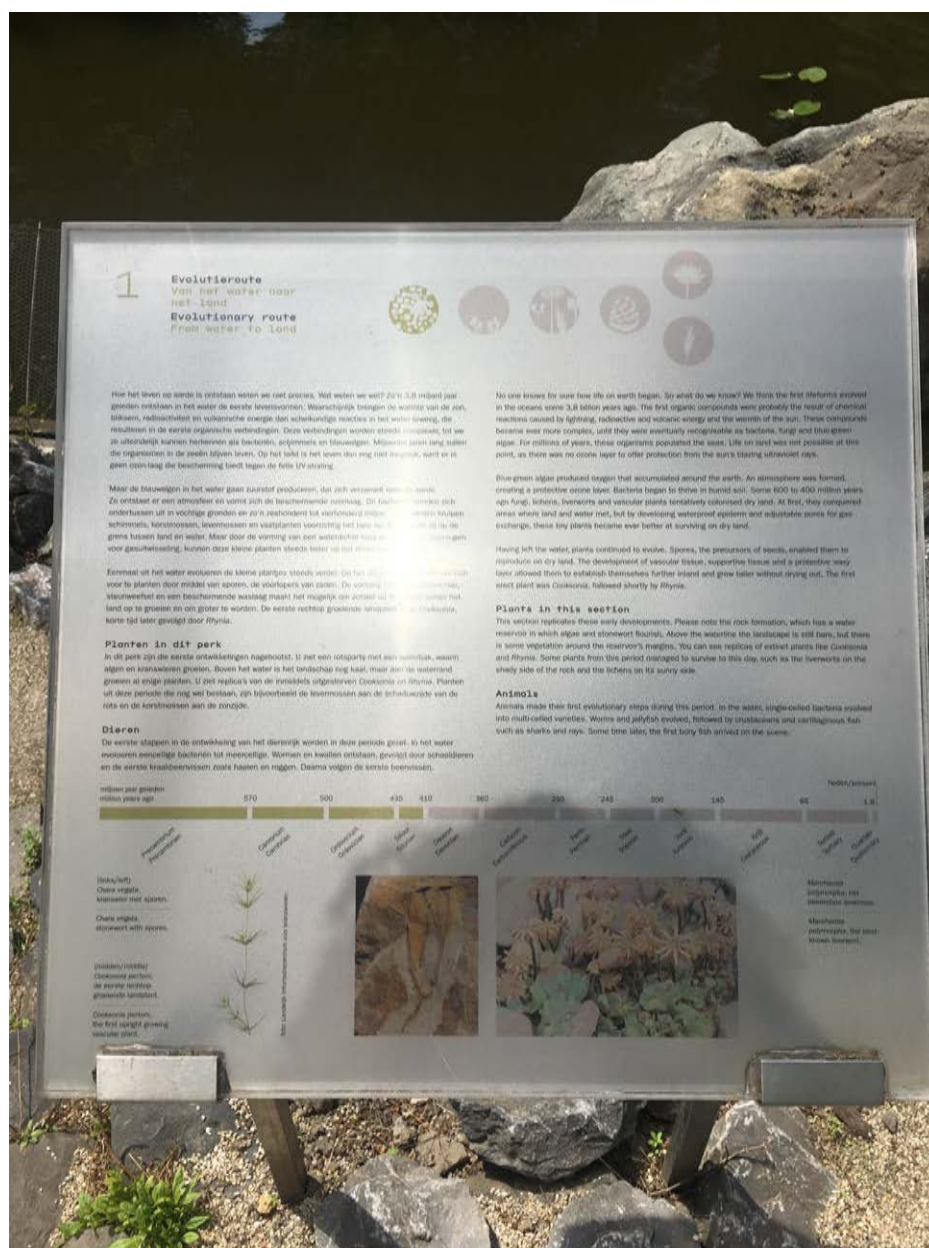


Figure 17. The first Evolutionary Route panel in the Desert Zone of the Three-Climate Greenhouse in the Hortus Botanicus. Evans 2020.



Figure 18 (top left) The Iron Tree in the main garden of the Hortus Botanicus. Figure 19 (above) the information panel for the Katsura Tree. Evans 2020.

Figure 20 (left). The pathway to the oil palm in the Tropical Greenhouse which can be seen behind the information stand. Evans 2020.

These palms formed the basis for the oil palm plantations on Sumatra from 1919" (figure 20). The oil palm is musealised and placed into a narrative which takes us on a journey through time, and across the globe, through the representation of a single tree – despite no claim that the current oil palm is in any way related to the first seedlings brought in 1848, though one may assume as such from the text. Walking along the damp and soft forest floor in the tropical climate, the experience is one of stepping back in time. The combination of showing and telling indicates that the oil palm is a tangible reminder of the Netherlands' global history and trade. Though there is mention of both palm oil's value and detrimental effects on the environment it is mentioned in terms of the current destruction of rainforests. There is a missing link between the economic importance of oil palms in the later eighteenth and early nineteenth century for plantations in a Dutch colony, as well as the labour it would have required. Implicitly, the gardens are also defined as a collection and institution with a self-imposed responsibility to preserve these seedlings. This fragmentary representation of multiple temporalities lends itself well to connecting the history of botanical gardens as imperial formations, and their present. For example, in the first two rooms of the Three-Climate Greenhouse the plants are not given a clear origin, only a vague time period and geographical location. The short description of the main introduction panel to the Three-Climate Greenhouse obscures a historical time frame for the plants it houses. The subtropical description of the three climates states: "Plants from South Africa have formed a specialty at the Hortus since the days of the Dutch East India Company." The days of the Dutch East India Company for visitors who are none the wiser creates an ambiguous historical grounding. The phrasing itself indicates days of nostalgia, too, something Gloria Wekker highlights is associated with Dutch colonisation of the East Indies (162). Following on from this, the second panel in the first greenhouse acts as an entrance to the main designed landscape of the greenhouse. Entitled South Africa, the last paragraph specifically mentions: "South African plants are a specialisation of the Hortus. In the 17th and 18th centuries, the Dutch East India Company (VOC) brought back many plants, seeds, and bulbs from South Africa, including many of our present-day indoor and garden plants." Here, the visitor is given a more focused time frame for the origin of the plants – though one that is in direct conflict to the erection of the structure of the greenhouse itself in 1993 – and an allusion to the colonial narrative of the bounded garden. In both panels there is a verbal jump from a colonial period to the present day. Although it produces a blurring of time, this discourse implicitly creates a direct link between the Dutch colonial relationship with South Africa as you walk through the subtropical greenhouse. Through what is absent, these temporal and narrative gaps, the glasshouse gardens represent Stoler's argument that imperial histories occupy multiple temporalities and articulate both the past and present. As forms of imperial debris and living objects, the plants also represent multiple tenses, if only in fragments.

Representations of time: the ever-present

Comparatively, the plants in the Temperate House are presented to have been completely taken out of context and isolated from their previous site and history. In the exhibition display, however, the telling of this history in the greenhouse provides the visitor with a new way to access a colonial narrative. Visually, the displays in the Temperate House juxtapose the Victorian architecture with the vegetation. Before entering the glasshouse, there are pillars in front of every entrance with the title "Over 150 years in the making". It offers a brief history of the Temperate House commissioned in 1859 and renovated in 2013. Whilst the history of the Temperate House is a key part of its description, the entrance panel to the space emphasises its renovation and the present for the visitor to "join in the story." The history of the Temperate House, which was supported by the government and funded by Britain's colonial exploits at the time (Payne 2018), is overshadowed by the recent history of the renovation and its present state. Perhaps in its previous state of ruin it would have been more obvious as imperial debris, remains of a bygone era that is materially and epistemologically constantly being renewed, restored, and kept alive. The tension between past and present continues with the same figure of the spiral staircase winding up to the upper balcony covered in creeping shoots and vines (figure 14) that imply a sense of history; these plants have had time to grow and adapt to their surroundings, comparable to the overgrown nature of the Hortus Greenhouse. Yet this visual discourse is again unsettled by one of the verbal displays. In the Wolfson Octagon, the plant bed displays tells the visitor of the recent history of the Temperate House. One display is dedicated to the restored Temperate House, how the plant collection was maintained and the new additions to its technological interior, and another has brief biographies about previous figures of Kew's history from the nineteenth to twentieth century. However, the section "plants through the history of the Temperate House" appears completely at odds with the historical narrative and experience of the glasshouse. The panel "The ever present" reads that "No single plant has endured throughout the history of the Temperate House, although many species have been represented in its collection since the beginning." Despite not being the exact plants, the living objects in the Temperate House are representative of imperial debris and the plants and seeds which were transported across the British Empire. The use of the word "represented" here is extremely significant as there is a distinction between plants and species. What is important for Kew is the representation of a species, not the individual plant, which works almost like reproductions or copies being presented in a museum. As living objects in Kew's collection, the plants hold the same purpose and representational value despite not being truly historical as the visual arrangement of the glasshouse could indicate. The subtitle of "ever present" further confuses the idea of the history of the botanical gardens. The plants are ever-present, seemingly with no origin and no indication

of their age or end. Temporally, perhaps the exhibition in the Temperate House does not unfold in time as Mieke Bal analyses, rather the plants are presented in order to represent almost an absence of time. However, the Weston Octagon depicts the state of the world's plants, giving information about Kew's current conservation work and the possible future of the environment and certain plants. The narrative is a contemporary one which situates the plants only as Kew's history, and the history of the garden only ever in relation to its present and future, concealing its imperial foundations with this meta-narrative. Analysing both the visual and verbal methods of display in tandem reveals a tension between the historical narrative of the Temperate House itself and the focus on the present and future of the plants which is at odds with the representation of the glasshouse. Yet what occurs here, then, as the exhibition unfolds in time and space is specifically an occluding of time; a friction between representing plants as historical objects and their ever-present. Rare plants which are representative of ancient knowledge and history are housed in a nineteenth century structure, updated and visited in the twenty-first century. The occluding of time in the garden - a blurring between past, present, and future - due to the exhibition of plants in the Temperate House gives justification to the imperial history and processes of botanical gardens which are still present today.

Representations of time: the accumulation of time

The same may be said for Kew's historic Palm House, whose visual organisation is dense with flourishing plants which take over the space entirely. The Palm House, built in 1848 and designed by Decimus Burton, was the first Victorian greenhouse of its kind to be built in wrought iron and on such a large scale (Attenborough). Today, the Palm House has become an important symbol for Kew Gardens itself. The basic design of the Palm House is relatively similar to the Temperate House; a central area with two wings, with the option of two paths in each leading around the smaller sections of greenhouse separated by the geographical locations of species. Discursively, however, the Palm House only provides text for a few select plants. The narrative of the Palm House is constructed through the musealisation of particular species - cycads, rubber, mahogany, black pepper and palms - which also highlight Kew's colonial history. The textual presentation of these plants is fixated on their uses, though cycads and palms are only mentioned for their uses in the context of Kew's own research; David Attenborough even refers to the Palm House as a "living laboratory". According to Brockway, rubber is a prime example of how botanic gardens contributed to the transfer of plants and scientific knowledge for the express purpose of using them as plantation crops in colonies (1979). Rubber was smuggled from its indigenous Latin America to Kew in 1876, and those which successfully germinated were sent on to Asia to be cultivated in plantations in Ceylon and Singapore. By the 1930s, the British, Dutch and French plantations in Southeast Asia were producing 98% of the

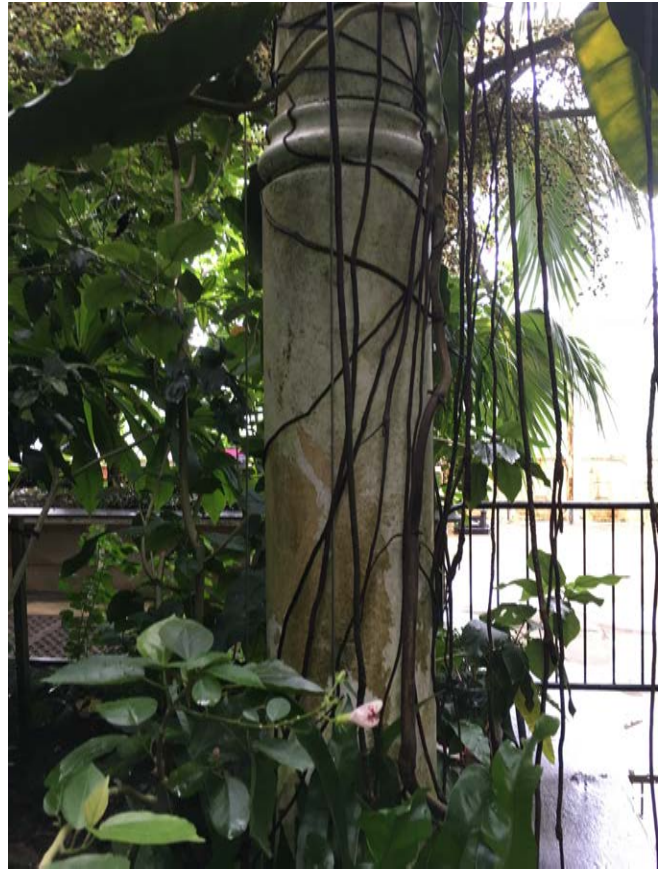


Figure 21 (left) the main walkway in the Palm House at Kew. Figure 22 (right) One of the historic pillars in the Palm House and Figure 23 (below) The plants of the Palm House at the Royal Botanic Gardens, Kew, can be seen through the glass. Evans 2020.



world's rubber (Brockway 458-459). In the Palm House, the information that comes close to presenting this history is the text "Although this tree is native to Brazil, most of the world's rubber comes from plantations in Indonesia, Thailand and Malaysia." It also details the harvesting method known as "tapping" where latex is gathered by "cutting an angled groove into the bark", a process that was replicated for Britain by the Kew-trained plantation director Henry Ridley in 1879 leading to the botanical and economic success of the crop (459). The same disconnect between the representation of the living objects and their past occurs for black pepper, too, only mentioned as "native to India, it is now cultivated as a crop throughout the tropics" with no indication of Britain's colonisation or the immense amount of labour involved in these plantations. I believe this gap of knowledge is an example of what Stoler calls "colonial aphasia". Stoler argues that colonial history is never simply forgotten but concealed, often through "aphasia", "a condition in which the occlusion of knowledge is at once a disremembering of words from the objects to which they refer" (2016: 12). Her argument is also why I refer to an "occlusion" of time in the Temperate House's representations rather than simply an obscuring or blurring. For Stoler, there is a disassociation between the practices and objects with a colonial past, and the use of language used to describe them. In the Palm House, the colonial past of the botanical garden fails to be translated to the contemporary. Since the verbal narrative in the Palm House is few and far between, subject to colonial aphasia, instead the visual narrative is produced by the dense arrangement of the plants, and the marriage between the plants and Victorian architecture. The atmosphere is much darker than the Temperate House, and closer to the tropical zone of the Three-Climate Greenhouse, both of which mimic Victorian botanical design of a romanticised jungle (McCracken 111). Tropical gardens in this period were composed in a way to be "a reduced copy of the virgin forest" (112). In figure 21, you can see it is impossible to walk along the pathway without being physically interrupted by plants leaning into the free space. The trees in the Palm House are on a huge scale, reaching to the high ceiling, and the dirty vine covered appearance of the pillars (figure 22) highlight the history and time of the Palm House, and that these plants have been growing for a long time. It also emphasises the narrative of the Palm House accumulating history - similar to the staircase of the Temperate House in figure 14 but to an even greater extent. There are pathways adorned with thick metal grates which a visitor can see down into the structure of the greenhouse. In combination with the heavy humid air, the regular misting of water sprayed into the top layers of vegetation, trickling down to the visitors creates a sense of seeing behind the pretence of the botanical garden in a different way to the renovated Temperate House. The visitor is physically confronted with the technology of the glasshouse and processes of cultivation in botanical gardens. However, the design and visual language of the Palm House, in addition to the colonial aphasia, divulges the discrepancy between a

historical narrative - stepping into the past through the botanic garden - and the ever present of the live plants highlighted in the Temperate House narrative. From the outside especially (figure 23), the curved glass gives the appearance of the plants being completely trapped and attempting to grow out of the frame of the Palm House. In fact, in 2018 one of the oil palms reached the ceiling and broke through the glass panes (Avis-Riordan). The focus is on Kew having “built their own rainforest” in miniature (Attenborough), frozen behind glass. Landscape historian Hunt raises an interesting paradox with the claim: “deliberate artifice presupposes, indeed must rely on, its converse” (Hunt 4). Even in its deliberate construction, the greenhouse - and by extension botanical gardens - inherently rely on the natural element of plants as living objects. The very nature of living objects undoes the notion of empty time in the greenhouse because they continue to grow beyond their individual history. Though the verbal narrative is one of colonial aphasia, the visual narrative of the plants, through their arrangement and growth, creates a layering and accumulation of time.

Living fossils, stuck in time: the representation of cycads

This conflict between artifice, nature, the language of colonial history and time continues in both the palm and cycad houses in London and Amsterdam. At the beginning and end of the structure of Kew’s Palm House, some plants are presented in pots, a phenomenon which also happens in the Palm Greenhouse in the Hortus Botanicus, Amsterdam, and which emphasises their musealisation compared to other natural displays. These plants are kept in pots because that is how they were presented in Victorian times (Attenborough), however the display adds to the systematic detachment of their original context and instead reinforce the plants association with colonial botany and Kew as a historical institution. In Kew’s Palm House, the pots come at the end of the greenhouse, arranged on different levels on the floor and a sweeping, round shelf (figure 24). The palms of various species, and from different locations are potted in large Victorian era dated ceramic containers, adorned with a seal of Royal Botanic Gardens, Kew. As a choice of exhibition display these pots expressly symbolise the height of Kew’s era of British imperial botany as botanical historian McCracken argues the domination of the British empire in the period of 1841-1905 “ensured Kew’s role as an imperial, as much as a national institution” (76). In the Hortus Palm Greenhouse, on the other hand, all the plants are potted in the same way but with a larger, negative space between them (figure 25). The Palm Greenhouse was built in 1912, designed by architect Johan Melchior van der Mey and commissioned by Hugo de Vries, the director of the Hortus Botanicus at the time. The floor plan has a main circular entrance hall, with two wings departing at a right angle as the greenhouse is situated at the edge of the city garden. Intended to house all tropical plants, today the collection is focused on palms and cycads. It is a “protected monument and a prominent

part of the Hortus heritage" (de Hortus). The narrative of the Palm Greenhouse is less about the plants themselves and more about their characteristics in relation to the Hortus and its history. This is shown through the choice of wide arrangement so that the eye moves between the pots and looks at the background of the historic Palm Greenhouse, as well as encouraging the visitor to walk the full length of the greenhouse to see each plant pot. Through the visual display of the living objects, both greenhouses emphasise the history of botanical gardens as an institution instrumental in the imperial trade plants and knowledge. In contrast to the occlusion of time in the Temperate House and text of the Palm House, these plants are a visual representation of the colonial narrative of the botanical gardens. Just as the visual and tangible aspects of the plants in figure 25 represent, the verbal narrative of the palm greenhouses depict an accumulation of time and history through the species of the cycad. Accordingly, the introductory panel in the Hortus' Palm Greenhouse declares:

"Cycads have always been an important plant group in the Hortus. The oldest specimen was brought to Holland by the Dutch East India Company (VOC) more than 300 years ago and has been in the Hortus since 1850. Cycads are a specialisation collection of the Hortus and as such are part of the Dutch National Plant Collection...In this way, the Hortus contributes to the conservation of this unique group of plants."

Though approximately 300 species of cycad remain today, many of which are close to extinction in their original habitats (de Hortus, Kew Gardens), the narrative is focused on how the historical nature of the greenhouse directly contributes to environmental conservation. In fact, almost all the text panels for cycads in the Palm Greenhouse end with this very same sentence. In figure 26, the oldest cycad in the Hortus can be seen in an immense plant pot, its leaves shading an average visitor. Its text panel to the side offers more information: "These seeds are distributed over botanic gardens worldwide. In this way the Hortus contributes to the conservation of this unique plant species." Here, cycads stand in for a long history of botanical science and conservation work in the botanical garden. In the Palm House, the cycads, South African plants often mistaken for ferns or palms, are explicitly represented as "living fossils", which seems to be a slightly paradoxical term. The giant Eastern Cape cycad (figure 26), a show piece in the Hortus, is the same species as the oldest cycad in Kew's Palm House, which has been growing in Britain since 1875 (Attenborough). According to the verbal narrative in Kew: "These plants were around before the dinosaurs! Cycads are known as living fossils as they have remained unchanged for millions of years", therefore their age refers to a lack of evolutionary changes and the fact that a single plant can live up to 2500 years old (Royal

Botanic Gardens, Kew). The emphasis on the living history of this species, and how long they live, as well as the arrangement and appearance of the Palm House, creates a discordant narrative of time passing outside of the greenhouse - as cycads are preserved and conserved. However, the dissonance comes from the significance placed on how old



Figure 24 (left) Palms on display in pots on a shelf in Kew. Figure 25 (bottom left) The central entrance of the Palm Greenhouse in the Hortus Botanicus.

Figure 26 (bottom right). The Giant Eastern Cycad in the Palm Greenhouse in Amsterdam. Evans 2020.



Figure 27. The cycad display in the Africa zone of The Temperate House at Kew. Evans 2020.



the particular objects in Kew's collection are. Rather, the showing and telling in the greenhouse create the effect of stepping into the past, almost. I argue this is achieved through the musealisation of the cycads within the exhibition of the greenhouse. Cycads, here, represent the past, present, and potential future of the botanical gardens. As extremely rare plants, all species of cycads are protected by British law (Royal Botanic Gardens, Kew). The plants are explicitly being propagated in Kew under the assumption and risk that they will go extinct eventually as the narrative for the cycads includes the garden's conservation work. The visual display of pots supports the representation of growing and caring for the plants, mimicking an everyday sight for the domestic gardener. Yet with the figure of the cycad in both the Palm House and the Palm Greenhouse, time in the botanical garden is rendered as cumulative rather than cyclical which is a more common assumption for the life cycle of plants.

As a focus and specialisation of both the Palm House in Kew and the Palm Greenhouse in the Hortus, the cycads are indexical of both the Netherlands and Britain's fraught history with South Africa. More than that, they have a "colonial presence",

inhabiting a past imagined to be long over (Stoler, "Duress" 33), having been transported from South Africa. Yet this presence, in combination with the verbal crumbs of a colonial past alter the knowledge and narrative created in the greenhouse exhibition. The specific area of the Cape in South Africa has a long history of Dutch and British rule, particularly in relation to botanical gardens, too. South Africa experienced two periods of Dutch rule between 1652-1795 and 1803-1806, the time between these periods being British occupation (Cissé, McCracken 40). Initially, a Cape Town botanical garden was established in the seventeenth century as a vegetable plot for Dutch ships traveling to the East Indies to trade (McCracken 10) and once British settlers established themselves in the area, Kew was sending plant collectors as early as 1772 (2). There is also a display for cycads in the Africa zone of the Temperate House which exposes another angle to the modern/colonial presentation of plants. In the Temperate House (figure 27), "cycads represent one of Earth's oldest plant lineages" and "populations of cycads can be found throughout both the Old and New World." The choice to capitalise "old" and "new" world, and refer to these imaginary places as if they exist today creates a colonial/modern distinct and situates the history of cycads within a time period of European exploration, alleged 'discovery', and oppression. These botanical gardens use the object of the cycad as representative of Britain the Netherlands vast - calling upon a discourse of an "age of exploration" and a time period of immense scientific advancement in botany. However, the presentation of cycads are intensely political, drawing attention to the narratives of time as accumulating in the present through conservation work, as well as frozen in time as historical objects despite their growing nature. From occlusion to accumulation, how can we reconcile the multiple and competing notions of time in the space of the botanical garden, in relation to its institutional colonial history?

"Flux": a slippage into the past, present and future of botanical gardens

In her 2015 analysis of the representation of time in Brazilian museums, Letícia Julião explores different ways in which time is articulated within historical museum exhibitions. She argues that "museums are institutions that are involved in the representation of an order of time", and their narratives are related to particular presentations of space and time (127). Whilst I disagree with her simplification of the definition of heritage as "the relation which the society establishes with its past" (129) and the essentialisation of the terms "society" and "the behaviours of Man" with a capital M, she does raise a valuable point; "the museal phenomenon establishes a relation mediated by objects, between the visible present and the invisible past and future" (130). The botanical gardens are desperate to present a narrative of themselves as historical institutions, accumulating time as heterotopias, which appears completely at odds with the ever-present of living objects.

Through this blurring of time and fragmented temporalities, one may assume that there is a sense of timelessness represented in the botanical garden. However, in the case of the Three-Climate Greenhouse in Amsterdam and Kew's historic Palm House their landscape design thrives off of the plants in relation to each other, growing together in a way that overtakes the space. In the first two climates of the Greenhouse in the Hortus, aesthetically, the design is not precise or well-kept, rather the intention appears to be something a little more overgrown. As seen in the previous figures, and in the analysis of the previous chapter, the display in the Three-Climate Greenhouse and Palm House presents plants close to each other, and often sprawling into each other (figure 17 and 18). Additionally, the main visual discourse in the Palm House is the dense amount of history inside the space of the greenhouse. According to McCracken, Victorian botanic gardens in the colonies were often designed with "an air of informality which at times verged on the wilderness" (123). In the case of these greenhouses, the visible present is part of the visual discourse of the greenhouse's architecture and the living plants. Their origin, their detailed past, is rendered invisible by the verbal discourse of the entrance and information panels. It would seem that Julião's understanding of 'time' within museum exhibitions is a modern, and therefore, colonial way of articulating the past, present and future in direct conflict to Rolando Vásquez's critique of the politics of time within systems of oppression. Vásquez, as a subscriber to Mignolo's theory of modernity/coloniality, points out that many economic and political practices within colonialism function to dismiss the past as archaic, establishing the present as the site of the real, and the future as the teleological of progress in order to devalue oppressed people's past and experiences (18). Visibility is a key idea for Vásquez which invites us to reconsider Julião's claim of the invisible past and future within the garden; the visibility of plants indicates an accumulation of time which can also point to a possible future of the institution.

That is to say, despite the history of the botanical gardens often being occluded in their greenhouses by virtue of the musealisation of the plants, the nature of plants as natural heritage enables them to simultaneously represent traces of their past, their meaning in the present and their future as living objects. In each of the greenhouses in London and Amsterdam there appear to have been competing narratives of time, from a blurred or fragmented chronology to an accumulation of time and feeling of stepping into the past due to the method of display and textual narratives. However, I argue that these seemingly opposing developments of time actually represent what Forbes coins as a "flux" in the botanical garden. According to Forbes, the attempt to fix plants in time - or musealise them - "is undone by the fact that plants are living things" (245). Botanical gardens were intended to represent the whole world through their plant collections (Grove 75), and paradoxically *represent a world of the past and a world yet to exist*. For example,

the Oil Palm in the Hortus, Amsterdam, grown from seedlings transported in the nineteenth-century would have been sent to the Netherlands to be cultivated and to represent the plants and economic resources of the Dutch East Indies. The garden was an 'other' space, representing the relationship between the colony and the metropole, that does not exist the same way anymore. The same can be said for the historical cycads in the Palm Greenhouse. In opposition, the display or lack thereof for the St Helena Olive at Kew is only one example of Kew's extensive research which could conserve plant and fungal life in the future. Furthermore, the discourse of "discovering" plant species or classifications which infiltrates the Temperate House actually reveals there is a natural world outside of our own realm of language, comprehension and representation waiting to be produced again within the botanical garden. The narratives and exhibition designs of The Temperate House, The Palm House, The Three-Climate Greenhouse and The Palm Greenhouse work in tandem to produce a narrative of suspended time; a flux, though it does occur in different ways. The tropical zone of the Three-Climate Greenhouse, the Palm Greenhouse and Kew's historic Palm House creates a sense of stepping into the past, unfolding into another long-gone time through their accumulation of time with an overgrown design. The style of potted display in both palm houses are subtle nods to the original era of colonial botany. The Temperate House and tropical space of the Three-Climate Greenhouse attempt to exist in an ever-present with the temporal gap between the visual discourse and textual narrative in the space. There is a lack of connection between the history of the plants and their current life within the greenhouses. Although the difference would be that Kew Gardens, most notably in the Temperate House, places an explicit emphasis on their future compared to the history and ever-present of the Hortus' greenhouses.

Due to this difference, I would go one step further than Forbes' "flux" and argue that unlike museums, the exhibition narrative in Kew Gardens is indexical of a time of the future in a way that the musealisation of objects may often obscure. There is something different about the accumulation and combination of times in the museums and gardens precisely because plants as living objects tell us of a future, the tense which is most important for a flux. Historical objects are removed from time, perhaps there is reference to their history before the museum collection in its narrative, though hardly afterwards, and there is an assumption for visitors the objects will always be there, frozen in time. Conversely, in the botanical garden the visitor is aware of living objects and plants as subject to time. To consider the botanical garden as a kind of living collection, or an exhibition from a museological viewpoint, in turn disrupts the narrative that objects have a past but no future. As types of gardens, the Three Climate Greenhouse and the Temperate House function as a heterotopic site. However, I disagree that it attempts to exist outside of space and time. To visit the hot greenhouse in a Dutch or English winter, full of plants outside

their season, does not conceal the passing of time or seasons. Rather a new time containing the simultaneous contradictions and contested interpretations can exist. Vásquez characterises modernity as “the age that designates space as reality, and space is the site of power” when space becomes an expression of the present (20) which is what the space of the museum and the botanical garden represent. Alternatively, space as an expression of the present in the garden - which already contains multiple times and places, invites us to consider a new conclusion of the botanical representing spaces of the past and the unknown future. Ironically, by the first world war public attitude toward botanical gardens shifted and they began to be considered as “victorian relics”, and symbols of the past (McCracken 209). However, this inconsistency enables their display to represent their flux as a continuum between past, present and future. As scientific institutions, botanical gardens also represent a marked sense of a future time, with the assumption of their continued existence and the maintenance of their living objects. Furthermore, museologist Susan Crane calls to attention the paradox of museums being both a stable reference of cultural heritage and representative of change (99). This “fixed ephemerality”, due to the intention behind collecting and preserving, allows for a museum’s mission to be “projected from present to future” (102). Because botanical gardens were established with scientific knowledge in mind they are irrevocably entangled with modern and colonial epistemologies, the garden as a space of power as Vásquez asserts maintains that power through a teleological assumption that this knowledge is important for the future. The museum and the botanical garden are also entangled with a modern/colonial representation of time.

In a critique of narratives of time in settler colonies, scholar Tshepo Madlingozi argues that a decolonisation of time requires the recognition that “the past is in the present” (Madlingozi 47). Perhaps this is precisely how to reconcile how narratives in the botanical garden unfold. Additionally, in *Imperial Debris: Reflections on Ruins and Ruination*, Ann Stoler concludes her article by calling for colonial studies to rethink “what constitutes as an effective history of the present” (“Imperial Debris” 211), which I would argue is exactly what the analysis of botanical gardens in the context of their colonial history can provide, especially with understanding that the musealisation of natural objects cannot totally occlude their colonial presence. However, as I noted earlier through Vásquez, the emphasis on the present and future, and the alleged ever-present of the plants in the Hortus and Kew, represent a colonial depiction of time due to the musealisation of the natural objects as they are severed from their history. Mieke Bal concludes there is an “epistemology of juxtaposition [between the verbal and visual displays in the museum] makes the slippage - from space to time, from present to past - explicit...” (Bal, “Telling, Showing”: 577). Yet, it is these brief moments of slippage, the

fragments and debris of the history of the plants - which is seen most notably in the tropical zone of the Three-Climate Greenhouse and both Palm Greenhouses, which prevent a completely colonial representation. It is the narrative of the plants, the verbal hints at their history which simultaneously musealises the plants by placing them into the narrative of the greenhouses but also indicates the traces and debris of their past which linger on as part of the cultural heritage of natural objects. For the Temperate House, Three-Climate Greenhouse, and Palm Greenhouses, this new way of making history is uncomfortable, contested because their visual and verbal discourses appear to be in conflict but are in fact a continuum, or blurring of time. Crucially, the botanical garden makes this slippage to a future as well. This analysis of botanical gardens represents "a new way of making history". Colonial history, colonial presence, becomes accessible to visitors within the present, through the interpretation and combination of showing and telling in the imperial debris and bounded space of the greenhouse.

CONCLUSION: The colonial future of botanical gardens

Despite what many would argue, plants are never neutral. Even seemingly by themselves, plants constitute an important part of culture and of course they are always related to particular social groups, cultural histories and economic networks. Not only that but, as I have shown, meaning is created for plants in the botanical garden through their exhibition and musealisation. Therefore, botanical gardens cannot be neutral either. Much has already been said about the imperial history of botanical gardens, although what is necessary now - and a point raised in this thesis - is a greater acknowledgement of their present day influence as an imperial formation. How have botanical gardens translated and interpreted their colonial past into the present, and their future as public institutions. In her definition of narratology and narrative systems, Mieke Bal includes "cultural artifacts that 'tell a story'," ("Narratology" 3). Crucially, the musealisation of plants in botanical gardens allows them to function as both natural objects and cultural artifacts that support a narrative, creating meaning and telling us, as visitors, a story. They remain as tangible reminders of empire, debris which lingers even in the face of scientific narratives that represent plants only as innocuous objects as argued in Chapter One. Additionally, for botanical gardens, too, their global networks and imperial histories are embedded into their exhibition design and the narratives they wish to communicate to visitors. Through a narratological analysis, I have offered one perspective on the culture of plants and botanical gardens, and how meaning can be made (Bal 222). In this case, plants are representative of multiple meanings and histories by virtue of their insertion into a botanical collection - hence their musealisation.

Because, as McCracken argues, "botanic gardens distinguish themselves from public parks by their scientific research, layout and publications" (146) gardens also present themselves as scientific institutions, highlighted in Chapter One. For the scientific narrative of Chapter One, the musealisation of natural objects in the botanical garden, like the museum, is made possible through the institutional framework and unique heterotopic quality of the space. I argue that what underlines this institutional character, as well as the presentation and representation in the glasshouses we have explored, is the colonality of knowledge. Composed by actors within institutions, according to Mignolo and Walsh, the colonial matrix of power is epistemologically constituted as knowledge is intertwined with every sphere of history, politics and economics (135). These spheres are being wrestled with through the method of display and musealisation of living objects in the botanical garden; the same modern/colonial knowledge of their origin is being reproduced for contemporary visitors today due to the visibility of natural objects, their capacity as an

institution, and their verbal narratives. This is important to acknowledge because gardening itself is, most significantly, a practice produced by years of accumulated knowledge (Johnson 99). In a similar way to museums, botanical gardens create and consolidate our knowledge about plants and natural objects. The problem can be summarised nicely with Walter Mignolo's claim of narratives of humanness and the anthropocene:

"Consequently, they are not universal, as they pretend to be invoking the authority of "science" but are narratives based on epistemic assumptions in the frame of Western epistemology (what is known and principles of knowing), and therefore they reproduce epistemic coloniality" (214).

This is exactly what occurs in the Temperate House at Kew and Evolutionary Route in the Hortus Botanicus. Both narratives in the gardens musealise plants but also rely on, and partly establish, epistemic assumptions of science. For example, in the case of the Linnaean taxonomic system in The Temperate House from Chapter One, Mignolo argues that "classifications are cultural because they are inventions, not representations", built and activated by the colonial matrix of power (177). Mignolo uses the example of race to demonstrate how the act of classifying requires a means of classification, such as discourses (180). The showing and telling of the Temperate House pretends to invoke the authority of science but at the same time produces and perpetuates that authority through the exhibition of particular plants and the textual narrative of Kew Gardens as a leader of botanical research. In both the Temperate House and The Three-Climate Greenhouse there is nothing to bridge the gap between their "natural" textual narratives and the visual cultural narratives which include the presentation within the greenhouses and the representation of plants as cultural heritage. In fact, like a system of classification, this distinction is a cultural invention. As a heterotopia, a unique space with societal implications, the botanical gardens of Amsterdam and London, are particular cultural landscapes of symbolic meaning and representation - a notion understood from Denis & Cosgrove (97). A botanical garden itself represents both forms of natural and cultural heritage, perhaps the only difference being the way we perceive and treat these notions, an idea which should be reflected in their internal narratives and presentation.

However, it is difficult to unravel these narratives of natural and cultural heritage due to the representation of time, highlighted in Chapter Two. The consideration of how blurred and interrupted time are represented in botanical gardens raises questions about the function of time in the heterotopia of the garden. Amy Pekar interprets time in heterotopias as working in two ways: "it can accumulate through objects collected in the

space or be transitory and give way to ongoing processes of change" which occurs simultaneously in the case of gardens (11-12). As living objects, and their historical traces which withstand their musealisation, plants do indicate the possibility of time in the heterotopic botanical garden as both accumulative and transitory. I consider this a particular layering of time, the term layering referencing the accumulation of time and history which also holds space in-between the layers, and the ability to insert and change processes. However, the layering of time in the space of the garden is a result of plants as imperial debris. Throughout this thesis I assumed a conclusion would steer us towards a starting point for the future of European botanical gardens, and how their colonial past could be presented for the future visitors. Yet, as Stoler points out for imperial debris and colonial ruins - these are unfinished histories which are still being lived today ("Duress" 349). Particularly as living objects, the colonial history of plants in botanical collections is being lived out today through their presentation and representation as I have argued throughout this thesis. In fact, for decolonial practice, Mignolo argues "the future doesn't exist, and neither does the past," rather we exist in a constant and always fluctuating present which is influenced by imperial formations (115). Temporally, we must understand the ways in which coloniality still operates and is represented in the botanical garden in order to begin to think beyond that - of a garden completely free or at least explicitly aware of its underlying structures of eurocentrism and perceived superiority of Western civilization. According to Harrison, heritage must "must act in the present in a way that maintains but also manages the openness of that future, that is, it exists in an ambiguous state" (34). Perhaps an "ambiguous state" is the best way to describe plant collections of botanical gardens as natural and cultural heritage which, as noted in Chapter Two, navigate their complicated cultural history and an open, decolonial future as living objects.

The title and metaphor of this thesis, "Cultivating Colonialism" indicates that everything pointed out through this analysis in botanical gardens of musealisation and narrating are, most importantly, processes which are therefore subject to change. In his vocabulary of culture and society, Raymond Williams tracks the history of the word "culture", looking towards a new definition for Cultural Studies. He argues, at least for the English language, early uses of the word were always in association with tending to crops before its modern connection to government or artistic and intellectual activity (77-80). Significantly, this is a *process* - one which requires care and awareness - and led onto a metaphor for human development. In understanding this metaphor for musealisation and exhibition display, "cultivation" represents both the physical process of agriculture in botanical gardens as well as the social and cultural element they present as public institutions. Every part of their arrangement takes thought - from the growth of plants, their

history and the narrative of the gardens that can often be overlooked. This is what makes botanical gardens so important; their presentation of plants encompasses the biological and cultural histories of these living objects which can develop over time. As part of the colonality of knowledge, the Hortus Botanicus and the Royal Botanic Gardens, Kew implicitly produce narratives of their colonial history which are then continuously reproduced - and cultivated - for visitors through the musealisation of plants. This would suggest that not much has changed over time regarding a European understanding of the relationship between “man” and nature; plants appear to be present for us to categorise, admire, and use for our own gain. Yet, museums and botanical gardens, as Crane points out, represent changes in meaning for both their objects and our understanding of ‘the past’ (101). By virtue of their presentation of living objects, botanical gardens represent the chance for development of their collections, displays and narratives to cultivate new narratives for the botanical garden. As mentioned in the conclusion of Chapter Two, botanical gardens can represent whole worlds; different historical spaces and still unknown spaces beyond our current understanding of nature and language.

Ultimately, an inclusive and comprehensive history of botanical science, which confesses the ways in which its colonality is still present, is severely lacking in the Royal Botanical Gardens, Kew and the Hortus Botanicus. The musealisation of natural objects within both of these institutions reveal how botanical gardens influence our relationship with nature, and how it is importantly part of culture, too. I argue that my analysis of botanical gardens presents the possibility for gardens to be a “new way of making history”, for both natural and cultural heritage. A decolonial approach necessitates an understanding that their history and exhibition display is entangled with their colonial history distinctly within the present; whether or not it is explicitly part of their narratives. Perhaps there is no way to conclude what the future of exhibition narratives and design should or will be botanical gardens. It is best to question and challenge the ways in which, as an imperial formation, botanical gardens enact processes of musealisation and how they present and represent natural objects to the public now through their methods of display. It seems there is no better time than today.

Word Count: 21, 453 (excl. notes and captions)

APPENDIX

- A. Due to the COVID-19 Pandemic during 2020, many museums and botanical gardens were temporarily closed at different points throughout the year. Travel restrictions also meant I was unable to visit other botanical gardens for a more comprehensive comparison across other European countries.
- B. Even during my visits to the Hortus Botanicus and Kew Gardens, in June and October respectively, had limitations. All greenhouses and indoor spaces had guided routes which changed the experience a visitor could have had. For the Three-Climate Greenhouse and Palm Greenhouse at the Hortus, the routes were merely indicated by arrows on the floor. At Kew, and in the second wave of the pandemic in the UK, many pathways in the Temperate House and Palmhouse were closed off. Either periphery paths were closed, leading visitors down a central route, or sections were restricted to create a winding path around the space. Both glasshouses also had a one-way system for visitors which limited how much of the vegetation one could see whilst maintaining distance from others. However, I stand by my analysis and experience of all the greenhouses as these so-called restrictions actually made the narratives in the gardens more linear and direct for visitor who would otherwise, perhaps, be wandering around at their leisure.

WORKS CITED

- Abrahamse, J. E. De grote uitleg van Amsterdam : stadsontwikkeling in de zeventiende eeuw. *University of Amsterdam*, 2010.
- van Andel, Tinde. "Open De Schatkamer En Dekoloniseer Het Museum." Clusiusstichting, 6 Jan. 2017, *University of Leiden*. Transcription. Accessed: 01 Dec 2020.
- van Andel, Tinde. "De rol van inheemse kennis in het ontstaan van botanische tuinen en de wetenschap vanaf 1492." Van wie zijn de botanische tuinen?, *Open Universiteit*, 8 Oct 2020, webinar.
- Antonelli, Alexandre. "It's Time to Decolonise Botanical Collections." *Royal Botanic Gardens, Kew*, Board of Trustees of the Royal Botanic Gardens, Kew, 25 June 2020, www.kew.org/read-and-watch/time-to-decolonise-botanical-collections.
- Attenborough, David, and Royal Botanic Gardens, Kew. "The Palm House at Kew Gardens." *YouTube*, 13 June 2014, www.youtube.com/watch?v=-ChP6OeNmBE.
- Avis-Riordan, Katie, and Will Spoelstra. "Secrets of the Palm House Revealed." *Royal Botanic Gardens, Kew*, 19 Jan. 2019, www.kew.org/read-and-watch/palm-house-secrets-facts.
- Baber, Zaheer. "The Plants of Empire: Botanic Gardens, Colonial Power and Botanical Knowledge." *Journal of Contemporary Asia*, vol. 46, no. 4, 2016, pp. 659-679.
- Bal, Mieke. "Telling, Showing, Showing Off." *Critical Inquiry*, vol. 18, no. 3, Spring 1992, pp. 556-594.
- Bal, Mieke. "Telling Objects: A Narrative Perspective on Collecting". In *The Cultures of Collecting*. Edited by John Elsmer and Roger Cardinal, Reaktion Books, 1994, pp. 97-115.
- Bal, Mieke. *Narratology: Introduction to the Theory of Narrative*. University of Toronto Press. 2nd ed., 1997.

- Batram, Rob. Shobbrook, Sarah. "Endless/End-less Natures: Environmental Futures at the Fin de Millennium". *Annals of the Association of American Geographers*, vol. 90, no. 2, 2000, p. 370–380.
- Bending, Stephen. "Introduction". In *A Cultural History of Gardens. Volume 4: In the Age of Enlightenment*, edited by Stephen Bending. Bloomsbury Academic, 2013, pp. 1-27.
- Berger Hochstrasser, Julie. "The Conquest of Spice and the Dutch Colonial Imaginary" in *Colonial Botany: Science, Commerce, and Politics in the Early Modern World*. Edited by Lora Schiebinger and Claudia Swan, University of Pennsylvania Press, 2005, pp.169-186.
- Bennett, Tony. *The Birth of the Museum: History, Theory, Politics*. Routledge. 1995.
- Brockway, Lucile. "Science and Colonial Expansion: the Role of the British Royal Botanic Gardens." *American Ethnologist: Interdisciplinary Anthropology*, vol. 6, no. 3, August 1979, pp.449-465.
- Boonstra, Sadiah. "Interview with Curator Sadiah Boonstra." Interview by Evie Evans, *Framer Framed*, April 2020. <https://vimeo.com/405785189>.
- Carruthers, J. "Trouble in the Garden: South African Politics ca. 1870-1950." *South African Journal of Botany*, vol. 77, 2011, pp. 258–267 .
- Cluitmans, Laurie. "The Potential of a Garden." *Radicals Radicants Epiphytes Parasites*, 2016. <http://radicalsradicants.com/essays/potentialofagarden/>
- Conan, Michel. "Introduction". In *Perspectives on Garden Histories*, Dumbarton Oaks, 1999, pp.1-16.
- Crane, S. A. "The conundrum of ephemerality: time, memory and museums." In *A companion to Museum Studies*. Edited by S. Macdonald. Blackwell Publishing, 2006, pp. 98-109.
- Cosgrove, Denis. Jackson, Peter. "New Directions in Cultural Geography." *Area*, vol. 19, no. 2, June 1987, pp. 95-101.

- Dorfman, Eric. *Intangible Natural Heritage: New Perspectives on Natural Objects*. Routledge, 2011.
- Emms, Paul, and Kirstenbosch National Botanical Garden. "Aloe Marlothii." PlantZAfrica, South Africa National Biodiversity Institute, Oct. 2007, pza.sanbi.org/aloe-marlothii.
- Erp-Houtepen, Anne van. "The Etymological Origin of the Garden." *The Journal of Garden History*, vol. 6, no. 3, July 1986, pp. 227–31.
- Forbes, Stephen J. "Collections and knowledge: constancy and flux in a sixteenth-century botanic garden", *Studies in the History of Gardens & Designed Landscapes*, vol. 36, no. 4, 2016, pp. 245-260.
- Foucault, Michel. *The Order of Things: An Archaeology of the Human Sciences*. Routledge, 1989.
- Foucault, Michel. "Text/Context: Of Other Spaces", In *Grasping the World: The Idea of the Museum*. Edited by Donald Preziosi. Gordon and Breach, 2004, pp. 371-379.
- Framer Framed. *On the Nature of Botanical Gardens*. Exhibition Catalogue. 2020.
- Francis, Mark. Hester, Randolph. Hester, Randolph Jr. *The Meaning of Gardens: Idea, Place, and Action*. MIT Press, 1990.
- Grant, Fiona. *Glasshouses*. Shire Publications. 2013.
- Grove, Richard. "Introduction", In *Green Imperialism*. Edited by David Worster and Alfred W. Crosby. Cambridge University Press, 1994.
- Harrison, Rodney. "Heritage as future-making practices." from *Heritage Futures: Comparative Approaches to Natural and Cultural Heritage Practices*. UCL Press, pp. 20-50.
- Hall, Stuart. *Representation: Cultural Representations and Signifying Practices*. SAGE Publications, 2003.
- Hohn, Timothy. *Curatorial Practices for Botanical Gardens*. AltaMira Press, 2008.

de Hortus. *Crown Jewels Route*. de Hortus Botanicus, Amsterdam, 2020.

Hunt, John D. *A Cultural History of Gardens. Volume 6: In the Modern Age*, edited by John Dixon Hunt. Bloomsbury Academic, 2016.

Jarman, Derek. *Modern Nature*. Overlook Press, 1994.

Johnson, Nuala C. "Botanical Gardens and Zoos" from *The SAGE Handbook of Geographical Knowledge*. SAGE Publications. 2011, pp. 99-110.

Julião, Letícia. "Museum and historicity: the representation of time in Brazilian museums", *ICOFOM Study Series*, vol. 43, 2015, pp.127-137.

Kirschenblatt-Gimblett, Barbara. *Destination Culture: Tourism, Museums, and Heritage*. University of California, 1998.

Kuhn, Thomas S. *The Structures of Scientific Revolutions*. 2nd ed. University of Chicago Press, 1970.

Kuitert, Wybe. "Research." Wybe Kuitert - Gardens and Landscapes, Wybe Kuitert, 2014, www.wybekuitert.nl/index.html.

Lambert, Léopold. Madlingnozi, Tshepo. "There Is Neither Truth or Reconciliation in so-Called 'South Africa': a Conversation with Tshepo Madlingozi ." *The Funambulist*, no. 30, 2020, pp. 46–51.

Leezenburg, Michiel. *History and Philosophy of the Humanities: an introduction*. Amsterdam University Press, 2018.

Lidchi, Henrietta. "The Poetics and the Politics of Exhibiting Other Cultures". In *Representation: Cultural Representations and Signifying Practices*. Edited by Stuart Hall, SAGE Publications, 2003, pp. 153-205.

Lotzof, Kerry. "Who Was Graman Kwasi?" Natural History Museum, *The Trustees of The Natural History Museum, London*, 4 Oct. 2018, www.nhm.ac.uk/discover/who-was-graman-kwasi.html.

- Lowenthal, David. "Natural and Cultural Heritage." *International Journal of Heritage Studies*, vol. 11, no. 1, March 2005, pp.81-92.
- Macleod, Roy. "Introduction" from *Nature and Empire: Science and the Colonial Enterprise*, Osiris, Vol. 15, 2000, pp. 1-13.
- Maranda, Lynn. "Museology: Back to the Basics Musealization." *ICOFOM Annual Symposium*, vol. 38, June 2009.
- McCracken, Donal P. *Gardens of Empire: Botanical Institutions of the Victorian British Empire*. Leicester University Press, 1997.
- McClelland, Linda. "Imagery, Ideals, and Social Values: The Interpretation and Documentation of Cultural Landscapes." *The Public Historian*, vol. 13, no. 2, 1991, pp. 107-124.
- Mehos, Donna C. *Science and Culture for Member Only: The Amsterdam Zoo Artis in the Nineteenth Century*. Amsterdam University Press, 2006.
- Mignolo, Walter. Walsh, Catherine. *On Decoloniality: Concepts, Analytics, Praxis*. Duke University Press, 2018.
- Morgan, Luke. "Out of time: temporality in landscape history", *Studies in the History of Gardens & Designed Landscapes*, vol. 36, no. 4, 2016, p. 221-224.
- Moser, Stephanie. "The Devil is in the Detail: Museum Displays and the Creation of Knowledge." *Museum Anthropology*, vol. 3, no. 1, 2010, pp. 22-32.
- Morton, A. *History of Botanical Science: An Account of the Development of Botany from Ancient Times to the Present Day*. Academic Press. 1981.
- Nakaue, Melanie. "Of Other Places: The Garden as a Heterotopic Site in Contemporary Art." *The Brock Review*, vol. 10, 2008, pp. 60-72.
- Noordegraaf, Julia. *Strategies of Display: museum presentation in nineteenth and twentieth century visual culture*. NAI Publishers, 2004.

- Olin, Laurie. "Form, Meaning, and Expression in Landscape Architecture". *Landscape Journal*, vol. 7, no. 2, Fall 1988, pp. 149-168.
- Payne, Michelle. *The Temperate House at the Royal Botanic Gardens, Kew*. Kew Publishing, 2018.
- Pearce, Susan. *Museums, Objects and Collections: A Cultural Study*. Leicester University Press, 1998.
- Pearce, Susan. *Collecting in Contemporary Practice*. SAGE Publications, 1998.
- Pekal, Amy. "Assembling the Natureculture Garden: A Diffractive Ethnography of the Utrecht Oude Hortus", *Utrecht University*, 2020.
- Prest, John. *The Garden of Eden: The Botanic Garden and the Recreation of Paradise*, Yale University Press, 1981.
- van Proosdij, Andre. "De Geschiedenis van de Hortus in een notedop. *de Hortus Amsterdam*, 2004.
- Said, Edward W. *Orientalism*. Vintage Books, 1979.
- Schiebinger, Londa. *Plants and Empire: Colonial Bioprospecting in the Atlantic World*. Harvard University Press, 2004.
- Schiebinger, Londa. Swan, Claudia. *Colonial Botany: Science, Commerce and Politics in the early Modern World*. University of Pennsylvania Press, 2005.
- Stoler, Ann. Laura. *Duress: Imperial Durabilities in Our Times*. Duke University Press, 2016.
- Stoler, Ann. "Imperial Debris: Reflections on Ruins and Ruination." *Cultural Anthropology* , Vol. 23, Issue 2, 2008, pp. 191–219.
- Smith, Laurajane. *Uses of Heritage*. Routledge, 2006.
- Vázquez, Rolando. "Modernity, Coloniality and Visibility: The Politics of Time." *Errant Journal*, no.1, Autumn/Winter 2020, pp. 17-24.

- Weber, Andreas. "Laborious Transformations: Plants and Politics at the Bogor Botanical Gardens." *Studium*, vol. 11, no. 3, 2018, pp.169–177.
- Weber, A. "A Garden as a Niche: Botany and Imperial Politics in the Early Nineteenth century Dutch Empire." *Studium*, vol. 11, no. 3, 2018, pp. 178-190.
- Wekker, Gloria. *White Innocence: Paradoxes of colonialism and race*. Duke University Press, 2016.
- Williams, Raymond. *Keywords: A Vocabulary of Culture and Society*. Oxford University Press. 1976.
- Woolf, Virginia. *Kew Gardens*. Kew Publishing, 2017.
- Worden, Nigel. "New Approaches to VOC History in South Africa", *South African Historical Journal*, vol. 59, no. 1, 2007, pp.3-18.

IMAGES CITED

Cover Image. Courtesy of the Hortus Botanicus, Amsterdam.

Figure 1. Illiff, David. "Kew Gardens Palm House, London." 25 July 2009. Wikipedia. https://en.wikipedia.org/wiki/File:Kew_Gardens_Palm_House,_London_-_July_2009.jpg. Accessed: 26 Nov 2020.

Figure 2. Evans, Evie. "The Temperate House at Kew Gardens, London." Own photo. London. 4 Oct 2020.

Figure 3. Hortus Botanicus. "Drieklimatenkas Hortus Botanicus, Amsterdam." Digital Image. 2019. <https://www.zja.nl/en/ZJA-werkt-aan-vernieuwing-Drieklimatenkas-Hortus-Botanicus-Amsterdam>. Accessed: 26 Nov 2020.

Figure 4. van Amelsfort, Barbara. "Hortus Herfst". Courtesy of the Hortus Botanicus. Digital Image. 2019.

Figure 5. Evans, Evie. "View of the subtropical zone in the Three-Climate Greenhouse from the treetop walkway." Own photo. 22 June 2020.

Figure 6. Evans, Evie. "The stairs in tropical zone of the Three Climate Greenhouse." Own photo. 22 June 2020.

Figure 7. Evans, Evie. "Aloe Bergalwyn in The Three-Climate Greenhouse, Amsterdam." Own photo. 22 June 2020.

Figure 8. Evans, Evie. "Rooikanol in The Three-Climate Greenhouse, Amsterdam." Own photo. 22 June 2020.

Figure 9. Evans, Evie. "The Desert Zone of the Three-Climate Greenhouse, Amsterdam." Own photo. 22 June 2020.

Figure 10. Evans, Evie. "Treetop walkway and metal poles in the Three-Climate Greenhouse." Own photo. 22 June 2020.

Figure 11. Evans, Evie. "Metal beams and walls of the Three-Climate Greenhouse." Own photo. 22 June 2020.

Figure 12. Evans, Evie. "A Wardian Case in the tropical zone of the Three-Climate Greenhouse." Own photo. 22 June 2020.

Figure 13. Evans, Evie. "Pathway from the Americas zone to the New Zealand Zone in the Temperate House." Own photo. 4 Oct 2020.

Figure 14. Evans, Evie. "The spiral staircase in the Temperate House at Kew." Own photo. London. 4 Oct 2020.

Figure 15. Evans, Evie. "Information Display for the Angel's Trumpet." Own photo. London. 4 Oct 2020.

Figure 16. Evans, Evie. "Information display for the St Helena Olive." Own photo. London. 4 Oct 2020.

Figure 17. Evans, Evie. "Evolutieroute: van het water naar het land". Own photo. Amsterdam. 22 June 2020.

Figure 18. Evans, Evie. "The Iron Tree in the Hortus Botanicus." Own photo. Amsterdam. 22 June 2020.

Figure 19. "Information panel for the Katsura Tree." Own photo. Amsterdam. 22 June 2020.

Figure 20. Evans, Evie. "Pathway to the Oil Palm in the Three-Climate Greenhouse". Own photo. Amsterdam. 22 June 2020.

Figure 21. Evans, Evie. "Pathway of Palm House at Kew". Own photo. London. 4 Oct 2020.

Figure 22. Evans, Evie. "Pillar of the Palm House". Own photo. London. 4 Oct 2020.

Figure 23. Evans, Evie. "The Palm House in October." Own photo. London. 4 Oct 2020.

Figure 24. Evans, Evie. "Potted Palms on display in the Palm House at Kew". Own photo. London. 4 Oct 2020.

Figure 25. Evans, Evie. "The central entrance of the Palm Greenhouse in the Hortus Botanicus." Own photo. Amsterdam. 22 June 2020.

Figure 26. Evans, Evie. "The Giant Eastern Cycad in the Palm Greenhouse." Own photo. Amsterdam. 22 June 2020.

Figure 27. Evans, Evie. "The cycad display in the Africa zone of The Temperate House." Own photo. London. 4 Oct 2020.