LAND LEDGER:

Inhabiting the Ignition Patches

BOOKLET I
Territorial Research



"Eco-histories of
Life & Death, Seed & Ash"

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the Built Environment

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ABSTRACT

This research is an attempt to understand the formation-deformation patterns of the forest landscape in Manavgat, Turkey, under an intensifying fire regime, and an experiment of a “vegetal proposal” that is shaped with flames. Despite being excluded from forest care and inhabiting the fragile thresholds inside the forest, a decentralized rural counter-practice of villagers that reclaims the forest and adopts its flows is imagined as the extension of current standardized land management activities and ownership.

The “Land Ledger”, situated in one of the burned villages in the 2021 wildfire, positions itself as a dynamic “becoming” by retaining the moments of different fire encounter scenarios as spatial conditions to embrace and appreciate. This approach focuses on the diverse fire timescales of design components, interconnected yet divisible, similar to the “augmented” patches of the forest landscape that contain numerous fractures having unique eco-histories. Recording these cyclical stories of resurgence and destruction, the proposal weaves the (re)organization of the rural art of making together without proximity or a strict frame, this time for inhabiting the ignition zone responsibly.



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PART I:
Introduction

Problem Statement - Fragility of Division

How does the evolving boundary between the perception of natural and virtual manifests rescripting on the territory? The multimedia exhibition by artist Jaye Rhee questions this rewriting through her sculptural seascape that she calls 'Fragile Terrain'. (Fig.1) Exhibited in 2025, the installation appears to be a digitally produced, pixelated abstraction of the land from a distance. However, a closer look reveals that the meticulously handcrafted over 900 paper pieces are actually patches still carrying pixelated yet diverse natural complexities of the terrain crumbled by the technologies of practices.[1] Inhabiting this level of complexity and diversity requires cooperation that listens to each other. Nevertheless, market-driven activities overdominate the rest, which shakes the pixelation in a way that they start losing the ability to form or sustain relations. Either inherited or introduced, this is where the fragilities start to be an urgency. Architecture, on the other hand, becomes an important medium that could address the fragility of these enclaves together with practices that produce them.

Similar to Rhee's beachscape, the Manavgat River Basin in southwest Turkey showcases a fragile territory, whose boundaries of what is natural or human-induced can no longer be identified. (Fig. 2) The cyclical wildfires are an inherent phenomenon in the East Mediterranean, yet intensified by the climate crisis of the Capitolecene. More frequent and wider impact incidents alter landscapes faster than ever without a reflective spatial strategy. Since not all the pixels are equally affected, some of these patches become more fragile than the others, demanding new spatial speculations.

1 "Fragile Terrain by Jaye Rhee," Locust Projects, accessed January 22, 2026, https://www.locustprojects-closerlook.org/blog/fragile-terrain-and-open-water-ktr-rf.



Fig 1. Jaye Rhee, Fragile Terrain, 2025. Installation view at Locust Projects. Photo by Pedro Wazzan.

Before searching for implicit activities of current governance and organization patterns, how do ongoing customs of architecture react to the intensifying fire fragility of the territory? The memorized reaction of TOKI (Housing Development Administration) to apply the same structures with inauthentic traditional masks to every burned village after disasters does not listen to the land-specific fragilities, also after the greatest wildfire in Turkey that struck the Manavgat Basin in 2021.

Apart from post-disaster constructions of this housing administration, the affordable housing projects as a response to unbearable rent in the center and near the touristic strip on the coast tend to be executed alongside the urban periphery, on the 'brittle pixels' of ignition, as the decision to build 377 housing units in Karaöz village near the center demonstrates.[2] This trend accelerated after the 2012 law that shifted the status of villages to neighbourhoods in metropolitan provinces, enabling the planning of the 'rural' with the same tools as urban.[3] As a result, tourism-driven economic pull not only affects the coastal fringe development of seasonal accommodation[4] but also reorganizes where the urban labor force lives, unexpectedly mixing it with villagers and flames.

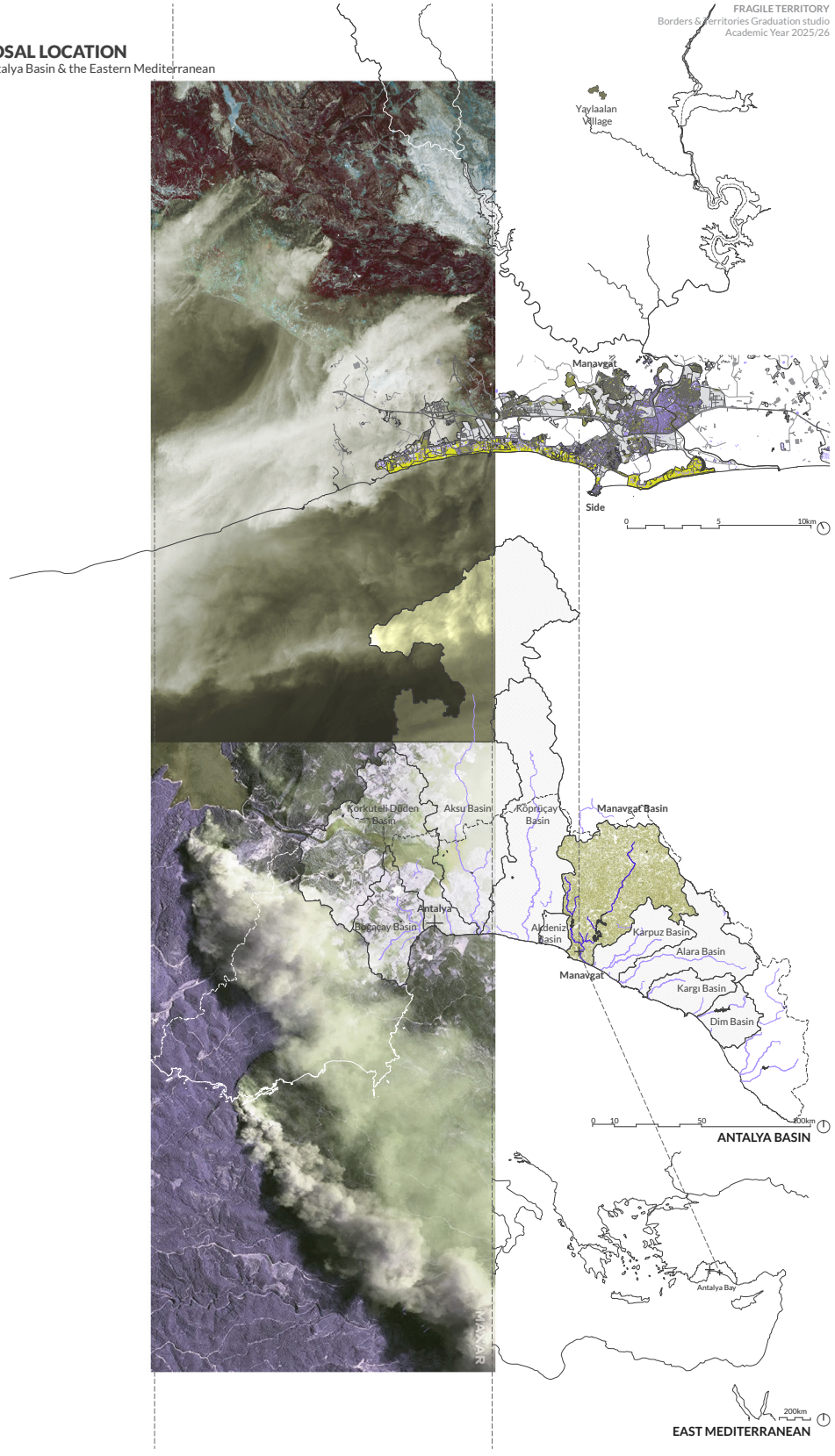
2 "İhale Tarihleri 14624," Toplu Konut İdaresi Başkanlığı, accessed January 22, 2026, https://siteadmin.toki.gov.tr/ihale-tarihleri/14624.

3 Esra K. Görgün and Neriman Yörür, "6360 Sayılı Büyükşehir Kanunu Sonrası Kırsal Alanları Yeniden Düşünmek: İzmir Örneği," *Aydın İktisat Fakültesi Dergisi* 2, no. 1 (2017): 11.

4 Yücel Dinç and Hamza Akengin, "Turizm Sektörünün Şehirleşmeye Etkileri: Manavgat Örneği," *International Journal of Geography and Geography Education* 41 (2020): 220, https://doi.org/10.32003/igge.615775.

RESEARCH & PROPOSAL LOCATION

Manavgat Basin within the Antalya Basin & the Eastern Mediterranean



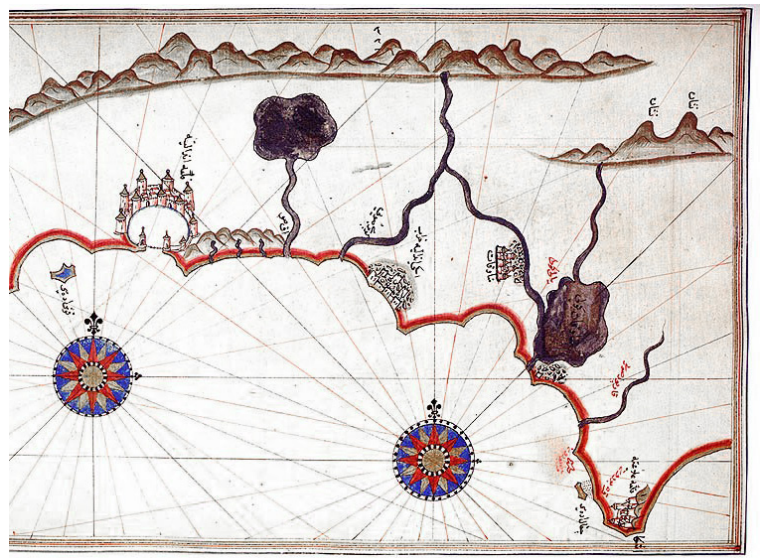


Fig 2. "Map of the Anatolian coastline from Alanya to Antalya" (fol. 330a), by Piri Reis, in Kitab-i Bahriye, Walters Ms. W.658, Walters Art Museum, Baltimore, late 17th century to early 18th century

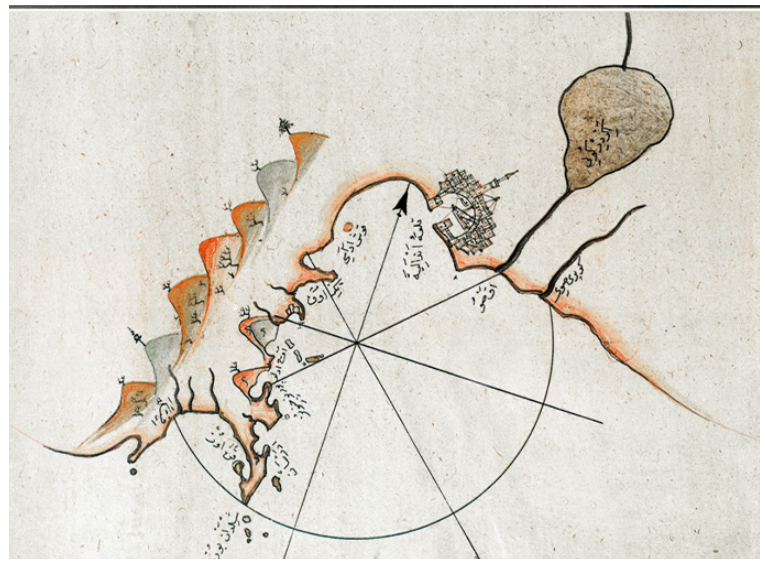


Fig 3. "Map of Antalya Bay", by Pîrî Reis Kitab-ı Bahriye, 1521. Accessed AKMED, Koc University.

Relevance - Motivation for Inventive Clusters

Against the current practices that lack the resilience to co-exist in the 'blotchy basin', how does a counter-practice propose new material and philosophical motivation that is inventive through challenging what is known and realizing what is indeterminate? An ecological practice of 'making in the rural for the rural' that is neither urban nor wild, but an intensification of both the actors, potentials, and risks, should be under discussion. The second step might be inventing 'counter-embankments' of 'augmentation' to activate impure stains of enclaves/clusters through reclaiming the forest. Between the fields of natural and virtual/artificial, the augmented stands, encapsulating both changing degrees of ferality and control. Whether an augmented enclave is productive or not depends on the practice circulating in it. What is being augmented and by whom, and eventually, how, should be traced. From a political ecology perspective, including especially the vegetal communities as agents in the augmentation would help (re)discover an architecture that is becoming with the fire, built and unbuilt for the situated multispecies communities.

Research Question - Symbiotic Spatial Strategies

The research and design inquiry starts with an introductory and overarching question: **(1)**"What does it mean to inhabit the slow-paced, cyclical evolution of the terrain in a proposal that is open-ended and can flow with sudden changes and surprise?"

On the architectural scale, the main research question is formalized as: **(2)**"What happens when a building embraces the possibility of burning and stages embedded scenarios of 'designed destruction' that also stimulate a resurgence afterwards?"

Furthermore, supporting questions of the research follow as: **(3)**"Could a building become intentionally 'fractured', just as the fire-torn landscape, with different fire timescales, thus producing unique 'crusts' with different 'histories'?" **(4)**"How can the 'behaviour of fire' assist in the way we formalize a structure together with its landscape and the materials we choose?" **(5)**"How do the traditional and modern vernacular techniques and their ruin conditions teach about the resilience of 'convenience' and 'temporality'?" **(6)**"How can the primary tree 'Pinus brutia' that evolved for this fire regime train the new building practice in handling its recovery?" A practice that is 'symbiotic', not 'autopoietic', just as the forest itself. Revival is not self-regulated towards a so-called guaranteed balance but is desired through work.



Scope - Recording (in) the 'Middle'

The pixelation in the territory resulted in dispersed residual 'middles', mostly in the locations where the forest ends and the settlement starts. These blotches are the ignition buffer zones, where the new practices of 'care' and 'healing' can physically manifest themselves, both along the lower basin urban edges and in the upper-basin village enclaves in the forest.
Initially, based on the territorial research, a counter-factual scenario where an open-ended rural program-infrastructure for owning both the forest and the flames is imagined. Secondly, for the design task, the village of Avasun (Yaylaalan) is selected as a site for research outcome experimentations on the architectural scale. However, how might this dissolved spatial practice of care be organized programmatically?

The program is shaped by a practice that listens to the people, ground, water, and ashes. Collects ‘seeds, words, pasts, and futures’. Rather than following the long-settled approach to erase the traces of fire, it makes a collection of these fragments. Recording the ‘ecohistories’ of the place, not as static chronicles but active tales of gathering grounds for ‘reorganization of the daily life’, becomes the foremost activity. This is where the challenge starts, proposing a rural communal space designed both for daily rhythms and telling the living histories for healing. A place where living knowledge is communally (re)produced and shared, without skipping accumulated trials and failures of individuals in the community.

This program can potentially be merged with the village governance system of ‘muhtarlık’, only to transform it into a small network of gatherings for deciding on how to live in that ignition zone and the documentation of this communication and practices in any form; objects, words, songs, or inscription. This infrastructure, in the end, also becomes a place to learn from the situated experiences of a specific eco-patch for new generations and visitors, with dispersed ‘Land Ledgers’ across the wounded landscape, extracting old words and worlds, through inventing new ones.





Fig 4. “2021 Manavgat Fire” by Mustafa Ciftci / Anadolu Agency / Getty



Fig 5. “2021 Manavgat Fire” by Mustafa Ciftci / Anadolu Agency / Getty

PART II:
When the Mute Narrator Stands

The inquiry into the fragile territory of Manavgat organizes the research in a narration, followed by mappings as a tool for research. The content of each map highlights the role of both biotic and abiotic actors in making the landscape. In the end, a story is formed through an iterative act of mapping various agents in action, unmuting the vegetal, bacterial, and animal earthly crusts.

Fudging From Flames

Took place in 2021 between the 28th of July and the 6th of August, the unprecedentedly massive wildfire in the Manavgat Basin revealed a crisis beyond the fire precautions and interventions on a land that always been shaped and reshaped by fires. At first glance, how people reacted and organized to extinguish, evacuate, care, and heal showcases a promising multiplicity of gatherings. (Map 1) Permanent organizations tied to central governance, spontaneous gatherings loosely composed by local municipalities, and volunteer parties all participated, although they struggled to cooperate at many levels. However, why couldn't this much collective effort respond creatively before, during, and immediately after the event?

As Felix Guattari discusses, mainstream politics mostly relies on techno-scientific tools that standardize and degrade the modes of life, whereas a transversal approach installs itself both on the environmental, social, and mental ecological realms that are all bound through autonomous assemblages. This 'ecosophical' lens still gives credit to the urgency of a global approach against the intertwined crises of Integrated World Capitalism, at the same time, by calling for new practices in molecular domains for sensible and intelligent 'small infrastructures' of assemblages that reshape the narrative.[1]

So in the end, the 'assemblage' that is needed on a territory that constantly burns and resurges is not equipped with more AI sensors, more fire brigades, and more planes and techno-centric fire infrastructure, but one that is forming and reforming on both the lands and the woven minds of individuals in the redefined social groups of 'autonomous creativity', living through and with fire. But how, with whom, and through which stories to reinvent the ways we live on this territory becomes essential for the next phase.

1 Félix Guattari, *The Three Ecologies*, trans. Ian Pindar and Paul Sutton. (Athlone Press, 2000).

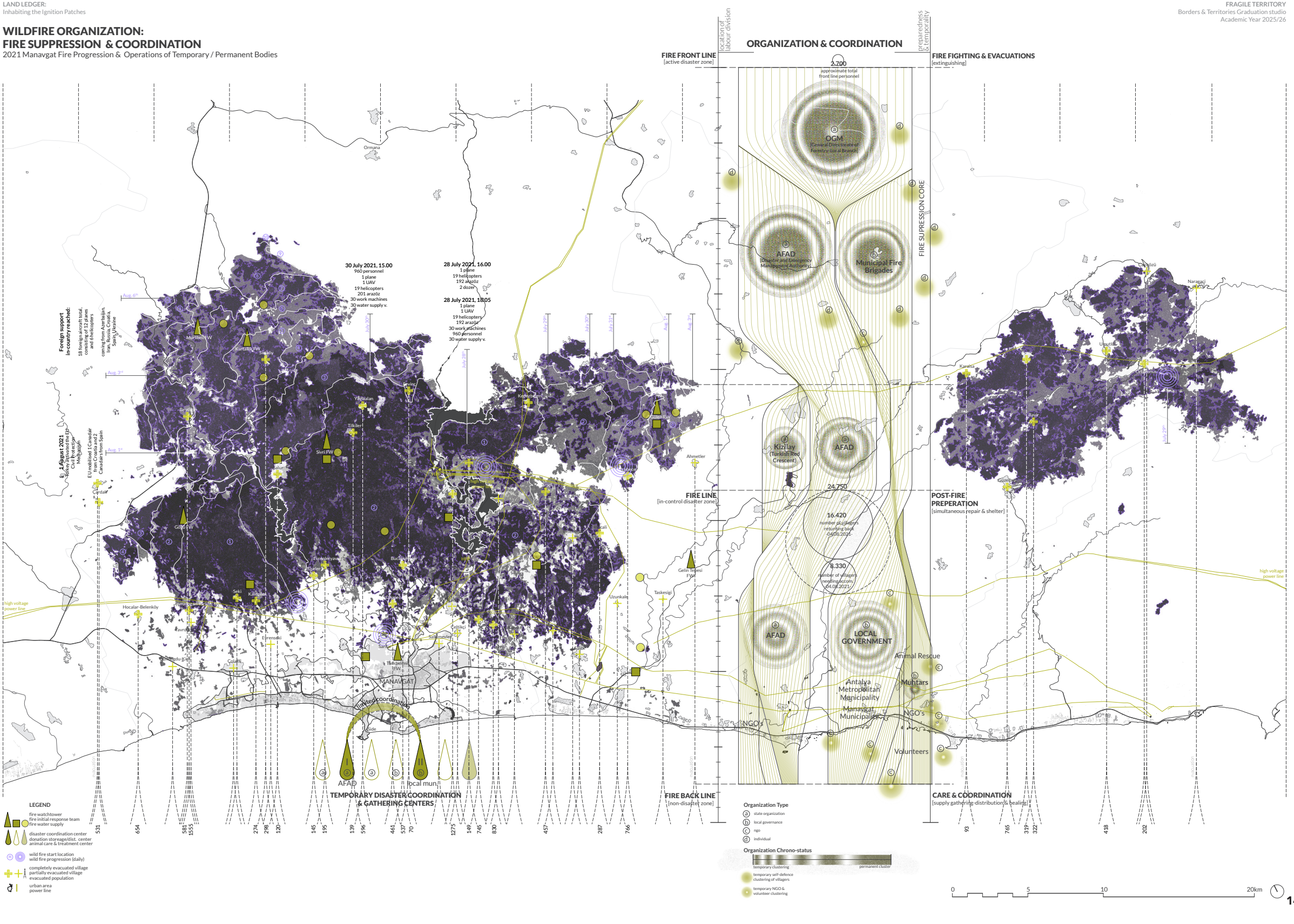


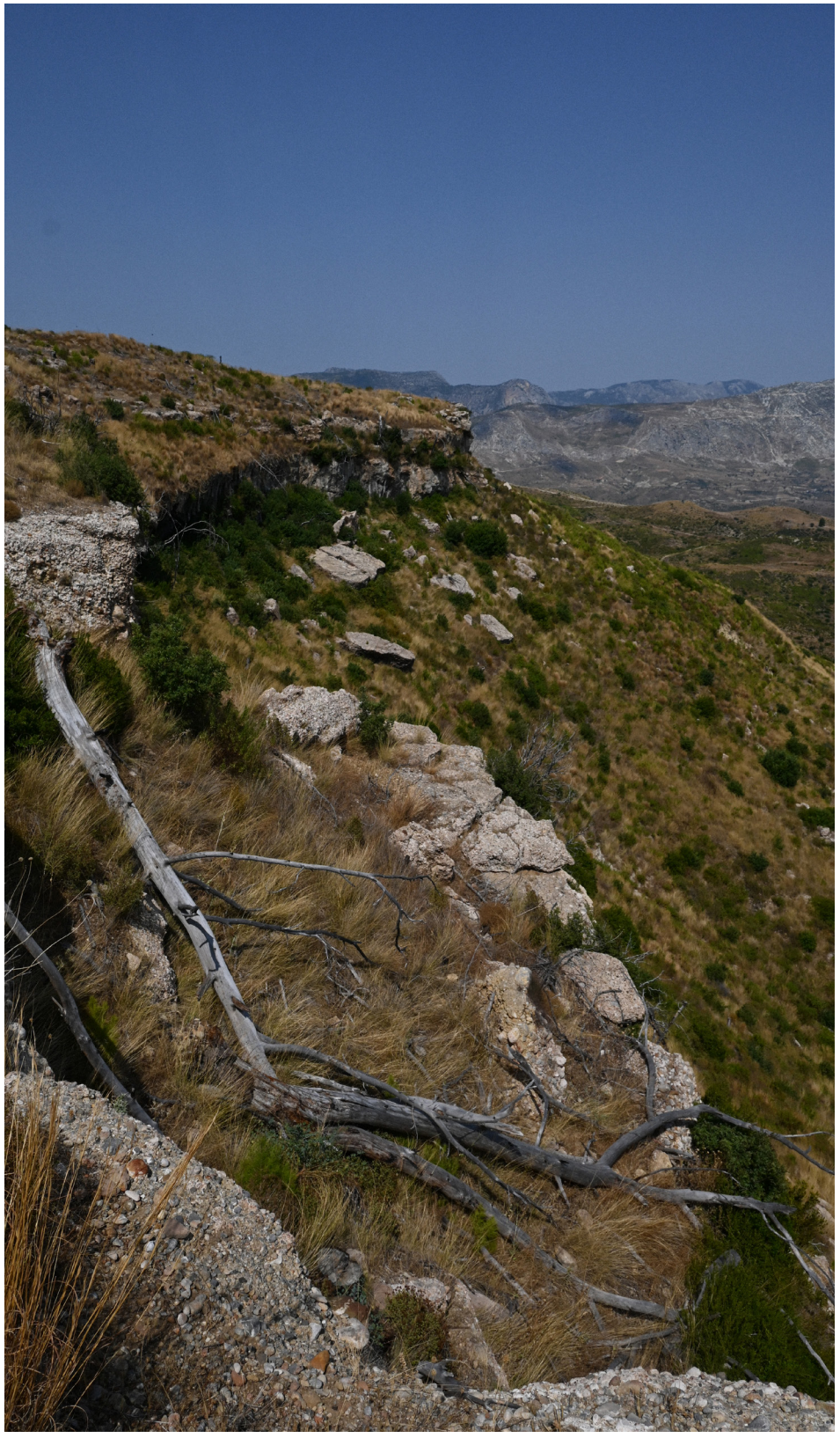
Map 1

WILDFIRE ORGANIZATION:
FIRE SUPPRESSION & COORDINATION
2021 Manavgat Fire Progression &
Operations of Temporary / Permanent Bodies

WILDFIRE ORGANIZATION:
FIRE SUPPRESSION & COORDINATION

2021 Manavgat Fire Progression & Operations of Temporary / Permanent Bodies


ORGANIZATION & COORDINATION
location of labour division
preparedness & temporality
FIRE FRONT LINE
[active disaster zone]
FIRE FIGHTING & EVACUATIONS
[extinguishing]
FIRE SUPRESSION CORE
2.700
approximate total front line personnel
OGM
(General Directorate of Forestry - local Branch)
AFAD
(Disaster and Emergency Management Authority)
Municipal Fire Brigades
Kizilay
(Turkish Red Crescent)
AFAD
24.750
16.420
number of villagers returning block 04.08.2021-
8.330
number of villagers meetings.com 04.08.2021
FIRE LINE
[in-control disaster zone]
POST-FIRE PREPERATION
[simultaneous repair & shelter]
AFAD
LOCAL GOVERNMENT
Animal Rescue
Muhtars
Antalya Metropolitan Municipality
Manavgat Municipality
NGO's
NGO's
Volunteers
FIRE BACK LINE
[non-disaster zone]
CARE & COORDINATION
[supply gathering-distribution & healing]
TEMPORARY DISASTER COORDINATION & GATHERING CENTERS
AFAD
local mun.
MANAVGAT
limited coordination
1 August 2021
Turkey activated the EU Civil Protection Mechanism
EU mobilised 1 Canadair from Croatia and 2 Canadair from Spain
Foreign support in-country reached:
18 foreign aircraft total, consisting of 12 planes and 6 helicopter
coming from Azerbaijan, Israel, Croatia, Spain, Ukraine
30 July 2021, 15.00
960 personnel
1 plane
1 UAV
19 helicopters
201 arazöz
30 work machines
30 water supply v.
28 July 2021, 16.00
1 plane
19 helicopters
192 arazöz
2 dozer
28 July 2021, 18.05
1 plane
1 UAV
19 helicopters
192 arazöz
30 work machines
960 personnel
30 water supply v.
Ormana
Murtana FW
Kartallik FW
Sirkeby
Yaylalan
Tikilier
Sivri FW
Beydam
Kalur
Cardak
Gebiz FW
Evrenleryaka
Sheler
Seki
Kalepalas
Hocalar-Belenköy
Evrenseki
Colakli
Sarilar
Tekelesi FW
Side
Kestelli
Gazipasa-Airport
Gazipasa
Gozeliali
Ahmetler
Kestelli
Kocaoluk
Kocaoluk
Kocaoluk



An Attempt to Listen

The mainstream commentary, even in the context of wildfire, approaches the plant as surface cover, an asset of resources lost or to be gained, not an agent that circulates, transforms in collaboration with others, in terraforming the landscape. Rather than thinking with categorizations based on their relationship with humans, indexing species based on the feral to maintained scala of the gatherings that they compose enables realizing the clusters' and the species' ability to coexist and survive with or without practices of augmentation. This doesn't mean, as Michael Marder discusses, that the paradigm of 'biocentric equity' is at stake, regarding life at its utmost generality and abstraction, eventually assessing particularities as equally insignificant. In contrast, he proposes loose assemblages, communities in wider communities, composed and decomposed together 'across species boundaries'.[2] (Map 2) Similarly, 'making kin' to Donna Haraway means, as opposed to the determinism of Anthropocene, being tentacular and earthly, triggering attachments and detachments with earthlings assembled beyond ancestral, species boundaries.[3] However, after cataloguing plants as the pioneer sculptors of dynamic gatherings, situating the processes affecting the formation of vegetal enclaves/clusters raises as the next step.

The ongoing practices on the territory create enclaves, embankments, clusters, or patches of 'landscapes' with various characteristics around the basin. These are sediments of accumulated biotic and abiotic activities that are in the making, both meaningfully and unintentionally. The result is a diverse, patchy landscape. The highly maintained and assessed enclaves of orchards, residues of forest scattered across them, transitional forest interface with more frequent disturbances, and deeper forest patches all have related yet distinctive ecohistories of their own. (Map 3) However, unproductive 'augmentations' such as isolated single-species orchards or plantation practices unsettle the opportunities of collective knowledge-making on land that is 'response-ability'. This might suppress in the case of Manavgat landscape and forest to compose and invent new assemblages resilient enough under changing fire regimes. Anna Tsing discusses the concept of 'agility' for becoming not outside but still more than your species capabilities, through open-ended gathering in microecologies,[4] which can be viewed as the source of resilient interspecies communities. The first act to regain this ability lies in an approach of ecological histories, that the world-making is cocreated by both human and non-human actor through their own apparatuses as a result of agile interactions with the land and each other.

What stories the plants of numerous clusters tell matters for mutual survival under cyclical fires. Andrew S. Mathews highlights the importance of reading the story of state formation and capitalist practices for extracting knowledge of changing landscapes that give valuable 'words' for the

2 Michael Marder, "For a Phytocentrism to Come," *Environmental Philosophy* 11, no. 2 (2014): 237–52, https://www.jstor.org/stable/26169805.

3 Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Duke University Press, 2016), 101-102.

4 Anna L. Tsing, "When the Things We Study Respond to Each Other: Tools for Unpacking 'the Material'," in *More-than-Human*, ed. Andrés Jaque, Marina Otero Verzier and Lucia Pietroiusti (Het Nieuwe Instituut, 2020).

future.[5] Even in proximity, patches of 'forest' manifest diverse stories of both resurgence and failure. Different frequencies and severity of fire, seed level, or specific interventions happened after the fire, direct the path of becoming. (Map 4) According to Marder, vegetal storytelling starts with the concept of 'middle' where manifestation happens, rather than the beginning or end. The middle is vegetal, generational, cyclical, and in motion. Composed of flourishing, decay, and regrowth, with soil-time and planetary time inside it, the communities tell the story of another middle, the milieu, that is a shared in-between.[6] As in the case of post-fire intervention, modes of inhabiting the middle suggest whether a forest-assemblage is perceived as a defined 'being' or an indeterminate 'becoming'.

5 Andrew S. Mathews, "Ghostly Forms and Forest Histories," in *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*, ed. Anna L. Tsing, Heather A. Swanson, Elaine Gan, and Nils Bubandt (University of Minnesota Press, 2017).

6 Michael Marder, "A Philosophy of Stories Plants Tell," *Narrative Culture* 10, no. 2 (2023), https://digitalcommons.wayne.edu/narrative/vol10/iss2/3.





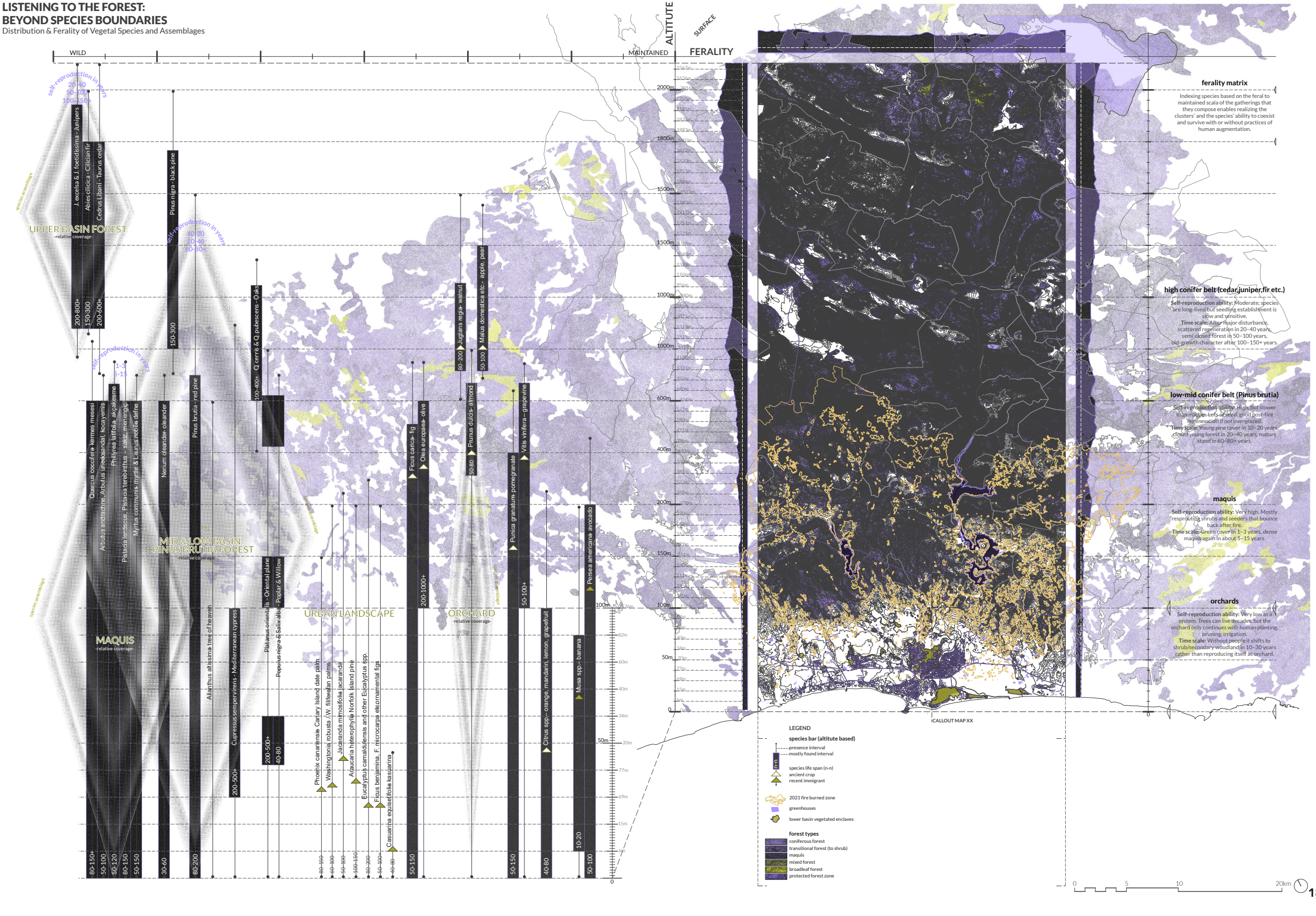
Map 2

LISTENING TO THE FOREST: BEYOND SPECIES BOUNDARIES

Distribution & Ferality of Vegetal Species and Assemblages

LISTENING TO THE FOREST: BEYOND SPECIES BOUNDARIES

Distribution & Ferality of Vegetal Species and Assemblages





Map 3

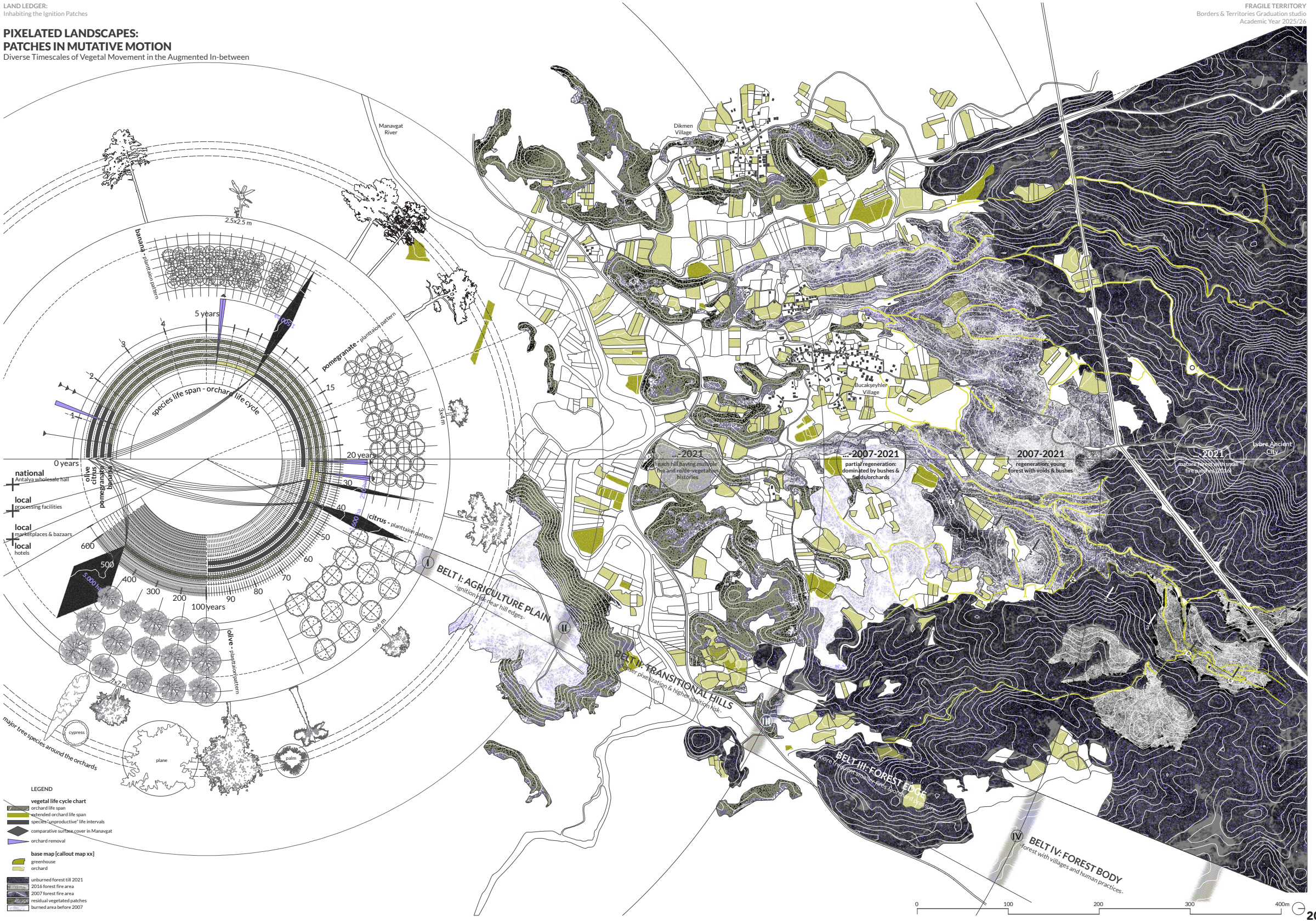
PIXELATED LANDSCAPES: PATCHES IN MUTATIVE MOTION

Diverse Timescales of Vegetal Movement in the Augmented In-between



PIXELATED LANDSCAPES:
PATCHES IN MUTATIVE MOTION

Diverse Timescales of Vegetal Movement in the Augmented In-between





Map 4

ECO-HISTORIES:
MOVEMENT MIDST & AFTER FIRES

Practices Affecting the Resurgence and/or Failure

Touching the Roughness

Heading from the analysis of multispecies gatherings and vegetal thinking, both the human and non-human practices happen and result in objects. Touching and collecting objects also leads to moving from together living and dying earthlings to the scale of matter and architectural practices. Augmented enclaves of agriculture and tourism practices leave residual objects that couldn't be tamed or partially occupied landscape objects due to their physical form. (Map 5) Karen Barad's discussion on transmaterialities and 'trans animacy' could be well adopted to the level of these objects. Matter/objects is a condensation of scattered being-times that constantly self-explores, experiments, and self-undoes open-endedly.[7] Just like the selected remnant object of the lower basin near the forest edge. 'Touching' and bodily engagement with the matter self creates intentional or unintentional augmentations that both accelerate the self-destruction through more frequent burnings and self-construction through ground care. These residual enclaves of higher ignition risk of rocky and sloping objects remind us to celebrate 'monstrosities' that destroy boundaries and introduce impurities in a 'patchwork' of intimacies.

One scale lower, rock as a perching ground transitions into stone as a found or crafted elemental object that is reused after each undoing. Although recently been severely substituted by modern vernacular ways of assembling, either due to time or a fire, each time a dry stone construct dissolves, remarkable possibilities of new assemblages emerge. Its modular readiness gathers and reflects rhythms, as a 'polyphonic assemblage' does. (Map 6) The 'involutionary momentum' of building with found stone builds the architecture of landscaping, not through mimicry of a rule but an iterative exploration as the crafters perform 'intimacy without proximity' on seemingly disconnected parts of the Manavgat basin.

Involuntary Churn

The in-depth story of stone requires a territorial, geological inquiry of its character and formation on different timescales. The millions of years of slow-paced terraforming of the territory were carried out by two major actors: water and bacterial life. Life and minerals coevolved through 'involuntary transmutation'.[8] The dense network of aquifers on this chemically dissolving and reforming karst geology carved the topography both from under and above ground. (Map 7) The water with drastically changing seasonal scarcity and its tendency to leak underground in the basin created the invention of a historical water infrastructure. Apart from the centrally built and maintained ancient aqueduct systems, a 'small infrastructure' that is the fountain-making practice is still alive in many forms without a conscious organization, but linked through the meaning of the craft. (Map 8)

7 Karen Barad, "Transmaterialities: Trans*/Matter/Realities and Queer Political Imaginings," *GLQ: A Journal of Lesbian and Gay Studies* 21, nos. 2–3 (2015): 387–422, https://doi.org/10.1215/10642684-2843239.

8 Myra J. Hird and Kathryn Yusoff, "Lines of Shite: Microbial-Mineral Chatter in the Anthropocene," in *More-than-Human*, ed. Andrés Jaque, Marina O. Verzier, and Lucia Pietroiusti (Het Nieuwe Instituut, 2020).

ECO-HISTORIES:
MOVEMENT MIDST & AFTER FIRES

Practices Affecting the Resurgence and/or Failure

collecting stories

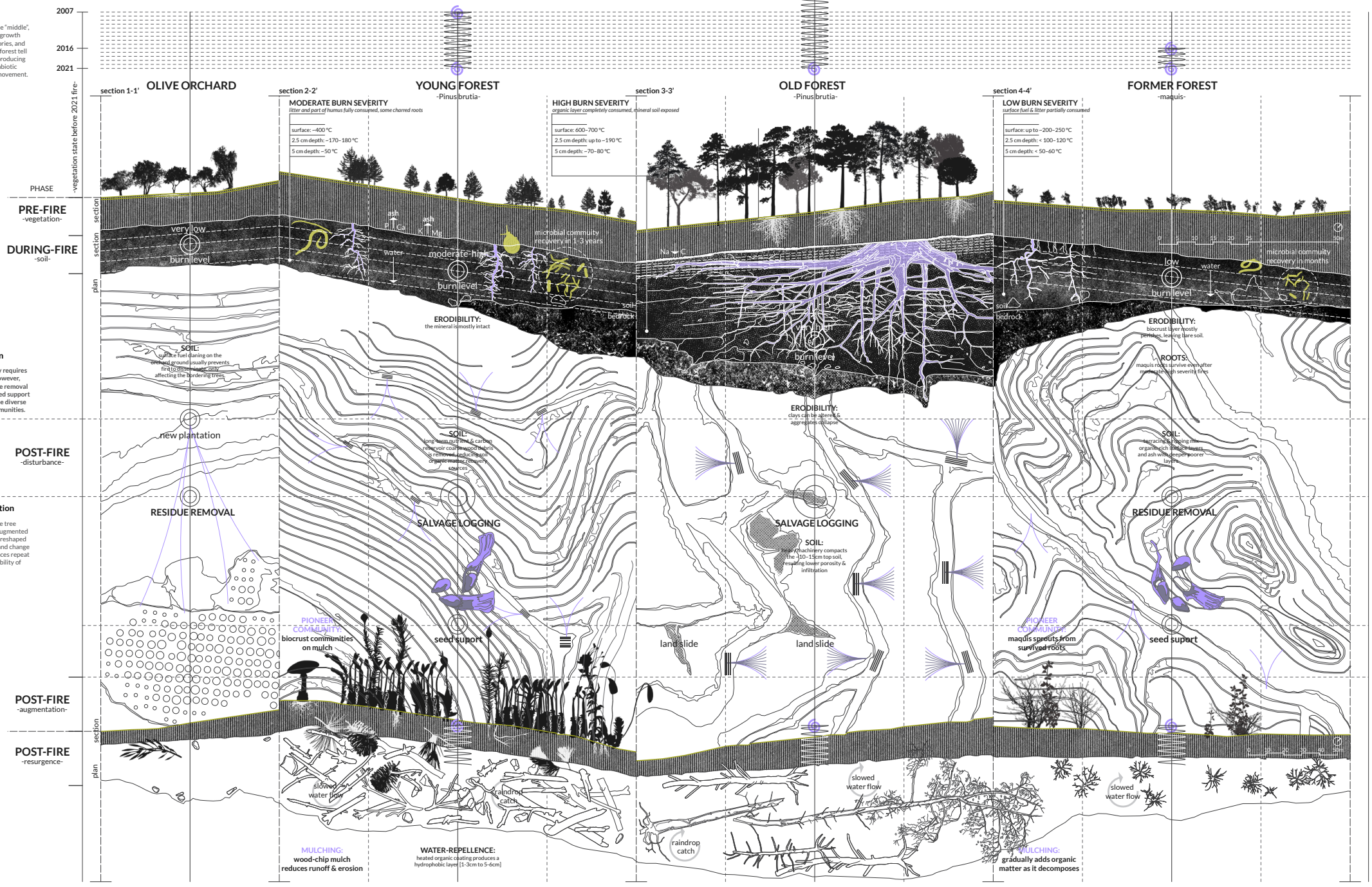
The vegetal storytelling starts in the "middle", where flourishing, decay, and regrowth coexists. Collecting the traces, stories, and words that the various patches of forest tell extends beyond recording to co-producing the landscape with biotic and abiotic assemblages that are in constant movement.

intense intervention

Each patch with its unique history requires varying approaches of care. However, practices of salvage logging for the removal of burned stems & terracing for seed support or plantation if needed disturb the diverse bacterial, fungal and animal communities.

practices of augmentation

Although the resurgence of the tree communities accelerate with the augmented practices of care, the landscape is reshaped with disturbed soil layers, erosion and change in water presence. These disturbances repeat after each fire, challenging the ability of communities to recover.





Map 5

ROCK & SLOPE:
AGILE OBJECTS OF BEING-TIMES

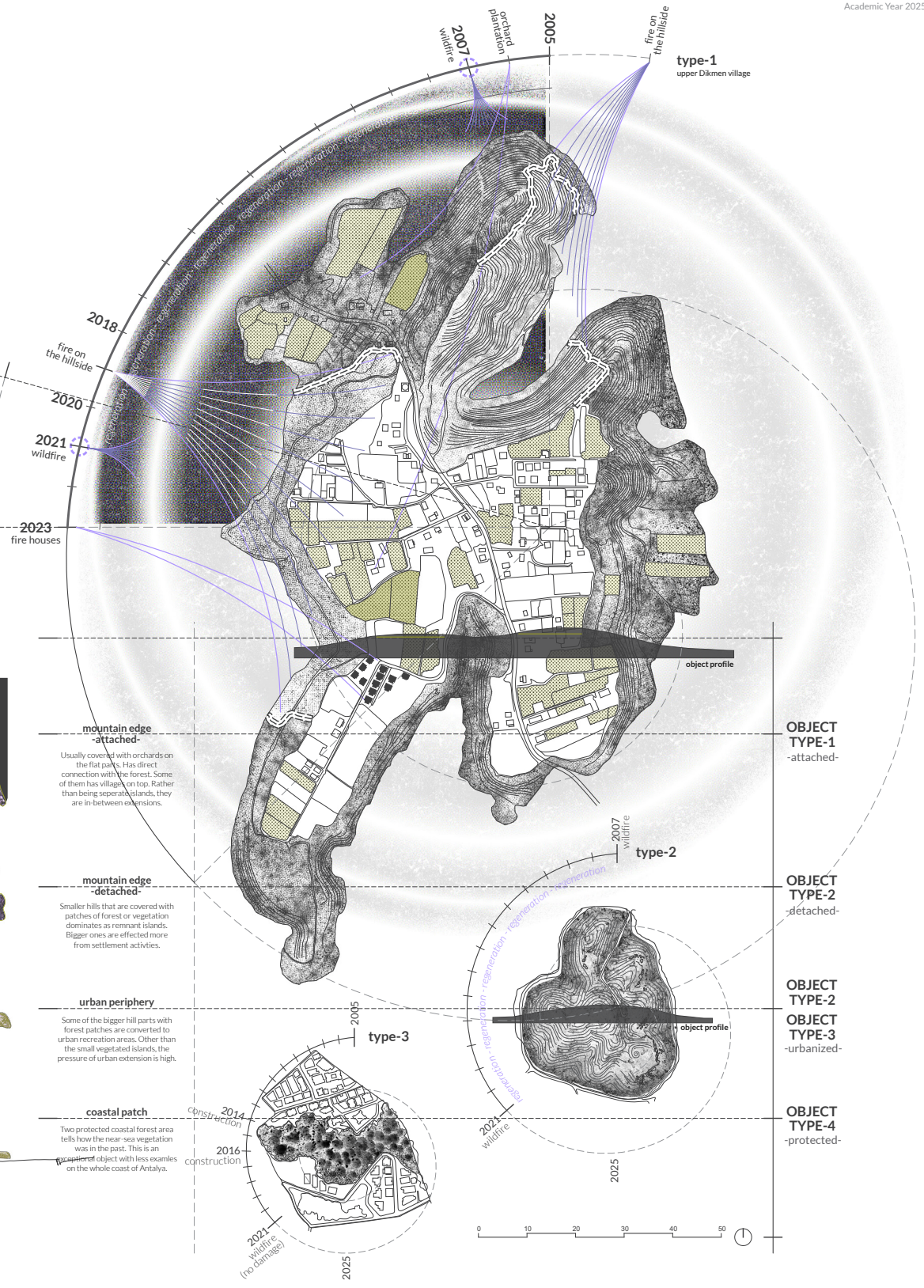
Self-undoing Hills/Patches as Residues or/and Refuge



ROCK & SLOPE:
AGILE OBJECTS OF BEING-TIMES

Self-undoing Hills/Patches as Residues or/and Refuge







Map 6

STONE & TIME:
AN ELEMENTAL AS-FOUND OBJECT OF REUSE

Stone Pieces Circulating Through Building, Landscaping and Bare Land



"A post-fire TOKI house and a traditional house from the village of Dikmen, lower Manavgat Basin."



STONE & TIME:
AN ELEMENTAL AS-FOUND OBJECT OF REUSE

Stone Pieces Circulating Through Building, Landscaping and Bare Land

DISSOLVED — RE-ORGANIZED

AS-FOUND OBJECT
-feral elements of stone-

AS LANDSCAPING
-spontaneous repurposing-

AS BUILDING
-a meticulous technique-

dry wall construction techniques
a loose assemblage

"düğmeli" wall (buttoned wall)

A timber frame is filled with roughly cut or found stones. Short timber ends project on the facade, creating the "buttons." The wood carries loads and ties the wall, while stone infill gives mass, and easy local repair. (a.1)

as-found stone landscaping wall

Loose stones cleared from fields are piled into low retaining or edging walls. The aim is quick ground shaping, boundary marking, and erosion control. Gaps let water pass and allow constant re-stacking after rain, grazing, or neglect. (a.3)

stone wall with timber leveler

Stones are stacked mostly without mortar, but thin timber "kayıt" pieces act as ties and levelers. Broken roof tiles are used as filllers to pack gaps, control water paths, and stabilize courses, making a hybrid structure. (a.2)

upper basin

terracing / propert walls

start of second life cycle

time

fire

middle basin

lower basin

coastal strip

0 10 20 30 40 50 100cm

LEGEND
- (a.1) in-use vernacular - buttened house
- (a.2) in-use vernacular - stone building
- (a.3) in-use vernacular - landscaping
- (b.1) Lybre - masonary wall (mortar & spolia)
- (b.2) Side - masonary - marble cut stone block
- (b.3) Lybre - masonary - limestone cut stone block
- (b.4) Kargıhan - masonary - stone with mortar

DISTRUCTION

STONE BUILDINGS

DESTRUCTION

PROTECTION

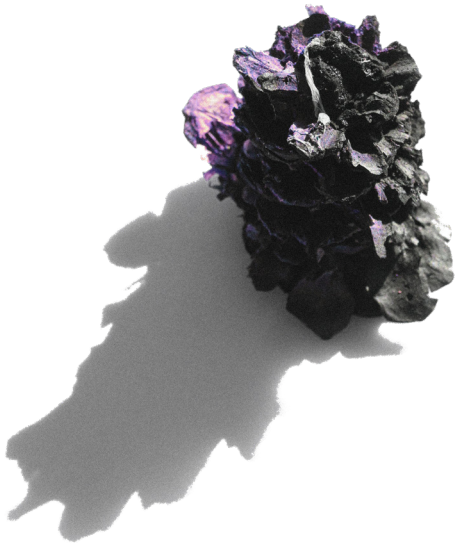
AS HERITAGE
-disintegrated structures-

ATKIÇI CARAVANSERAI

ÜZÜMCÜ CARAVANSERAI

TEPSİLİ CARAVANSERAI

DALKATIRAN CARAVANSERAI



Map 7

KARST TERRAFORMING:
A LINGERING NETWORK OF DISSOLUTION

Dissolved by Water, Fractured Into Aquifers & Carved by Rivers













KARST TERRAFORMING:
A LINGERING NETWORK OF DISSOLUTION

Dissolved by Water, Fractured Into Aquifers & Carved by Rivers

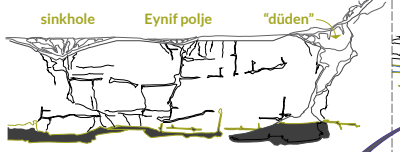
dissolution of calcite (carbonate bedrock)
$CaCO_3 + H_2CO_3 \longrightarrow Ca^{2+} + 2\,HCO_3^-$

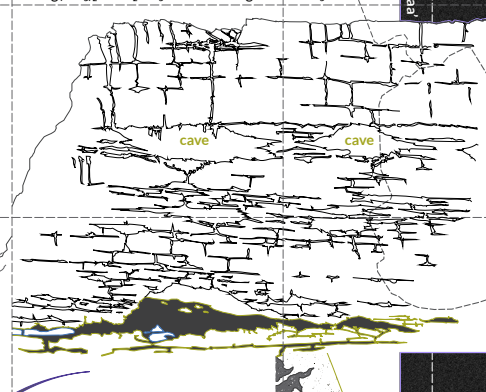
dissolution of dolomite
$CaMg(CO_3)_2 + 2\,H_2CO_3 \longrightarrow Ca^{2+} + Mg^{2+} + 4\,HCO_3^-$

microbial contribution

Cave and karst rocks are coated by bacteria and archaea that use carbon, sulfur, nitrogen, iron and manganese as energy sources. These communities change the local chemistry along fractures and cave walls: they respire CO_2, oxidize sulfide to sulfuric acid, carry out nitrification. So calcite and dolomite dissolve faster than in purely abiotic water.

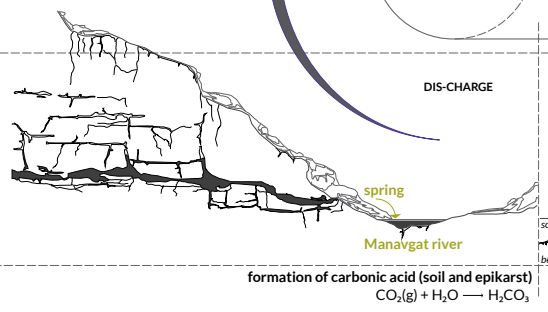
sinkhole
$Ca^{2+} + 2HCO_3 \longrightarrow CaCO_3 + H_2O + CO_2$

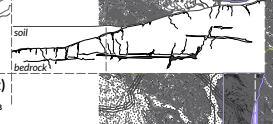




hidden movement of water

Rainwater infiltrates through soil and epikarst, picking up CO_2 and acids. It flows down fractures, enlarging conduits, then moves laterally through caves and channels. Finally, groundwater concentrates and emerges at karst springs and mixes with river.





formation of carbonic acid (soil and epikarst)
$CO_2(g) + H_2O \longrightarrow H_2CO_3$

sulfide oxidation to sulfuric acid (microbial)
$H_2S + 2\,O_2 \longrightarrow H_2SO_4$

LEGEND
- karst landforms (polje, sinkhole, cave etc)
- düden
- aquifer (predicted route)
- spring
- spring & cave
- fault line

geological formation (oldest to youngest)
- tepekli fm
- oymapınar fm
- çakallar fm
- geceleme fm
- karpuzçay fm
- eskiköy fm
- fan delta
- yenimahalle fm
- quaternary deposit

MIDDLE - Miocene basin fill
TOP - Pliocene / Quaternary veneers

- water treatment/distribution
- main underground water pipe
- secondary underground water pipe



Map 8

OBJECTS OF/FOR DISPENSATION
Centralized & Involutionary Infrastructures of Water & Trade

Inhabiting Ignition

Who takes care of the water, the stone, or the forest is a question beyond just governance and regulations. It directly affects how and with whom the territory re-creates itself through the inhabiting assemblages. The current strictly centralized state ownership and maintenance of forests and fire precaution works are based on direct severance of the forest and the human. In practice, forest entry bans during fire season neglect tens of thousands of villagers living inside or near the forest. And the gaps surrounding the settlements in and near the forest form augmented 'middles' with high combustion risk areas to be maintained by the state, creating further local fragilities embedded in an already fragile territory. (Map 9)

On the contrary, the Ottoman land regime before the mid 19th century appeared with several categories, such as state-linked, open-access, private, to foundation owned, leaving space for informal or negotiated use.[9] From 1840 to 1870, new codes seeking modernization pruned the free-for-all legacy of these lands by increasing the state's role. Although the early Republican period displayed a dual ownership of the forests dispersed between the state and local practice, starting from 1937, all forests became state property.[10] Thus, the people who are all the time present in the land and literally living in the combustion zones are excluded from cooperation.

Why imposing 'common' rules on everybody doesn't work in the multiplicity of a patchwork landscape and its communities could be discussed with Isabella Stengers concept of 'cosmopolitical'. For her, 'cosmos' refers to the divergence and ambiguity of multiple worlds, resisting being encompassed by a common measure prevailed by a peace-keeper. Cosmopolitical knowledge neither stands on selfish nor general interest but in situated practices.[11] This means both the Manavgat basin and even the differentiated patches of clusters demand situated and political practices of caring and becoming, through decentralized shareholding.

Dispersing the political power over those who were excluded would definitely require resistance. Interestingly, this hardship might find inspiration in the 'subtle vegetal movement' of a plant, which is decaying and flourishing at the same time; both life and death are distributed in its body. (Map 10) Surviving on a fragile land that is shaped by fires becomes resisting like a plant, decentered in its nature, where victory or defeat loses its meaning when a head or heart is absent.[12]

9 Bekir Koç, "Osmanlı Devleti'ndeki Orman ve Koruların Tasarruf Yöntemleri ve İdarelerine İlişkin Bir Araştırma," *OTAM: Ankara Üniversitesi Osmanlı Tarihi Araştırma ve Uygulama Merkezi Dergisi* 10, no. 10 (1999): 139-158, https://doi.org/10.1501/OTAM_0000000426.

10 Hüseyin Ayaz and Cantürk Gümüş, "Türkiye'de Orman Mülkiyeti, Yaşanan Sorunlar ve Çözüm Önerileri," *Karadeniz Araştırmaları Enstitüsü Dergisi* 2, no. 2 (2016): 212-236.

11 Isabell Stengers, "The Cosmopolitical Proposal," in *Making Things Public: Atmospheres of Democracy*, ed. Bruno Latour and Peter Weibel (MIT Press, 2005).

12 Michael Marder, "Resist Like a Plant! On the Vegetal Life of Political Movements," *Peace Studies Journal* 5, no. 1 (2012): 24–32.

OBJECTS OF/FOR DISPENSATION

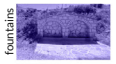
Centralized & Involutionary Infrastructures of Water & Trade

OBJECTS OF WATERSCAPE

OBJECTS FOR EXCHANGE



MURTBELİ FOUNTAIN



fountains



BAHADIROĞLU FOUNTAIN









upper basin

middle basin

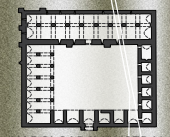
lower basin

coastal strip





EYNİF TOL CARAVANSERAI



KARGI CARAVANSERAI



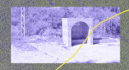
DOLBAZLAR FOUNTAIN



OBJECTS OF BACKGROUND

POWERLINE NETWORK







Köprücay River

Kargıçay River

Naras Dam

Oymapınar Dam

Manavgat Dam







ROADSIDE SELLER STANDS

water to electricity

Besides the modern infrastructures for domestic and agricultural water useage, the dams in the territory provide electricity to a large region, through the objects of power line towers that poses high risk to start ignition.







irrigation



fountain network

The unorganized art of fountain-making is beyond mere need. The meaning attached to providing water as charity in the name of a person weaves people throug practice without proximity or plan.





fountains









bazaars



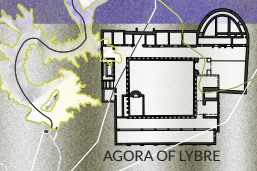


hotels



SIDE AQUADUCT SYSTEM

SIDE NYMPHAEUM



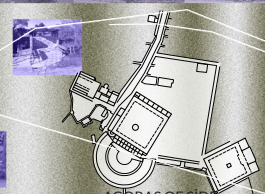
AGORA OF LYBRE





Karpuzçay River

Çenger River



AGORAS OF SIDE





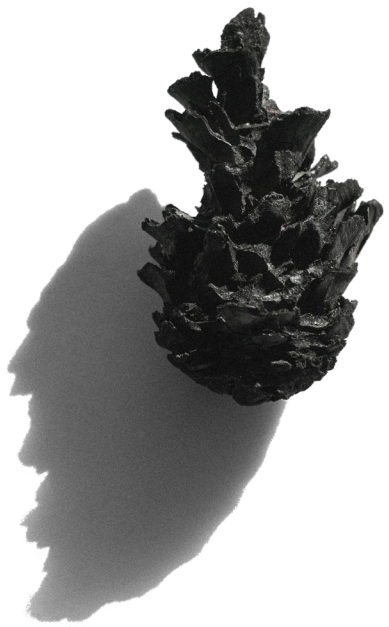




LEGEND

- ancient Roman road
- Kesikbeli Seljuk historical road
- Side aquaduct system & bridges
- rivers
- high voltage power line
- object photo black&white - historical
- object photo purple - vernacular fountains
- object photo desaturated purple - modern irrigation
- object photo yellow - modern bazaars & hotels

0 0.5 1 1.5 2km















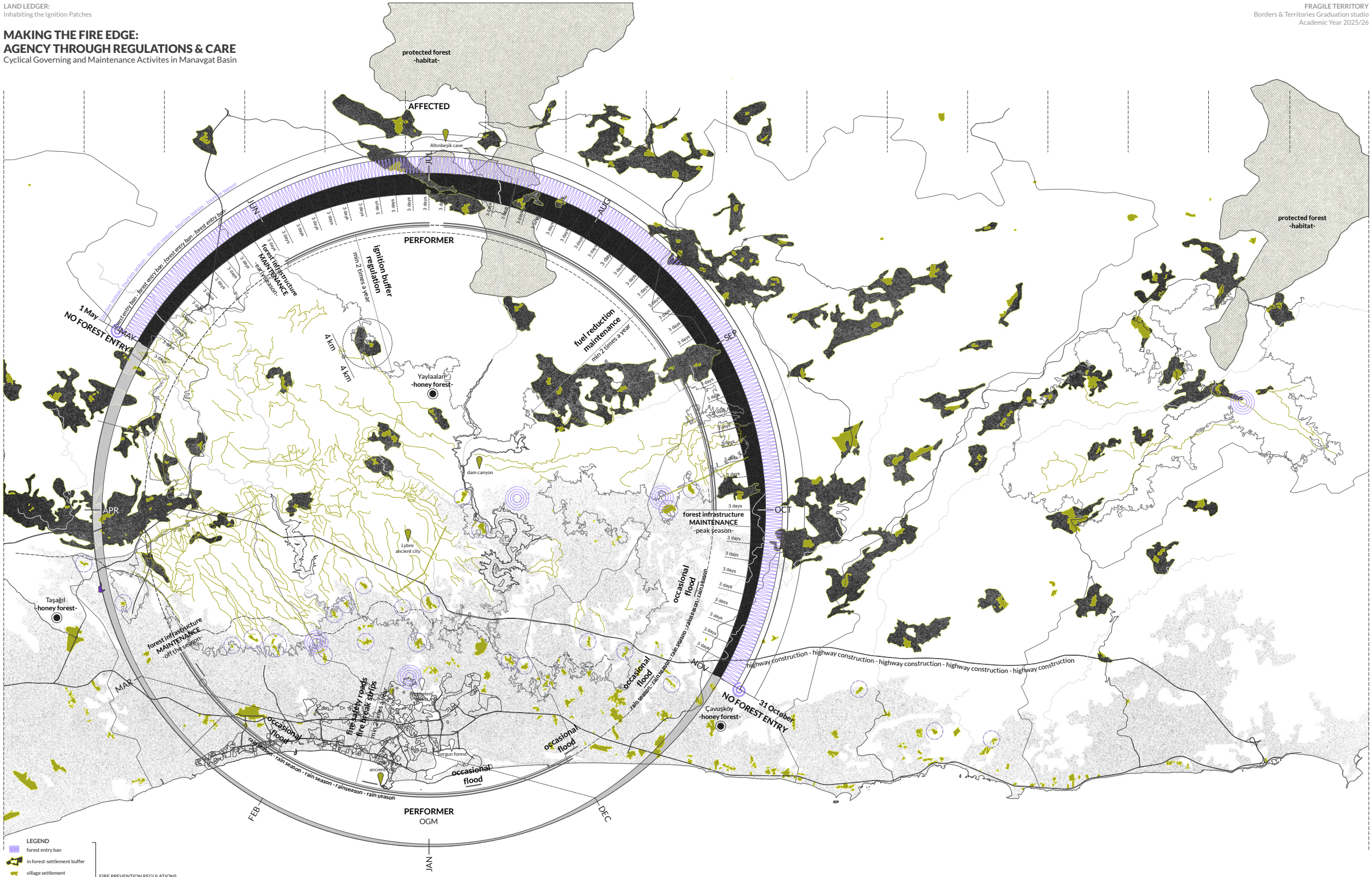
Map 9

MAKING THE FIRE EDGE:
AGENCY THROUGH REGULATIONS & CARE

Cyclical Governing and Maintenance Activites in Manavgat Basin

MAKING THE FIRE EDGE: AGENCY THROUGH REGULATIONS & CARE

Cyclical Governing and Maintenance Activites in Manavgat Basin





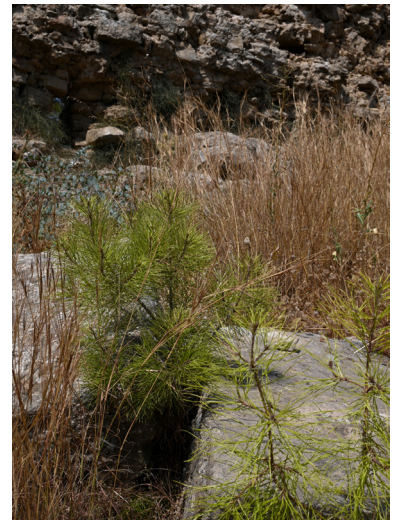












Map 10

VEGETAL ORGANIZATION:
LEARNING FROM DE-CENTERED SUBTLE MOVEMENT

Life-cyle of Different Pinus brutia Body Parts

VEGETAL ORGANIZATION:
LEARNING FROM DE-CENTERED SUBTLE MOVEMENT

Life-cyle of Different Pinus brutia Body Parts

MOVEMENT
-Pinus brutia-

CROWN [NEEDLES]
-I-

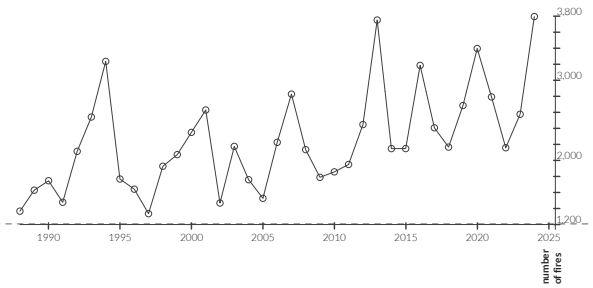
Needles form a slow vertical conveyor belt. New ones appear at twig tips, move inward as they age, then yellow, dry and drop into the litter. In about three years each needle travels from bright crown surface to forest floor.

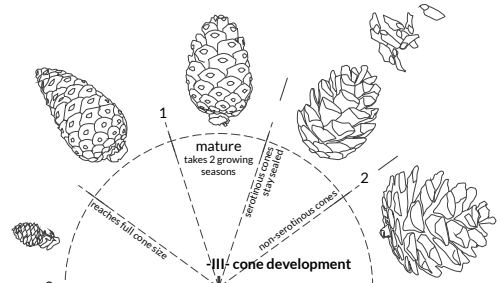
BODY [STEM, BRANCHES, ROOTS]
-II-

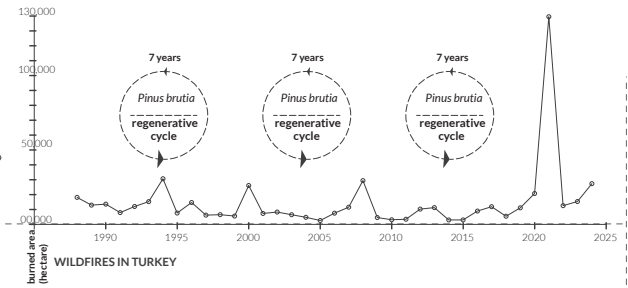
Stem, branches and roots shift more slowly. Young trees push straight upward, crowns narrow and roots chase moisture along rock cracks. With age, stems lean, branches die, trunks fall, roll downslope and gradually fragment into logs, chunks and buried wood.

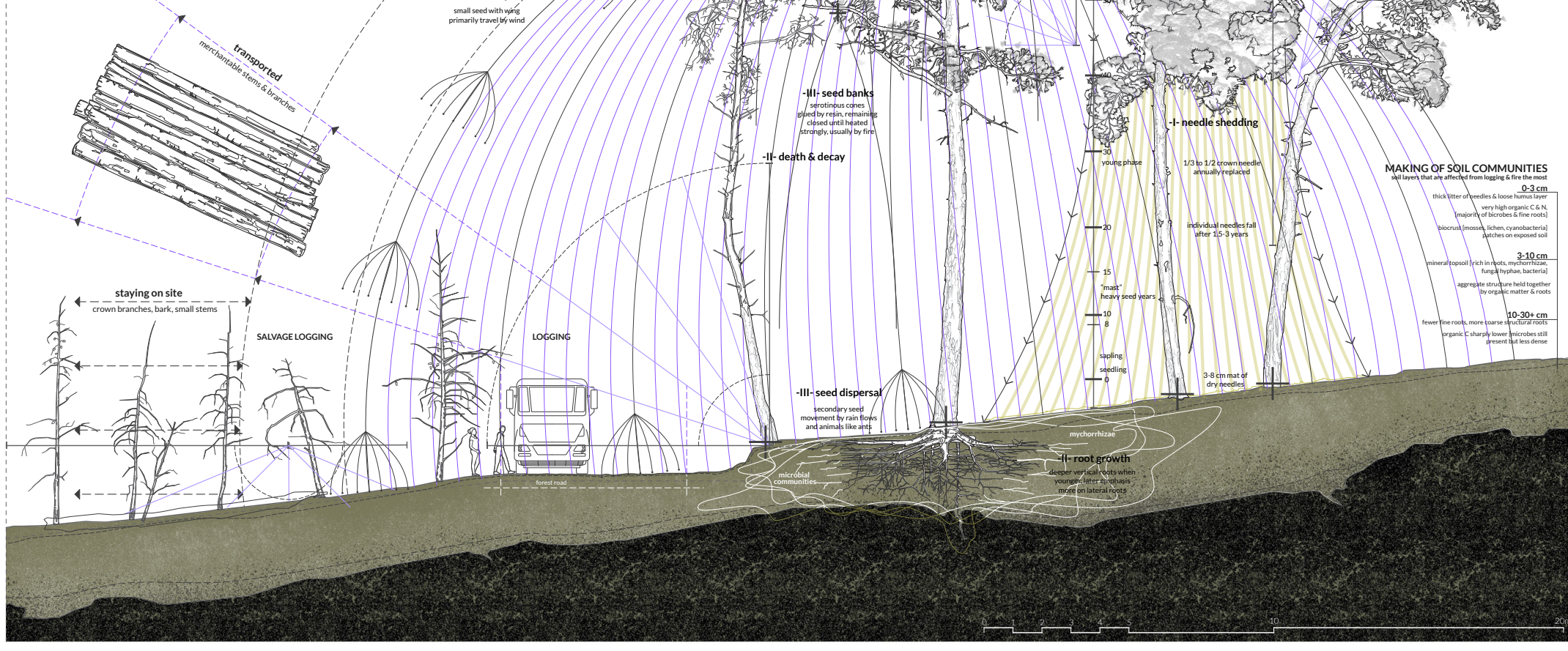
CONES / SEEDS
-III-

Cones grow from small flowers into woody capsules over two years, then may hang closed for several more. Heat or drought opens them. Winged seeds burst out in waves, fall through branches, travel with wind and water. Finally, colonise new empty zones.









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LAND LEDGER:

Inhabiting the Ignition Patches

BOOKLET II
Design Experiments



"Eco-histories of
Life & Death, Seed & Ash"

TU Delft
Faculty of Architecture &
the Built Environment

Kaan Özdemir

Borders & Territories
Graduation Studio 2025/26



LAND LEDGER:
Inhabiting the Ignition Patches

Kaan Özdemir

Supervised by:
Negar Sanaan Bensi
Oscar Rommens

ABSTRACT

This research is an attempt to understand the formation-deformation patterns of the forest landscape in Manavgat, Turkey, under an intensifying fire regime, and an experiment of a “vegetal proposal” that is shaped with flames. Despite being excluded from forest care and inhabiting the fragile thresholds inside the forest, a decentralized rural counter-practice of villagers that reclaims the forest and adopts its flows is imagined as the extension of current standardized land management activities and ownership.

The “Land Ledger”, situated in one of the burned villages in the 2021 wildfire, positions itself as a dynamic “becoming” by retaining the moments of different fire encounter scenarios as spatial conditions to embrace and appreciate. This approach focuses on the diverse fire timescales of design components, interconnected yet divisible, similar to the “augmented” patches of the forest landscape that contain numerous fractures having unique eco-histories. Recording these cyclical stories of resurgence and destruction, the proposal weaves the (re)organization of the rural art of making together without proximity or a strict frame, this time for inhabiting the ignition zone responsibly.



TU Delft
Faculty of Architecture &
the Built Environment

Borders & Territories
Graduation Studio 2025/26

CONTENT

PART I: Introduction

Problem Statement - Fragility of Division

Relevance - Motivation for Inventive Clusters

Research Question - Symbiotic Spatial Strategies

Scope - Recording (in) the ‘Middle’

PART II: When the Mute Narrator Stands

Fudging From Flames

An Attempt to Listen

Touching the Roughness

Involuntary Churn

Inhabiting Ignition

PART III: Design Explorations

(1) Reclaiming the Forest in Avasun

(2) Embracing the Burn: Designing with/of the Destruction

(3) Crustal Layering: Introduction of Diverse Fire-Timescales

(4) Translation of Fire Behaviour Into Grounding Principles

(5) Built to be Fragile: Interpretations of Vernacular (Ruin) Conditions

(6) Inhabiting the Building Like a Tree: Vegetal Programming of Time

PART IV: Conclusion

PART III:
Design Explorations

This chapter follows the order of spatial responses to the research questions; an introduction to the grounding site (1), main research inquiry (2), further detailing of architectural explorations (3-5), and finally an overarching conceptual outcome of the proposal (6).

(1) Reclaiming the Forest in Avasun

"What does it mean to inhabit the slow-paced cyclical evolution of the terrain in a proposal that is open-ended and can flow with the sudden changes and surprise in Avasun?"

The territorial research pointed out that the ownership situation of the forest might play an essential role in inhabiting the fire landscape. To activate the counter-practices of villagers in and around the forest, as discussed previously, villagers need to gain their rights to engage with the forest. The first step to start translating the research outcome into the architectural proposal then requires making the relationship of Avasun residents with the forest and fires clear.

Situated within the 2021 wildfire area, the village of Avasun was partially burned, together with its surrounding forest that the village depends on economically. It also sits very close to the border of effect are of that devastating fire, creating a unique opportunity to be in touch with the transitional zone of severely burned Pinus Brutia forest into surviving forest on the upper hills of the village, where the vegetation starts to transition from denser to sparse, red pine to juniper, black pine, and Cedrus mixtures. Within this transitional belt, the neighbouring forest to the village stands as an "augmented forest", altered for supporting laurel production that is neither artificial nor feral. Introduced in the 1960s by the Forestry Institution, laurel harvesting is now the major activity of the villagers. As









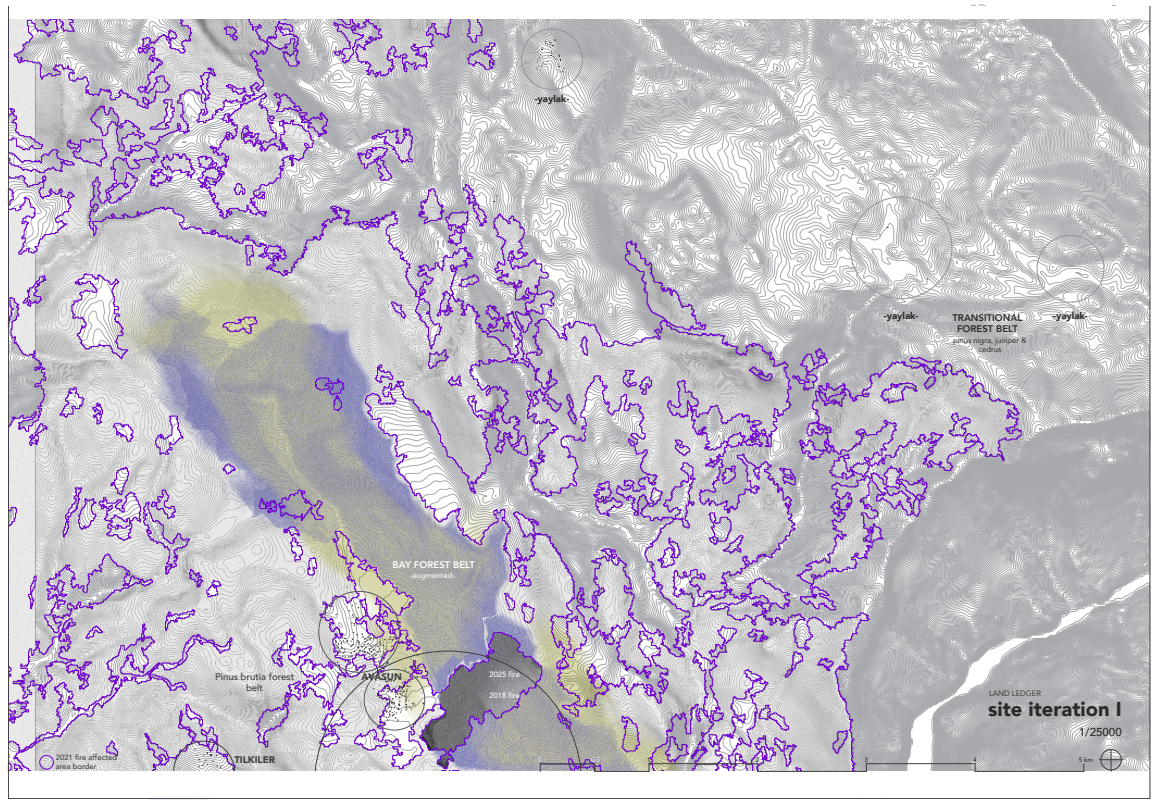
"Views of Avasun (Yaylaalan) village, from the mountains and resurging laurel harvesting forest."

villagers point out, the greatest laurel forest area is state-owned, which they openly demand ownership of, limiting when and how to harvest the leaves.[13] Reclaiming the forest in Avasun also becomes integral to another practice to stay active: seasonal nomadism. Some families still migrate to higher lands in the summer, for climatic reasons and goat herding, requiring more freedom of access to the forest.

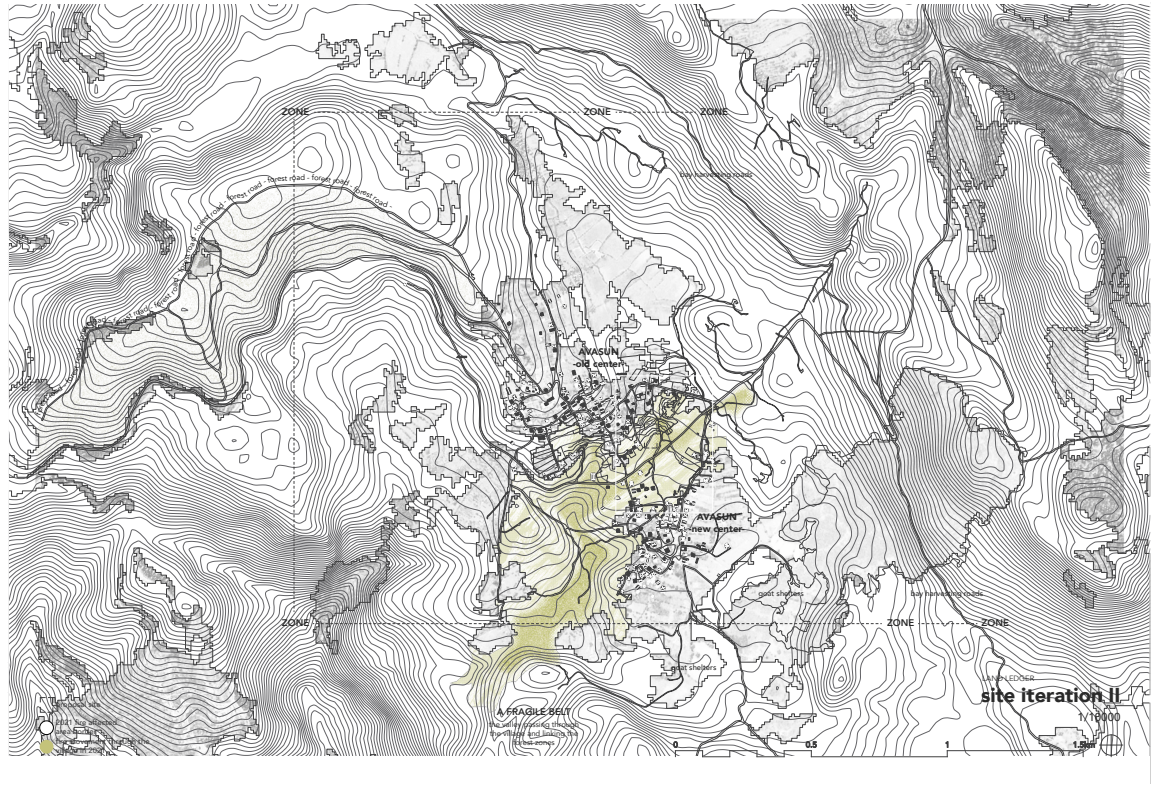
Considering the small scale fire happened in the same laurel forest in the 2025 summer, an expanded inclusion of people in this fragile ecosystem would not only ease their practices but also introduce new responsibilities: gaining, or maybe remembering, the ability to follow and respect the rhythms and needs of other living communities. This way, the state forest starts to become from a vast, everybody's land that is in practice nobodys land, into a fragmented patchwork in which villagers take care of some of these blotches, where people start to own the forest, resulting in forest owning them too.

13 Zeki Demir, "Yayla Alan Belgeseli- 2- Bölüm- Yönetmen-Halit Sunal," YouTube video, uploaded by Vizyon Zeki Demir, accessed June 9, 2026.

"Effect area of the villagers' practices between the 'yaylak' highlands and the lower village center with its augmented forest, situated on the opposing sides of the 2021 fire burn mark border."



"The forest zones created by fire safety belts and infrastructure, in relation to the fire movement that passed through the village in the 2021 fire."



(2) Embracing the Burn: Designing with/of the Destruction

"What happens when a building embraces the possibility of burning and stages embedded scenarios of "designed destruction" that also stimulate a resurgence afterwards?"

Being owned by the forest and the ability to confluence with the existing flows could be realized with a striking shift in the way we build: embracing the flames of destruction. A building that doesn't resist the fire but learns to exist with it, meaning to approach the possibility of burning not something to prevent with precautions but an event that will eventually be a regenerative new stage in the lifetime of the structure. This would require open-ended, not strictly determined design strategies that trick the fire by redirecting and slowing it down. Designing how the building provisionally collapses. By planning the collapse as an embedded code within the design, the "lifetime" of the building can turn into a "lifecycle" that is engraved with possibilities of resurgence, just as the forest itself. This cyclical way of being would start appreciating spatial moments both before, amidst, and after fire as a whole in different ways

To speculate on the idea of designing with fire, conceptual model making is used as a method to discuss the "assembly" of the proposal, in close contact with the "ground" and programming. The first model is produced by dividing a single aerated concrete block step by step, until reaching a diversity of flat, narrow, big, or small pieces by mimicking the natural shear forces that shape the ground. This reproduced ground

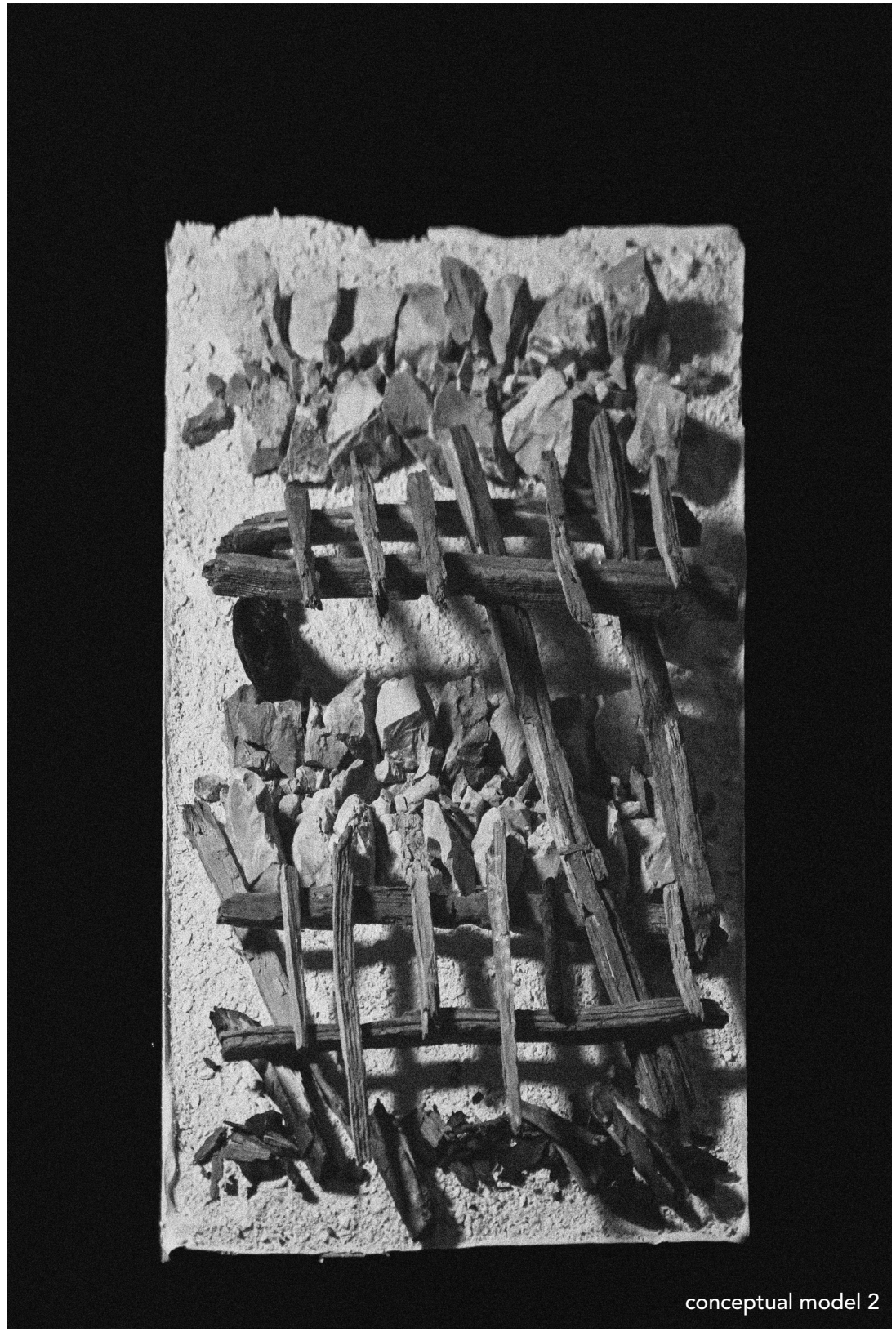


conceptual model 1

starts to turn into a spatial composition, having extensions both above and below ground, similar to a porous and dissolvable karst terrain. This assemblage of fractured objects could create obstacles and refuges that don't fight but intervene in the flows of nature, including the fire. As a result, although it seems paradoxical, fracturing turns into an assembly principle for grounding.

The second assembly model is similarly a result of contemplations on ground, but this time the inspiration is not on the geology but on the existing architectural texture. Although it emerged from the scarcity of locally available materials, not as a strategy to inhabit the fire zone, the "düğmeli" construction system of the region creates more than buildings but a whole village landscape that could flow with the flames. This vernacular method enables building with small stone pieces and the absence of mortar, gaining its structural stability only with a dense inner wooden frame. This results in a loose assemblage, where





conceptual model 2

stone becomes surprisingly ephemeral, and the wood determines the lifespan of the structure. When burned, the walls start to dissolve, either partially or totally; the sum of ruined object/embankments even creates a new layer of landscape. The model breaks down a wall object and lays down its fragments, both the stone embankments and the burned wooden elements, in a spatial organisation to experiment with this unintentional genesis of a landscape.

The last model explores ways to program the proposal spatially, in an assembly similar to a vegetal one. Made by deconstructing a stem piece of a burned Pinus brutia tree, the reconstruction is achieved through playing with the fractured bark pieces (originally a "crust" to protect the stem to some level), generating new landscape strips reshaped from the existing ground. The core stem (the vital part for the plant's functioning) is, however, not fractured in the experiment due to its hardness, staying behind the composition of the bark pieces. This formal and locational separation, which could be reflected in the proposal's programming, is based on the relationship between the assembly's fractures and the outside, whether direct, active, or distant.



conceptual model 3

(3) Crustal Layering: Introduction of Diverse Fire-Timescales

"Could a building become intentionally "fractured", just as the fire-torn landscape, with different fire timescales, thus producing unique "crusts" with different "histories"?

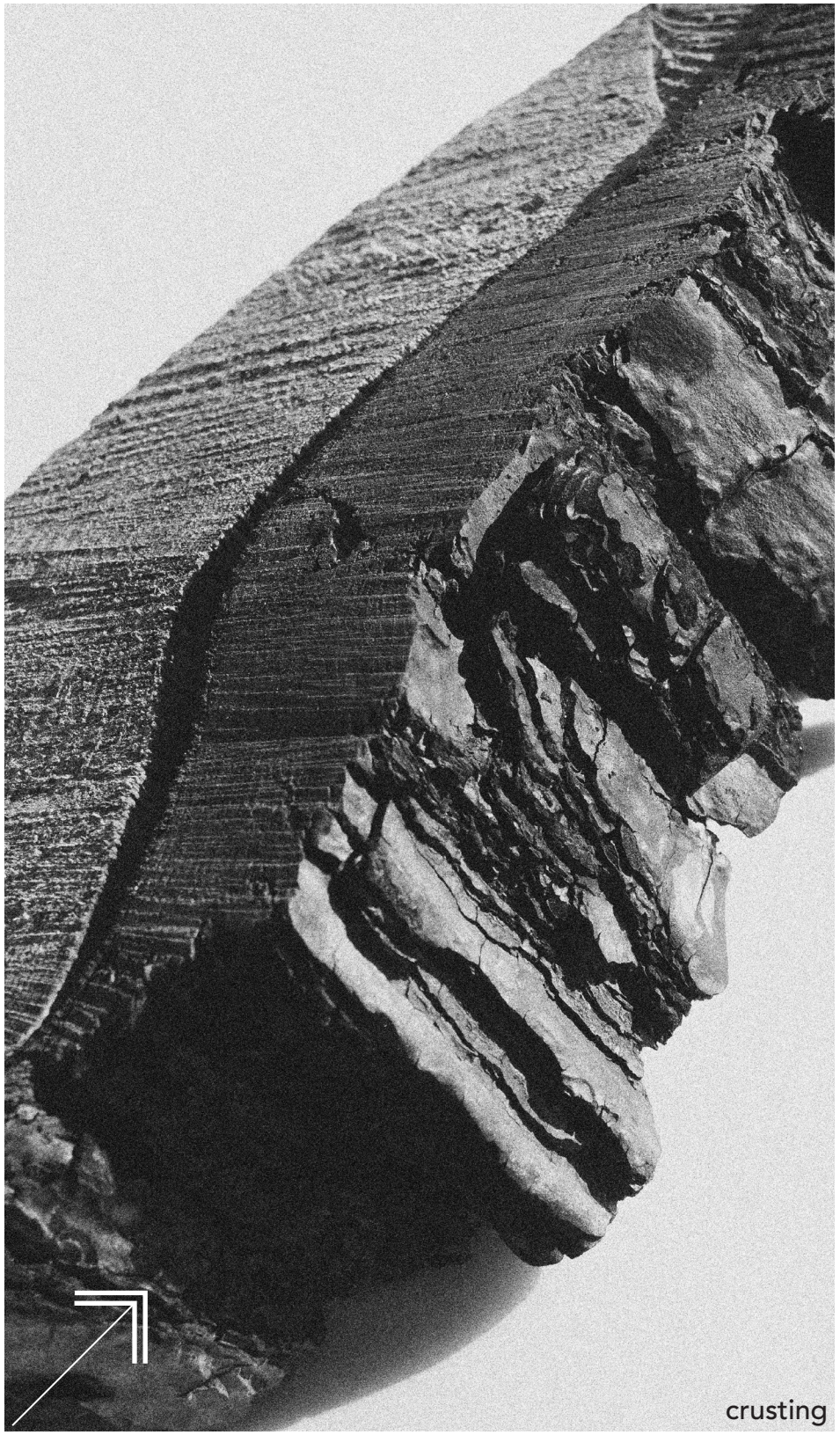
With the intention to adopt the flames and after the model-making exercise, an integral design strategy is proposed as "crusting". This would mean the design of both the building and the landscape as a series of "strips" having different combustibility and resilience characteristics. In resemblance to the fire safety strips, or barrier tree plantations from different tree species of fire infrastructure practice, a variety of vertical and horizontal "layering" creates a complex landscape in which fire passes through in a supported way with intentional encounters. Each strip, which I call "crusts", could be generated through a sequence of open and closed spaces that uses specifically selected material and construction properties, based on intended lifecycle and fire encounter.

Each layering also possesses the ability to react in a nuanced way to different fire scenarios: mild, medium, or severe. The "sequencing" of these crusts then plays an integral role in shaping the composition. However, this doesn't mean that the most vulnerable structures have to be the last to touch with flames. On the contrary, the outermost fire-facing facade strip is proposed not as the most resilient one but as a crust that is designed to burn and dissolve. The initial crust type, the "sacrificial", then faces the possible fire movement directions first. Both on landscape and building scales, this layer functions to divide, shrink, and redirect the fire, for the sake of the second type of crust, the "protected". Unlike the first layer, which serves recreational, service, and circulation functions, this protected strip hosts the program's daily and large-scale activities. It is protected, yet at a medium-severity fire, it starts to be affected by the fire too, and in a scenario of a high-impact one, it might totally burn. Materially, the sacrificial crust fits with the dissolving yet slow-burning character of the "düğmeli" construction system, and the protected crusts possess varying constructional systems, from interpretations of düğmeli to more timber-based examples.

The idea of welcoming the fire is nothing new in the vegetal communities, but with a fundamental adaptation, meaning an end is accepted but equipped with the sparks of a new start. Pinus brutia reserves some of its cones for years, sealed with resin, which only spreads the seeds when a high temperature is reached, most probably during a fire. Similarly, a third crust type, the "secured", accommodates the code, memory, and resources that will help regenerate a new body after the demolition. Thus, this last layer needs to be reserved even in the worst fire scenarios, which is architecturally achieved via the buried concrete spaces. In the end, each crust achieves diverse "fire-timescales", meaning each distinct layer of fracture in their loose assemblage could have unique, interdependent yet separable life-cycles; stories of their own.

To further expand the program in relation to their "fire-coding", the proposal consists of two major interconnected and divisible clusters: the "village commons" and the "land ledger". Besides clear borders, the

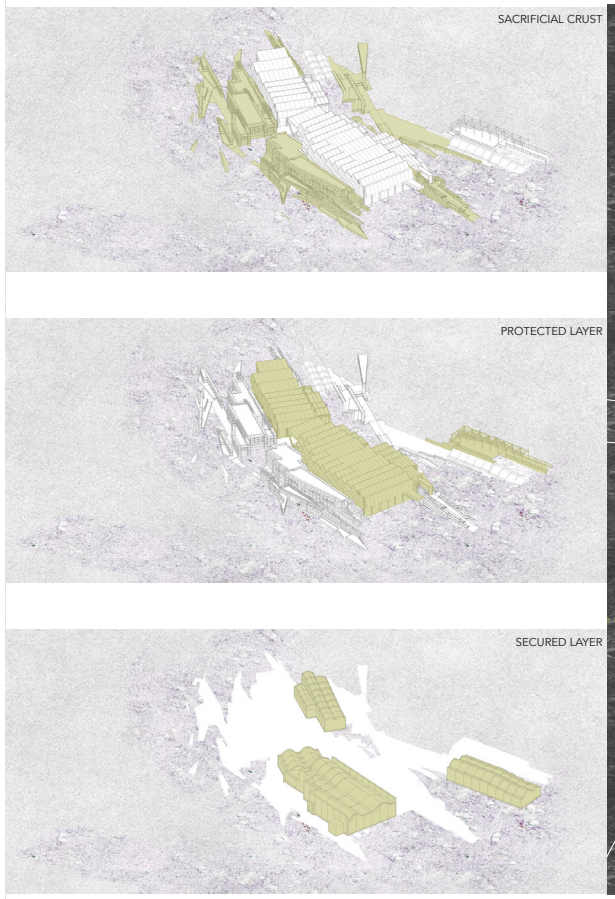


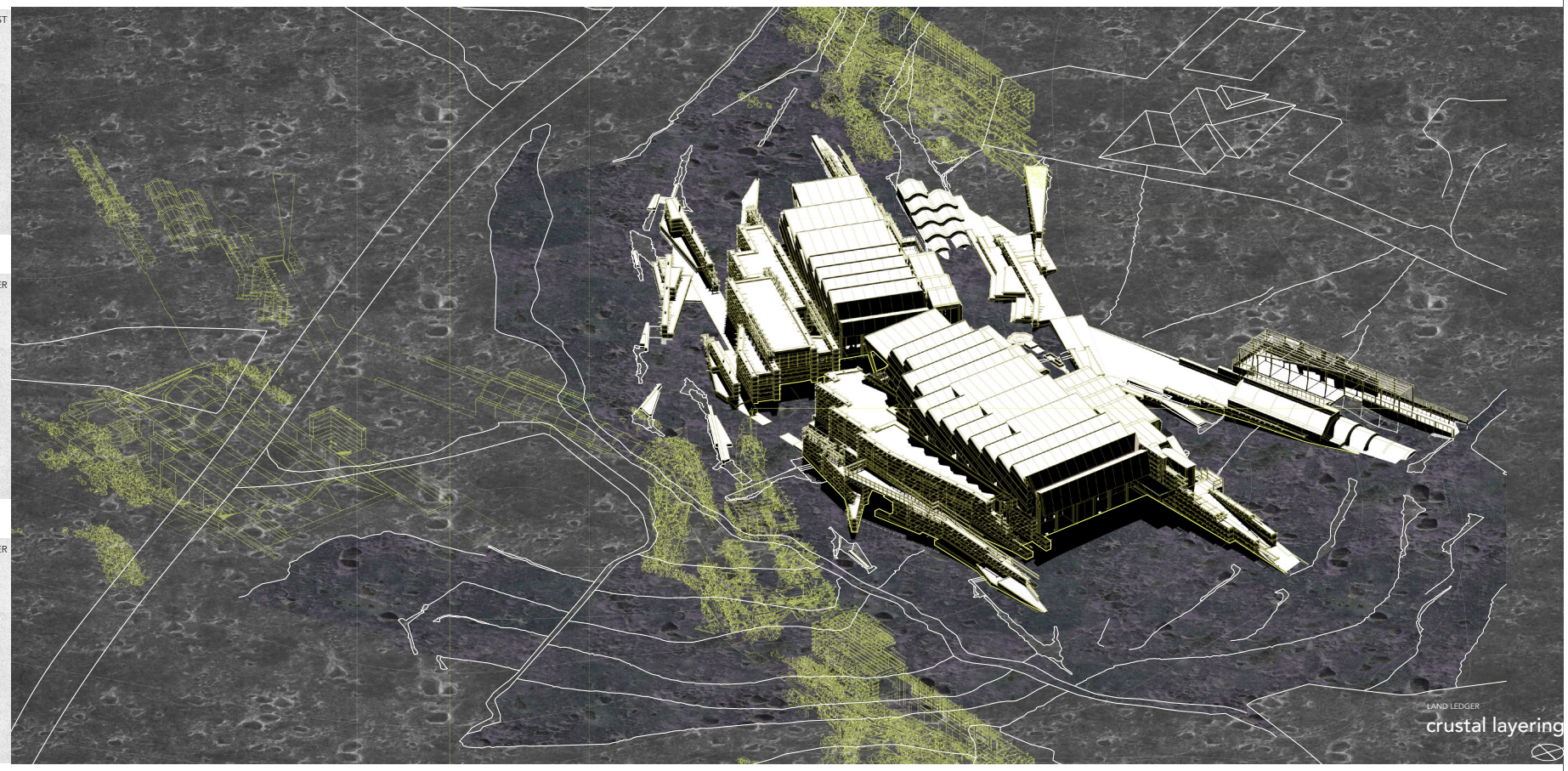


first group of spaces is for everyday use, a "village cafe" in a sacrificial crust serving to the "village hall" it protects. Located on the most public interface, this hall provides a space for daily recreational meetings, celebrations, mournings, and occasional discussions related to forest care and harvest. Placed in a concrete, secured strip, the half-buried "village atelier", together with its terrace, serves for individual or communal moments of building. It is the place that will organize the reconstruction of the damaged parts after a fire encounter, or seasonal repairs of the forest infrastructure that are in the villagers' responsibility.

The two more specialized spaces, an "archive" and the "convergence hall", sit in the second cluster. Situated in the protected band, this hall is a workspace for eco-histories and forest works, whereas also a confrontation and intersection ground for experts, villagers, and state forestry agents. Through regular tutoring sessions for the students of the village school and the residents in general, this place blurs the division between scientific work and forest care with education and conversion of research results into multimedia stories to spread across the land. In case of a fire in the region, the hall is used as a disaster management center by the organizations. Hiding under this big meeting space, the "land ledger archive" secures the intellectual/artistic productions and stored samples from field trips. Beyond being a container, this archive is a computer and digitalization lab, and a village library about the forest habitat and local history. These two spaces, the convergence hall and the archive, on the fire-facing side, are connected and protected by a sacrificial mass, which slows down the circulation, creates niches, and provides space for exhibitions. As the last component of the project, on the terraces alongside the "fire corridor" in Avasun, the village forest revives with common efforts, retaining some secured patches, the "living archive". Combined with nurseries, these small pieces of vegetation are enjoyed daily, besides serving as seedbanks for a resurgence.

"crusting: development of a monstrous outer layer that redefines itself after every fire, or resetting of the life cycle. Becoming denser, thicker, and fractured, the sacrificial crust follows the flow of flames and decay courageously. Different than the secured layer that is isolated from the damage of fire, protected strips inhabit multifunctional spaces of gathering and organization that could be lost in severe fire scenarios."





"Situated on the edge of the high-fire-risk green belt passing through the village of Avasun, the immediate and surrounding landscape becomes an integral part of the 'Land Ledger', burning, reviving, or transforming in interconnected ways.

Although the building secures the intellectual forest work and village chronicles under the ground, the archival activities transcend architectural space. Similar to the introduction of crusting the mass based on fire encounter and anticipated protection level, the surrounding landscape, through integrating with the existing practice of terracing, is fractured into various patches. These distinct patches, the Living Archive, are both appreciated common green areas and harvest grounds, and a collection of nurseries and seed banks of different tree species."



"The proposal lies in a strategic location, between the old and new centers of Avasun, on the way to the resurging augmented laurel forest. Nevertheless, proximity to the forest means a higher risk of being affected by the cyclical wildfires. By embracing this fact, every fracture and layer of 'Land Ledger' is envisioned differently toward the fire, demolition, and rebuilding.

This layering strategy, 'the vegetal organization of time', aims to learn from the diversity of reactions that species in the forest community possess: highly combustible pines that need decades to reform while securing seeds after fire, or maquis shrubs having fire-resilient roots helping them to re-establish themselves after a short time."



(4) Translation of Fire Behaviour Into Form Explorations and Grounding Principles

"How can the "behaviour of fire" assist in the way we formalize a structure together with its landscape and the materials we choose?"

Designed to interact with different stages of fire uniquely, each crust, sacrificial, protected, and secured, is a response to the movement patterns of fire. But how does the fire, which is too complex to strictly generalize, actually proceed and disseminate? Wildfire behaviour is shaped by the intertwined coupled phenomenon of wind and topography.[14] The fire follows the combustible fuel, but upslope and wind direction alignment promote convective pre-heating, resulting in faster spread uphill. Confined landforms such as canyons also intensify the flame movement further. The spread of the 2021 wildfire across the village aligns with these behaviours. The flames tracked the uphill canyon, which both links the lower-altitude forest with the laurel forest and divides the two centers of Avasun. This event justifies that this green band caused fragility to the settlement and the laurel forest, although it was a valuable part of the place.

Secondly, on a lower scale, wildfire exposure is also mediated by radiant heat and wind-blown embers, in addition to direct flame contact, turning fire into a discontinuous and multicentered flow. Although the first behaviour set is related more to the proposal orientation and landscape, radiant heat and

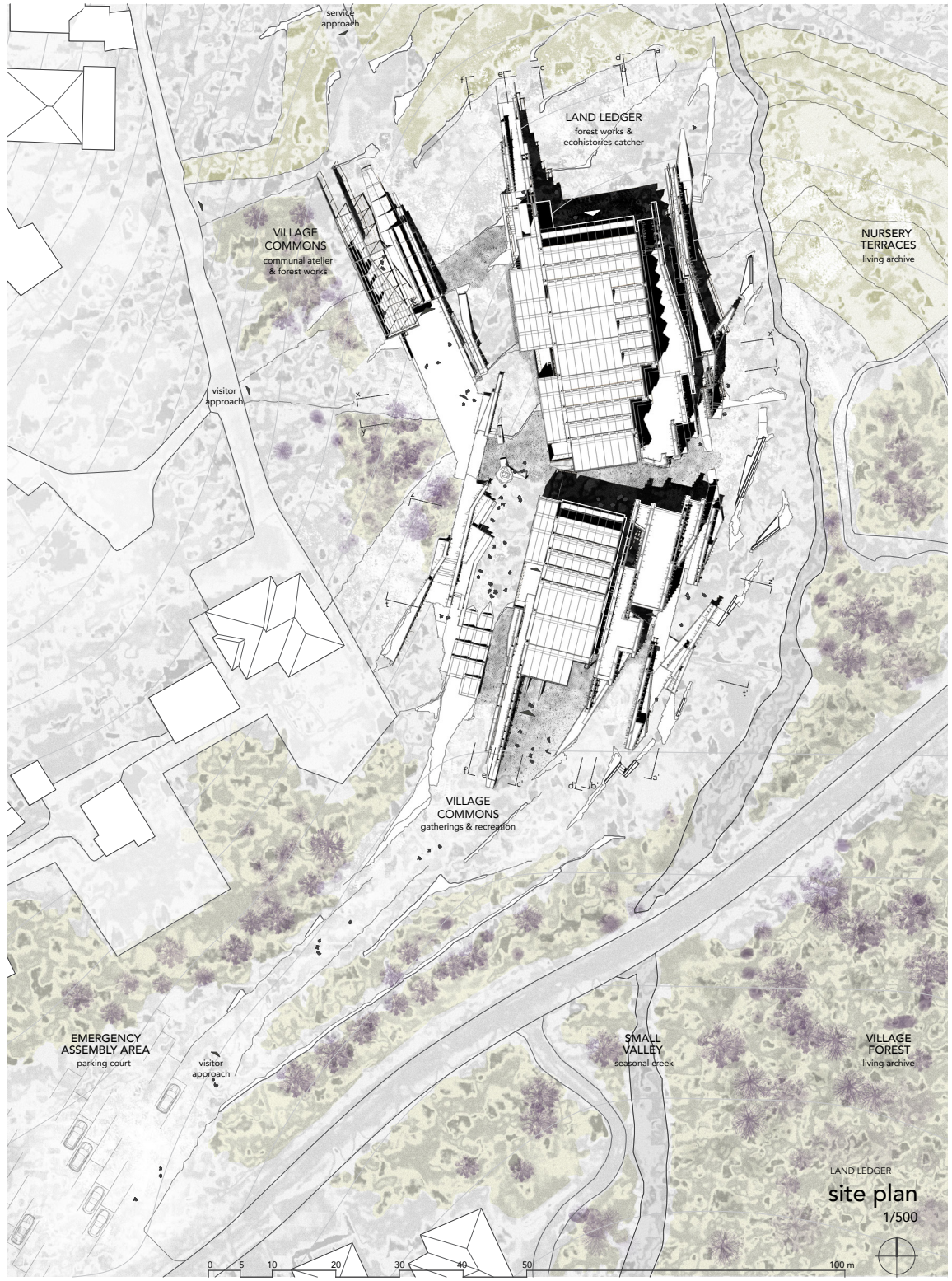
14 Suhaib M. Hayajneh, Mohammad I. Alzghoul, and Jamal Naser, "Wind and Slope Effects on Wildland Fire Spread: A Review of Experimental, Empirical, Mathematical, and Physics-Based Models," *Fire* 9, no. 3 (2026): 100, https://doi.org/10.3390/fire9030100.



ember spread highlight that architectural geometry matters essentially for the fire movement, concentration, and entering through the structure.[15]

The translation of these behaviour characteristics into form explorations starts with the introduction of discontinuity and diversification of orientations. Especially on the sacrificial crust, both the landscape manipulations and the building provide sufficient mass breaks with offsets and redirection walls of various orientations. Oblique and rough surface texture helps slow the spread, especially when combined with stiffened facade portions. On the edges and corners, walls of the sacrificial layer thicken, and the iteration of walls creates a denser space. In addition to these, researchers show that ember accumulation and trapping is shaped by building geometry. The cavities and thresholds that might work as ember-catching pockets are either avoided on the protected crust or treated as ember traps on the fire-facing detached walls. The roughness of near-building ground also becomes vital for ember catchment. The ragged ground traps the embers, meaning that the landscape texture is a part and extension of the fire-exposure facade. As a result, discontinuous terraces, stone aprons, a series of thresholds, multiple courtyards with diverse pavement, and detached sacrificial landscape walls compose a fire flow landscape around and through the building. To sum up, the building is organized by anticipated fire flows where the encounter is aerodynamic and geometric.

15 Stephen L. Quarles, Christine Standohar-Alfano, Faraz Hedayati, and Daniel J. Gorham, "Factors Influencing Ember Accumulation near a Building," *International Journal of Wildland Fire* 32, no. 3 (2023): 380–387, https://doi.org/10.1071/WF22132.

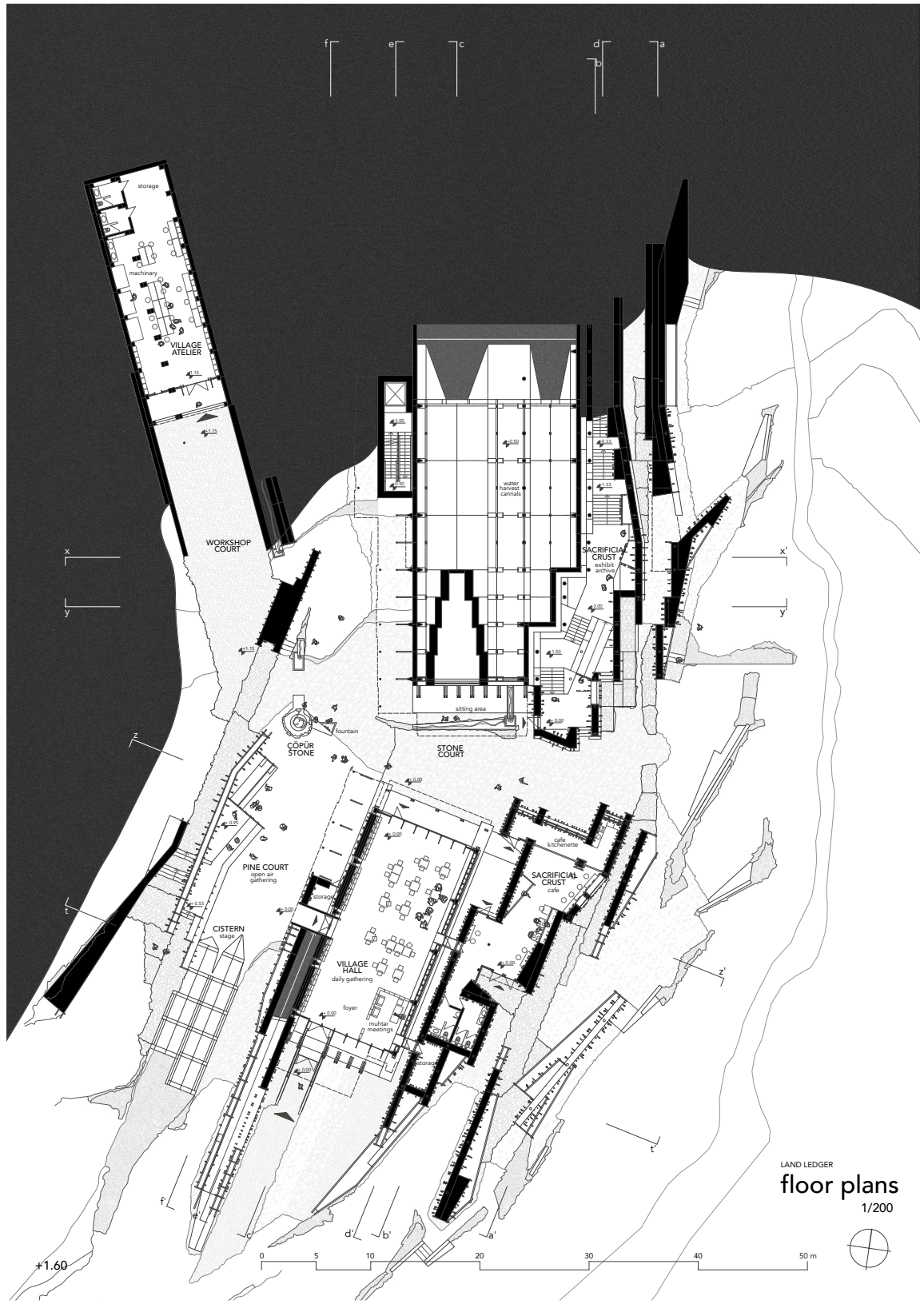




LAND LEDGER

floor plans

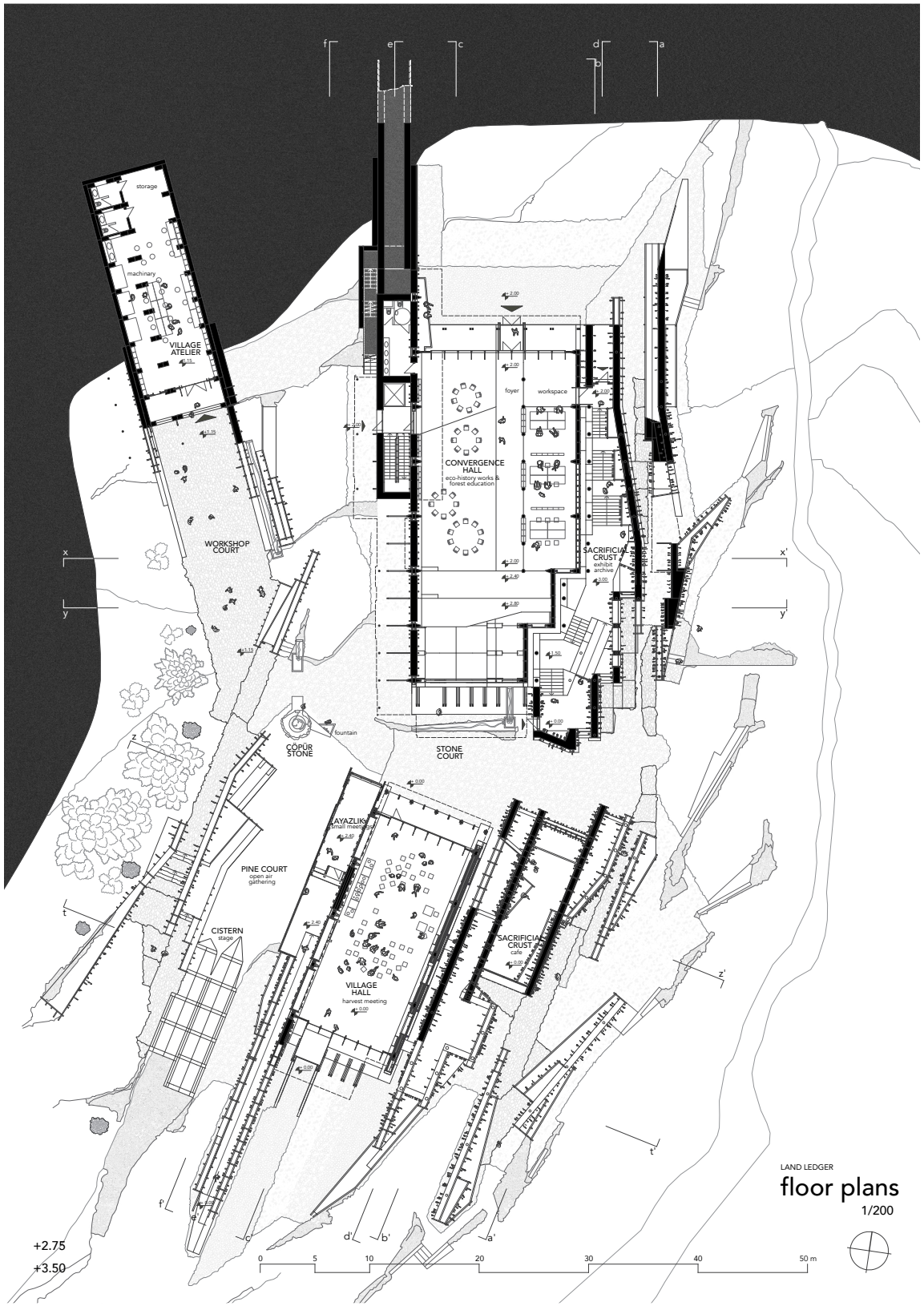
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LAND LEDGER

floor plans

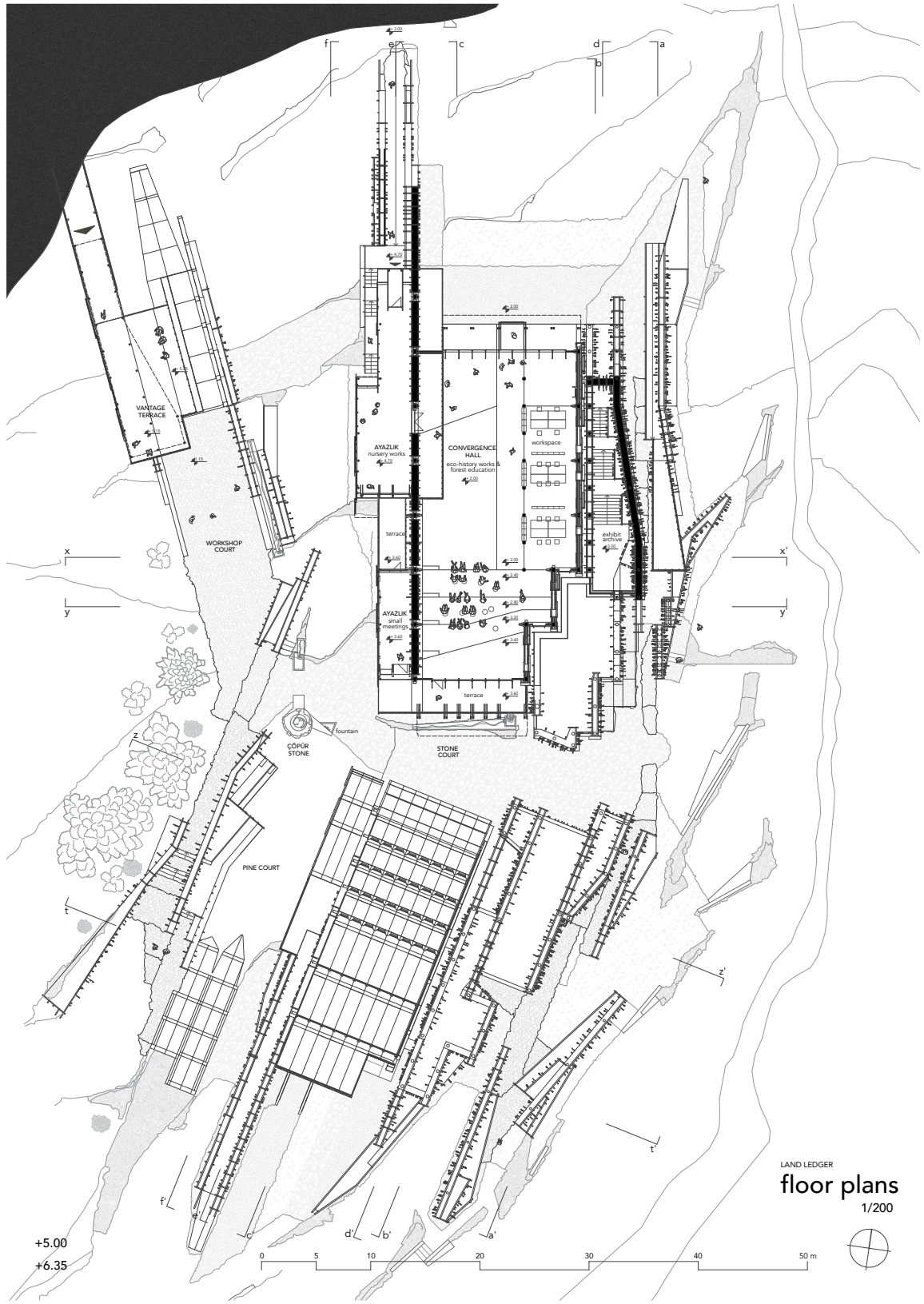
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LAND LEDGER

floor plans

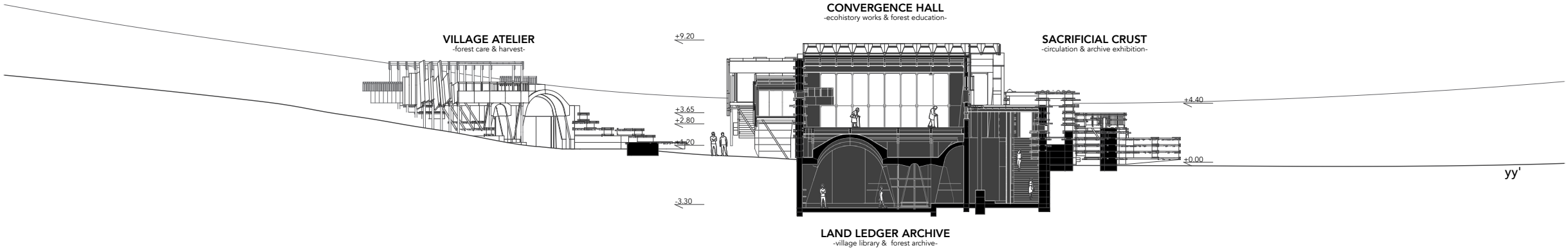
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LAND LEDGER

floor plans

1/200


CONVERGENCE HALL
-ecohistory works & forest education-
VILLAGE ATELIER
-forest care & harvest-
SACRIFICIAL CRUST
-circulation & archive exhibition-
+9.20
+3.65
+2.80
+1.20
-3.30
+4.40
+0.00
yy'
LAND LEDGER ARCHIVE
-village library & forest archive-
VILLAGE HALL
-everyday recreation & gatherings-
SACRIFICIAL CRUST
-village cafe-
+6.20
+3.90
+0.00
+5.75
+2.50
+0.00
zz'
SACRIFICIAL CRUST
-circulation & archive exhibition-
+2.00
+5.40
+4.40
+0.00
-3.00
-3.50
SACRIFICIAL CRUST
-village cafe-
+2.90
+0.00
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AYAZLIK
-small gatherings & recreation-
+8.20
+7.00
+4.80
+2.00
-3.00
AYAZLIK
-small gatherings & recreation-
+5.75
+2.50
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LAND LEDGER
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demolition scenarios

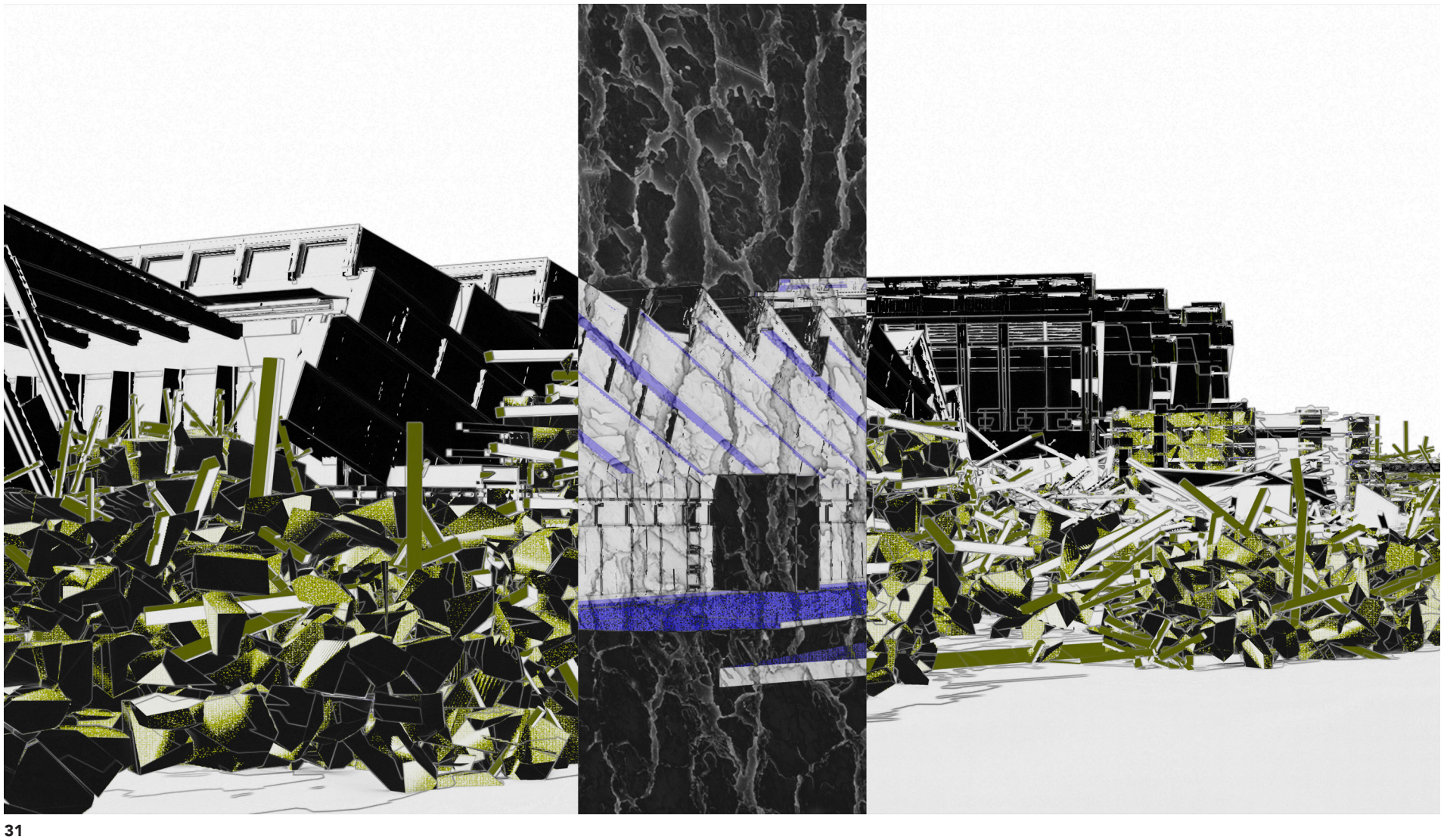
VILLAGE COMMOMS



Fire encounter is complex, discontinuous, and impossible to fully anticipate. The grounding strategies based on fire behaviour are used to redirect the fire and gain time.

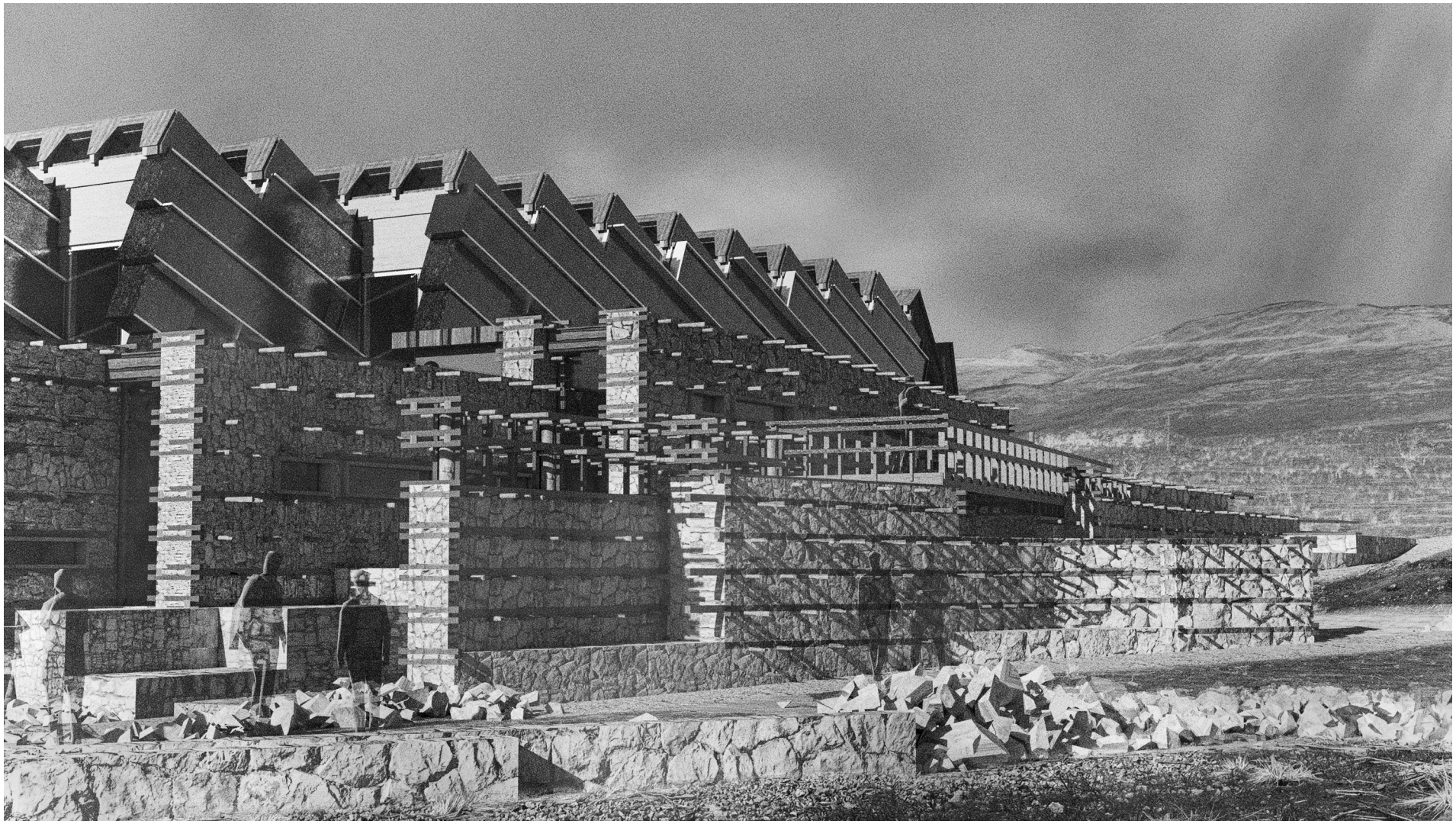
demolition scenarios

VILLAGE COMMOMS



demolition scenarios

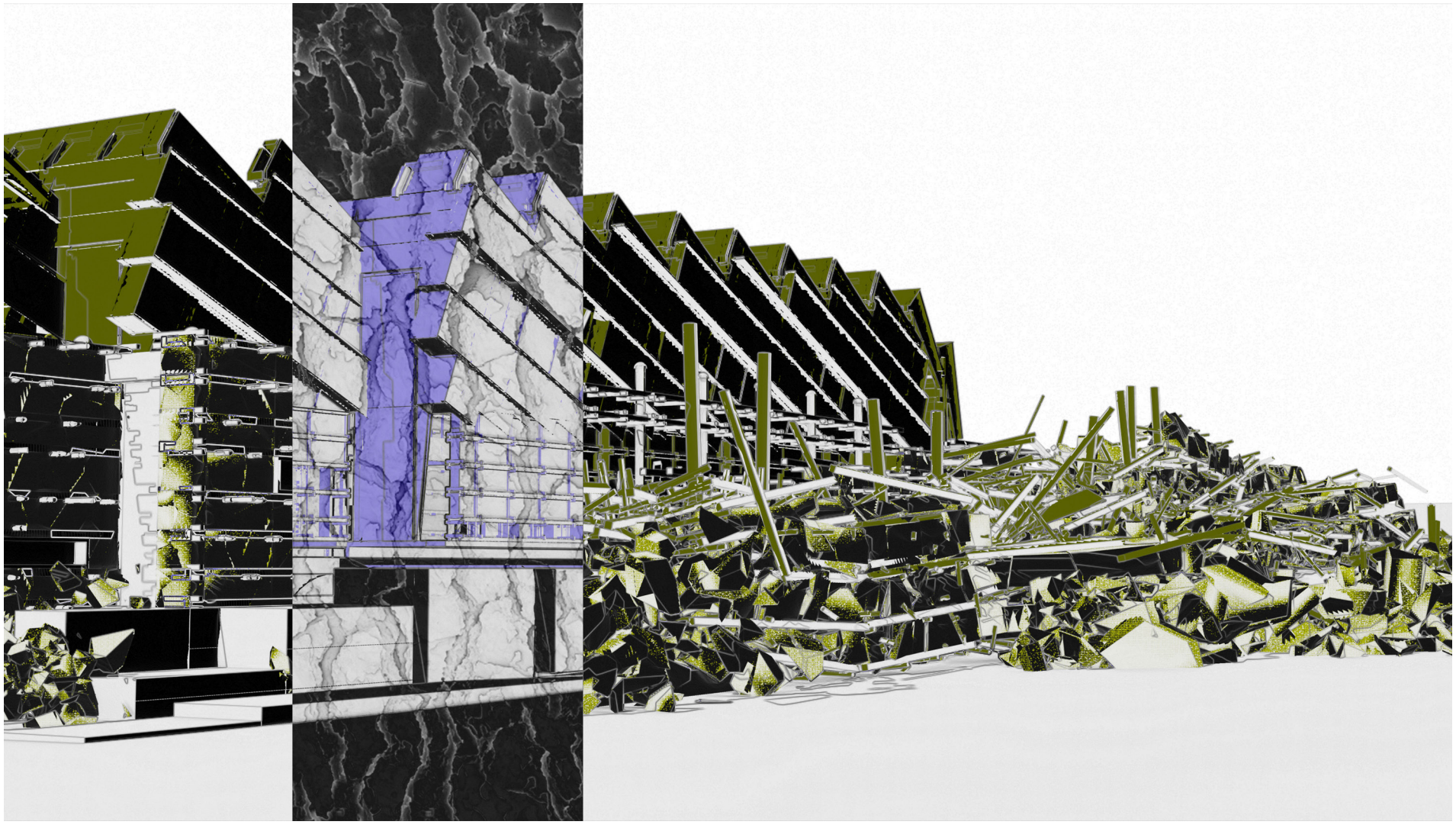
LAND LEDGER - FOREST WORKS



Partial survival is the most likely situation in a medium-scale fire, where the loss of parts does not critically affect the functioning of the rest. Life and death are inhabited together, through equal appreciation.

demolition scenarios

LAND LEDGER - FOREST WORKS



demolition scenarios

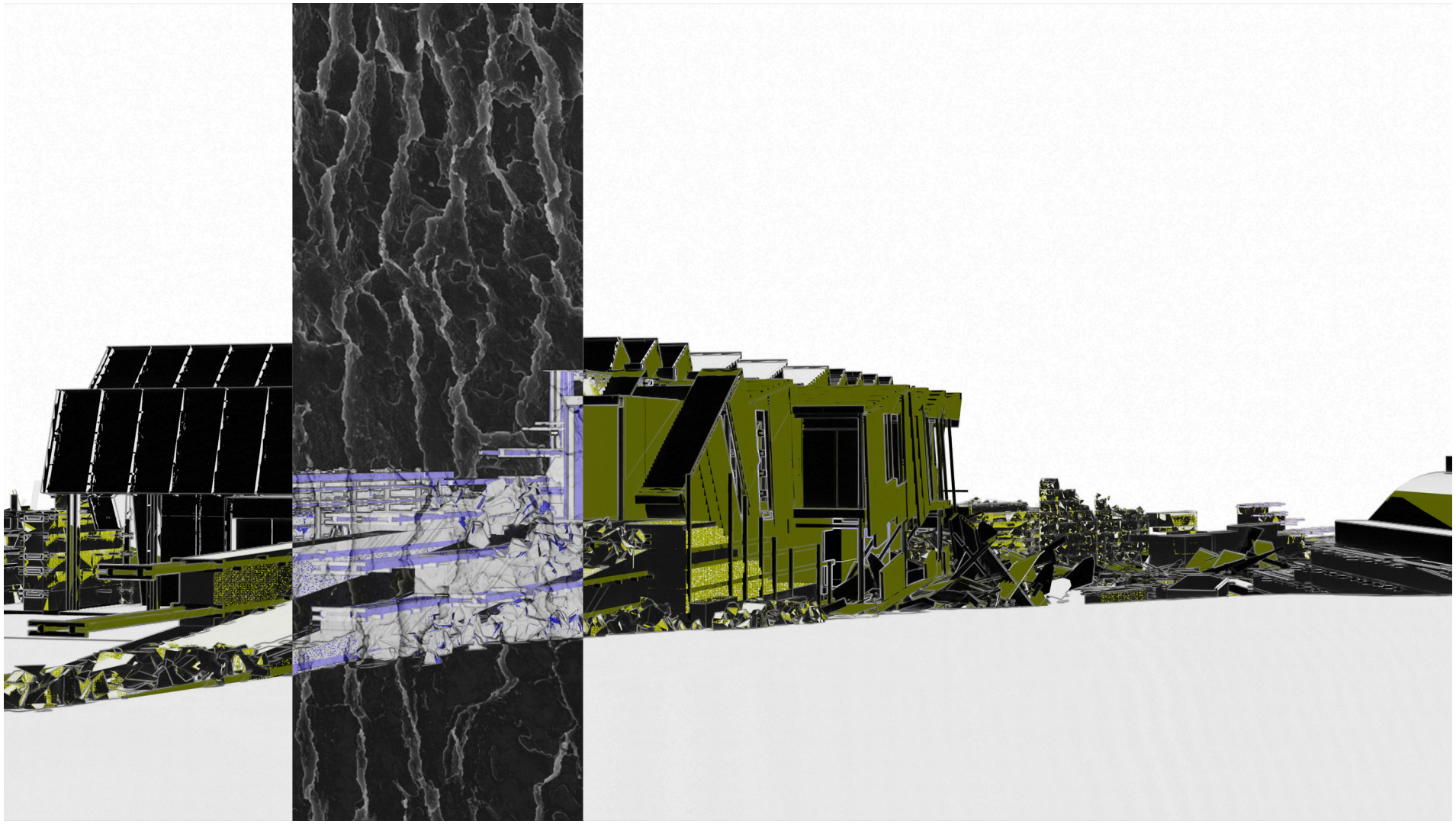
LAND LEDGER - FOREST WORKS



As a result, the different crusts and layers follow diverse fire timescales, while also being in the same loose assemblage that is the "Land Ledger" in Avasun.

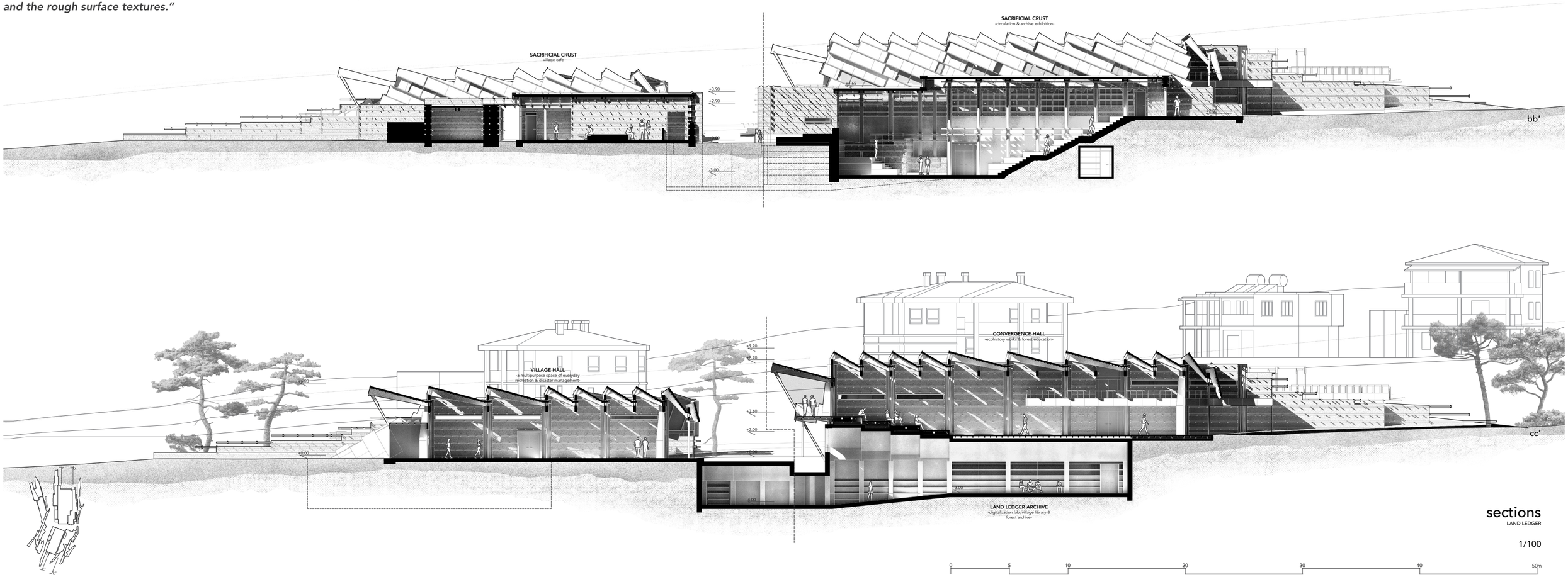
demolition scenarios

LAND LEDGER - FOREST WORKS



"The sacrificial crust is beyond being a protective layer. It introduces different spatial qualities: on the lower mass, it provides a modest, low yet denser space via sequences of walls, whereas on the upper mass, it becomes narrow and high, even monumental in a controlled way.

How the interior spaces receive light and how the shadows cast on the facade are integral parts of the structural system. Repetitive use of light and shadow creates diverse spatial experiences throughout the day and further emphasizes the fire-staging of the structure and the rough surface textures."



sections

LAND LEDGER

1/100

0 5 10 20 30 40 50m

"The building situates itself not only to the flow of fire but also to water. The harvested rainwater is directed to the landscape canals and fountains through the channels in between the separated structures of vaulted secured spaces and the ground floor slab. Eventually, this water is collected in a cistern for everyday usage of the building and nursery watering."



sections

LAND LEDGER

1/100

0 5 10 20 30 40 50m

(5) Built to be Fragile: Interpretations of Vernacular (Ruin) Conditions

"How do the traditional and modern vernacular techniques and their ruin conditions teach about the resilience of 'convenience' and 'temporality'?"

Keeping the design principles extracted from the site and the fire behaviour as a guide, the existing village tissues in the region and vernacular construction techniques are analyzed and interpreted to gain a local yet contemporary understanding. In addition to Avasun, the village of Sarıhacılar, as an historical yet mostly uninhabited example, is included to imagine demolition scenarios. The dry stone wall and timber construction systems of the region are also modified to meet the specific needs of the crust they are placed on.

The first interpretation, as discussed before, is equipping the dissolving character of the "düğmeli" system as something desired,



not a weakness of the technique. This way, the anticipated act of collapse does not produce rubble. During the fire, the wreckage acts as an embankment of the fire infrastructure landscape, which is also a material resource of stone for rebuilding in the future. Secondly, when not used in the "sacrificial" parts, this construction system is integrated with the concrete structure of "protected" spaces. The inner hidden timber columns turn into exposed concrete ones, which divide the continuity of the stone wall, resulting in making repairs easier without losing the whole wall in a fire. Thus, the stone walls might dissolve; however, in a medium-scale fire, the roof and unaffected parts of the facade still can survive.

The architecture of Land Ledger in Avasun retains interpretations on the "ruin condition" that is both present in the village and building component scales. The half-demolished düğmeli walls, which unintentionally turn into stone slopes, resembling even ramps and stairs with protruding inner timber elements, influenced the formalization of sacrificial crusts remarkably. As an example, stone walls thicken and turn into circulation elements, with timber levellings of the wall extending beyond the wall to perform as railings. This play of wall height and gradually lowering walls at the ends contributes to the effect of vanishing into the landscape, helping to melt the mass. Another decision rooted in the observations from the ruin condition is to expose and exaggerate the inner timber structure of the "düğmeli", especially to achieve porosity and visual connections. In between the sacrificial and protected spaces, where an offset is required but visual continuity is spatially preferred, the stone

"Interest in the ruin condition is not a romanticization or imitation of decay. Ruin reveals the hidden layouts, undesired outcomes, and unintentional potentials that the objects possess."





"Known for its longevity, cedar trees are used for beams and levellings (hatıl), and juniper for the smaller protruding elements (düğme or pişţuvan)."

walls stay short while the grid of the core timber structure extends. This extension could be just the timber columns, or a new wall that turns from stone to timber and glass, as if a wall is half dissolved, but the voids are either left as they are or filled with a different material.

Apart from the stone, an important segment of vernacular buildings in the region is the timber extensions, called "ayazlık", which emerged from the needs of thermal buffering and moisture management. Usually placed on the corner and supported by small columns and slanted supports, these ventilated and shaded threshold spaces are included in the proposal especially for summer times. As observed in some examples, these timber parts are extended with additions by wrapping the stone facade further and creating a long shaded space underneath. The unplanned, irregular quality of these exceptions is interpreted in the "protected" spaces as an additional buffer strip that is directly linked with the back courtyards and the landscape. In brief, implementing the vulnerable, self-evolving and additive attributes of the vernacular condition without excluding the decayed versions expands the concept of resilience till the borders of temporality.





"The ruined condition is manifested through a wide variety of embankments. Especially the semi-dissolved walls unintentionally propose ramps and vantage points in this new layer of more-than-rubble landscape."





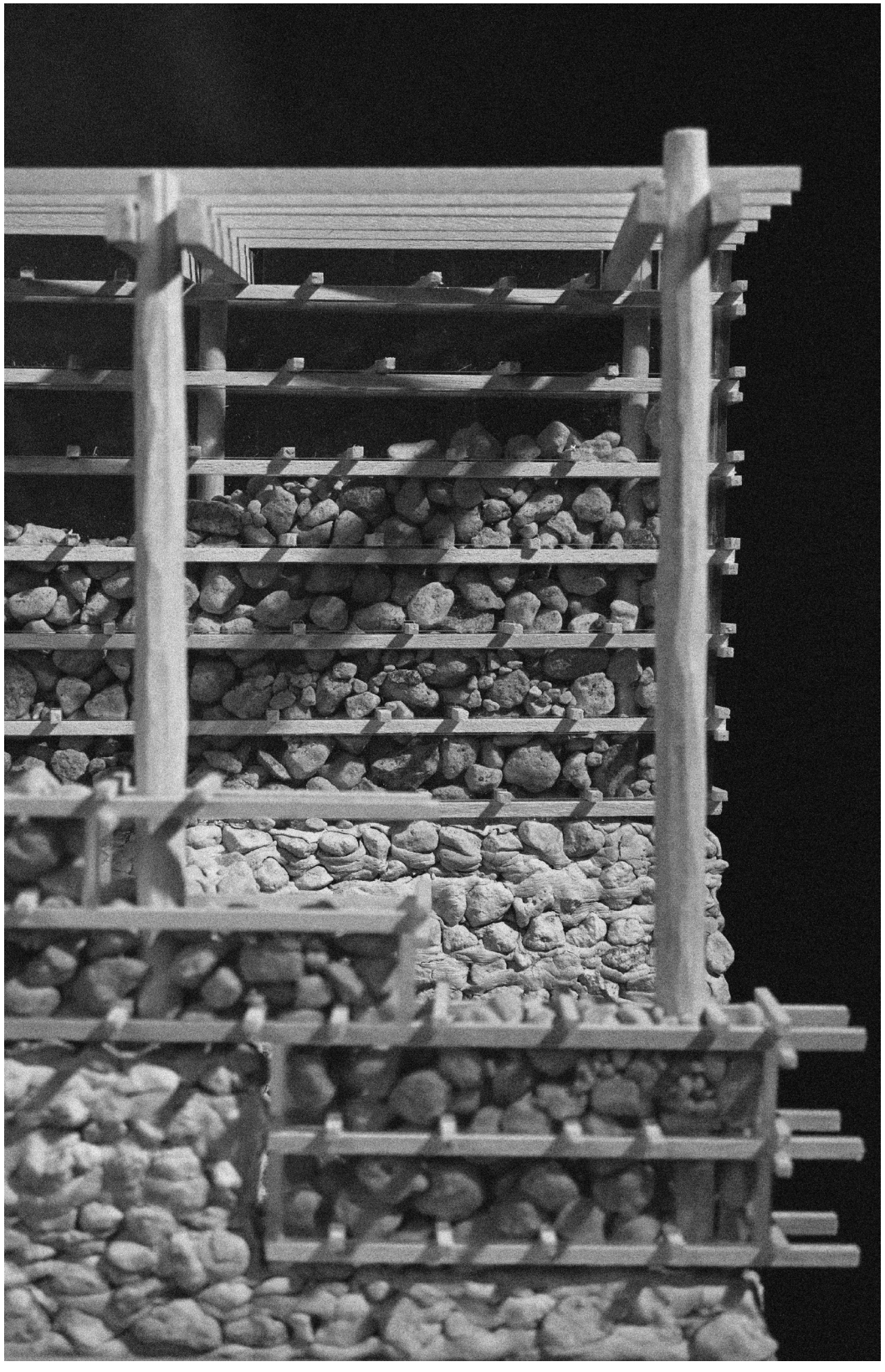




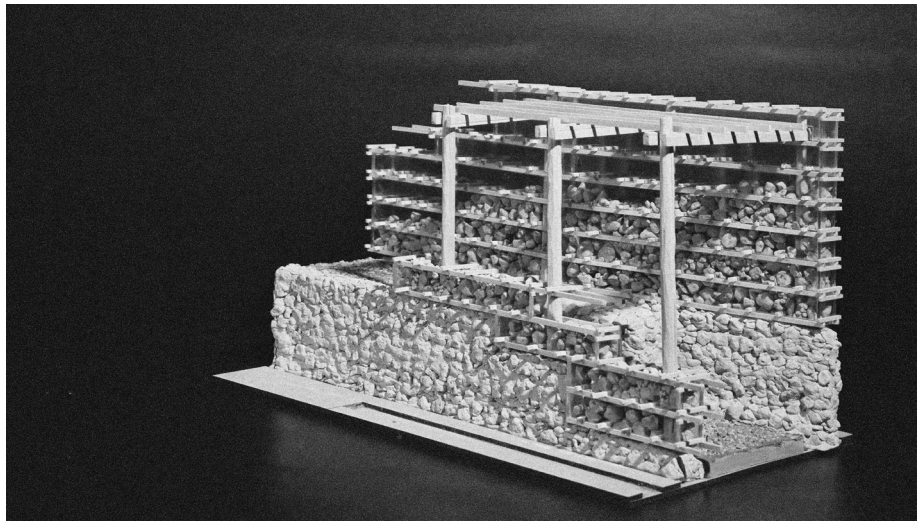


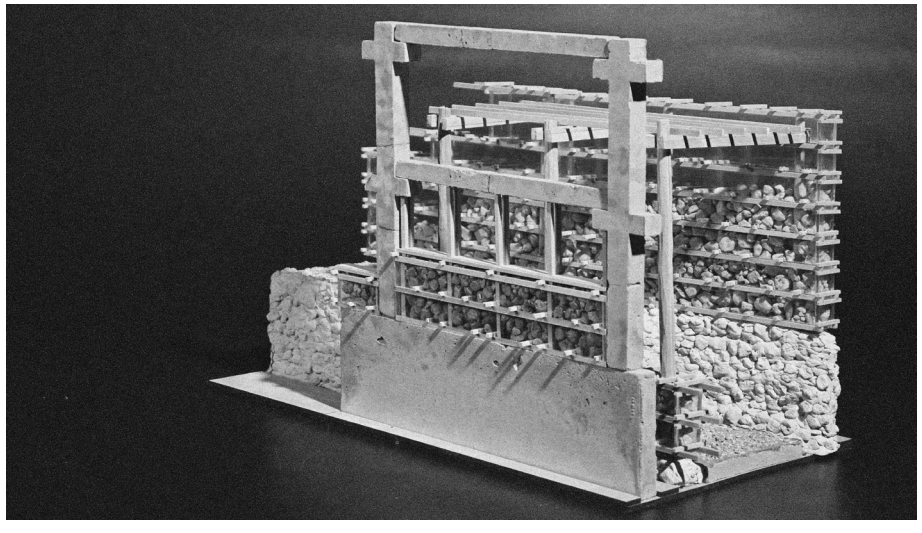


"Examples of timber 'ayazlık or kafesönü' and stone dry walls from the neighbouring Ormana, Ürünlü and Sarıhacılar villages."

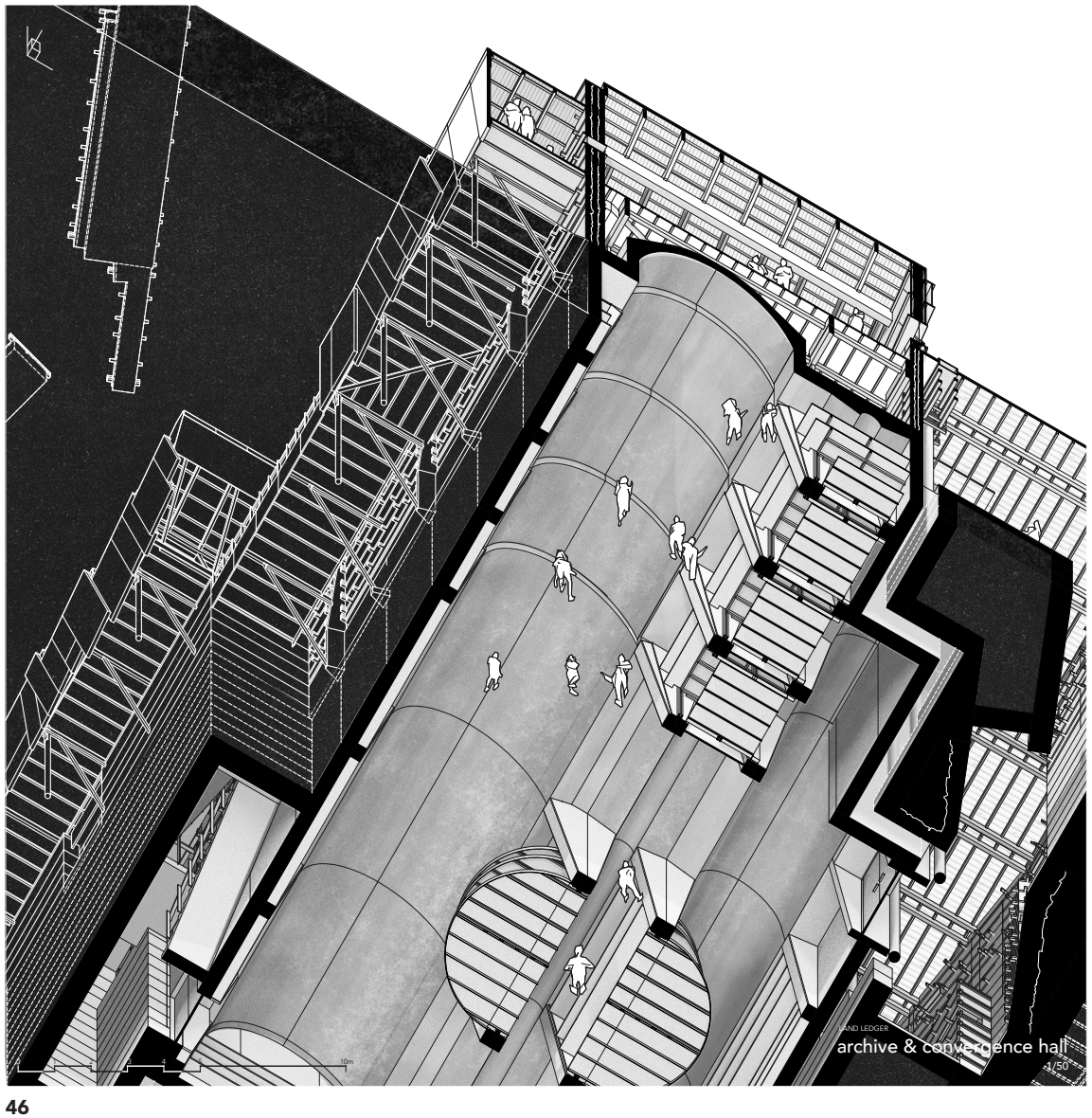


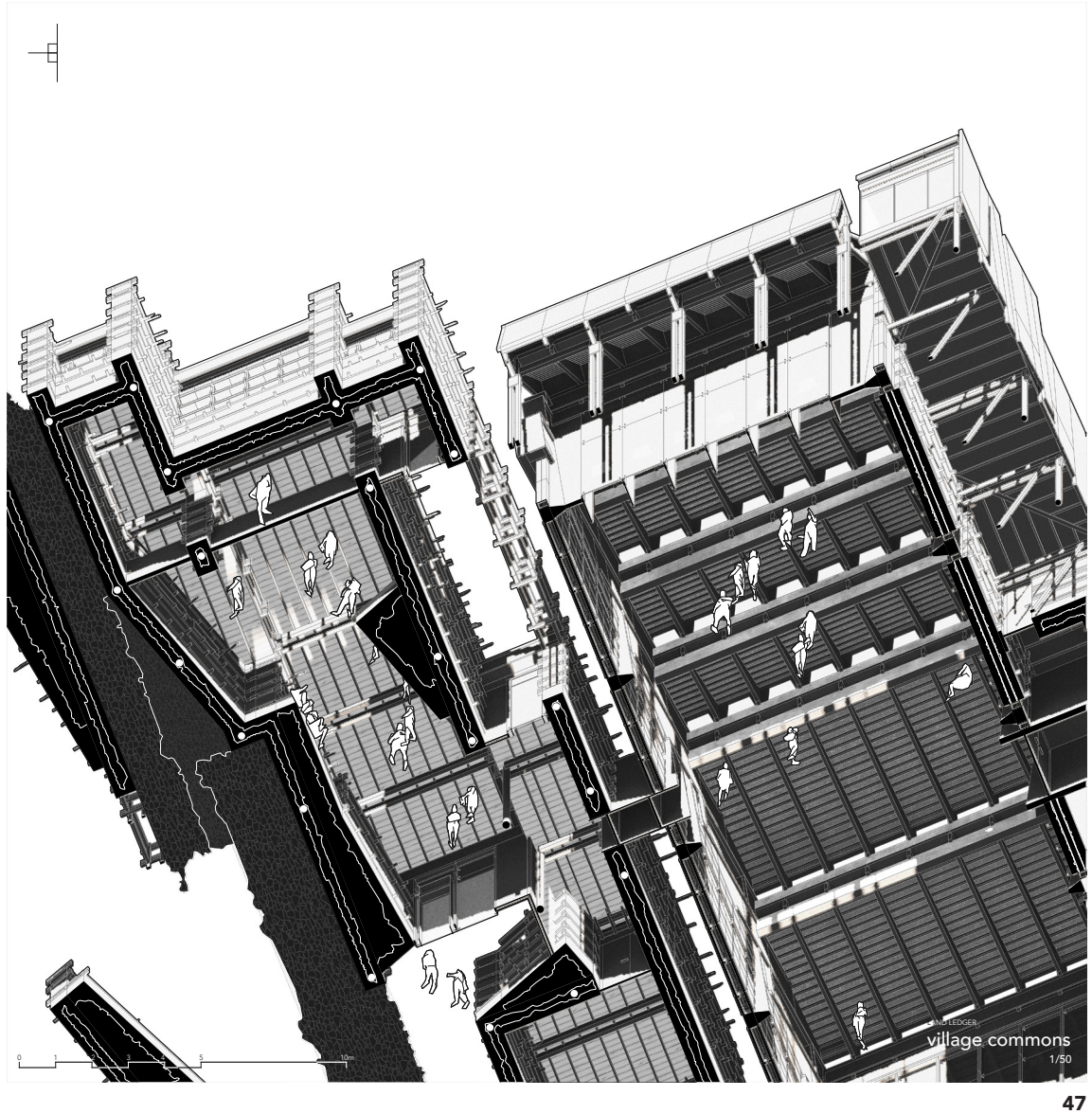
"The 1/20 structural model demonstrates how the vernacular construction system of "düğmeli" is implemented and interpreted. From outer to inner direction, the stone dry walls become thinner and more 'transparent' by exposing and extruding the inner timber structure, which is conventionally concealed, beyond the stone edges. At last, this inner timber structure is replaced by a concrete frame, also to integrate glass with the freed timber structure."

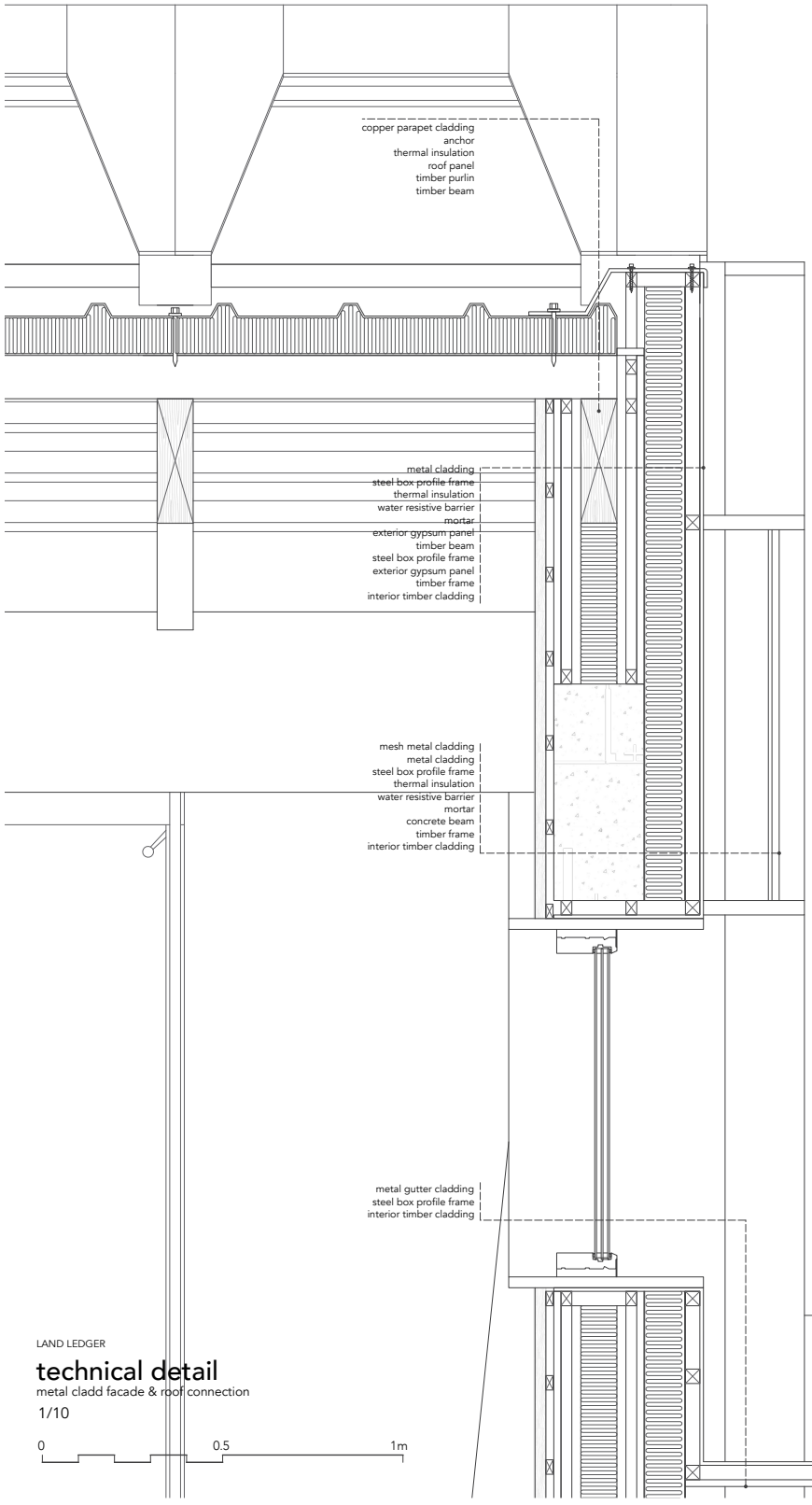




"Integrating the plan layout with section and structure, the Choisy drawings reveal how different materials, construction systems, and crustal strips are organized on the Land Ledger and Village Commons masses. From buried bunker-like concrete spaces to narrow timber structures raised on timber posts, to robust stone walls with protruding timber elements, the variety of material use also reflects the program, either recreational, everyday, or essential."







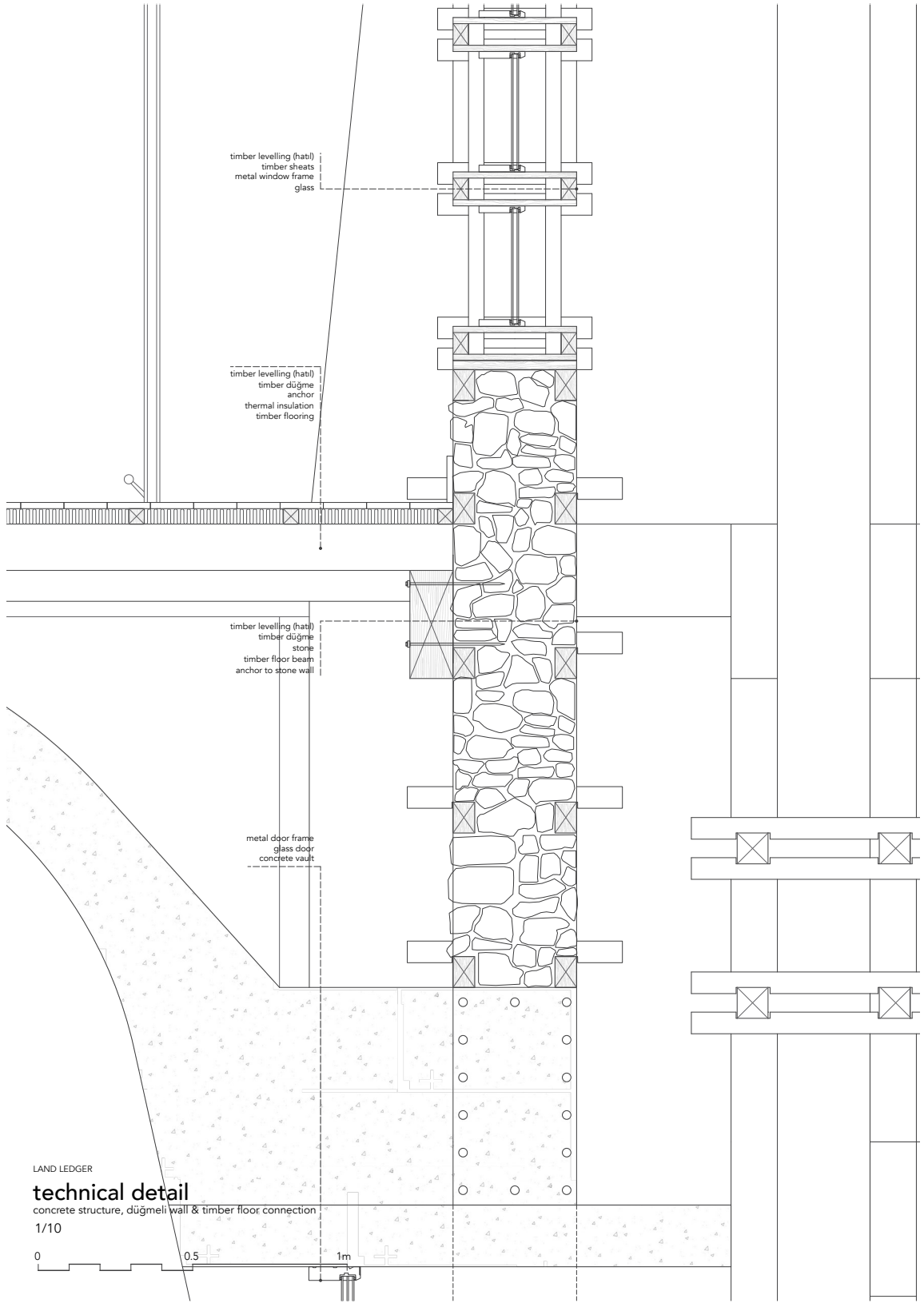
LAND LEDGER

technical detail

metal cladd facade & roof connection

1/10

0 0.5 1m



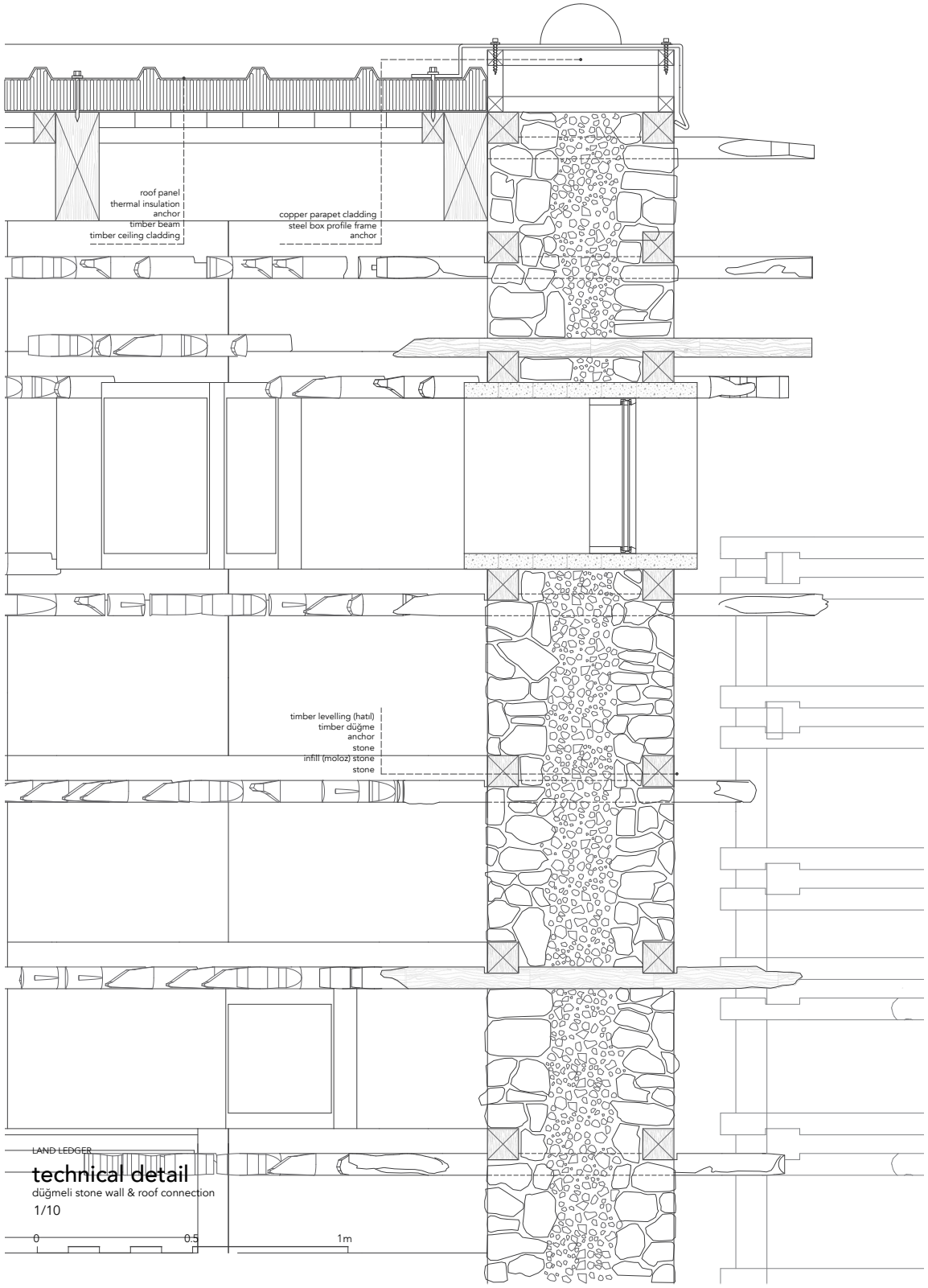
LAND LEDGER

technical detail

concrete structure, düğmeli wall & timber floor connection

1/10

0 0.5 1m



(6) Inhabiting the Building Like a Tree: Vegetal Programming of Time

"How can the primary tree 'Pinus brutia' that evolved for this fire regime train the new building practice in handling its recovery?"

Just like a burned forest lacking its vegetation is still a forest, since it keeps the surviving seeds and roots under the ash, a building as "becoming", not a "being", is designed with the flow of fire, allowing it to stay as a building even at a ruined or collapsed state. After the separation of non-repurposable elements, possibly glass, plastic parts, etc the remaining stone and timber that would constitute the great majority of the wreckage lead both the architectural and landscape resurgence. The accumulated stones and particularly the damaged timber components could be used in mulching and terracing practices for forest regeneration, providing water to slow down, and allowing microcrust communities to flourish. The result is a landscape element that is part of the augmented, managed forest.

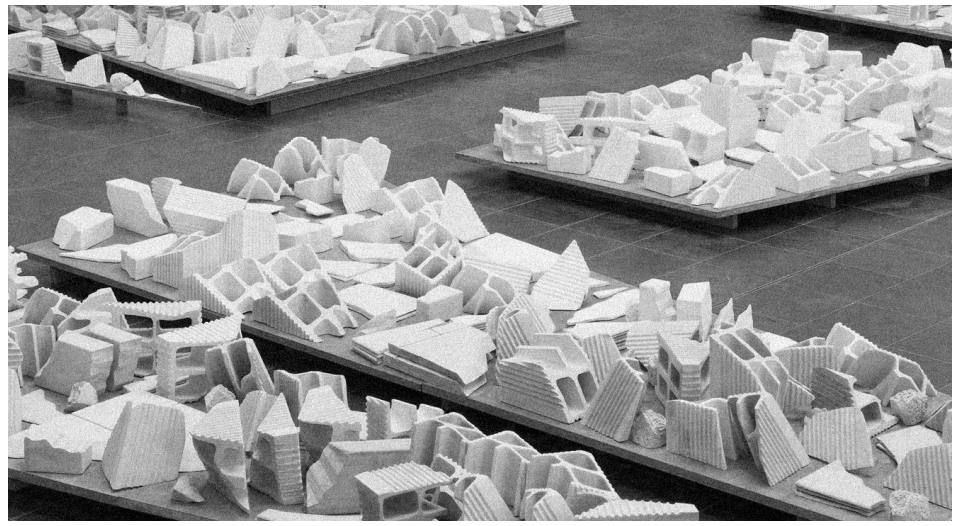


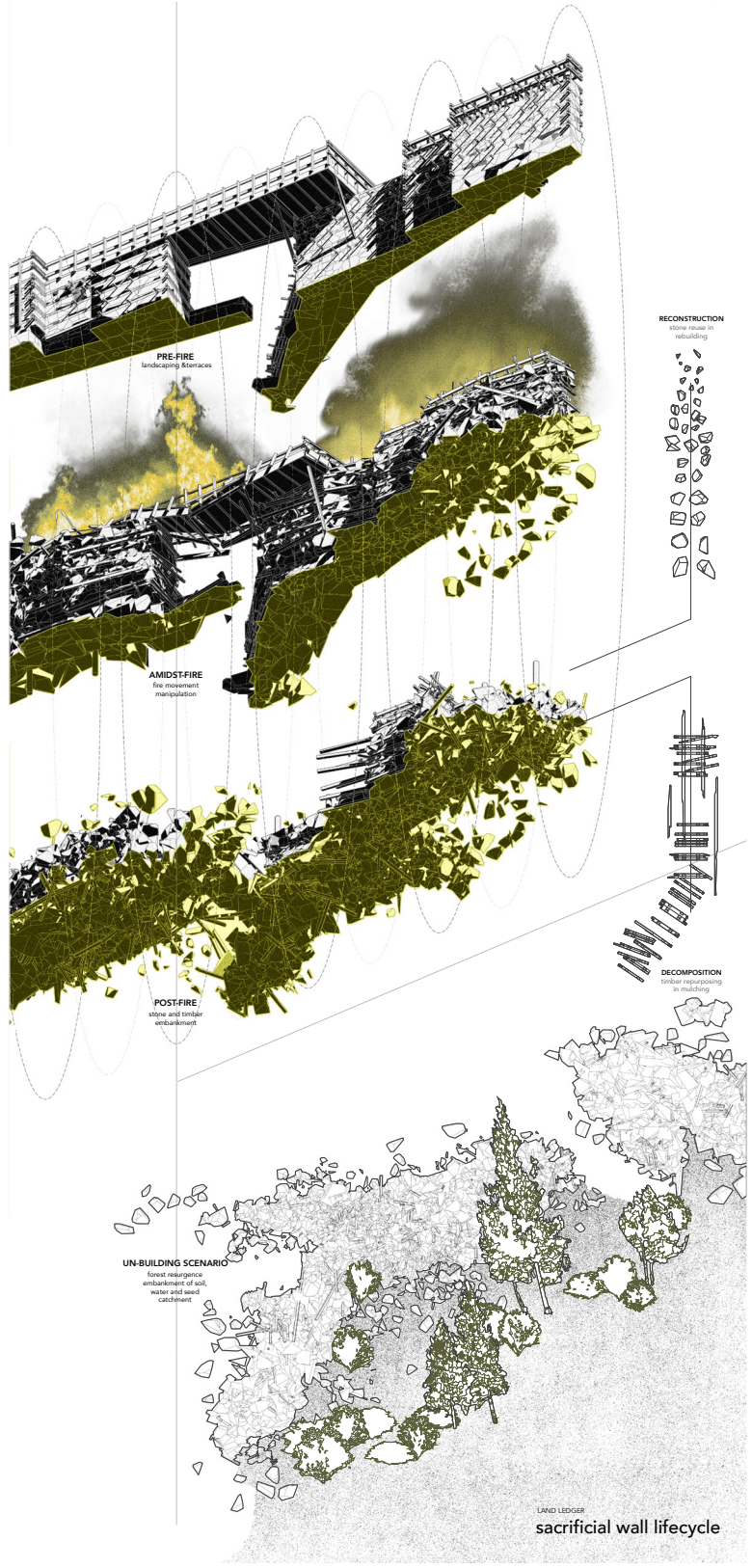
Fig 6. Nazgol Ansarinia, Fragments, Particles and the Mechanisms of Growth, 2018. Installation view at KIOSK, Ghent, Belgium. Photo by Tom Callemin.

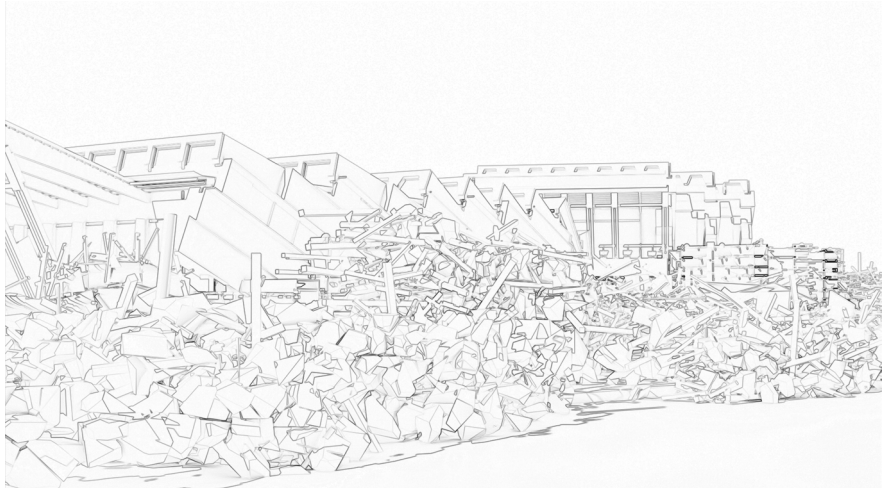
In these post-fire scenarios, how does the healing of the building and its program follow the rhythm of forest recovery and local conditions? It could be expected that after a wildfire, the initial motivation and labor will be invested in the recovery of the critical infrastructures, residential buildings, and the preparation of the forest for post-fire care. Rebuilding the Land Ledger will be a slow process, which can be an advantage. Nazgol Ansarinia, in her artworks exhibited under the title "Fragments, Particles and the Mechanisms of Growth", tells the story of deconstruction for the sake of more construction in Tehran. As opposed to rationalized and fast-paced building procedures, she experiments with debris which is used as a new building block, in a slow, intuitive, and interrogative process of rebuilding. Her sculptures reflect the in-between moment of "demolition and creation, dissection and construction, disorder and pattern".[16] Similarly, the transitional process after a fire should take the time it needs for the new creative rebuilding, without any rush but with all the discussion ground for changes based on the evaluations of the destructive event. Consequently, the reconstruction doesn't necessarily repeat the vanished form. With similar design principles of fire flow, a totally or partially altered proposal could be realized, benefiting from the chance of change.

The expanded in-between moment of deform and reform creates a new occasion. The ruined version is imagined as a spatial moment, not just a phase to be skipped as soon as possible or ignored. The added "rubble landscape" becomes part of the "secured" crust, where the delay in decision-making or realizations doesn't affect the functioning of the essential compartments of the Land Ledger. Therefore, ruin becomes a cyclical moment in the lifecycle of the building. Moreover, it could never be rebuilt as a "properly enclosed space", but a sequence of sacrificial landscape and shading structures only, as experimented in one of the secured spaces. All things considered, the building and its landscape inhabit the fire zone like a tree, simultaneously dead and alive, transforming in a scattered manner in time and place.

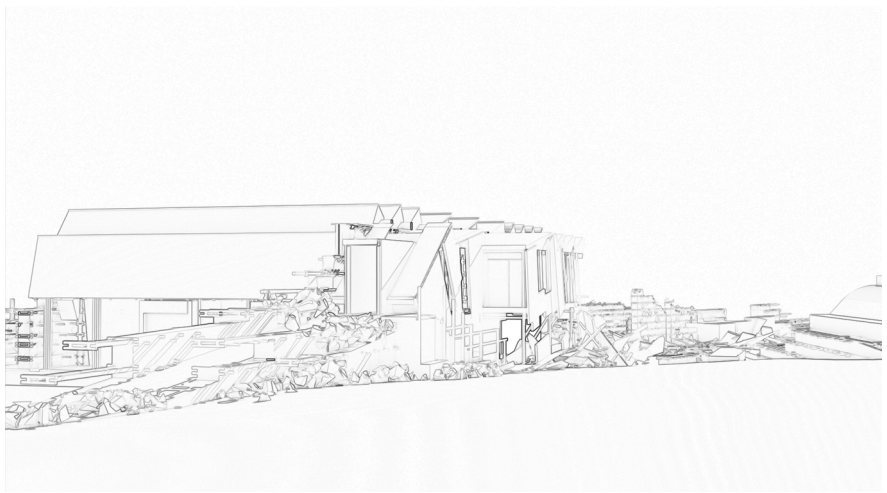
16 Art Viewer, "Nazgol Ansarinia at KIOSK," February 4, 2018, accessed June 9, 2026, https://artviewer.org/nazgol-ansarinia-at-kiosk/.

"The wall lifecycle doesn't mean the stones and timber are reused after demolition the same way. The path of its life could even divert from space-making to ecosystem-making, via water, soil, and seed-catching embankments and mulching."

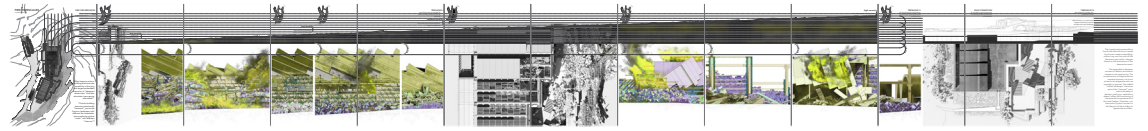








FIRE TIMESCALES



FIRE PROGRESSION

protected crust-2 **SC-5**
-secondary spaces-

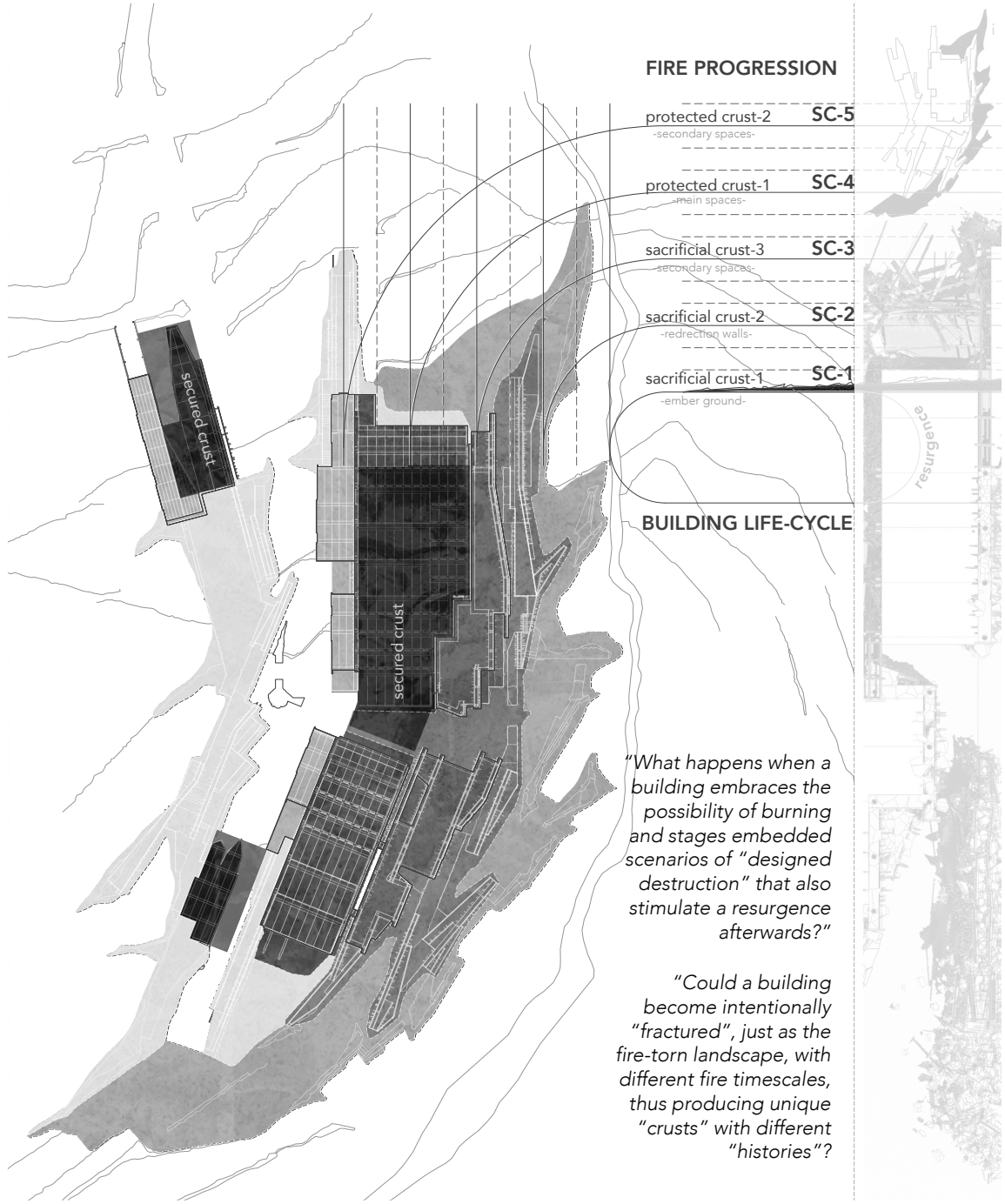
protected crust-1 **SC-4**
-main spaces-

sacrificial crust-3 **SC-3**
-secondary spaces-

sacrificial crust-2 **SC-2**
-redirection walls-

sacrificial crust-1 **SC-1**
-ember ground-

BUILDING LIFE-CYCLE



"What happens when a building embraces the possibility of burning and stages embedded scenarios of "designed destruction" that also stimulate a resurgence afterwards?"

"Could a building become intentionally "fractured", just as the fire-torn landscape, with different fire timescales, thus producing unique "crusts" with different "histories"?

i

ii

low severity

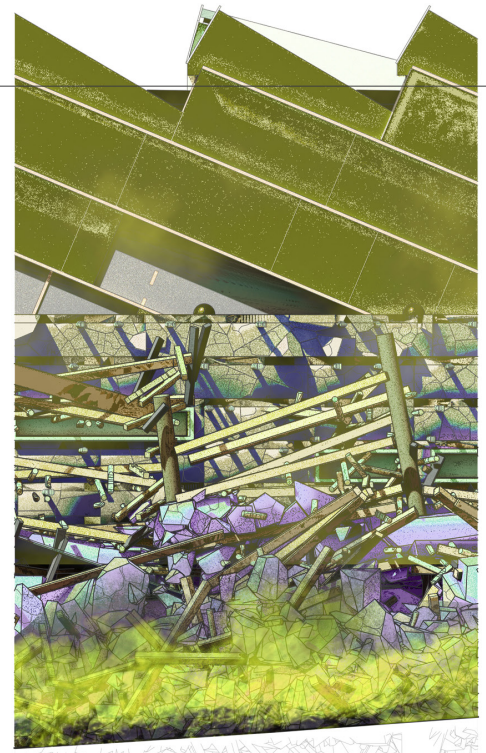
landscape
manipualtions are
passed

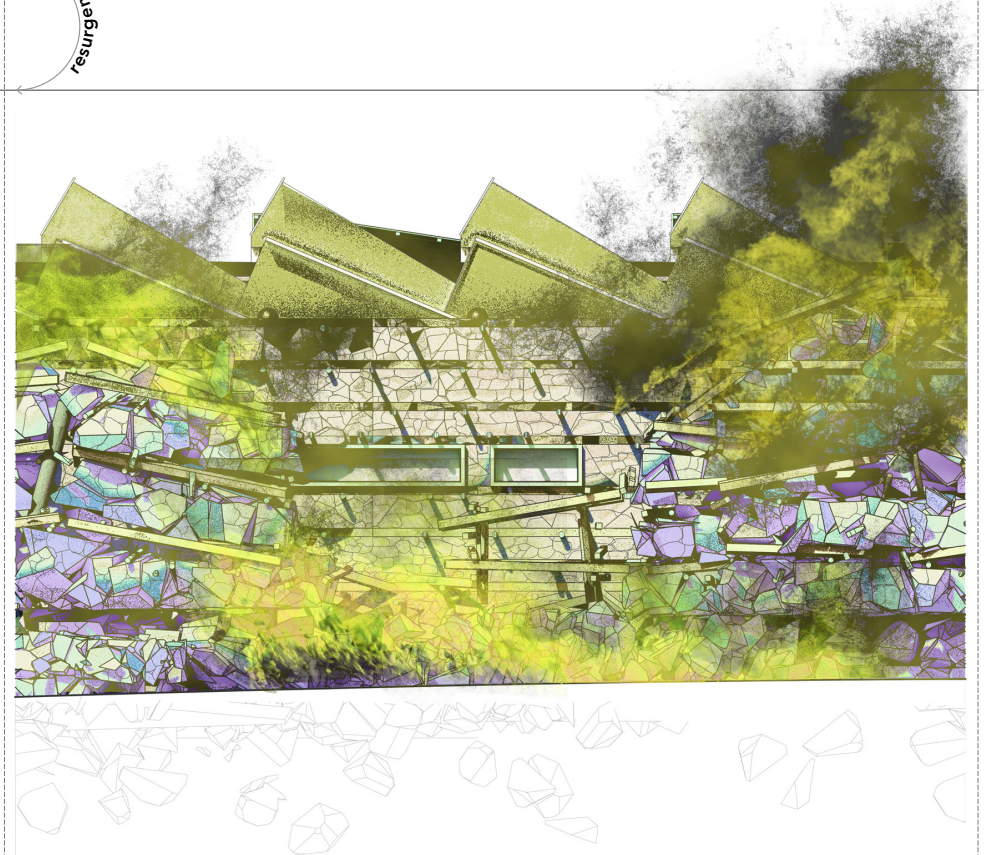
low severity

free-standing landscape
walls burned & dissolved

resurgence

resurgence





ii

iii

iv

low severity

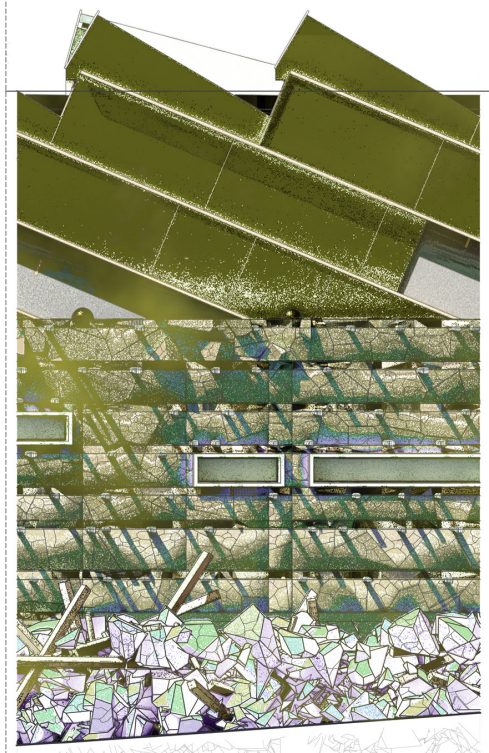
free-standing landscape
walls burned & dissolved

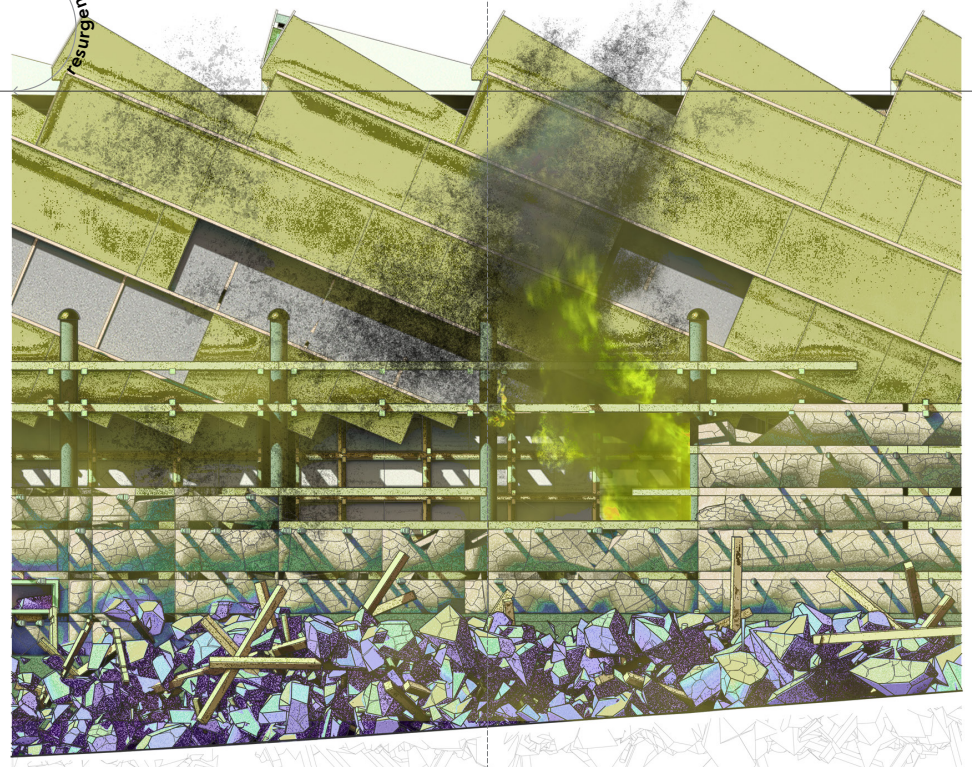
TRESHOLD I

sacrificial parts are passed &
protected spaces starts being
affected

medium severity

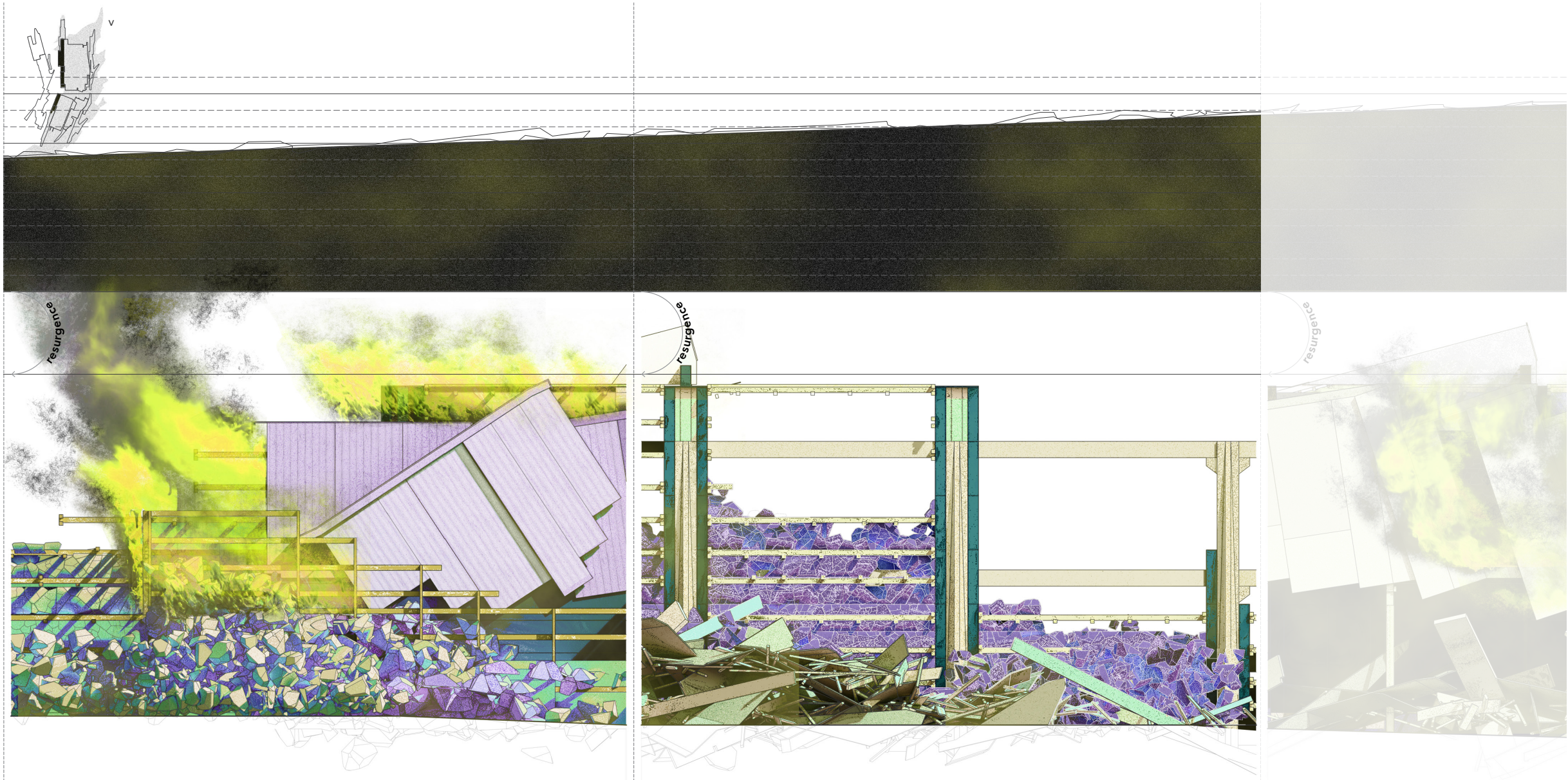
the inner strip of the sacrificial
layer demolished





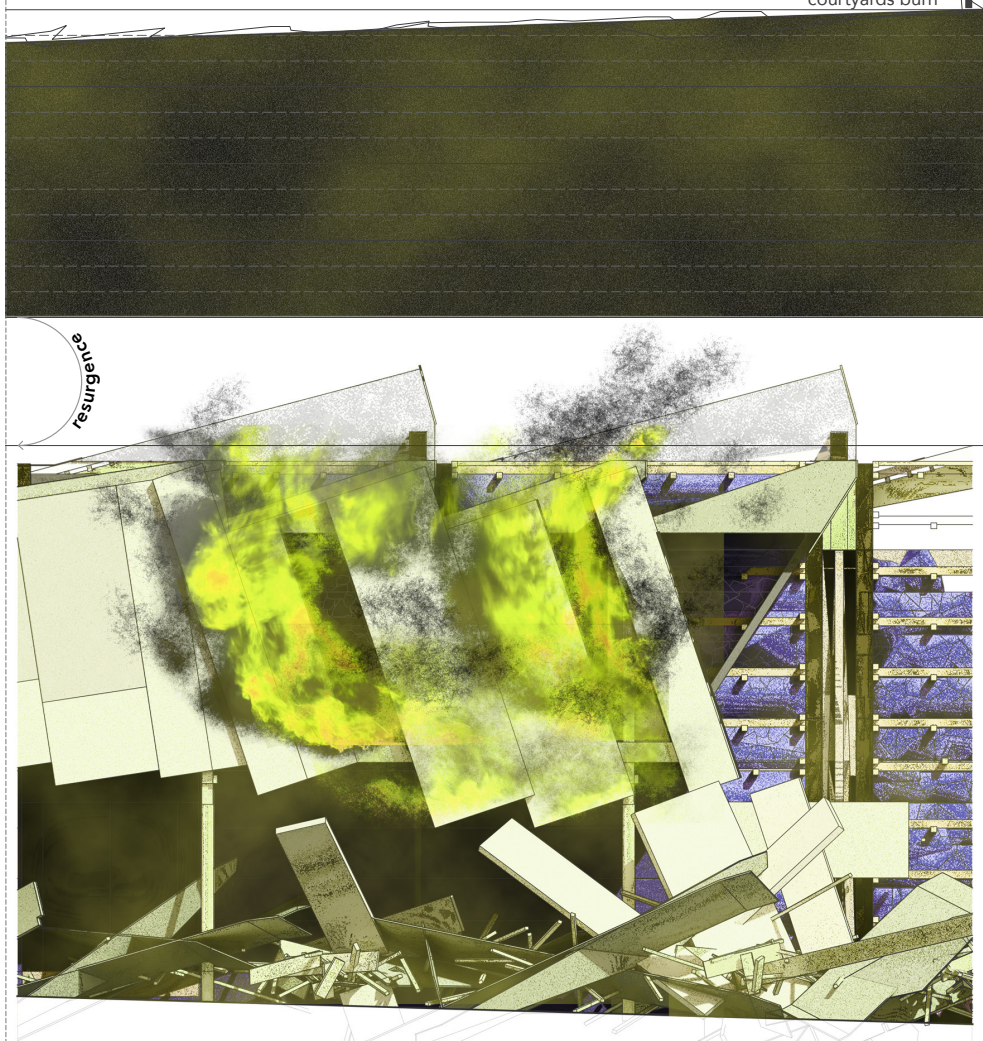


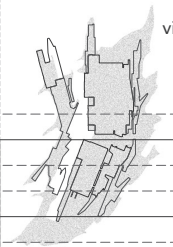

Resurgence
iv


V
resurgence
resurgence
resurgence

high severity

even the spaces facing inner courtyards burn





vi

TRESHOLD II

all the above ground spaces are burned, leaving secured crust behind



RUIN CONDITION

curation of the ruin for restarting the everyday usages

The transitional process after a fire should take the time it needs for the new creative rebuilding, without any rush but with all the discussion ground for changes based on the evaluations of the destructive event.

The expanded in-between moment of deform and reform creates a new opportunity. The ruined version is imagined to be a spatial moment, not just a phase to be skipped as soon as possible or ignored. The added "rubble landscape" becomes part of the "secured" crust, where the delay in decision-making or realizations doesn't affect the functioning of the essential compartments of the Land Ledger. Therefore, ruin becomes a cyclical moment in the lifecycle of the building to appreciate and learn.

RUIN CONDITION

curation of the ruin for
restarting the everyday usages

TRESHOLD III

the revised or totally new
proposal is built

alternatively, no construction
happens and the proposal
merges with the landsvape



PART IV:
Conclusion: A Situated Spatial Experiment with Forest

The project Land Ledger explores ways of inhabiting the fragile land patches between the forest and the settlements in the Manavgat Basin, amid an escalating fire regime. The proposal site, Avasun, which was affected by the devastating fire of 2021, is still in an early phase of recovery, both for the village and the surrounding ecosystem. The augmented and semi-wild forest of laurel harvesting, which the villagers rely upon, causes a noteworthy dispute between the locals and the state agents: ownership. Even though all forest land belongs to the state, this valuable demand of reclaiming forest land could be an initial step to even expand the scope of villagers-cared lands, aligning with the research conclusion that forest management and responsibility should be decentralized on certain levels, by the inclusion of villagers taking care of their immediate ecological community.

The place that will host the organization and coordination of this counter practice is formed as a village cooperative building. The program both responds to the everyday patterns and recreation needs of the village through multipurpose meeting spaces, combined with parts dedicated to forest work. This hints at diversification in the users, by hosting researchers and professionals. Working together with Avasun residents, these people monitor the burned and surviving forest by paying attention to the unique story of each slope, hill, or plain. These ecohistories help interacting with the land with respect to living communities and its evolution direction, beyond being

"Highly tactile fire-facing facades lead to stone aprons and courtyards through open-air corridors and platforms."



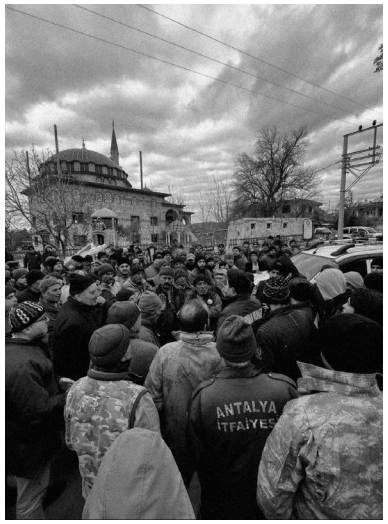


Fig 7. "Laurel harvest organization discussions." Image posted by yaylaalan.avason, Instagram, January 3, 2026.

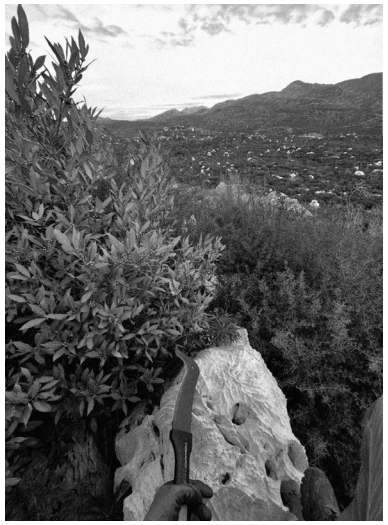


Fig 8. "Start of laurel harvest." Image posted by yaylaalan.avason, Instagram, January 4, 2026.

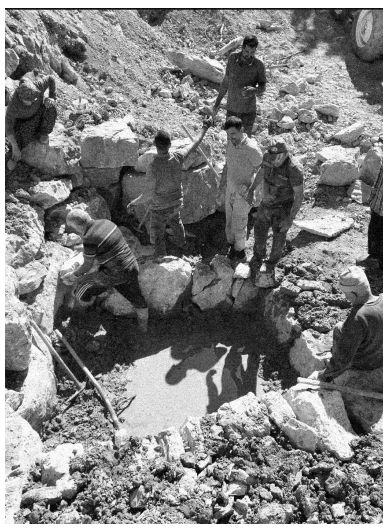


Fig 9. "Communal repair and reconstruction activities of fountains and wells." Image posted by yaylaalan.avason, Instagram, September 23, 2023.

totally scientific or practical, but poetically grounded, as supportive alternatives to standardized forest recovery practices of salvage logging or monoculture plantations. In brief, the project embraces and appreciates the in-between lands of neither wild nor tamed but augmented. Furthermore, through the possible introduction of other land ledgers in neighbouring river/ forest basins, a network of knowledge and experience could be established, met with a small infrastructure that is locally managed.

All things considered, architecturally, the building stands with a bold position by embracing the fire and demolition as an anticipated and designed phase in the lifecycle. This is achieved through following the flows of fire, without resisting, yet through understanding its behaviour and spatially responding. The result is a layered building with different crusts, based on their intended encounter towards different fire severity scenarios. Besides the sacrificial parts on the fire-facing directions, buried and secured spaces enable the proposal to continue functioning, even during ruined phases. Eventually, the structure is a "becoming", possessing vegetal nuances of accommodating life and death for survival simultaneously.

Before finishing, two aspirations of the proposal need to be clarified. Firstly, Land Ledgers are imagined as a convergence ground for the villagers and the professionals. Yet, these buildings are for locals, and should be repairable and rebuildable with locally available materials and labor, with minimal help outside Manavgat. This intention led to abstaining from the high-tech building solutions that

"Raised timber spaces perform as an extension of the landscape strip and a climatic buffer zone for recreation."



would alienate the villagers from the building and the building from the site. The revisiting of the stone and timber architecture, by experimenting with them in the proposal and the inclusion of passing on this knowledge in the program, could promote the usage of these systems in a contemporary and creative way in the villages, rather than the copy-pasted typologies of housing administrations. The second highlight is the capacity of the proposed design principles. Ultimately, no fireproof architecture or a saviour set of guidance is claimed to be achieved; on the contrary, the proposal is a spatial, material, and social response to fulfill the needs, gaps, or patches of that specific land. The result denotes a situated experimentation that blends in the flows, flames, needles, ashes, and people of the territory in question.

"The western strip secured spaces, with light construction on top, also demonstrates a possible rebuilding scenario with limited intervention."



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