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Fall 2020

### The Politics of the Trash Heap

Kyle Neumann

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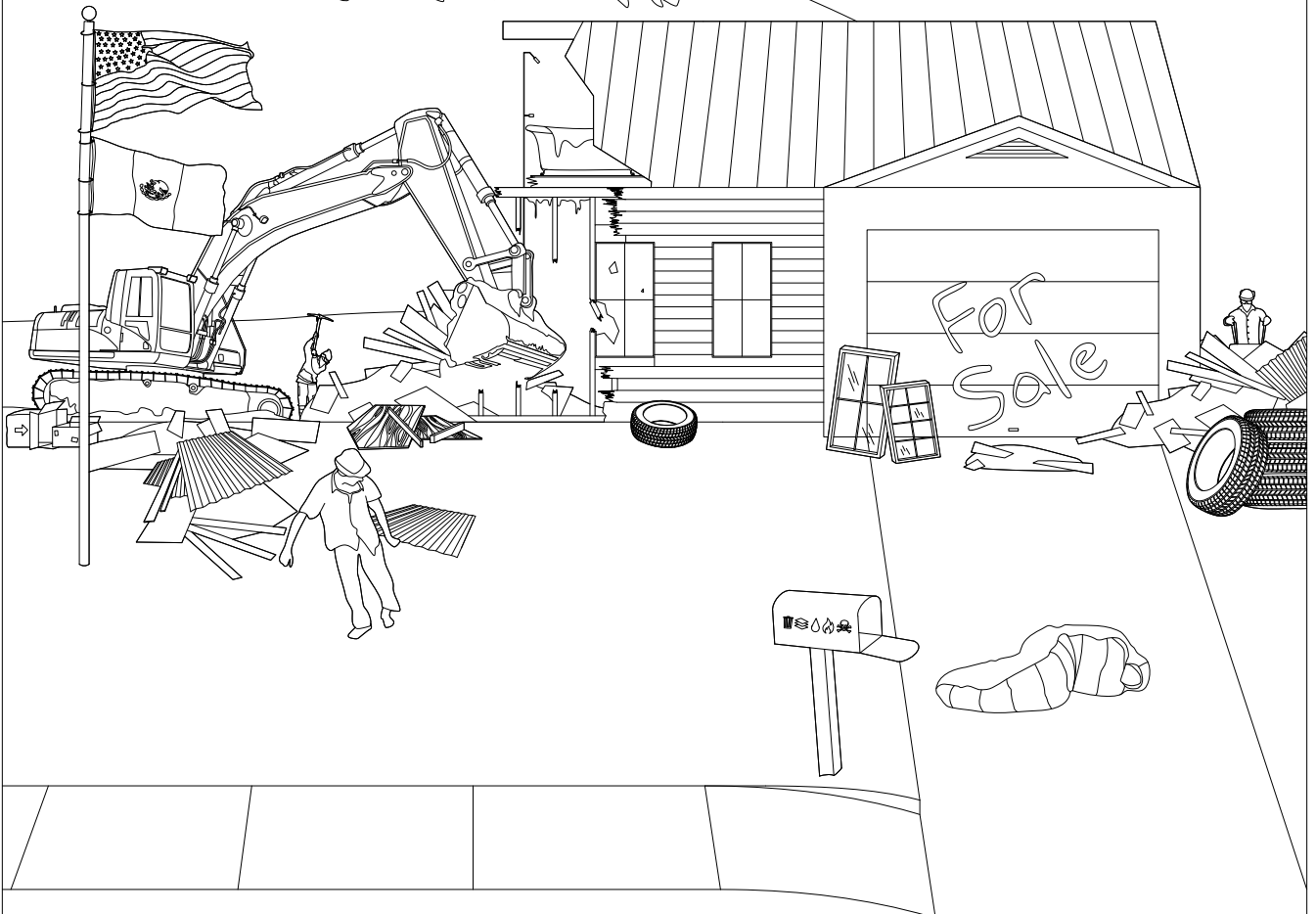
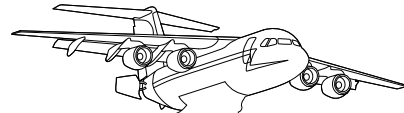
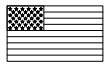
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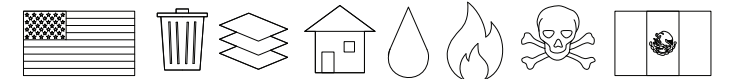
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# ***THE POLITICS of THE TRASH HEAP***

***Towards a new material dwelling***



Kyle Neumann  
Elizabeth Kamell  
Timothy Stenson  
12/14/2020  
Syracuse University  
School of Architecture

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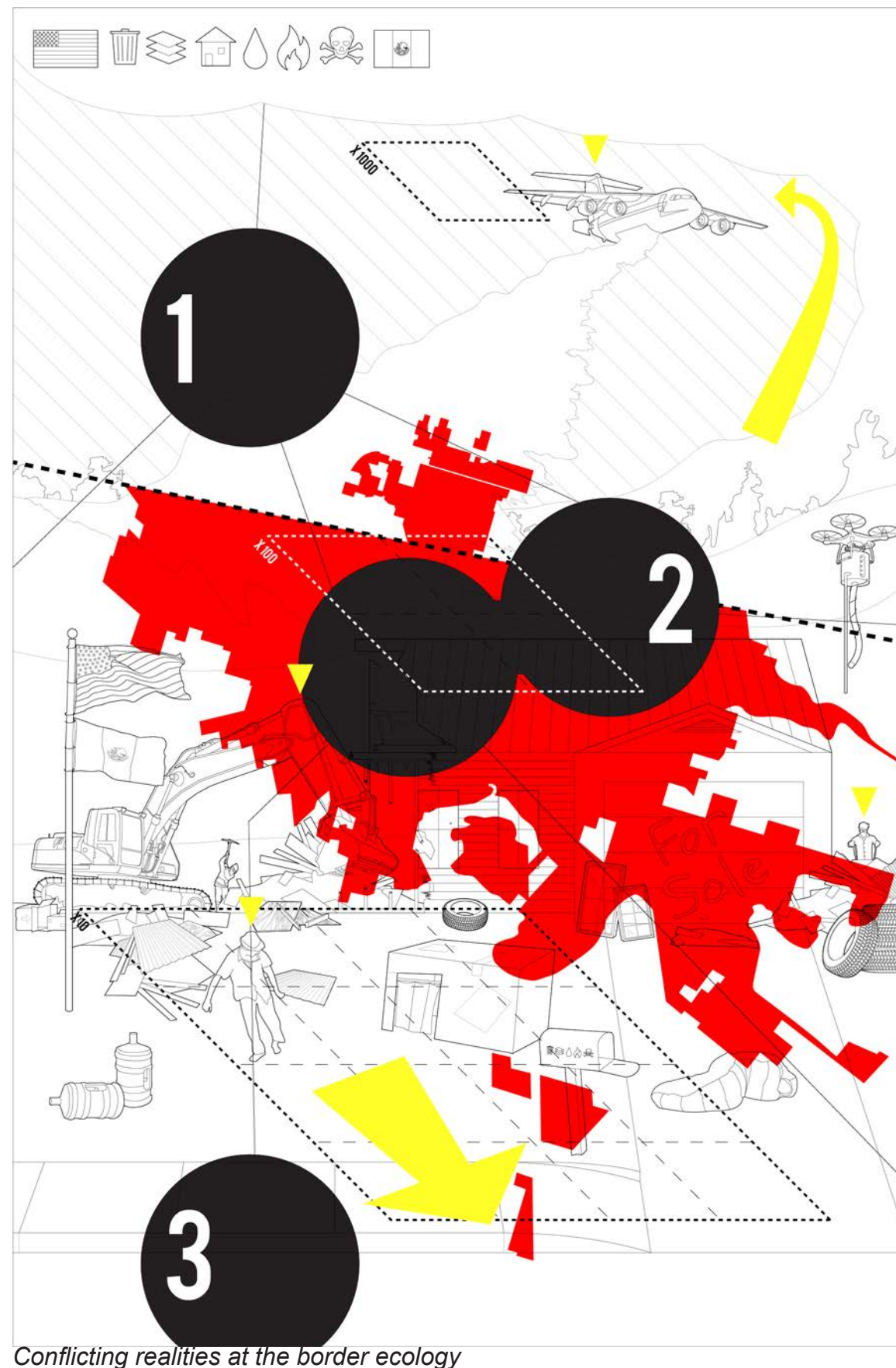
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# Thesis Publication Spread



The border region that lies between the US and Mexico is a ribbon of over 2000 miles and stretching 62 miles to the north and south, effectively developing a new border country. The La Paz agreement in 1983 was developed to maintain a strong alliance between the two countries, allowing resources to be shared and policies to overlap in the interest of a more permeable border threshold. But for whom does this threshold provide the most benefit, arguably not for the citizens of towns like Mexicali or Tijuana where a lack of sufficient resources and policies leave them vulnerable to poverty, sickness and climate related issues. The largest of these issues is the lack of proper housing due to rising urban growth and lack of sufficient resources such as water and building materials for homes.

Architects are called to intervene with the upmost cultural competence to emerge a new manifesto on housing and what it means to dwell in ever-shifting realities.

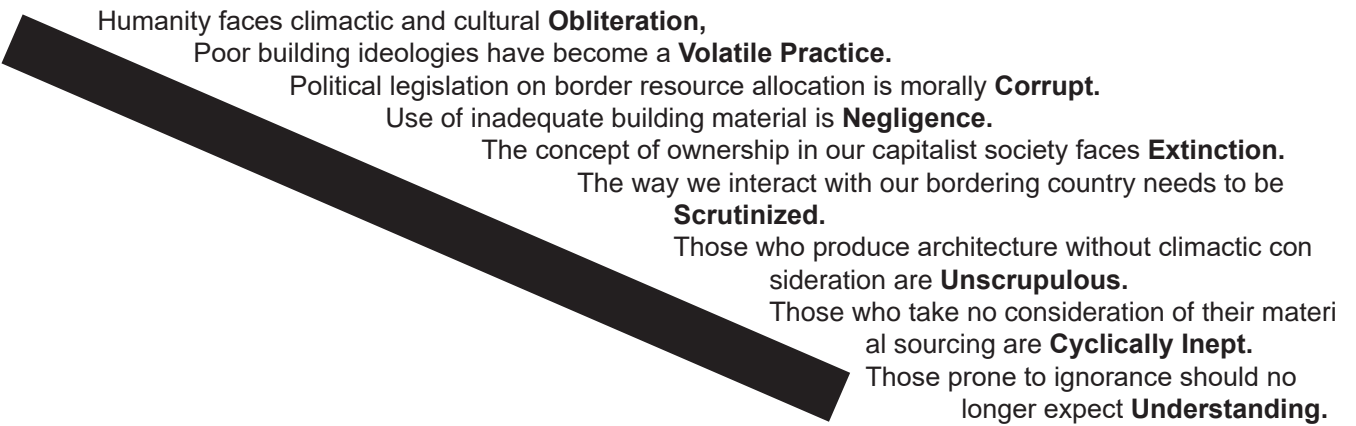
I propose to develop a new methodology on housing fabrication and community development and engagement in the region of northern Baja to be achieved through material sourcing and fabrication, localized infrastructure, and larger scale infrastructure throughout the border region of Mexico and California. This will be done at three scales: Macro-scale, studying ecologies, climate, and political landscapes; Meso-scale, studying infrastructure, resources, population density, and agriculture; Micro-scale, studying familial types, dwelling infrastructure and the cultural community. The Human dwelling will be the amalgamation of this border redevelopment, as refuse material from the US can be augmented to produce climatically appropriate materials for this region. The thesis speculates on these materials being processed in localized facilities to promote cross border comradery and bring financial stability to border settlements in Mexico. The uses for these materials will aid in the construction of necessary dwelling for families of workers on both sides of the newly formed border country. The development of these homes will be made more obtainable through a comprehensive kit of parts and a modular interchangeable system that allows for family growth/downsizing and mobility if climatic threats such as fires infringe on settlements.

# Thesis Claims

*I propose to develop a new methodology on housing fabrication and community development and engagement in the region of northern Baja to be achieved through material sourcing and fabrication, localized infrastructure, and larger scale infrastructure throughout the border region of Mexico and California. This will be done at three scales: Macro-scale, studying ecologies, climate, and political landscapes; Meso-scale, studying infrastructure, resources, population density, and agriculture; Micro-scale, studying familial types, dwelling infrastructure and the cultural community. The Human dwelling will be the amalgamation of this border redevelopment, as refuse material from the US can be augmented to produce climactically appropriate materials for this region. The thesis speculates on these materials being processed in localized facilities to promote cross border comradery and bring financial stability to border settlements in Mexico. The uses for these materials will aid in the construction of necessary dwelling for families of workers on both sides of the newly formed border country. The development of these homes will be made more obtainable through a comprehensive kit of parts and a modular interchangeable system that allows for family growth/downsizing and mobility if climactic threat such as fires infringe on settlements.*

How we dwell in this reality faces **OBLIVION!**

**A fire is burning under our existence, A smokeless sky leaves us in peril to our malcontent brutality. Our inability to reconcile facts leads us down this path of inherent demise,Dwelling is a moral right! Recognize these facts to preserve and improve our collective cultural and climactic context!**



**The hard boundary is just that. HARD! Preexisting policies promise a palpable new threshold in which the allocations of life-giving resources are obtained unanimously by all municipalities. This is a FALLACY! The inept nature of such pre-existing treaties have found their policies antiquated and impotent for the tasks at hand. Leaving communities fighting scrambling over one another to obtain enough to survive in this context. This boundary is not a transparent threshold. It is HARD. And until it can be dissolved this region will find its issues ever-growing.**

- We REJECT** the inability to consider climactic building positioning.
- We REJECT** the monetization of home as commodity and not necessity.
- We REJECT** the blatant ignorance of building material sourcing and construction methods.
- We REJECT** the loss of our habitation/habitat in result of capitalistic monetization.
- We DEMAND** issues on building with climate change be addressed.
- We DEMAND** adaptive dwellings that work in tandem with their social/political/climatic contexts.
- We DEMAND** the permeability of our border for egalitarian transfer of resources.
- We DEMAND** that the fragility of cultural relevance be preserved through integration of modern building practice.

AMENDMENTS TO PREEXISTING TREATIES ARE EXISTENTIAL FOR EGALITARIAN ALLOCATION OF RESOURCES TO MUNICIPALITIES ON EITHER SIDE OF THE BORDER. WITHOUT THESE CONTINGENCIES, LIFE GIVING RESOURCES WILL NOT FIND THOSE WHO NEED THEM MOST AND ACTIONS SO INFORMAL WILL HAVE TO TAKE PLACE IN ORDER TO PRESERVE ORDER. ON THE EDGE OF A RESOURCE AND HOUSING CRISIS, ARCHITECTS ARE CALLED TO INTERVENE WITH THE UPMOST CULTURAL COMPETENCE TO EMERGE A NEW MANIFESTO ON HOUSING AND WHAT IT MEANS TO DWELL IN EVER-SHIFTING REALITIES.



1. The La Paz Agreement

The La Paz Agreement of 1983 affects over 2000 miles of border territory between the US and Mexico expanding 62 miles on either side of the border developing a politically unique border area. The agreement covers a broad area of subjects with 5 annexes and over 100 articles addressing specific issues, most notable are the articles on allocating resources between the two countries and the effort to develop a more integrated border region. This agreement was meant to provide mutual benefit for individuals on either side of the border, yet the Mexican side suffers from severe medical, insurance, migration inequitable health and poverty issues. While Mexico's sister cities in the US see little to none of these issues due to different policies and access to essential resources like **WATER AND BUILDING MATERIALS FOR HOMES**.

**ARTICLE 1** The United States of America and the United Mexican States, hereinafter referred to as the Parties, agree to cooperate in the field of environmental protection in the border area on the basis of equality, reciprocity and **MUTUAL BENEFIT**. The objectives of the present Agreement are to establish the basis for cooperation between the Parties for the protection, improvement and conservation of the environment and the problems which affect it, as well as to agree on necessary measures to prevent and control pollution in the border area, and to provide the framework for development of a system of notification for emergency situations. Such objectives shall be pursued without prejudice to the cooperation which the Parties may agree to undertake outside the border area.

2. Water Treaty of 1944

The Water Treaty, signed in Washington on February 3 1944 allocated water along the United States-Mex-ico border based on a negotiation formula. in Article 4, the 1944 Treaty allotted the waters, of the Rio Grande/Bravo between Fort Quitman, Texas and the Gulf of Mexico to the two countries as follows:

A. To Mexico

- a) All the waters reaching the main channel of the Rio Grande (Rio Bravo) from the San Juan and Alamo Rivers, including the return flow from the lands irrigated by the last two rivers.
- b) Half of the flow in the main channel of the Rio Grande (Rio Bravo) below the lowest major interna-tional storage dam, insofar as said flow is not specifically allotted under this Treaty to either of the two countries.
- c) Two-thirds of the flow reaching the main channel of the Rio Grande (Rio Bravo) from the Conchos, San Diego, San Rodrigo, Escondido and Salado Rivers and the Las Vacas stream.
- d) Half of all other flows not otherwise allotted by this Article 4 occurring in the main channel of the Rio Grande (Rio Bravo), including contributions from all the unmeasured tributaries, which are those not named in Article 4, between Fort Quitman and the lowest major international storage dam.

B. To the United States

- a) All of the waters reaching the main channel of the Rio Grande (Rio Bravo) from the Pecos and Devils Rivers, Good-enough Spring, and Alamito, Ter-lingua, San Felipe and Pinto Creeks.
- b) One-half of the flow in the main channel of the Rio Grande (Rio Bravo) below the lowest major in-ternational storage dam, so far as said flow is not specifically allotted under this Treaty to either of the two countries.
- c) One-third of the flow reaching the main channel of the Rio Grande (Rio Bravo) from the Conchos, San Diego, San Rodrigo, Escondido and Salado Rivers and the Las Vacas Arroyo, provided that this third shall not be less, as an average amount in cycles of five consecutive years, than 350 000 acre-feet (431 721000 cubic meters) annually. The United States shall not acquire any right by the use of the waters of the tributaries named in this subparagraph, in excess of the said 350 000 acre-feet (431 721 000 cubic meters) annually, except the right to use one-third of the flow reaching the Rio Grande (Rio Bravo) from said tributaries, although such one-third may be in excess of that amount.
- d) One-half of all other flows not otherwise allotted by this Article 4 occurring in the main channel of the Rio Grande (Rio Bravo), including the contributions from all the unmeasured tributaries, which are those not named in this Article 4, between Fort Quitman and the lowest major international storage dam.

3. Material Border Crossing

The materials that make up much of the border towns and cities in Mexico are originally sourced from the US, often refuse or leftover building materials from luxury homes find their way over the border and are used to construct informal settelments on the fringes on cities like Tijuana or Mexicali. Often constructed quickly, these structures house in-dividuals whom cannot abide by Tijuana’s steep housing interest rates or who wish to free themselves from financial obligations of land ownership. Since the 1940’s the U.S. has been providing or disposing of waste building products in TJ, everything from rubber tiers, wood, glass, metal, masonry and even entire buildings make it across the border each year. Often newcomers to TJ looking for work find themselves homeless and in-stead of living on the street they construct dwellings of this type on often unbuildable land with no utilities or formal infrastructure. This fact is so pervasive in Mexican border towns that it can be seen as a vernacular building, where culture and family have strong roots.



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Image by Stewart Brand

- Understanding Whole Systems
- Shelter and Land Use
- Industry and Craft
- Communications
- Comunity
- Nomadics
- Learning



Image by Teddy Cruz

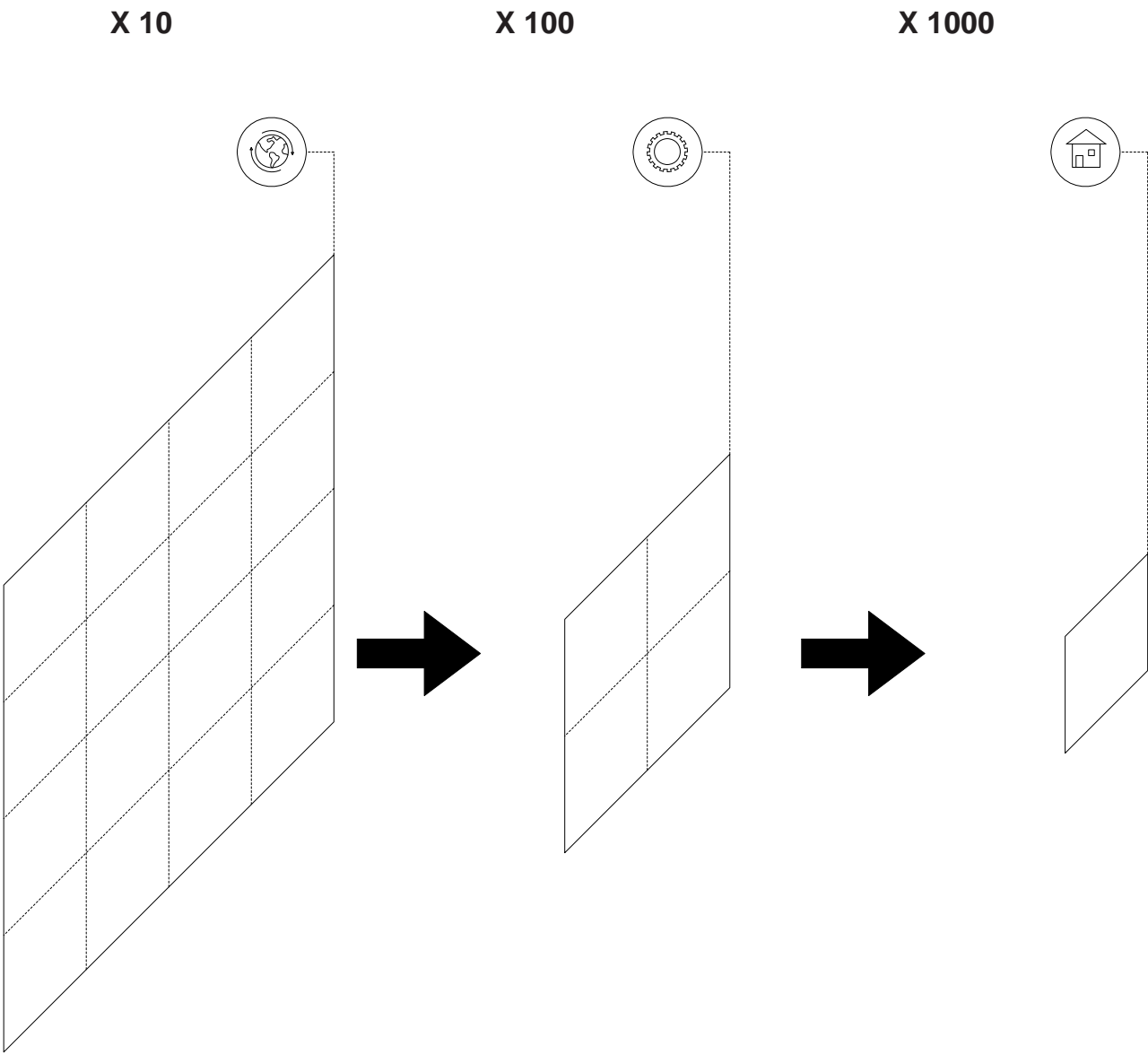
# Criteria of Evaluation

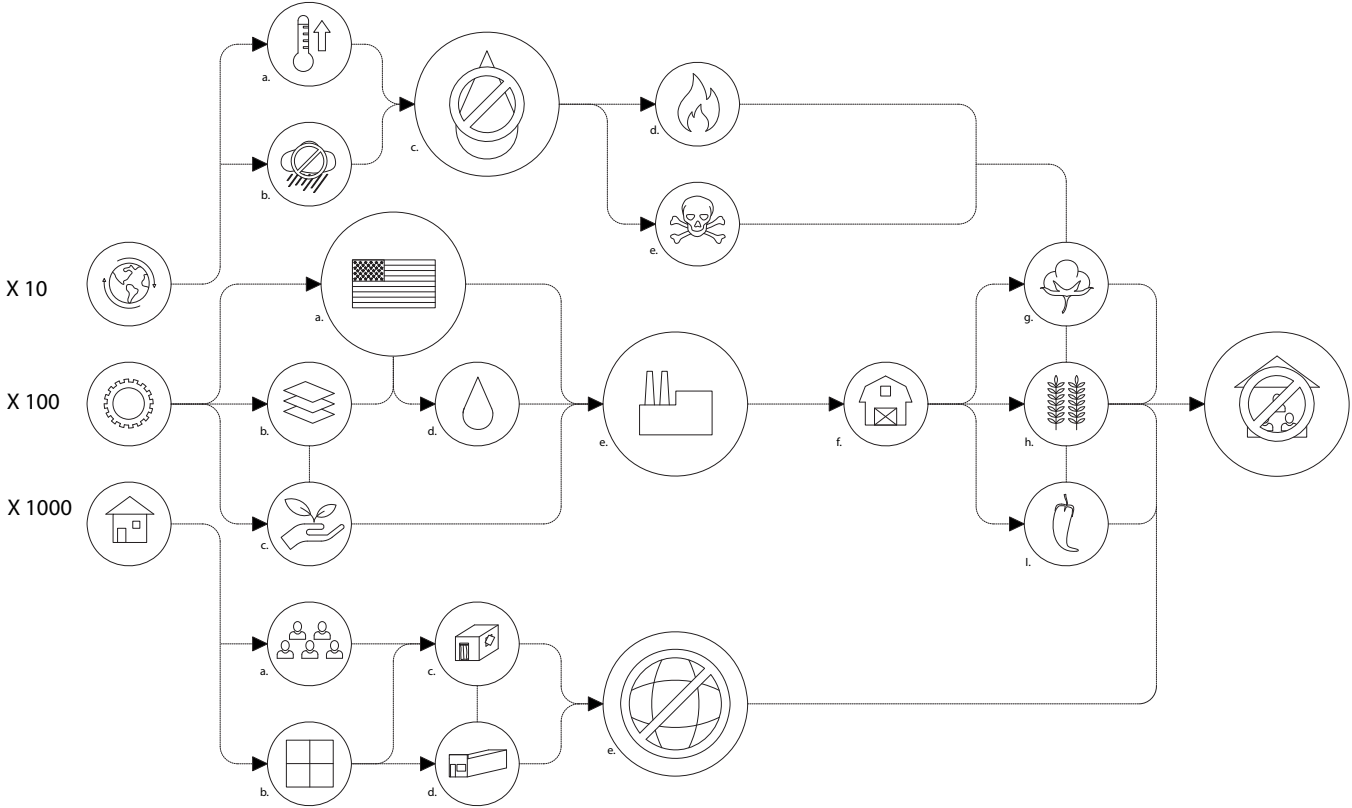
## The evaluation of this thesis depends:

1. On the formation of relationships between the three proposed scales, Macro, Meso and Micro.
2. Establishing a base infrastructure for a sustaining community model.
3. re-evaluating political criteria on climate change, resource allocation and land use.
4. Establishing a projected timeline for climate change in this region.
5. Defining what it means to dwell in this region (domestic living).
6. The development of a process to form a cultural kit of parts for domestic living.



The border region that lies between the US and Mexico is a ribbon of over 2000 miles and stretching 62 miles to the north and south, effectively developing a new **BORDER COUNTRY**. The La Paz agreement in 1983 was developed to maintain a strong alliance between the two countries, allowing resources to be shared and policies to overlap in the interest of a more **PERMEABLE BORDER THRESHOLD**. But for whom dose this threshold provide the most benefit? Arguably not for the citizens of towns like Mexicarna or Tijuana where a lack of sufficient resources and policies leave them vulnerable to poverty, sickness and climate related issues. The largest of these issues is the **LACK OF PROPER HOUSING** due to rising urban growth and lack of sufficient resources such as water and building materials for homes.





X 10 Macro Scale  
Climate / Landscapes / Ecologies

a. temperature rise  
b. lack of rain  
c. no water  
d. fire threat  
e. death

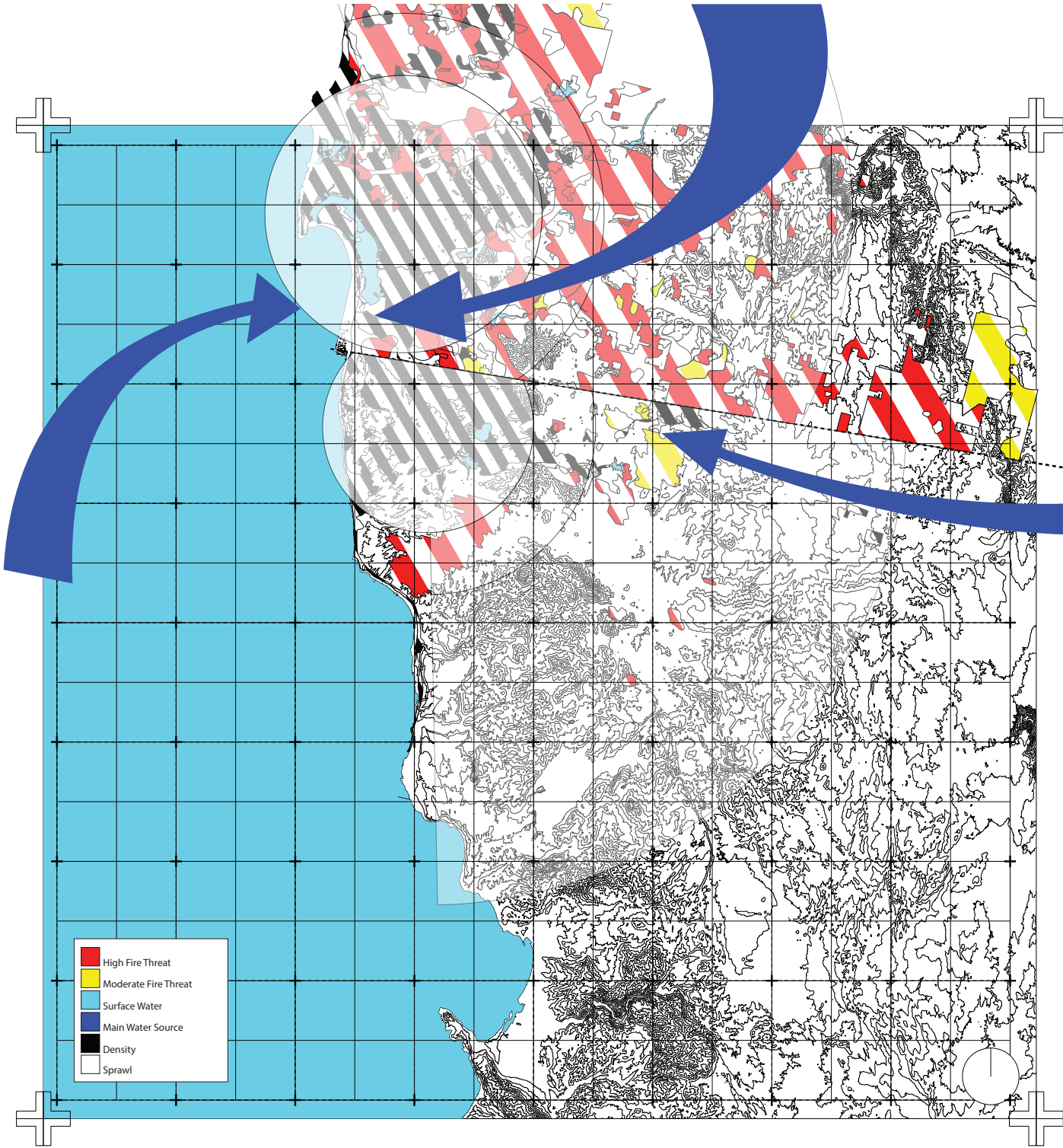
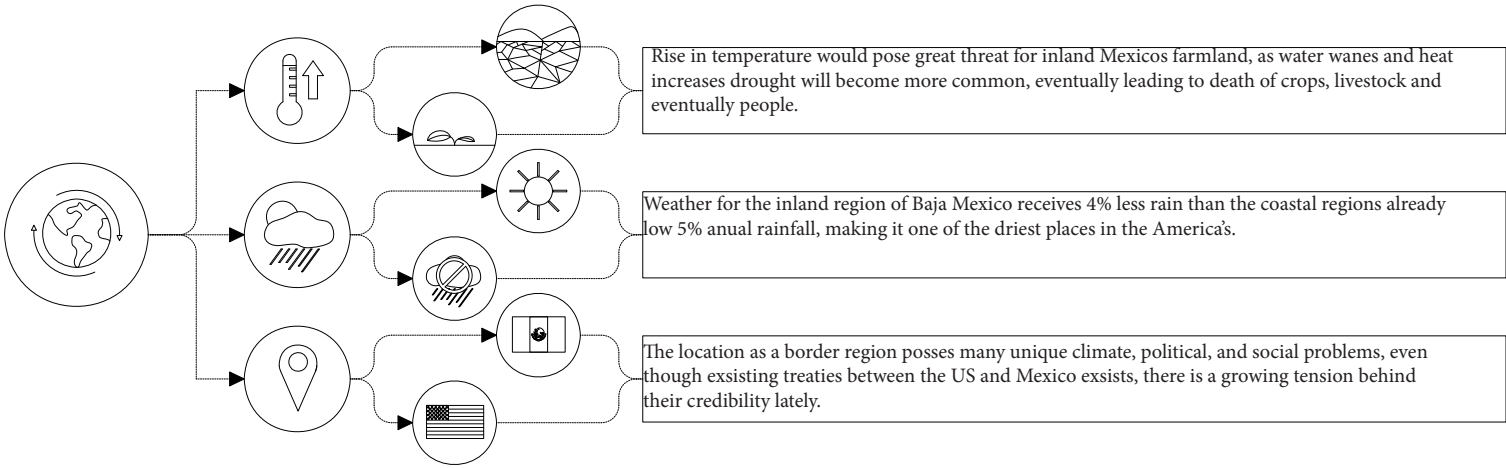
X 100 Meso Scale  
Infrastructure / Resources / Policies

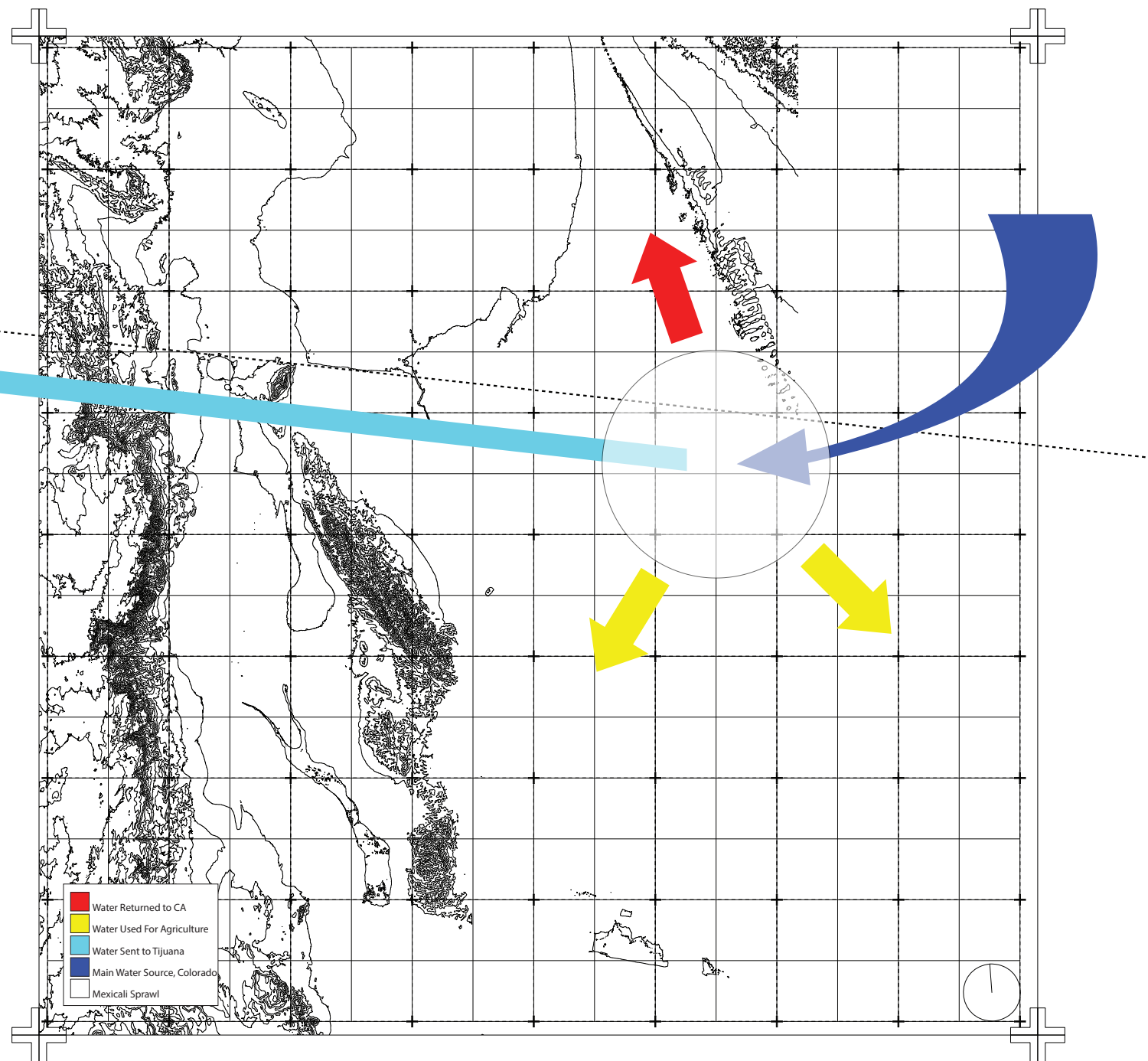
a. relationship with USA  
b. materials  
c. agriculture  
d. water as a resource  
e. industry  
f. farms / main crops  
g. cotton  
h. wheat  
i. produce

X 1000 Micro Scale  
Community / Dwelling / Material

a. population growth  
b. zoning  
c. informal settlements  
d. houses produced from housing crisis  
e. death of culture

- How will climate most likely affect these regions and the people who dwell in these regions?
  - a. How will pre-instated treaties, regarding resources, protect or destabilize communities within the border region?
- How have border treaty agreements allocated resources unequally, or equally, to either side of the border region?
  - a. Do these allocations provide more or less benefit to municipalities and localized communities within the La Paz border treaty?
  - b. Who does this benefit?



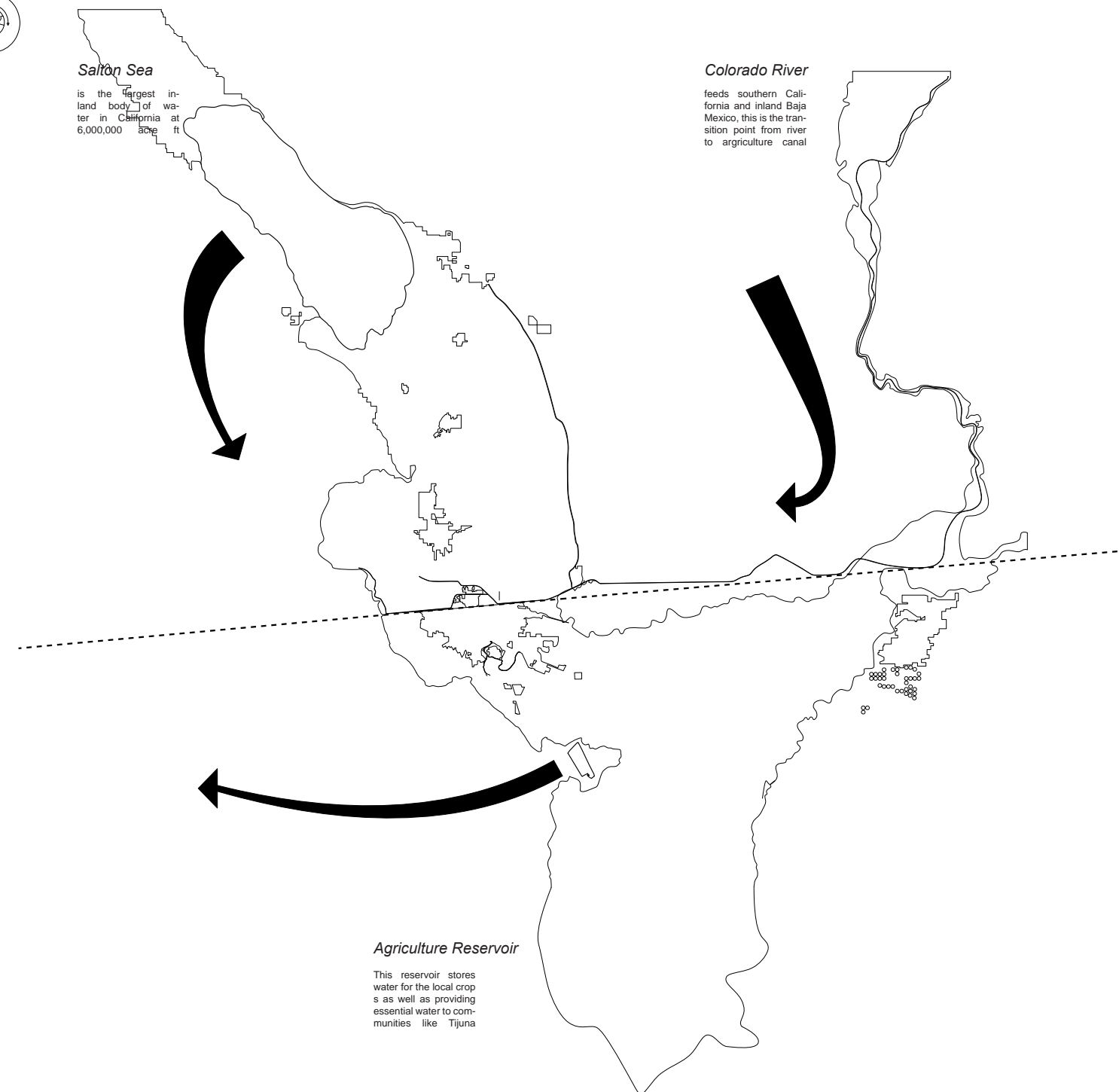


### ***Salton Sea***

is the largest inland body of water in California at 6,000,000 acre ft

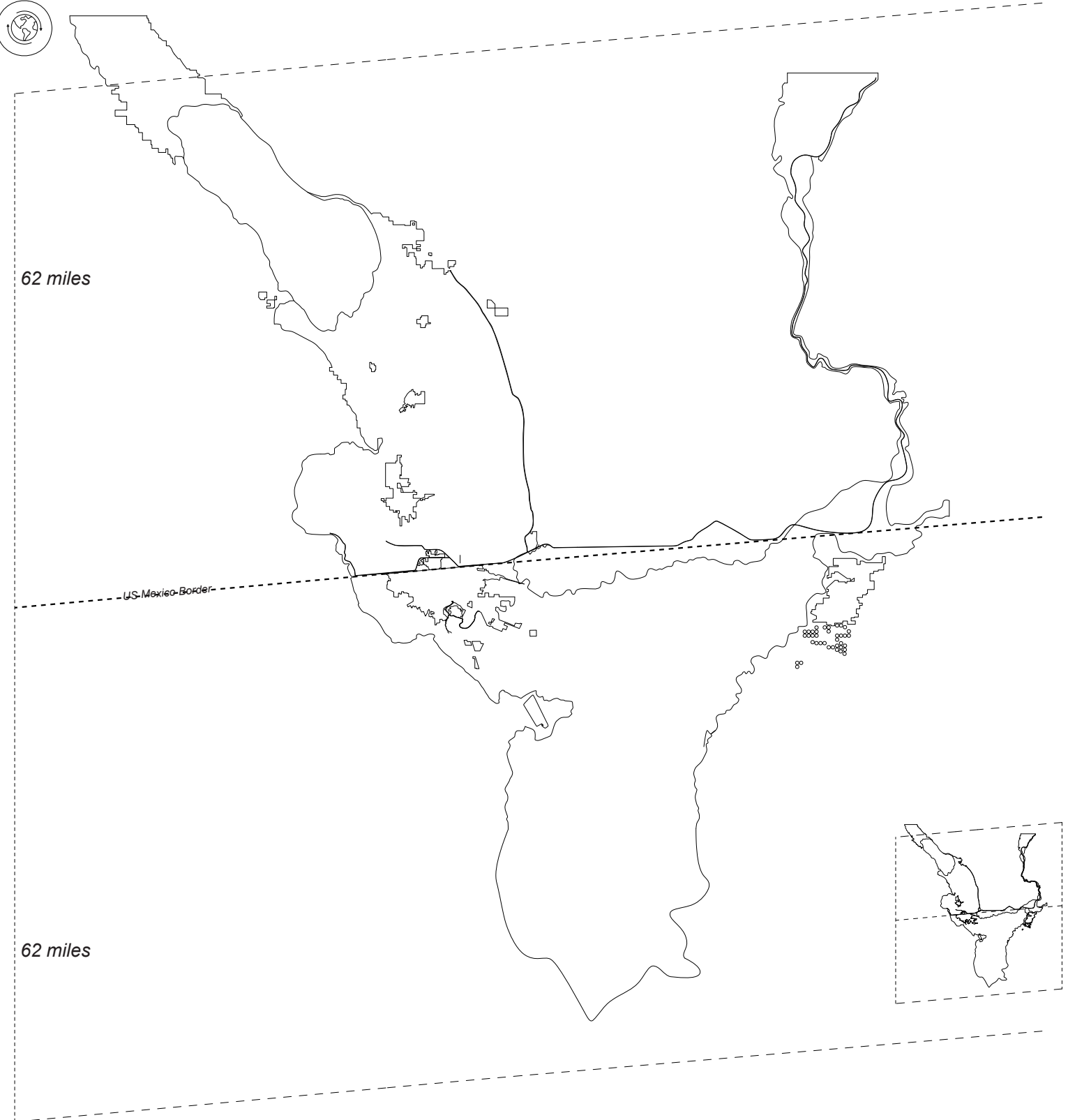
### ***Colorado River***

feeds southern California and inland Baja Mexico, this is the transition point from river to agriculture canal



### ***Agriculture Reservoir***

This reservoir stores water for the local crops as well as providing essential water to communities like Tijuana

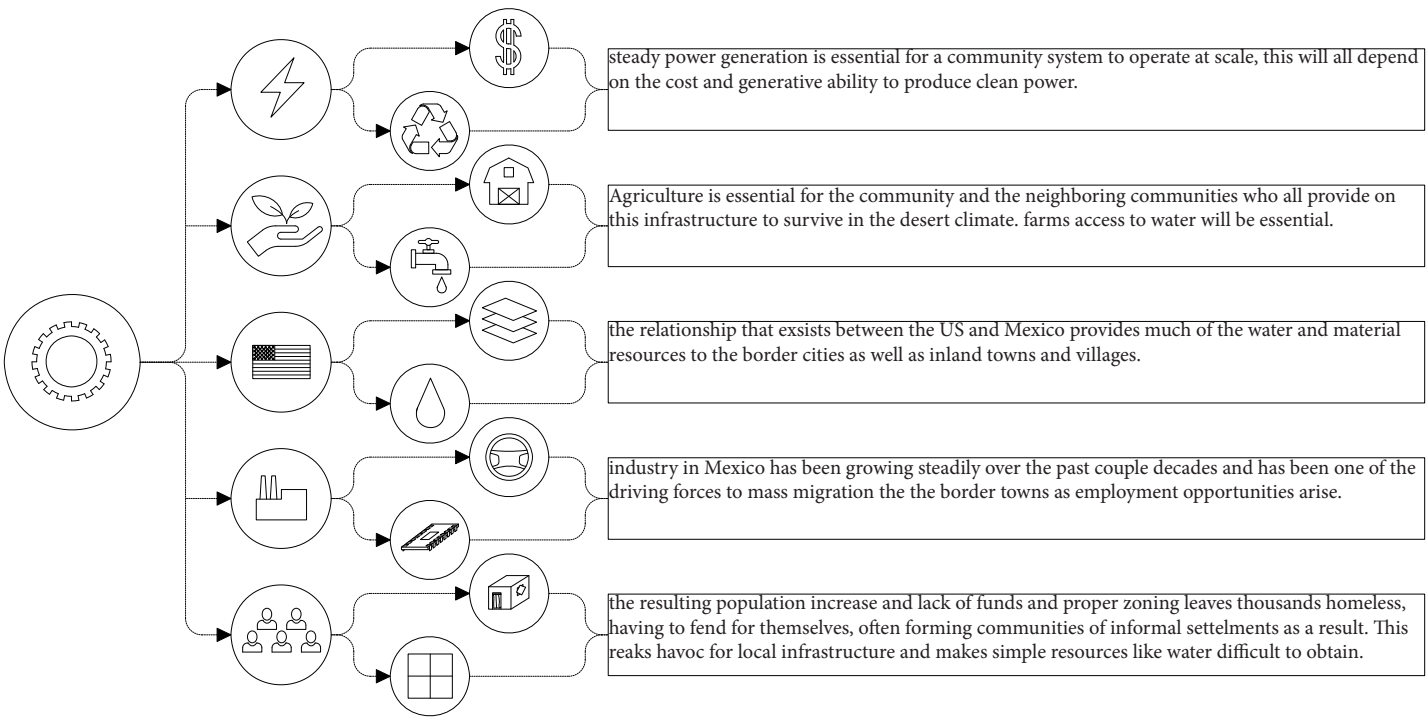




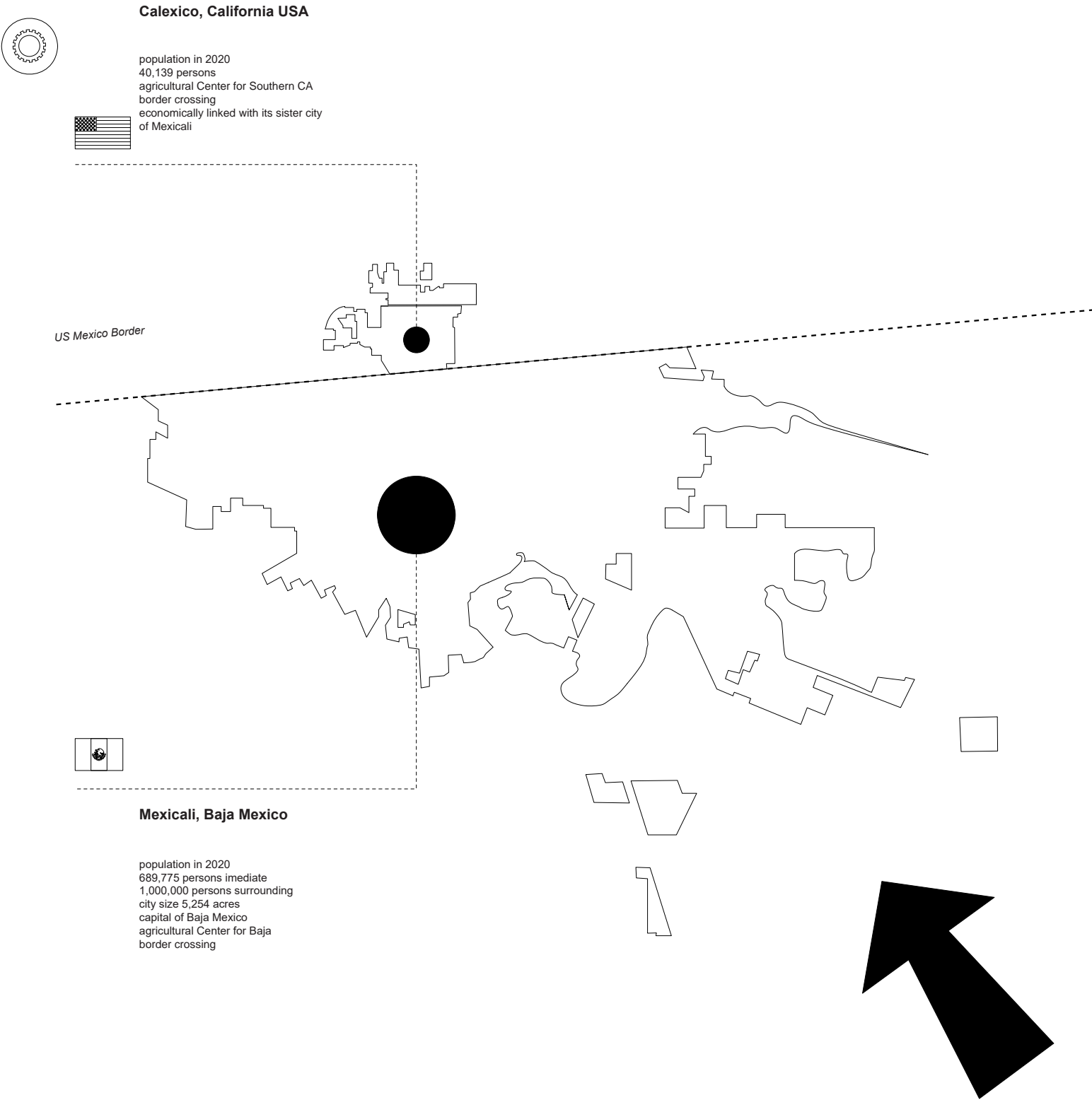




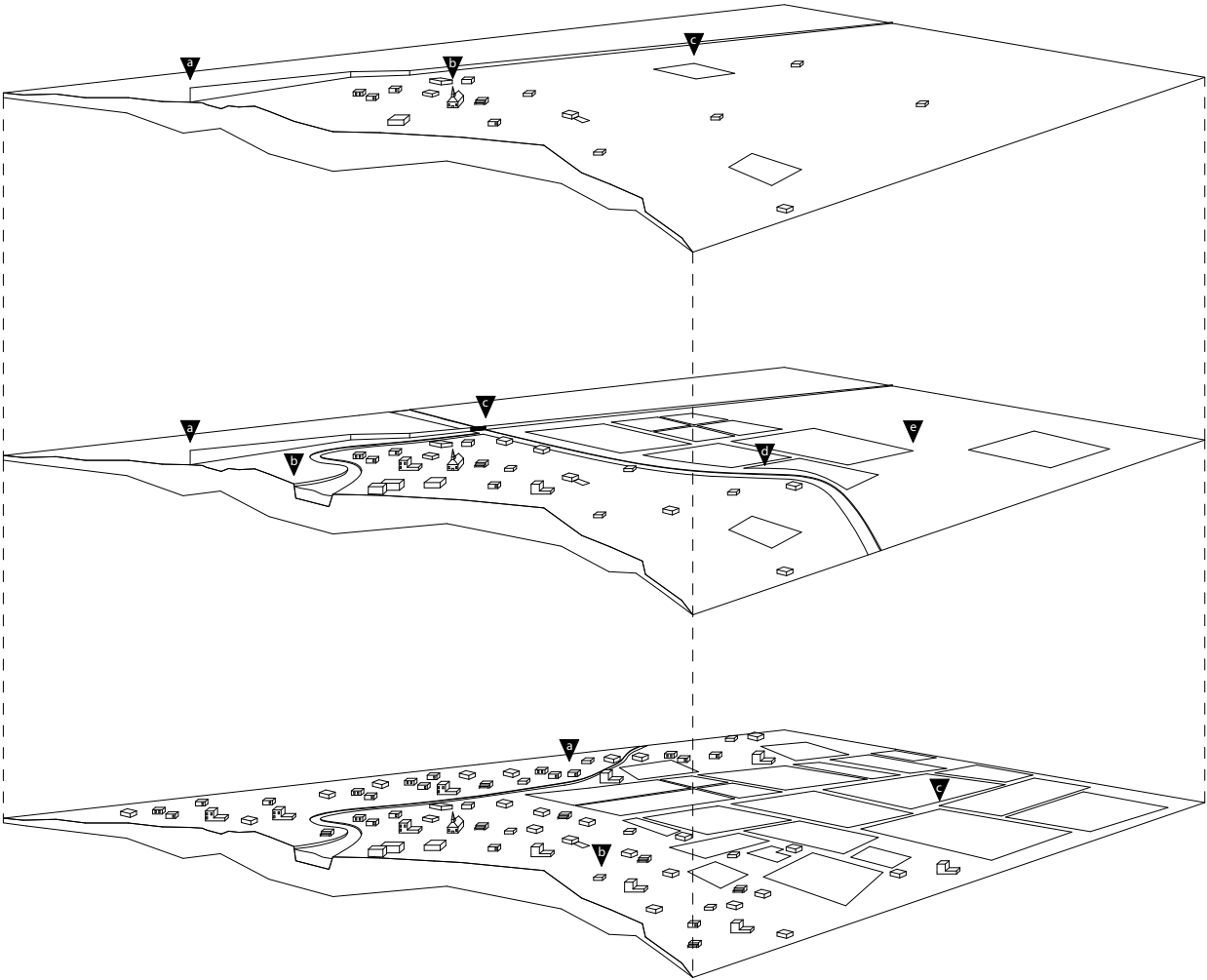
- How is the water treaty of 1944 affecting the region of inland Baja?
  - a. Who benefits from this water treaty and are primary resources negatively impacted? (e.i., agriculture)
- What are the key components of these communities for survival?











- a. border wall
- b. small settlement
- c. lack of agriculture due to water shortage
- a. border wall security increased
- b. canal bringing water from the US
- c. border crossing for water
- d. agriculture canals bring water to farther stretches of land
- e. growing agriculture due to more resources
- a. overlap of US and Mexican settlements after border is dissolved
- b. larger settlements as a result of increased resources
- c. expansive agriculture due to sufficient water supply

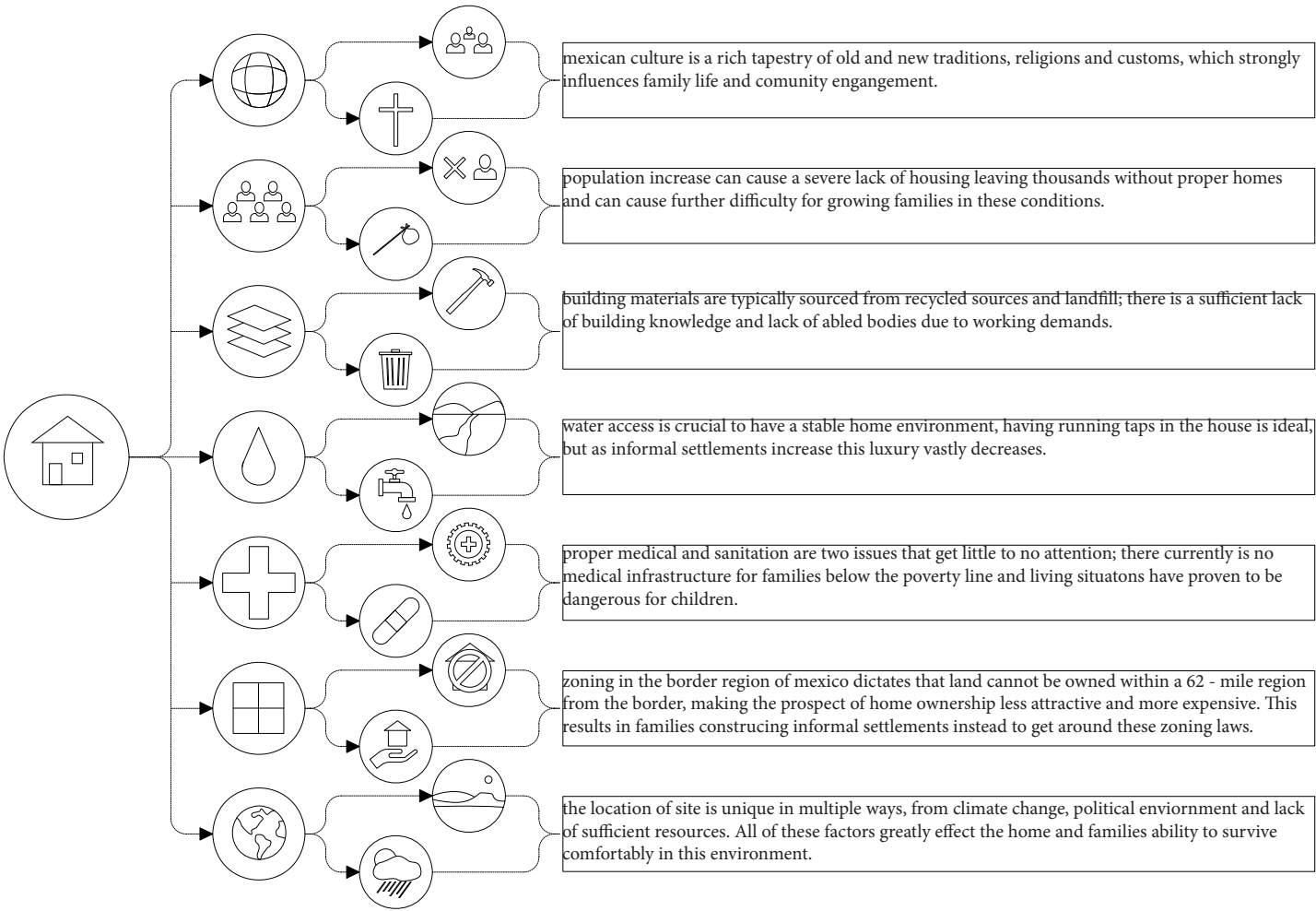








- What are the vernacular building types and methods for community development in this region?
  - a. How do locals of this region source materials for their dwellings and what are the pros and cons of these dwellings?
  - b. What can be learned from previous failed housing infrastructure projects and how can these failures be avoided in the future for housing projects?



- a. food access

a-1 food types are made up of locally grown produce, meat and imported products

a-2 cost of food per month
- b. community and culture

b-1 other religions and customs

b-2 80% of Mexico's population is Roman Catholic

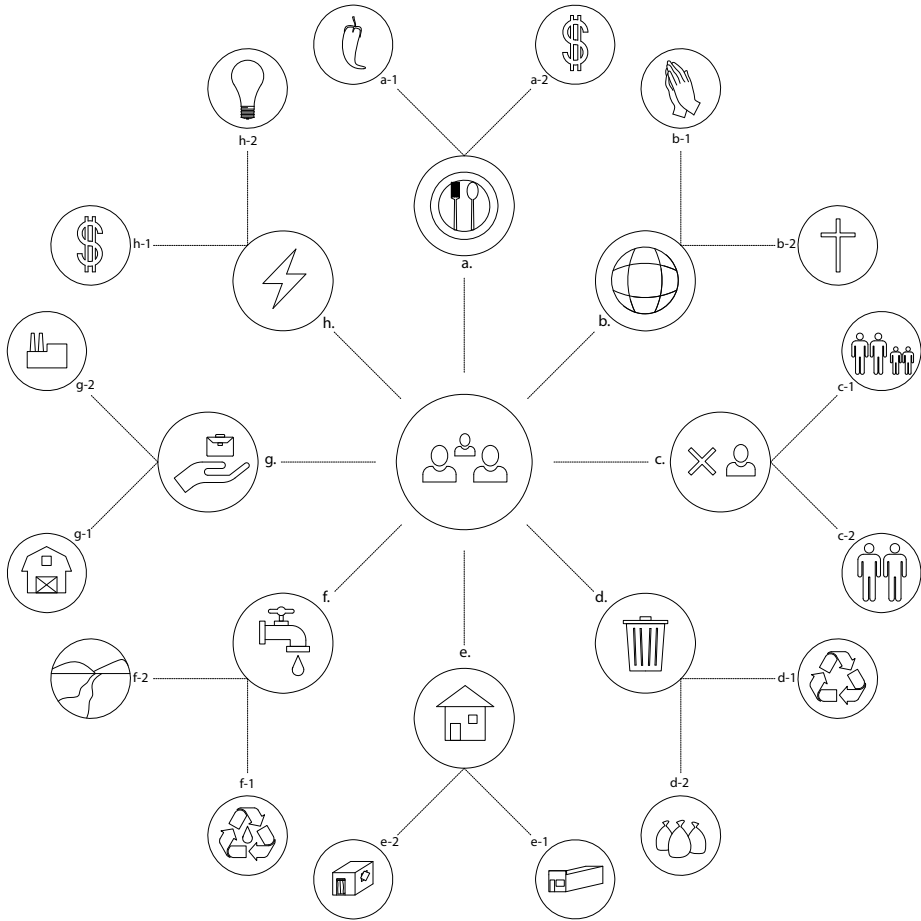
- c. size of family

c-1 the average size of a typical Mexican family is 3.5-4 persons

c-2 newly married couples make up the rest of the housing family types
- d. trash production

d-1 recycling of trash is uncommon

d-2 trash is often disposed of openly



- e. dwelling type

e-1 one million dwellings were constructed for the housing crisis they failed

e-2 informal settlements spring up as a result
- f. water access

f-1 naturally occurring water source

f-2 water recycling can boost water accessibility
- g. employment

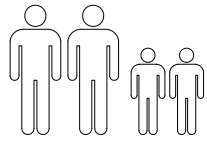
g-1 farms make up 80% of the current employment in northern Baja

g-2 other industries in automotive, electronics and consumer goods supplement
- h. power access

h-1 price per month for power

h-2 a large percentage of families are without electricity





a. 3,061sq ft

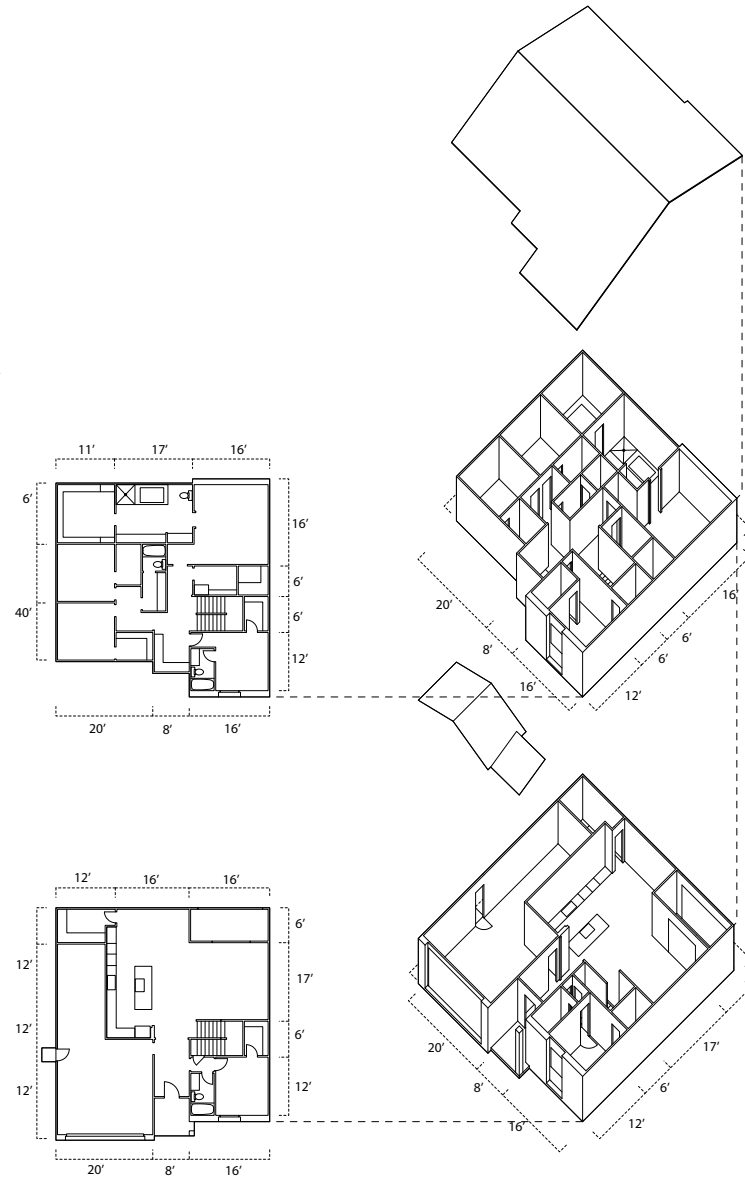
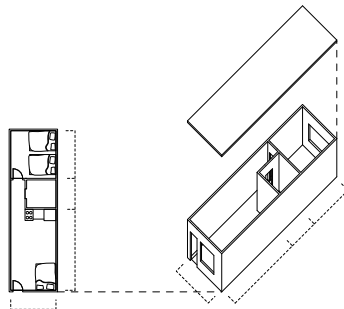
USA Single Family Home  
Single family home

**USA dwelling**

- 84 - 91 gallons of water usage per day
- the average household uses 6,000 kWh per year with an average of 3 residents in house
- individuals use 2,000 kWh per year
- building cost per sq ft is \$225 - 350
- the median housing cost is \$699,000
- the average size of a new home is between 2,728 - 3,581 sq ft
- the average apartment size is 877 sq ft with a cost on average of \$2,237 per month
- the average land cost per acre in California is between \$5,000 12,000

**Mexican dwelling**

- utilities for one month in a 900 sq ft apartment is 939 MXN
- low-income homes range from \$30 middle-income homes \$60 and high-income \$100 per sq ft
- informal settlements stats unknown
- low-income home 320 sq ft
- cost to rent a 900 sq ft home per month \$8,456 - 21,089 MXN
- cost to rent a 480 sq ft home per month \$6,309 - 10,210 MXN
- the cost to buy a home per sq ft \$1,072.55 - 1,994.74 MXN

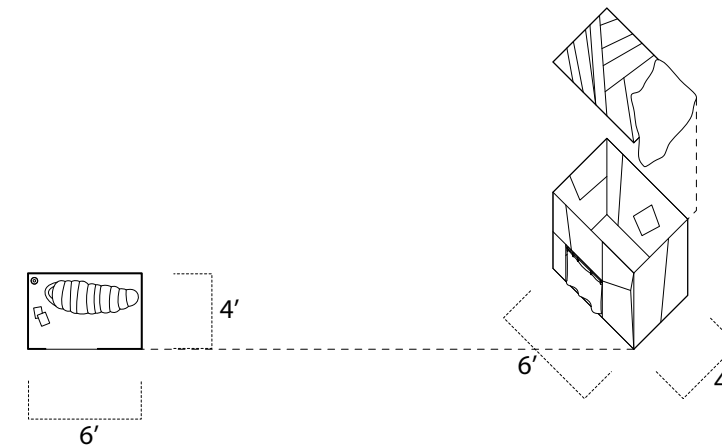


1/16" Scale

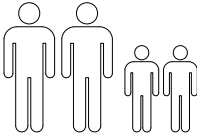
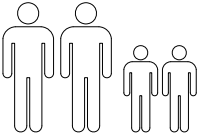


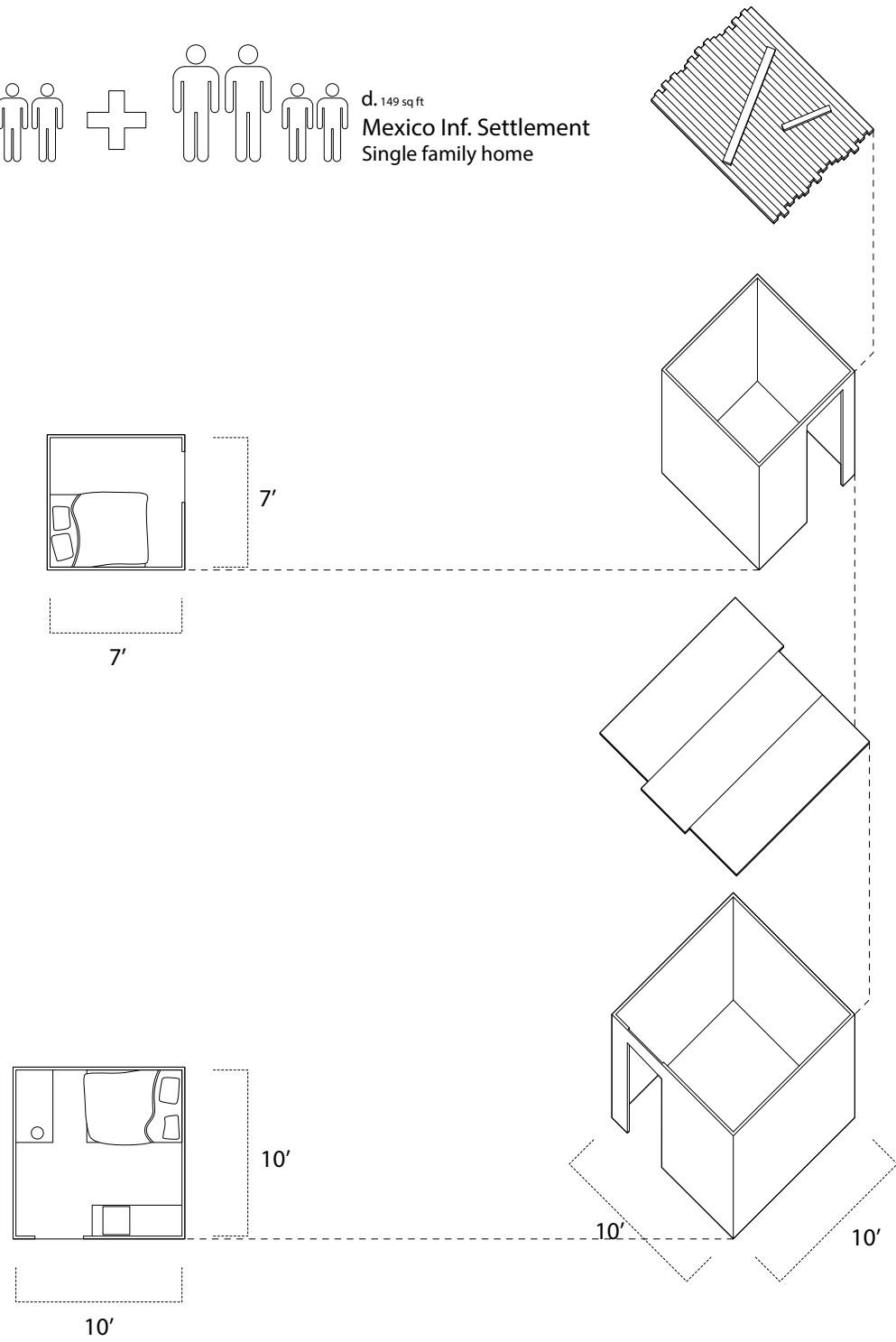
C. 24 sq ft

Mexico Informal Shelter  
Single to multi-person shelter



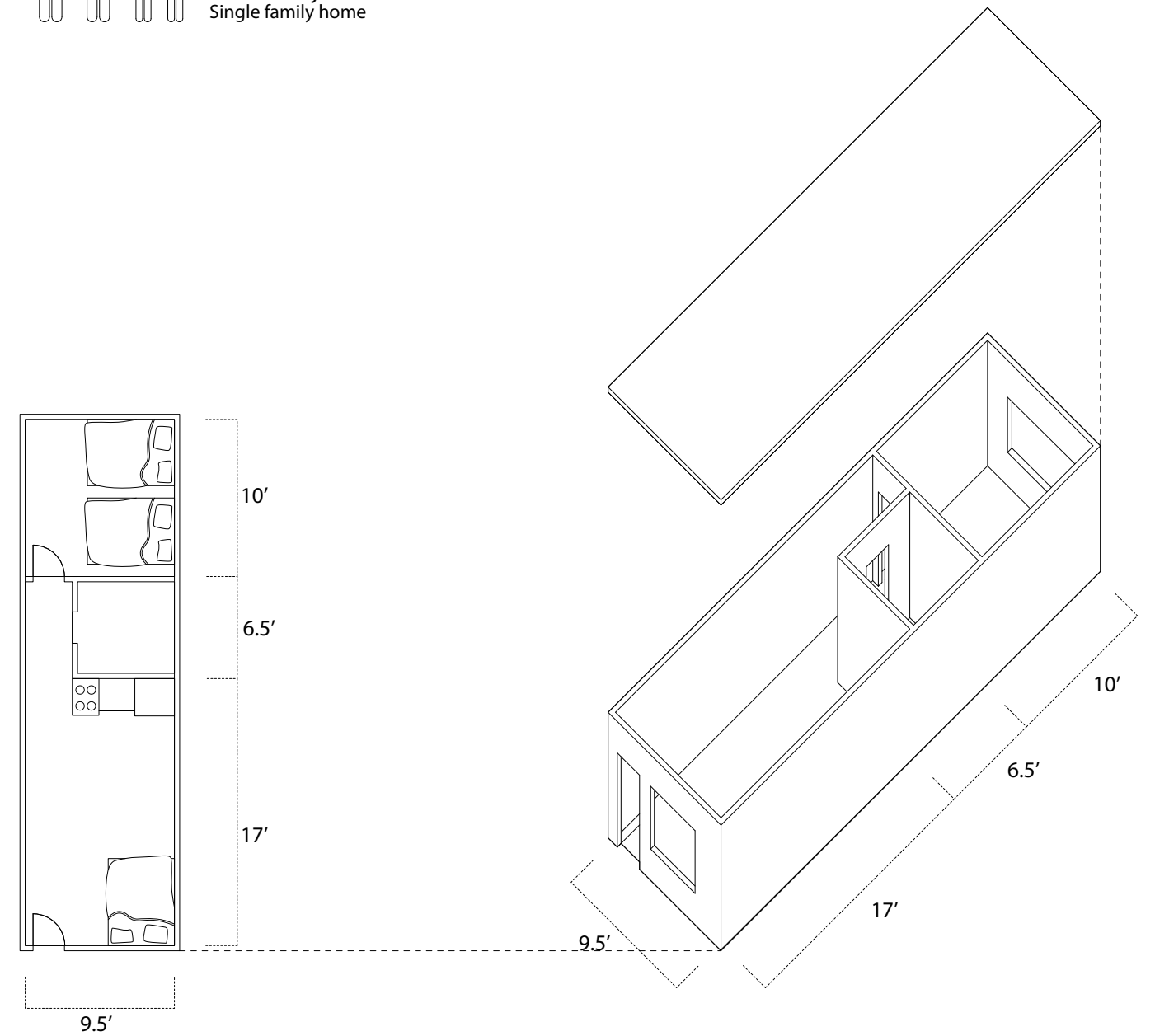
1/4" Scale



 +  
**d. 149 sq ft**  
**Mexico Inf. Settlement**  
 Single family home

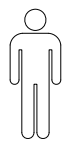


1/4" Scale

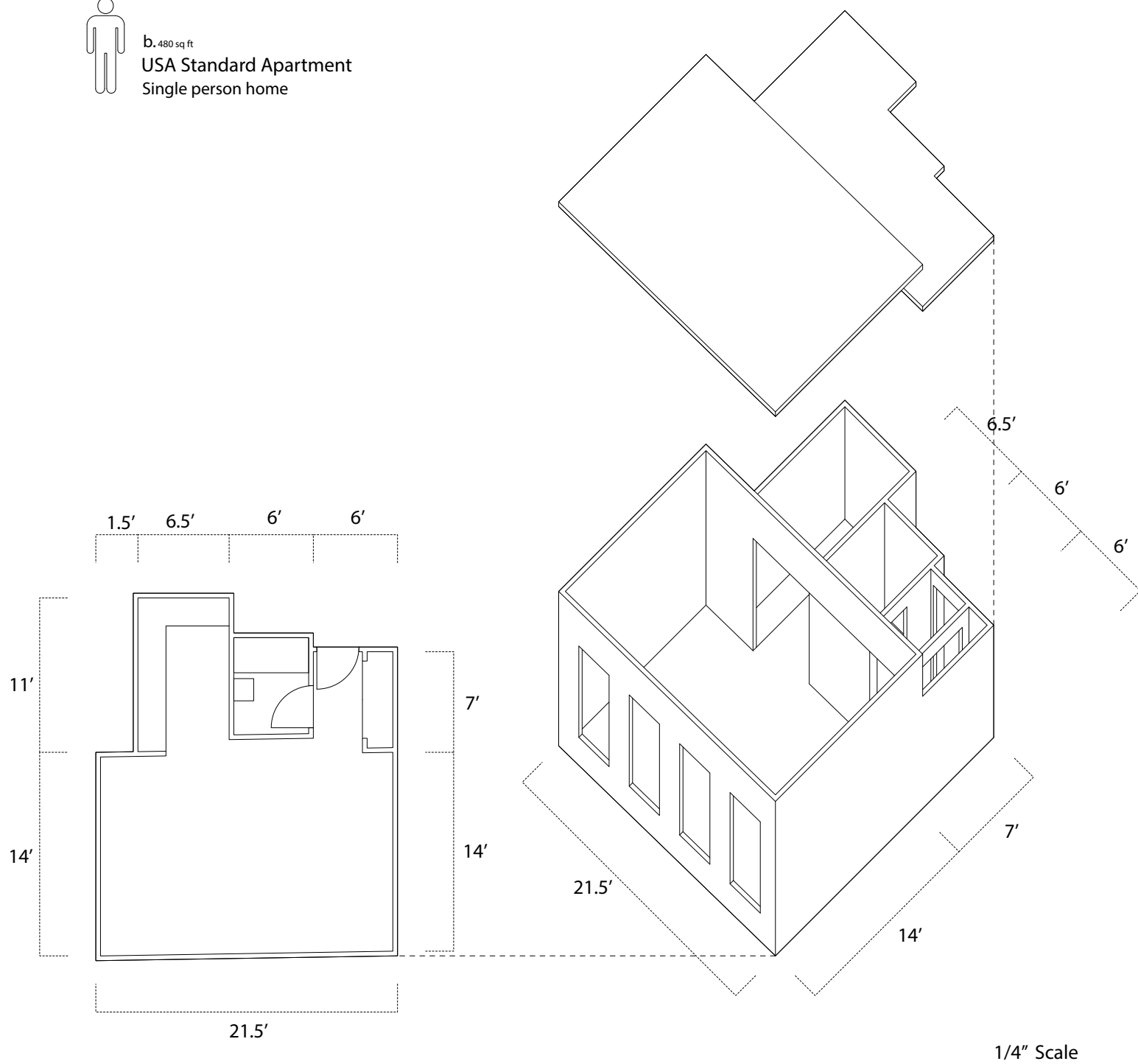

**e. 325 sq ft**  
**Mexico Project Home**  
 Single family home



1/4" Scale



b. 480 sq ft  
USA Standard Apartment  
Single person home







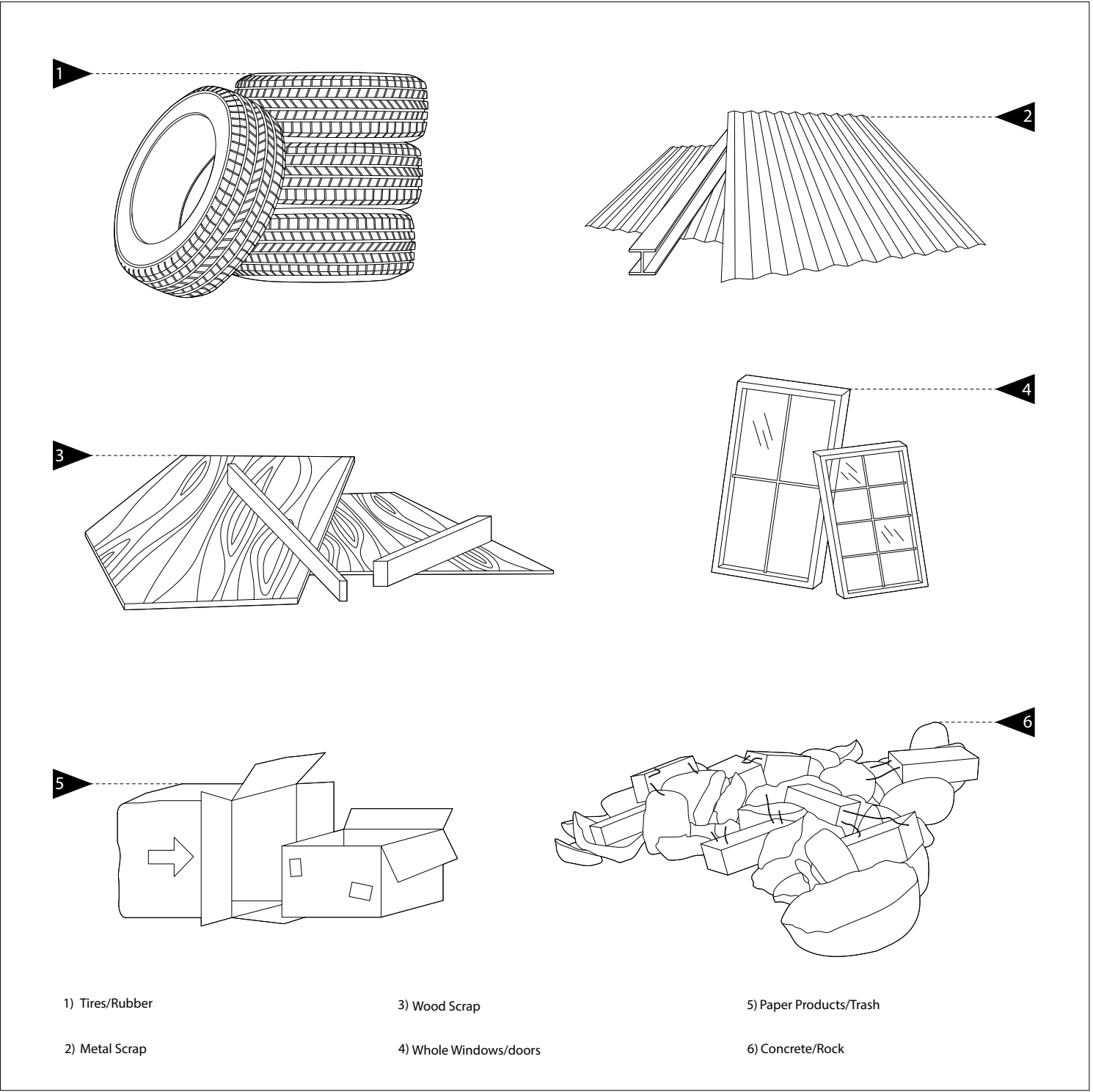


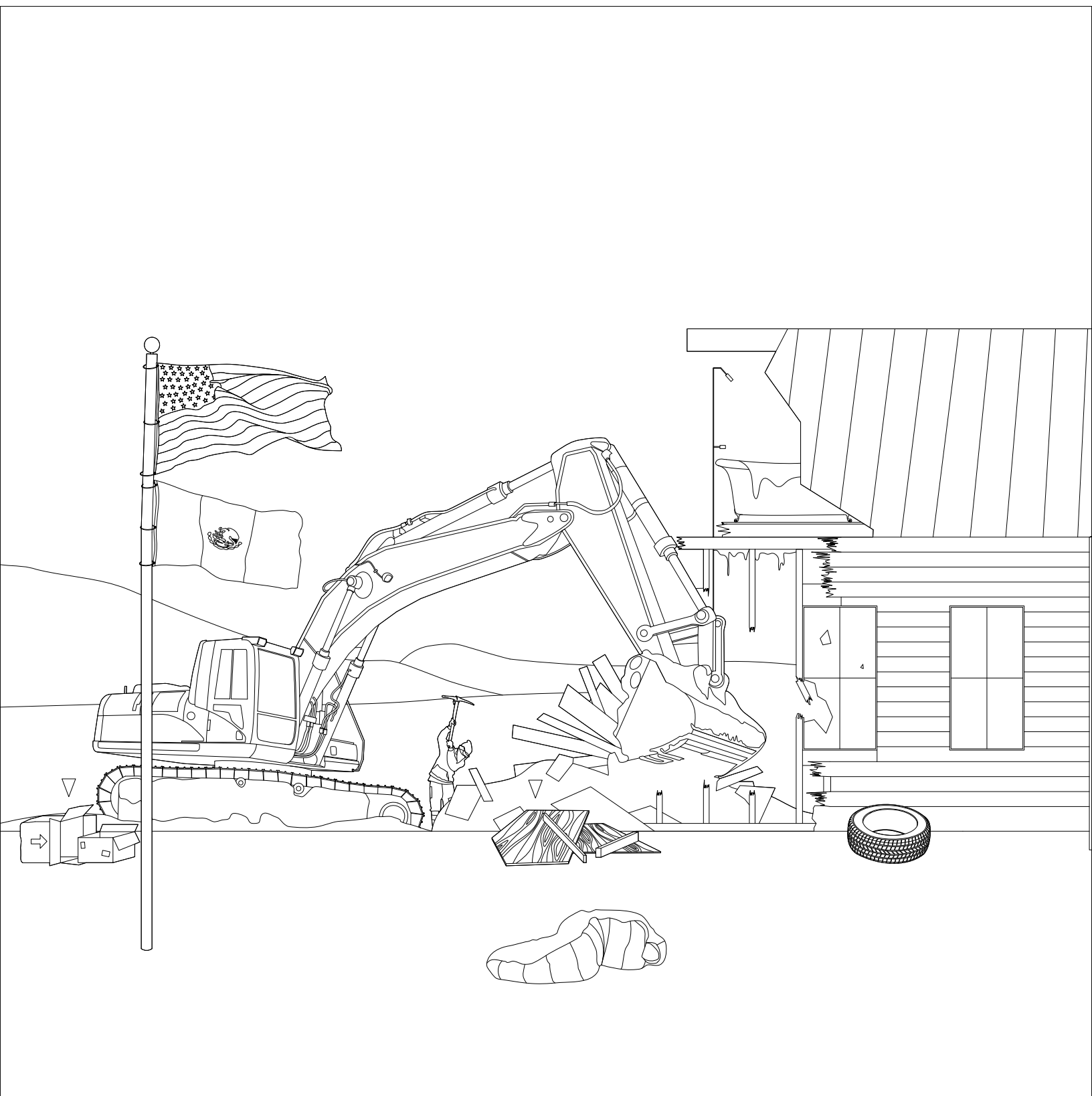


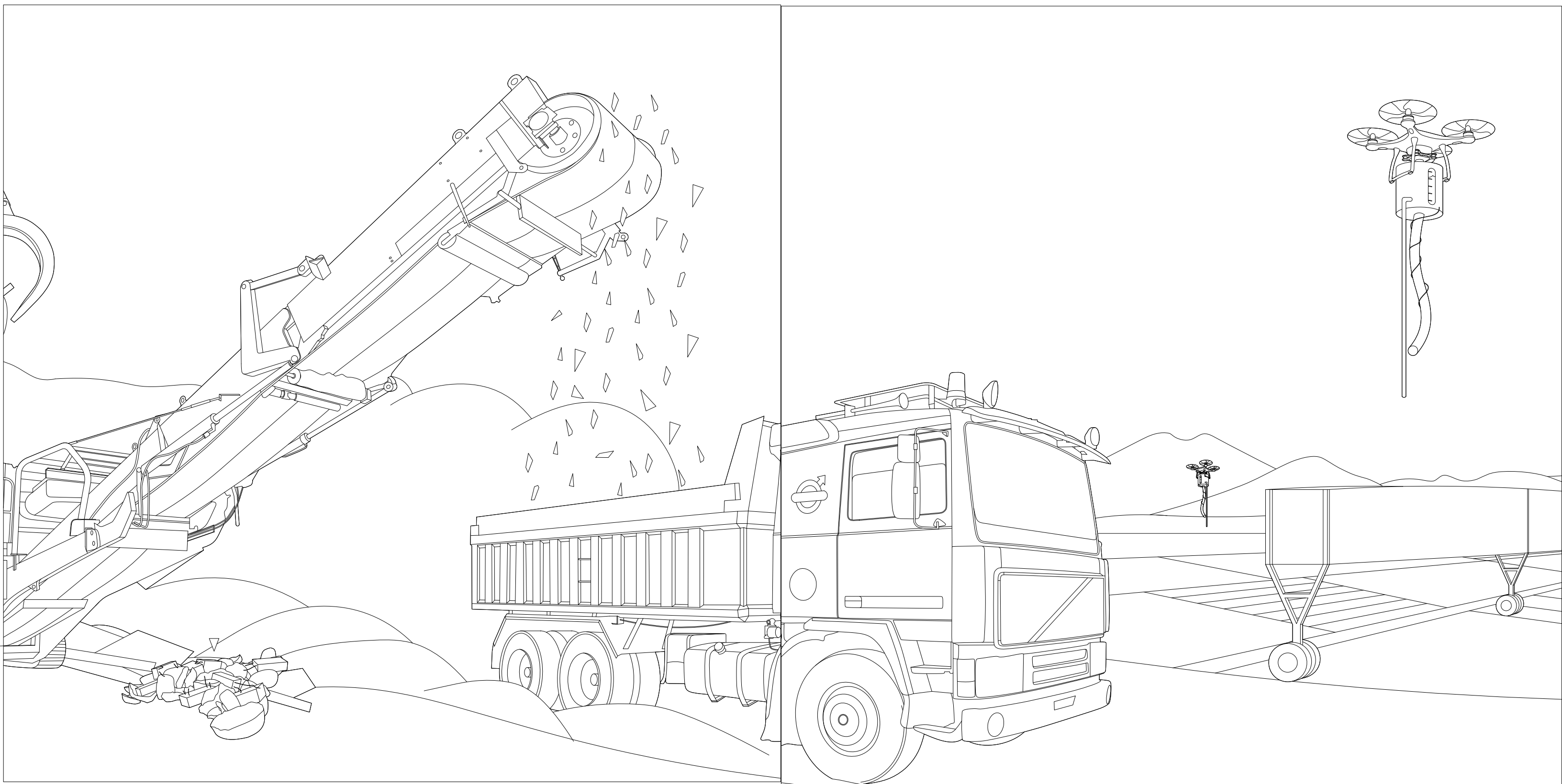


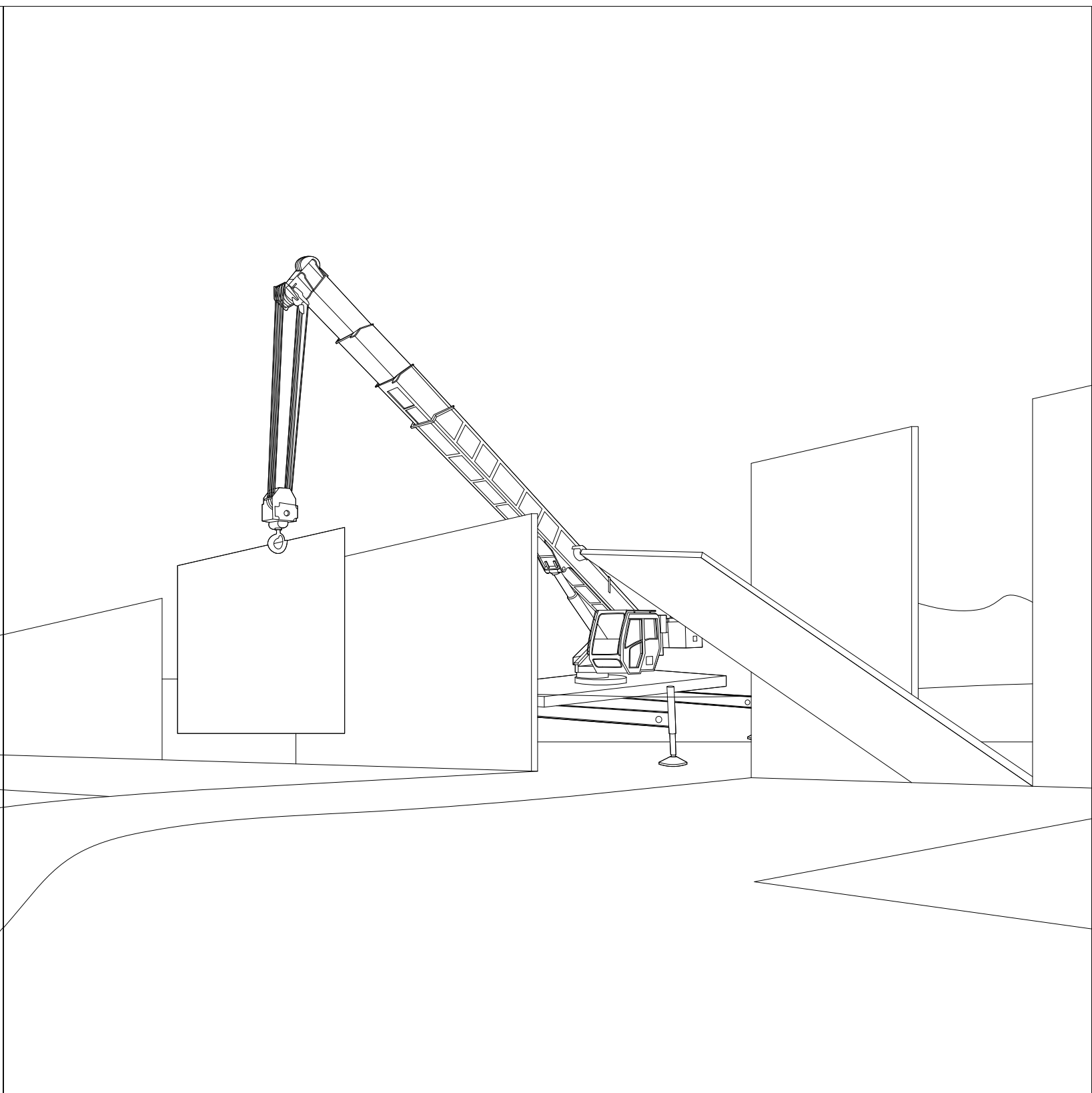
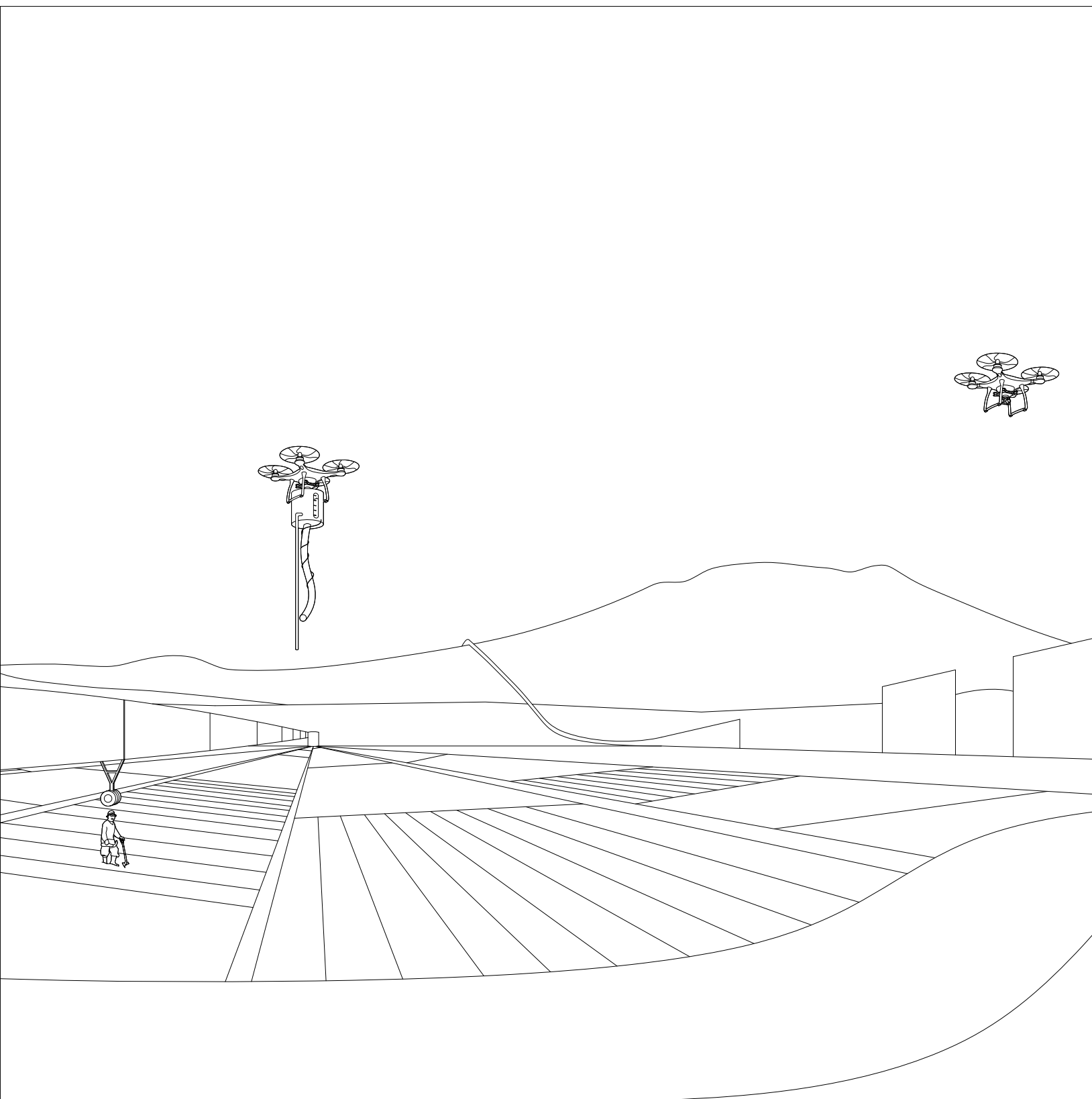




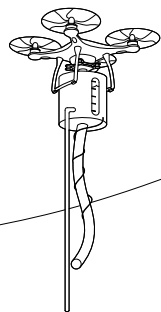








- How can a process of designing a kit of parts instruction manual maintain cultural relevance while providing expedited housing solutions?
  - a. What are the characteristics of “moral” housing pertaining to cultural dogma and social stigmas for this region?
  - b. How can low tech vernacular building methods be modified for a large-scale fabrication boom?
  - c. How can high-tech fabrication methods merge with vernacular low tech building traditions to better preserve culture while combating the housing crisis at scale?



*Design a process in which manuals could be developed in other regions of the world as well.*

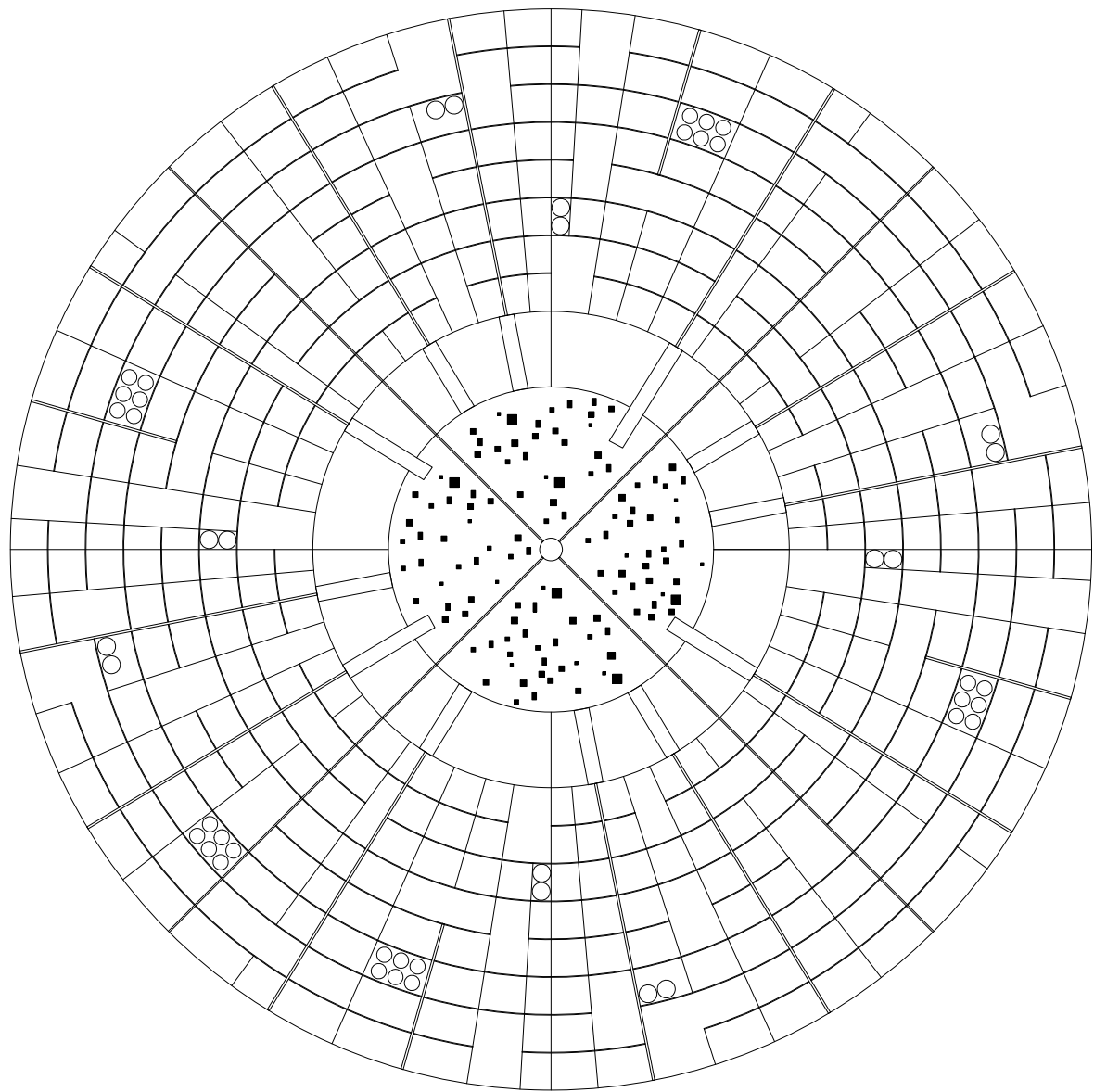
Meso Scale Infrastructure

Comprehensive Kit-of Parts

1. **Spatially Options**
  - a. Localized culture
  - b. Family Type
  - c. Community Type
2. **Fabrication and Construction**
  - a. Localized Building Materials
  - b. Material augmentation
  - c. Parts Fabrication
  - d. High and Low-Tech Merge
  - e. Expansions
3. **Maintenance**
  - a. Upkeep/ Detailings
  - b. Replacement
  - c. Locally relevant materials

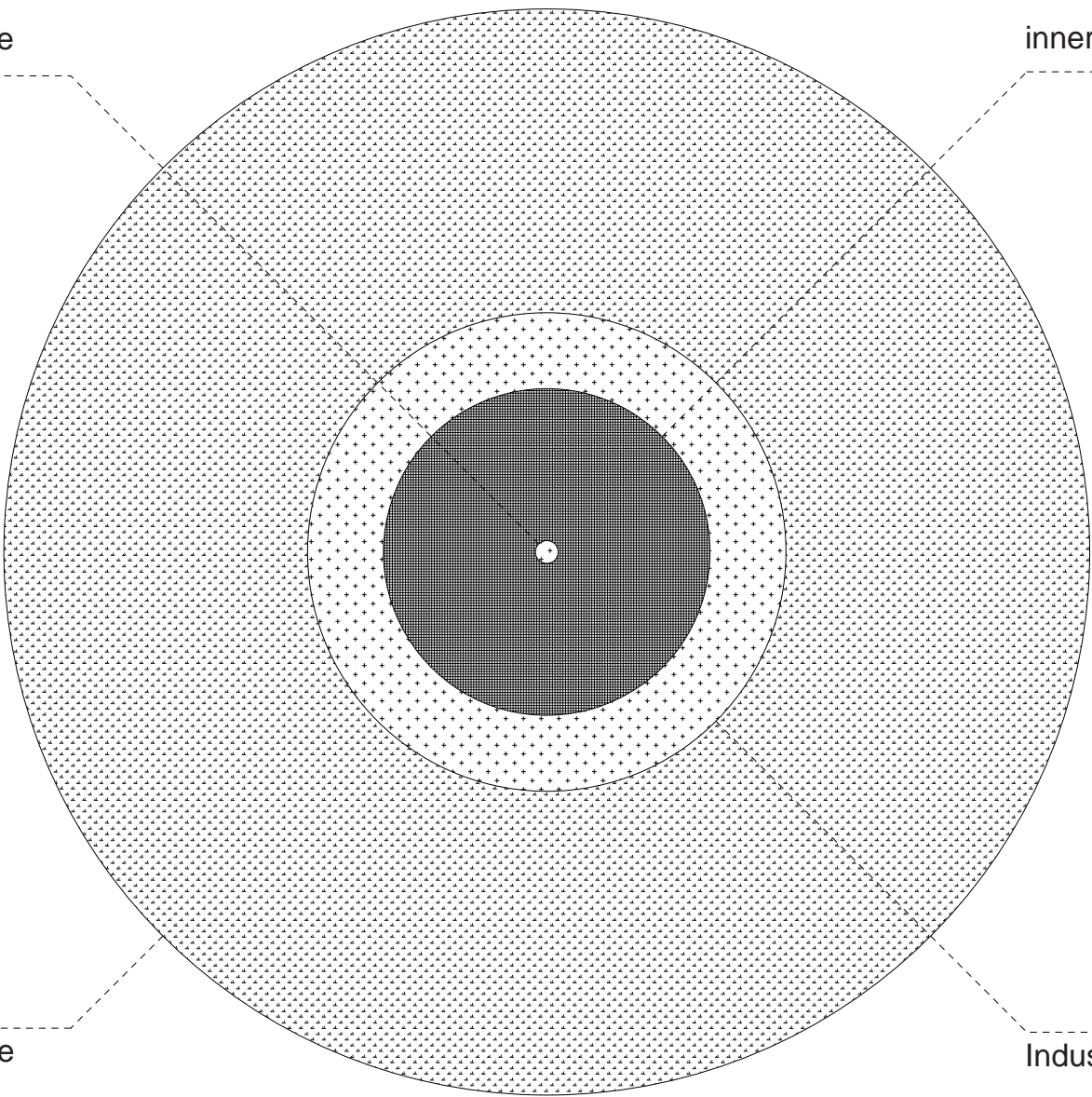
Intended Outcomes

1. Manual
2. Physical mock-ups of detailed system/ modularly developed system



Central node

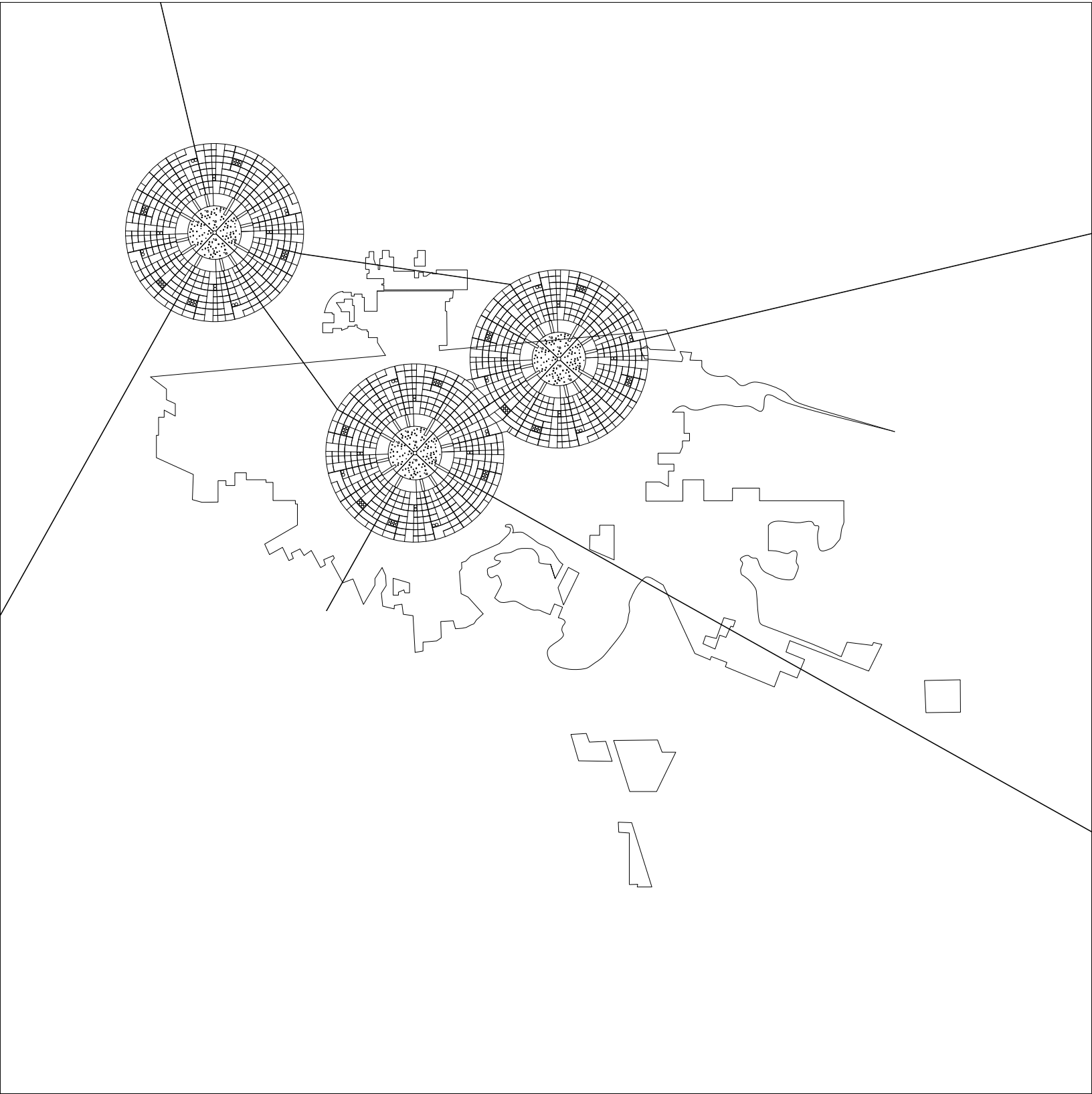
inner community



Agriculture

Industrial sector





**Individual Ownership**

- water access
- building material/dwelling
- access to local resources

**Communal Ownership**

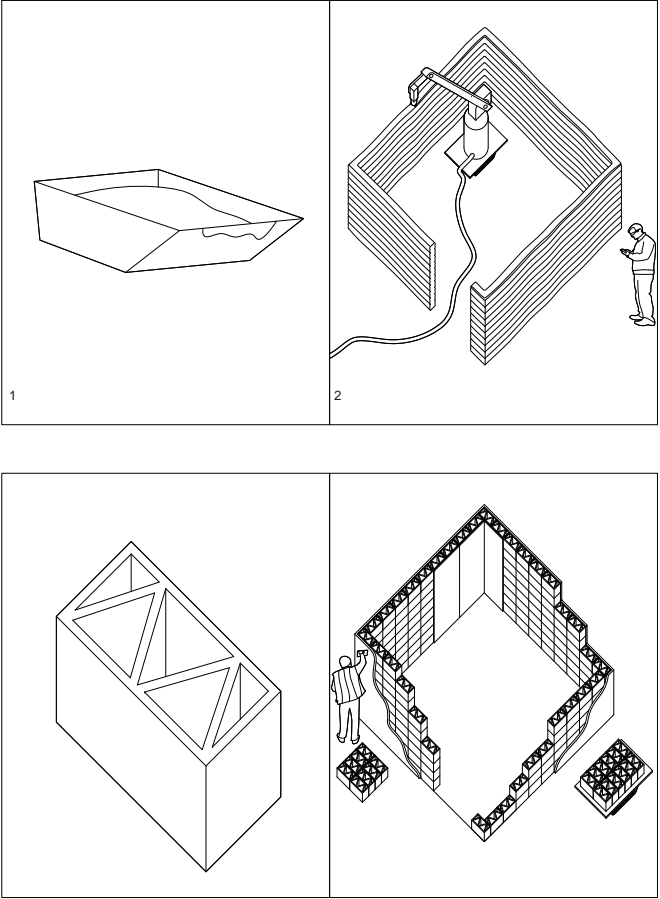
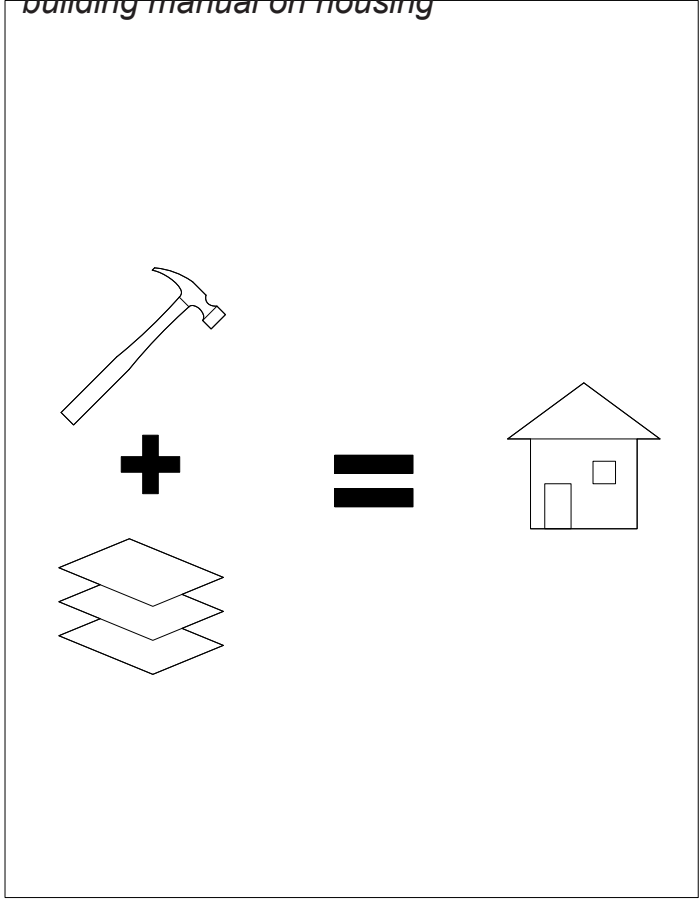
- agriculture resources
- land access
- employment

**Municipal Ownership**

- border country
- overall water access
- treaties

Kit of Parts

building manual on housing

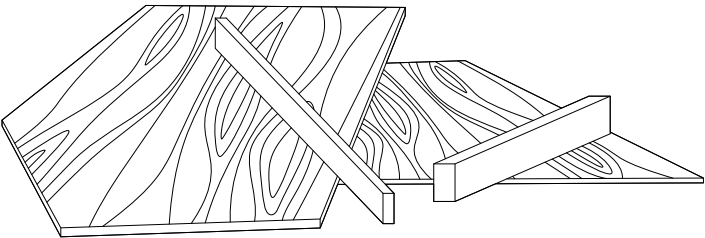
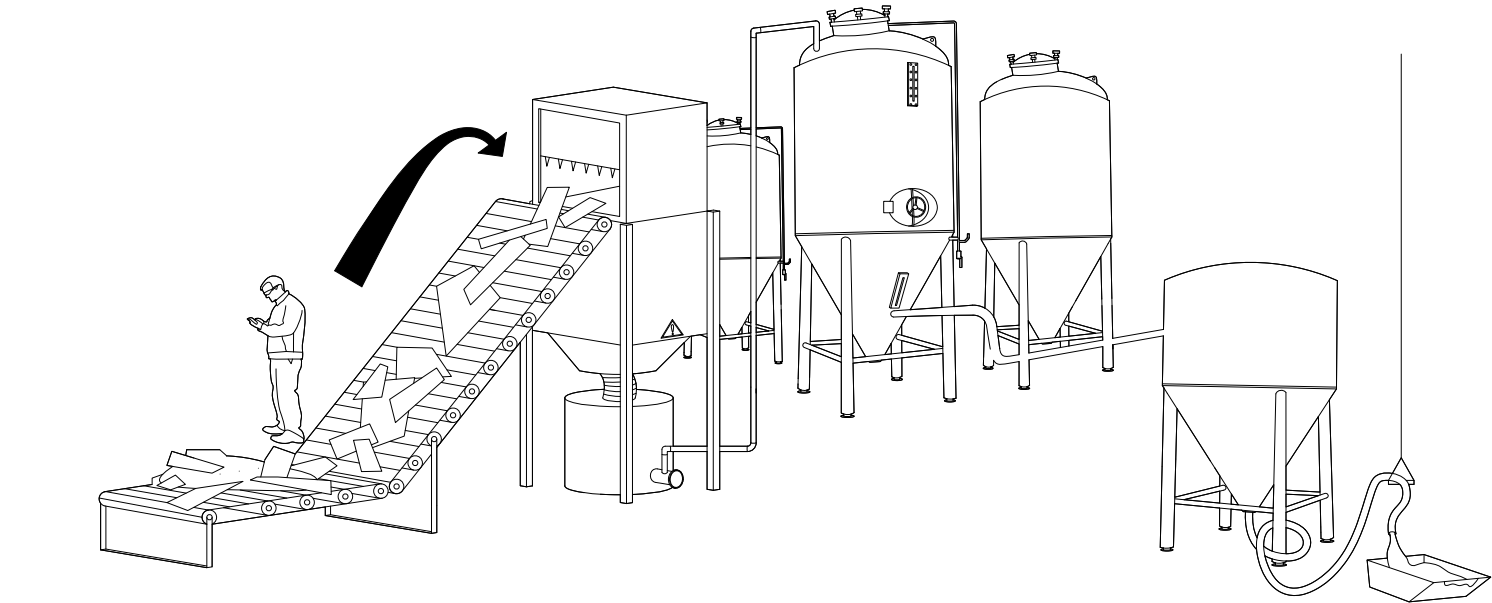


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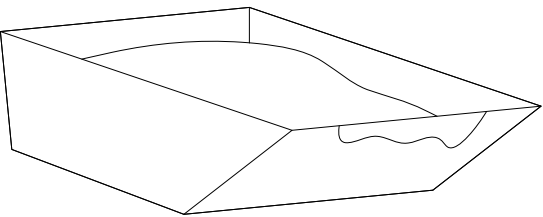
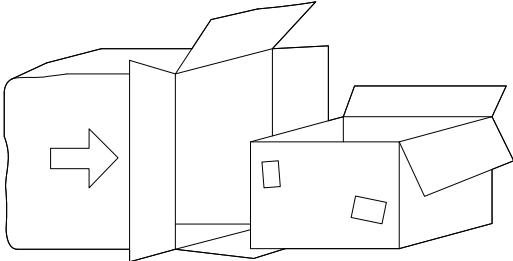
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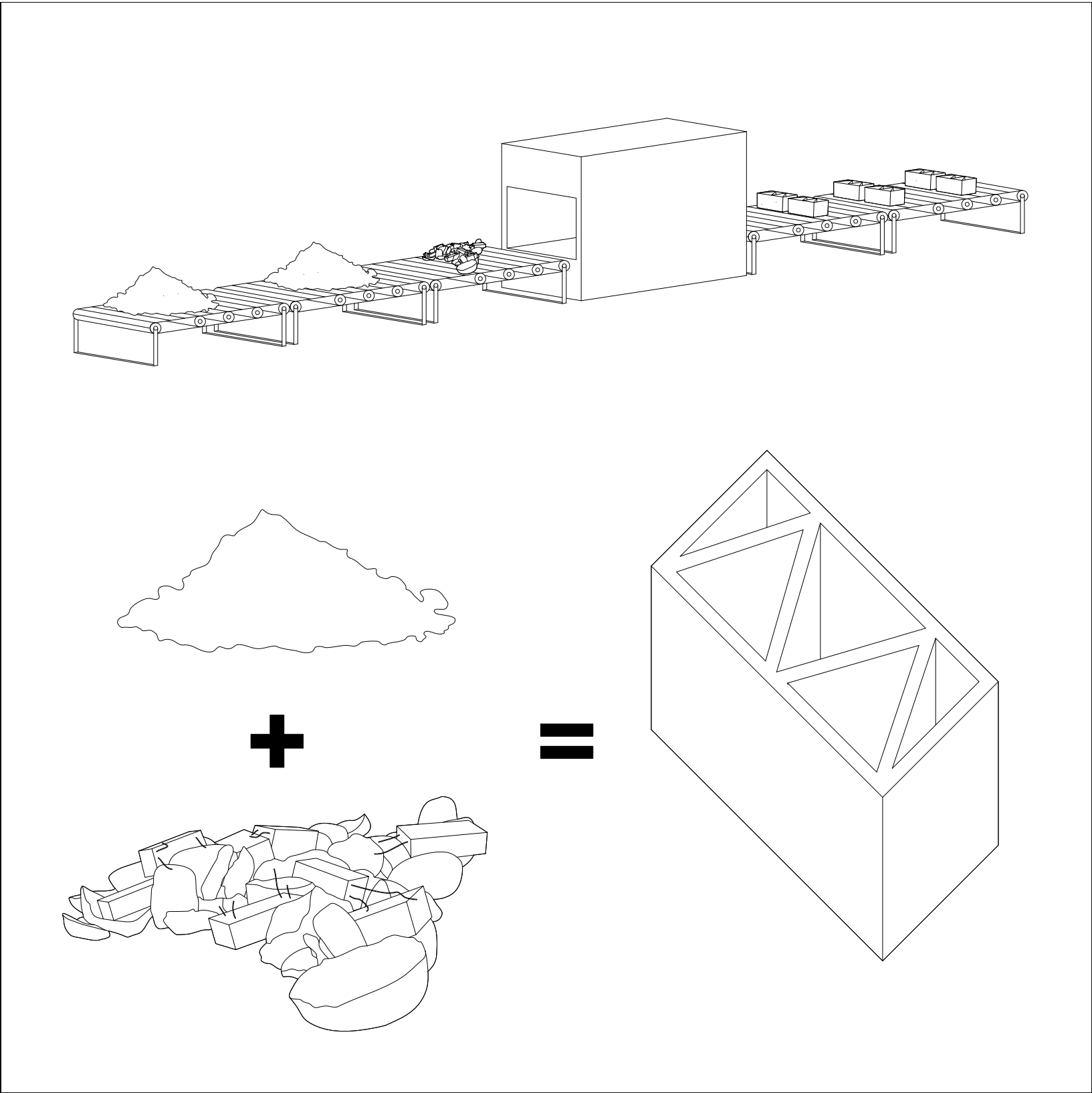
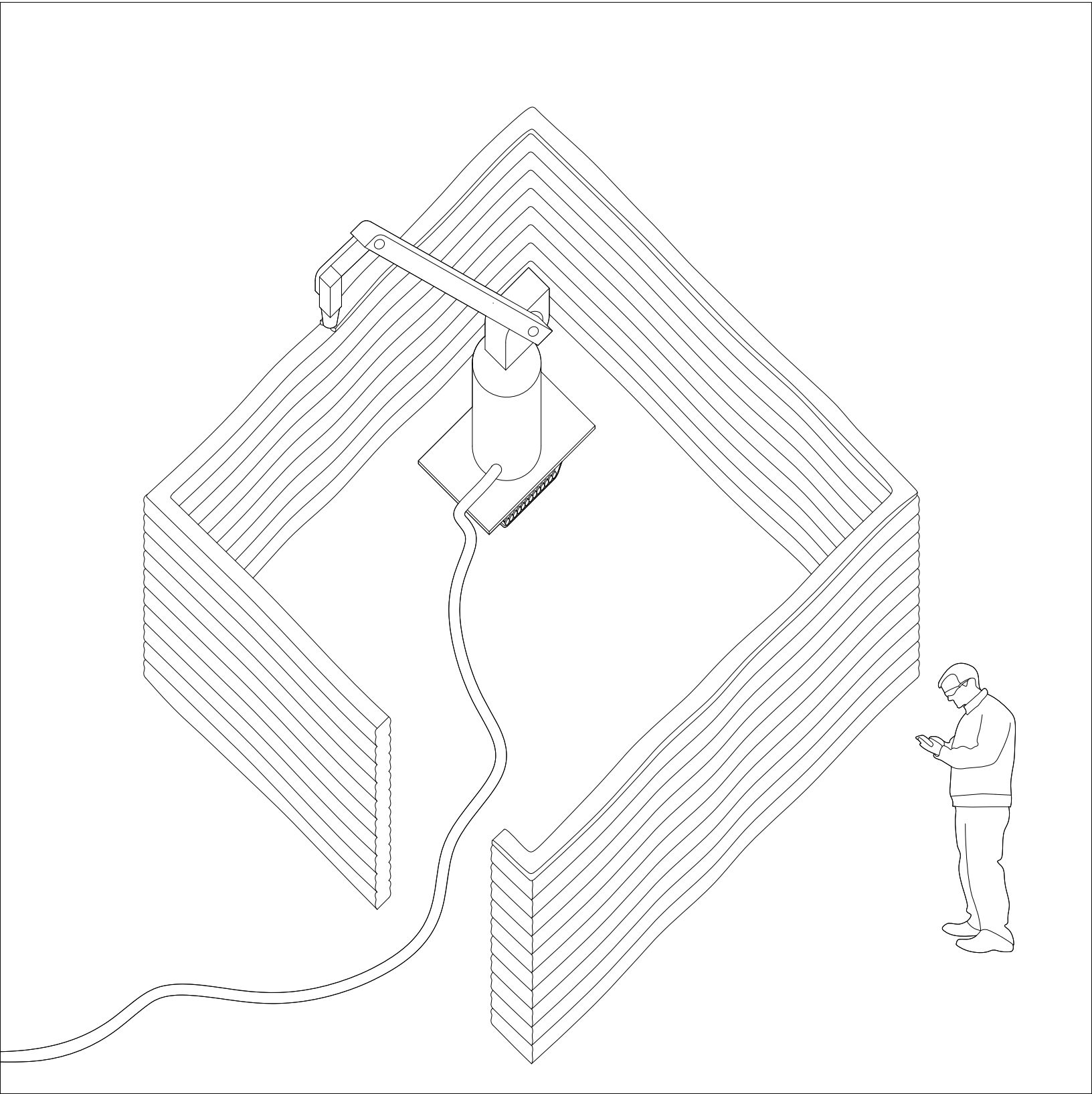
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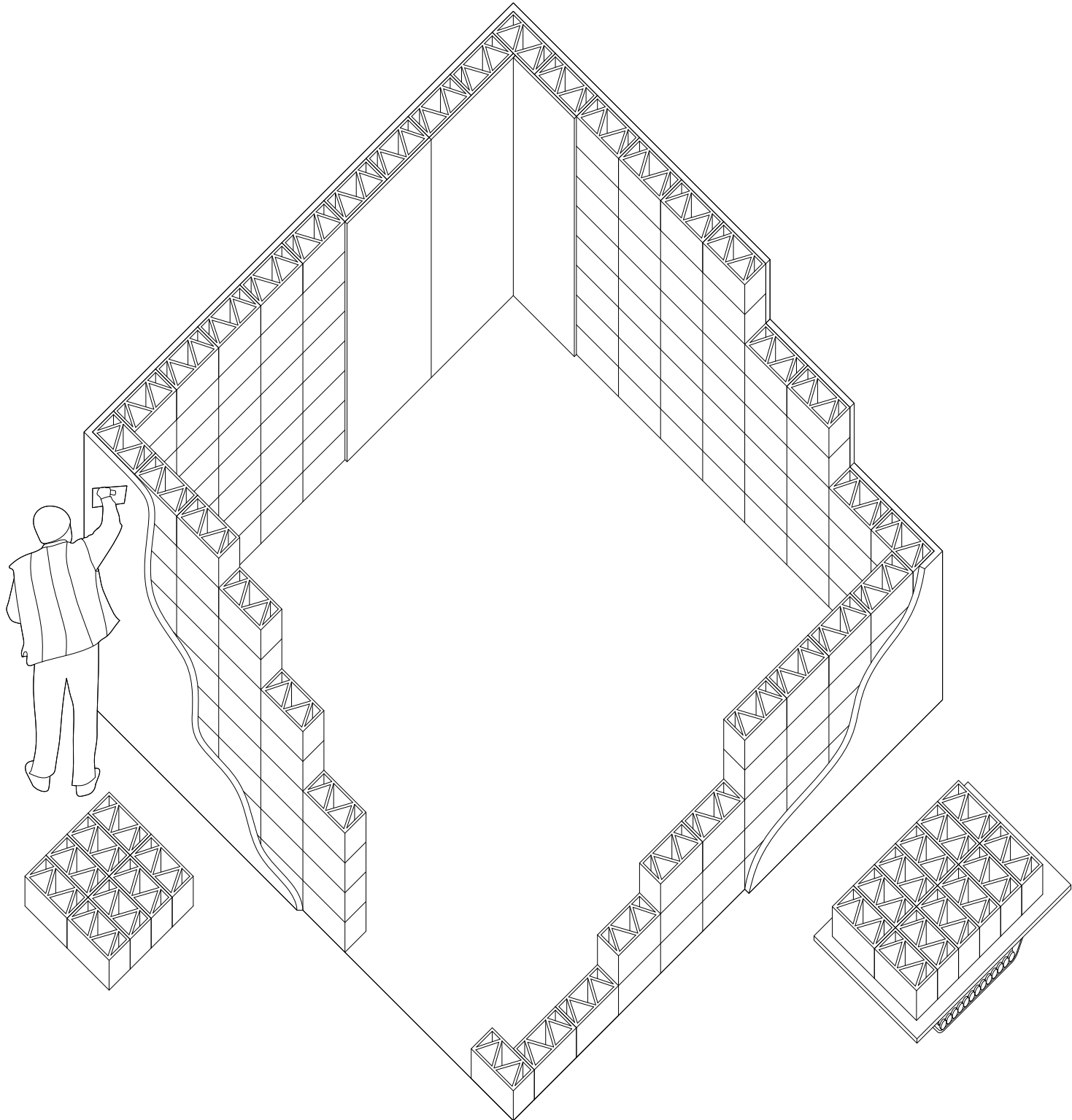


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