

1_MEXICO A Quintana Roo - VISUALIZING
DROP-OUT RATES POST- COVID **B** Quintana
Roo - INTRASTATE MIGRATION **C** Mexico
City - ON SCHOOLS AND MOBILITY
D Mexico City - BRINGING BACK
THE TEMPLE **2_BRAZIL A** Minas Gerais -
LANDSCAPE ANALYSIS **B** Minas Gerais -
ORNITHOLOGY CENTER

1_MEXICO



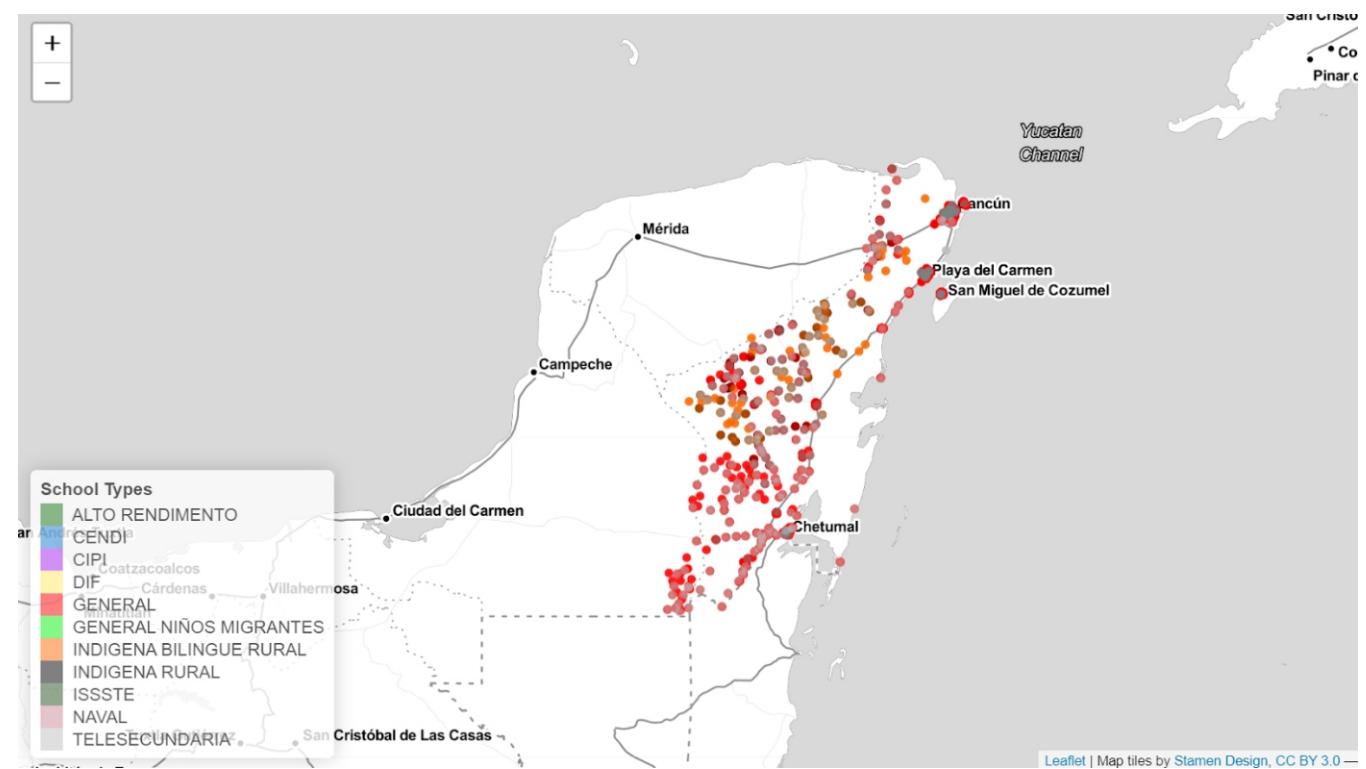
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Quintana Roo

One of the poorest states in Mexico with one of the highest percentages of indigenous populations has been hard-hit by COVID-19. I am part of a project seeking to understand drop-out trends and ethnic make-up of the municipalities for potential interventions.



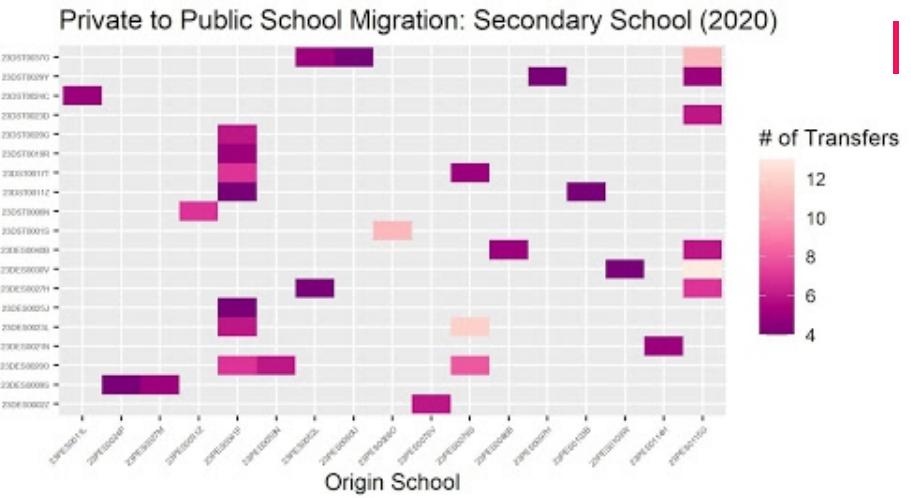
[Interactive HTML Map
\(click on map\)](#)
by School Type, location
and number of students



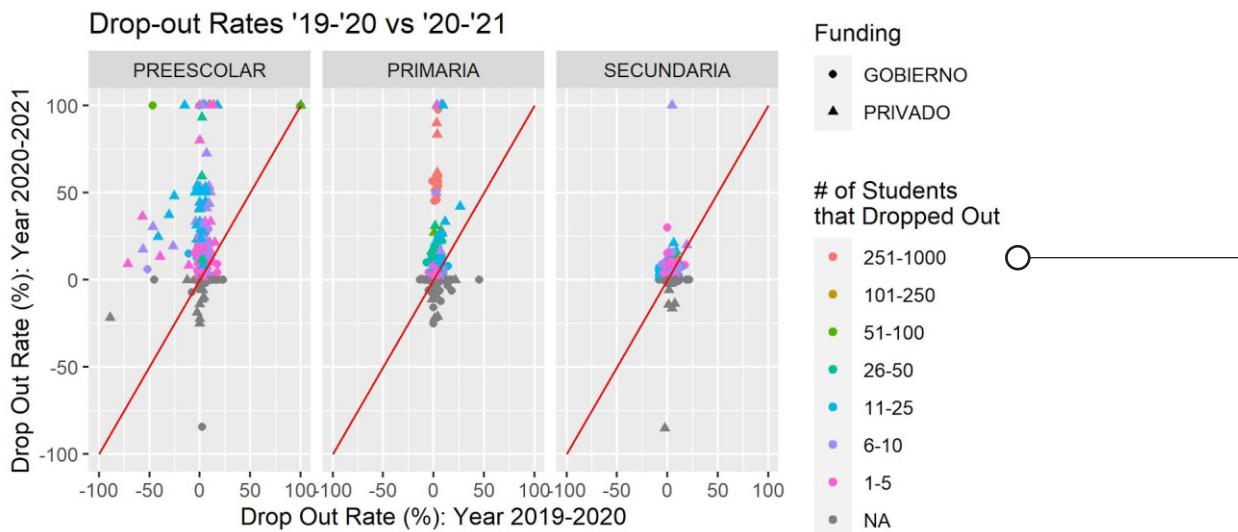
Leaflet | Map tiles by Stamen Design, CC BY 3.0

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Heatmaps to denote trends in private-to-public school movements as students facing financial hardship drop-out of private schools.
[\(click on graphic\)](#)

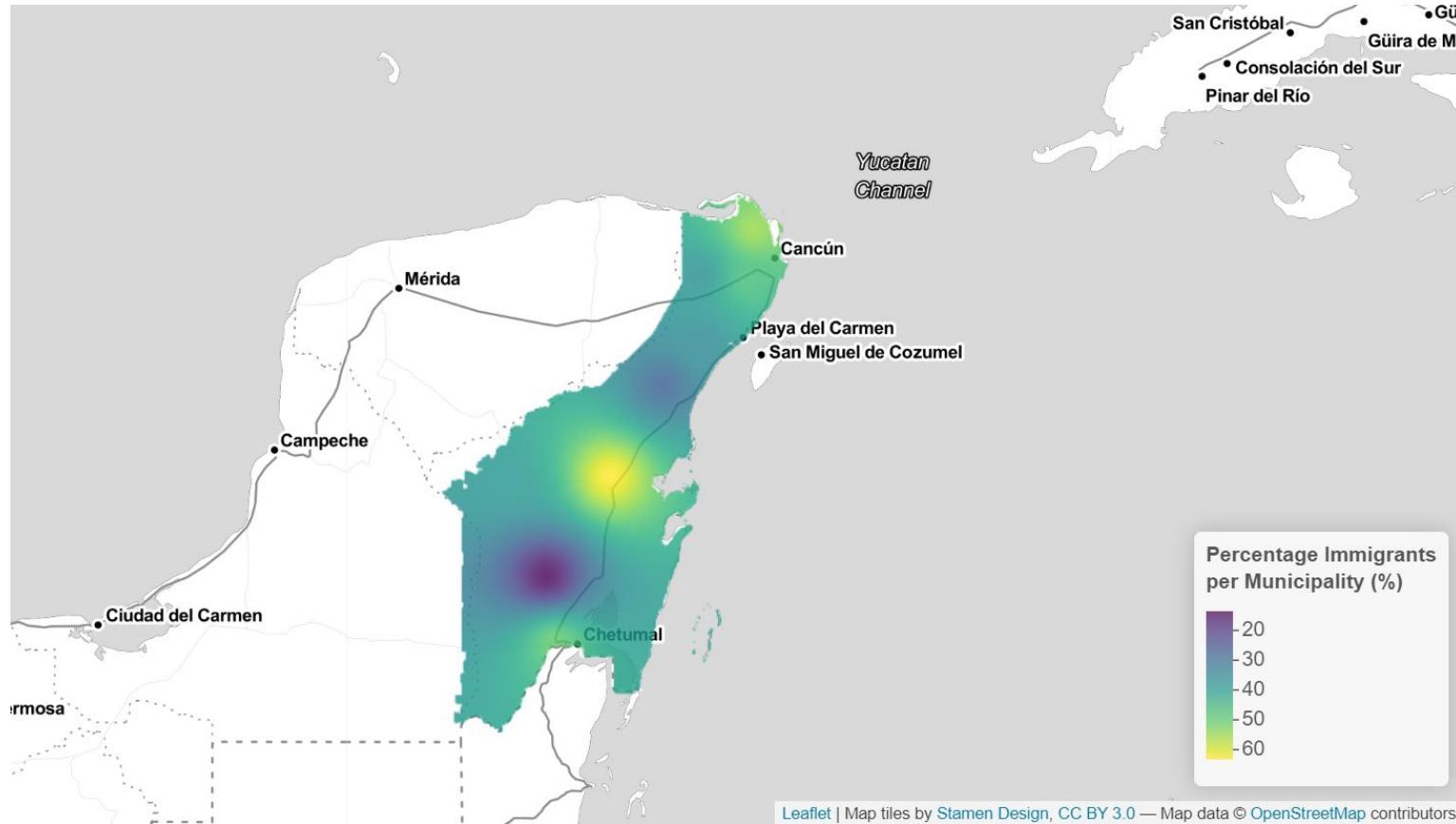


100



(interactive map in Leaflet and heatmap - all in R.)

Interactive map comparing drop-out in '19-20 vs '20-21 by school type, Private / Public, grouped in bins that denote the number of drop-outs.
(click on graphic)



(Click on map to expand)

WHERE IS EVERYONE?

Quintana Roo

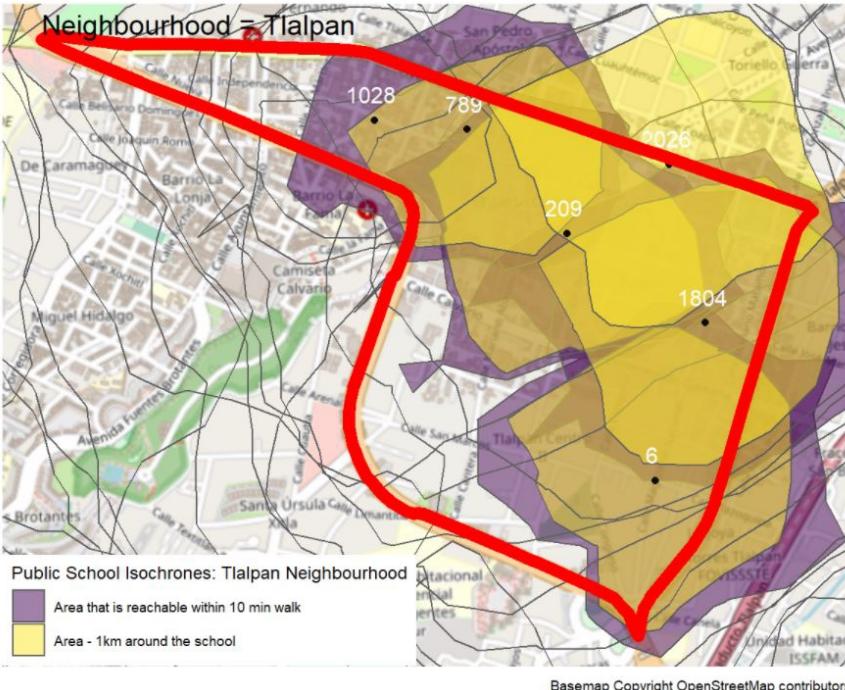
A tourist destination (think Cancún) with a large migrant population - Where are these migrants? How have they been affected by COVID-19?

(Interpolated map over one variable in R.)

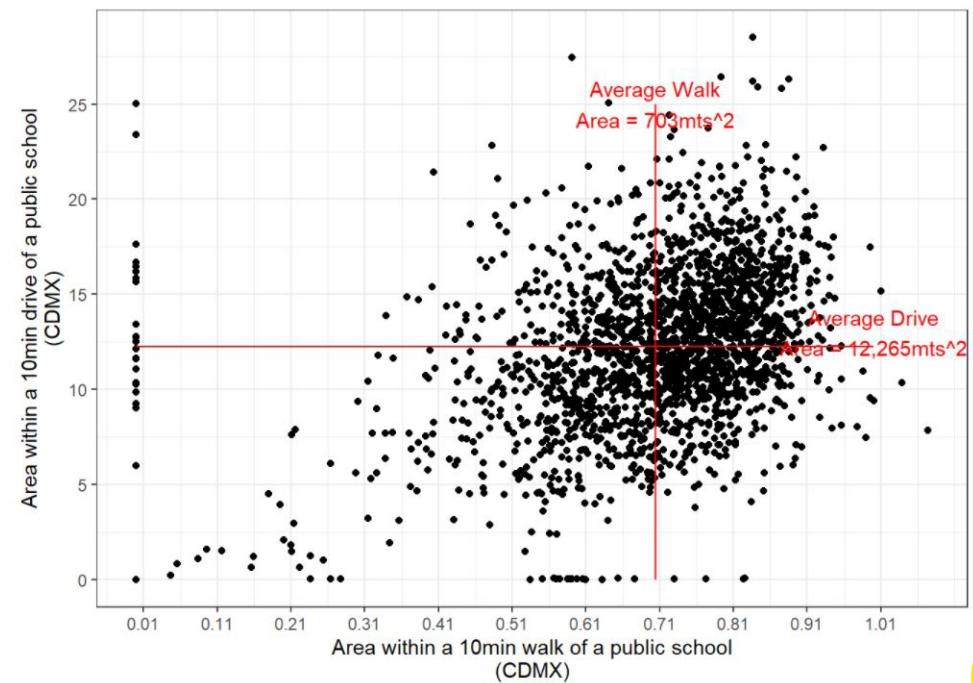
Mexico City is Chaotic

One of the largest urban centers in the world, greater Mexico City holds 21.3mm people and seemingly as many cars. How does this density affect mobility for school-age children? Where do they need to live, to be “close” to school?





[\(Click to expand\)](#)



[\(Isochrone utilizing OSM and graph utilizing ggplot - all integrated in R.\)](#)

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[\(Click to expand\)](#)



Templo Mayor Reconstruction: Reformatting Mexico City

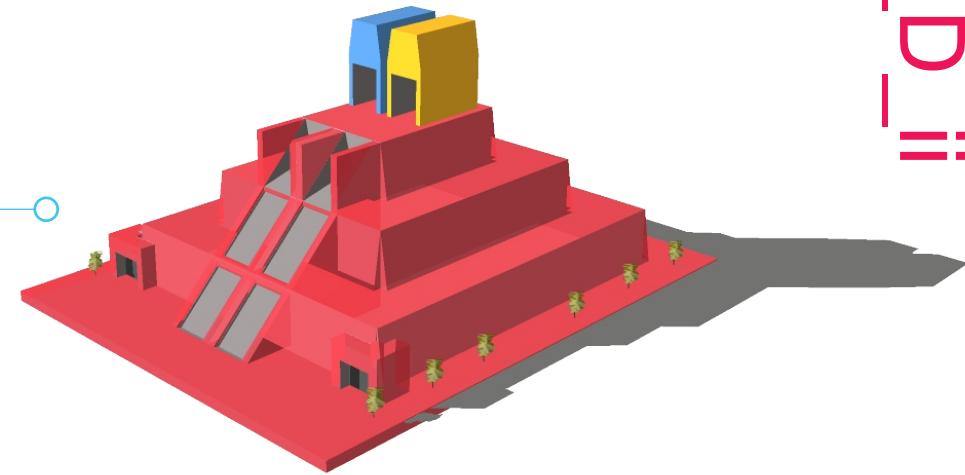
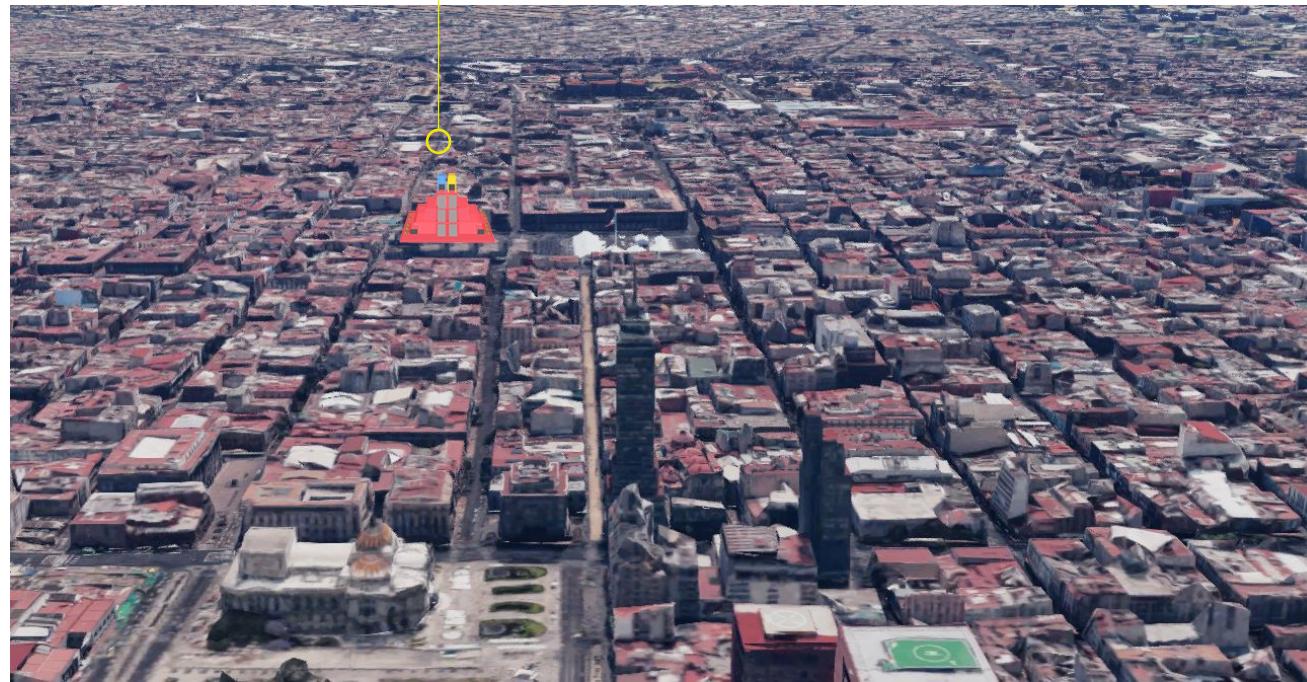
Templo Mayor or (*Huey Teocalli* in Nahuatl) was the main temple of the antique city of Mexico-Tenochtitlan in Pre-hispanic times.

The temple dedicated to two deities, Tlaloc (God of Rain) and Huitzilopochtli (God of War), was destroyed during colonial times; only some vestiges remain today adjacent to the Presidential Palace and the National Cathedral.

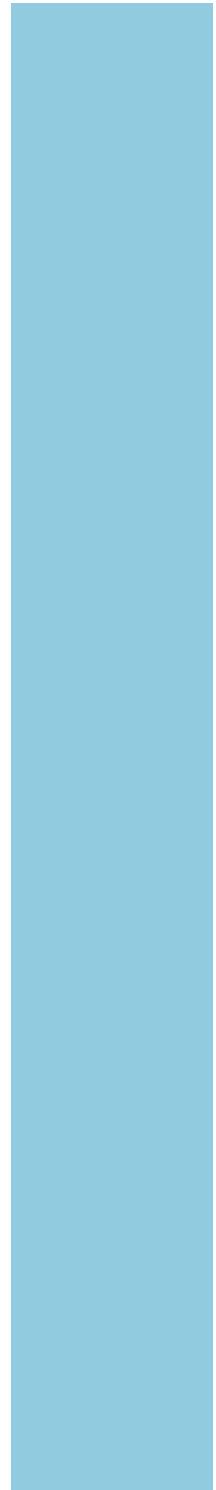
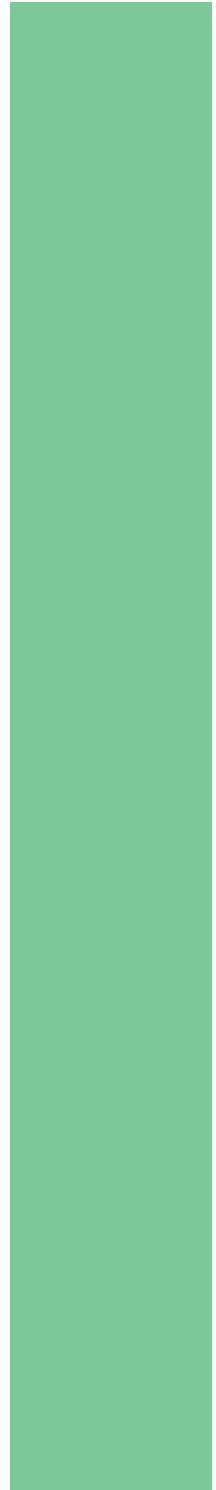
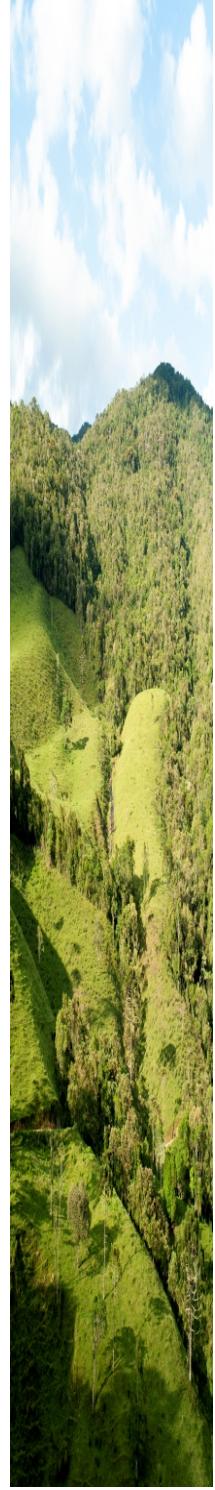
This intervention would re-build *Huey Teocalli* as a symbol of a nation better reconciled with its past.

3D
Conceptual
model

3D Conceptual model in Sketch-up of the Templo Mayor and rendering of its possible location in the Center of Mexico City.



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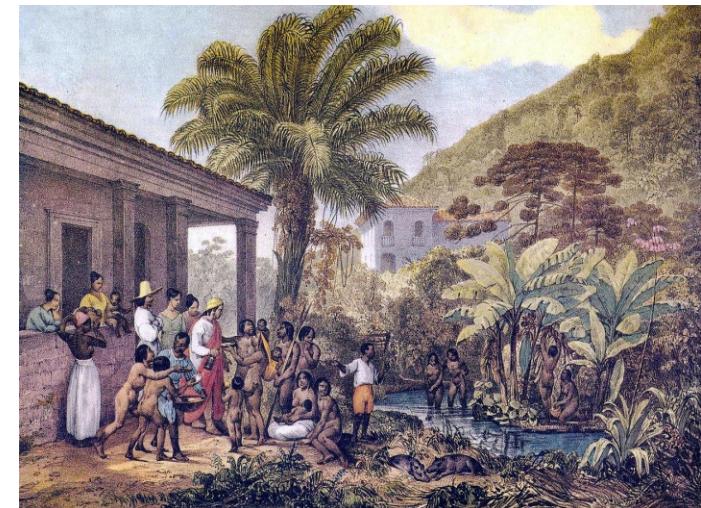
BRAZIL
2

Casa Tlalli

Casa Tlalli is a 49 hectare former farm located in the Silver Valley (Vale da Prata) in the Mantiqueira region in the municipality of Bocaina de Minas, in the state of Minas Gerais in Brazil.

The Valley's history has followed in many ways the history of Brazil. Originally being settled by the indigenous Puri and Coroados people, the **ethnic component radically changed after the Portuguese colonization** of the country and the **discovery of gold** in the state of Minas Gerais in 1693. The landscape changes followed the European settlers and African slaves, with quick deforestation first due to coal production, followed by cattle (for milk and slaughter), and then intensive monoculture of maize and beans.

Through mapping, I seek to understand historical land-use and the drivers that will determine the future of the Valley.



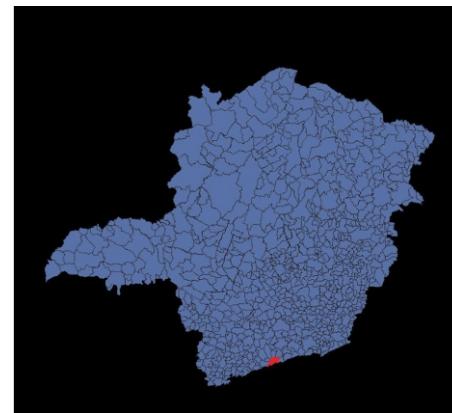
"Indians" in a Minas Gerais fazenda
Johann Moritz Rugendas (1802-1858)

WHERE?

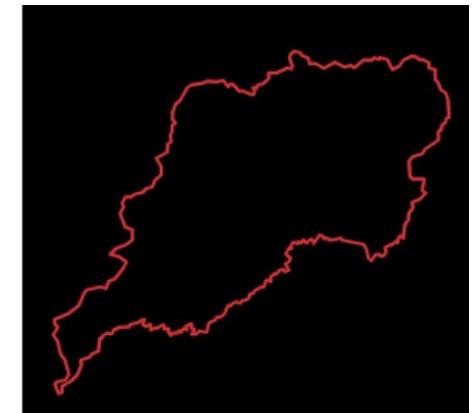
2
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!!



Brazil



Minas Gerais



Bocaina de Minas

Population

210mm

21.1mm

5,007

Area

8.5mm km² (1)

8.5mm km² (1)

501 km² (1)

Topography

Band 1

1,754 mt
1,012 mt

1,677 mt
1,221 mt

1,675 mt
1,408 mt

2
A
III

Band 2

B5

B3

Casa Tlalli

B2

B1

B7

B6

Band 3

1,592 mt
1,194 mt

1,730 mt
1,268 mt

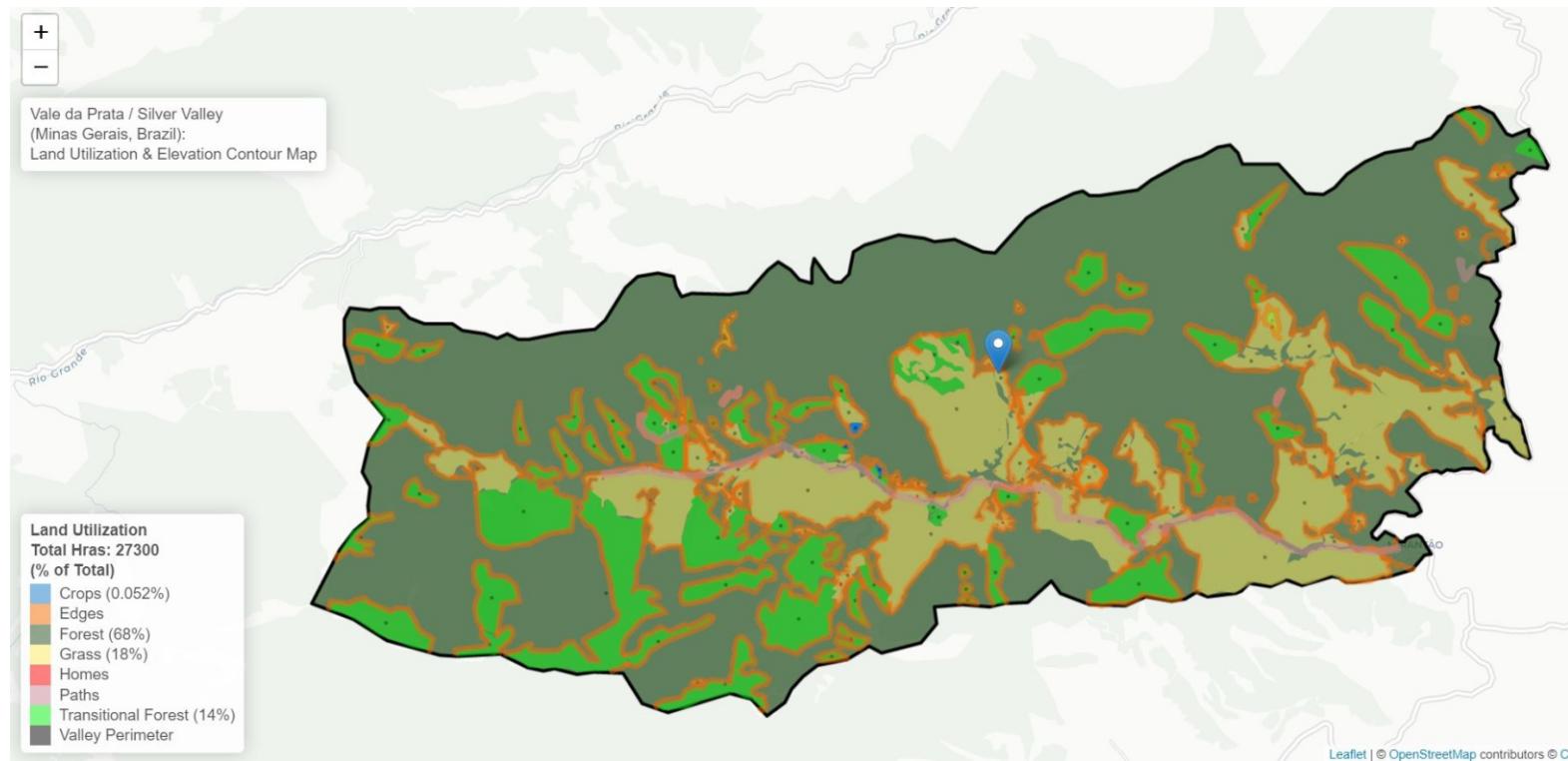
1,650 mt
1,072 mt

Band 7

(Elevation bands in QGIS and graphed in R - ggplot.)

Band 5

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One way to understand the Valley is to understand the anthropocene impact in the land through its use.
(HTML interactive map by type of land utilization from self-drawn KML/Shapefiles in Google Earth and analysis in QGIS, with integration via R with Leaflet)

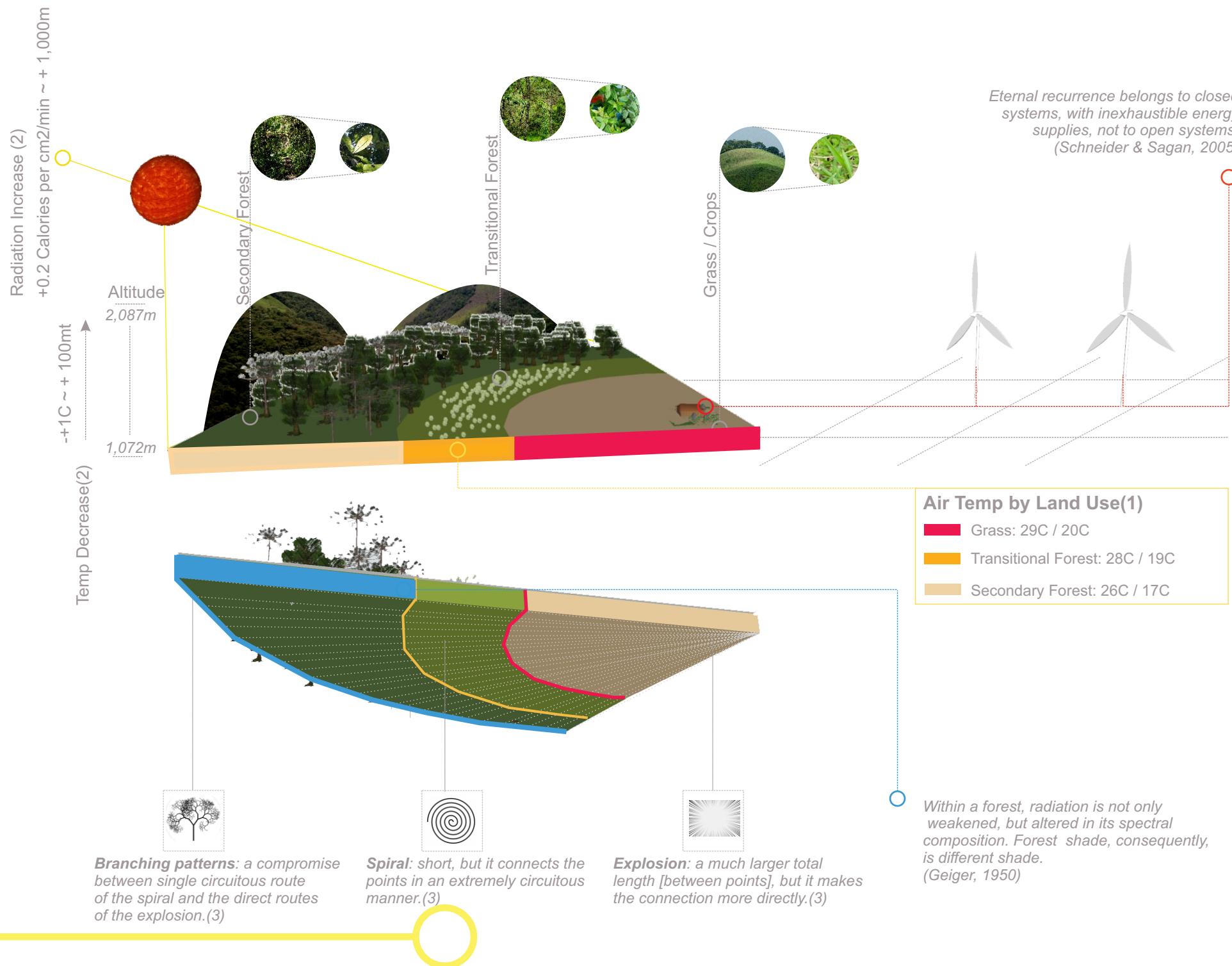
E
n
t
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p
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mbiogenesis

2nd Law of Thermodynamics

Nature abhors gradients

Who will win this tug-o-war between human and nature? Who is the most efficient at capturing energy and reverting it to its own use?

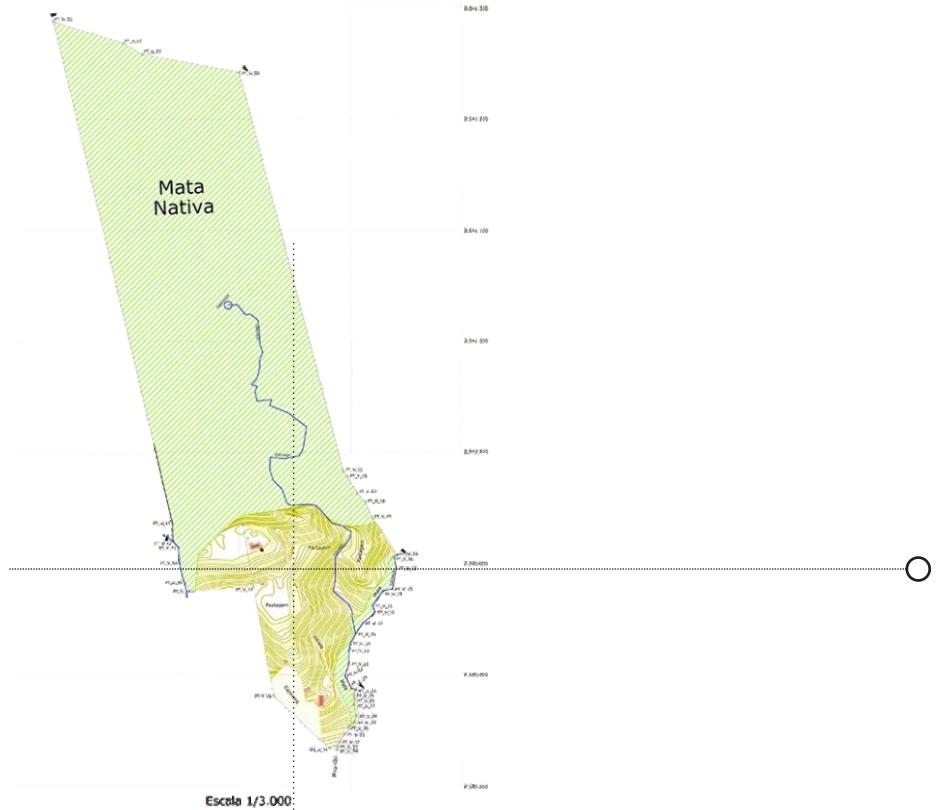
(next page - SketchUp Model and Photoshop integrated on Corel)



(1) Average temperatures in Celsius during February / August (Lopes, Valeriano, da Silva, Moura & da Silva, 2013).

(2) Base of .8 at 100m above sea level (Geiger, 1950).

(3) (Stevens, 1974).

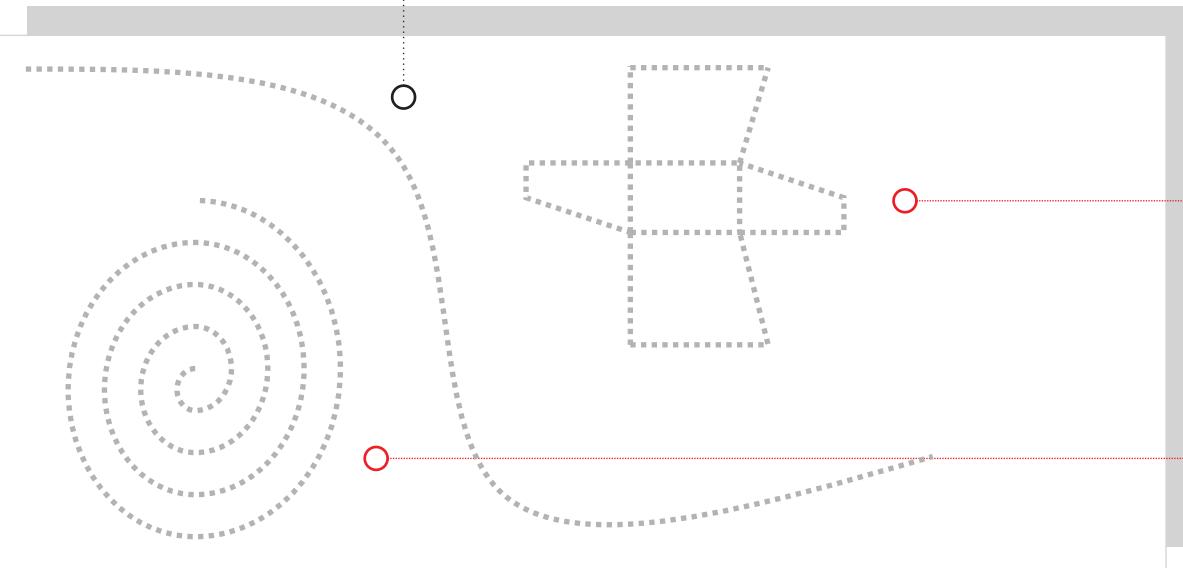


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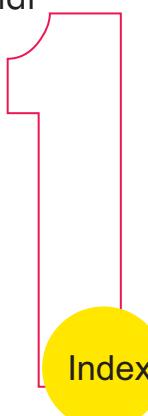
There is only 7% remaining of the biodiversity hotspot - Mata Atlantica (Brazil). Many of the losers of this decline are birds. Casa Tlalli - a private reserve - and OAMA - an ornithological research outfit - have teamed together to find a solution. We are starting a new ornithological center based at Casa Tlalli to attract a novel audience and build a business model that would stimulate conservation and provide income to the local population.



Ornithological Educational Center & Shop

Outdoor Amphitheater

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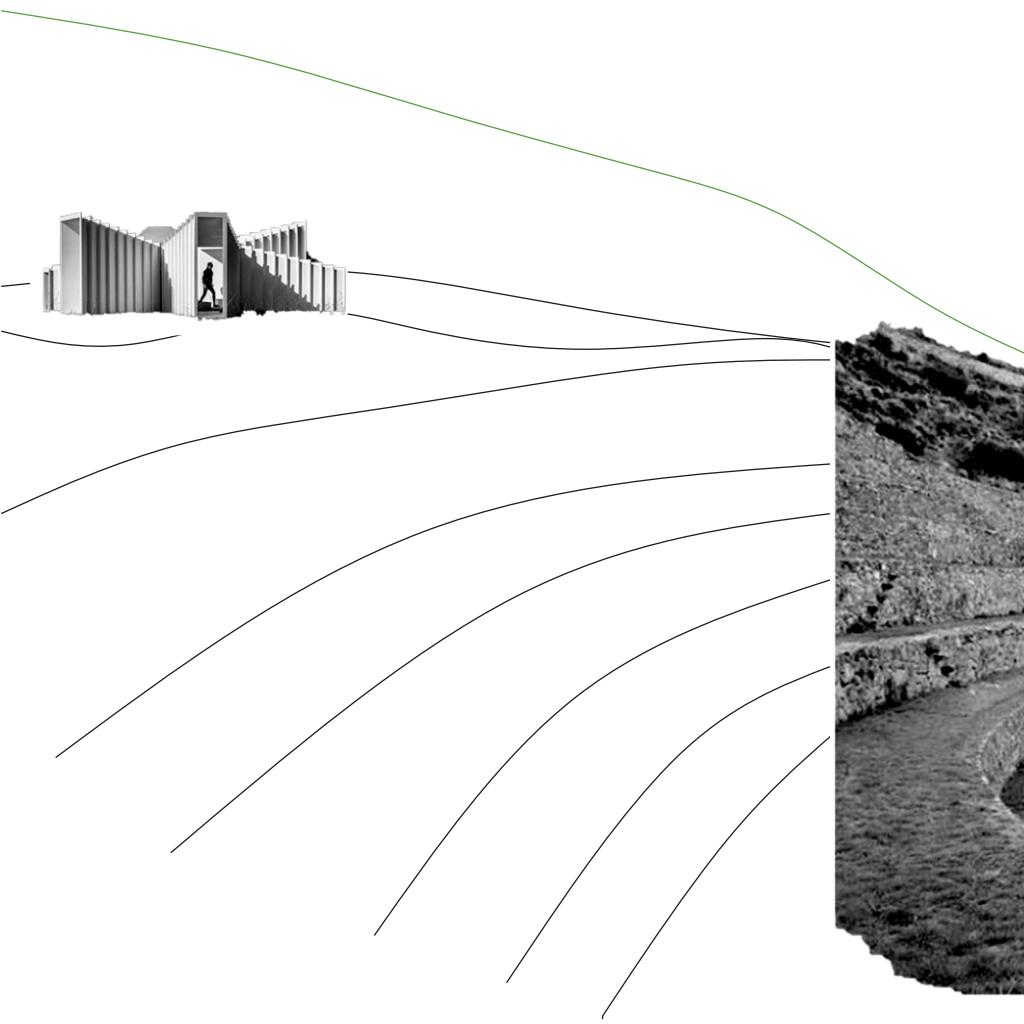


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