

From Empire to Ecology the concealed foundations of plant life

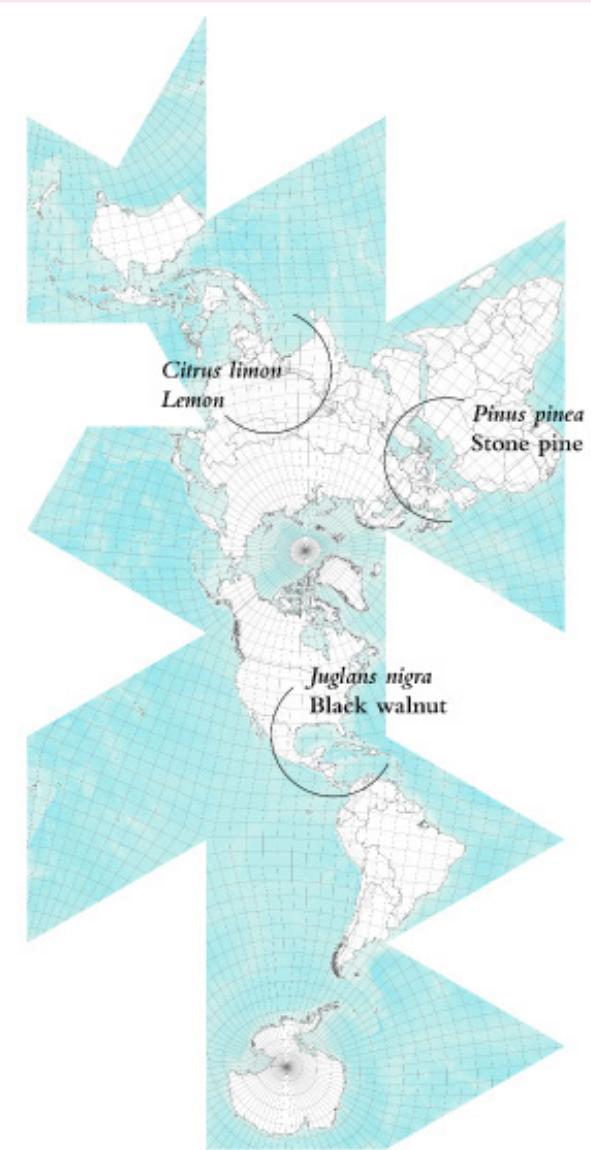
“Form is something mobile, something becoming, something passing.”

—J. W. Goethe 1790

Goethe proposed the concept of plant morphology during his Italian Journey, as a means to express his own dissatisfaction with the power of colonial science. From Goethe’s perspective, his era of scientific research had produced a limiting dependence on measure through microscopic study and on order through taxonomy. These two approaches, he believed, were quick to confirm “truth” rather than articulate and convey knowledge. The science of plant morphology evolved from his prose, whereby plant life is appreciated as living process studied through ongoing formation and transformation. Following Goethe’s lead, we will approach three plants based on first-hand experience and observation, so that we can appreciate the ongoing practices of exchange that bind human and plant life. Therefore, we will not celebrate great events or great struggles, but great plants: *Citrus limon* in the Giardino Segreto of The Villa Farnesina, *Juglans nigra* in the Orto Botanico and *Pinus pinea* within urban fragments. Together, we will discuss the aliveness of plants, their individual adaptations, and collaborative behavior as an opportunity to revisit our own cultural histories. In conversation and exchange, we will explore how each plant also informs broader issues from ecological systems to human progress, by including the subtle relationships that bind organisms, creating a gradation between categories that animates rather than separates. Attention to each plant’s individual behavior makes it possible to take stock of why nature and society are entangled, in order to untangle the assumptions of the anthropocene—namely that nature is gone. The counterargument offered here is that ‘nature’ is very much alive.

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Citrus limon

Lemon

Citrus likes to mutate, creating a great deal of botanical confusion. As *Citrus* genes are deleted, inserted, or rearranged the plant makes decisions by taking cues from one another, fostered by environmental conditions. This same indifference is also why these plants take so well to grafting, pruning and other forms of human interference and forced migration. Roman scholar G. Ferrari was the first to confront the ensuing taxonomic havoc, as Italy established itself at the center of an important *Citrus* economy. But the promiscuity of *Citrus* needed to be resolved before the empire could properly benefit and develop a commercial industry. Ferrari's system differentiated the three rigid categories still in use today: citrons, lemons and oranges. The central theme of his treatise is the mythical garden of the Hesperides, comparing it with the contemporary flowering of the Italian garden during the 'Golden Age'. At the Villa Farnesina the cultivation of *Citrus* exemplified the wealth of Agostino Chigi— only the richest Italians could persuade these plants to grow and force them to prosper.

notes.

Juglans nigra

Black walnut

Allelopathy is communication between plants—plants evolved chemicals in much the same way that humans evolved language. But it has taken some time for our species to appreciate the less visible attributes and behaviors of plant life. Communication is vital to growth, as signals either create tension or invite collaboration in plant life. Black walnut is usually found growing alone or in stands because of an antagonism established in the soil that prohibits other plants from establishing nearby. Observations of black walnut include another remarkable adaptation—suckering and sprouting. Unfortunately, this is not well understood due to imprecise botanical terminology and an insistence on distinguishing plant “parts” regardless of origin. Due to its valuable wood, humans have used shoot and root cuttings to advance propagation of the black walnut without a deeper understanding of the role of the parent plant and its complex below ground intelligence. This active rethinking invites expression rather than identification; as recognition, alliances, mergers and shared features are acknowledged. Accepting that living organisms have intelligence and that plant life behaves by modifying its relationships through collaboration can generate new terms of engagement.



Above: Stone pine seedling in the pineta at Castelfusano
Below: Cave paintings at la Sarga, Spain. Earliest record of *Pinus pinea*.

Rosetta S. Elkin is Principal of RSE Landscape, Assistant Professor of Landscape Architecture at Harvard University's Graduate School of Design, and Faculty Associate at Harvard Arnold Arboretum. Her research and teaching consider living environments with a particular focus on plant morphology, behavior, and intelligence. She is committed to design as a means to address the risk, injustice, and instability brought about by planetary climate disintegration. As Co-Director of the Risk and Resilience MDes Program, her pedagogy attends to biological complexity as a neglected aspect of ecosystem integrity and recovery. Her practice prioritizes public exhibitions, open access publishing, and collaborative research to promote a more thoughtful and accountable design agenda. She is currently the recipient of the 2018 Garden Club of America Rome Prize in landscape architecture.

As a registered landscape architect in the Netherlands, Elkin founded RSE Landscape in 2007. Current projects include the study of root systems in coastal defense strategies, an investigation of state-scale ecological transformation in Rhode Island, and design research for sea-level adaptation on barrier islands in Florida. RSE Landscape is also currently working on a commission from the Robert Rauschenberg Foundation concerning landscape adaptation on Captiva Island, Florida, and a Harvard Climate Change Fund-supported project that documents climate-induced retreat and environmental migration case studies worldwide.

Elkin is the author of *Tiny Taxonomy* (Actar 2017), a publication which reflects on the scale of individual plants in practice through a reading of three design installations. With support from the Graham Foundation, Dutch Fonds BKVB, and Canada Council for the Arts, she is currently working on a monograph publication about the geo-political ambitions of continental tree planting programs. Elkin's work has been exhibited at the Victory and Albert Museum, Les Jardins de Metis, Chelsea Festival, and the Isabella Stewart Gardner Museum, and featured in publications including *Journal of Landscape Architecture*, *New Geographies*, *Harvard Design Magazine* and *Lotus International*. Before joining the GSD as the Daniel Urban Kiley Fellow, she was a Senior Designer and Project Manager at Inside/Outside in Amsterdam and taught at the Academie Bouwkunst and the Gerrit Rietveld Academy.



Above: Ferrari (1584-1655) *Hesperides, De Malorum Aureorum cultura et Usu*.
Below: Lusieri (1755-1821) *A Panorama of Palermo and the Conca D'Oro*.

Pinus pinea Stone pine

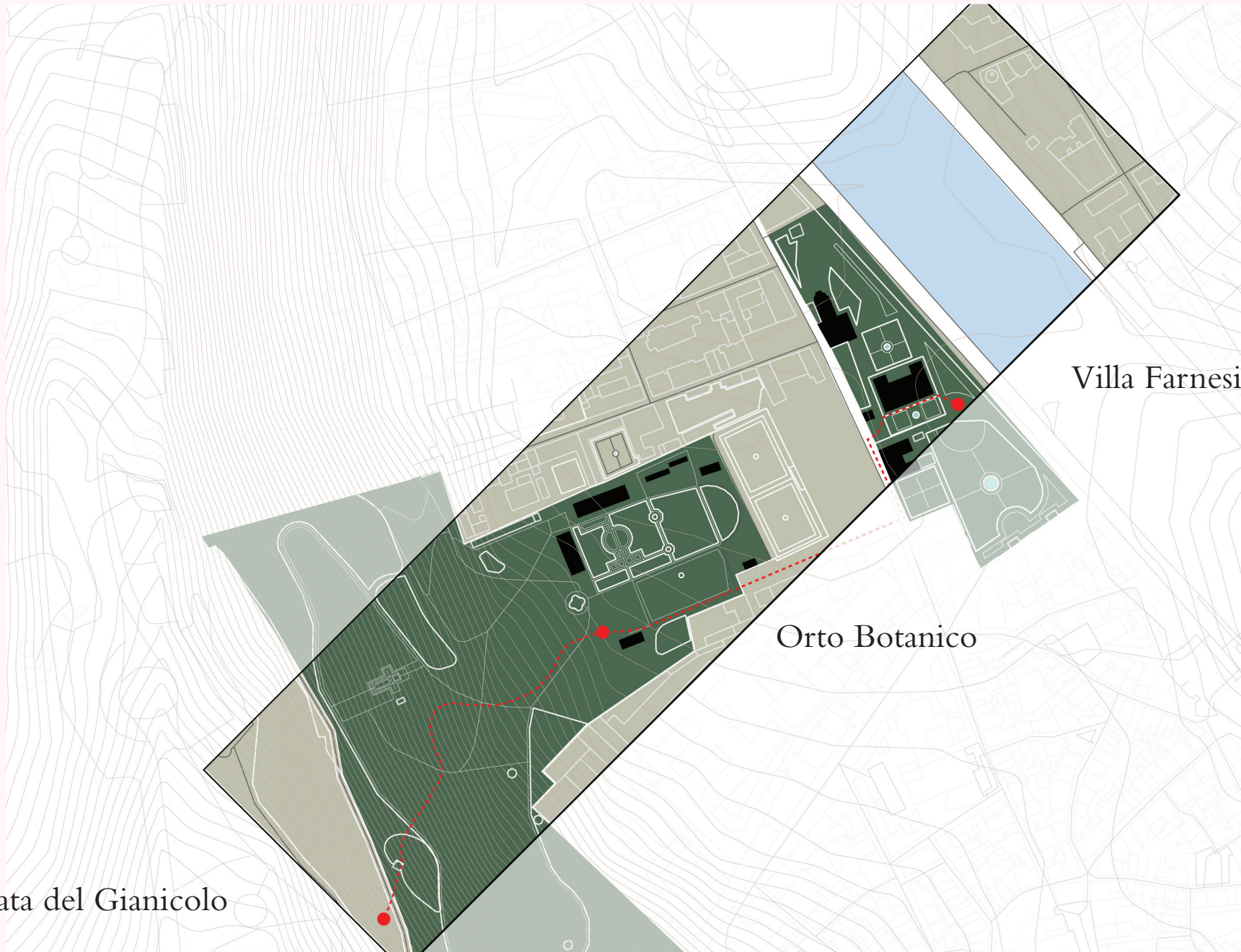
The nourishing nuts of stone pine have been consumed by our species since the Paleolithic era, approximately 6,000 years ago. Portable and easy to store, seeds and cones moved along the trade routes of the ancient Mediterranean cultures expanding their range in turn. Prior to the rise of humans, such gymnosperm plants (meaning naked seed) prospered because of the evolutionary advantage of mobile reproduction, or the movement of seed. Each seed preserves enough food to nourish a future sapling and encourage root mass until its internal dataset is strong enough to invite in the elements and work with other organisms to prosper. If stored dry, the hard-shelled pine nuts are durable for years without losing the capacity to germinate. But these trees only produce fruit around the tenth year, while maturation takes three years to complete. As a result, this plant persists as it invites collaboration but has resisted industrial and commercializing standards. Stone pine thus assumes cultural, symbolic and spiritual attributes across time that now expands to include ecological dominance, even within sites of extreme urbanism and the fluctuations of a changing climate. What is life as we *don't* know it?



Above: Ernest H. Wilson *New England Trees*, 1923. Holdings of Harvard Arnold Arboretum.

Below: Herbaria sample of Black walnut, University of North Carolina.

Passeggiata del Gianicolo



Orto Botanico

Villa Farnesina

