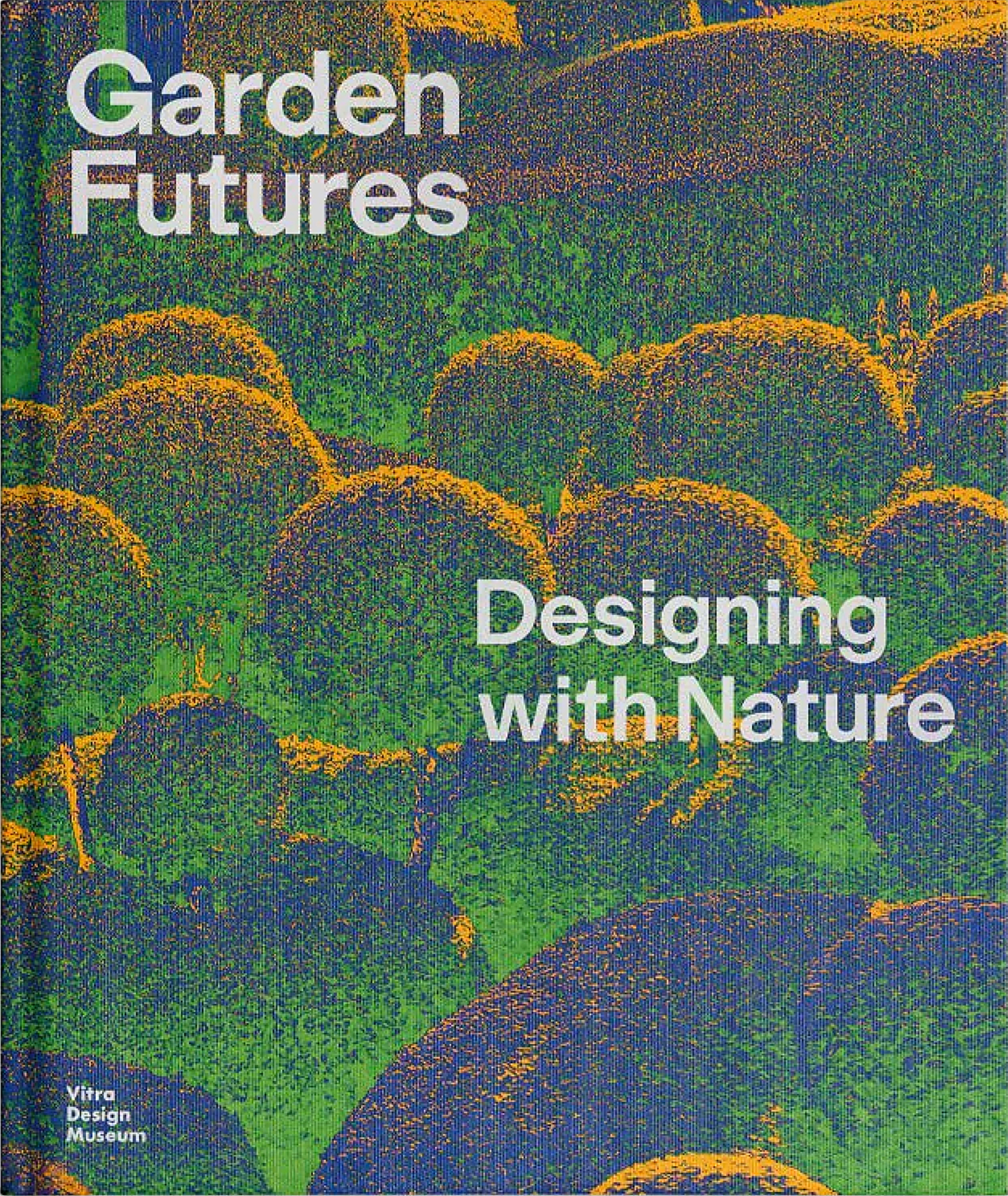




# Garden Futures

Designing  
with Nature

Vitra  
Design  
Museum



ABLE.  
Y.  
DRIA MONOECIA. POLYGAMIA.

# Taming the Taxonomy

The kingdom of plants is a place of overwhelming diversity. Leaves, flowers, fruits, and stems come in a kaleidoscopic expression of shapes, textures, and colours. Some plant species remind the innocent human eye of peach-coloured tongues (*Cryptostylis subulate*), ultra-long phalluses (*Titan arum*), or life-sized pistachio ice cream scoops (*Azorella compacta*). With these endless variations, botany – the scientific and orderly study of plants – has always posed a challenging endeavour to the human mind.

The first attempts to design a system of plant classification were made in India and Greece over 2300 years ago. In Europe, however, many of the early botanical insights fell into oblivion during the Middle Ages, when scholars focused on the medical aspects of plants and not their taxonomic traits<sup>1</sup>. It was only with the rise of botanical gardens as a place of scientific curiosity that serious efforts of tackling plant systemization were reintroduced in Renaissance Europe. In the gardens of medical universities and monasteries, including Orto botanico di Pisa (opened 1544) and Orto botanico di Firenze (opened 1545), botanists such as Italian Luca Ghini cultivated and classified plants. Their work led to a new type of publication, the herbarium, in which they documented and compared dried specimens in a systematic manner.

Nonetheless, there was no universal system in place; plants were classified inconsistently and names for new species were a matter of taste, often voluminous and complicated. The tomato, for example, was called *Solanum caule inermi herbaceo, foliis pinnatis incis*, which translates in English as “the solanum with the smooth stem which is herbaceous and has incised pinnate leaves”. This kind of tongue-twister must have been rather impractical for a chat between two botanists.

In the eighteenth century, now legendary Swedish botanist Carl Linnaeus set out to clean up what he perceived as a mess. While working as head gardener for the director of the Dutch East India Company, George Clifford, at his summer home in Hartekamp near Haarlem, Linnaeus had access to a vast botanical library, greenhouses, a grand garden, and the company's vegetal prey from overseas explorations. His studies of the sumptuous flora would provide the basis for a radical idea: the kingdom of plants could be neatly organized by applying "the social hierarchy of his day, with its kingdoms, provinces, parishes and villages, to the natural world. He slotted plants [...] into a framework of five main categories – kingdom, class, order, genus, species"<sup>2</sup> – and from there each plant was called by just two succinct Latin names,

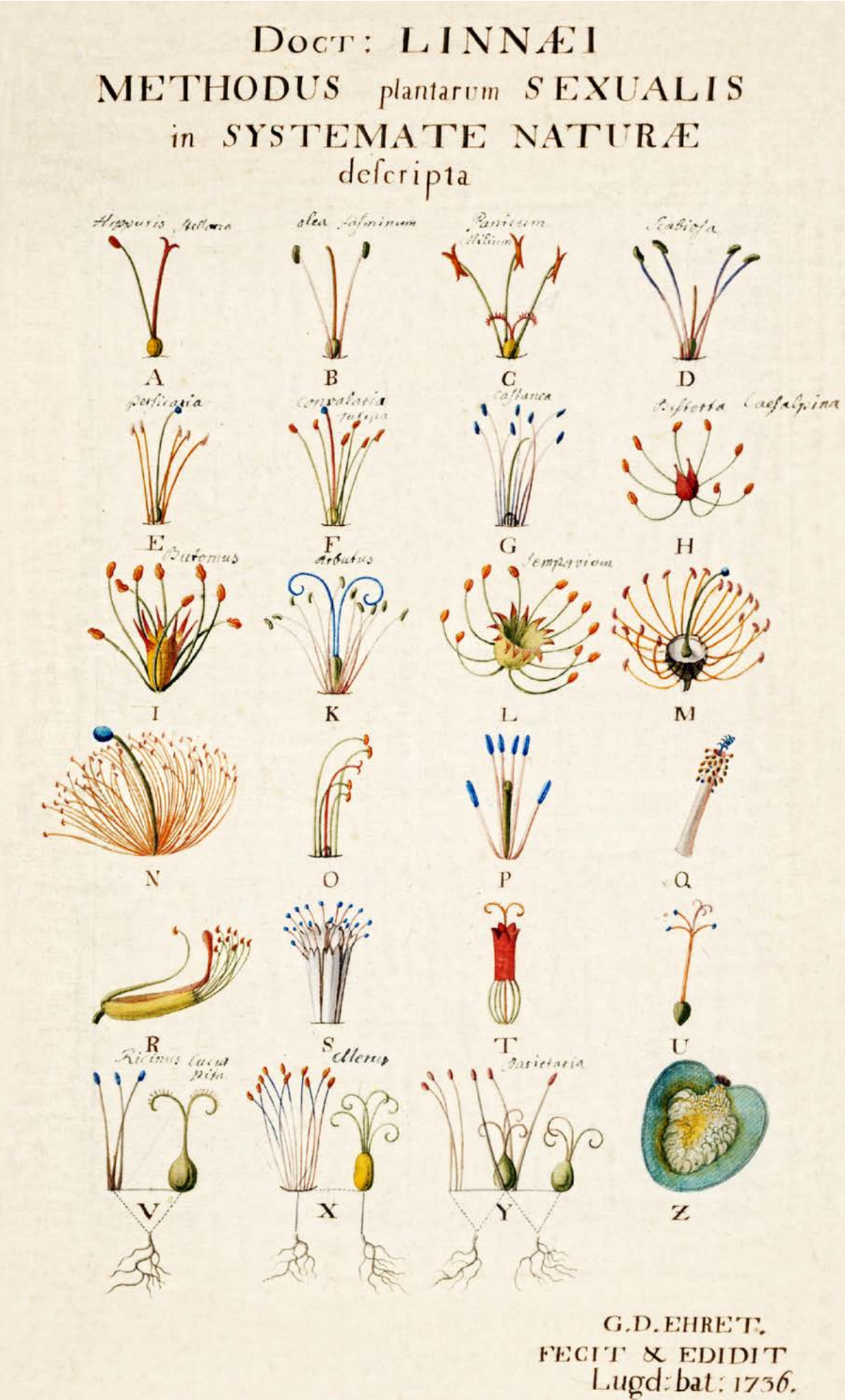
→ Carl Linnaeus established three kingdoms in his *Systema Naturae*, namely *Regnum animale*, *Regnum vegetabile*, and *Regnum lapideum*. Tabular representation of the plant kingdom, from Linnaeus, *Systema Naturae*, 1735.

# REGNUM VEGETABILE

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| <p>* CALICE CADUCEO.</p> <p><i>Adiant. Chelidonium</i> T.</p> <p><i>Podophyllum. Anemone</i> T.</p> <p><i>Cochlearia</i> T.</p> <p><i>Sanguinaria</i> D. *</p> <p><i>Chelidonium</i> T.</p> <p><i>Glaucium</i> T.</p> <p><i>Papaver</i> T.</p> <p><i>Argemone</i> T.</p> <p><i>Sarcocolla</i> T.</p> <p><i>Calophyllum</i> M.</p> <p><i>Tilia</i>.</p> <p>* CALICE PERISTENTE.</p> <p><i>Pegonium. Hymenocallis</i> B.</p> <p><i>Lacynophylla</i> B.</p> <p><i>Michelia</i> T. <i>Samolus</i> H. M.</p> <p><i>Ascarum. Pteris</i> D.</p> <p><i>Celastrum</i> T.</p> <p><i>Alnus</i> T.</p> <p><i>Caryophyllus</i> T.</p> <p><i>Theca</i> T.</p> <p><i>Melissa</i> T.</p> <p><i>Balastrum</i> H. M.</p> <p><i>Cypripedium</i> T.</p> <p>* CALICE TARSICENT.</p> <p><i>Euphorbia</i> L. 3.</p> <p><i>Cereus</i>.</p> <p><i>Oryza</i> T. <i>Tuna</i> D.</p> <p><i>Cadua. Melicaria</i> T.</p> <p>* N. 3. <i>Delphinium</i>.</p> | <p>* PETALI LAB. SUP. NULLO.</p> <p><i>Bulga. Bugula</i> T.</p> <p><i>Potamo.</i></p> <p><i>Tecum.</i></p> <p><i>Thlasia. Chamaepitys</i> T.</p> <p>* PETALI LAB. SUP. BREVE.</p> <p><i>Oryzium</i> T.</p> <p><i>Thymus</i> T.</p> <p><i>Saracolla</i> T.</p> <p><i>Staphylinum</i> T.</p> <p><i>Thymus</i> T.</p> <p><i>Lavandula.</i></p> <p><i>Nerium.</i></p> <p><i>Hyssopus.</i></p> <p><i>Cinopodium.</i></p> <p><i>Matricaria.</i></p> <p><i>Betonica.</i></p> <p><i>Glechoma. Calamintha</i> T.</p> <p><i>Chamaecrista</i> B.</p> <p><i>Ruphrichia. Ruz. clausa</i> B.</p> <p><i>Ocimum.</i></p> <p>* PETALI LAB. SUP. CONCAVO.</p> <p><i>Mentha.</i></p> <p><i>Staphylinum</i> R.</p> <p><i>Euphorbia</i> R.</p> <p><i>Moldavia.</i></p> <p><i>Polemonia</i> H.</p> <p><i>Stachys.</i></p> <p><i>Galopifolium.</i></p> <p><i>Ladanium</i> D. <i>Tetrachis</i> D.</p> <p><i>Lamium.</i></p> <p><i>Malva.</i></p> <p><i>Cordia.</i></p> <p><i>Galathea</i> D.</p> <p><i>Lecocarpus.</i></p> <p>* PETALI LAB. SUP. GALEATO.</p> <p><i>Dracopis.</i></p> <p><i>Scutellaria</i> R.</p> <p><i>Calidia</i> T.</p> <p><i>Brutella.</i></p> <p><i>Phloxia.</i></p> | <p>* PERICARPICO UNICULARI.</p> <p><i>Idiota.</i></p> <p><i>Croton.</i></p> <p><i>Cable.</i></p> <p><i>Myrsine.</i></p> <p><i>Bumelia. Sapindum</i> T.</p> <p>* PERIC. BRIO. DISSIP.</p> <p><i>OPHIOST.</i></p> <p><i>Thlasia</i> T.</p> <p><i>Berberis</i> D.</p> <p><i>Bifurcata. Thlasia</i> T.</p> <p><i>Naltium.</i></p> <p><i>Alnus</i> R.</p> <p><i>Coronopus</i> H. R.</p> <p><i>Lepidium.</i></p> <p><i>Artemisia</i> R.</p> <p><i>Cochlearia.</i></p> <p><i>subulata</i> R. <i>Juncifolia</i> R.</p> <p>* PERIC. BRIO. DISSIP.</p> <p><i>PARALL.</i></p> <p><i>Alyfium.</i></p> <p><i>Draba</i> D.</p> <p><i>Ludwigia</i> T. <i>Bulmaria</i> R.</p> | <p><i>Hermaphrodite.</i></p> <p><i>Melochia</i> D. *</p> <p><i>Agave. Ananassoides</i> T.</p> <p>* PETALANDRIA.</p> <p><i>Malva.</i></p> <p><i>Alnus</i> T.</p> <p><i>Malope</i> T.</p> <p><i>Lavatera</i> A.</p> <p><i>Golfysium. Xylis</i> T.</p> <p><i>Alcea. Malva</i> T.</p> <p><i>Althaea</i> T.</p> <p><i>Urena</i> T.</p> <p><i>Timonium. Ramnia</i> R.</p> <p><i>Alnus. Kalmia</i> T.</p> <p><i>Camellia</i> T. <i>Jubaea</i> K.</p> <p><i>Sida. Althaea</i> M.</p> <p><i>Favaria. Inga</i> P.</p> | <p>* FLORE SIMPLICI.</p> <p><i>Dottiantha</i> R.</p> <p><i>Ranunculus</i> T. <i>Cardus</i> R.</p> <p><i>Laevonia</i> M.</p> <p><i>Jaffone</i> T. <i>Ranunculus</i> T.</p> <p>* SIMPLICIOLITI.</p> <p><i>Lampyris.</i></p> <p><i>Cochlearia.</i></p> <p><i>Cassia.</i></p> <p><i>Zadachia.</i></p> <p><i>Tristachya. Dent. Lami</i> T.</p> <p><i>Hieracium.</i></p> <p><i>Sonchus.</i></p> <p><i>Chondrilla.</i></p> <p><i>Pilea</i> T.</p> <p><i>Ladicia.</i></p> <p><i>Sclerocarya.</i></p> <p><i>Trigonon.</i></p> <p>* FLOREUSOLI.</p> <p><i>Chrysothemum. Linaria</i> M.</p> <p><i>Eupatorium.</i></p> <p><i>Sphaerocarpus. Echinops</i> T.</p> <p><i>Scutellaria.</i></p> <p><i>Verbena. Bident</i> T. P.</p> <p><i>Carlinia.</i></p> <p><i>Xanthoxanthum</i> T. <i>Stale</i> R.</p> <p><i>Serratula</i> D.</p> <p><i>Callistemon.</i></p> <p><i>Carduus.</i></p> <p><i>Cinara.</i></p> <p><i>Archimedes. Lappa</i> T.</p> <p><i>Cnicus.</i></p> <p><i>Petalites.</i></p> <p><i>Kleinia</i> T. <i>Anthyminoides</i> B.</p> | <p>* RADIO PETAL. DESTITUTO.</p> <p><i>Antennaria.</i></p> <p><i>Abutilum.</i></p> <p><i>Abrotanum.</i></p> <p><i>Filago.</i></p> <p><i>Ananthocorylus</i> V.</p> <p><i>Tanacetum</i> T.</p> <p><i>Baccharis</i> T.</p> <p><i>Senecio.</i></p> <p>* RADIO PETAL. DESTITUTO.</p> <p><i>Antennaria.</i></p> <p><i>Abutilum.</i></p> <p><i>Abrotanum.</i></p> <p><i>Filago.</i></p> <p><i>Ananthocorylus</i> V.</p> <p><i>Tanacetum</i> T.</p> <p><i>Baccharis</i> T.</p> <p><i>Senecio.</i></p> | <p>* RADIO PETAL. 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← Illustration by Georg Dionysius Ehret, depicting Linnaeus's sexual classification of plants from *Systema Naturae*, 1735  
➤ "A Garden of Parallel Plants" from Leo Lionni, *La botanica parallela*, 1976

representing genus and species. He then went on to consider the number and arrangements of sexual organs as the most important character for designating the class of a plant within his system. In a rather sexualized and patriarchal version of nature, Linnaeus formulated an index based on the number of “husbands” (male stamens) and *concubinae* (female pistils) that were sharing the “bed” within a “house”.

The method of Linnaeus to bring order into the overflowing world of living things wasn't merely an act of scientific need, but should also be viewed as an act of design. If we consider the roots of design in the Latin term *designare*, which translates as “to mark out, to choose, to designate”, then we might also see the parallels to his classification system. Linnaeus's work equally *designates* and *chooses* “constant, certain and organic”<sup>3</sup> plant features as representative, and thereby predefines what one should actively look at and what one should simply ignore. In order to render the sweeping kingdom of plants into numerical and standardized terms, one could argue that Linnaeus had to *design* this highly selective, new botanical gaze.

Shortly after Linnaeus published his theories in *Species Plantarum* in 1753, he was critically acclaimed by his contemporaries, amongst them philosopher Jean-Jacques Rousseau who praised him as the “greatest man on earth”<sup>4</sup>. Linnaeus claimed success in what so many before had failed to do: taming the vast plant kingdom through the human mind. The foundations for modern taxonomy had been laid, fitting to the emerging world view of the time – rationalism.

Famous rationalist René Descartes wrote in 1637 that if we can describe, understand, and organize life, we can also “render ourselves the masters and possessors of nature”<sup>5</sup>. The idea was that if we could comprehend and control (and ultimately exploit) our planet through intelligence and technological innovation, we could continue to claim top position in nature's hierarchy. Fast-forward nearly 400 years: if Linnaeus, a firm believer in the idea of plants as God's creation, was to take a walk through our contemporary landscape, he would likely encounter genetically engineered species resistant to disease, plants with new DNA strands that glow at night, plants that grow without soil, and plants that are mere 3D replicas of their long-lost originals. Welcome to the age of the Anthropocene, Mr. Linnaeus, we have taken God's creation into our own hands!

However, cracking glaciers, rising sea levels, and increasing extinction rates draw a very different picture of our position within the world. The manifestations of our ecological crises tell us that the rationalist fantasies of total control and endless growth have reached their limits – our relationship with plants can no longer be a simple one-way street of domination. We need to change something. But where to start?

Perhaps the first thing to recognize is that the rationalist perspective on the world is a powerful one, for it suggests control, order, and hierarchies when in fact there are none. It's a way to look at the world



René Descartes wrote in 1637 that if we can describe, understand, and organize life, we can also “render ourselves the masters and possessors of nature”.





← Alexandra Daisy Ginsberg and Sascha Pohflepp, *Growth Assembly* (Herbicide Gourd), 2009

that we have found comforting, a story that we’ve constructed to feel safe as part of a complex and sometimes chaotic reality. By circulating this narrative we’ve learned to perceive the world in a certain way: mainly through numbers, abstractions, and logical arguments, which created a particular reality for us in turn.

Philosopher Timothy Morton proposes a different perspective, not one of hierarchy but of an ecological mesh that interconnects all living beings, including us. Here, human beings are not an outside force disturbing an otherwise natural system, rather they are an integral and interacting part of the system itself. But if we tell the stories of plants solely through the lens of scientific objectification, static taxonomies made of fixed categories and their related economic value, it is hard to see the dynamic mesh that plants and humans are part of. This is what biologist and philosopher Donna Haraway implies when she says, “It matters what stories tell stories”<sup>6</sup>

Looking for new perspectives and novel stories of plant life is to reconsider what Linnaeus did and to add a new chapter. Instead of taming life’s variable expressions, it is time to tame the taxonomy. We don’t have to kill the ideas of rationalism and its applications, but we do have to find ways of subverting and expanding its hegemonic, reductionist horizon towards more complex symbiotic relations, which we all rely on in the end.<sup>7</sup>

The potential to narrate the structures and experiences of the mesh seems to be particularly promising for designers. Speculative fiction has already paved the way for this. As a thought experiment it allows us to use our current reality as raw material for building stories about potential ways of coexisting. With the tools of science fiction, speculative evolution, and botanical fiction we can blow up bacteria, shrink humans, and let trees talk. We are also free to ask “what if?” Such a speculative way of thinking enables us to explore possible futures, while reflecting on our current day and age. It becomes a tool for structuring our present experience and making sense of reality from a different vantage point.

Authors, artists, and designers have used botanical fiction since the 1850s to discuss humanity’s role within the larger scheme of things. H. G. Wells criticized the colonial exploitation of nature in his short story “The Flowering of the Strange Orchid” (1894), Leo Lionni drew and sculpted fictional plants to question the reductionism of botanical reality in his fantastical herbarium *La botanica parallela* (1976; Eng. *Parallel Botany*, 1977), and Ursula K. Le Guin explored ideas of consciousness in plants in her sci-fi story “Vaster than Empires and More Slow” (1971), in which the forest of World 4470 senses and emanates fear as “one big green thought”<sup>8</sup>. Today, artists like Hito Steyerl, Suzanne Treister, or Alexandra Daisy Ginsberg – the latter visualizes plants as the means for the production of consumer goods in her project *Growth Assembly* (2009) – continue in the tradition of botanical fiction.

These approaches go far beyond a mere reflection of modern science and technology; they question what plants essentially are and how they escape their normative categorizations. And all suggest a view of seeing the interconnectedness between the planet and the creatures that live on it.

If we want to make these entanglements graspable, methods of botanical fiction, eco-fiction, and speculative evolution are clearly needed. Used in the right way these strategies can help us reconsider our way of looking at the plant kingdom, and in turn our role within the ecosystem – from domination to collaboration. A redesigned botanical gaze will contribute to narratives that break with the outdated idea of human mastery over nature and a hierarchy of living beings. Obviously, there is much to do within the “basic survival project in our present context”<sup>9</sup> as ecofeminist and philosopher Val Plumwood phrases it, but reconsidering our position within the living world through new narratives might be a healthy and necessary starting point. Not least because this might allow us to experience the world for what it is: a highly dynamic network of infinite connections and interdependencies ●

1 Alan G. Morton, *History of Botanical Science: An Account of the Development of Botany from Ancient Times to the Present Day*. London: Academic Press, 1981, pp. 58–64.

2 Kennedy Warne, “Organization Man”, *Smithsonian Magazine* (May 2007), online: <https://www.smithsonianmag.com/science-nature/organization-man-151908042>, accessed 31 August 2022.

3 Mary Letitia Green (ed.), *The “Critica botanica” of Linnaeus*, trans. Arthur Hort. London: Ray Society, 1938, p. 116. Carl Linnaeus’s *Critica botanica* was first published in 1737.

4 “What People Have Said about Linnaeus”, *Linné on line*, Uppsala University, online: [https://web.archive.org/web/20110513033923/http://www.linnaeus.uu.se/online/life/8\\_3.html](https://web.archive.org/web/20110513033923/http://www.linnaeus.uu.se/online/life/8_3.html), accessed 27 September 2022.

5 René Descartes, *Discourse on Method and Meditations*, trans. Laurence J. Lafleur. New York: Liberal Arts Press, 1960, p. 45 [French original: *Discours de la méthode pour bien conduire sa raison et chercher la verité dans les sciences*, VI, 2, Leiden, 1637].

6 See Donna J. Haraway, “It Matters What Stories Tell Stories; It Matters Whose Stories Tell Stories”, *a/b: Auto/Biography Studies*, vol. 34, no. 3 (2019), pp. 565–75.

7 We should mention, as described by Michael Pollan in his 2013 essay “The Intelligent Plant”, that plant science has been on the move over the last 15 years. New fields of research like plant neurobiology and plant communication are being explored and knowledge produced that starts to describe the complex lives and relationships of plants in scientific terms through both logical arguments and experiments. Michael Pollan, “The Intelligent Plant”, *The New Yorker* (23 December 2013).

8 Referring directly to Andrew Marvell’s poem “The Garden” from 1681 which speaks of a “green thought in a green shade”.

9 Val Plumwood, “Nature in the Active Voice”, *Australian Humanities Review*, no. 46 (May 2009), pp. 127–28.