





THE STATUTES OF THE REPUBLIC OF SINGAPORE
LAND ACQUISITION ACT 1966

2020 REVISED EDITION

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THE REVISED EDITION OF THE LAWS ACT 1983

SELETAR HILLS
Assignment
of leasehold land Private Lot 250 Part of
Lot 2217 Mukim XVIII.
Phase 7.

Dated... 31st January 1966.
SINGAPORE UNITED RUBBER
PLANTATIONS LIMITED
SINGAPORE UNITED ESTATES
LIMITED

1st Part.
2nd Part.
3rd Part.
FG F&S CHECK
and TAN EWE LAIN

17854
MIDSON,

Mapping Land: Reframing Representation in Kampong Lorong Buangkok

by Tan Wei Jie Eugene

Abstract

Maps are often the starting point in the design of architecture. Yet these maps often value measurability, precision, and objectivity over other qualities. In omitting information about materiality, history, and culture, these maps often reduce a site to a shape on paper. In Singapore, where land is scarce, this means of representation is particularly useful as it ascribes the value of land to its size, allowing authorities to make economic decisions about the use of land.

The documentation phase critiques this neoliberal paradigm in valuing land. In Kampong Lorong Buangkok, the huge site has been earmarked for redevelopment into a three-lane expressway due to economic methods of valuation. In exploring the site as opposed to studying it from a map, I argue that land cannot be valued for its size, but rather should be valued for the community, the way of life, and the narratives that had defined the village. Using the same methodology of mapping, the documentation phase explores a series of alternative maps, that argue that the value of land is more than its size, but rather the ecology, the narratives, and the events that have happened on the site.

However, maps that are created in the cartographic frame are always limited by the limitations of the cartographic profession. In the design phase, mapping is explored through the architectural frame. An archatographic map is proposed, which subverts conventions like the rectangular frame, the material of paper, and conventions like the north arrow or the grid.

Envisioned as a map in 2038 when the Kampong has been cleared for redevelopment, the archatographic map allows one to navigate around the site by carrying it around. By orientating and navigating using landmarks and pacing, the slow process of navigating reveals stories and artifacts that once existed on the site. In the absence of the kampong, the map seeks to embody the experience of living on the site, allowing visitors to experience the kampong from the perspective of a resident.

Lastly, in the absence of the original kampong, as different visitors move around the site using the archatographic map, their engagement with the map creates different spaces that rely on their interpretation of the site and map. This spatial response contradicts the fixity of architecture, revealing the biases of architectural maps that we often overlook.

key words: Kampong Lorong Buangkok; narratives; embodiment of resident's experience; intuitive navigation; cartography

Introduction

In architecture, maps are the basis for site analysis and the starting point for design. These maps are often measurable, objective and irrefutable. Yet contrary to the neutral position that a map aspires to be, it is a carefully curated document that selectively presents information, and often a political tool that serves the agenda of the map maker¹.

In Singapore, where land is scarce, the map reflects the state's priorities of land as an economic resource - where the value of any land is directly proportional to its size. Thus, maps are often carefully delineated to demarcate property and territory.

1. Wood, Denis, and John Fels. *The Power of Maps. Mappings.* (New York: Guilford Press, 1992)

A disjunction in value: land on Kampong Lorong Buangkok



refer to the appendix for a link to the photobook of the kampong



aerial photograph of Kampong Lorong Buangkok.

Located at the boundary between Seletar Hills and Buangkok Crescent lies "the last kampong" on mainland Singapore: Kampong Lorong Buangkok. The its houses with zinc roofs, overhead electrical lines and sprawling vegetation contradicts with the high-rise government flats and landed houses in the distance

2.
Ministry of National Development. "Reply by Minister Desmond Lee in response to Adjournment Motion by MP Dr Intan Azura Mokhtar on "Preserving Green Spaces and Heritage in Jalan Kayu Constituency" (2017)

<https://www.mnd.gov.sg/newsroom/parliament-matters/speeches/view/reply-by-minister-desmond-lee-in-response-to-adjournment-motion-by-mp-dr-intan-azura-mokhtar-on-preserving-green-spaces-and-heritage-in-jalan-kayu-constituency>

On the site of Kampong Lorong Buangkok, I argue that the above method of mapping omits intangible qualities of the site such as heritage, personal histories, ecologies and narratives tied to the land. The *land survey (1991)* and *URA master plan (2019)* prioritise a measurable, objective representation of the site, reducing it to a shape on paper that emphasizes its size. This influences decisions about the future of the site, where authorities might value the potential utility over other unrepresented qualities. In the case of Kampong Lorong Buangkok, this translates into the decision to develop the site into a three-lane expressway to serve the needs of the residents of the Buangkok neighbourhood².



Kampong Lorong Buangkok represented in measurable, objective maps. From Left: Land Survey (1991) by Singapore Land Authority; Aerial map (2022) traced over Google Earth Images; URA Master Plan (2019) by Urban Redevelopment Authority

Documentation: Mapping as methodology for valuation

Environmental images are the result of a two-way process between the observer and his environment. The environment suggests distinctions and relations, and the observer—with great adaptability and in the light of his own purposes—selects, organizes, and endows with meaning what he sees.³

Kevin Lynch

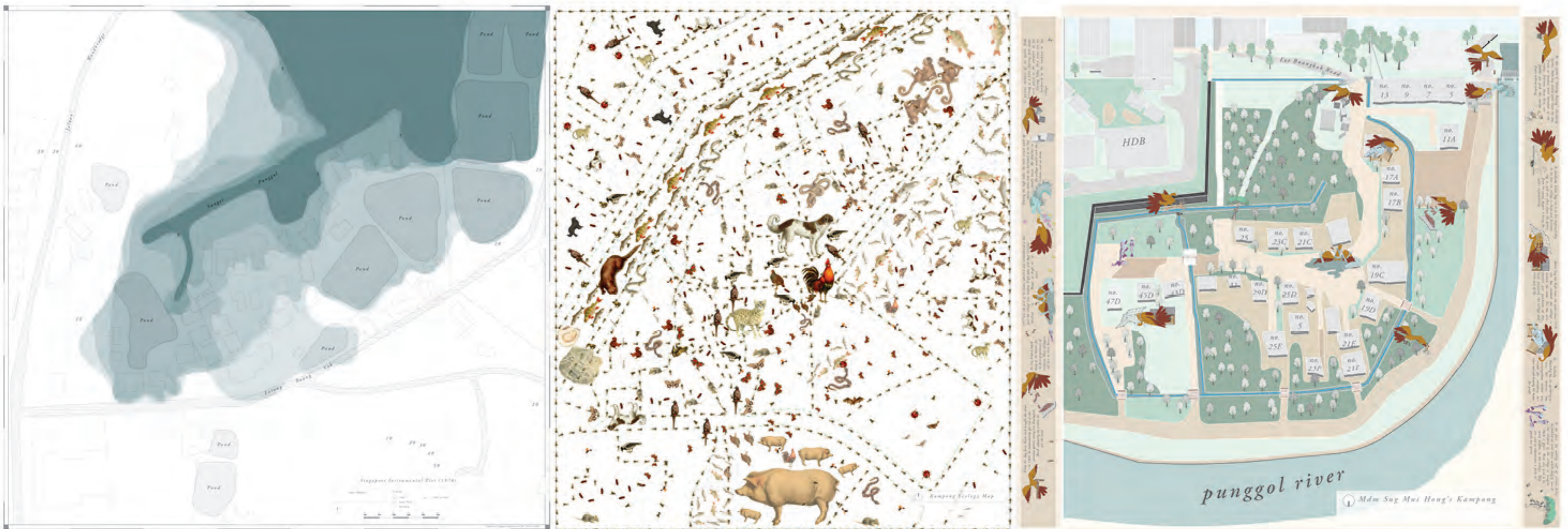
My documentation of Kampong Lorong Buangkok revealed many unique, intangible qualities that were omitted from the official maps.

Mapping was a useful methodology to illustrate these intangible qualities and their direct relationship to the land. Mapping thus could give value to these intangible qualities by illustrating how the value of land is more than its size. Here I investigated 3 unique aspects of the site through the flood map of 1977, the ecology map and the narrative map.

3.
Kevin Lynch, "The Image of the Environment"
(MIT Press, 1960). P6.



refer to the appendix for a link to video of the mapping processes



Intangible qualities, like the ecology and narratives are mapped on the land, revealing the richness of land, as opposed to the official representations.



refer to the appendix for a link to video of the flood map.

the flood map of 1977 explores how the material of water might have flown on the site.

Deconstructing the conventions of maps: proposing the Archatographic Map

4.
Simon Ferdinand, "Mapping beyond measure: art cartography and the global space of modernity" (University of Nebraska Press, 2019), P12.

in engaging so closely with cartographic form, other map artworks ultimately reproduce and reinforce it. Even as they dispute and strain to leap free from dominant cartographic imaginations, such artworks are ultimately recuperated within the singular, objective, and calculable casting of the world inherited from institutional cartography.⁴

Simon Ferdinand

Through my documentation, I found that the institutional conventions, like bearing, the rectangular frame and the top-down orthogonal projection might limit my development and thinking of maps. Thus, I questioned how my architectural education and design skill set can be used to redefine the map.

I envision that in the year 2038, the kampong will be redeveloped into a 3-lane expressway in part due to political pressures and the prevailing neoliberal ideology.

Following the clearing of the kampong, the map I am proposing will be used to navigate around this new site - to recreate the experience of the absent kampong.



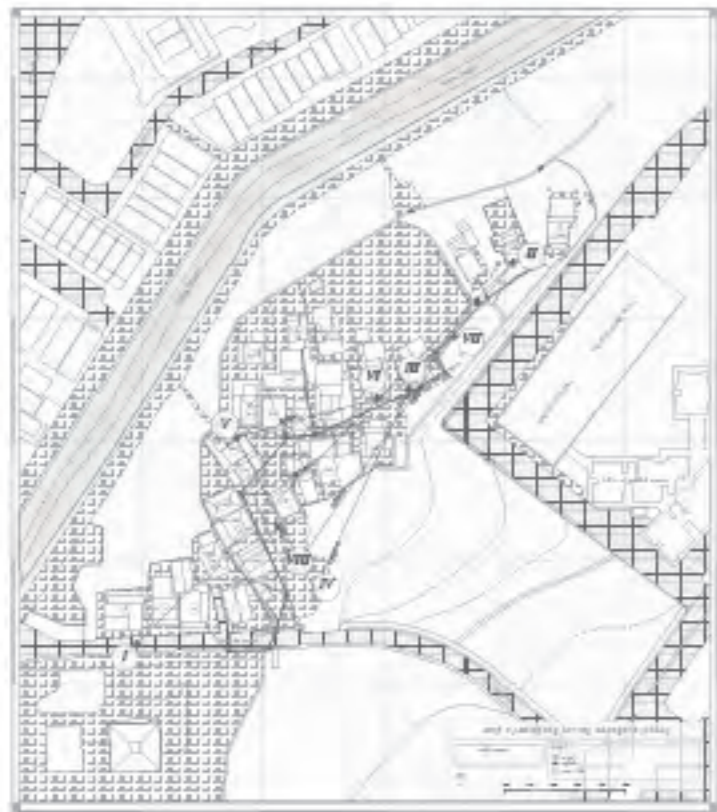
on an empty site, the archatographic map seeks to recreate the experience of living in the kampong.

The map's primary function is as a device that embodies the experience of living in the Kampong, recreating this experience for a visitor to the site. The archatographic map does this through three design approaches:

1. Situating narratives on the site
2. Orientation and Navigation of a Resident
3. Visitors movements through the site

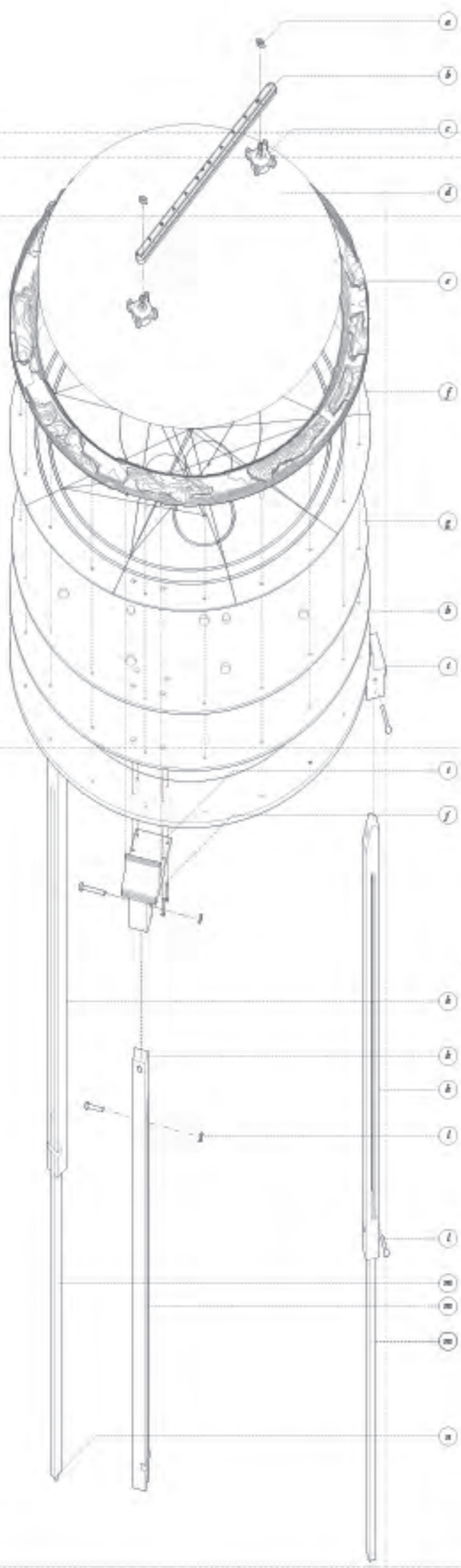
manual to read the map

01 a map for imagining the absent land



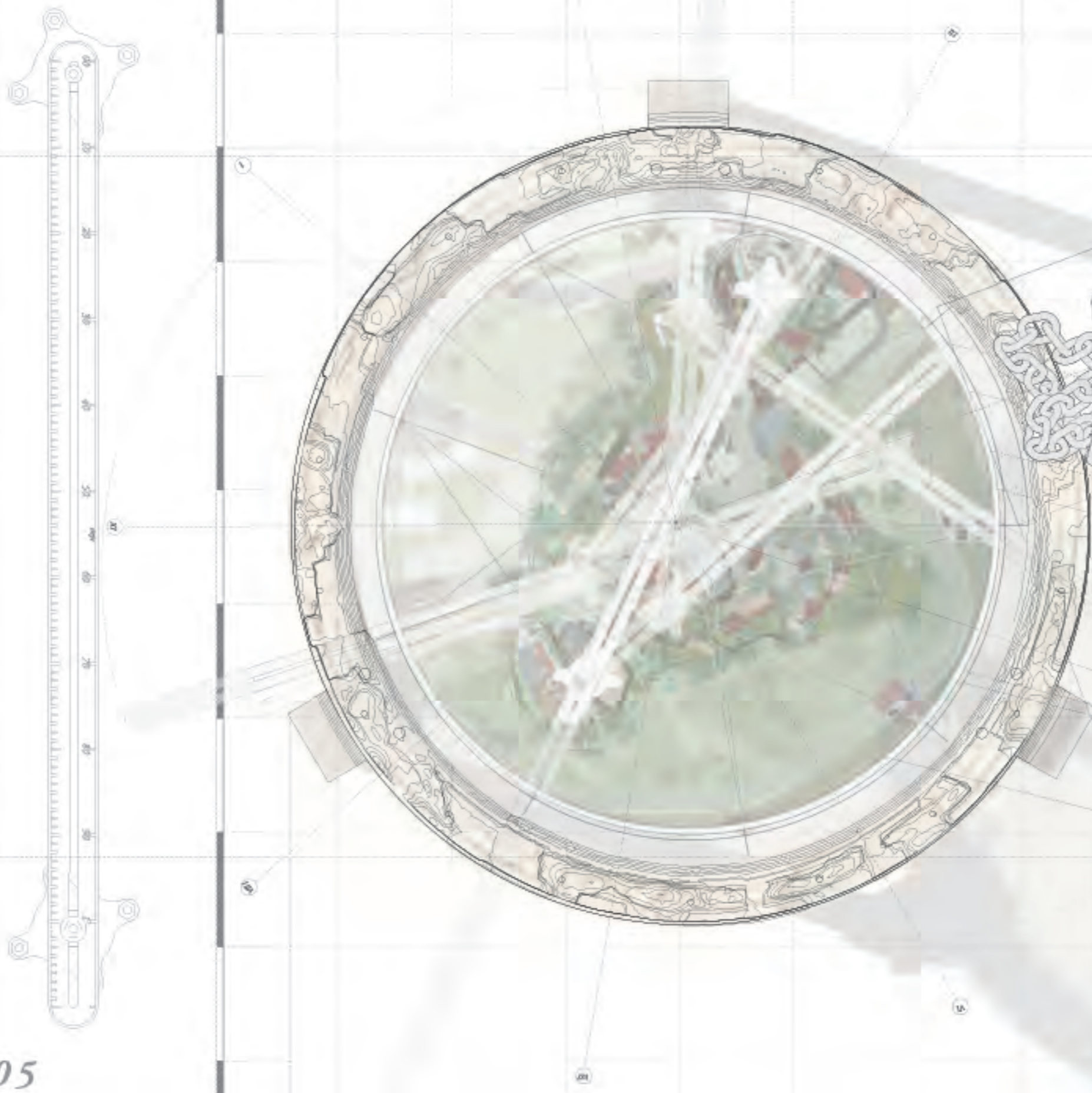
- 1. Borough Hall County Courthouse
- 2. East River at Murray Street
- 3. Church at the top of City Hall
- 4. Bow Street
- 5. North River at Bowling
- 6. South River at Bowling
- 7. Canal at the top of Bowling
- 8. Canal at the bottom of Bowling
- 9. Canal at the bottom of Bowling
- 10. Canal at the bottom of Bowling
- 11. Canal at the bottom of Bowling
- 12. Canal at the bottom of Bowling

02 map axonometric

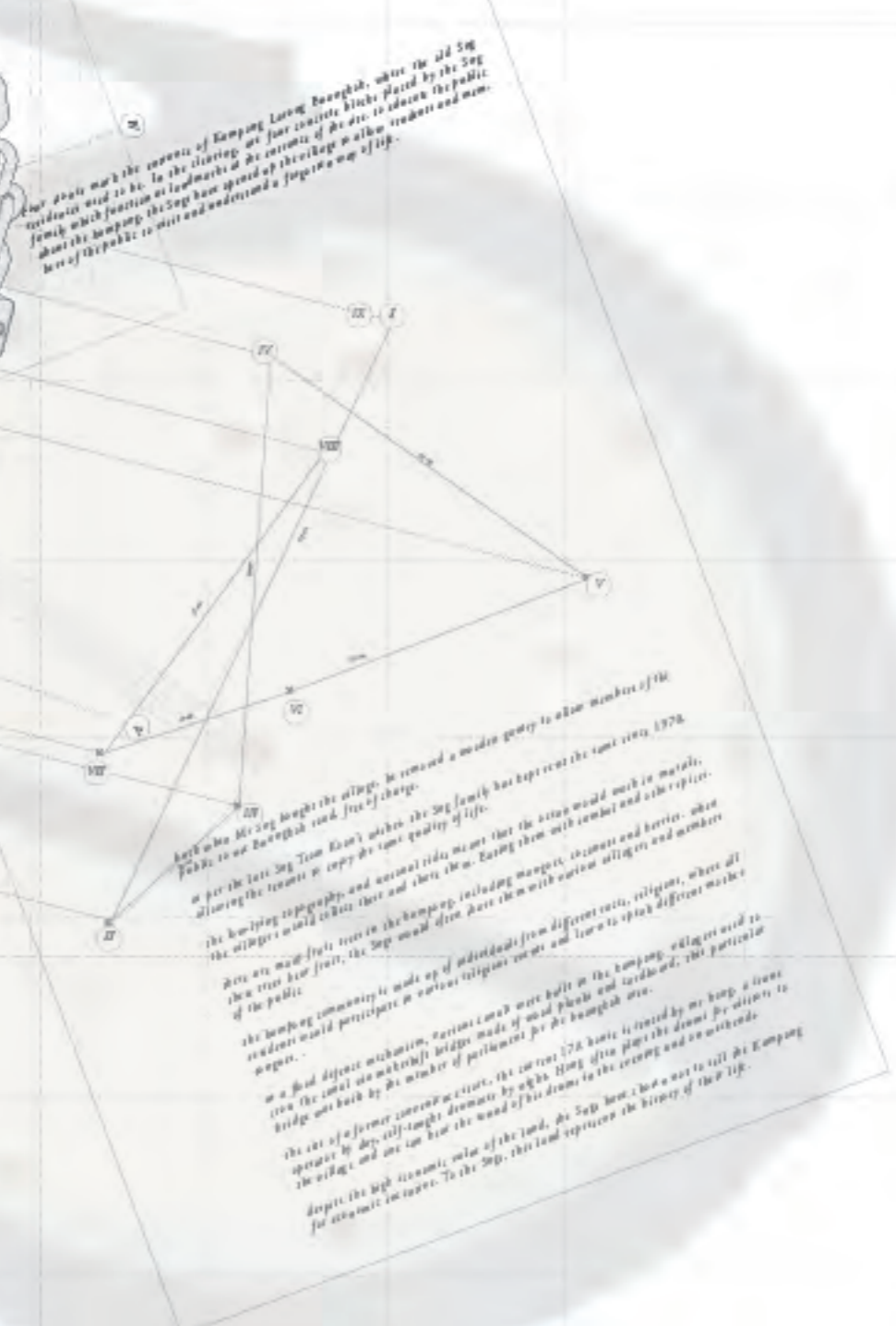


- 1. ruler
- 2. ruler
- 3. ruler
- 4. ruler
- 5. ruler
- 6. ruler
- 7. ruler
- 8. ruler
- 9. ruler
- 10. ruler
- 11. ruler
- 12. ruler

03 narrative drawing

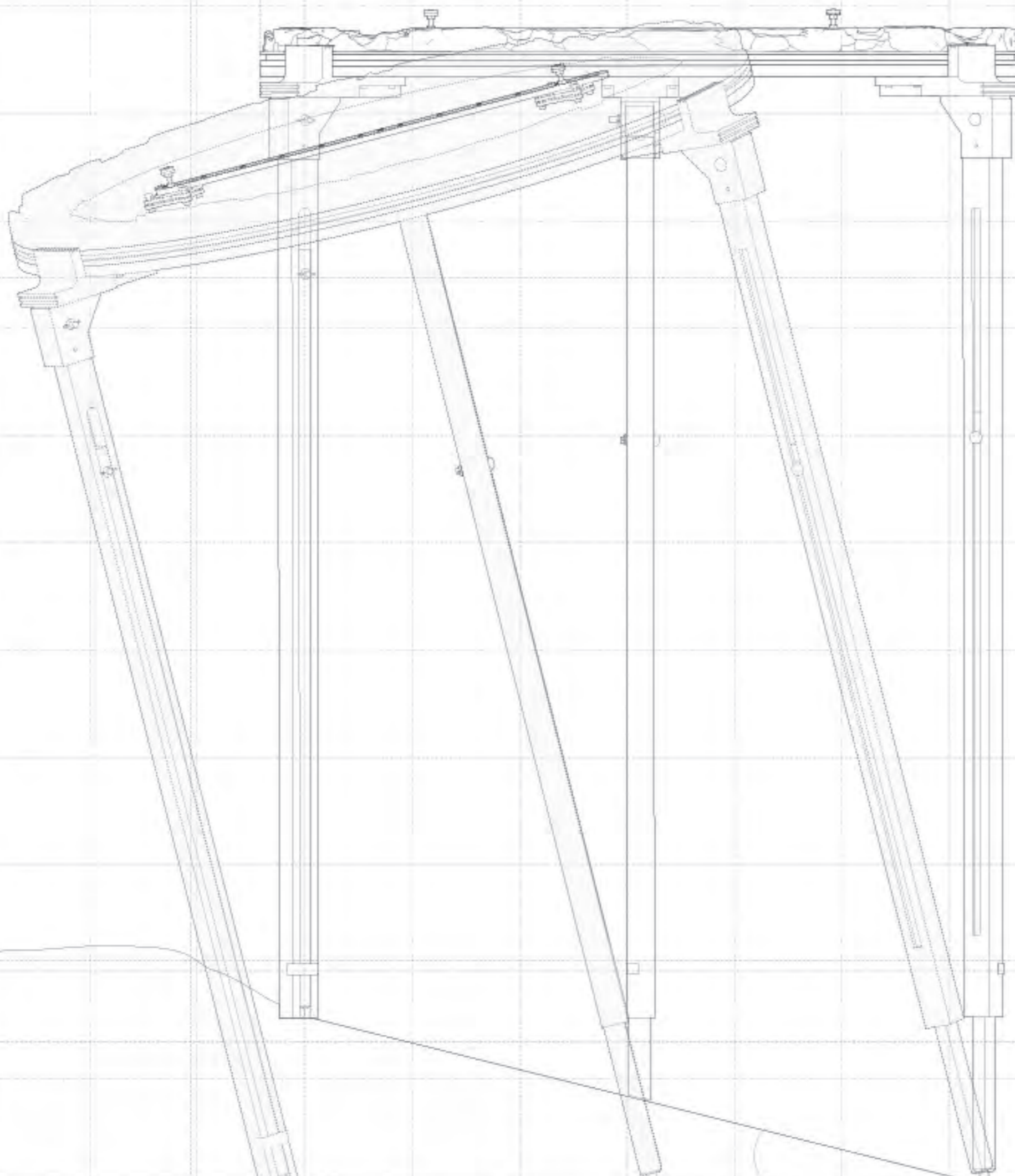


04 situating artefacts

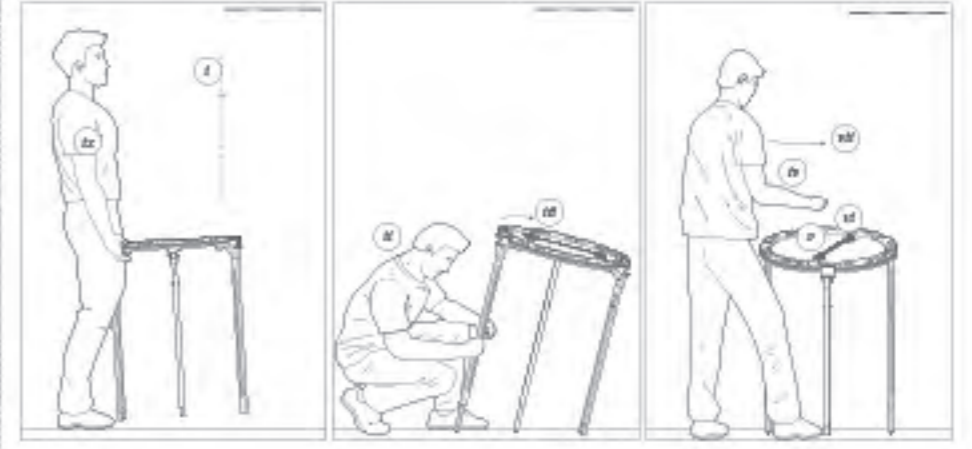


05 a ruler for counting steps

06 recreating the uneven topography

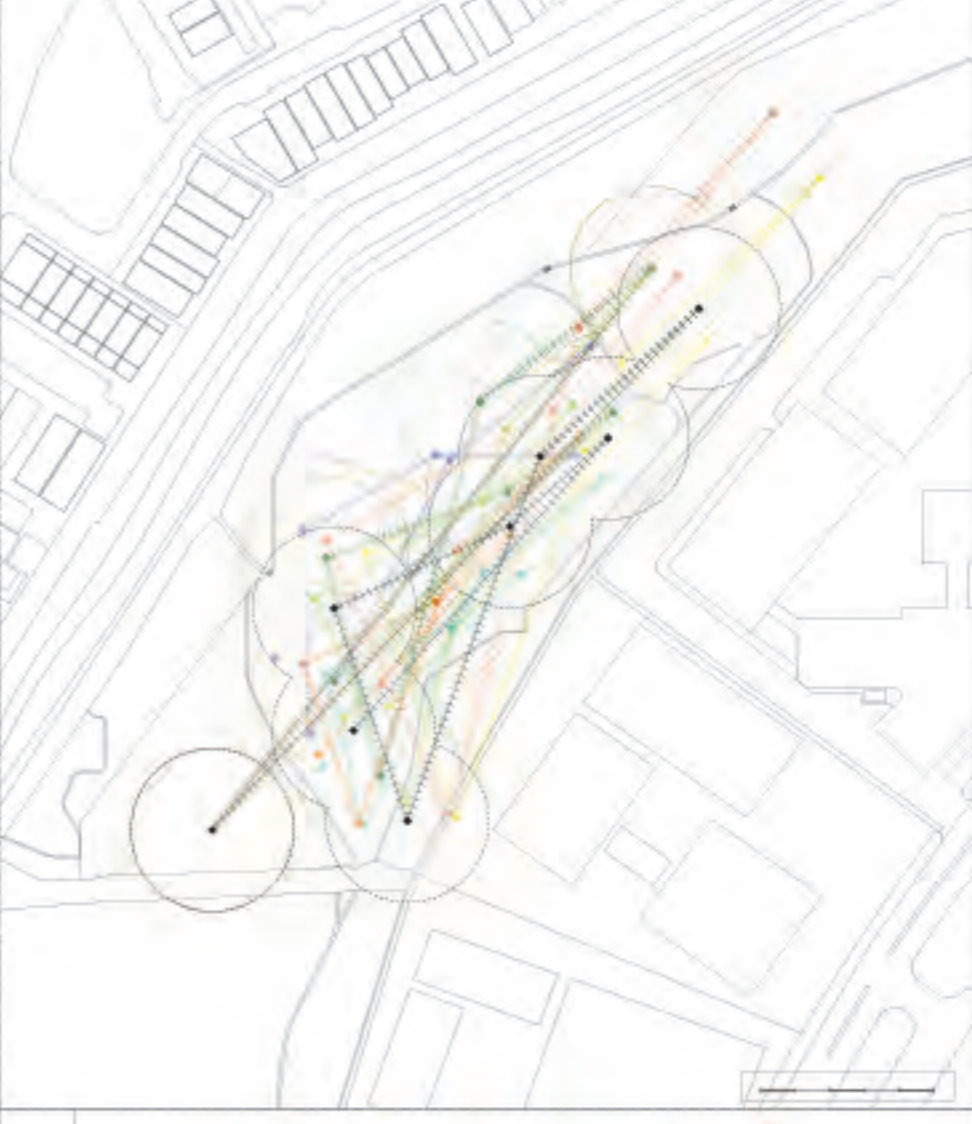


07 instructions to read the map



- 1. the user must be able to see the map at a distance of 1.5m from the map.
- 2. the user must be able to see the map at a distance of 1.5m from the map.
- 3. the user must be able to see the map at a distance of 1.5m from the map.
- 4. the user must be able to see the map at a distance of 1.5m from the map.
- 5. the user must be able to see the map at a distance of 1.5m from the map.
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- 9. the user must be able to see the map at a distance of 1.5m from the map.
- 10. the user must be able to see the map at a distance of 1.5m from the map.
- 11. the user must be able to see the map at a distance of 1.5m from the map.
- 12. the user must be able to see the map at a distance of 1.5m from the map.

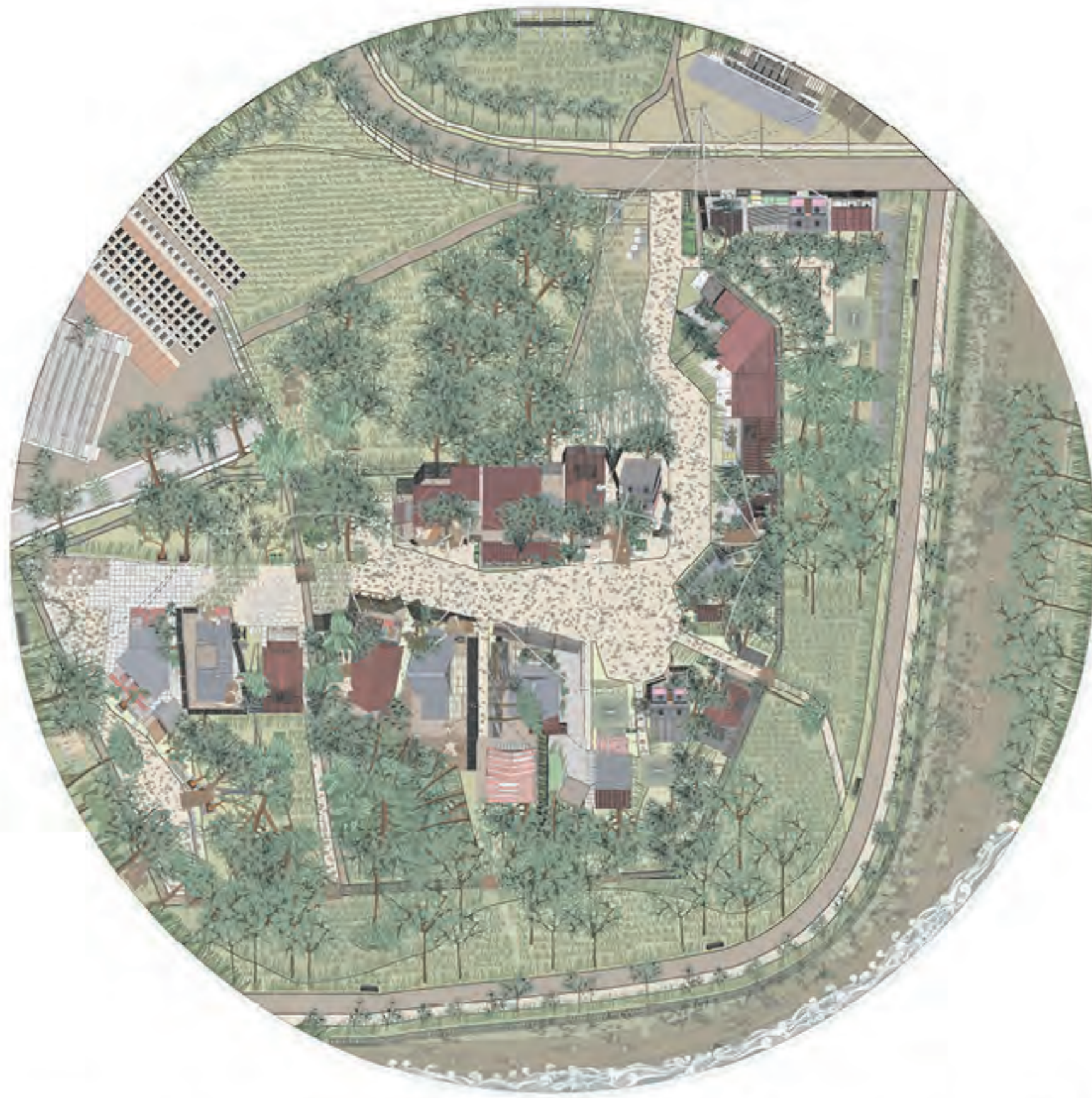
08 subjective space



- 1. red
- 2. orange
- 3. yellow
- 4. green
- 5. blue
- 6. purple
- 7. pink
- 8. grey
- 9. white
- 10. black
- 11. brown
- 12. tan

the various functions of the archatographic map, from recreating the lost topography, to subjective spatial interventions.

Situating Narratives: Drawing a history of the site



developing the narrative map, this early iteration of the drawing combines different aspects of the maps from the documentation phase, such as the ecology, the narratives and the historic events to present the kampong as a culturally rich site

As villagers have lived in the kampong for their entire lives, many stories that the villagers told me were directly related to the land. Inspired by historic maps such as the mappa mundi, this drawing illustrates a brief history of the Kampong, mapping the narratives to specific areas of the land. The stories selected here tell a brief history of the key events that have shaped the kampong in 2022, two such tales that were selectively curated include:

the story of how Mr Sng Teow Koon, the original landlord of the kampong, removed an important gantry on Buangkok road to allow the public to use the road for free;

or how the Sng family has kept the tenant's rents the same since the 1970 at prices from \$6 - \$30;

these stories were chosen as they demonstrated how the villagers often help each other and are often not motivated by financial gain. As a result of their non-neoliberalistic tendencies, these stories are effective in explaining how the kampong exists in 2022 and explains briefly some reasons which has shaped it into the place it is today.



Here, I consciously decided not to present this drawing as a single flattened drawing, but rather a series of layers printed on mylar paper. The translucent quality of each drawing illustrates a relationship that extends beyond each individual sheet, where different qualities of the site relate to each other across the layers.



the various layers of the drawing, illustrating how narratives and land are related across different scales, materials and categories.

As new layers of the drawing can be added, I highlight that stories that shape the past should be used in the planning of the future. As opposed to a tabula rasa of the site, knowing the events that have occurred on the site might allow for a sensitive conservation or shaping of the road to respect this.



Space shapes narratives and in turn, narrative shapes space, to represent this duality, the space around a narrative distorts the environment to create a certain centrality around it.

Situating Narratives: Archives of the Site

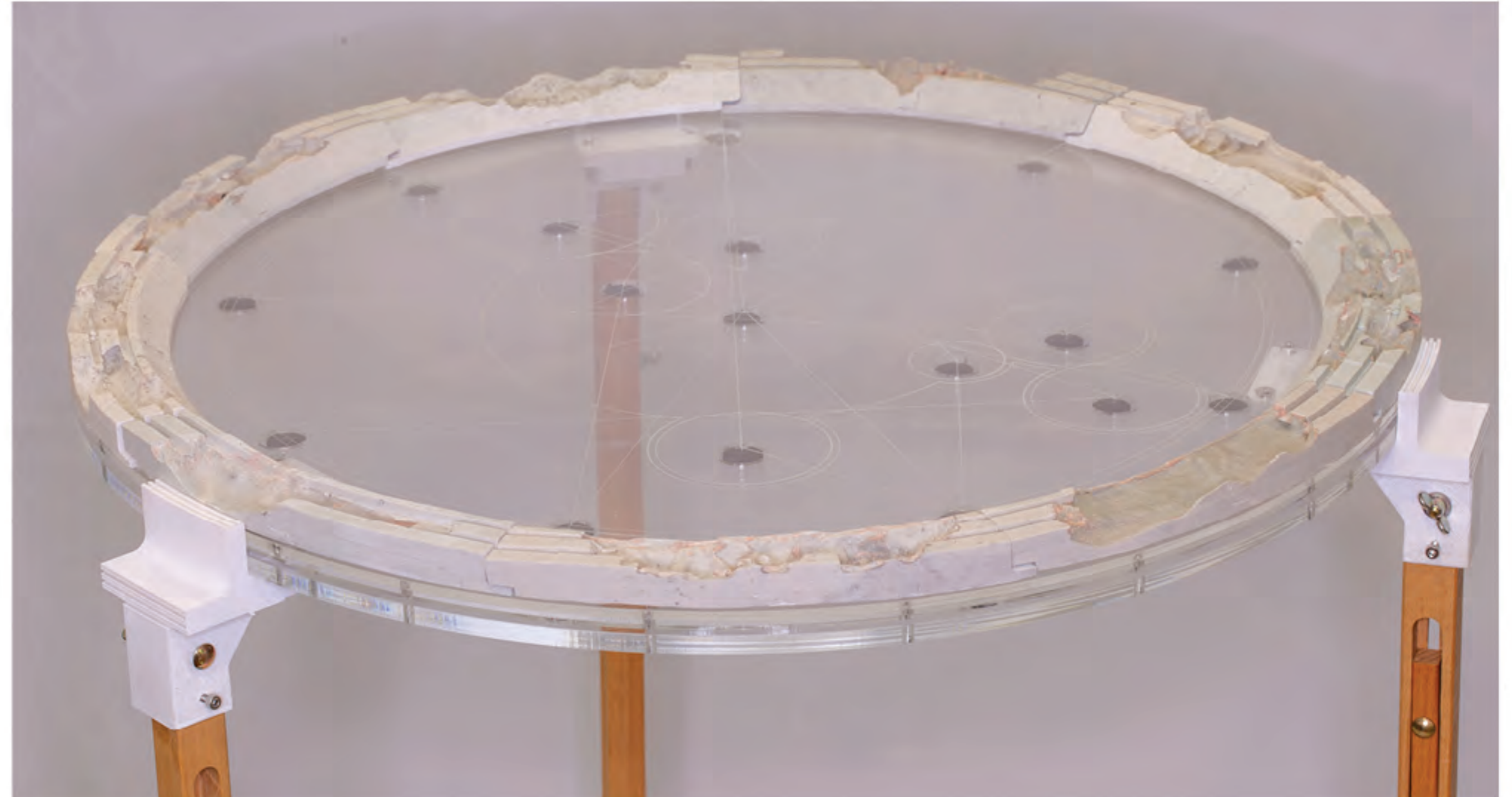
5.
Hill, Jonathan, "Designs on history: the architect as physical historian" (RIBA publishing, 2022). PXIV.

Like a history, a design is a critical reinterpretation of the past in the present. Equally, a design is equivalent to a fiction, convincing users to suspend disbelief. We expect a history or a novel to be written in words, but they can also be delineated in drawing, cast in concrete or seeded in soil.⁵

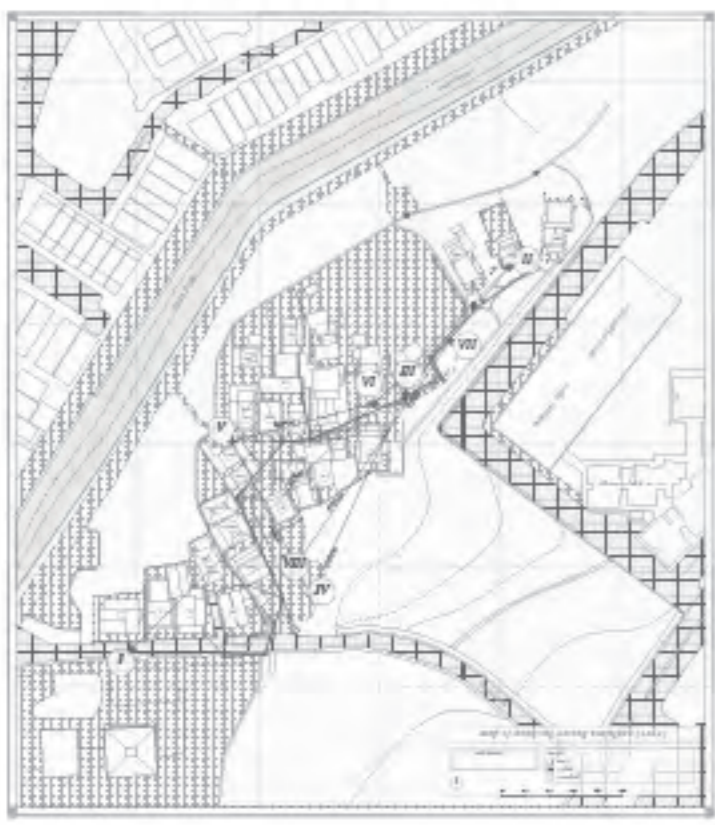
Jonathan Hill

Surrounding the drawing is a circular frame of 9 casts that record objects from the existing kampong. As a reflection of the mappings done in the documentation phase, I felt that materiality, scale and the dimensionality of paper failed to capture the reality of the site.

Thus illustrating the 9 sites of the narratives on the drawing were insufficient in situating these stories. I proposed that the casts were better suited to tell this physicality in the absence of the Kampong. These artefacts allow the visitor to imagine and touch the location where some of these narratives have occurred



overview and detail photographs of the 9 casts that form the frame of the archatographic map.

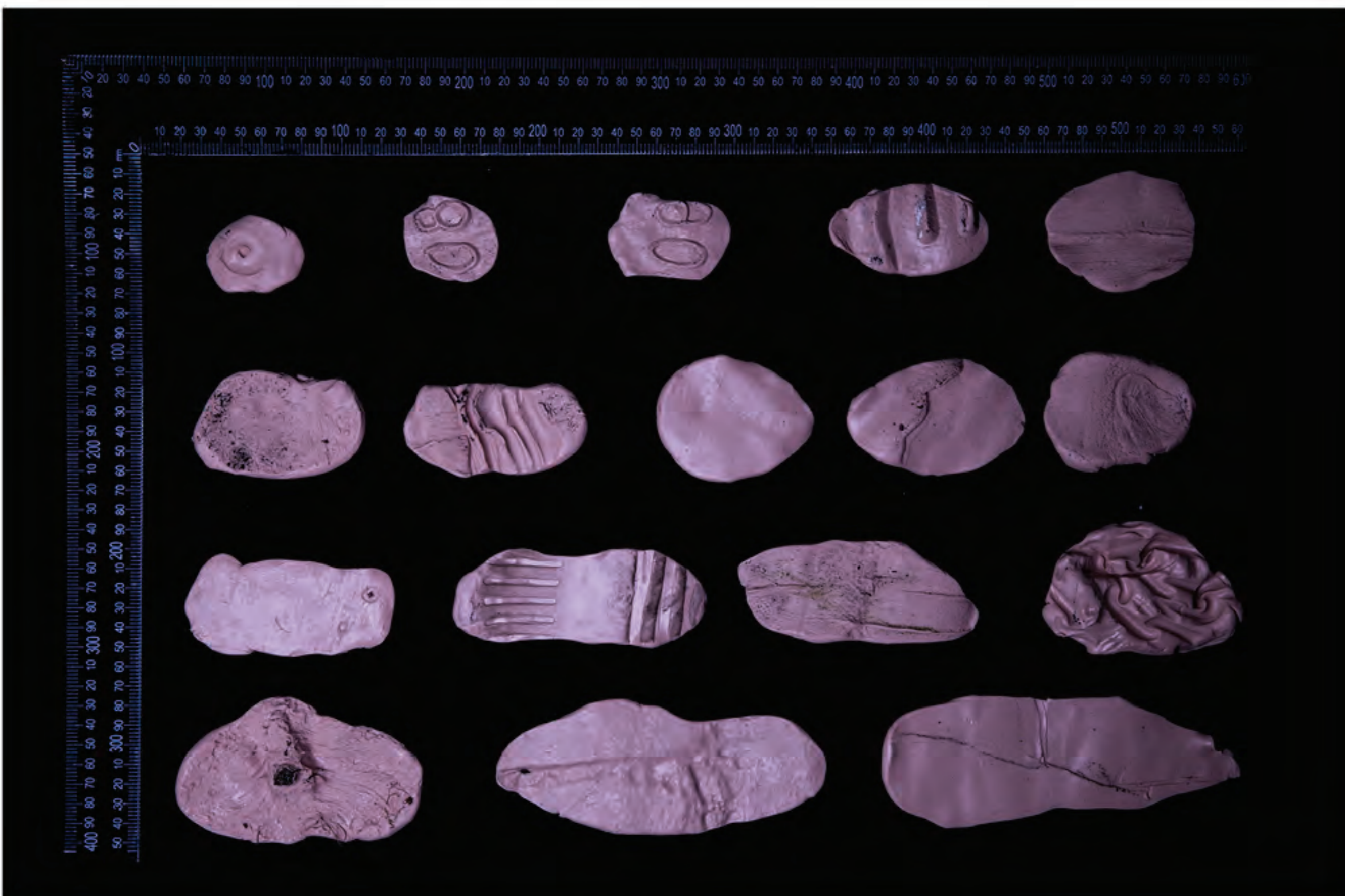


- 1 Bangkok Road County (Borabok)
- 2 Low Bank of Hanoi River
- 3 Close to the landmark of Ping River
- 4 River Canal
- 5 North Entrance to the village
- 6 Same as 5 (Entrance to Kampong Loring Bangkok)
- 7 Canal Bank
- 8 Along River, nearby the Commune Base
- 9



Using the 9 sites that the narratives are situated in, the frames cast objects and surfaces that exist on these sites. On the right, is me creating an impression of the iron chains on the 4 concrete blocks at the entrance of the kampong, these impressions give a real and tactile record of the objects that once existed on the sites.

Here I designed the system of gathering the impressions of the 9 sites, and casting various objects that exist on the site. The image below shows all the impressions of the 9 sites, including the drum set of Mr Hong, the tree bark of a Coconut tree, and the markings on the canal flood marker.



various impressions of the site, that were used in the casts that form the frame.



the various experiments, and kit used in the making of the frame.

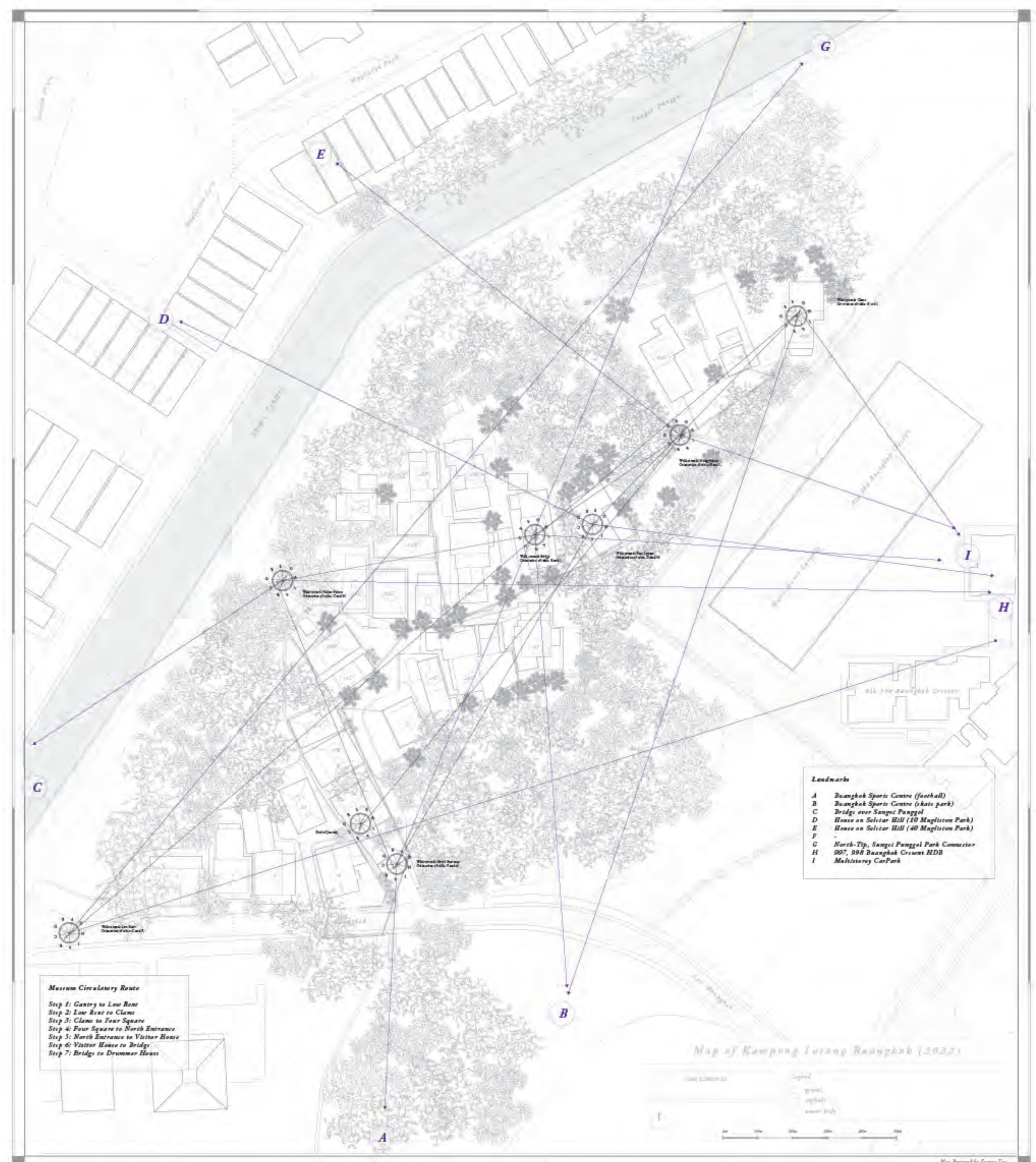
Navigating intuitively

Unlike visitors, villagers who have lived in the kampong for their whole lives do not use modern navigational tools like the compass or GPS. As opposed to a measured scientific movement, the process of the villagers was an intuitive one. The archatographic map seeks to deconstruct this intuitive process into two parts:

1. orientation by landmarks.
2. wayfinding by pacing steps.

Orientation to landmarks

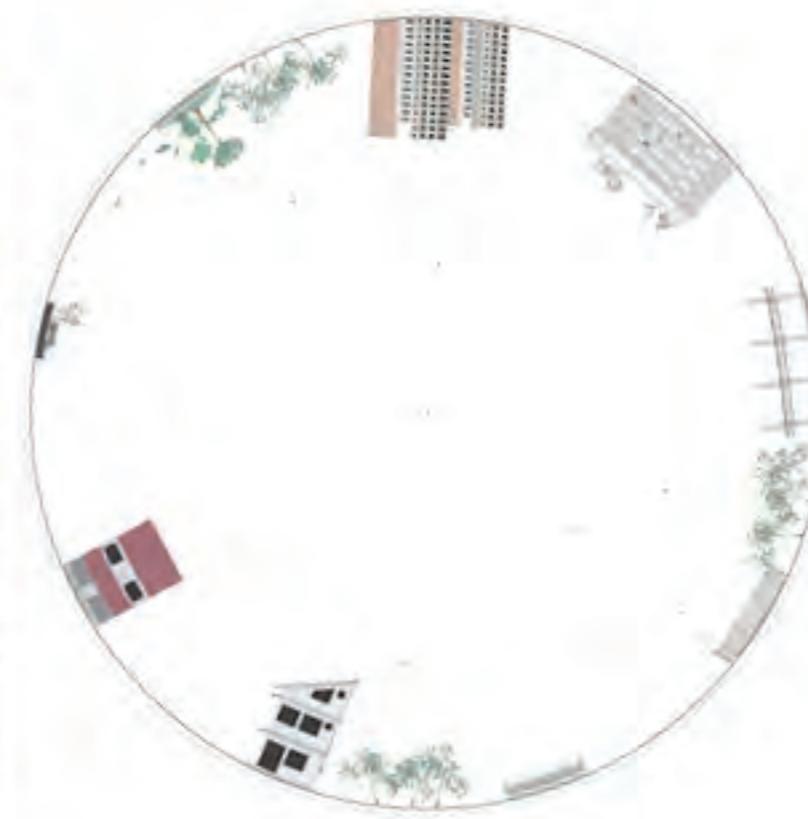
The archatographic map subverts the rectangular frame of cartographic maps by using a circular form. There is no north or south, as a resident often looks radially outwards from the home, as opposed to a particular bearing. To orientate with the archatographic map, visitors look at landmarks surrounding the kampong, using features to identify where they are and where they wish to go.



This drawing illustrates how as the visitor moves through the land, their landmarks shift relative to the archatographic map. Thus the distinctive landmarks differ for each site.



an action sequence of using the archatographic map on the site, the map is held parallel to the ground during the orientating process.



9 landmarks are identified and printed on the narrative drawing. These landmarks surround the kampong and can be used to wayfind.

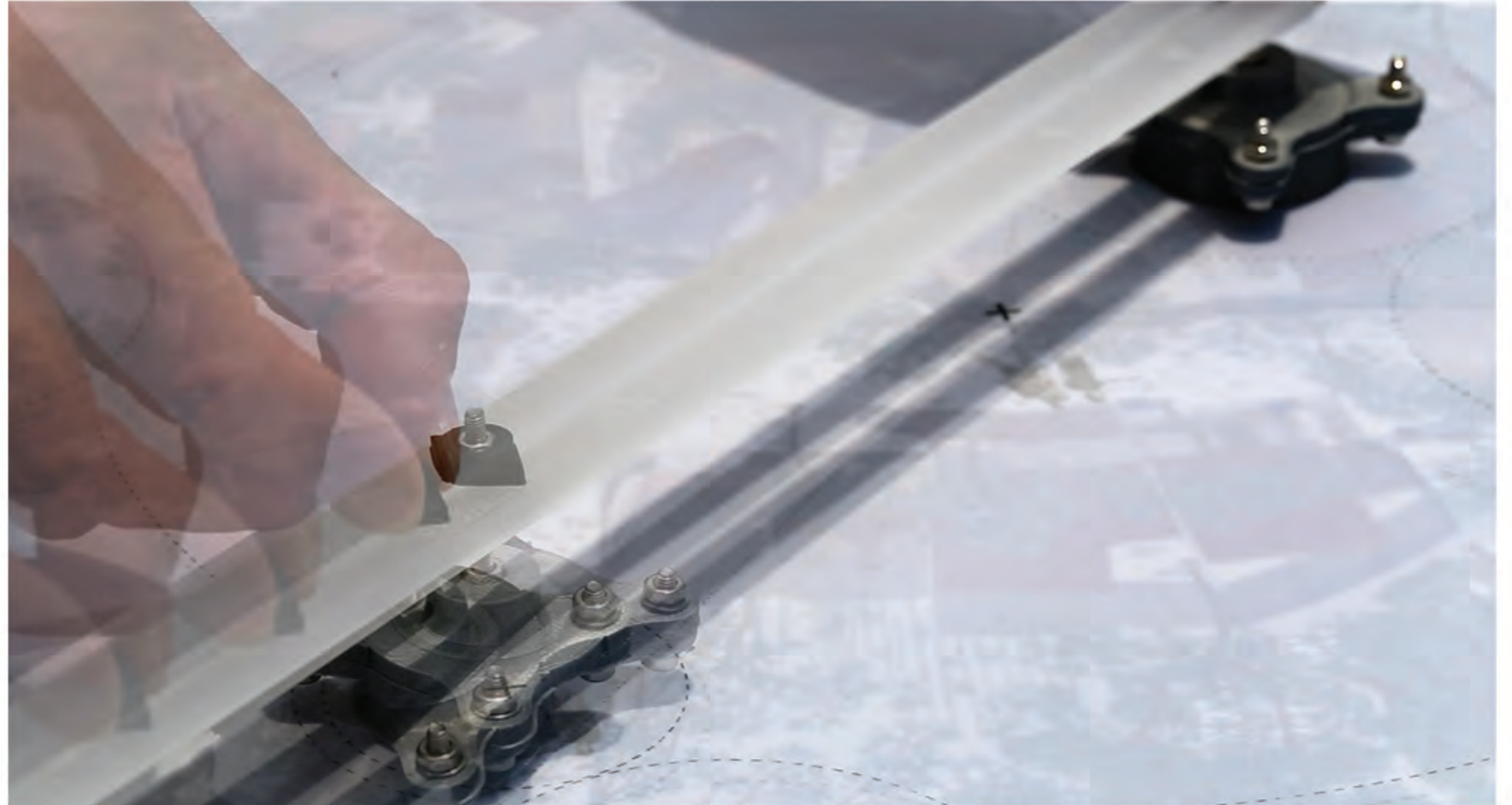


the map requires the visitor to move around it, transforming the visitor's movements.

Wayfinding by steps

In one of the stories told by Mdm Sng, she recounted how even when the kampong is pitch black, she is still able to find her way. This highlights an intuitive understanding of the site through the body.

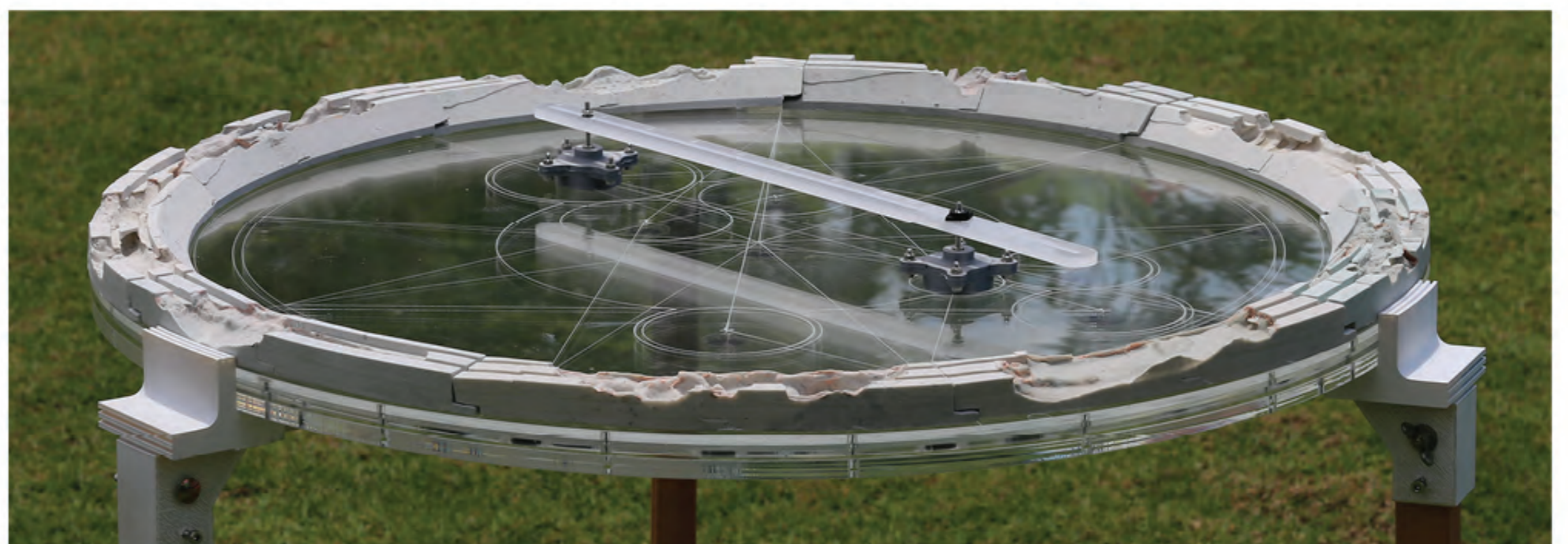
The step-ruler here investigates how we can translate a the distance on the map into a series of cues that the body can intuitively understand. Here, the step ruler tells us *how many steps we have to walk*, as opposed to *how far we should walk*.



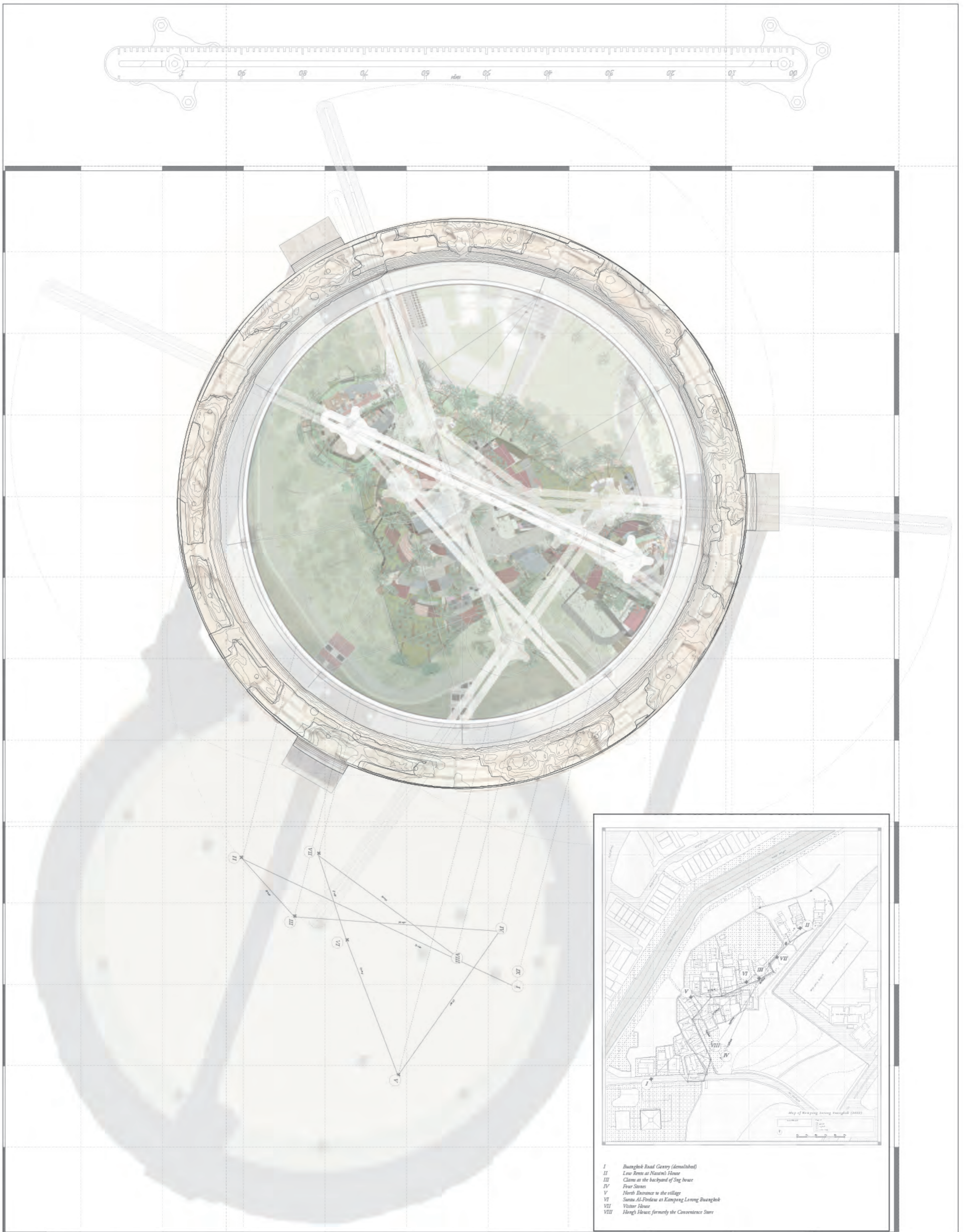
Using the step ruler for measuring distance..



the totems snap to different positions on the archatographic map.



magnets within the totems and the map allow for the ruler to be placed on any elevation.



translating distance to steps: the archatographic map allows for mistranslation of distance according to the visitor's own interpretations. Each step may vary for the visitor as well.

Recreating the lost topography

6.
Mostafavi, Mohsen, "Cartographic Grounds: Projecting the Landscape Imaginary" ed. Waldheim C., Desimini J. (Princeton Architectural Press, 2016). P6-7.

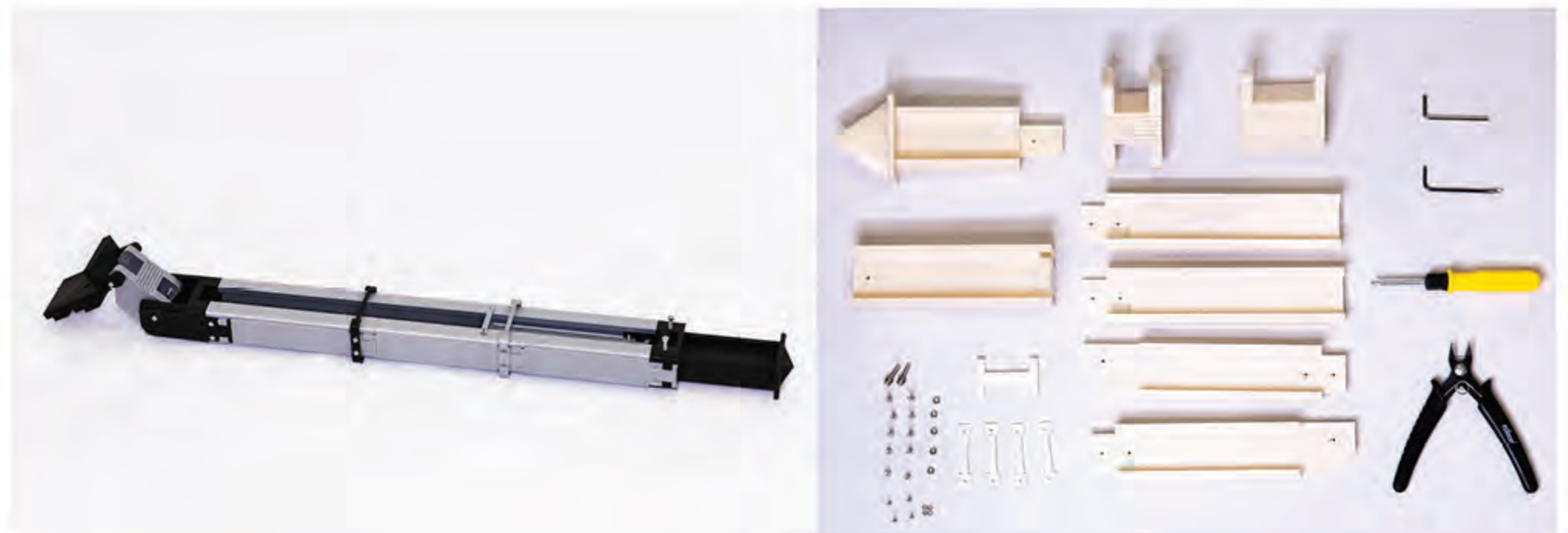
There still remains, however, the challenge of translating three-dimensional information into a two-dimensional surface, including the necessity of misrepresentation as a means of getting closer to the perception of the real. What are the tools, conventions, and scales that we should employ in order to tell the story, describe the characteristics of a particular territory, including even the narrative of dynamic change and transformation? ⁶

Mohsen Mostafavi

The topography of the kampong is unique, as it contrasts with the modern developments commonly found in the rest of Singapore. The surrounding topography has largely been the cause for floods in the village.

In 2038, to make way for the redevelopment of the kampong, the site will be moulded and flattened. The topography of the kampong will be lost. When maps represent the three-dimensionality of land on other mediums such as paper, there is information that is often lost. Developments of modern GIS and surveying tools like LIDAR have allowed for more precise recreations of topography, yet the digital medium allows us to conveniently switch between different scales. I find that this convenience makes it harder to understand the topography.

Thus, the archatographic map seeks to recreate the lost topography at 1:1 through a translation of the topography via the adjustable legs. As each leg of the map is adjusted to a different height, the map tilts, exaggerating the topography of the kampong from 2022.



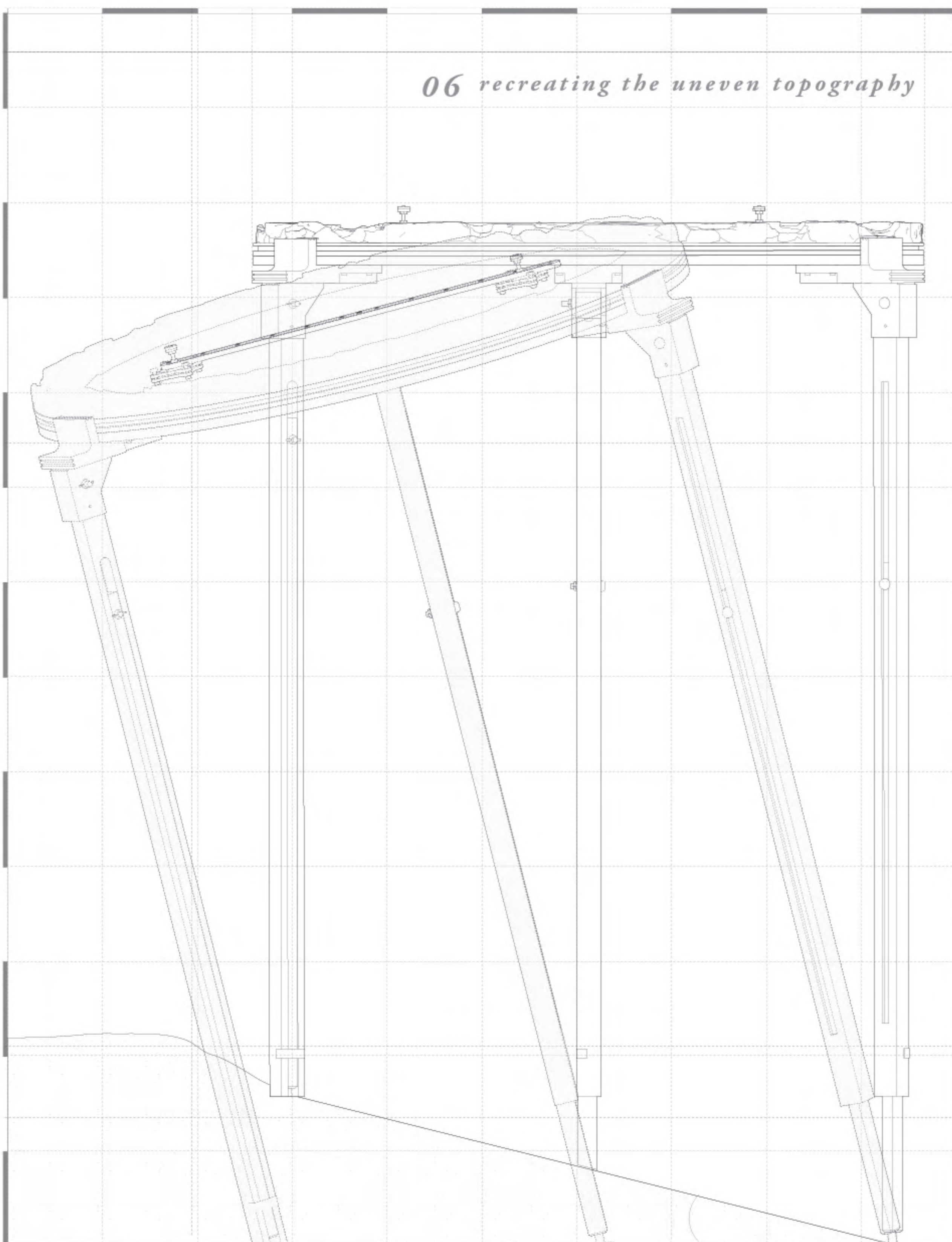
Early prototypes for the design of the legs of the archatographic map.



Marking the archatographic map with a knife



photograph of the leg, and connection via the 3D-printed leg bracket.



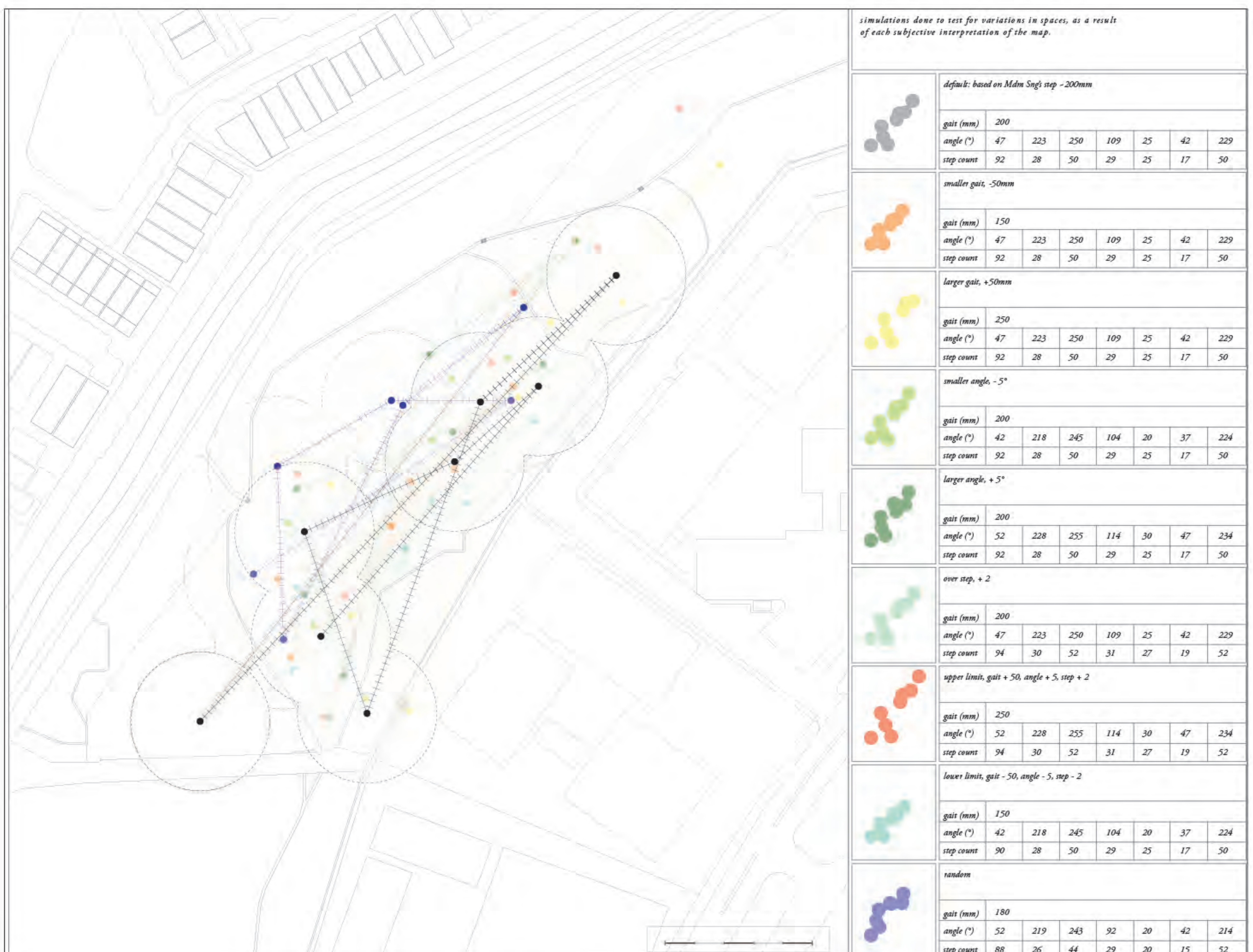
recreating the lost topography

Rethinking the fixity of architecture

In architecture, maps are the basis for site analysis and the starting point for design. What type of spatial intervention might we create with a map that does not follow the conventions of cartography?

The archatographic map led to a subjective way of interpreting space by different visitors. As each individual has different step gaits, orientate to the landmarks differently, and measure the steps differently. The resultant movement in the site would be different.

To illustrate certain possible scenarios, simulations were conducted. A standard deviation of $\pm 5^\circ$ for the orientation angle, $\pm 50\text{mm}$ for the step gait and ± 2 steps for the step count were used as variables. The resulting movement across the site, and the boundary ($r = 2000\text{mm}$) is illustrated below.



variables tested and resulting spatial boundaries



Object Oriented Programming: using grasshopper to simulate the results that different visitors might take

Propositional Animation

To conclude, this animation depicts how the archatographic map is used in 2038. Combining drawings, recorded footage and digital animation, the propositional animation summarises the key concepts of the project.

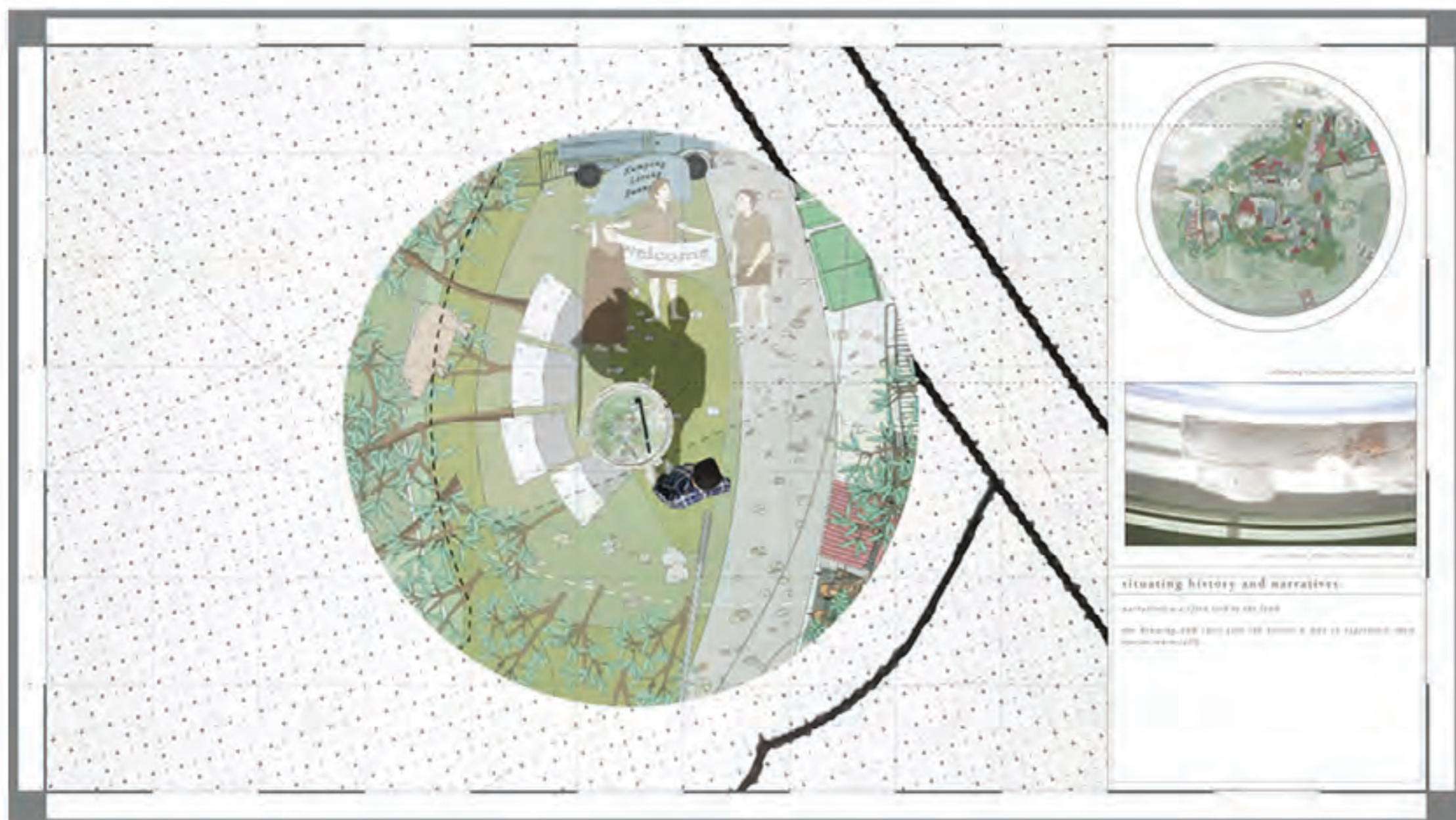
Please watch the film, you can scan the QR code or visit:
<https://vimeo.com/700703036>



Scan to watch the summary animation
<https://vimeo.com/700703036>



still from 00:00:07:18



still from 00:01:10:12

00:00:00:00

00:00:02:24

00:00:07:18

00:00:21:23

00:00:38:11

00:00:55:16

00:01:10:12

00:01:27:23

00:01:53:29

Conclusion: an inevitability?

5.
Hill, Jonathan, "Designs on history: the architect as physical historian" (RIBA publishing, 2022). P.XV.

Our perceptions and memories are fallible and creative... Rather than just living in the moment, we filter the present through memories of the past and speculations on the future that are permeated by personal and collective values, weaving many times into one. As we move from place to place, we may seem to move backward or forward in time or oscillate between pasts, presents and futures. ⁷


Jonathan Hill

In Kampong Lorong Buangkok, the land ought not to be valued according to maps that only delineate boundary and territory. During the documentation phase, I was able to interact with the residents who shared their stories about the land. Mdm Sng would bring me on walks to see specific aspects of the kampong. In the future, when the kampong is cleared, it is not just the built environment that is lost, but also the ability to interact with the residents of the kampong. In 2038, the archatographic map creates the ability for visitors to embody an architecture of absence. To reimagine the kampong through movement, narratives and the site; to see from the perspectives of the residents; to imagine and feel these artefacts as they relate to the site. and recreate the lost topography. These are small, site-specific ways to represent the land in the absence of the real thing; a consolation prize for the loss of the last kampong..



the archatographic map in the kampong.

Appendix: supporting material

S/N	Description	Visual Ref	Link
1.	Photobook made for documentation stage that documents the various observations of the villagers.		 <p data-bbox="1430 721 1843 750">Scan to see the read the photobook on issuu</p> <p data-bbox="1430 771 1923 825"> https://issuu.com/documentationprojecteugene/docs/researchbook_caa050222 </p>
2.	mapping process done with Mdm Sng, recording how she thinks of her space on a map.		 <p data-bbox="1430 1219 1871 1249">Scan to see the mapping process with Mdm Sng</p> <p data-bbox="1430 1270 1713 1299"> https://vimeo.com/700687399 </p>
3.	Mdm Sng's description of her palm mimicking the map of the site.		 <p data-bbox="1430 1694 1772 1724">Scan to see the mapping of the palm.</p> <p data-bbox="1430 1745 1713 1774"> https://vimeo.com/700687422 </p>
4.	Using a model and water to explore how the village might have flooded in 1977. As there is no other documentation, this process proposes how the water line might have been		 <p data-bbox="1430 2139 1671 2169">Scan to see the flood map</p> <p data-bbox="1430 2190 1713 2220"> https://vimeo.com/700687300 </p>
5.	Propositional Film, depicting the proposition of the Archatographic Map		 <p data-bbox="1430 2614 1780 2644">Scan to watch the summary animation</p> <p data-bbox="1430 2665 1713 2694"> https://vimeo.com/700703036 </p>

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