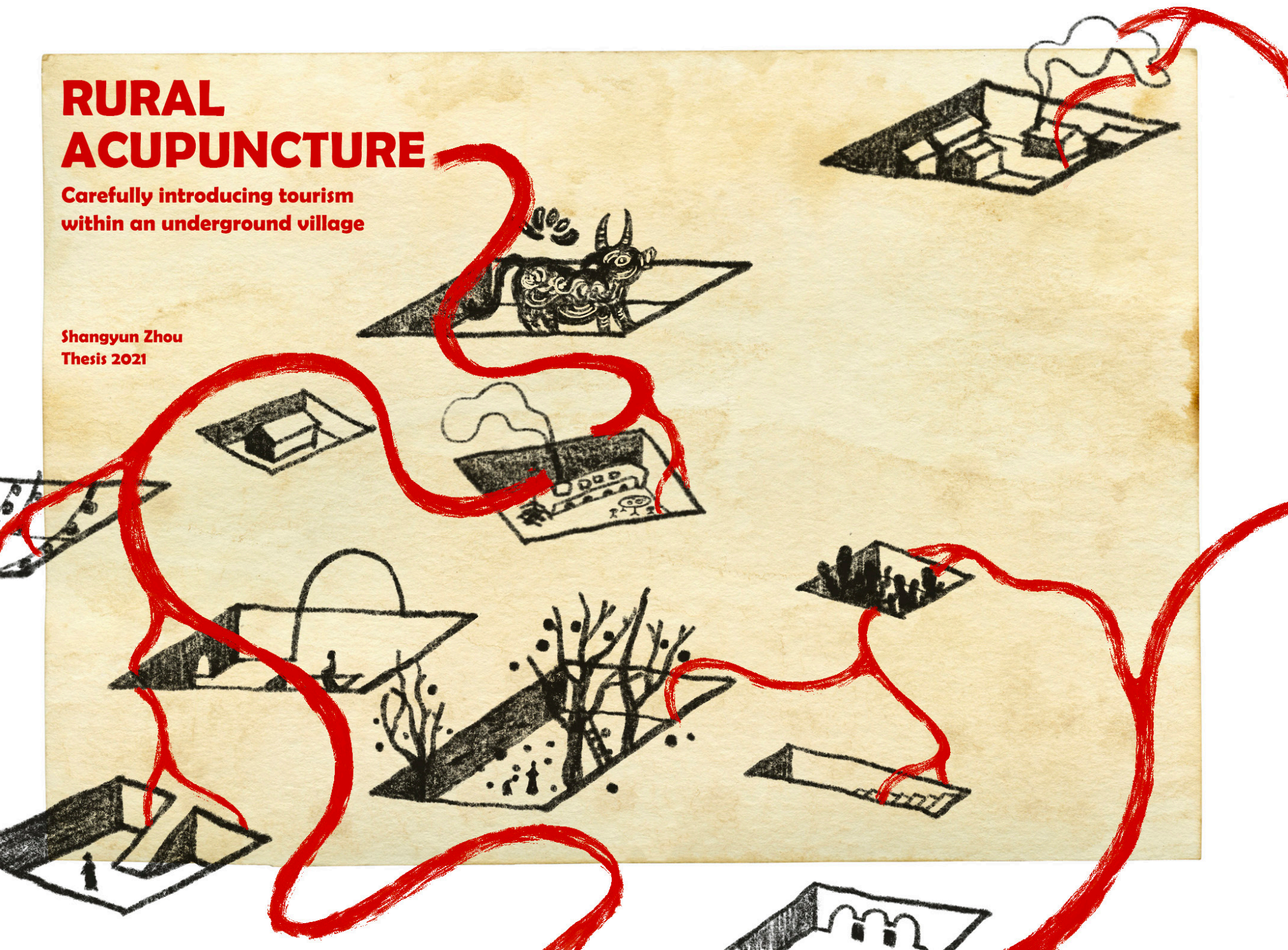


RURAL ACUPUNCTURE

Carefully introducing tourism
within an underground village

Shangyun Zhou
Thesis 2021



Thesis Proposal Book
Spring 2021
Shangyun Zhou

Rhode Island School of Design
Department of Interior Architecture

Rural Acupuncture

Carefully introducing tourism within an underground village

A thesis submitted in partial fulfillment of the requirements for the degree
Master of Design in Interior Studies [Adaptive Reuse] in the Department of
Interior Architecture of the Rhode Island School of Design

By
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2021

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ABSTRACT

Di Keng Yuan(地 坑 院) are traditional cave dwellings in northern rural China, with a history of over 4,000 years of use. Today, living in Di Keng Yuan represents poverty and lower social status. Most Di Keng Yuan are ignored and abandoned by local people more interested in urbanization and the evolution of society. Yaodi Village is facing such a challenge of hollowing, meaning 1.young rural labor flows spontaneously into big cities, resulting in increased rural aging and 2.residents living in rural areas have gradually moved to the surrounding areas, resulting in the abandonment of cave dwellings, and the village is becoming a shell with no life. The original community has gradually lost its vitality. The architecture and social network of Yaodi Village are fragmented. In the past, the role of the Chinese village was to support rural life and produce, through planting and raising livestock, but now culture and tourism have become the two fastest-growing industries in rural China. People in cities are eager to return to the countryside to enjoy nature and recover a lost lifestyle. However, in many instances the countryside has been over-developed for tourism, resulting in the destruction of the original environment, local residents' lives and traditional folk culture. The tourism experience under this development model runs counter to the original rural life and destroys everything it touches. **This thesis aims to formulate a new development model for rural tourism that forges connections between community members and beyond, between villagers and visitors.**

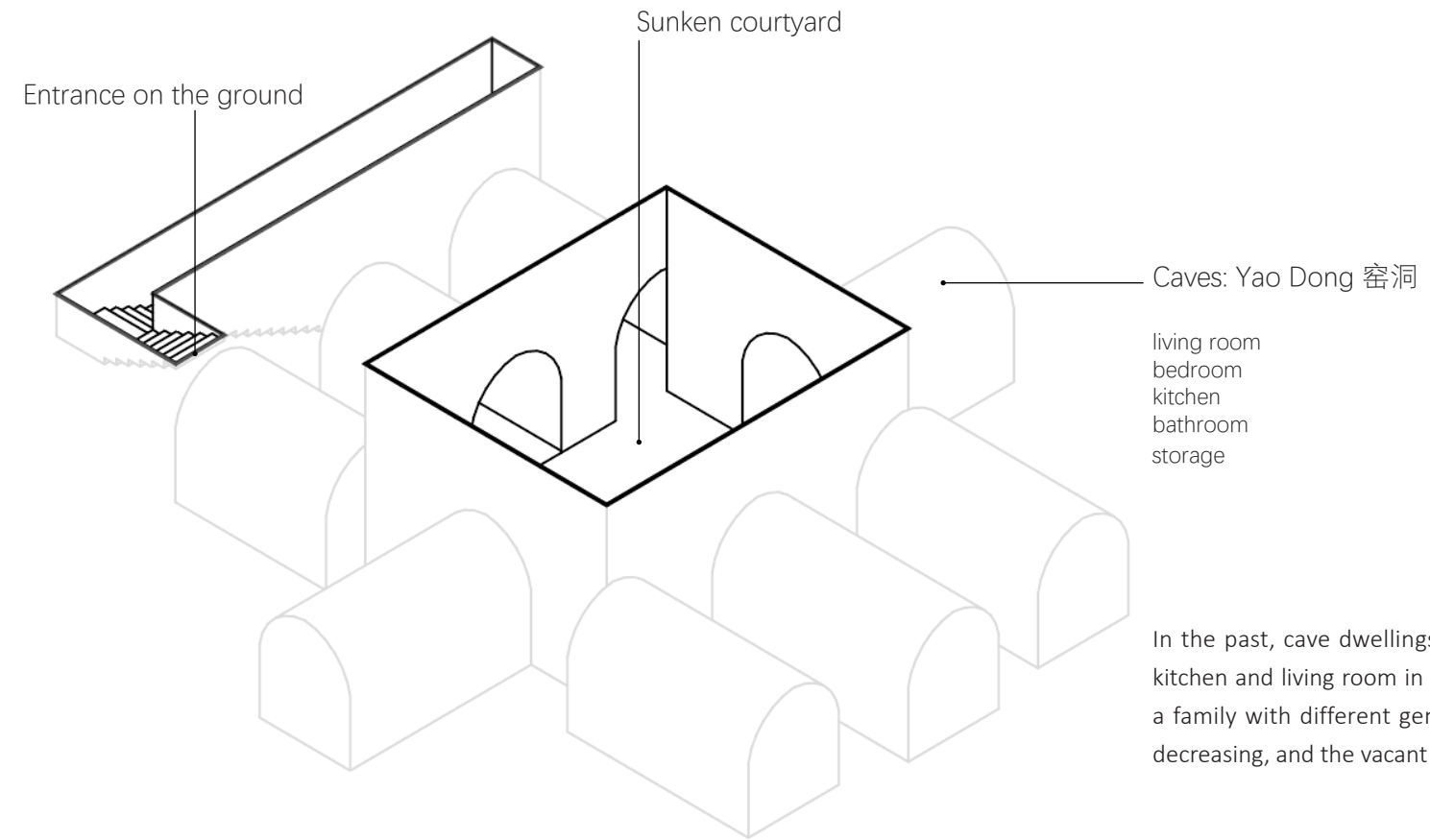
The concept of “rural acupuncture” is a sustainable way to revitalize Yaodi Village. Phased interventions that insert small-scale architectural functions into the village that relate to its historical context will introduce urban resources to Yaodi Village and improve conditions for long-time residents. By repairing and renovating Di Keng Yuan, I propose to boost tourism while maintaining the regional identity and creating cultural experience. “Rural Revitalization not only constructs buildings in rural regions, it integrates the economic, social and cultural aspects and presents a more synthesized complexity.”¹ Rebuilding communities holistically requires villagers and visitors to participate in the renovation activities together, in the process reclaiming ownership of their hometown. This will spontaneously lead to sustainable rural maintenance and development, perpetuating folk culture and facilitating exchange between urban and rural people. **The transition to tourism of vernacular architecture is not the ultimate goal, but instead a way to revitalize the countryside and rebuild the regional identity of the local community.**

1 Interview goood x Xu Tiantian, DnA_Design and Architecture on goood, October 25, 2019

INTRO TO DI KENG YUAN 地坑院

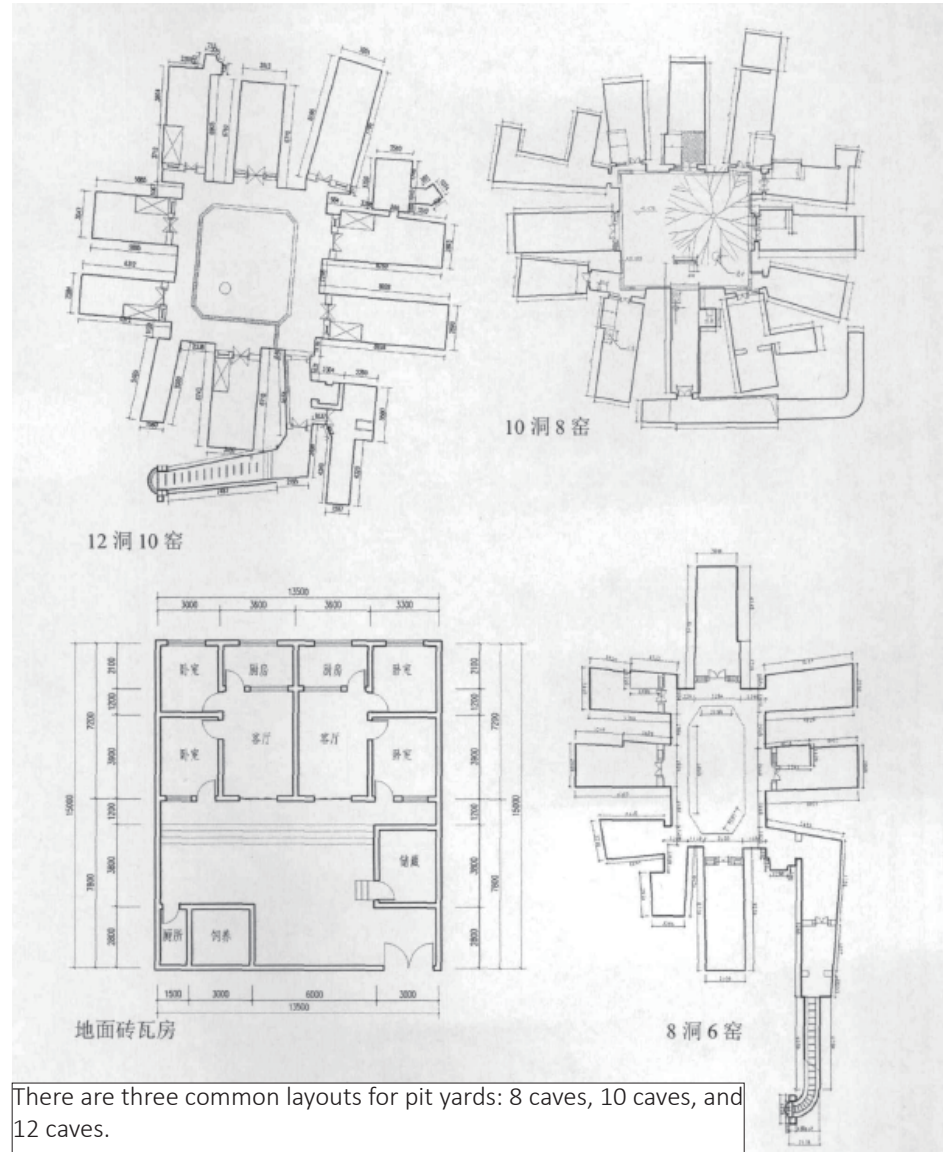


Di Keng Yuan is a kind of underground cave dwellings in northern rural China. This is in the arid area of the Loess Plateau, where there are no mountain slopes and gullies available. Farmers skillfully use the characteristics of loess to dig a square pit on the spot, and then dig caves on the four walls to form a sunken cave dwelling. Di Keng Yuan is excavated downwards by using the natural terrain, and the structure is integrated with the earth, so there is almost no trace of that on the ground. The style of Di Keng Yuan is quite different from that of ordinary brick-concrete buildings. This unconventional construction method is the greatest value and charm of Di Keng Yuan. Warm in winter and cool in summer, this type of dwelling does not require special materials for the construction, just the earth of the Loess Plateau itself, and as such it is very cheap to construct and maintain.



In the past, cave dwellings were multifunctional, usually mixing the bedroom, kitchen and living room in one cave. A Di Keng Yuan can meet multiple needs of a family with different generations. Now the population in the countryside is decreasing, and the vacant caves are used as storage rooms and kitchens.

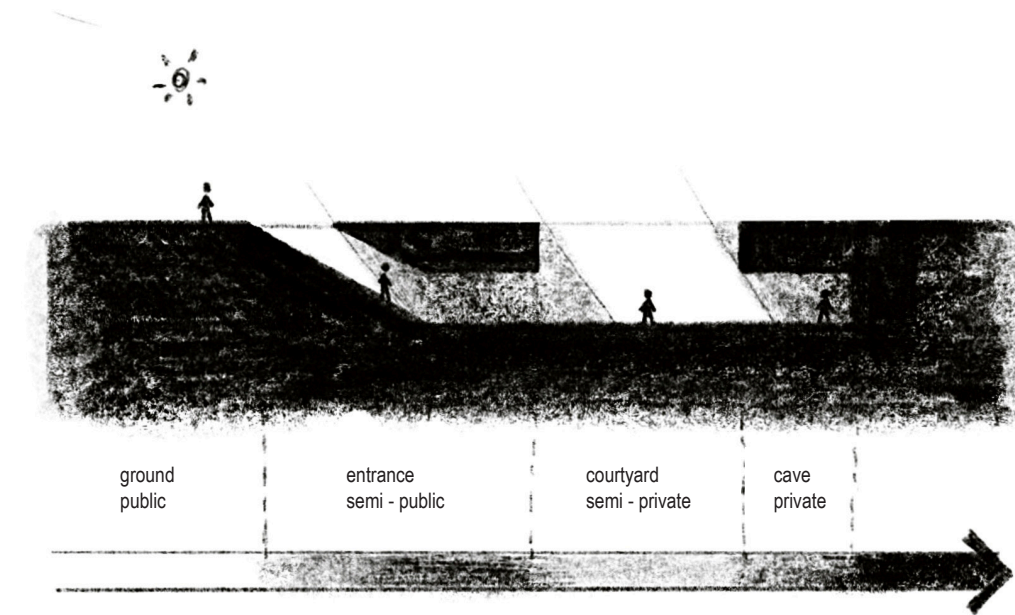
Types and spacial analysis



There are three common layouts for pit yards: 8 caves, 10 caves, and 12 caves.



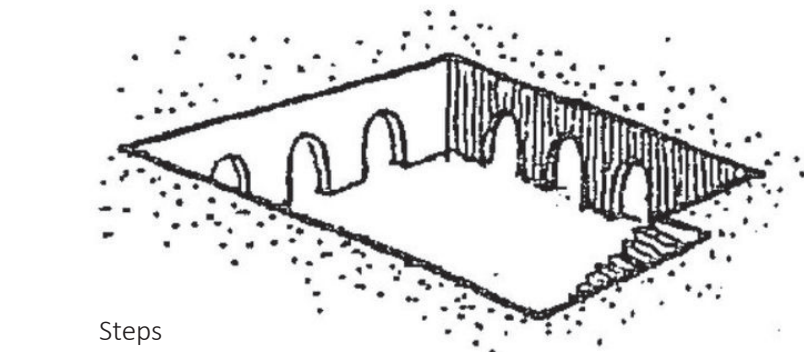
The more caves in Dikeng Yuan, the single function of each room, and the more spacious courtyard, which can hold the outdoor activities of large families. People living in the narrow Dikeng Yuan, usually build additional house in the yard for cooking or storage.



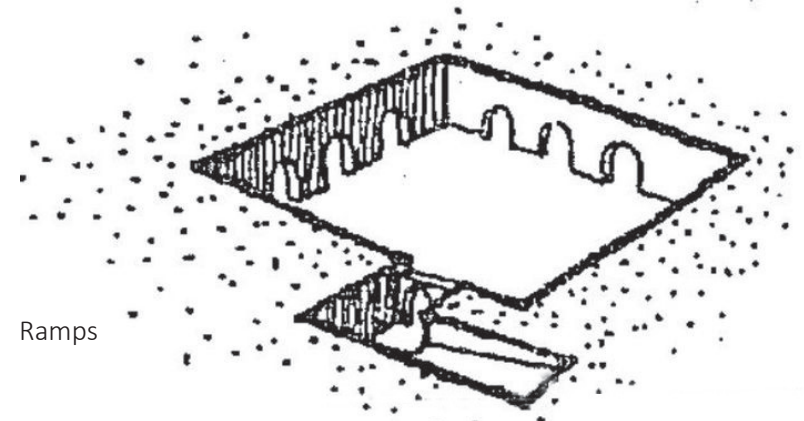
From the public space on the ground to the semi-public space of the courtyard of the underground residents, it needs to pass through a certain level of circulation. This circulation organizes the various spaces and forms a hierarchical layout according to the degree of publicity in people's use.¹

¹ Zhao, Weixia, Regeneration and protection of independently constructed cave-dwelling. April 2010.

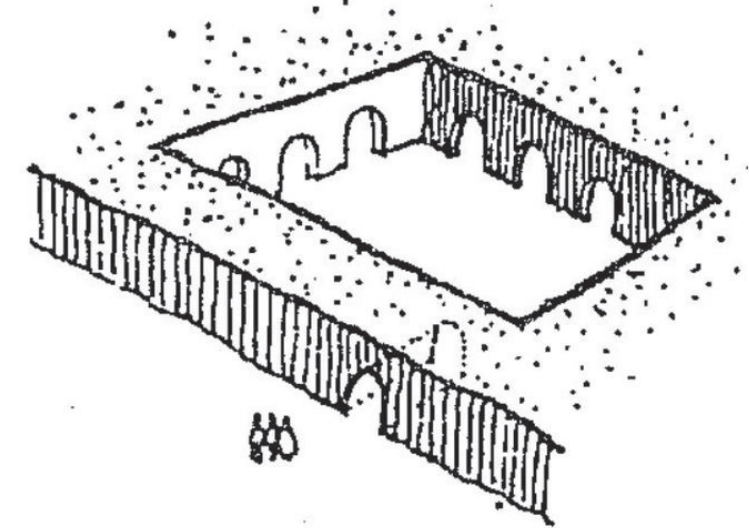
The entrance



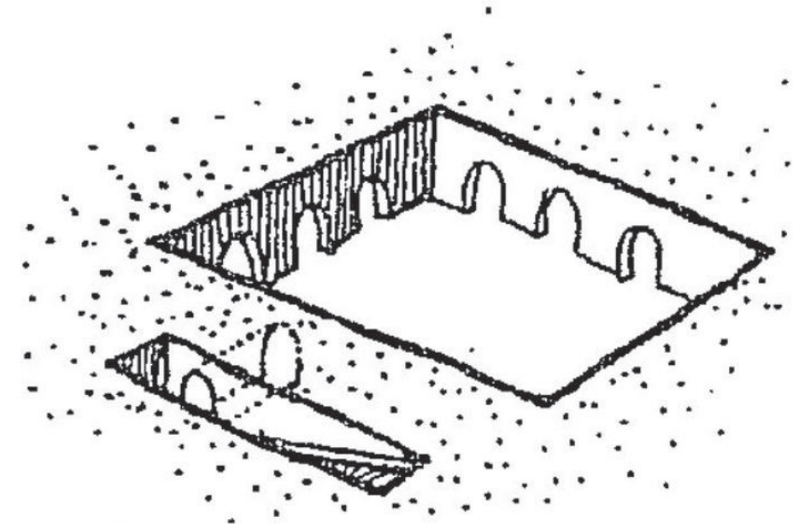
Steps



Ramps



The straight passage

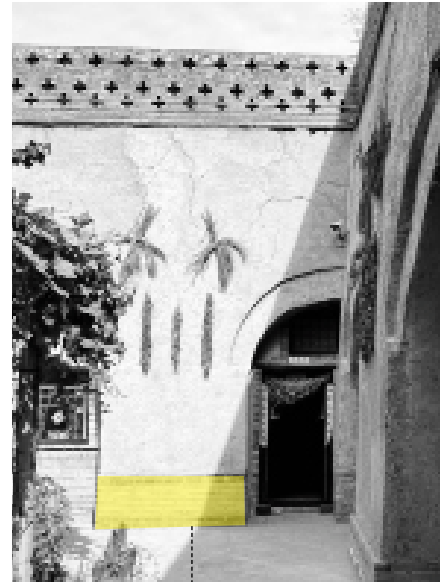


Steps and ramps (most common)



The entrances of each Dikeng Yuan are independent, and each Dikeng Yuan is not connected. The relationship between the entrance and the courtyard is not clear on the ground. The ground space is completely public, there is no definite path on the ground leading to each Dikeng Yuan. Trees are used to divide the space and determine the circulation. Private circulation includes different heights, and public circulation occurs only on the ground-the flat surface.

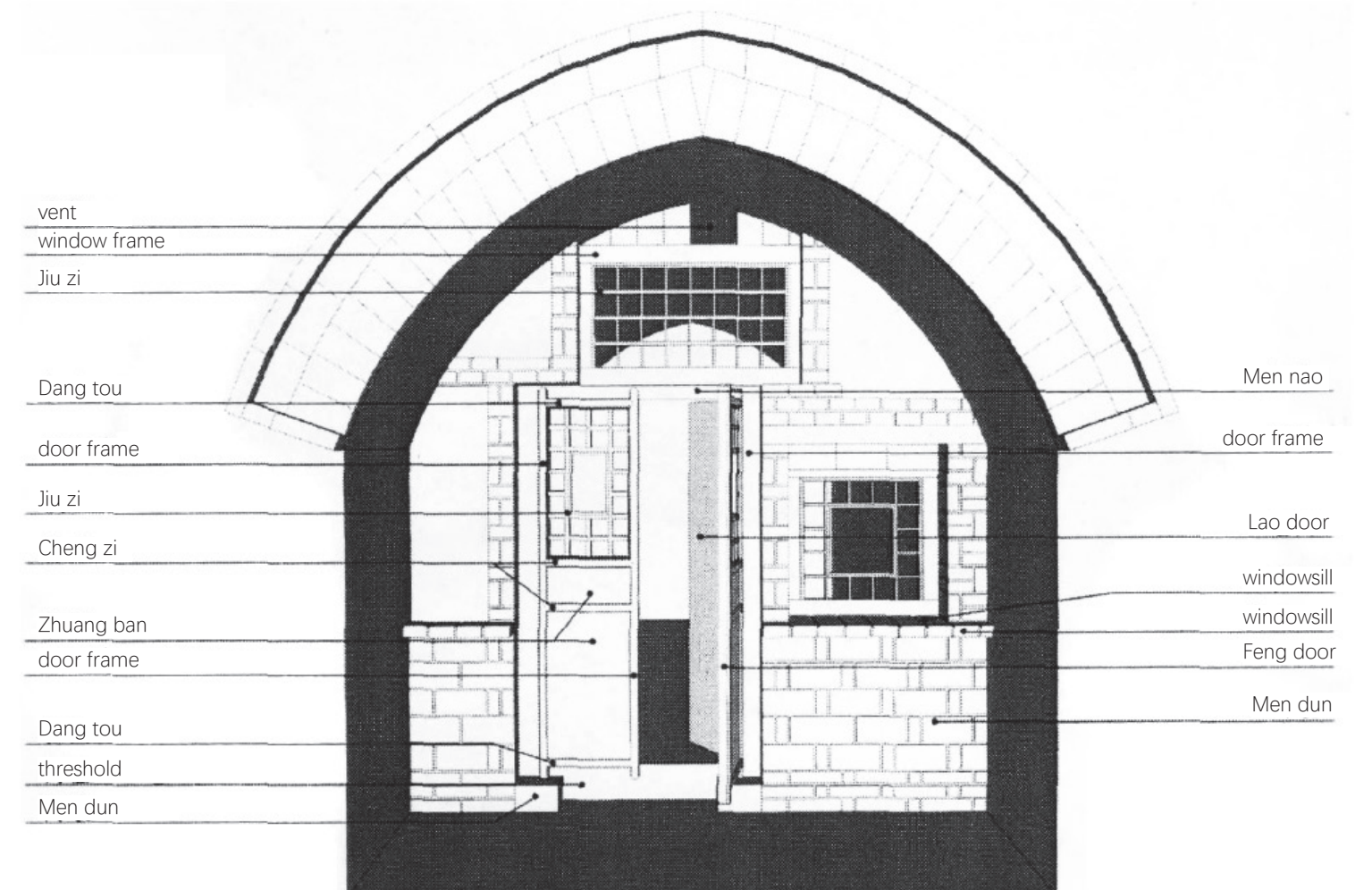
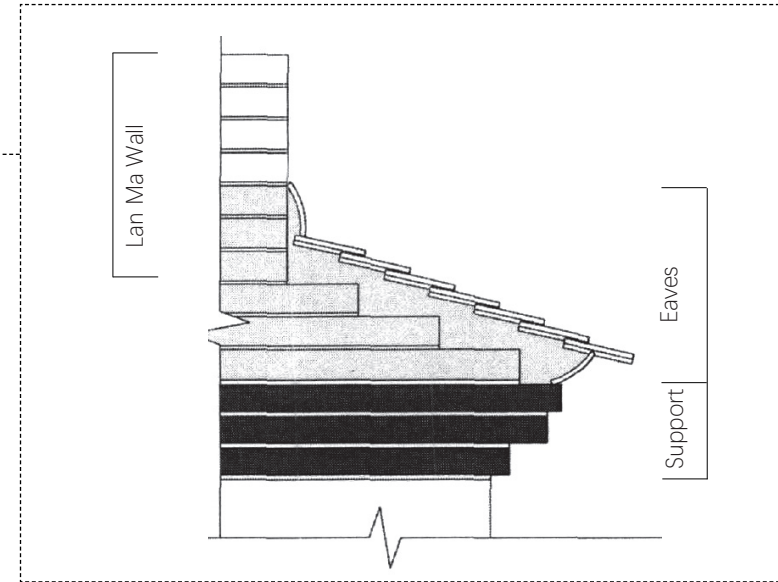
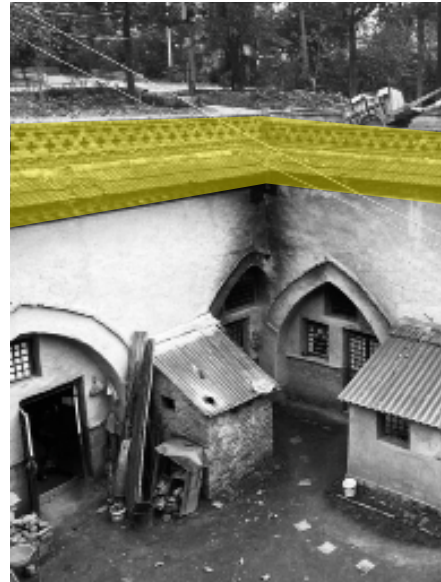
Details of Dikeng Yuan



Le Jiao Wall

Le Jiao Wall is at the bottom of the wall to prevent rainwater from damaging the surface of the earth wall. Brick is the main material.

Lan Ma Wall in Chinese means "stop the horse" and is used to prevent people and livestock from falling into the yard. The eaves are usually built together with it to prevent rainwater from directly splashing on the wall and shorten its service life. Bricks and tiles are the main materials.



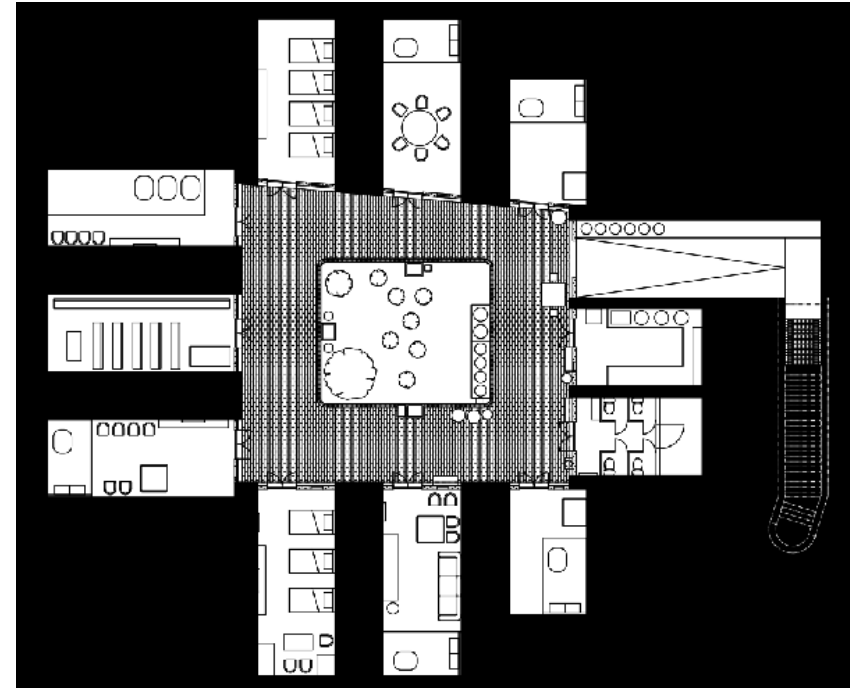
The threshold is closed in winter to prevent heat loss, and opened in summer to enhance indoor ventilation.¹

¹ Zhao, Weixia, Regeneration and protection of independently constructed cave-dwelling. April 2010.

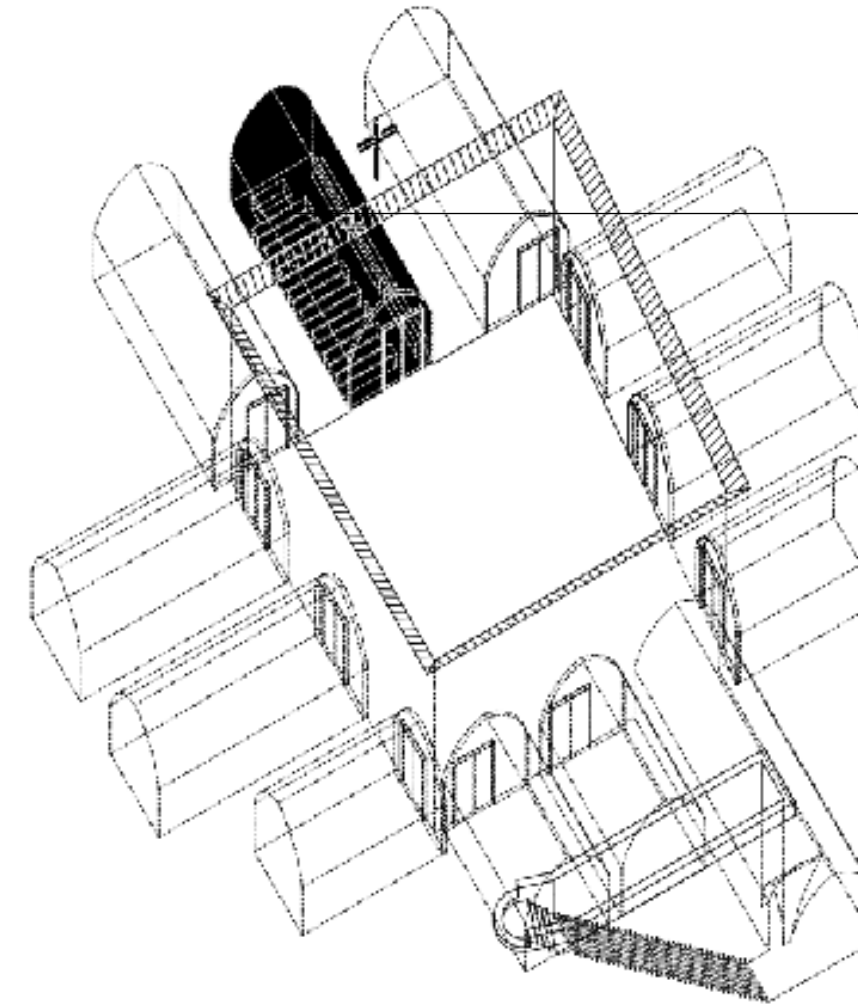
CASE STUDY:

CHURCH HOUSE QU VILLAGE, SHANXI PROVINCE

Programmatic adaptation was prevalent in the Di Keng Yuan of Shanxi province. Government subsidies encouraging residents to transform once abandoned houses into restaurants or hostels followed the listing of dugout houses as UNESCO World Heritage sites. Programmatic adaptation often led to the introduction of comforts that were previously unknown, including ventilation, piped water, heating and toilets. This example comprises an exemplary mixture of programs, bringing together tourists visiting from urban areas and members of local community for weekly religious services which are tolerated by authorities. After renovation, this family established a chapel in one of the central rooms of their underground house. A cross projects from the ground marking the small, hidden church. As fewer dugouts are being used for residential purposes, this house proposes on a new communal program that takes advantage of the privacy offered by the sunken courtyard.¹



¹ Sony Devabhaktuni, Renovation Toolbox: Strategies for adapting vernacular architecture in rural China, September 2017- ongoing



Chapel

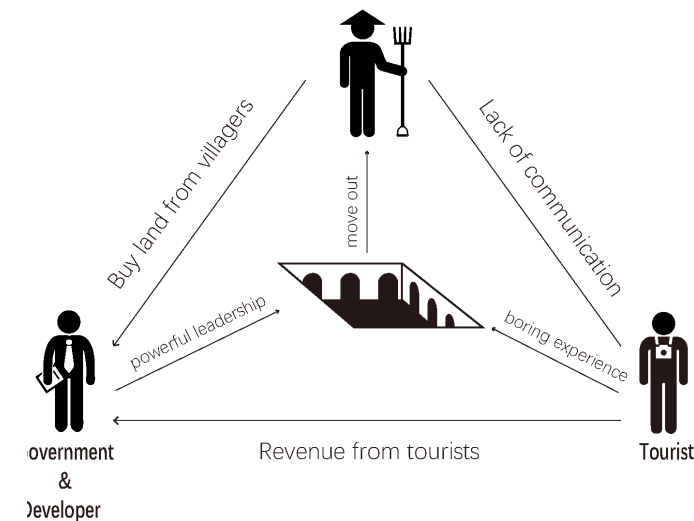
A long time ago, all the courtyards were constructed by the family members themselves. Sometimes it also involved neighbours' help, and you return the favour when the neighbours dig out their courtyards. People would first dig out the square shaped main YaoDong and move in.

When the rooms and the courtyard are occupied daily by the residents, it remains in its state almost effortlessly. When it's not occupied and left empty, it decays very fast.

As part of the renovation, they added ventilation pipes. The traditional courtyard rooms weren't ventilated properly. They used a tool called "Luoyang Chan" to dig a hole on the level above to pass the pipe in. Whenever the door opens, it ventilates.¹

¹ Sony Devabhaktuni, Renovation Toolbox: Strategies for adapting vernacular architecture in rural China, September 2017- ongoing

MOTIVATION



Existing tourism model based on Di Keng Yuan

The government and developers bought the land containing Di Keng Yuan from the villagers and developed it into a tourist attraction. Therefore, the villagers moved away from the original village, and the abandoned Di Keng Yuan was transformed into a folk museum. When tourists come here in droves, what they experience is not the original lifestyle, but an experience that is out of touch with the authentic rural life.

Dayan 大研, the Old Town of Lijiang is the historical center of Lijiang City, in Yunnan, China. "Most of the Naxhi inhabitants of the ancient city have moved away due to rising costs of housing and food items, only to be replaced by tourist establishments who pay huge rents to the Naxhi owners, now retired to the new town area. The growth of these tourism businesses is largely uncontrolled."¹ The influx of tourists has destroyed the original life and style, forcing people to stay away from their houses and communities. This phenomenon is very common in China's village reconstruction in recent years. Economic benefits have become the most important factor in judging regional development, but the spiritual and cultural needs of local residents have been ignored.

¹ "Old Town of Lijiang" In Wikipedia. https://en.wikipedia.org/wiki/Old_Town_of_Lijiang



1987



2016



One of the oldest Inn, Togakuboh 東学坊 established in 1600, Here, they can arrange sessions for meditation and transcribing sutras in Oyama Temple and Lower Afuri Shrine.



Local dishes: maccha tea and tofu

Oyama Town is located in Oita Prefecture in the southern island of Kyushu. Oyama's version of nature-based tourism includes themes like green tourism, landscape tourism and agriculture tourism. "Nature-based tourism activities in Oyama have helped the community members identify, conserve and capitalize on many latent local resources. Nature-based tourism in Oyama has also increased the promotion of farm products and local culture, income opportunities for local women and elderly, and the diffusion of implicit knowledge on traditional rural lifestyles and environment."¹ Under this development model, local people still benefit from traditional agricultural activities, which strengthens their identification with the community and traditional lifestyle. At the same time, visitors also joined the event, which realized the behavioral and spiritual communication between local residents and tourists. Tourists have a deeper understanding of traditional culture by experiencing authentic local life.

¹ Eid-UI Hasan, Nature-Based Tourism and Revitalization of Rural Communities in Japan: An Ethnographic Case Study of Oyama Town. *Journal of Social Science Studies*, November 5, 2016.

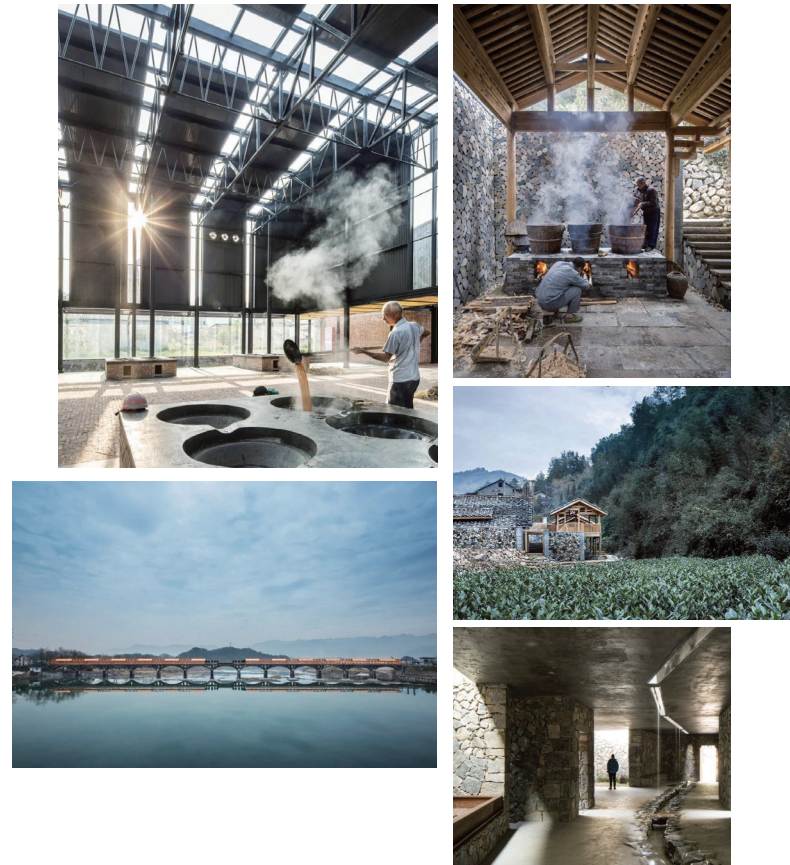
PRECEDENTS

Rural Revitalization in Song Yang

Song Yang, China, 2007, DNA

Based on the various conditions, projects are set up to best tackle program functions and designs. These small-scale renovations or new architecture scattered around different villages are conducted through an in-depth analysis of the traditional craftsmanship and the basic needs of each village. "Architectural Acupuncture introduces public programs to rural and villages, it restores village identity, recaptures its historical and cultural context, stimulates economic growth. It's a holistic approach."¹

In my project, Yaodi village also has unique cultural characteristics based on its traditional cave dwellings and folk culture. By intersecting new programs in the village and transforming abandoned Di Keng Yuan into new public architecture can reactivate the old village.



¹ Interview goood x Xu Tiantian, DnA_Design and Architecture on goood, October 25, 2019.

The Maosi ecological primary school

Loess Plateau, China, 2007, Edward Ng, Mu Jun

"Ng aimed to devise a building that would be low cost, dignified and environmentally sound."¹ Many local technologies and resources are used to build a primary school. The designer also cooperates with local villagers to facilitate public participation and build a sustainable community. After establishing and maintaining communities by themselves, villagers can deepen their understanding of ownership.

The environment of this site is almost the same as that of the Yaodi village. It is very important for local professional workers to provide traditional construction techniques and experience to transform the countryside.



¹ Ying, Li. Renovation of vernacular architecture in rural China. 2017. <https://www.tdx.cat/handle/10803/406043#page=16>

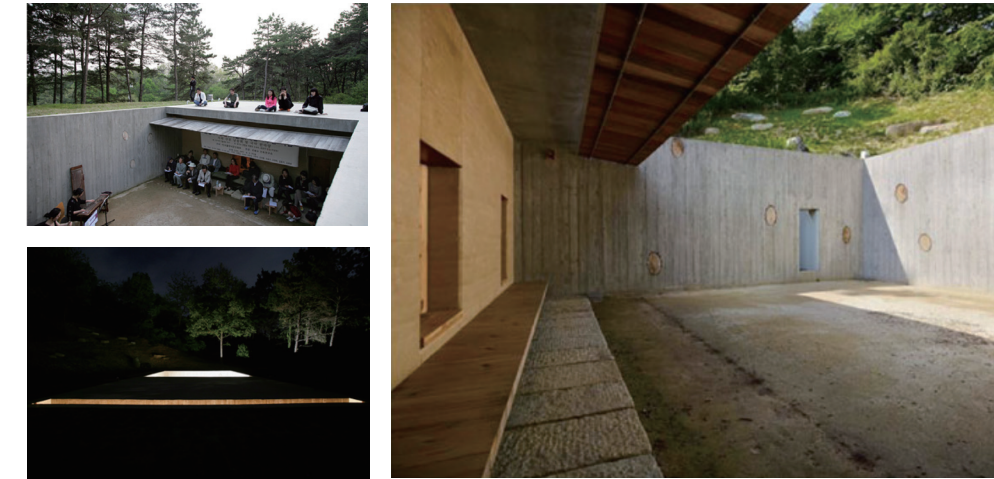
Sakura Apartment

Tokyo, 2011, Hitoshi Wakamatsu Architects

Sakura Apartment is a six-storey apartment building on a corner lot in Tokyo. "The seven box-like volumes are connected by concrete slabs, the exterior corridor spaces between them serving as shared terraces, having ambiguous distinctions between private and common territory."¹

Each cave in Di Keng Yuan is isolated, and caves are connected only through the central courtyard. This project provides a reference for how to further connect the various spaces and how to enrich the spatial hierarchy in Di Keng Yuan. This is conducive to enriching the level of space to meet people's different needs, while also increasing space experience.

¹ Hildner, Claudia. Future Living : Collective Housing in Japan. Birkhäuser, 2013.

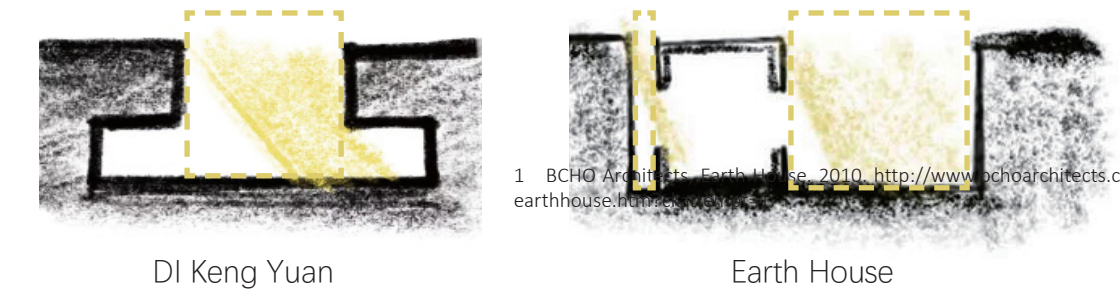
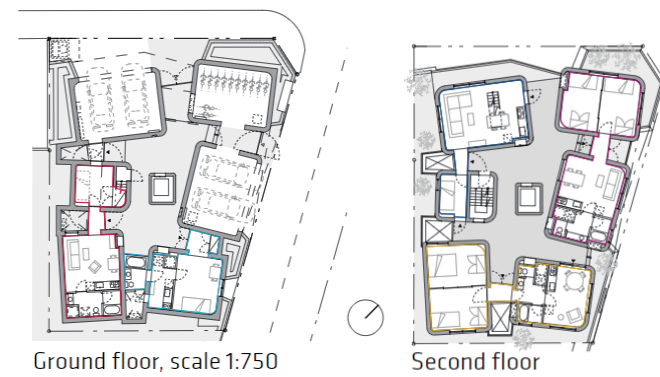
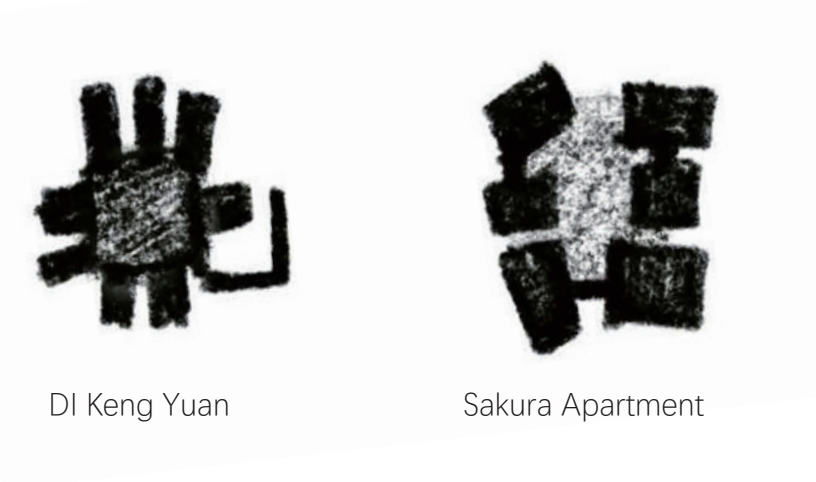


Earth House

Seoul, Korea, 2010, BCHO Architects

Earth House is a house of the sky. It is a house built in honor of Yoon Dong-joo, a Korean poet. "The house has a small kitchen, a study, two resting rooms, a bathroom with a wooden tub and toilet, and a wash room. The rooms are all adjacent to each other and open directly to the earth filled courtyard. Connecting rooms can be joined to create a bigger room."¹

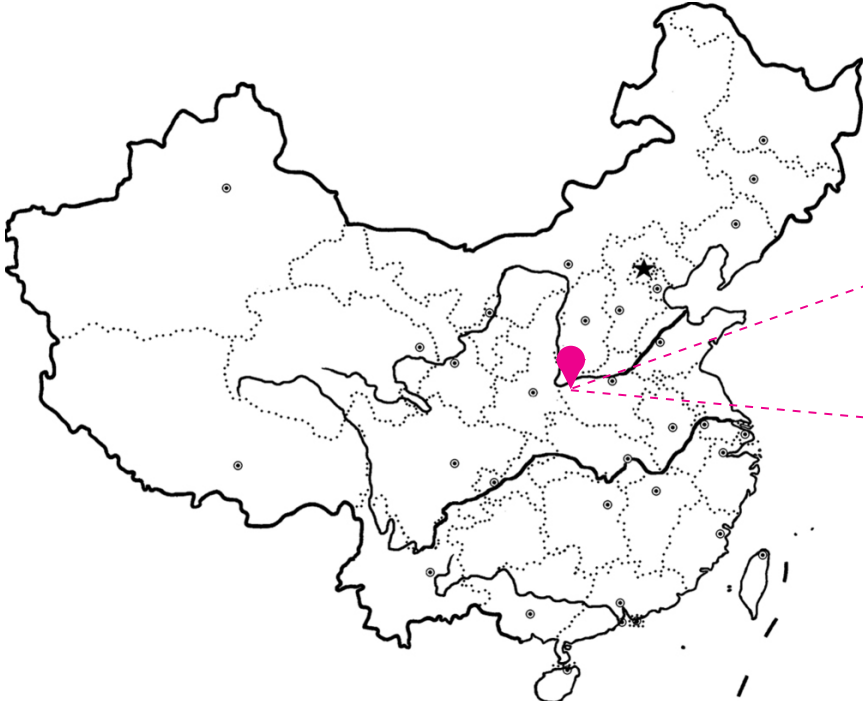
The house is lower than ground level but open onto the landscape around it, which is exactly the same as Di Keng Yuan. There is a gap introducing ventilation and light into the underground space between earth and the concrete box, which can be used in Di Keng Yuan to improve the living condition. This gap also creates another more private courtyard for people to enjoy the outdoor environment without being disturbed by public activities.



¹ BCHO Architects, Earth House, 2010. <http://www.bchoarchitects.com/main/earthhouse.html>

SITE: YAODI VILLAGE

Site location :
Yaodi village, Shanzhou District, Sanmenxia, Henan Province, China



Folk culture



Paper-cutting workshop and exhibition



Chuan Shan stove



Traditional local wedding

There are some special folk activities in the area where the Dikeng Yard is located. Paper-cutting is often accompanied by opera activities. Some people sing and play, and some people listen to the opera and cut paper. The two activities are carried out at the same time, forming a unique atmosphere. This kind of activity usually takes place in courtyards or on the ground. The courtyard and the connected ground have increased the possibility of being watched by others. The banquet is an important part of the wedding. According to local customs, almost all people in the village will come to the banquet. The courtyard space is often unable to meet the needs, so the banquet will extend to the space above the ground.¹ The boundaries and ownership of the ground become blurred, making the entire scene continuous and vibrant. Chuan Shan stove 穿山灶 can meet the needs of people cooking at the same time. When there are activities, people will cook and eat together in the courtyard.

¹ Li Jiandong, Song Yating, Relationship Between Folk Activities and Village Public Space: A Case Study of the Cave-dwelling Village of Shan County, June 25, 2012

Shared kitchen:
Chuan Shan stove 穿山灶



Outdoor public activities
Traditional performance

Culture
&
Tradition



Sun-dried crops



paper cutting

Voice from local people



Migrant workers(Li):

The village is poor, **how can one raise a family by farming?** If the village develops well, I don't want to go to the city to work. I have no relatives and no reason. **We need to work hard in a big city to make a living**, even lose life! There is no way to take root there, my hometown is still my root.



Villager(Wang):

Now the YaoDong can't fit new furniture and the light is poor. Who doesn't want to build a house on the ground if he has enough money? There are **buildings in the city**, they are definitely **better than our earthen houses!**



Villager(Li):

We did renovations, and we hired people for construction. We couldn't do it ourselves as it **requires professional skills**. But the government encouraged every family in the village to initiate renovations to their courtyards.



Villager(Zhang):

In the past, villagers could build cave dwellings by themselves as a family unit, but now that **young people are gone, traditional construction techniques have almost disappeared from the village**, and only professional old workers can repair houses.



Villager(Zhang, aged 8):

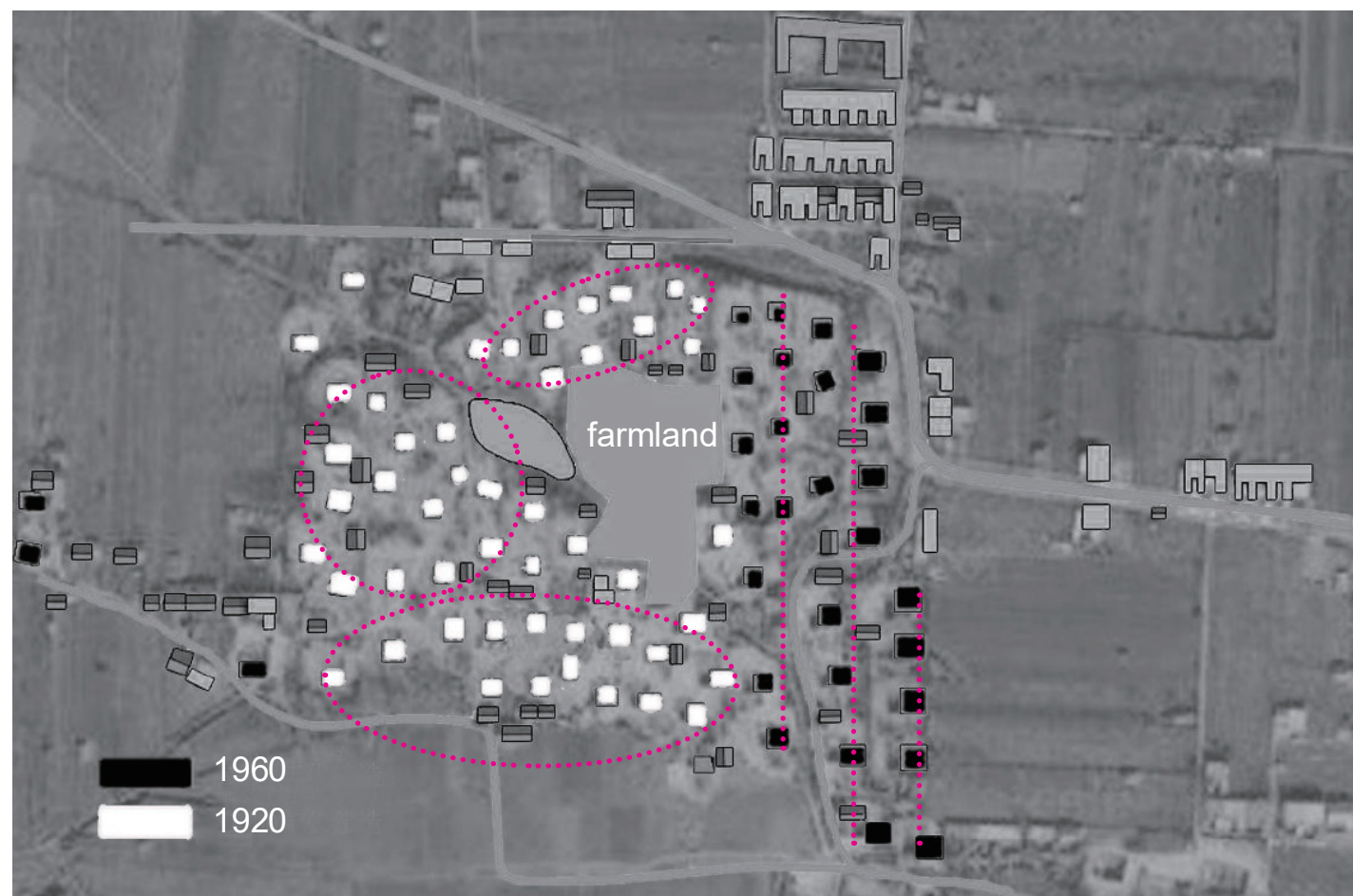
Mom and Dad only come back during the Spring Festival. I usually stay with my grandma and little brother. They told me that **I should study hard and go to the city so that I can have a future**. I like my home because here are my friends and grandma, but I miss my parents.

People who visit Di Keng Yuan



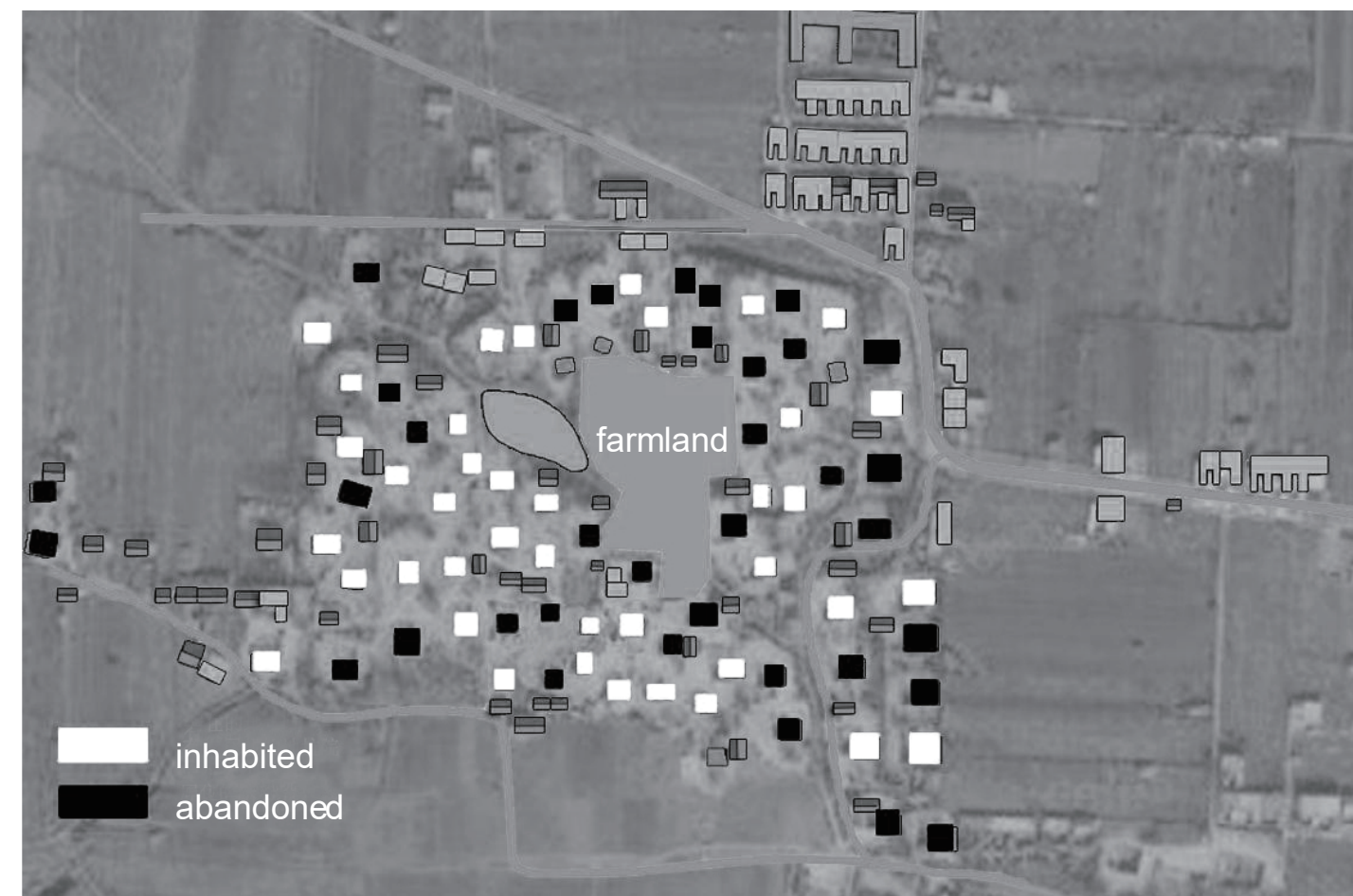
Some cave dwellings around have been transformed into scenic spots, but most of the people who visit here are mainly elderly people. It seems that young people are not interested in the traditional culture here, and even hold backward prejudices. They believe that rural culture is a manifestation of lagging behind the times, and this aesthetic does not conform to the current trend.

Villagers are struggling between the countryside and the city. Traditional cave dwellings can no longer meet the needs of modern life. People decisively abandon the traditional way of life for convenience. The buildings in the city seem to be a powerful totem for the villagers, attracting people to go to the city, and those who cannot go to the city also want to build a concrete square box in the hometown. It seems that this is a sign of getting rid of poverty.



Di Keng Yuan built in different periods

The early Di Keng Yuan were built in the 1920s. The village was distributed in blood clusters, and the houses were organized around the houses of the oldest in the family. In the 1960s, due to the increase in the population of the village, the size of the village needed to be expanded, but the original layout pattern of family units was no longer maintained. The newly built houses were mainly concentrated on the east side of the village, forming a relatively regular column.



Usage conditions of Di Keng Yuan, 2014

After the 1990s, people's income increased, and villagers began to build houses on the ground, and many Di Keng Yuan were gradually abandoned or even buried. The original form of Yaodi Village was gradually destroyed, and the rural fabric began to develop in disorder.¹

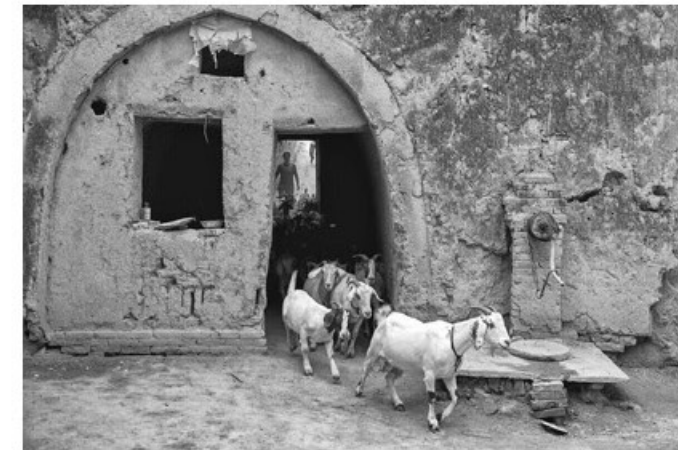
¹ Wang Luping, The protection and utilization research of Yaodi Pit House Village at Shan County, May 2014.

Usage of Di Keng Yuan

In Yaodi Village, almost half of Di Keng Yuan were abandoned, the inside of the cave was partially collapsed, and the yard was full of plants. Some uninhabited Di Keng Yuan are used to raise livestock and store items. Inhabited Di Keng Yuan are often accompanied by loose structure, and the indoor space cannot meet people's modern life needs.



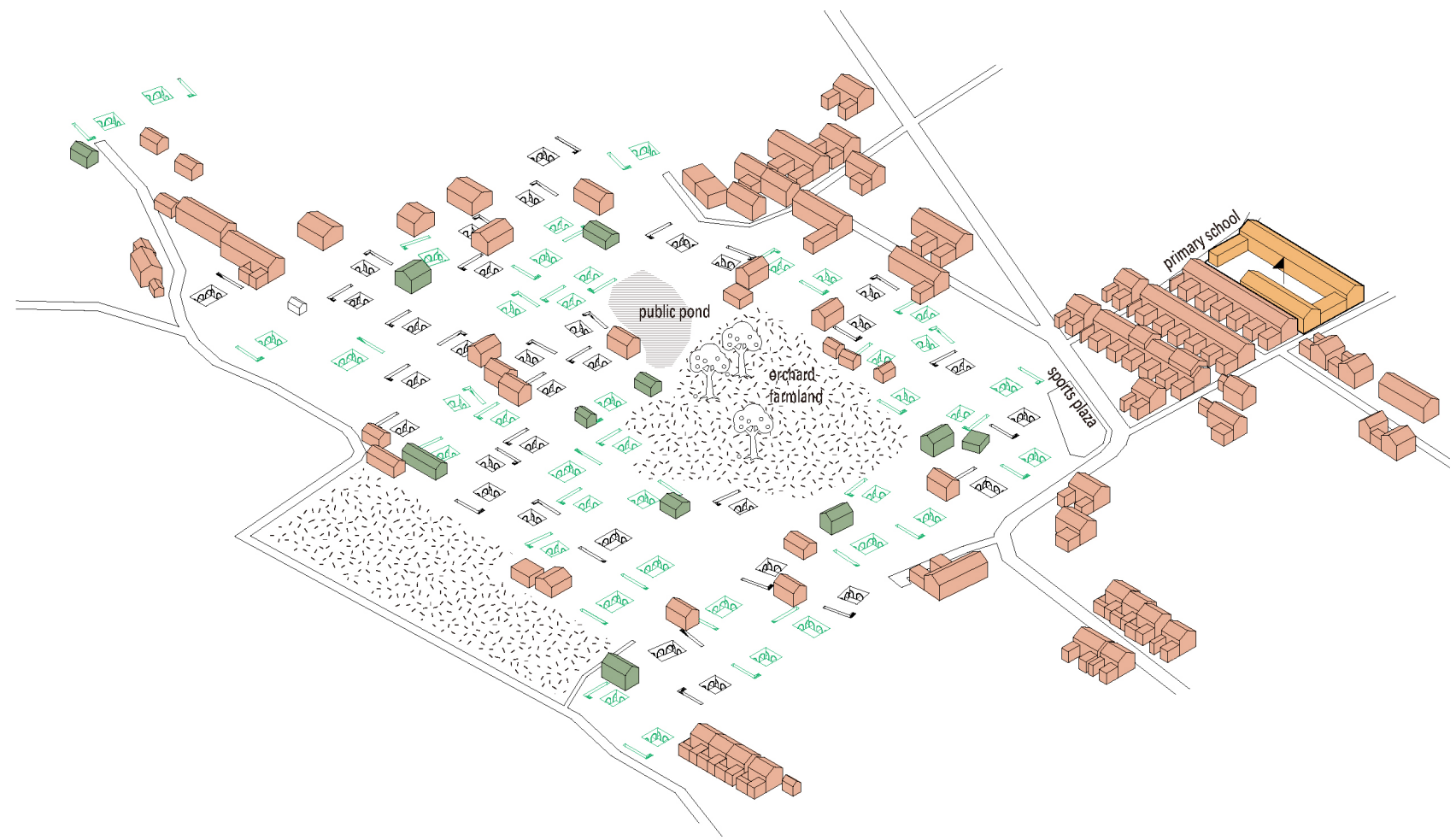
Abandoned





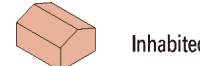


For storage & livestock

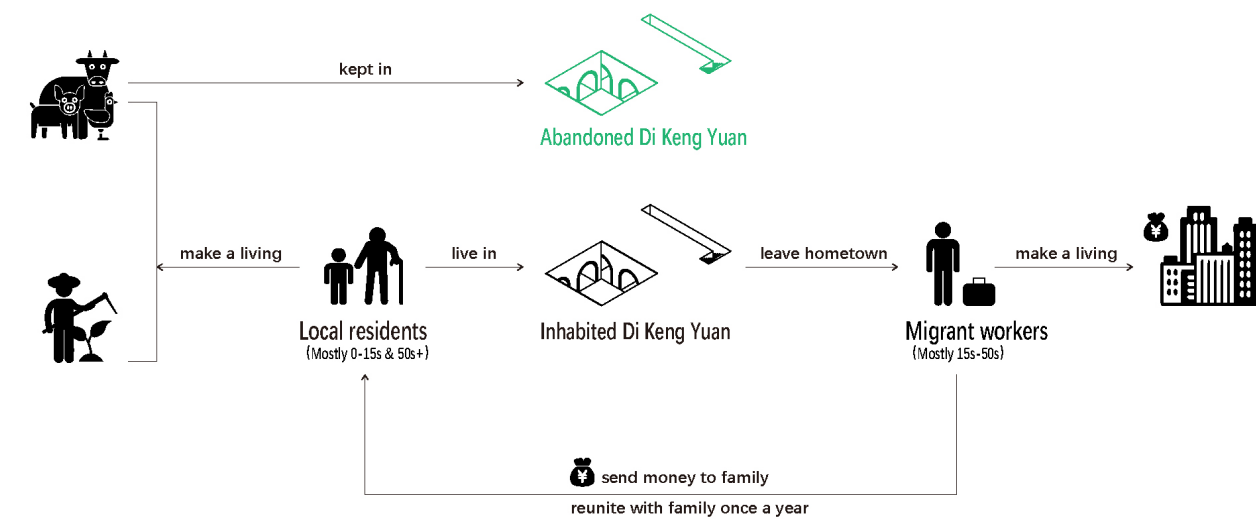


Inhabited



EXISTING SITE CONDITION

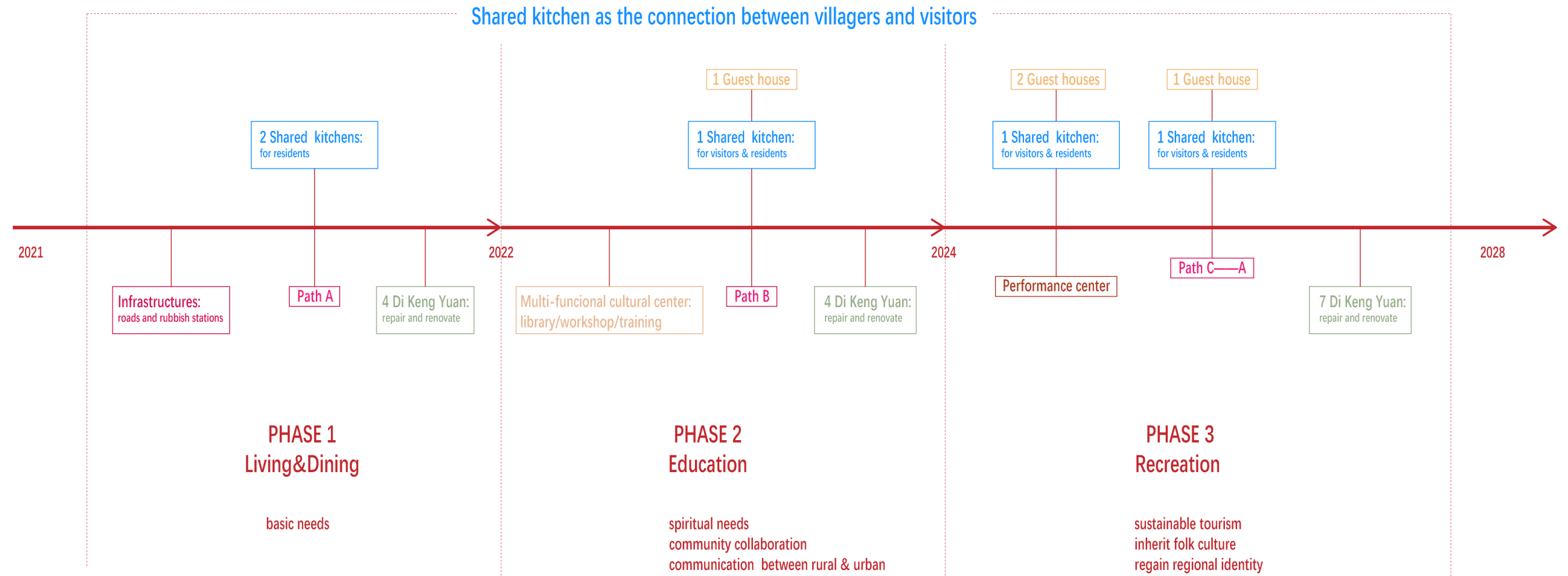
-  Inhabited Di Keng Yuan
-  Abandoned Di Keng Yuan
-  Inhabited cottage
-  Abandoned cottage
-  Primary school



CONCEPT AND DESIGN

TIMELINE OF PHASED DEVELOPMENT

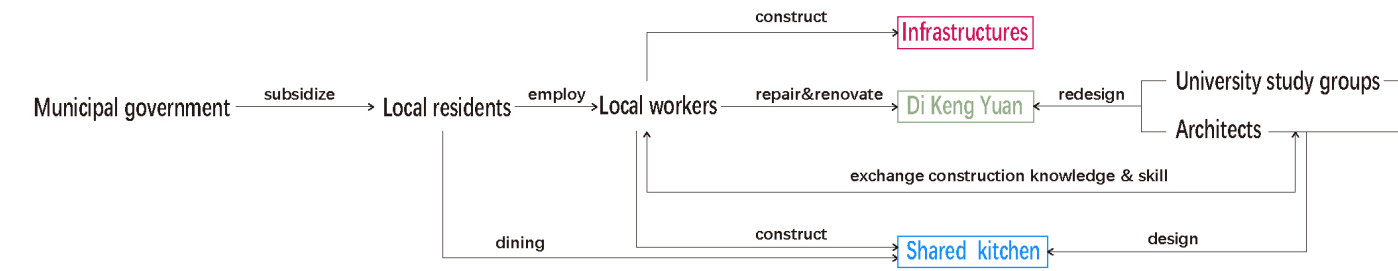
The concept of **“rural acupuncture”** is a sustainable way to revitalize Yaodi Village. Phased interventions that insert small-scale architectural functions into the village that relate to its historical context will introduce urban resources to Yaodi Village and improve conditions for long-time residents.

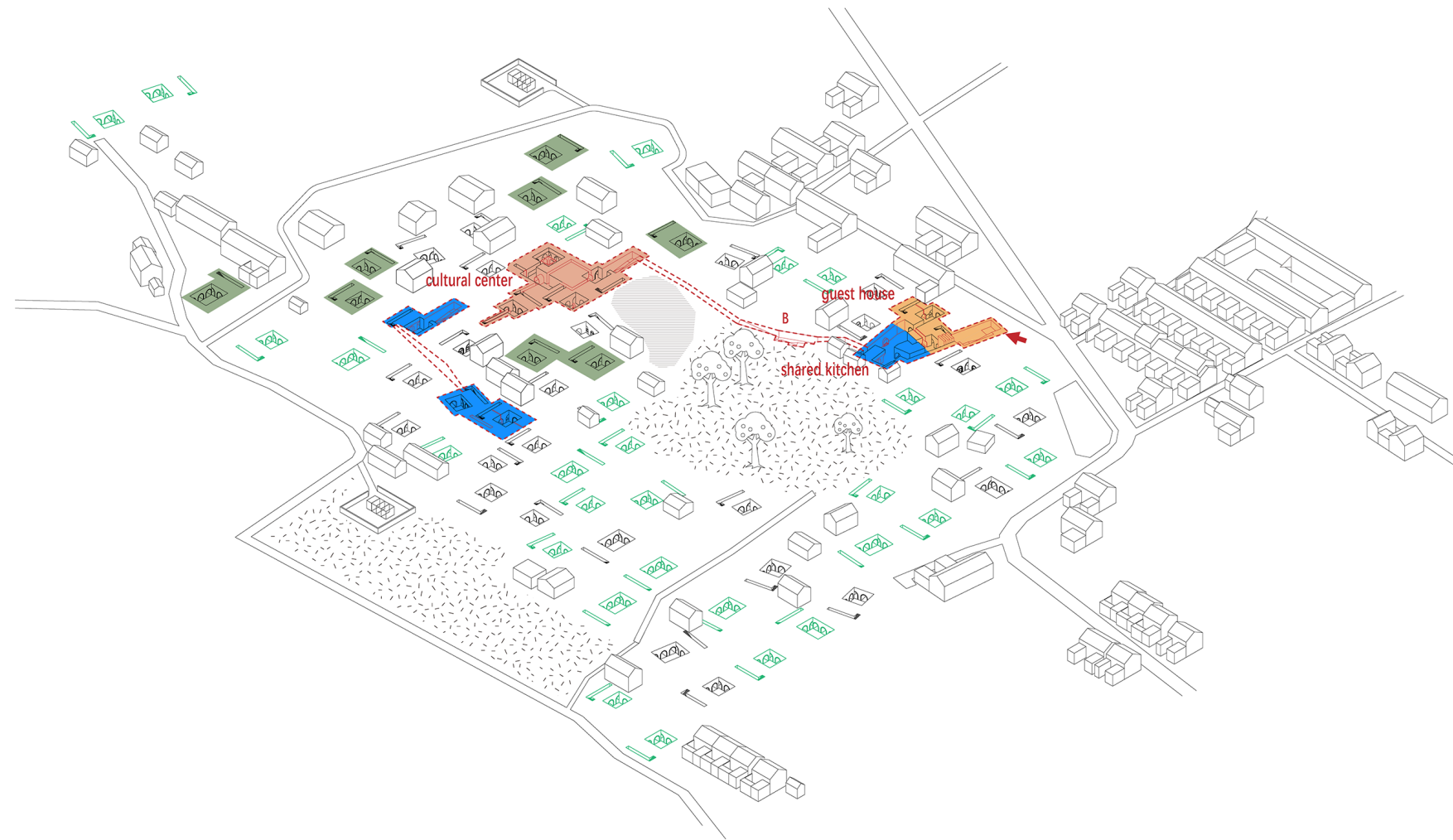




PHASE 1

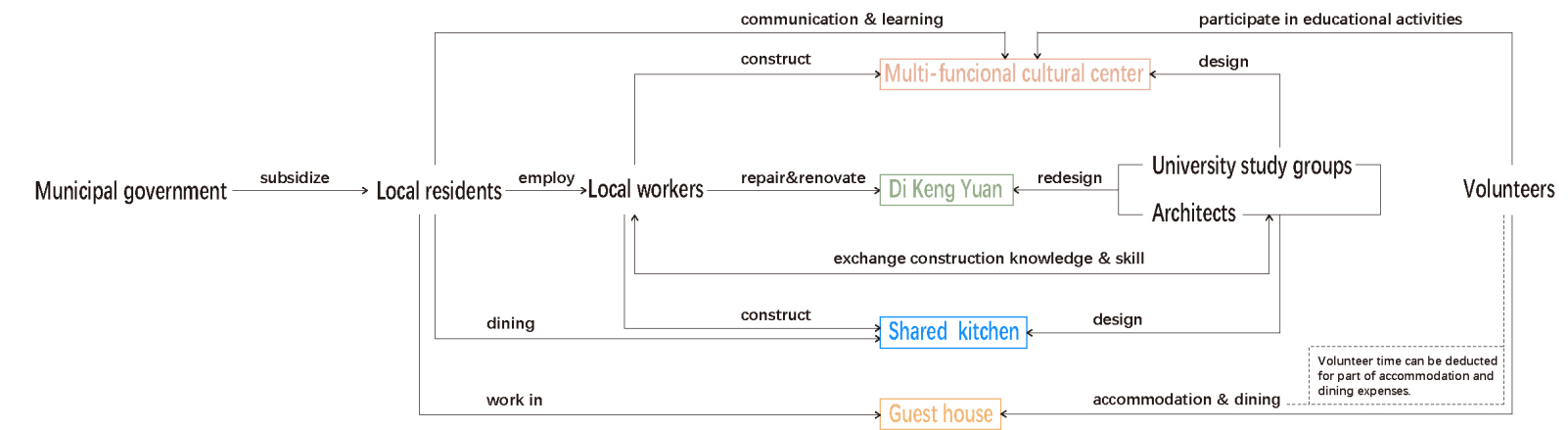
- Construct infrastructure: new roads/rubbish stations
- Repair&Renovate inhabited Di Keng Yuan
- Abandoned Di Keng Yuan → Shared kitchen

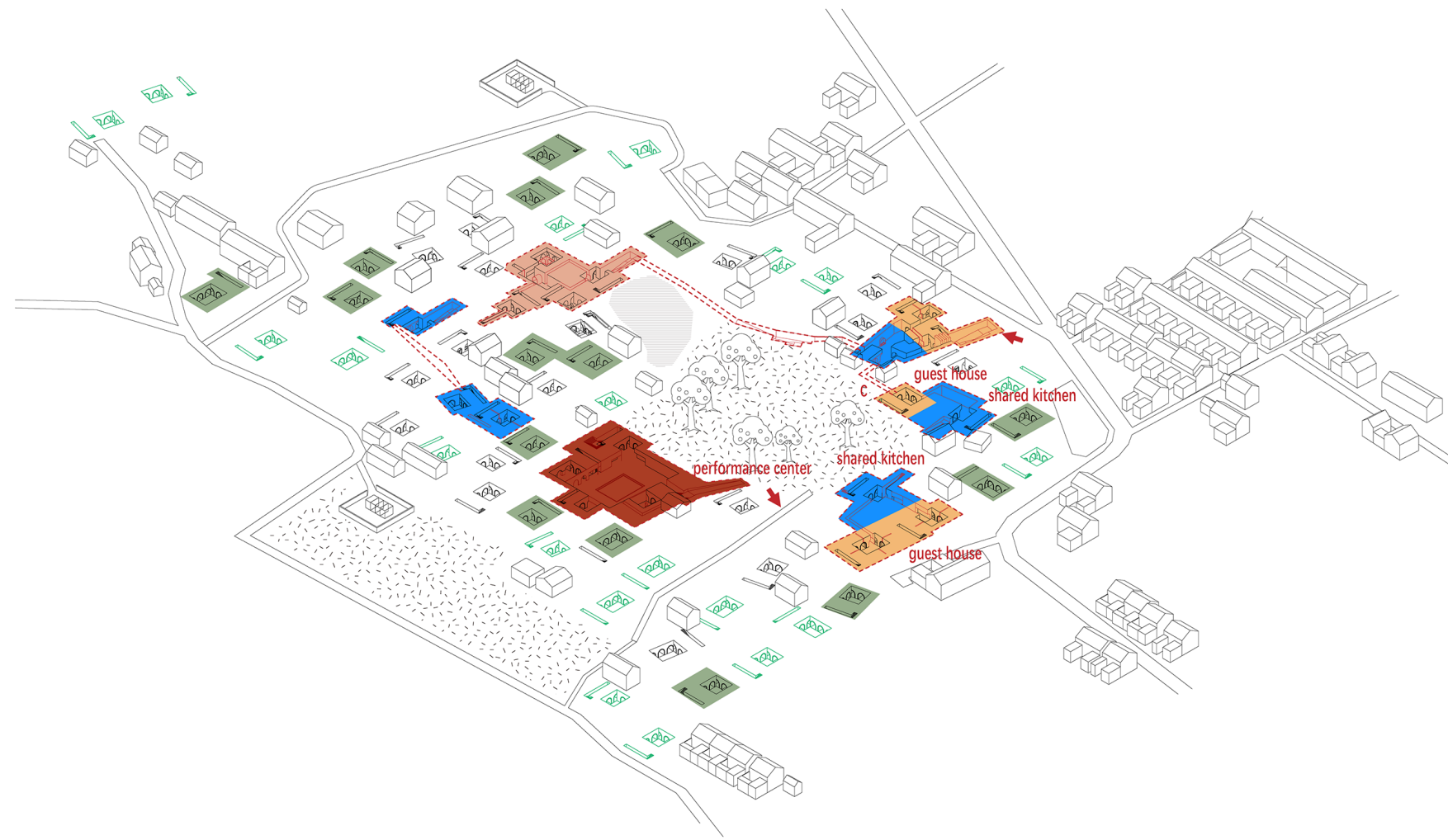




PHASE 2

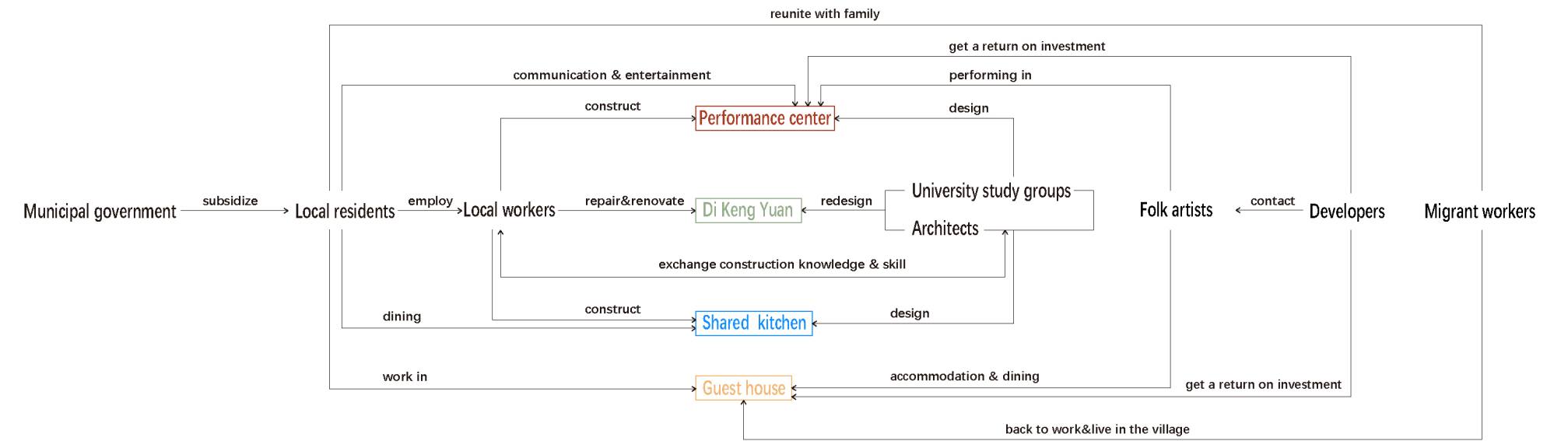
- Abandoned Di Keng Yuan → Multi-funcional cultural center
 - library
 - workshop (paper cutting)
 - knowledge & skill training
- Abandoned Di Keng Yuan → Guest house
- Repair&Renovate inhabited Di Keng Yuan
- Abandoned Di Keng Yuan → Shared kitchen





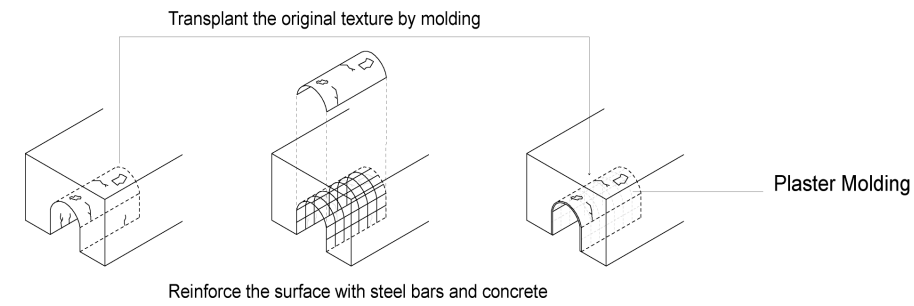
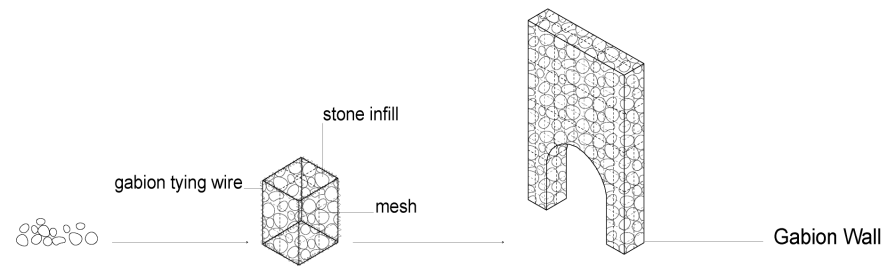
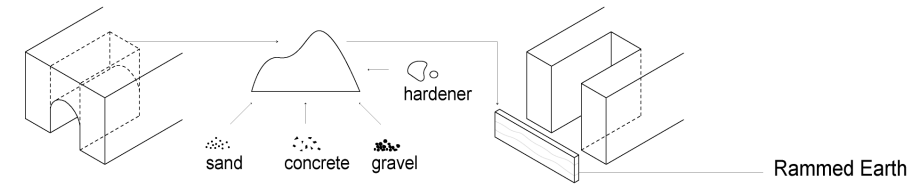
PHASE 3

- Abandoned Di Keng Yuan → Performance center
- Abandoned Di Keng Yuan → Guest house
- Repair&Renovate inhabited Di Keng Yuan
- Abandoned Di Keng Yuan → Shared kitchen



Materiality

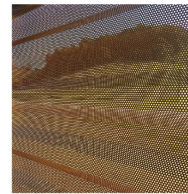
Local Materials



New Materials



Corten Steel
 high strength
 corrosion resistance
 minimum maintenance
 traces of time



Mesh
 prevent the surface from falling off
 shows the hierarchy of space

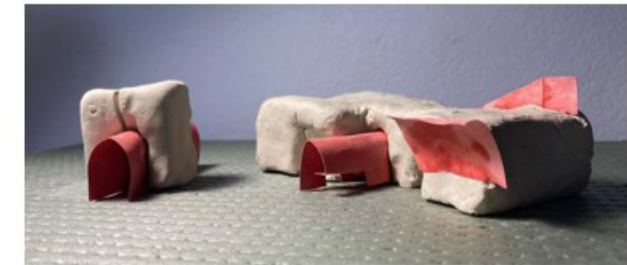
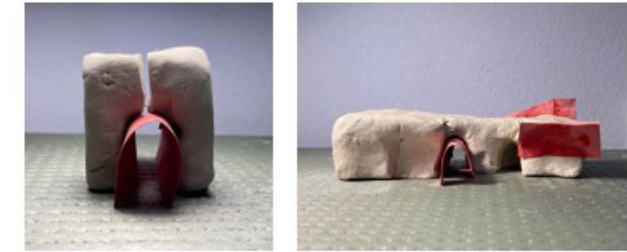
Construction Process



Cooperation

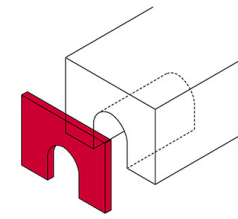
Rebuilding communities holistically requires villagers and visitors to participate in the renovation activities together, in the process reclaiming ownership of their hometown.

Concept Model

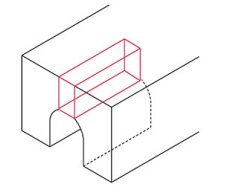


Intervention and Typology

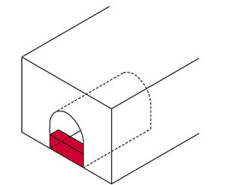
The purpose of these four interventions is to increase the flexibility of the original space, blur the boundaries of the space, and integrate the originally separated cave dwellings to meet the needs of indoor public activities. The new part can reinforce the original structure while contrasting with the original rough materials to highlight the original atmosphere and characteristics of the site. Various types are a mixture of interventions, creating more practical and interesting experiences for villagers and visitors.



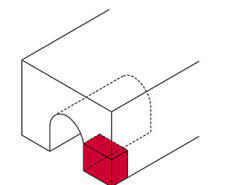
Reproduce



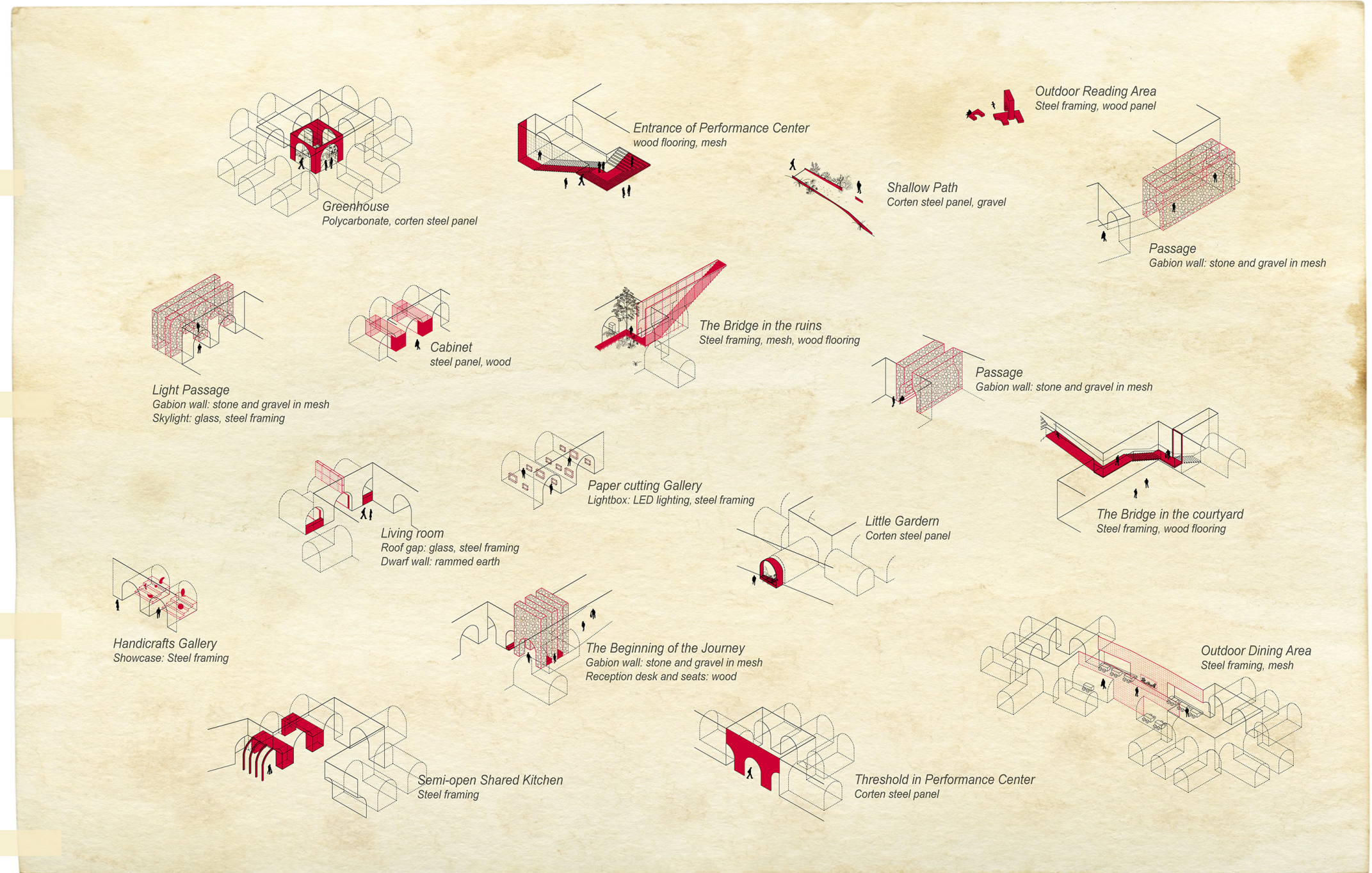
Subtract



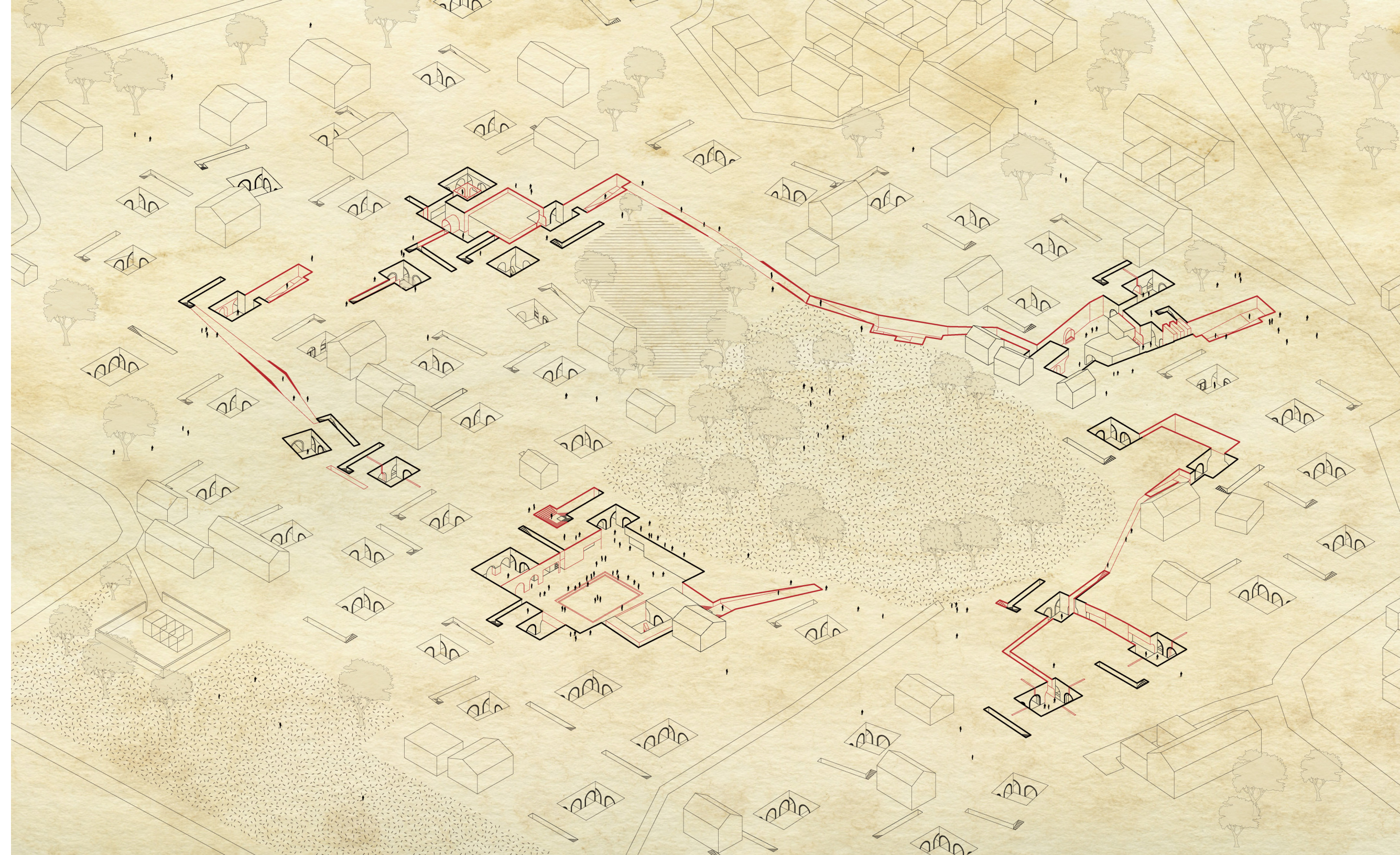
Fill



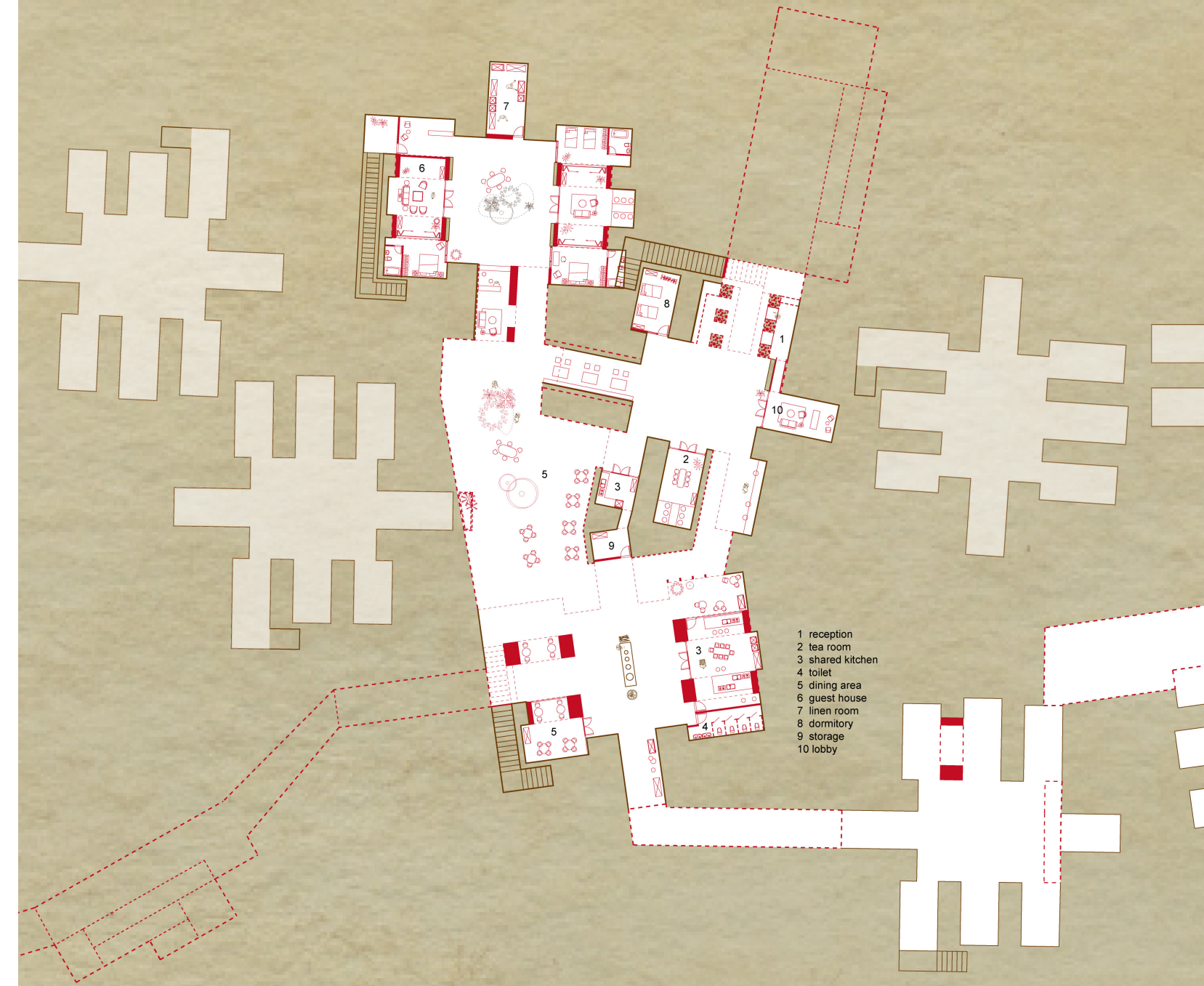
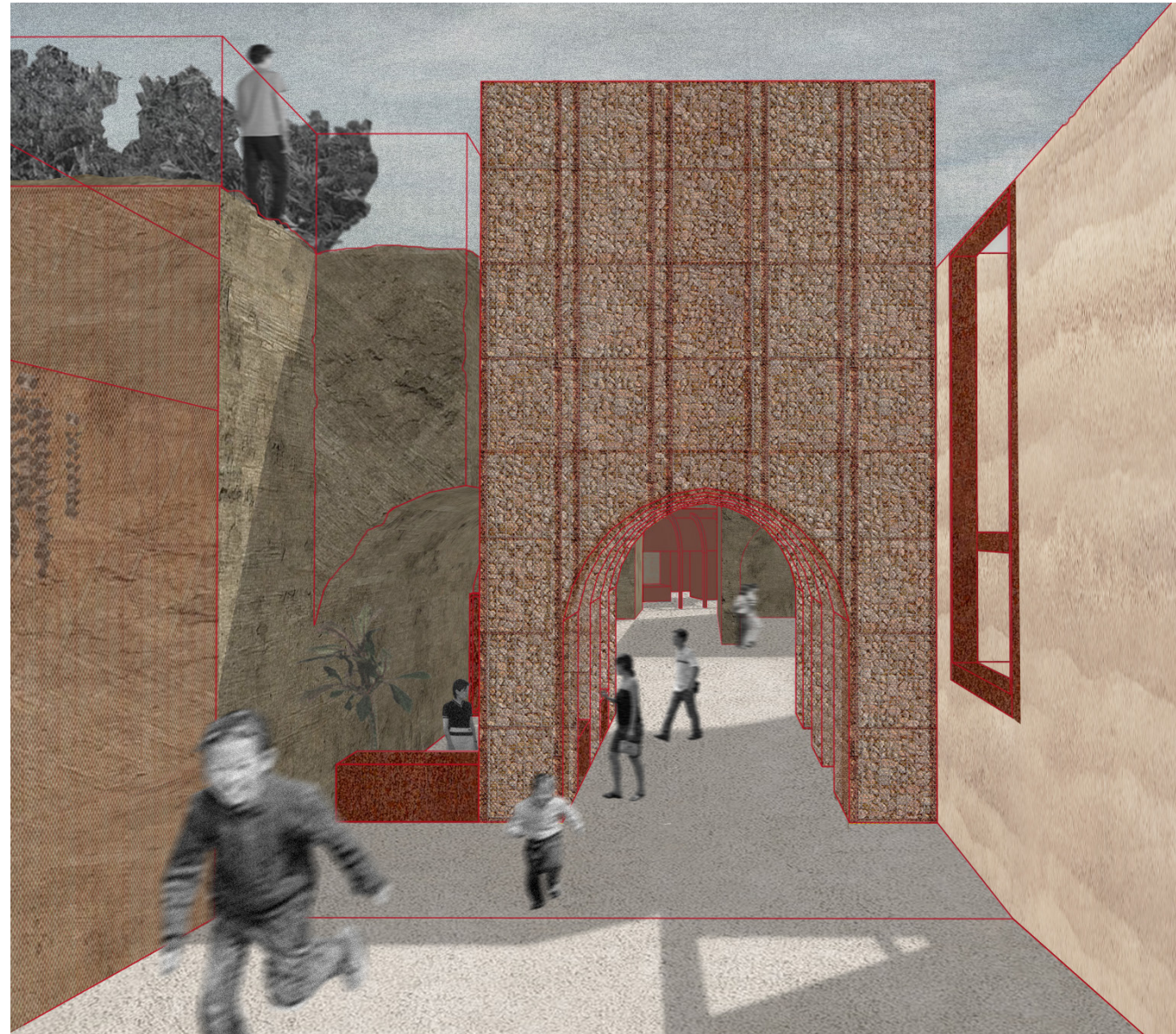
Replace



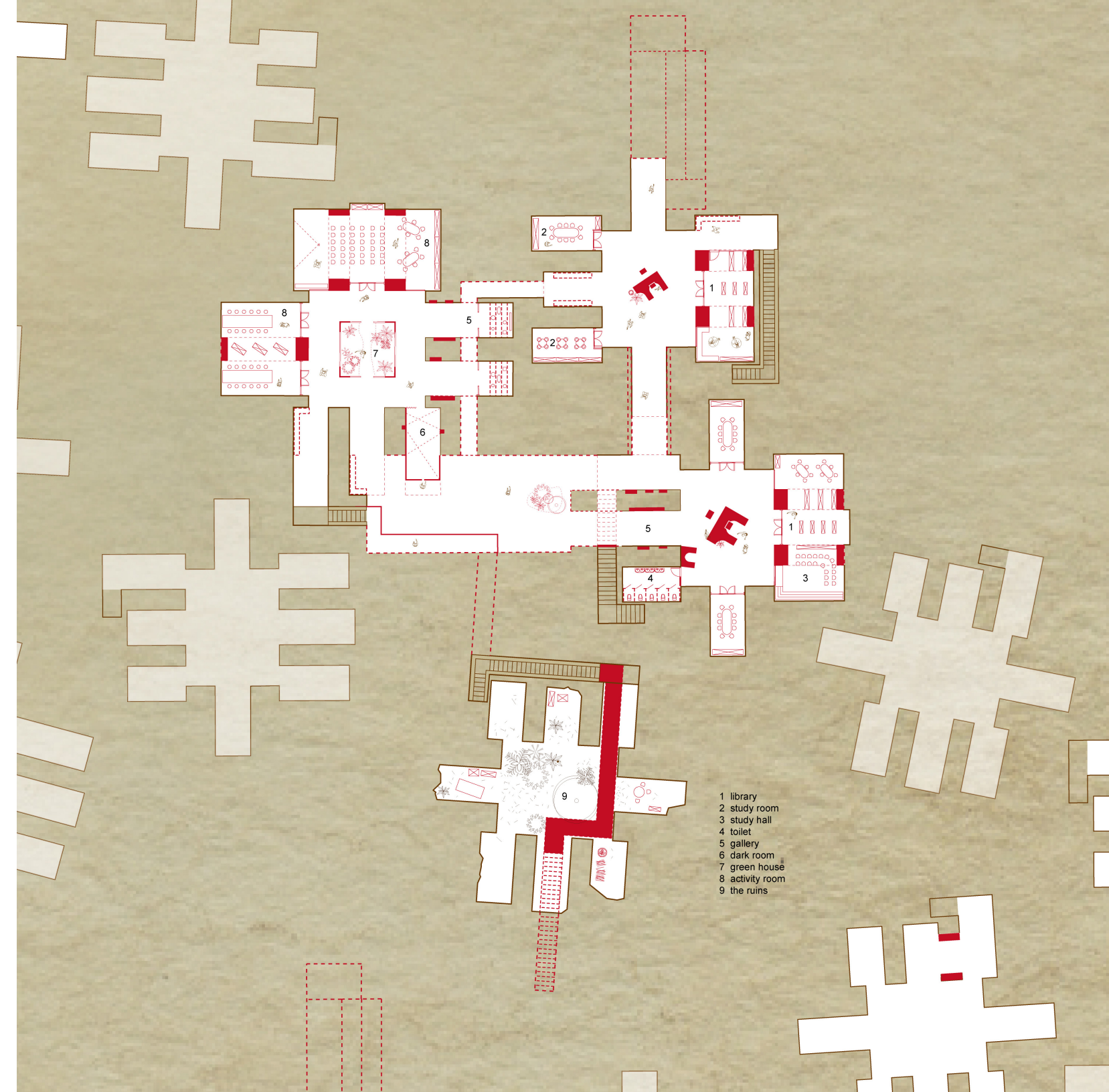
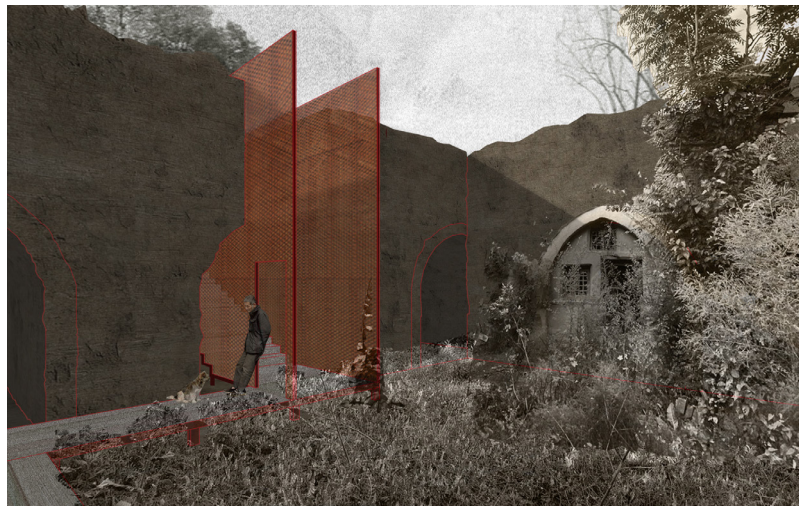
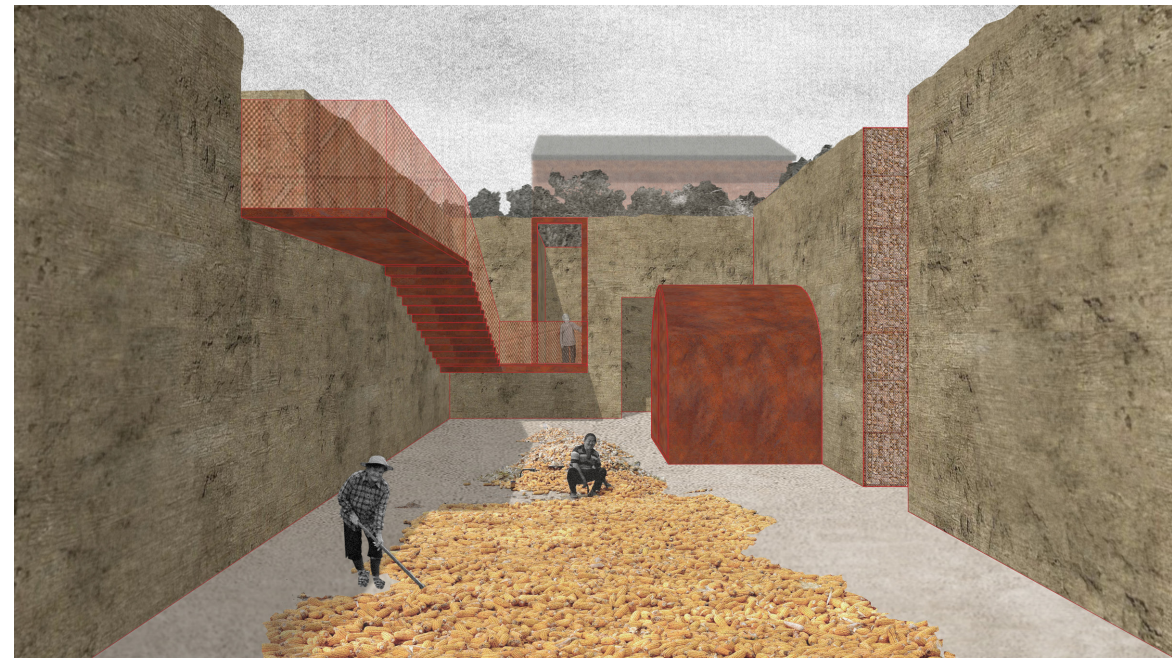
The story between the ground and the underground



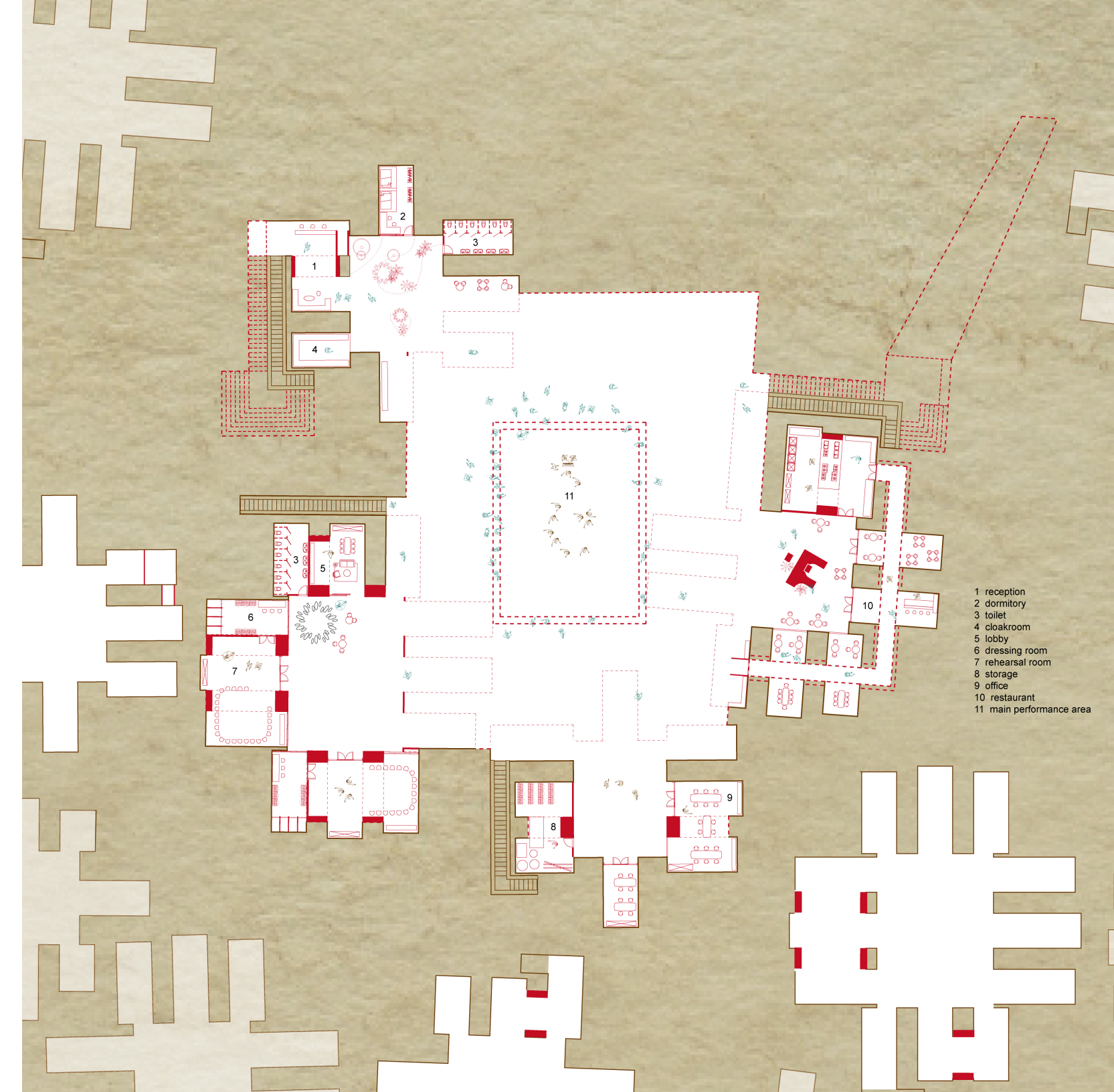
Shared Kitchen + Guest House



Multifunctional Cultural Center + The Ruins



Performance Center



- 1 reception
- 2 dormitory
- 3 toilet
- 4 cloakroom
- 5 lobby
- 6 dressing room
- 7 rehearsal room
- 8 storage
- 9 office
- 10 restaurant
- 11 main performance area

THE NEW STORY OF YAODI VILLAGE

A

Reception

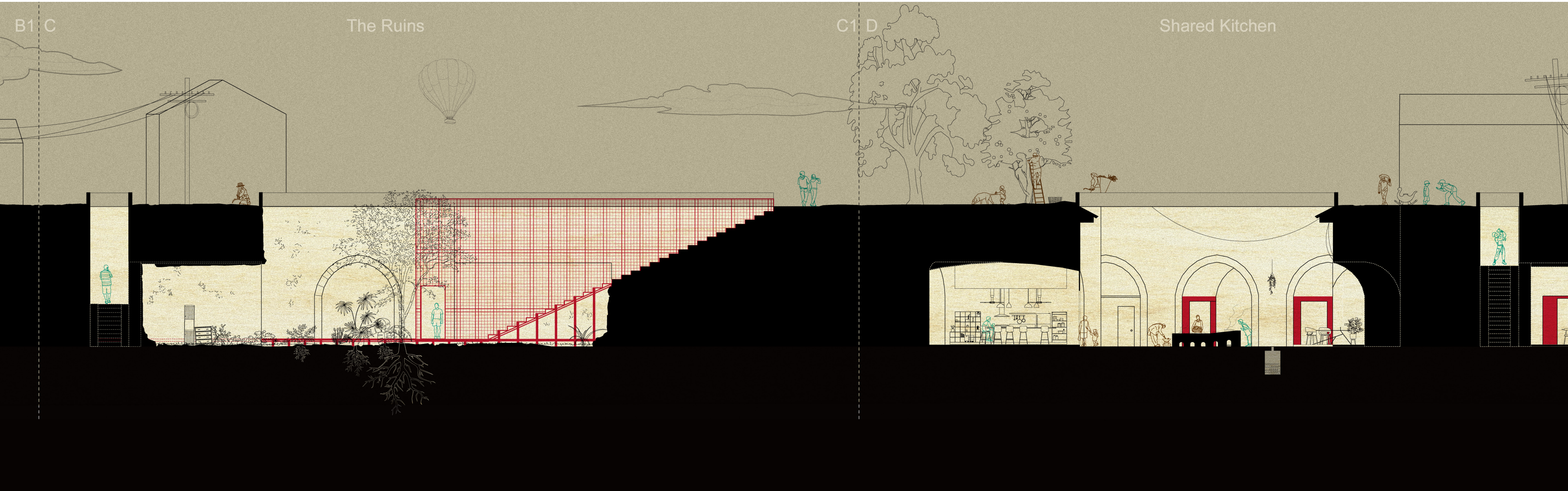
Shared Kitchen



A1 B

Multifunctional Cultural Center





Shared Kitchen

Local Residence



Performance Center

D1 E



Guest House

Shared Kitchen

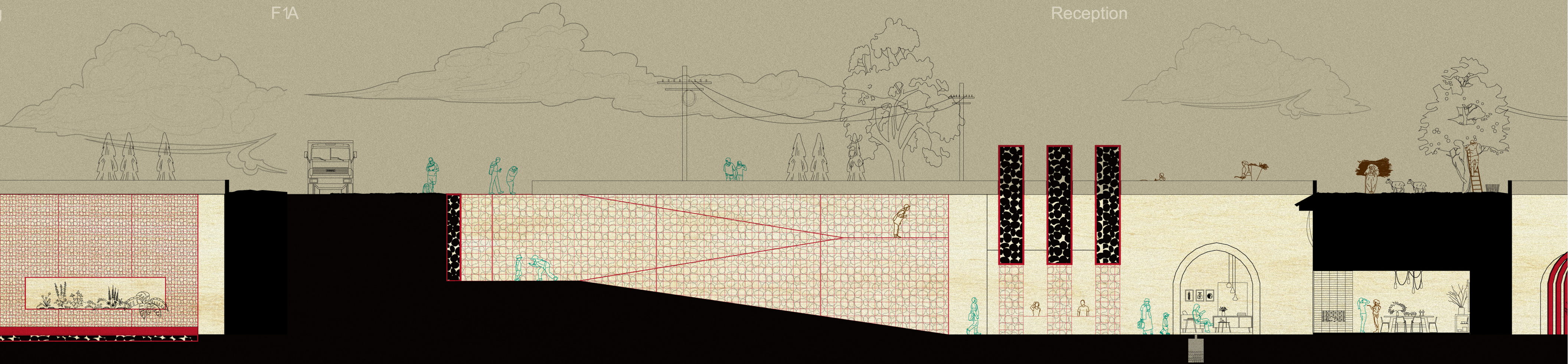
E1 F

Back to the beginning



F1A

Reception



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In different fields in different eras, builders without formal training have demonstrated an admirable ability to integrate architecture into the natural environment. They did not take our kind of behavior that strives to conquer nature, but are willing to accept the volatility of the climate and the challenges of the terrain. This kind of public architecture, or public art, was not invented by a small number of elites or experts, but was formed by a group of people with a common cultural tradition based on group experience, spontaneous and continuous creative activities.

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The space of the village is an important aspect that reflects the social nature of the village. It is highly recognizable and reflects people's living habits and ways of communication. In the process of people's acquisition of land and resources, clan culture and life customs are also constantly promoting changes in the spatial layout of the village.

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The pressure of fast-paced city life is gradually increasing. Rural tourism provides people with opportunities for physical enjoyment and spiritual relaxation. However, there are many problems in the development of rural tourism, such as imperfect infrastructure and lagging management. As a precedent for cave dwellings, Beiyong Village still faces the problem of how to integrate agriculture, industry, and service industries to promote the sustainable development of rural tourism. The stakeholders of rural tourism need to find a common balance of interests to ensure the overall and sustainable development of the village.

Image credits

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