



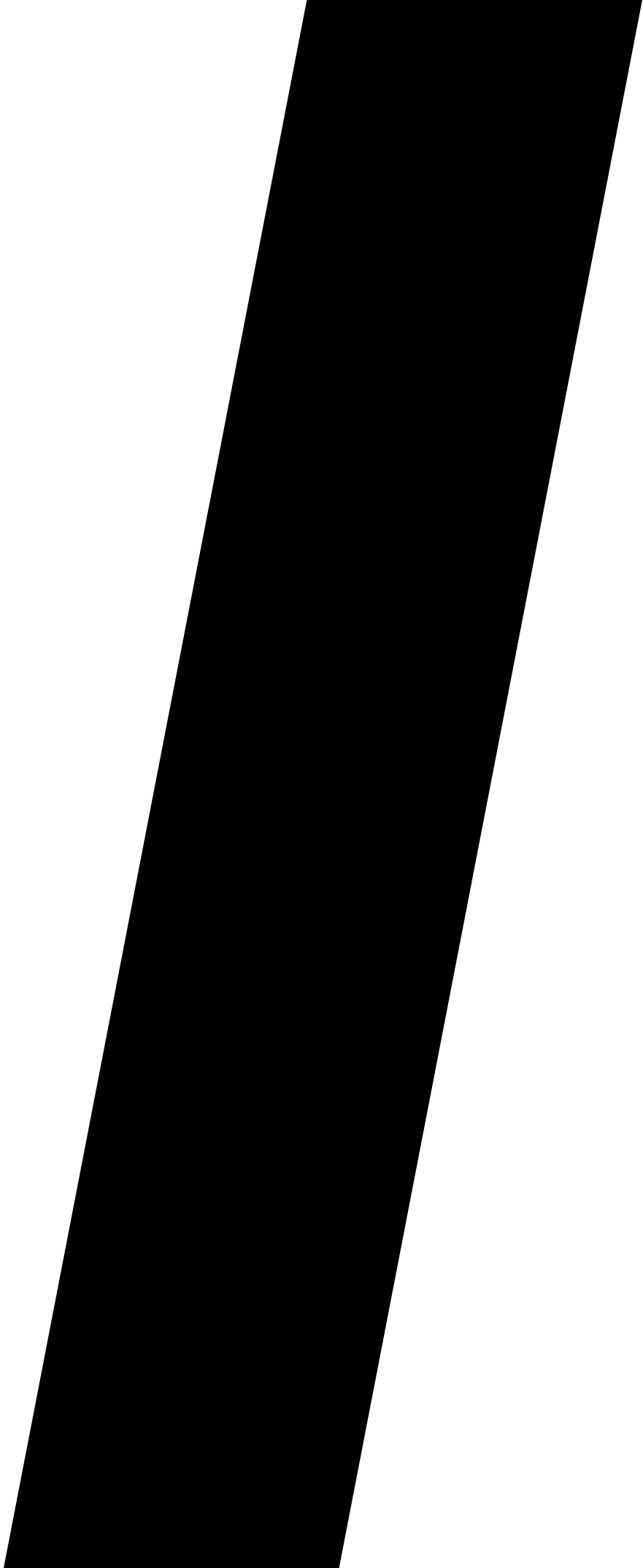
Portugal Lessons

Environmental Objects

laba EPFL
Teaching and Research in Architecture

Portugal Lessons

Environmental Objects



Introduction

Homemaking on a Hostile Planet

1. Hubris vs. Homemaking 9
2. Dwelling in the End Times 11
3. Environmental Forms of Life 11
4. Lessons From Portugal 13

Homemaking on a Hostile Planet

The built environment has grown into an alarming global force. We impact over 83 percent of the terrestrial biosphere, we dredge more sediment than all natural processes combined, and after water and air, sand is the most exploited resource, itself now also endangered. In our age of human-induced climate change, life on Earth challenges who we are, where we live, and how we live. These are profoundly architectural questions, if we choose to see the discipline in a broader scope than its increasingly technocratic confinements. These challenges demand a rethinking of our organized forms of life, and accordingly, a rethinking of our forms of building.

1. Hubris vs. Homemaking

The dream is to see invisible forms
Of imprecise distance, and, with sensitive
Movements of hope and of will,
To search the cold line of the horizon
For tree, for beach, for flower, for bird, for spring—
The well-deserved kisses of Truth.
— Fernando Pessoa¹

There is an old legend that attributes the founding of Lisbon to the Greek hero Odysseus, mythical king of Ithaca and traveler in Homer's epic poem *The Odyssey*. The claim dates back to Roman antiquity, but there is little evidence to support it other than a weak etymological link between the protagonist's Latin name, Ulysses, and Lisbon's earlier alias, Olisippo.² Nevertheless, the legend stuck and came to feature prominently in Portugal's national mythology, most famously in its two literary epics: Fernando Pessoa's *Message* and Luís Vaz de Camões's *The Lusiads*.³ Both works refer to Ulysses in their content as well as in their form. Written in the literary style epitomized of the hero's journey, they recount the fateful trials of a heroic subject, the Portuguese people, in their nautical adventures "discovering" the world.⁴ [Fig. 1]

In this cannon, travel is narrated as a rite of passage, generating a process of transformation and atonement that, upon completion, grants the hero a god-like status. Its purpose is thus encapsulated in the glory of the homecoming. For Ulysses, this meant the return to Ithaca and his long-waiting wife Penelope; for Portugal it represented wealth and imperial recognition.⁵ [Fig. 2] This articulation of traveling and homecoming is pervasive to this day in Portuguese culture, from its penchant for nostalgic art forms, such as Fado, to its recurrent national justifications for the colonial impulse as its own manifest destiny.⁶

In his 1991 book *Travel as Metaphor: From Montaigne to Rousseau*, Belgian scholar Georges Van Den Abbeele

speaks of travel as an economy. It offers a possibility of gain—in power, wealth, or knowledge—as well as a danger of loss—through poverty, exile, or death. In order to mitigate this risk, travel needs a fixed point of reference: the *oikos*, which is Greek for home and, incidentally, the root of the word economy.

The positing of an *oikos* ... is what domesticates the voyage by ascribing certain limits to it. The *oikos* defines or delimits the movement of travel according to that old Aristotelian prescription for a "well-constructed" plot, namely, having a beginning, a middle, and an end. ... [T]he *oikos* is most easily understood as that point from which the voyage begins and to which it circles back at the end[,] ... a transcendental point of reference that organizes and domesticates a given area by defining all other points in relation to itself.⁷

Although home and travel are binary opposites, the two are not equal in value: home can only be conceived in function of travel, retroactively, and "at the price of its being lost."⁸ Citing Abbeele and this cultural dominance of travel, Portuguese sociologist Boaventura de Sousa Santos interprets "the travel motif as a core metaphor for the modern way of being in the world."⁹ He argues that travel expresses a sense of movement inherent in the idea of modern progress seen as the constant pushing of traditional boundaries against the 'homelessness' of the unknown.¹⁰ This becomes evident, for example, in our depiction of scientific achievements as "conquering new horizons" or "exploring new territories"—history told as a hero's journey. Conversely, home is the vernacular root that grounds us in habit and tradition; to be native means "to be born and to live in bondage to a place," to be a slave. Home is thus rendered inimical to both progress and liberation.

Citing Aristotle in her 1958 book, *The Human Condition*, political theorist Hannah Arendt explores a similar equation from an earlier stage of Western

culture: the private and public realms of ancient Greece, embodied in the figures of the *oikos* and the *polis*. *Oikos* is the place of *oikonomia* or “economy,” where household management is sustained. *Polis* is the place of the *politikos* or “politics,” where citizenship is performed.

In this binary, house and city operate complimentary social functions. The purpose of the *oikos* is to manage social reproduction by ensuring the laboring activities necessary to family maintenance, such as cooking, shelter, cleaning, sex, etc. It is characterized by three kinds of despotic relationships between the household head, the *paterfamilias*, and the household members subordinated to him: the slave, the wife, and the child. In contrast, the *polis* is the realm of freedom from biological necessity, where the household head can be free among equals and distinguish himself individually through the practice of “great words and great deeds.”¹¹

To be political, to live in a *polis*, meant that everything was decided through words and persuasion and not through force and violence. In Greek self-understanding, to force people by violence, to command rather than persuade, were prepolitical ways to deal with people characteristic of life outside the *polis*, of home and family life, where the household head ruled with uncontested powers, or of life in the barbarian empires of Asia, whose despotism was frequently likened to the organization of the household.¹²

So, here too, the house is rendered as a place of coercion and non-freedom, opposed to culture, progress, and liberation. While necessity is fulfilled in the natural realm of the *oikos*, which both contains and hides the menial labor of biological maintenance, freedom is achieved through transcendental action, which can only exist publicly, out in the *polis*. Women, children, and slaves must remain confined to a domestic sphere that is, nonetheless, the pre-condition for the experience of freedom by others. Consequently, freedom is conceived as the possibility to leave the *oikos*, to travel away from the home. *The Human Condition* opens with a telling, more recent illustration of this feeling on a collective scale:

In 1957, an earth-born object made by man was launched into the universe, where for some weeks it circled the earth according to the same laws of gravitation that swing and keep in motion the celestial bodies—the sun, the moon, and the stars. ... This event, second to no other, not even to the splitting of the atom, would have been greeted with unmitigated joy if it had not been for the uncomfortable military and political circumstances attending it. But, curiously enough, this joy was not triumphal; it was not pride or awe at the tremendousness of human power and mastery which filled the hearts of men. ... The immediate reaction, expressed on the spur

of the moment, was relief about the first “step toward escape from men’s imprisonment to the earth.”¹³

Arendt notes how this fear of entanglement in worldly matters has pervaded our culture for millennia: “Christians have spoken of the earth as a vale of tears and philosophers have looked upon their body as a prison of mind and soul.”¹⁴ This perceived imprisonment within the “natural” realms of the earth, the body, or the domestic is what drives the travel impulse to value the home only retroactively, as a nostalgic point of reference for departure and homecoming. As our culture reached the Space Age, feelings of contempt for our earthliness were once again magnified, leading Arendt to wonder:

Should the emancipation and secularization of the modern age, which began with a turning-away, not necessarily from God, but from a god who was the Father of men in heaven, end with an even more fateful repudiation of an Earth who was the Mother of all living creatures under the sky?¹⁵ [Fig. 3]

Pondering over this question, another moment in recent history stands out with unquestionable importance. On August 6, 1945, an American plane dropped the world’s first atomic bomb over Hiroshima in Japan, immediately killing 80,000 people and destroying 90 percent of the city. Three days later, another bomb dropped on Nagasaki killed an estimated 40,000 people. [Fig. 4] Philosopher Noam Chomsky recalls his experience of the event:

[In that moment,] it was perfectly obvious ... that humans, in their glory, had achieved the capacity to destroy everything. Not quite at that time, but it was clear that, once the technology was established, it would only be developed further, escalate and would soon reach the point of becoming what Dan Ellsberg ... calls a “doomsday machine”—an automatic system set up so that everything becomes annihilated—and as he points out, we have indeed constructed such a machine; we’re living with it.¹⁶

In Chomsky’s words, the threat of nuclear omnicide, genocide extended to all forms of life, “has since been dangling over our heads like a Sword of Damocles.”¹⁷ Hence, the atomic bomb might well be Sputnik’s dark mirror—while the latter signaled the possibility of escape, the former marked our capacity for mass self-destruction. While one seemed to promise the ultimate emancipation from the immediacies of context, the other showed our ability to erase context. Sputnik and the A-bomb, two of humanity’s most extraordinary achievements, encapsulate the travel economy in its alienating escapism and blind faith in technological progress. They are monuments of our civilizational disembedding and our incapacity to find transcendence and freedom in the maintenance and preservation of our common home.

2. Dwelling in the End Times

It is 2 Minutes to Midnight.

— Doomsday Clock, *Bulletin of Atomic Scientists*¹⁸

Rhapsody in August is a beautiful film by Japanese director Akira Kurosawa. It tells the story of the healing process of an elderly woman, Kane, dealing with her fading mental health and painful memories of the atomic bomb. As a storm brews on the horizon, trauma makes her relive the past and mistake the atmospheric phenomenon with another air raid. In the movie's most famous scene, she describes her experience of the bombing of Nagasaki, which she witnessed visually from a distance: "Suddenly, the sky split open and glared at us furiously. A great eye stared through the crack."¹⁹ The shot cuts to her view. A mushroom cloud erupts on the horizon and is immediately overlaid by an all-seeing Eye of Providence scowling at humanity's hubris.²⁰ [Fig. 5]

Kane's delusion is spurred by a suggestive entwining of nuclear and climatic threats—the past bomb and the present storm, omnicide and ecocide. That coincidence reminds us that 1945 is also the historic moment that marks the onset of the Anthropocene, the new geological era named after humanity's implication in three accelerating planetary events: pollution, global warming, and mass extinction.²¹ Its meaning is scientific as well as political and symbolic. Political because it forces a re-embedding of humanity in nature as a collective geological force; symbolic because it compares that force to the Chicxulub asteroid, which struck the Earth 66 million years ago and wiped out 80 percent of life on the planet, including most dinosaurs. Like Kurosawa's eye in the sky, the Anthropocene is a reckoning for humanity, especially for those of us in the West whose histories of "epic traveling" and "civilizing mission" have mostly contributed to the present-day environmental crisis.

Reactions to this new climatic era have been fraught, despite general scientific consensus. Denial has been largely incited by powerful corporate lobbies but, in part, it has also been owed to a general sense of individual helplessness and grief: grief for the loss of nurturing Mother Nature, whose riches would provide eternal growth and discovery; helplessness in the face of an abstract climatic threat so entangled with a socio-economic system for which there seems to be no alternative. Denialism is itself also a form of escape, an alienation from reality.

According to French anthropologist Bruno Latour, Anthropocene is to humanity as "the creature" was to Dr. Frankenstein: an uncanny technological creation that makes us want to flee in horror. He argues that rather than abandon our monster, as Frankenstein did, we should learn to love it, just as the Christian God loved His Creation.²² The analogy is poignant and the

message is legitimate. However, it also reveals a problematic understanding of the Anthropocene that can easily lend itself to boastful claims about humanity's quasi-divine aspirations to master and geoengineer the planet.²³ The ancient Greeks called this hubris, a defiance of reason, owed to arrogance and ignorance, eventually leading to downfall or nemesis. Prometheus stole the fire, Icarus built his wings, Frankenstein birthed his creature, and we have anthropogenic Earth. However, Earth is not really our creation, and it is not really ours to control, nor create, nor abandon. In her 2014 book, *This Changes Everything*, Canadian journalist Naomi Klein explains:

"the monster" we are being asked to love is not some mutant creature of the laboratory but the earth itself. We did not create it; it created—and sustains—us. The earth is not our prisoner, our patient, our machine, or, indeed, our monster. It is our entire world. And the solution to global warming is not to fix the world, it is to fix ourselves.²⁴

Effectively, the Anthropocene is the "Era of Man" because it is the outcome of the odyssey of Man. In other words, there is a link between our culture's aspirations to "great, immortal deeds" and our urge for domination and escape, for ownership without responsibility. There is a link between our heroic techno-scientific achievements and our inability to direct those achievements toward the preservation of our species and planet. This link can be understood as a direct outcome of our culture's opposition between the cultural realm of progress and the natural realm of the home, a home which has historically been associated with feelings of captivity and violence that reduce acts of maintenance to menial servitude worthless of historical recount. Heroism, like all hubris, is inimical to homemaking, the kind of thinking and acting that the Anthropocene so urgently requires. Dwelling—both in the sense of "residing in" as well as "thinking about"—is the antithesis of escape. It is the act of lingering in and embodying a place and situation.

3. Environmental Forms of Life

Perhaps the outrage meriting a name like Anthropocene is about the destruction of places and times of refuge for people and other critters. ... Right now, the earth is full of refugees, human and not, without refuge.

— Donna Haraway²⁵

There is a famous quote that says "it is easier to imagine the end of the world than to imagine the end of capitalism."²⁶ Indeed, capitalist realism will have us think that "there is no alternative," that growth is inevitable, that pollution is our birth right, and that

inequality is natural selection.²⁷ In this mindset, there seems to be no resolution to the Anthropocene besides escape or death (the Sputnik or the A-bomb). And in fact, most of our crisis narratives fit within one of these plotlines—flee to a colony on Mars or perish in a Hollywoodesque Armageddon. Such spectacles of destruction are problematic because they tend to shun emotional response in favor of morbid voyeurism, a twisted kind of *Schadenfreude* whereby the misfortune we take pleasure in watching is our own.²⁸

A healthier alternative to this sort of End Times gloom is environmental preservation, but in our cultural mindset, acts of maintenance and care do not often qualify as historical epics of human freedom. They are too discreet to be universalized, too anonymous to be made heroic. The Anthropocene, so often steeped in heroic narratives that further domination and objectification, needs to be situated and politicized.

For starters, it is often implied that the Anthropocene is the collateral damage of widespread civilizational progress, but this is misleading. For many people, progress happened at the expense of dignity, and far from being a vehicle for freedom, modern progress was the very instrument of its denial.²⁹ Secondly, the causes and effects of the environmental crisis are not universally and democratically distributed. In fact, a relatively small percentage of the world's population (the industrialized Global North) is responsible for the greatest ecological footprint, while the bulk of the damage is being borne disproportionately by the world's most vulnerable in the Global South.³⁰ Lastly, contrary to widespread accounts, climate change is not an issue that poses insurmountable techno-scientific barriers; it is first and foremost a political crisis, or in the words of Naomi Klein, it is a message, telling us that our cherished Enlightenment ideals of progress are no longer viable.

The fact that the earth's atmosphere cannot safely absorb the amount of carbon we are pumping into it is a symptom of a much larger crisis, one born of the central fiction on which our economic model is based: that nature is limitless, that we will always be able to find more of what we need, and that if something runs out it can be seamlessly replaced by another resource that we can endlessly extract. But it is not just the atmosphere that we have exploited beyond its capacity to recover—we are doing the same to the oceans, to freshwater, to topsoil and to biodiversity. The expansionist, extractive mindset, which has so long governed our relationship to nature, is what the climate crisis calls into question so fundamentally.³¹

In sum, it is not so much the *anthropos* that lies at the core of the Anthropocene, at least not in any generalizing species-sense, but rather the collective actions of large corporations, heavy industry, and well-resourced nations. Climate change is intimately tied to our eco-

nomical model and responding to its perils, according to Klein, “requires that we break every rule in the free-market playbook and that we do so with great urgency.”³² Citing Klein and several other prominent environmentalists in his book *Decolonizing Nature*, American historian T. J. Demos explains that “[t]here are, in fact, plenty of solutions for sustainable living today, which, if implemented globally, could protect biodiversity and define a more equitable and inclusive socioeconomic order than today's environmentally destructive corporate-state oligarchy.”³³

Granted, from a pessimistic (albeit realistic) standpoint, the challenge is quite daunting. In his recent book *Old Gods, New Enigmas*, American urban theorist Mike Davis structures his environmental prognosis along two conflicting mindsets: a “pessimism of the intellect” and an “optimism of the imagination.” From the pessimistic viewpoint, he argues that we have likely “already lost the first, epochal state of the battle against global warming,” since by now it is “highly unlikely that greenhouse gas accumulation can be stabilized this side of the famous ‘red line’ of 450 ppm by 2020,” a crucial target in the goal to keep the global temperature rise below 2°C. Once this tipping point is passed, implementing systemic change will become much harder, especially in the context of economic crises such as the Great Recession, which provide a political alibi for ecological targets to be dismissed as “unaffordable sacrifices.”³⁴ As governments retreat from climate responsibilities, he warns, “socioeconomic inequality will have a meteorological mandate, and there will be little incentive for the rich northern-hemisphere countries ... to share resources for adaptation with those poor subtropical countries most vulnerable to droughts and floods.”³⁵ Davis counters this pessimism with a proposal garnered from “optimistic imagination.” He asks that we look to cities as ground zeroes for the convergence of climate action:

Although forest clearance and export monocultures have played fundamental roles in the transition to a new geological epoch, the prime mover has been the almost exponential increase in the carbon footprints of urban regions in the northern hemisphere. Heating and cooling the urban built environment alone is responsible for an estimated 35–45 percent of current carbon emissions, while urban industries and transportation contribute another 35–40 percent.³⁶

Davis revisits utopian socialist critiques of the modern city from the late 19th and early 20th centuries to garner visions of collaborative forms of living, where environmental concerns converge with struggles to raise living standards. He states that any hope in adapting human habitats to the Anthropocene depends precisely on the capacity to marry “the challenges of poverty, energy, biodiversity, and climate change within an integrated vision of human progress.”³⁷ Achieving

this, he admits, would “necessarily command a revolution of almost mythic magnitude in the redistribution of income and power,”³⁸ but he finds plenty of precedents in our histories of labor, housing, and civil rights struggles, and any form of human organization that subordinated property rights to the right to existence, designing ways of life based on a coherent sense of the dignity of others. So, despite pessimism, faced with the challenges to come, hope is an ethical imperative. ^[Fig. 6]

In sum, the economy of progress through travel and extraction has been the predominant way in which Western culture has looked at the planet: a logic of expropriation and management of natural resources catered to human needs and adventures, readily discarded after use. The current climate crisis is demanding a new ecological way of inhabiting the planet, which, as the name indicates (*oikologia*), requires a rethinking of our meaning of home (from *oikos*, “house” and *-logia*, “study of”). That means, quite literally, that housing—the design and planning of our forms of life—should become a ground for ecological debate and experimentation.

Within the discipline of architecture, issues of political and ecological cohabitation are frequently relegated to the larger scales of urban and landscape planning, or to the exterior realms of public space. Discourses on the architectural object and the domestic interior tend to be depoliticized and seen as private concerns. This is a missed opportunity for a discipline whose core *métier* is spatial organization and whose history is filled with exploratory visions of the future. As architects, we need to reclaim the courage to imagine wondrous horizons within the ecosystems that we have inherited, to find transcendence in the maintenance and preservation of life, to see the houses we build as environmental forms of life. We can start by reframing the hero’s journey away from distanced exoticism toward the embedded spaces that we inhabit every day, our domestic contexts, our *oikos*. Home-making is environment-making.

4. Lessons from Portugal

What the world needs is a good housekeeper.

— Aviva Rahmani ³⁹

The present book presents the results of the studio course offered in the 2017–2018 academic year by laba (Laboratoire Bâle), the architecture and urban design studio of the École Polytechnique Fédérale de Lausanne (EPFL). *Portugal Lessons: Environmental Objects* inaugurates a new series of studio courses dedicated to researching an approach to environmental aesthetics in architecture that focuses on modes of ecological contextualism. The book’s three-part structure reflects

the academic method employed in the studio. Part 1, “Territory,” presents a regional reading based on cartography. Part 2, “Field,” shows photographs of a trip to Portugal that took place in December 2017. Part 3, “Architecture,” presents 19 architecture designs produced by laba’s students as critical syntheses and proof of concept of the analysis generated in the preceding phases. All of them focus on housing programs.

By expanding the field of architecture onto the territorial scales, laba aims to claim the urban-environmental system as part of the architectural object, and foster an engagement with the “big picture” that is reflected in both design practice and critical thinking. Operating under the orientation Urban Nature, laba wishes to question the age-old opposition between architecture and the environment in light of today’s ecological crisis. “Environmental Objects” is both a mirror and a subversion of this opposition—the environment is a space that surrounds, encloses, and encircles; the object is a thing that limits a place and a point of view. In questioning this dynamic of separation, we want to imagine a discipline that amplifies its context, attunes to it, and renders it conscious.

With this in mind, the studio turns to Portugal’s history of architectural contextualism for traces of an aesthetic that can help us to move beyond architecture as the foreground of nature. In its original meaning, aesthetics means “to sensitize,” from the Greek *aesthesis*, which means “to breathe in, to perceive by the senses or by the mind.” To emphasize environmental aesthetics in architecture is to counter the alienated objectification that currently pervades the discipline, its anesthesia. To see architecture as an environmental threshold, that sensitizes rather than insulates, is to foreground the environment and de-objectify the building, hopefully revealing architecture’s implication in land use and exploitation.

We chose to focus on Portugal not only for its well-known histories of context-sensitive architectures, but also because of its ambivalent geography, which occupies two time-spaces simultaneously, the European and the colonial. Portugal’s empire was largely subordinated to British power, and southern Europe has long been subordinated in economic, political, and cultural terms to northern Europe, the powerhouse of the Enlightenment, especially since the onset of the Great Recession.⁴⁰ From this double periphery, between traveler and occupied, one hopes to gain access to both hegemonic structures and their subversive resistance, noticing the ways in which people rally to revive alternative forms of organization, emancipation, and life. ^[Fig. 7–10]

— Bárbara M. Costa

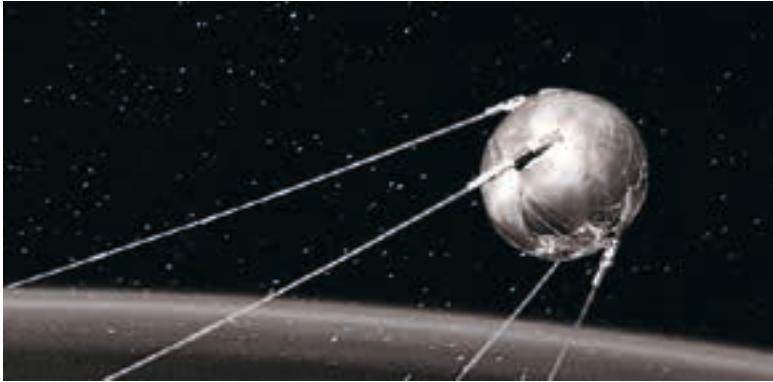
— Harry Guggler



[Fig. 1] John William Waterhouse, *Ulysses and the Sirens*, 1891. Oil on canvas, 100×201 cm. Melbourne: National Gallery of Victoria.



[Fig. 2] John William Waterhouse, *Penelope and the Suitors*, 1912. Oil on canvas, 129.8×188 cm. Aberdeen: Aberdeen Art Gallery & Museums.



[Fig. 3] Sputnik 1, the first artificial Earth satellite launched by the Soviet Union in 1957.



[Fig. 4] Nagasaki after the dropping of the atomic bomb on August 9, 1945. Photograph by Charles Levy.



[Fig. 5] Eye of Providence, or the all-seeing eye of God, alchemical woodcut, ca. 17th century. *Quo Modo Deum* translates as "This is the way of God."



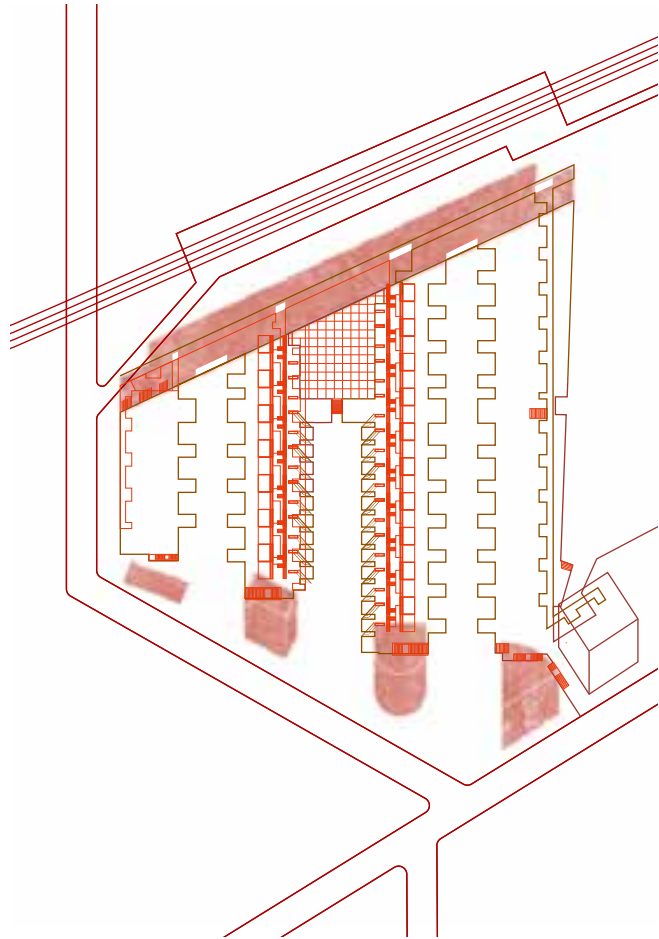
[Fig. 6] Poster from the SAAL Process (Local Ambulatory Support Service), ca. 1975–1976. *População Organizada, Habitação Conquistada* translates as "Organized Population, Conquered Habitation."



[Fig. 7] SAAL project of Bairro de S. Vitor, by Álvaro Siza, Porto, 1975. The SAAL was a revolutionary project that over 26 months, implemented approximately 170 housing projects that claimed environmental and land rights as human rights.



[Fig. 8] Still frame from *As Operações SAAL*, 2007, directed by João Dias.



[Fig. 9-10] Charlotte Din and Fiona Uka, Maps of SAAL project of Bairro da Bouça, by Álvaro Siza, Porto. From the laba teaching unit UE: U Cartography which maps buildings as environmental objects.

Notes and References

Teaching and Research in Architecture

- 1 XIV Entretien, in E.-E. Viollet-le-Duc, *Entretiens sur l'architecture*, Paris, vol. 2, 1872: 173.
- 2 William Morris, *Hopes And Fears For Art* (Worcestershire: Read Books) 2012 [1882].

Homemaking on a Hostile Planet

- 1 Fernando Pessoa, "II. Horizon" in *Message*, trans. Mark Will (Taipei: Cadmus & Harmony, 2017), 26. Original version:
O sonho é ver as formas invisíveis
Da distância imprecisa, e, com sensíveis
Movimentos da esp'rança e da vontade,
Buscar na linha fria do horizonte
A árvore, a praia, a flor, a ave, a fonte—
Os beijos merecidos da Verdade.
- 2 Several Roman authors referred to popular legends that the city of Lisbon was founded by Odysseus on his journey to Ithaca from Troy. Another unverified theory claims that the name derives from the Phoenician Alis-Ubo, meaning "safe harbor." The arrival of the Moors supposedly changed it to Al Aschbuna, which later became Lissabona. In any case, the famous Roman geographer Pomponius Mela called it Ulyssippo, and Pliny the Elder later used the name Olisippo. The actual etymological origin remains unknown.
- 3 Fernando Pessoa's *Mensagem* (1934) is a symbolist epic made up of 44 short poems organized in three parts. It recounts Portugal's history in apologetic terms, trying to make sense of the country's lost grandeur and modern decadence and calling for a national "cultural regeneration" founded on the symbolic value of its past heroes. It pays homage to the premier epic of Portuguese literature, *Os Lusíadas* by Luís Vaz de Camões, known as the Portuguese language's greatest poet, often compared to Shakespeare, Vondel, Homer, Virgil, and Dante. Translated as *The Lusíads* (from Lusitânia, the ancient Roman province that roughly predated the country's current geography) and published in 1572, it is regarded as Portugal's most important national epic, much as Virgil's *Aeneid* was for Rome, or Homer's *Iliad* and *Odyssey* were for Ancient Greece. His date of death, June 10, is officially commemorated as Portugal's National Day.
- 4 Also known as the monomyth, the hero's journey is a term popularized by Joseph Campbell, who described it as follows: "A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man." Joseph Campbell, *The Hero with a Thousand Faces* (Princeton, NJ: Princeton University Press, 1968), 30.
- 5 In Homer's *Odyssey*, Penelope is the wife of Odysseus/Ulysses. She waits 20 years for his return, during which time she devises various strategies to delay having to marry one of her 108 suitors. One of those strategies is to pretend to be weaving a burial shroud for her elderly father-in-law and claiming that she will choose a suitor when the work is completed. Every night she secretly undoes part of the shroud. Penelope has come to symbolize the cultural link between femininity, chastity, and the domestic realm.
- 6 Fado, meaning "destiny" or "fate," is a Portuguese folk music genre that is characterized by mournful tunes and lyrics, often about the

- longing for someone away at sea. It is often associated with feelings of *saudade*, which roughly translates as "nostalgia" (from Greek *nostos* [homecoming], and *algia* [longing]).
- 7 Georges Van Den Abbeele, *Travel As Metaphor: From Montaigne to Rousseau* (Minneapolis: University of Minnesota Press, 1991), xviii.
 - 8 Abbeele, *Travel As Metaphor*, xix.
 - 9 Boaventura de Sousa Santos, *Epistemologies of the South: Justice Against Epistemicide* (2014; repr., Oxon and New York: Routledge, 2016), 79.
 - 10 Santos calls this the equation of "roots and options"—a dialectic frame that weaves historical events into sequences of tensions between social regulations (roots) and social transformations (options). Roots refer to "all that is profound, permanent, singular and unique, all that provides reassurance and consistency," for example, tradition, religion, family, and the home. Options, on the other hand, concern "all that is variable, ephemeral, replaceable and indeterminate from the viewpoint of roots," for example individualism, civil society, markets, and the constitutional state.
 - 11 This expression is repeated several times throughout the book, but it is introduced as follows: "The task and potential greatness of mortals lie in their ability to produce things—works and deeds and words—which would deserve to be and, at least to a degree, are at home in everlastingness, so that through them mortals could find their place in a cosmos. ... By their capacity for the immortal deed, by their ability to leave non-perishable traces behind, men, their individual mortality notwithstanding, attain an immortality of their own and prove themselves to be of a 'divine' nature." See Hannah Arendt, *The Human Condition* (Chicago: University of Chicago Press, 1958), 19.
 - 12 Arendt, *The Human Condition*, 26–27.
 - 13 Arendt, *The Human Condition*, 1.
 - 14 Arendt, *The Human Condition*, 2.
 - 15 Arendt, *The Human Condition*, 2.
 - 16 Noam Chomsky, keynote lecture, "Political Awareness Committee Spring Speaker" from St. Olaf College, Northfield, MN, May 4, 2018. Available at www.stolaf.edu/multimedia/play/?e=2215. Transcribed by the authors.
 - 17 Damocles is the protagonist of an ancient moral anecdote that featured originally in the lost history of Sicily by Greek historian Timaeus. Damocles was a sycophant courtier to his king, Dionysius, whose fortune as a man of power and authority Damocles admired and envied. In response, Dionysius offered to switch places with Damocles for one day so that he could taste that very fortune first-hand. Having agreed to the transaction, Dionysius ordered that a sword be hung over Damocles's neck, held at the pommel by a single hair of a horse's tail. The moral of the story is that with great fortune and power comes also great, looming danger.
 - 18 The Doomsday Clock is a graphic that first appeared on the cover of the *Bulletin of the Atomic Scientist* in the aftermath of the Second World War. It is a symbolic clock set to a few minutes before midnight, which represents the amount time left before (and therefore the likelihood of) an impending global catastrophe. Its original setting was at seven minutes to midnight, in 1947. It has since shifted back and forth twenty-three times, with the furthest position to midnight being seventeen minutes, in 1991, and the closest being two minutes, on two occasions:

- in 1953, after the US and the Soviet Union began testing hydrogen bombs and in 2018, due to escalating nuclear tensions and global inaction on climate policy. See John Mecklin, ed., "It Is 2 Minutes to Midnight: 2018 Doomsday Clock Statement" in *Bulletin of the Atomic Scientists*, <https://thebulletin.org/2018-doomsday-clock-statement/>, accessed August 1, 2018.
- 19 *Rhapsody in August*, directed by Akira Kurosawa (1991; Tokyo: Shochiku Films Ltd., 2006), DVD.
 - 20 The ancient notion of hubris referred to actions that shamed and humiliated the victim for the pleasure or gratification of the abuser. It was closely tied to concepts of honor and shame whereby the exaltation of the one receiving honor was tied to the shaming of the one overcome by the act of hubris, based on a strictly competitive and zero-sum logic.
 - 21 The term "Anthropocene" suggests that the previous interglacial state, known as the Holocene, has been brought to an end by pervasive anthropogenic activities that have now left a permanent geological mark on the planet. See Will Steffen, Paul J. Crutzen, and John R. McNeill, "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?" in *Ambio* 36, no. 8 (December 2007): 614–621.
 - 22 Bruno Latour, "Love Your Monsters: Why We Must Care for Our Technologies as We Do Our Children" in *Love Your Monsters: Postenvironmentalism and the Anthropocene*, ed. Michael Shellenberger and Ted Nordhaus (Oakland: Breakthrough Institute, 2011).
 - 23 See Mark Lynas, *The God Species: How the Planet Can Survive the Age of Humans* (London: Fourth Estate, 2011) or, in a slightly more restrained tone Paul J. Crutzen, "Geology of Mankind" in *Nature* 415 (2002), 23: "A daunting task lies ahead for scientists and engineers to guide society towards environmentally sustainable management during the era of the Anthropocene. This will require appropriate human behavior at all scales, and may well involve internationally accepted, large-scale geo-engineering projects, for instance to 'optimize' climate."
 - 24 Naomi Klein, *This Changes Everything: Capitalism vs. the Climate* (London: Allen Lane, 2014), 279.
 - 25 Donna Haraway, "Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin" in *Environmental Humanities* 6 (2015): 159–165.
 - 26 Frederic Jameson, "Future City," *New Left Review* 21 (May–June 2003): 65–79.
 - 27 This slogan was made famous by Margaret Thatcher, meaning that market economy is the only system that works and its validity need not be further debated. Often shortened as TINA, it is a hallmark of Neoliberal ideology.
 - 28 This kind of self-inflicted *Schadenfreude* was famously identified by Walter Benjamin in "The Work of Art in the Age of Technological Reproduction" as an outcome of the "aestheticizing of politics." He writes: "*Fiat ars—pereat mundus*," says fascism, expecting from war, as Marinetti admits, the artistic gratification of a sense perception altered by technology. ... Humankind, which once, in Homer, was an object of contemplation for the Olympian gods, has now become one for itself. Its self-alienation has reached, the point where it can experience its own annihilation as a supreme aesthetic pleasure."
 - 29 For example, the trans-Atlantic slave trade installed a 400-year system of forced labor

and indignity upon people of African descent throughout the Americas. Portugal was the first country to start the trans-Atlantic slave trade, having trafficked overall 6 million people. Amerindian peoples who suffered genocide at the hand of European colonizers have been dealing with and surviving ecological catastrophes for centuries.

- 30 A 2015 Oxfam report announced that the world's richest 10 percent produce half of the world's carbon emissions, while the poorest half contribute to just 10 percent.
- 31 Naomi Klein, "Capitalism vs. the Climate," *The Nation* (November 9, 2011), www.thenation.com/article/capitalism-vs-climate, accessed November 11, 2018.
- 32 Klein, "Capitalism vs. the Climate."
- 33 T. J. Demos, *Decolonizing Nature: Contemporary Art and the Politics of Ecology* (Berlin: Sternberg Press, 2016), 12.
- 34 In *Old Gods, New Enigmas*, Mike Davis quotes the Berlusconi regime denouncing the EU goal of cutting emission by 20 percent by 2020 as an "unaffordable sacrifice." See Davis, *Old Gods, New Enigmas*, 210.

- 35 Davis, *Old Gods, New Enigmas*, 202.
- 36 Davis, *Old Gods, New Enigmas*, 215.
- 37 Davis, *Old Gods, New Enigmas*, 220.
- 38 Davis, *Old Gods, New Enigmas*, 212.
- 39 Aviva Rahmani, *What the World Needs Is a Good Housekeeper: An Ecological Art Field Guide* (Charleston, SC: BookSurge, 2009).
- 40 Boaventura de Sousa Santos, "Epistemologies of the South and the Future," *From the European South* 1 (July 2016): 17–29.

[Fig. 1] Wikimedia, [https://commons.wikimedia.org/wiki/File:John_William_Waterhouse_-_Ulysses_and_the_Sirens_\(1891\).jpg#/media/File:WATERHOUSE_-_Ulysses_y_las_Sirenas_\(National_Gallery_of_Victoria,_Melbourne,_1891_-_%C3%93leo_sobre_lienzo,_100.6_x_202_cm\).jpg](https://commons.wikimedia.org/wiki/File:John_William_Waterhouse_-_Ulysses_and_the_Sirens_(1891).jpg#/media/File:WATERHOUSE_-_Ulysses_y_las_Sirenas_(National_Gallery_of_Victoria,_Melbourne,_1891_-_%C3%93leo_sobre_lienzo,_100.6_x_202_cm).jpg), accessed November 11, 2018.

[Fig. 2] Wikimedia, [http://commons.wikimedia.org/wiki/File:JohnWilliamWaterhouse-PenelopeandtheSuitors\(1912\).jpg](http://commons.wikimedia.org/wiki/File:JohnWilliamWaterhouse-PenelopeandtheSuitors(1912).jpg), accessed November 11, 2018.

[Fig. 3] The Science Museum, London.

[Fig. 4] Wikimedia, www.en.wikipedia.org/wiki/George_R._Caron#/media/File:Atomic_cloud_over_Hiroshima_-_NARA_542192_-_Edit.jpg, accessed November 11, 2018.

[Fig. 5] Wikimedia, www.commonswikimedia.org/wiki/File:QuoModoDeum.gif, accessed November 11, 2018.

[Fig. 6] Centro de Documentação 25 de Abril, University of Coimbra, Alves Costa Poster Collection (SAAL).

[Fig. 7] Centro de Documentação 25 de Abril, University of Coimbra, Alves Costa Slide Collection (SAAL).

[Fig. 8] Press kit from Midas Filmes. Available at: http://www.midas-filmes.pt/uploads/dossiers/di_as_operacoes_saal.pdf, accessed November 11, 2018.

[Fig. 9–10] Student work from EPFL Teaching Unit U: Cartography, Fall 2017, taught by Bárbara Mações Costa.

Territory: General Facts

[Fig. 1] laba, data from José Manuel Rocha da Silva, "Cartografia Preditiva Da Vegetação Natural Florestal Potencial No Perimetro Florestal De Valhelhas E Áreas Adjacentes," PhD diss., Instituto Politécnico de Castelo Branco, Castelo Branco, 2013), 12.

[Fig. 2] laba, data from "Solar Resource Map," © 2018 Solargis, <https://solargis.com>, accessed 2018.

[Fig. 3] laba, data from "Clima," SNIAMB.

[Fig. 4] laba, data from Direcção Geral do Ambiente, "Hipsométrica," *Atlas do Ambiente*, 1982.

[Fig. 5] laba, data from "Atlas da Água," SNIAMB.

[Fig. 6] laba, data from "Litoral," SNIAMB.

[Fig. 7] laba, data from "Litoral," SNIAMB.

[Fig. 8] laba, data from "Desigualdade Regional da Península Ibérica," Sobreaponte, accessed October 2017.

[Fig. 9] laba, data from PORDATA and Portugal Vivo, "Les Grandes Dates de l'Histoire du Portugal," www.portugalvivo.com/les-grandes-dates-de-l-histoire-du.html, accessed 2018.

i Statistics Portugal, "Annual Estimates of Resident Population," Portal de Estatísticas Oficiais, 2017.

ii Jörg Rausch, Azenhas do Mar, 2011 / Flickr / CC-BY.

iii Edgar Jiménez, Alto Douro, 2016 / Flickr / CC-BY.

Territory: Coastal Metropoles

1 Instituto Nacional de Estatística, www.ine.pt, accessed 2018.

2 L. de Camões, *Os Lusíadas* (Lisboa: Instituto Camões, 2000), 104.

3 G. Gorani, Portugal, *A Corte e o País nos anos de 1765 a 1767* (Lisboa: Círculo de Leitores, 1945), 99.

4 Instituto de Infra-Estruturas Rodoviárias, www.imt-ip.pt/sites/IMTT/Portugues/InfraestruturasRodoviaras/RedeRodoviaria/Relatrios/Relatório%20de%20Monitorização%20da%20ORRN%20-%20202010.pdf, accessed 2018.

5 Instituto Nacional de Estatística, www.ine.pt, accessed 2018.

6 Centro de Observação das Dinâmicas Regionais, A Região de Lisboa e Vale do Tejo em Números, www.ccdr-lvt.pt/files/aa5aee7dbcf-2c48dd421e4c324944faf.pdf, accessed 2018.

7 N. Portas, A. Domingues, and J. Cabral, *Políticas Urbanas II: Transformações, Regulações e Projectos* (Lisboa: Fundação Calouste Gulbenkian, 2011), 69.

8 Instituto Nacional de Estatística, Retrato da Área Metropolitana do Porto (Porto: I.N.E. – D.R.N., 2004), 20.

9 Portas, Domingues, and Cabral, *Políticas Urbanas II*, 69.

10 K. Nilsson, S. Pauleit, S. Bell, C. Aalbers, and Sick Nielsen, *Peri-Urban Futures: Scenarios and Models for Land Use Change in Europe* (Berlin: Springer-Verlag, 2013), 25.

11 J. Carvalho e A. C. d'Abreu, *A Ocupação Dispersa no quadro dos PROT e dos PDM* (Lisboa: DGOTDU, 2013), 33.

[Fig. 1] laba, data from NASA/Goddard Space Flight Center Scientific Visualization Studio.

[Fig. 2] laba, data from GinkgoMaps-project, color-coded topography, shaded relief, www.ginkgomaps.com, accessed 2018.

[Fig. 3] laba, data from "Water," Epic WebGIS Portugal, <http://epic-webgis-portugal.isa.ulisboa.pt>, accessed 2017.

[Fig. 4] The Roman province of Lusitania (orange) from William Bellamy, "Who Were the Ancestors of the Portuguese," *Quora*, www.quora.com/Who-were-the-ancestors-of-the-Portuguese, accessed 2018.

[Fig. 5] laba, data from "ports of Portugal," *Ports.com*, www.ports.com/browse/europe/portugal/, accessed 2018.

[Fig. 6] laba, source missing.

[Fig. 7] laba, data from *fundacao calouste gulbenkian*.

[Fig. 8] *Gazeta dos Caminhos de Ferro de Portugal, Portuguese Railroad Network in 1895*, Biblioteca Nacional de Portugal.

[Fig. 9] laba, data from Google Maps, accessed 2017.

[Fig. 10] laba, data from PORDATA, *Densidade populacional Segundo os Censos*, 2017, www.pordata.pt/DB/Municipios/Ambiente+de+Consulta/Tabela, accessed 2018.

[Fig. 11] laba, data from PORDATA

[Fig. 12] laba, data from "Built Up Areas/Area Edificada," Epic WebGIS Portugal, <http://epic-webgis-portugal.isa.ulisboa.pt>, accessed 2017.

[Fig. 13] laba, based on INE, "Mobilidade pendular e fluxos relativos de interação da população empregada ou estudante, por munípio, 2011," *Retrato Territorial de Portugal*, 2011

[Fig. 14] laba

[Fig. 15] laba, based on INE, "Mobilidade pendular e fluxos relativos de interação da população empregada ou estudante, por munípio, 2011," *Retrato Territorial de Portugal*, 2011.

[Fig. 16] laba, data from PORDATA, Employment According to the Census by Sector of Economic Activity, 2011.

[Fig. 17] laba, data from Europages, Textiles & Clothing, *Europages*.

[Fig. 18] laba, data from Center for International Earth Science Information Network – CIESIN – Columbia University, International Food Policy Research Institute – IFPRI, The World Bank, and Centro Internacional de Agricultura Tropical – CIAT, *Global Rural-Urban Mapping Project, Version 1 (GRUMPv1): Urban Extents Grid (Africa)*, Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC), 2011, <http://sedac.ciesin.columbia.edu/data/set/grump-v1-urban-extents/maps>, accessed 2018.

[Fig. 19] laba, data from United Nations Statistics Division, "Population Growth Rate," UNdata, <http://data.un.org>, accessed 2018.

[Fig. 20] Airbnb Total Available Listings. data from AirDNA, as quoted in Rebecca Stone, "Lisbon's Overtourism Lesson: Living Like a Local Is Not Enough," *Skift*, 2018, <https://skift.com/2018/05/31/lisbons-overtourism-lesson-living-like-a-local-is-not-enough/>, accessed 2018.

[Fig. 21] laba, source missing.

[Fig. 22] laba, map data from Infografia DN Índice de preços Idealista, as quoted in Ana Margarida Pinheiro, "Estrangeiros compraram 25% das casas vendidas em 2017," *Diário de Notícias*, www.dn.pt/dinheiro/interior/estrangeiros-compraram-25-das-casas-vendidas-em-2017-9038828.html. Accessed 2018.

[Fig. 23] laba.

[Fig. 24] laba, data from Google Maps, 2017.

[Fig. 25] laba.

[Fig. 26] laba students GIS, Topography and Rivers.

i Estudo prévio, Editor: CEACTUAL, Creative Commons – CC BY 4.0.

ii Heribert Bechen, *Nazare*, 2017 / Flickr / CC BY-SA 2.0.

iii Cornelius Kibelka, Buarcos and Figueira, 2007 / Flickr / CC-BY.

iv Joaquim Alves Gaspar, The Tagus River near Vila Velha de Rodão, Portugal, September 2010 / Wikimedia Commons.

v Anne Lotte, Lisbon, 2013 / Flickr / CC-BY.

vi Light Chaser, Ponte Luiz I, 2015 / Flickr / CC-BY.

- vii © Joaquim Alves Gaspar, Coimbra, 2012 / Wikimedia Commons.
- viii © Joseolgon, Fishers in Mira, May 2010 / Wikimedia Commons.
- ix Luis Filipe Azevedo, "AerialFootage from Cidade da Maia," YouTube, <https://youtu.be/FnnklkYwy4>, accessed 2018.

Territory: Interior Mountains

- Programa Nacional para a Coesão Territorial, "O Interior em Números," p. 49, www.pnct.gov.pt/wp-content/uploads/2017/01/DIAGNOSTICO.pdf, accessed 2018.
 - Instituto da Conservação da Natureza e da Floresta, "Décimo Relatório Provisório," www2.icnf.pt/portal/florestas/dfci/relat-rel-if/2017, accessed 2018.
 - Á. Domingues, *Volta a Portugal* (Lisboa: Edições Contraponto, 2017), p. 140.
 - Instituto Nacional de Estatística, *Retrato Territorial de Portugal*, 2017, p. 16.
 - A. Barreto, *Tempo de Incerteza* (Lisboa: Relógio D'Água, 2002), p. 27.
 - Pordata, "Densidade populacional segundo os Censos," www.pordata.pt, accessed 2018.
 - SIPA, "Atlas do Património Cultural," www.monumentos.gov.pt/Site/APP_PagesUser/SitePageContents.aspx?id=f3a23714-e8c6-48d4-b5d5-76061aee0b82, accessed 2018.
 - Programa Nacional para a Coesão Territorial, "O Interior em Números," p. 83 <http://www.pnct.gov.pt/wp-content/uploads/2017/01/DIAGNOSTICO.pdf>, accessed 2018.
- [Fig. 1] laba, data from PORDATA, Densidade populacional Segundo os Censos, 2017, www.pordata.pt/DB/Municipios/Ambiente+de+Consulta/Tabela, accessed 2018.
- [Fig. 2] laba, source missing.
- [Fig. 3] laba, data from J. Mattoso, *Historia de Portugal*, (Lisboa: Editorial Estampa, 1994) vol. 1, p. 258.
- [Fig. 4] laba, data from Patricia Abrantes, *La Métropolisation au Portugal: Processus et Politiques Spatiales* (Lisbon: Modelação, Ordenamento et Planeamento Territorial Centro de Estudos Geograficos Universidade de Lisboa, 2011) p. 62.
- [Fig. 5] laba, data from Instituto Português do Mar et da Atmosfera, 2017, www.ipma.pt/en/oclima/monitorizacao/index.jsp?selTipo=m&selVar=tx&selAna=an&selAno=2017, accessed 2018.
- [Fig. 6] laba, data from Instituto Português do Mar et da Atmosfera, 2017, www.ipma.pt/en/oclima/monitorizacao/index.jsp?selTipo=m&selVar=tx&selAna=an&selAno=2017, accessed 2018.
- [Fig. 7] laba, data from "Water," Epic WebGIS Portugal, <http://epic-webgis-portugal.isa.ulisboa.pt>, accessed 2017.
- [Fig. 8] laba, data from "Geografia," *102geografiavanesa*, <http://102geografiavanesa.blogspot.com/p/recursos-hidricos.html>, accessed 2018.
- [Fig. 9] laba, data from PORDATA.
- [Fig. 10] laba, source missing.
- [Fig. 11] laba, data from Direção e Coordenação, *Relatório de Monitorização da Rede Rodoviária Nacional* (Lisbon: Instituto da Mobilidade e dos Transportes, 2014), p. 32, http://www.imt-ip.pt/sites/IMTT/Portugues/InfraestruturasRodoviaras/RedeRodoviaria/Relatorios/Relatorio_Monitorizacao_RRN_2012-2013.pdf, accessed 2018.
- [Fig. 12] laba, data from PORDATA.

- [Fig. 13] laba, data from Instituto Nacional de Estatística, *Retrato Territorial de Portugal*, October 2017, 16.
- [Fig. 14] laba data from GLC2000 downloaded from DIVA-GIS, <http://www.diva-gis.org/gdata>, accessed 2018.
- [Fig. 15] laba, based on INE, "Mobilidade pendular e fluxos relativos de interação da população empregada ou estudante, por município, 2011," *Retrato Territorial de Portugal*, 2011.
- [Fig. 16] laba students.
- [Fig. 17] laba, data from Portuguese Government Forest Service (INCF).
- [Fig. 18] laba, data from ICNF, as quoted in fig. 6 Flora Ferreira-Leite, Luciano Lourenço, and António Bento-Gonçalves, "Large Forest Fires in Mainland Portugal, Brief Characterization," *Revue géographique des pays méditerranéens*, 2013, <https://journals.openedition.org/mediterranee/6863#>, accessed 2018.
- [Fig. 19] laba, source missing.
- [Fig. 20] laba, source missing.
- [Fig. 21] laba, data from INCF.
- [Fig. 22] laba, source missing.
- [Fig. 23] laba students.
- laba student.
 - Turismo En Portugal, *Pitões das Júnias*, 2014/ Flickr / CC-BY.
 - Google maps, *Iberian Peninsula*, accessed 2018.
 - Samuel Fonseca 85, *Vista de Vila Nova de Cerveira*, May 2004 / Wikimedia Commons.
 - Joseolgon, *Landscape in Valença do Douro, Tabuaço, Portugal*, November 2011 / Wikimedia Commons.
 - Dinah Raphael, *Vista da aldeia de Monsanto*, Wikimedia.
 - source missing.
 - Seglea, Penela da Beira, *Penedono, Portugal - Granite Outcrop Among Village Houses*, May 2015/ Wikimedia Commons.

Territory: Montado

- O. Ribeiro, *Portugal, o Mediterrâneo e o Atlântico* (Coimbra: Coimbra Editora, 1945), p. 227.
- Agência Portuguesa do Ambiente, "Melhorar o sucesso da reflorestação em zonas semiáridas: adaptação ao cenário de alterações climáticas," www.apambiente.pt/_zdata/adaPT/Setoriais/Projetos/AdaptForChange_PT.pdf, accessed 2018.
- H. M. Pereira, T. Domingos, L. Vicente, and V. Proença, *Ecosistemas e Bem-Estar Humano* (Lisboa: Fundação da Faculdade de Ciências da U. L., 2009), p. 251.
- Pereira, et al., *Ecosistemas e Bem-Estar Humano*, p. 257.
- Quercus, "A Importância dos Montados de Sobre em Portugal," www.quercus.pt/artigos-floresta/2411-a-importancia-dos-montados-de-sobre-em-portugal, accessed 2018.
- Associação Portuguesa de Cortiça, "A Cortiça em Números," www.apcor.pt/media-center/estatisticas/, accessed 2018.
- "Montado, Cultural Landscape," <https://whc.unesco.org/en/tentativelists/6210/>, accessed 2018.
- J. Saramago, *Raised from the Ground* (Wilmington: Mariner Books, 2013), 1.
- Alqueva, "Alqueva, uma nova terra de oportunidades," www.alqueva.com.pt/pt/regadio/ocupacao-cultural/11, accessed 2018.
- Público, "Refugiados acabam explorados na apanha da azeitona em Alqueva," <https://www.publico.pt/2018/02/02/>

- local/noticia/refugiados-acabam-explorados-na-apanha-da-azeitona-em-alqueva-1801642, accessed 2018.
- World Wildlife Fund, "Water Scarcity," www.worldwildlife.org/threats/water-scarcity, accessed 2018.
 - LUSA, "Alentejo perde oito pessoas/dia com despoivoamento 'acentuado,'" Público, Feb. 25, 2016.
 - World Wildlife Fund, "Water Footprint in Portugal", p. 29, www.assets.panda.org/downloads/pegadahidrica_2011.pdf, accessed 2018.
- [Fig. 1] laba, data from "Roman roads," Epic WebGIS Portugal, accessed 2017 <http://epic-webgis-portugal.isa.ulisboa.pt>.
- [Fig. 2] laba, data from "Soil texture," Epic WebGIS Portugal, accessed 2017 <http://epic-webgis-portugal.isa.ulisboa.pt>. Definition of the term "Regosol" <https://en.wikipedia.org/wiki/Regosol>.
- [Fig. 3] laba, data from Instituto Português do Mar et da Atmosfera, 2017.
- [Fig. 4] laba, data from "Agriculture," Epic WebGIS Portugal, <http://epic-webgis-portugal.isa.ulisboa.pt>, accessed 2017.
- [Fig. 5] laba, data from "Built Up Areas/Rede Ferroviária," Epic WebGIS Portugal, <http://epic-webgis-portugal.isa.ulisboa.pt>, accessed 2017.
- [Fig. 6] laba, data from Tom Gallagher, *Portugal: A Twentieth-Century Interpretation* (Manchester University Press, 1983), p. 16.
- [Fig. 7] laba, data from "Tree Species," Epic WebGIS Portugal, <http://epic-webgis-portugal.isa.ulisboa.pt>, accessed 2017.
- [Fig. 8] laba, data from FAO 2010, as quoted in "Cork Oak," Apcor, www.apcor.pt/en/montado/cork-oak/, accessed 2017.
- [Fig. 9] laba, data Portugal: IFN, 2013; Spain: MARM, 2007; Italy: FAO, 2005; France: IM Liege, 2005; Morocco: HCEF Maroc, 2011; Algeria: EFI, 2009; Tunisia: Ben Jamaa, 2011, as quoted in Apcor, "Forest," <http://www.apcor.pt/en/montado/forest/> accessed 2018.
- [Fig. 10] laba, data from "Water" and "Nature Conservation/National Network of Protected Areas and Rede Natura 2000," Epic WebGIS Portugal.
- [Fig. 11] laba, data from Rede Electrica Nacional, S.A. *Hidroelectricidade em Portugal*, www.centrodeinformacao.ren.pt/PT/publicacoes/PublicacoesGerais/Hidroelectricidade%20em%20Portugal%20-%20Memória%20e%20desafio.pdf and Wikipedia, "List of Dams and Reservoirs in Portugal," https://en.wikipedia.org/wiki/List_of_dams_and_reservoirs_in_Portugal, accessed 2018.
- [Fig. 12] laba, data from Alqueva Uma nova terra de água, "Ocupação Cultural," Alqueva, www.alqueva.com.pt/pt/alqueva/18#/regadio/ocupacao-cultural/11, accessed April 2018.
- [Fig. 13] laba, data from INE, *Recenseamentos Agrícolas 1989/1999/2009*, produced by Susana Pelucio Pimenta in "A Agricultura da Região Alentejo nos Últimos 25 Anos e Perspetivas no Quadro da PAC POS 2013" (PhD diss., Universidade de Évora, 2014), pp. 11-13, <https://dspace.uevora.pt/rdpc/bitstream/10174/11990/1/Agricultura%20da%20Região%20Alentejo....pdf>.
- [Fig. 14] laba, data from Mohan K. Wali.
- [Fig. 15] laba, data from INE, 1999, as quoted in Geoffrey Alan Wilson and Meri Juntti, "Desertification and Policies in Portugal: Landuse Changes and Pressures on Local Biodiversity," *Unravelling Desertification: Policies and Actor Network in Southern Europe* (The

Netherlands: Wageningen Academic Publishers, 2005), p. 137, https://books.google.ch/books?id=DaO7laPO9ugC&printsec=frontcover&source=gbs_ViewAPI&redir_esc=y#v=onepage&q=soil%20quality&f=false, accessed 2018.

[Fig. 16] laba, data from EEA, 2008.

[Fig. 17] laba, data from PORDATA.

[Fig. 18] laba, data from PORDATA.

[Fig. 19] laba, data from PORDATA.

[Fig. 20] laba, data from DGRF, 2006, and Recenseamento Agrícola 2009.

[Fig. 21] laba, data from GPP, 2012, as quoted in INAG.

[Fig. 22] laba student project.

[Fig. 23] laba student project.

i Mediaeval Arabic manuscript from Islamic Spain, ca. 1200 / Wikimedia Commons.

ii Joe Dielis, *Alentejo*, 2011 / Flickr / CC-BY.

iii © Unauthenticated / Wikimedia Commons / CC-BY-SA 3.0.

iv Honza Soukup, *Alqueva Dam*, 2007 / Flickr / CC-BY.

v source missing.

vi Basotxerri, *Steineiche*, 2016 / Wikimedia

vii Kolforn, *Cork oak, Vale da Azinheira*, 2016 / Wikimedia Commons.

viii Pedro Ribeiro Simões, *Traditional Music Group*, 2006 / Wikimedia Commons.

ix Google Maps, 2000, *Guadiana River*.

x Google Maps, 2018, *Alqueva Lake and Dam*.

xi Google Maps, 2003, *Sao Mancos*.

xii Google Maps, 2016, *Sao Mancos*.

Territory: Costa Ibérica

- 1 Associação dos Hotéis e Empreendimentos Turísticos do Algarve, *Balanço do Ano Turístico 2017* (Albufeira, AHETA, 2018), p. 29.
- 2 J. R. Magalhães, *O Algarve na Época Moderna* (Coimbra: Imprensa da Universidade de Coimbra, 2012), p. 295.
- 3 M. Marques, *O Algarve da Antiguidade aos Nossos dias* (Lisboa: Edições Colibri, 1999), p. 385.
- 4 Turismo do Algarve, www.turismoalgarve.pt/home.html, accessed 2018.
- 5 Publico, "ICNF não sabe qual a área ocupada por estufas e túneis no Sudoeste Alentejano," www.publico.pt/2017/08/25/local/noticia/icnf-nao-sabe-qual-a-area-ocupada-por-estufas-e-tuneis-no-sudoeste-alentejano-1783403, accessed 2018.
- 6 O. Ribeiro, *Le Caroubier. Ses Conditions Naturelles, son Expansion, ses Rapports avec l'Agriculture*, vol. 5: *Opúsculos Geográficos* (Lisboa: Fundação Calouste Gulbenkian, 1994), p. 184.
- 7 M. Caetano, H. Carrão, and M. Painho, *Alterações da ocupação do solo em Portugal Continental: 1985–2000* (Lisboa, Instituto do Ambiente, 2005), p. 23.
- 8 The PROT is the Regional Programme of Territorial Management which was created in 1991 but has somewhat failed in accurately predicting and regulating the growth of the main urban poles of the region.
- 9 A. Corboz, "La Suisse comme hyperville," paper presented at the Suburbanisme et Paysage Cycle, April 1997.
- 10 Italian philosopher Roberto Esposito explored this idea in his book *Communitas: The Origin and Destiny of Community*. In it, he states: "communitas is the totality of persons united not by 'property' but precisely by an obligation or a debt; not by an 'addition' but

by a 'subtraction.' ... Here we find the final and most characteristic of the opposition associated with the alternative between public and private. Those, in other words, that contrast communitas to immunitas." Roberto Esposito, *Communitas: The Origin and Destiny of Community* (Redwood City, CA: Stanford University Press, 2010), p. 6.

- 11 A. Domingues, *Volta a Portugal* (Lisboa: Edições Contraponto, 2017), p. 26.
 - 12 Turismo de Portugal, "10 Produtos Estratégicos para o desenvolvimento do turismo em Portugal," <http://www.turismoportugal.pt/Portugues/AreasAtividade/desenvolvimentoinovacao1/Documents/Golfe.pdf>.
- [Fig. 1] laba, data from "Relief/Hypsometry and Roads Infrastructures," Epic WebGIS Portugal, <http://epic-webgis-portugal.isa.ulisboa.pt>, accessed 2017.
- [Fig. 2] laba, data from "Built Up Areas/Area Edificada," Epic WebGIS Portugal, <http://epic-webgis-portugal.isa.ulisboa.pt>, accessed 2017.
- [Fig. 3] laba, data from World Tourism Organization, *Yearbook of Tourism Statistics, Compendium of Tourism Statistics and Data Files*, CC BY-4.0, <https://data.worldbank.org/indicator/ST.INT.ARVL?locations=PT>, accessed October 2017.
- [Fig. 4] laba, data from World Travel & Tourism Council, "Travel & Tourism's Contribution to GDP," *Travel & Tourism Economic Impact 2018 Portugal*, p. 3, www.wttc.org/-/media/files/reports/economic-impact-research/countries-2018/portugal2018.pdf, accessed September 2018 and South Information, "Contribution of the Algarve to the National GDP cCn Reach 4.6% in 2017," *Sulinformacao*, www.sulinformacao.pt/2017/12/contributo-do-algarve-para-o-pib-nacional-pode-chegar-aos-46-em-2017/, accessed October 2017.
- [Fig. 5] Elaboração própria com base em INE – Estatísticas de Turismo, as quoted in Sergio Palma Brito, "Indústria da hotelaria no Algarve – dualidade de estabelecimentos," April 2017, *Sergioalpalmabrito.blogspot*, <http://sergiopalmbrito.blogspot.com/2017/04/industria-da-hotelaria-no-algarve.html>, accessed July 2018
- [Fig. 6] laba, data from Instituto Português do Mar et da Atmosfera, 2017.
- [Fig. 7] laba, data from José Manuel Rocha da Silva, "Cartografia Preditiva Da Vegetação Natural Florestal Potencial No Perímetro Florestal De Valhelhas E Áreas Adjacentes" (PhD diss., Instituto Politécnico de Castelo Branco, Castelo Branco, 2013), 12.
- [Fig. 8] William D. Phillips, "A. R. Disney," in *A History of Portugal and the Portuguese World, Vol. 1: Portugal* (Cambridge: Cambridge University Press, 2009).
- [Fig. 9] laba, data from J. Mattoso, *Historia de Portugal*, Editorial Caminho vol. I, p. 258.
- [Fig. 10] GIS exact source missing.
- [Fig. 11] laba students.
- [Fig. 12] laba, data from Gazeta dos Caminhos de Ferro de Portugal, *Portuguese Railroad Network in 1895*, Biblioteca Nacional and data from "Infrastructures, Roads," Epic WebGIS Portugal, <http://epic-webgis-portugal.isa.ulisboa.pt>, accessed 2017.
- [Fig. 13] PORDATA, INE – Lodging Capacity and Personnel Employed Survey, Guests Stay in Hotels and Other Accommodations Survey, <https://www.pordata.pt/en/DB/Municipalities/Search+Environment/Chart>, accessed 2018.

[Fig. 14] Tableau comparatif du climat France/Portugal, Agence d'accompagnement pour la retraite au Portugal, "Climat Portugal: 300 jours de soleil par an", Ma Retraite Portugal, 30.09.2015, www.ma-retraite-portugal.com/climat-portugal-300-jours-de-soleil-par-an.html, accessed October 2017.

[Fig. 15] source missing.

[Fig. 16] laba, data from "Soil Texture," Epic WebGIS Portugal, <http://epic-webgis-portugal.isa.ulisboa.pt>, accessed 2017. Definition of the term "Regosol" <https://en.wikipedia.org/wiki/Regosol>.

[Fig. 17] laba, data from "Water" and "Nature Conservation/National Network of Protected Areas and Rede Natura 2000," Epic WebGIS Portugal, accessed 2018.

[Fig. 18] INE, 2011 Census – Provisional results, p. 38, as quoted in F. Matos, "The Expansion of Secondary Housing in Portugal," in *The Overarching Issues of the European Space*, ed. Faculdade de Letras da Universidade do Porto (2013), p. 179, <http://ler.letras.up.pt/uploads/ficheiros/12315.pdf>, accessed October 2017.

[Fig. 19] laba, data compiled from various sources.

[Fig. 20] laba, data from "Water" and "Nature Conservation/National Network of Protected Areas and Rede Natura 2000," Epic WebGIS Portugal and Algarvekarte, Visit Portugal, accessed April 2018, www.visitportugal.com/de/node/194951.

[Fig. 21] source missing.

[Fig. 22] Instituto Nacional de Estatística, I. P. *Estatísticas do Turismo 2016*, accessed October 2017.

[Fig. 23] laba, data compiled from various sources.

[Fig. 24] laba, data from EEA, 2008.

[Fig. 25] Síntese das áreas susceptíveis à desertificação em Portugal Continental, as quoted in Lucio do Rosario, *Indicadores de Desertificação para Portugal Continental* (Lisboa: Direcção Geral dos Recursos Florestais, 2004) p. 41, www2.icnf.pt/portal/pn/biodiversidade/ei/unccd-pt/pancd/resource/doc/dismed/DGRF%20Pub%20IndiceDesert-2004.pdf, accessed 2018.

[Fig. 26] IPMA, 2018, as quoted in Agencia Portuguesa do Ambiente, "Riscos Ambientais," *Rea apambiente*, <https://rea.apambiente.pt/content/seca>, accessed September 2018.

i Boston Public Library, *No rain in Portugal but tourists pour in*, 2010 / Flickr / CC BY-NC-ND 2.0.

ii Laurent, Kingdom of Algarve, 18th century / Wikimedia Commons.

iii Algarve Poster / Max Pixel CC0.

iv Google Maps, *Av. de Islantilla*, 2018.

v Photogal, *Quarteira-Algarve, 2008* / Wikimedia Commons / GNU.

vi source map missing.

vii Google Maps, *Av. de Islantilla*, 2018.

viii Google Maps, *Quinta do Lago*, 2018.

ix © Oliver Gunning / www.yourgolftravel.com/ Vale do Lobo Royal Golf Course, 16th hole.

Participants

Studio Director

Harry Guggler

laba Team

Augustin Clément
Bárbara Mações Costa
Helen Ebert
Juliette Fong
Tiago Trigo
Karolina Slawicka
Charlotte Truwant

laba Students

Charlotte Astaes
Laura Bornet
Elodie Bricout
Gabriel Chareton
Isabelle Cochevelou
Victoire Courtaux
Oliver Cretton
Simon Cristiano
Charlotte Din
Miriam Egger
Dominic Ender
Julien Fawaz
Céline Feugier
Xavier Fromaigeat
Mathias Gommier
Jonatan Maddalena
Séverine Oppliger
François Otten
Eirini Peraki
Laure Pieren
Anna Pontais
Dora Regev
Margaux Ruiz
Isabel Schmid
Manuela Schönenberger
Quentin Touya
Loris Vendrami

Acknowledgments

We extend our gratitude to the contributors of the lecture series "Environmental Objects": Chiara Cavaliere, Victoria Easton, Christian Gilot, Anne Lacaton, Nelson Mota, Martino Pedrozzi, Emily Scott, Andre Tavares, and Ines Vieira da Silva as well as the reviewers Ivo Barão, Nancy Couling, Graça Correia, Victoria Easton, Eik Frenzel, Jeannette Kuo, Charlotte von Moos, Elli Mosayebi, Maria Saiz, and Adrien Verschuere for their collaboration throughout the laba studio 2017/18 Environmental Objects: Portugal.

We also wish to thank the lecturers at the Symposium "Environmental Objects," December 13, 2017, FAUP, namely Bernardo Amaral, José Antonio Bandeirinha, Pedro Levi Bismarck, and Alvaro Domingues.

Our sincere thanks also goes to all organizations, experts, and friends who have supported us, specifically to the State Secretariat for Education, Research and Innovation, which provided substantial funding for this publication, and the School of Architecture and Environmental Engineering ENAC EPFL.

Student Assistants

Isabelle Cochevelou
Anna Pontais

Imprint

Editors

Harry Guggler
Augustin Clément
Bárbara Mações Costa
Tiago Trigo
Charlotte Truwant

Introduction

Bárbara Mações Costa
Harry Guggler

Copy Editor

Margaret Puskar-Pasewicz
www.margaretedits.com

Editorial Concept and Graphic Design

© Helen Ebert, Zurich
www.helen-ebert.eu

Typefaces

Atlas Grotesk, Berthold Baskerville

Project Photography

© Eik Frenzel
www.dreierfrenzel.com

Field Photography

© laba staff and students

Lithography, Printing and Binding

DZA Druckerei zu Altenburg GmbH, Germany

Every reasonable attempt has been made by the authors, editors, and publishers to identify owners of copyrights. Errors or omissions will be corrected in subsequent editions.

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other ways, and storage in databases. For any kind of use, permission of the copyright owner must be obtained.

© 2018 Laboratoire Bâle (laba)
Institut d'Architecture Faculté ENAC
École Polytechnique Fédérale de Lausanne
and Park Books, Zurich

EPFL ENAC IA laba
Ackermannshof
St. Johanns-Vorstadt 19-21
4056 Basel
<http://laba.epfl.ch>

Park Books
Niederdorfstrasse 54
8001 Zurich
Switzerland
www.park-books.com

Park Books is being supported by the Swiss Federal Office of Culture with a general subsidy for the years 2016-2020.

ISBN 978-3-03860-109-8

 PARK BOOKS

The environment is a space that surrounds, encloses, and encircles. The object is a thing that limits a place and a point of view. To think of architecture as an “environmental object” means to question this dynamic of separation and imagine a discipline that amplifies its context, attunes to it, and renders it conscious. *Portugal Lessons: Environmental Objects* turns to Portugal’s history for traces of a design contextualism that can help us to move beyond architecture as the foreground of nature. Based on a recent research program at EPFL’s Laboratory Basel (laba), it postulates that, if ecology means the “study of the house” (from the Greek *oikos*, “house” and *-logia*, “study of”), it must also mean the practice of studying the design of the house. Who do we live with? Who/what do we extend our hospitality to? How permeable should our walls be? How do we organize life on an increasingly hostile planet? In our age of human-induced climate change, we must reassess our forms of life and our forms of building.

laba has been operating in Basel since September 2011 and is directed by Professor Harry Gugger. *Portugal Lessons* is the tenth volume in a series entitled *[Place] Lessons: Teaching and Research in Architecture* that documents laba’s academic work.

Laboratoire Bâle (laba)
Institut d’Architecture et de la Ville (IA)
Faculté de l’Environnement Naturel, Architectural et Construit (ENAC)
École Polytechnique Fédérale de Lausanne (EPFL)

Printed in Germany
ISBN 978-3-03860-109-8



9 783038 601098