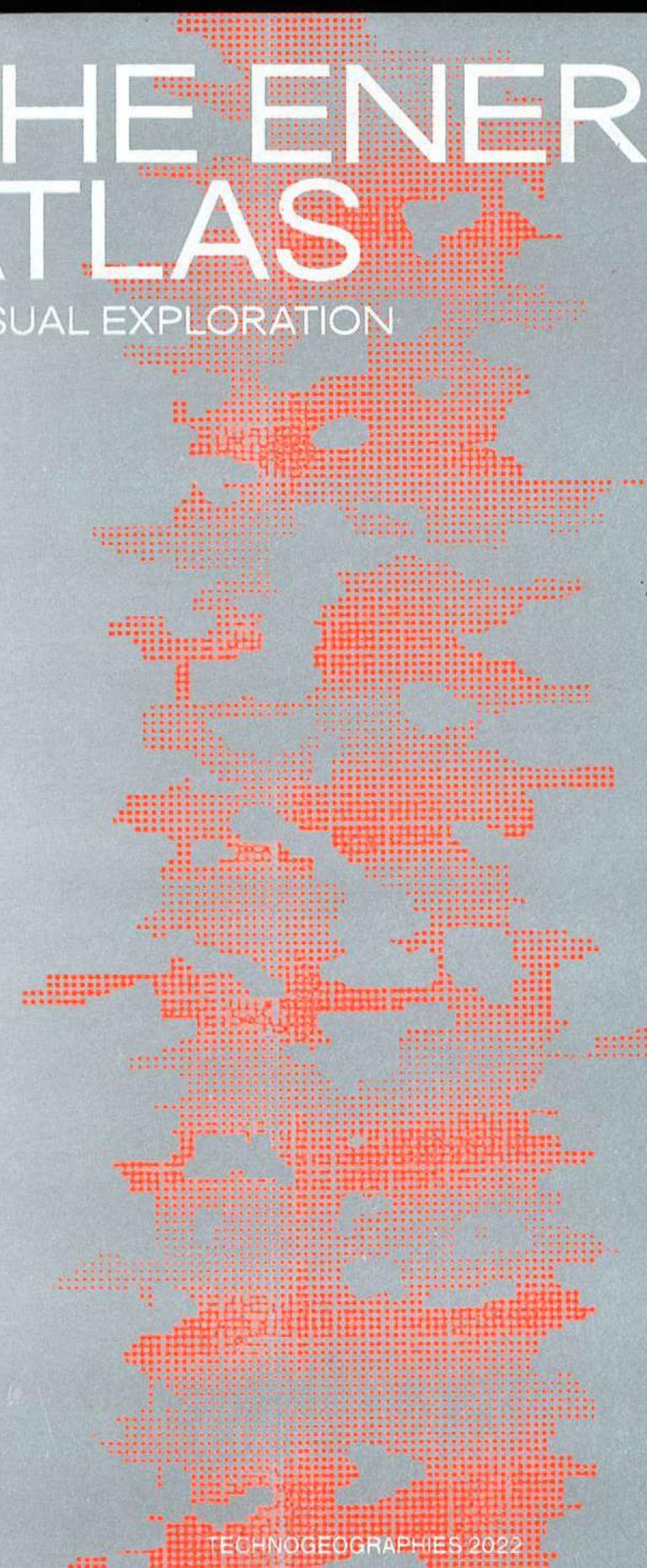
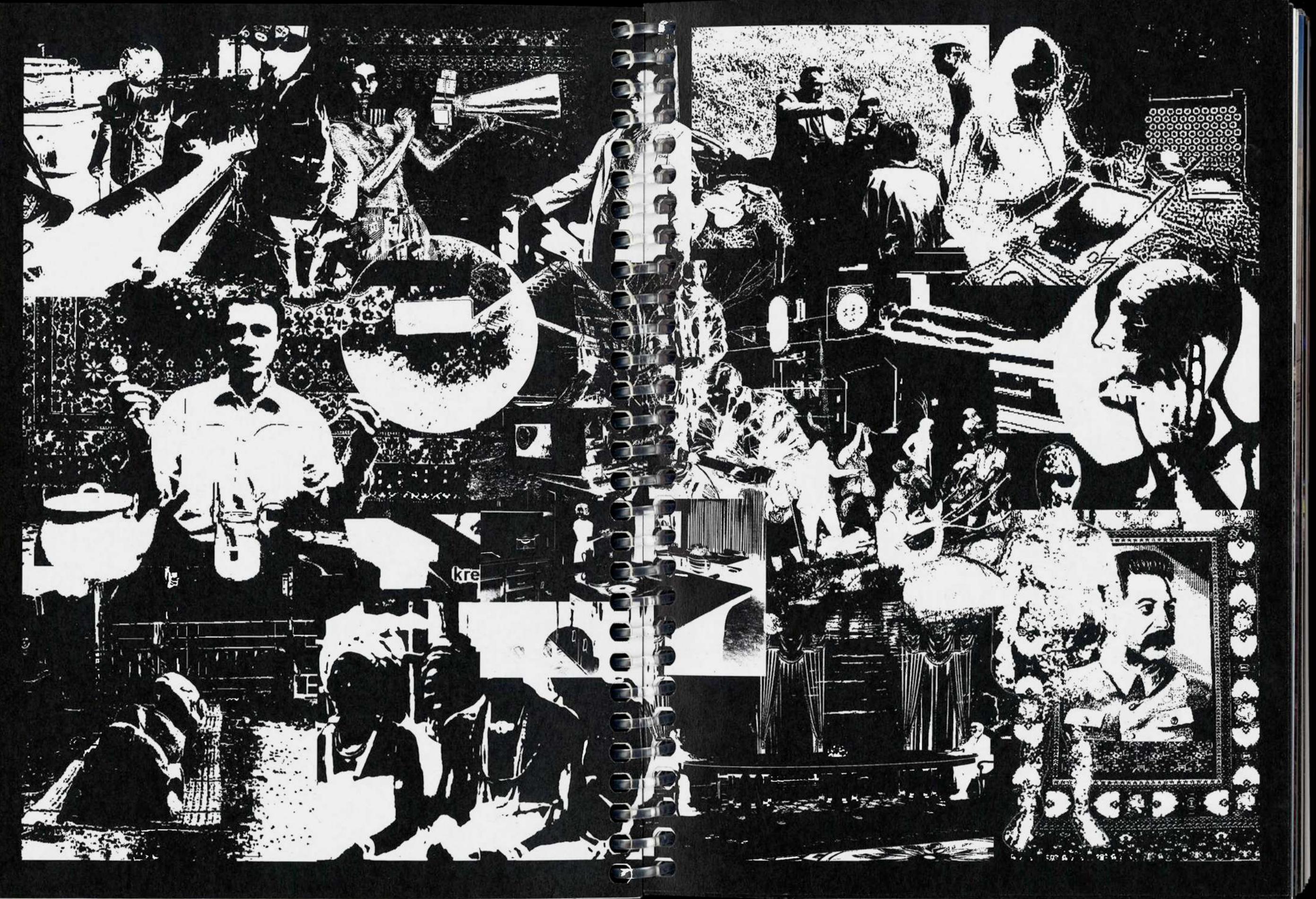
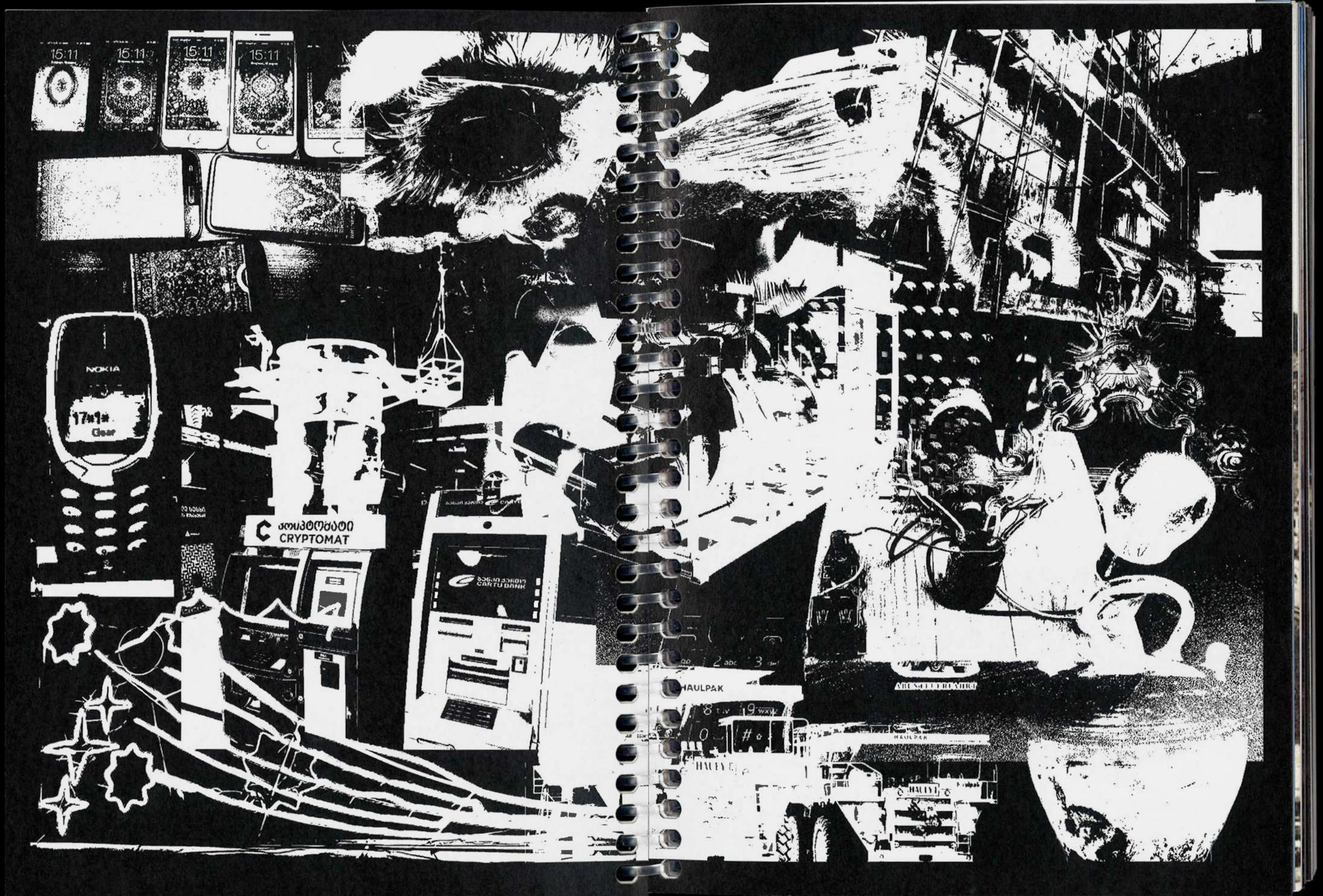


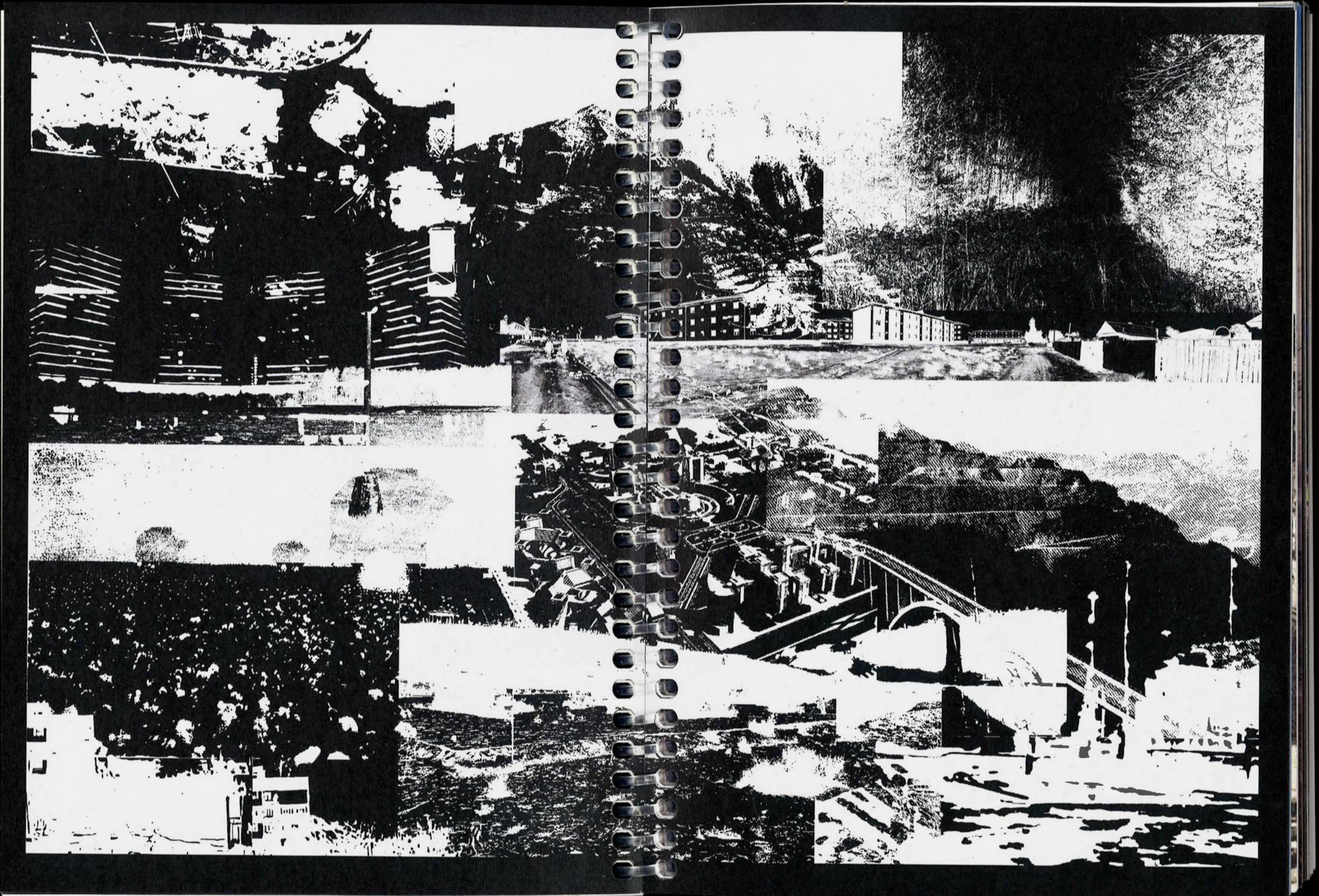
THE ENERGY ATLAS

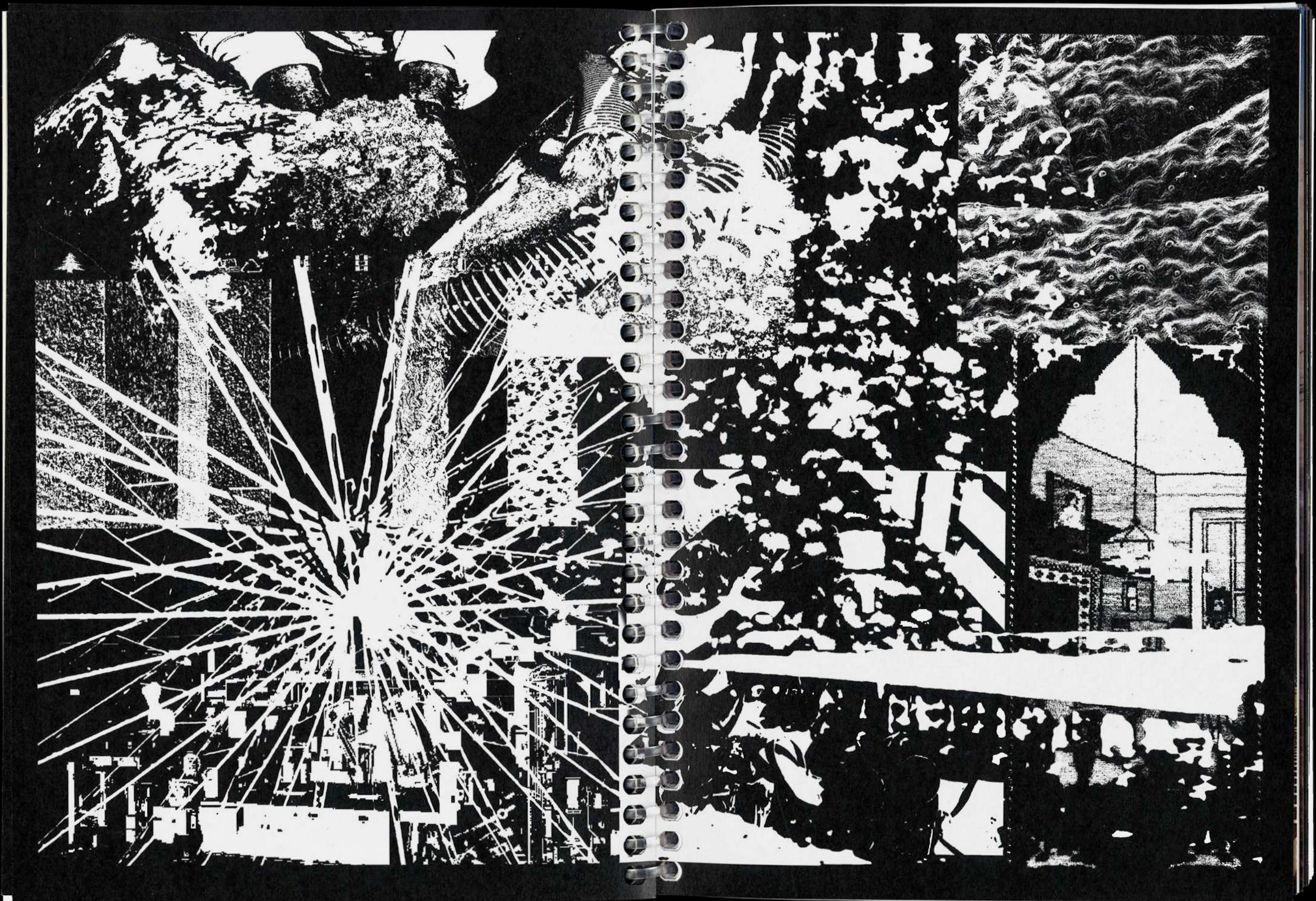
A VISUAL EXPLORATION











FLows of Energy: Tracing The Ephemeral

Introduction

Energy is a mysterious thing. You cannot touch it, you cannot see it. How many of us know where exactly it is coming from, how it moves and how it works? And yet most of us depend on its unconditional presence. In this day and age a life without energy would be hardly imaginable for as the actions of plugging in, heating, cooling, and refuelling are indispensable for our modern societies to operate. With energy, we charge our devices, warm-up our flats, power our machines, run our factories, cool down our data centres, drive our cars, and operate our hospitals, schools and art exhibitions. It is no wonder then that its ubiquity in our daily lives leads us to take it for granted. Energy, in its many forms, is just simply there.

Paradoxically, only when an energy system breaks down, when suddenly energy is absent, it becomes rather visible, almost tangible.¹ All of a sudden it becomes hard to *not see* their presence and materiality. A blackout during a storm makes us aware of the physicality of powerlines that criss-cross our landscape, the breakdown of the internet connection makes us think of the fragility of glass fibre cables, while the gas supply crisis as a result of the Russo–Ukrainian War makes us reflect on the pipelines that lie directly under our feet.

Indeed, the currently ongoing war in Ukraine provides a striking example for the ubiquitous presence of energy systems, as well as their complex global entanglements. Let's consider one small fragment of the events taking place between February and March 2022: When Russia attacked Ukraine, Europe introduced economic sanctions against Russia. In return, Gazprom—the mainly state-owned Russian energy corporation—pumped less gas towards Europe via the Nord Stream 1 pipeline. 1

² Shortly after, the newly built Nord Stream 2 pipeline was deactivated before just before entering service. This naturally stirred concerns over gas shortage, especially within Italy, Germany, Austria and other European countries highly dependent on Russian gas, which were accused of indirectly financing the war through their continuous gas purchases. As a consequence, a chain of economic and geo-political re-formations were set off in order to redirect flows of fossil fuels: While the European Union intensified its relations with US-liquid gas producers, Italy made new gas deals with Algeria, and Germany negotiated a new energy collaboration with Qatar on top of a reboot of some coal power stations (which had been closed down in order to reduce CO₂ emissions).²⁺³ Meanwhile, 106 employees of the Swiss-based Nord Stream 2 AG—the company responsible for the construction and maintenance of the second Nord Stream pipeline—lost their jobs as the company went bankrupt in the face of the closure. As of today, an inactive Nord Stream 2 pipeline lies on the ground of the Baltic Sea, which is currently filled up with 360 million cubic metres of methane, worth 400 million Euros. As the war continues, and politicians are seeking alternatives to plug the hole of their individual energy crisis, environmentalists man the barricades. They remind us that we should not ignore the potential long-term threats that the sleeping giant Nord Stream 2 and its eroding plastic sheathing and corroding steel components could pose to the environment, if nobody maintains it.⁴

The contemporary war zone is certainly not the only context where the presence and complexities of energy distribution can be observed. Energy networks are everywhere, ready to be used and abused, purposefully directed and redirected. They are ideologically motivated, they reflect power structures and geo-political relationships. Shifts in direction, metamorphoses and migration of energy leave traces, marks and fragments. By tracking and analysing these visual, material and acoustic signs we can learn something about the ubiquity, characteristics and global interdependencies of energy networks. By deconstructing their entangled flows and transformations, we can investigate economic, environmental and social relations at different scales starting from the level of an atom.

Theoretically, such an investigation can take all sorts of shapes. It could deploy natural sciences to measure energy and apply statistics to learn about its future. Research could be

1 Leigh Star S. (1999): The Ethnography of Infrastructure. In: American Behavioral Scientist, Vol 43, Issue 3.

2 Blechner N. (2022): Wer leidet unter den gedrosselten Lieferungen? In: tagesschau.de, accessed on July 20th 2022.

3 Vetter P (2022): Habeck schließt Energiepartnerschaft mit Katar. In: welt.de, accessed on July 20th 2022.

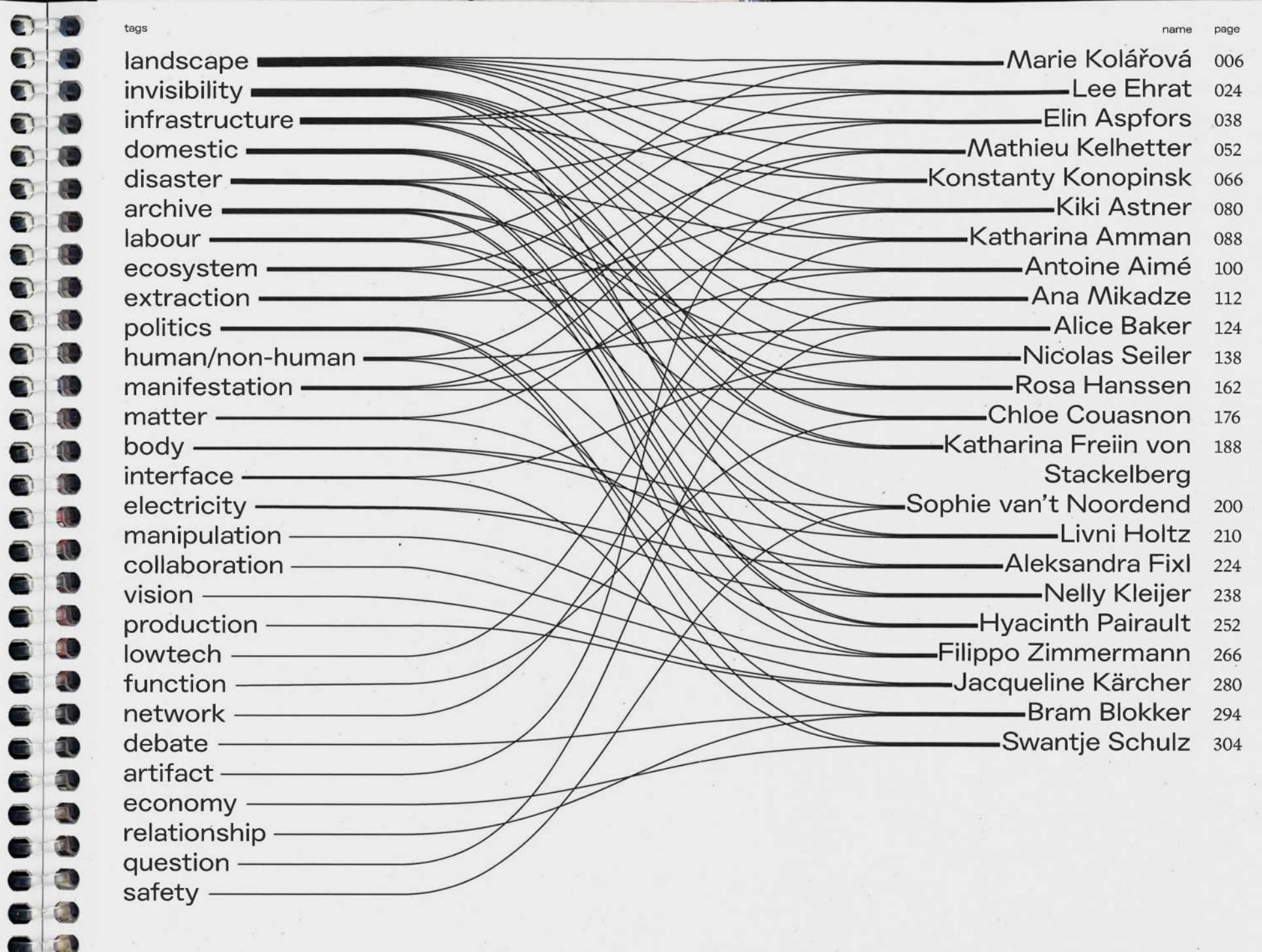
4 Tilmann S. (2022): Milliardenruine am Meeresgrund. In: zeit.de, accessed on July 20th 2022.

undertaken through a journalistic approach by doing field-work and collecting information and evidence through interviews and photographs; or alternatively the inquiry might focus directly on the material and by extension matter itself, by analysing it under a microscope. All of these research methodologies were touched upon in this spring semester 2022. Now within this publication we were eager to test and apply another mode of investigation, called *visual research*. Its aim is to produce knowledge and generate insights into the critical aspects of energy by looking closely at the vast stream of energy-related images. Visual material is sourced from websites, search engines, YouTube videos, books, social media platforms, encyclopaedias, corporate press sections and a planetary-scale network of sensors, including smartphones, surveillance cameras, and satellites. By collecting, comparing, sorting, editing and sequencing those images, we have produced image-based narratives which aided our understanding of the particular energy systems each of us was curious to investigate. Flows of images trace flows of energy. They raise relevant questions and explore pressing issues in a critical, visually-driven manner. The projects included aim to tell new narratives by employing visual research to generate new insights, that the single image on its own, the mathematical model or the academic essay may not reveal as such.

INDEX

collaboration	—the action of working with someone to produce something	human/non-human	—the being / non being of a person with all their body, history and inner world
labour	—practical work, especially when it involves hard physical or mental effort	manifestation	—a sign, act or process of something existing, happening or making visible
domestic—	existing or occurring inside a particular space, often home or family	artifact	—a usually simple object showing human workmanship or elements of a culture
ecosystem	—a complex network or interconnected system	economy	—system that manages production and consumptions of goods and services
extraction	—the action of extracting something, especially using effort or force	question	—requiring for resolution or discussion.
matter	—the material which is included into the extraction process	electricity	—energy originated from charged particles, protons and electrons.
infrastructure	—physical and organizational structures and facilities needed for the operation of a society or enterprise	invisibility	—state of being unseen or inability of seeing somebody or something.
vision	—an idea or mental image of something influenced by surrounding circumstances	safety	—the condition of being protected or out of danger
landscape	—a part of the earth's surface that can be viewed at one time from one place	interface	—the point through which user and computer communicate.
body	—the organized physical substance of an animal or plant either living or dead	manipulation	—controlling and influencing someone and/or something in order to get benefit out of it.
function	—The predetermined reason for a certain object or labor to fulfill a goal.	archive	—a collection and gathering of information or data throughout a period of time.
network	—a system of multiple parties being connected through varying levels of exchange, dependency, anonymity and technology	low-tech	—methodology which takes in practice technology that is not recent.
politics	—The activities associated with the governance of a country, area or group	disaster	—an event that results in harm, damage, loss and/or death
debate	—the serious exchange of arguments, opinions and views on a subject	production	—the action of making or manufacturing from components or raw materials
relationship	—the way in which two elements of a systems are connected		

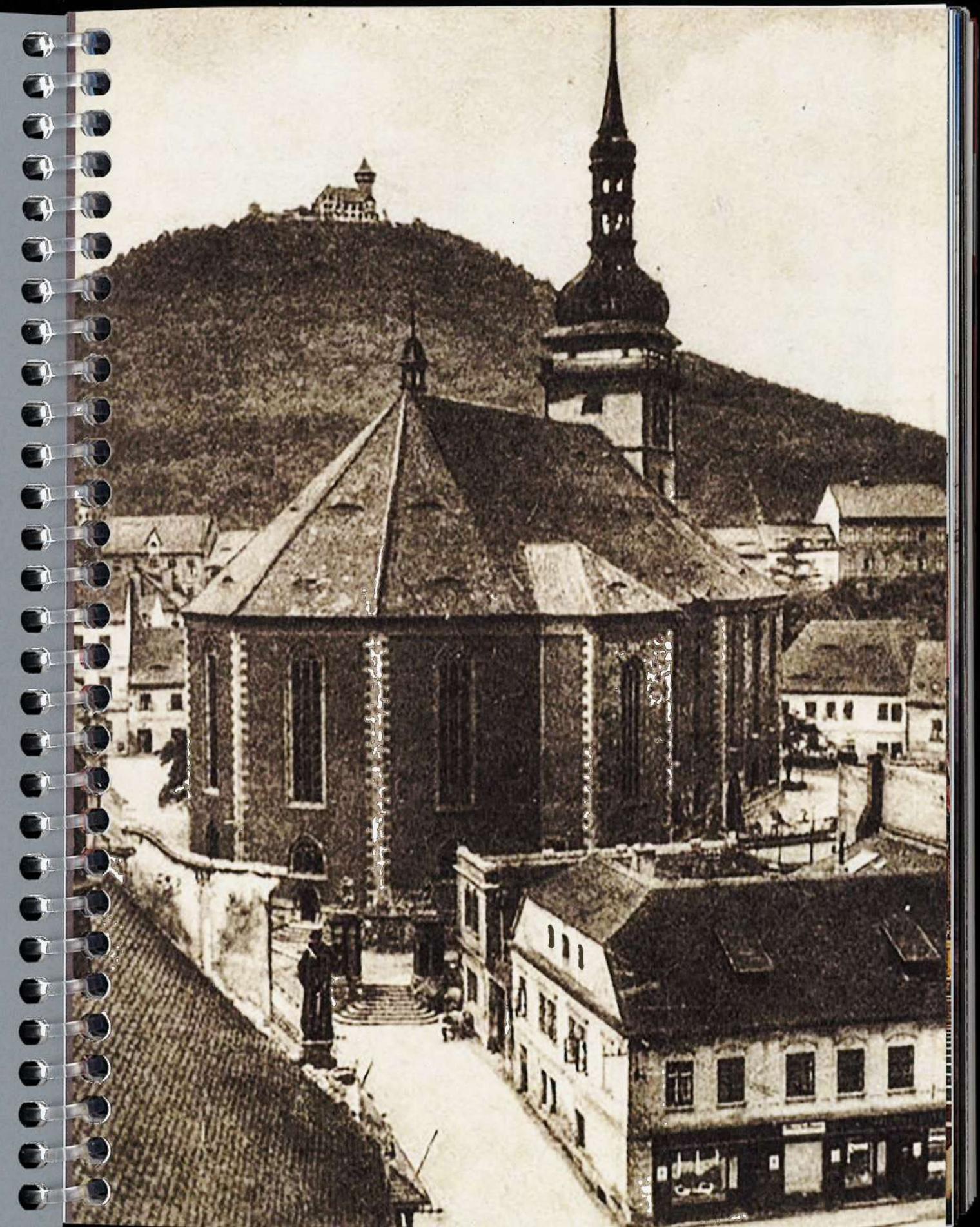
INDEX

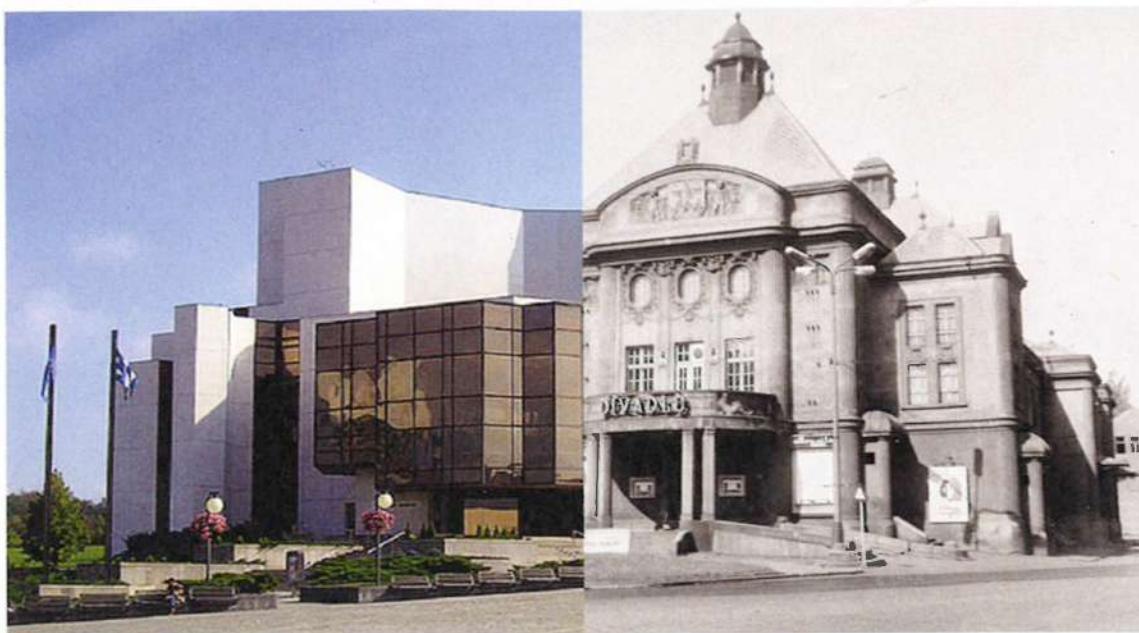


VISUAL EXPLORATIONS

6 landscape— archive— extraction

Marie Kolářová





Town theater



Marie Kolářová



The headquarters of SHD (North Czech Brown Coal Mines)



9



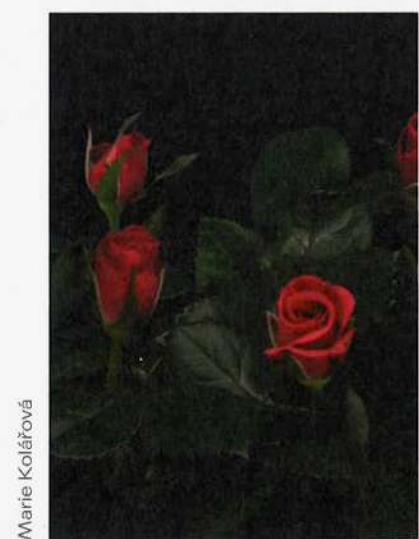
Courthouse



Post office



landscape archive extraction



Marie Kolářová



13

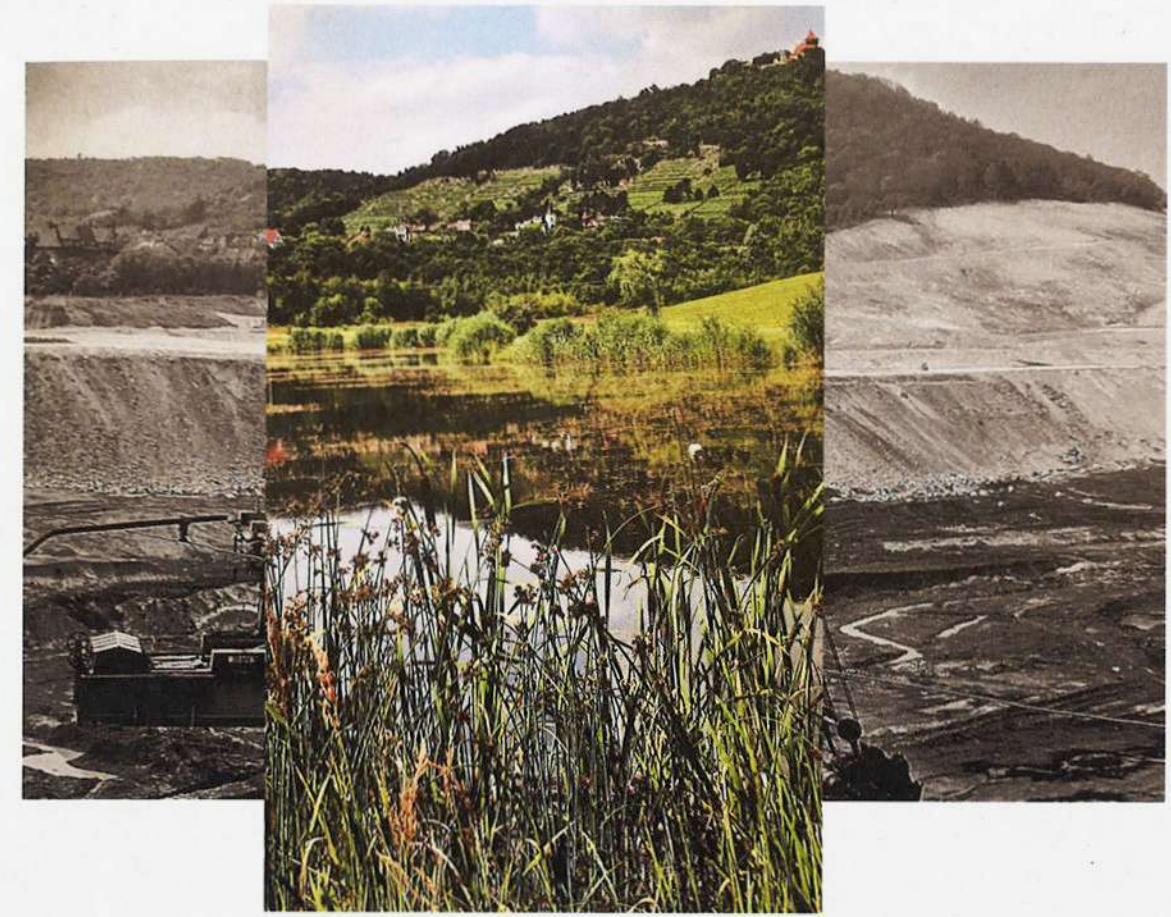


Marie Kolářová



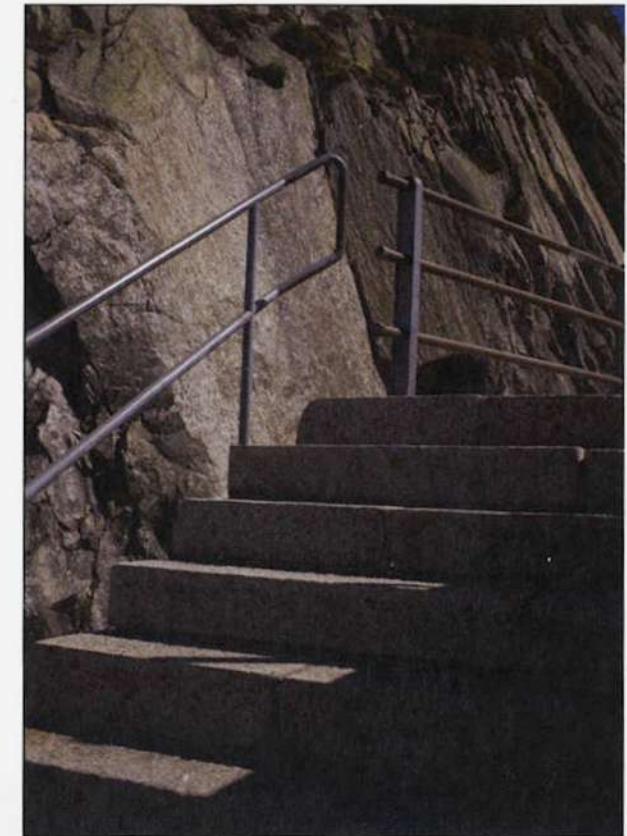


Marie Kolářová



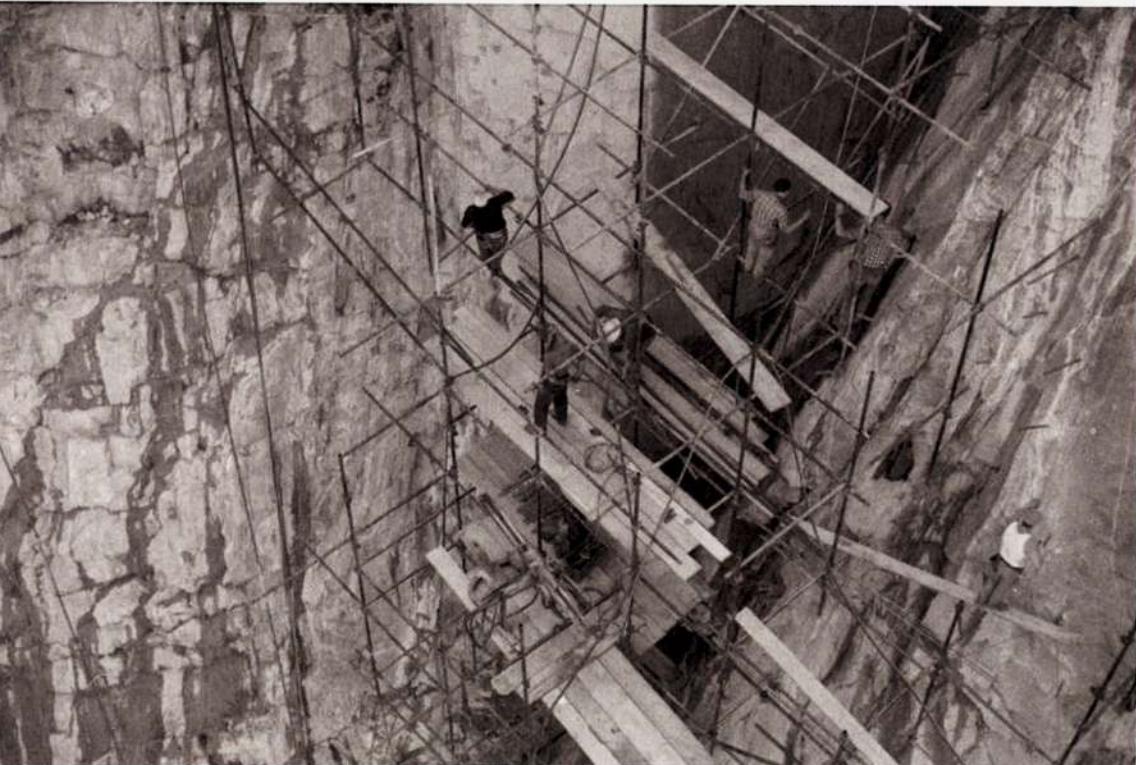
24 landscape— ecosystem— infrastructure

Lee Ehrat



landscape ecosystem infrastructure

4.6 ★★★★★ Lago di Vogorno
34 reviews



Lee Ehrat



★★★★★ Bruno Conti Rossini

★★★★★ Stefano Costa

★★★★★ Max Kunz

★★★★★ Mirko Potjer

★★★★★ Edith Peter

★★★★★ Patrick Fässler

★★★★★ Giovanni Malinverni

★★★★★ Oscar Valsangiacomo

Beautiful artificial lake with clear and extremely deep waters. The dam consists of a futuristic dam built at the beginning of the 60's of the 20th century. The incredibly light dam is 220 meters high and is 7 meters wide at the crown and 25 meters at the base.

The dam became famous thanks to the initial stunt of the film Golden eye.

Drive along the lake by car to reach the magnificent Verzasca Valley! Lovely places

270 meter high Dam Wall (Bungy jumping)

Impressive - the Lago di Vogorno is the backwater result of the Verzasca dam. It is wonderful to drive along the lake further up into the Verzasca valley. Attention at the weekend the whole Verzasca Valley is totally overrun with tourists, no more parking spaces, traffic jams, too many people in too little space.

This super beautiful reservoir is idyllically situated and known from the James Bond film "Goldeneye" and again and again draws thousands of hikers under its spell, who experience a mystical and wonderful seascape here ... in the sun room in Ticino. ...

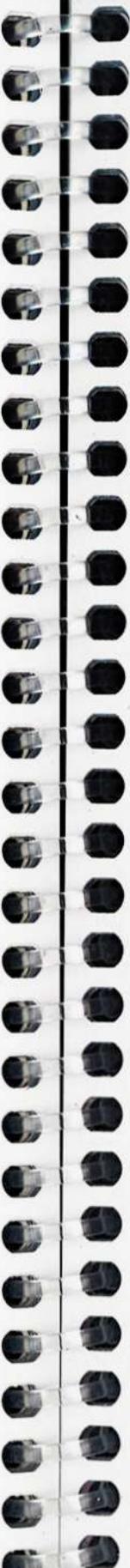
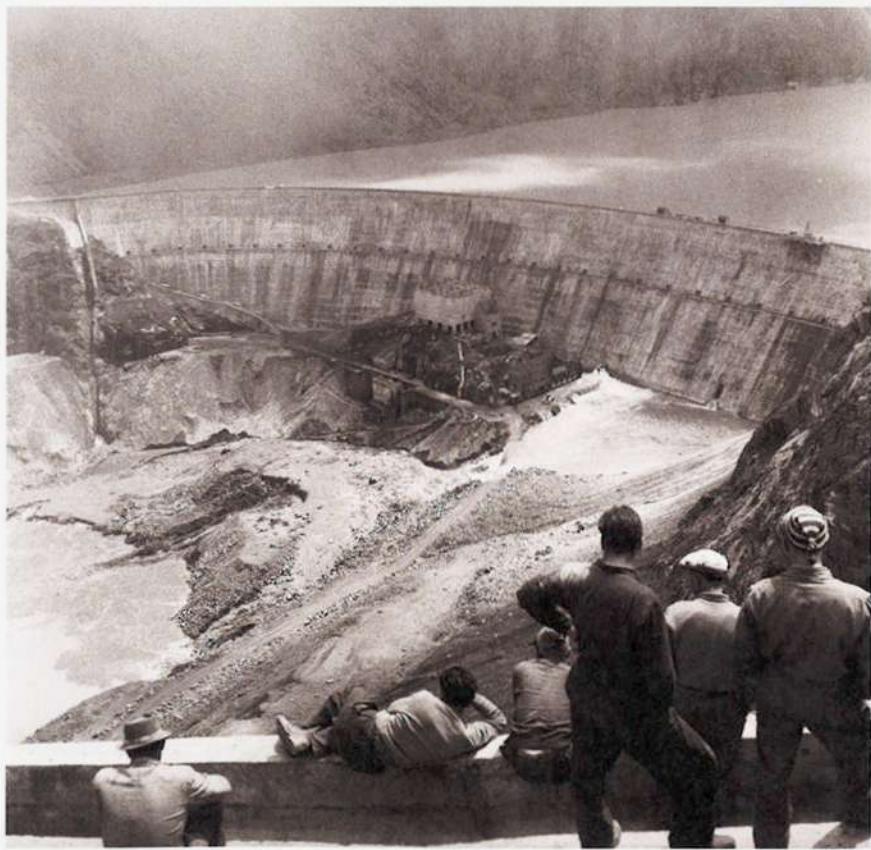
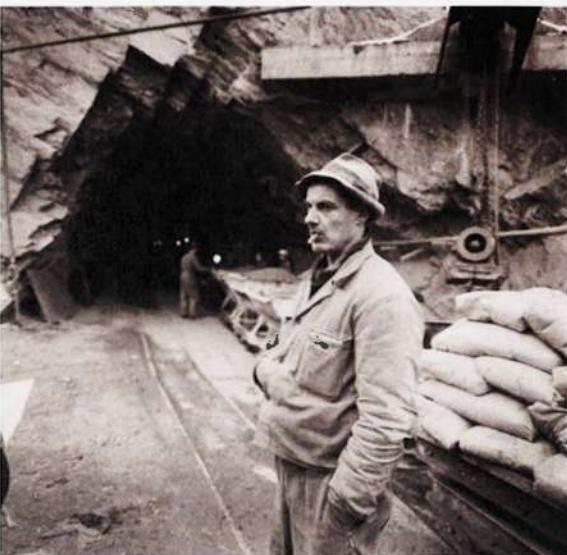
Impressive dam of about 220m height that created this lake. In 2021/2022 the water was almost completely drained after 56 years. It was very impressive.

Impressive dam at the beginning of Val Verzasca collects the waters of that stupendous river that crosses the whole valley

Magnificent Verzasca



4.8 ★★★★★ Lac des Dix
89 reviews



★★★★★ Gilles Curchod

★★★★★ Ivana

★★★★★ Bruno Spängler

Great artificial lake hold by the amazing technical monument Grande Dixence Dam finished in 1961. It's the highest gravity dam in the world. It's impressive not only for this enormous wall but also for all the tunnels pierced in the mountains to bring the water from the other valleys in this lake. From the dam, you can hike along the lake or go on several passes. A very nice hike is the "Sentier des Bouquetins" for instance that will bring you to the "Col des Roux" where you have a splendide view on the lake.

If you like my review, give it a thumb ☺

Nothing can be criticized for this place. A beautiful place to relax, adrenaline, but especially for amazing hiking. Parking under the dam is free. You can get to the lake on foot or by cable car at an affordable price. I recommend hiking to Le col des Roux, but in reverse order, from point 7 to point 1. It is an amazing rocky route, ending with a view of the lake. the whole route takes about four hours.

THE BREAK
Cracks hurry down
Separating what can not be separated
Over and over again
Horror in many a face

Astonished almost one hundred
Squeezed in a pale light
Admiring the masterpiece
They did not notice the disaster

Concrete crashes thunderously down into the valley
Water shoots from pretty 'over'
Furrows gape cross and crooked
Torrents are bubbling with torrents

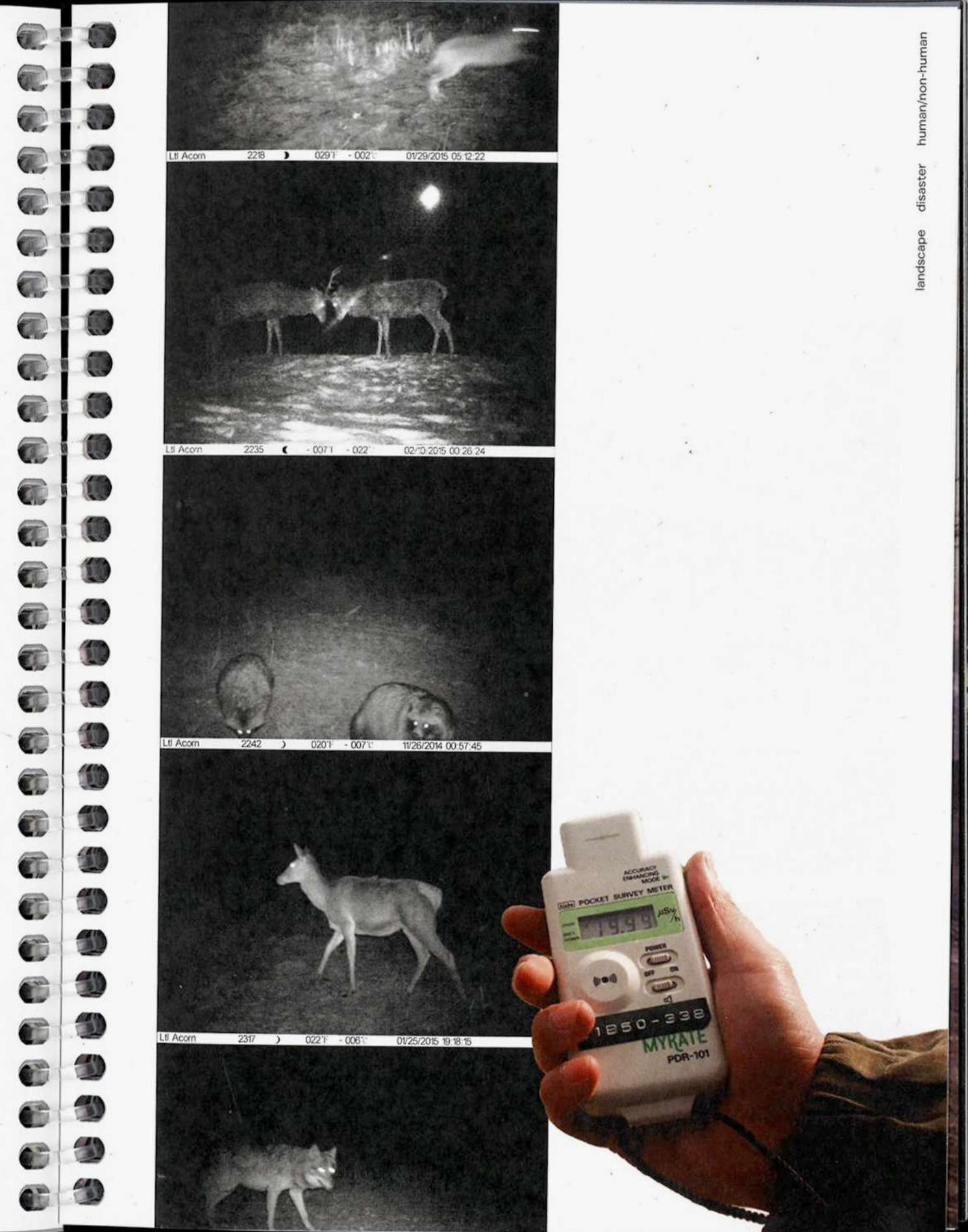
Tear something strange
The valley in deep dark emerges
Destructive as if it were with weapons
Residents bring anger and fear

Unbidden drones Urgewalten
Smash what's in the way
Held in check for decades
From now on his way

Just a moment's horror - moments
It seems like eternity
Smash now into a thousand pieces
Gives the lake concentrated power

Covered by dust crushed rock
A swath of desolation gapes
Roll rubble and mud to the valley
Nothing bothers anything

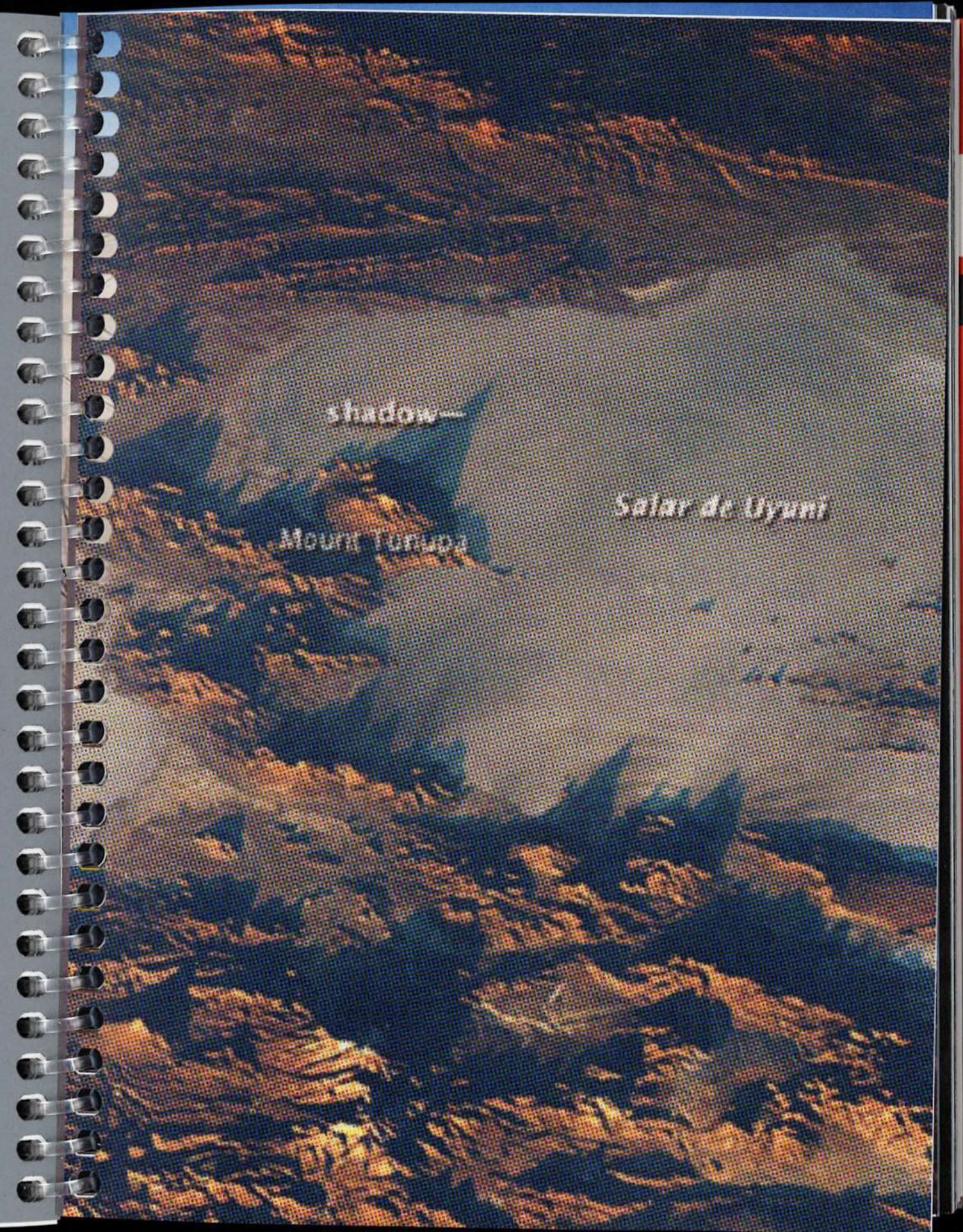
No fault - God's will
Do not fathom its ways
Not a complaint - dead silence
Little human being, little human

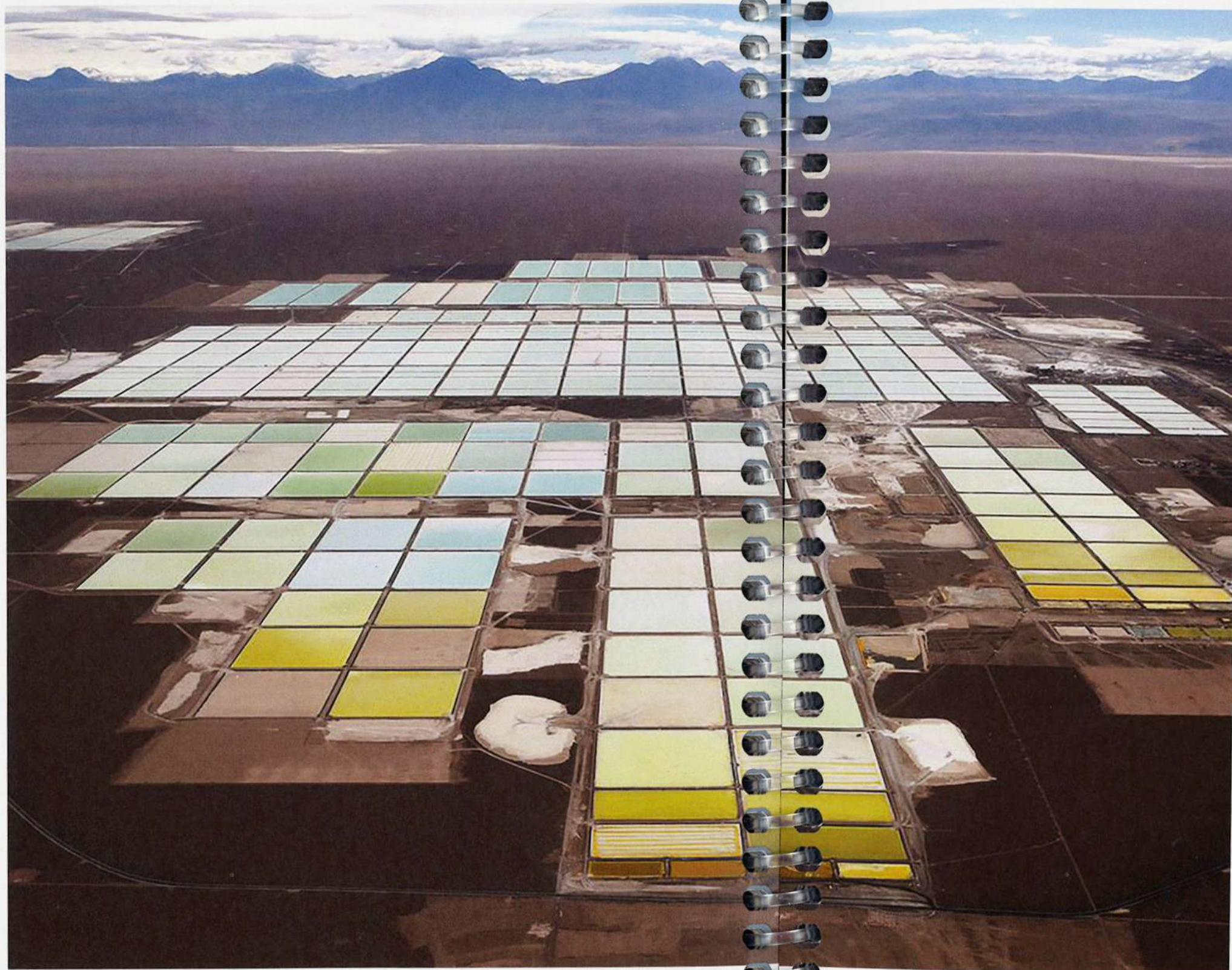




52 extraction— landscape— manifestation

Mathieu Kelhettter





Lithium evaporation fields in the Atacama desert

Mathieu Kelhettter

Impact of coal extraction on landscape over time



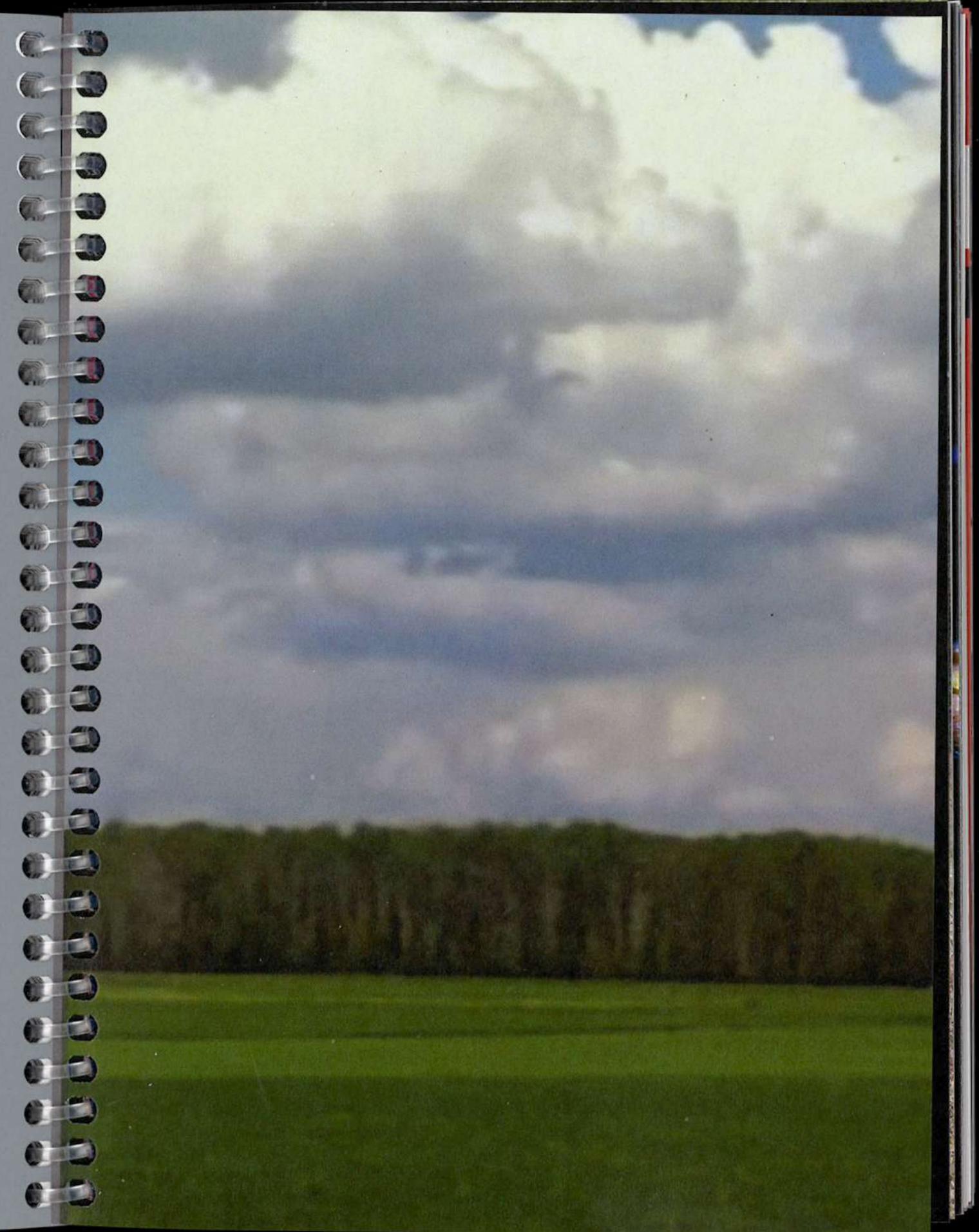
extraction landscape manifestation





66 artefact—
landscape—
infrastructure

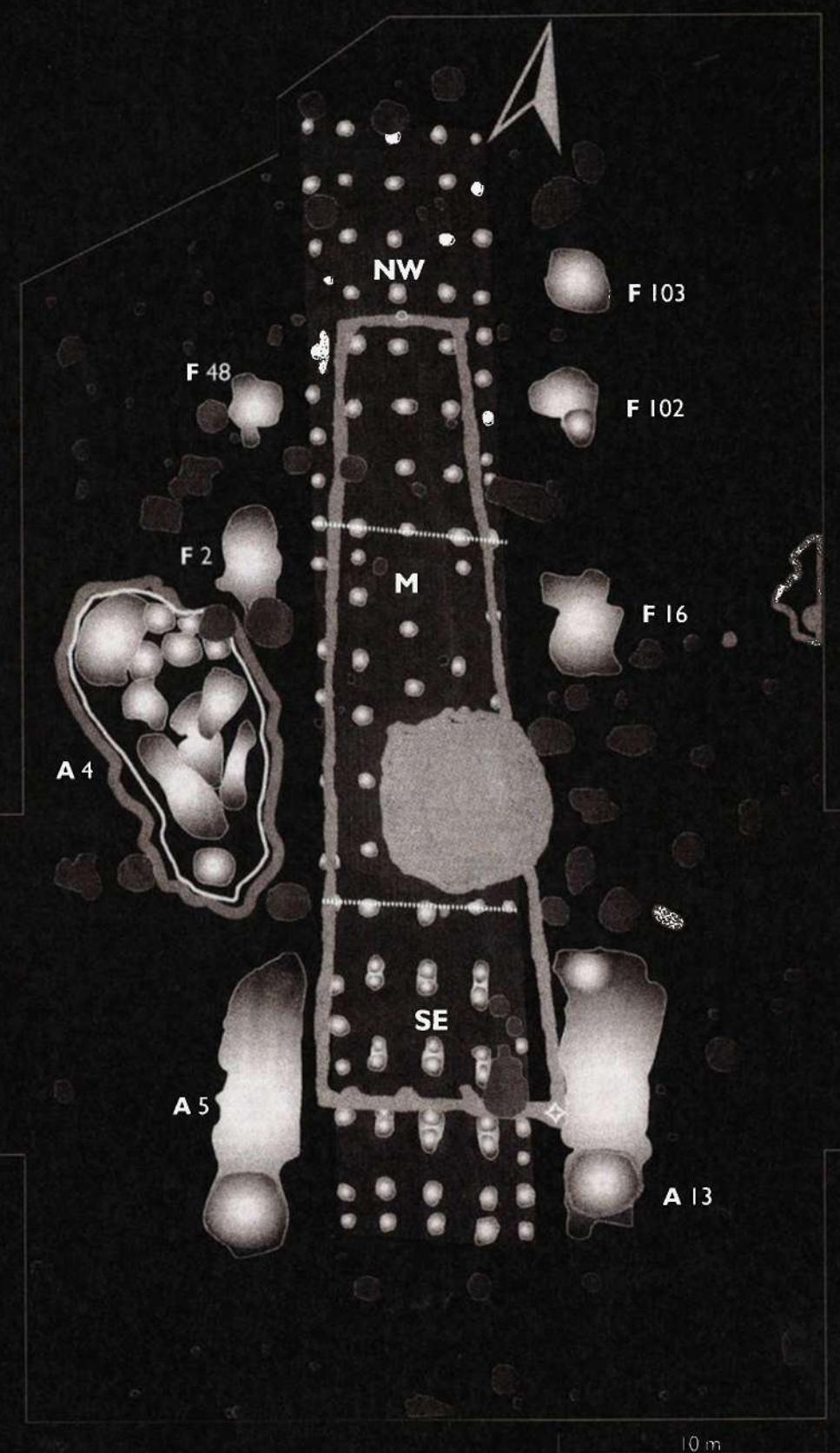
Konstanty Konopinski





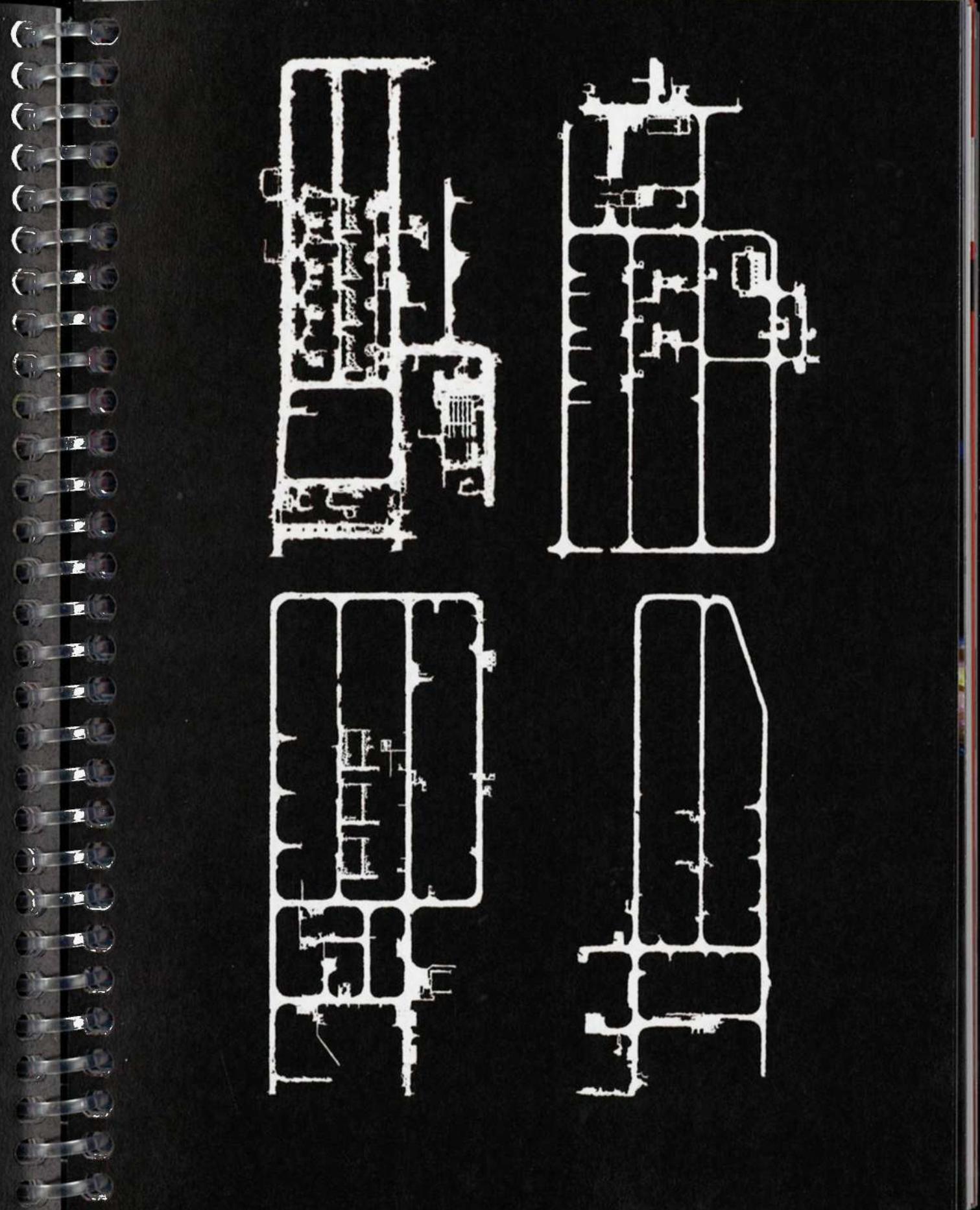
1. Coca-Cola bottle (Leszczyna, 2010s AD)
2. Amphora (Kuczkowo, early 3rd millennium BC)





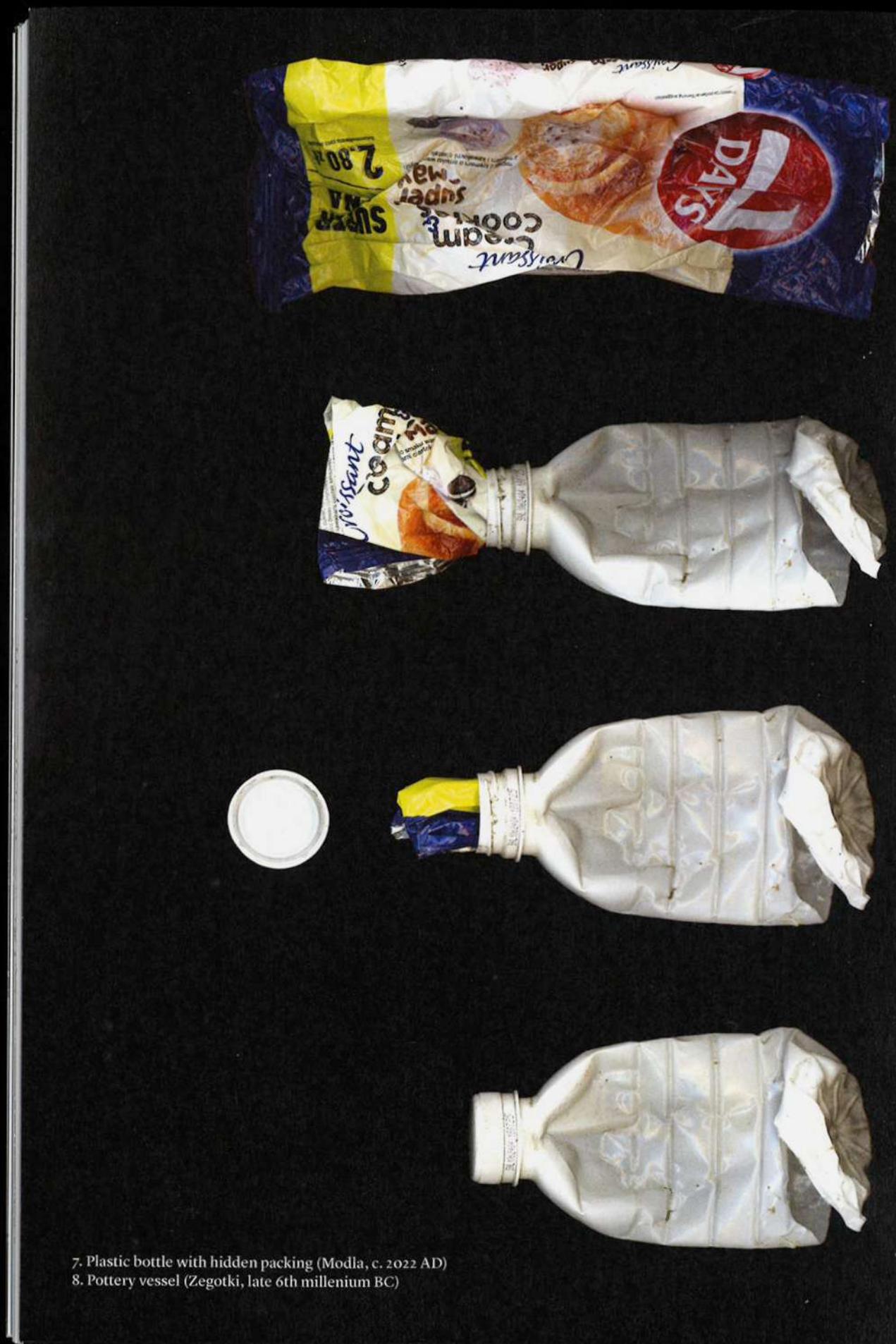
3. Ground plan of house (Bozejowice, late 6th millennium BC)

4. Ground plans of Kondratki, Wloclawek, Ciechanow and
Zambrow pressure stations (various locations, c. 2005 AD)

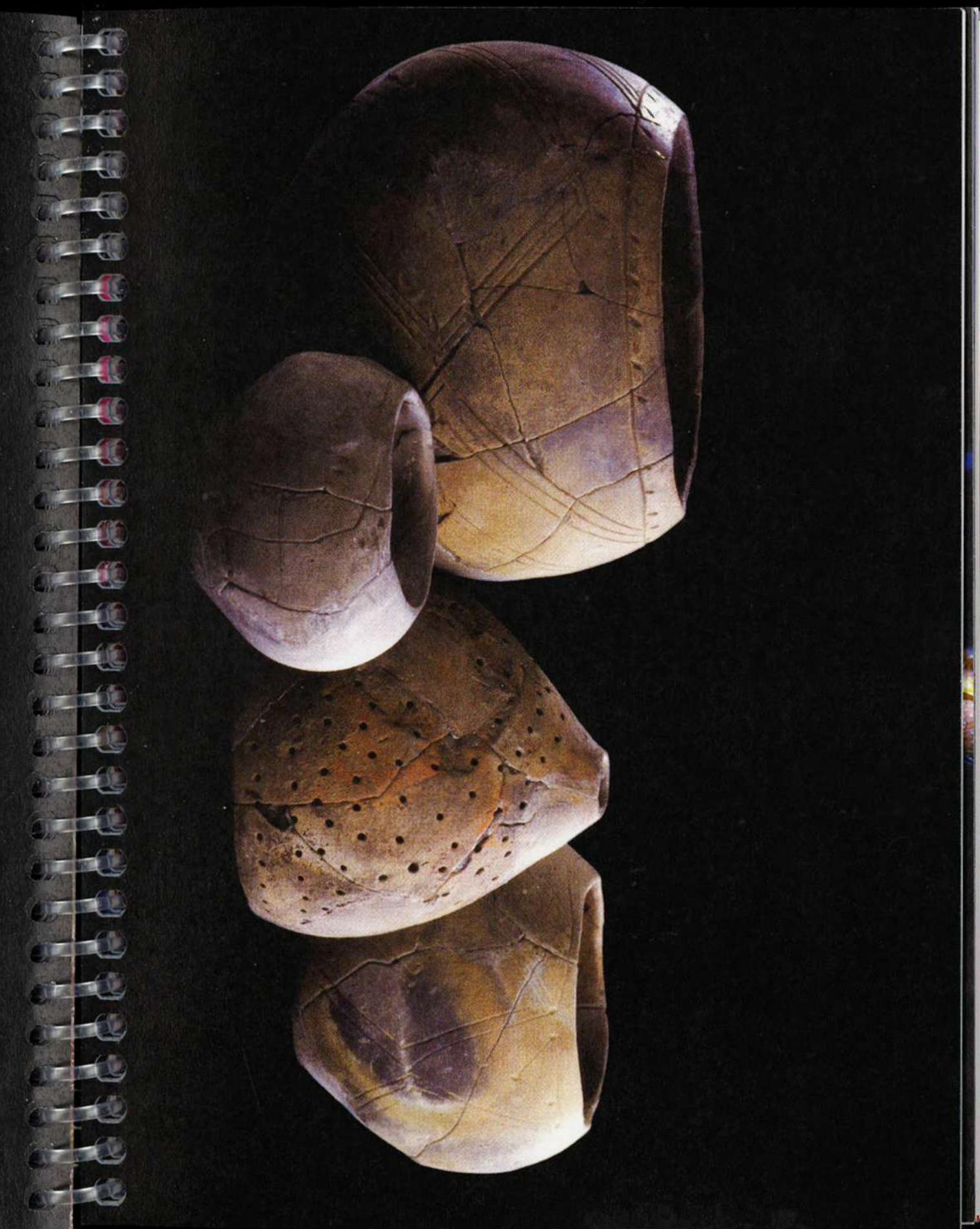


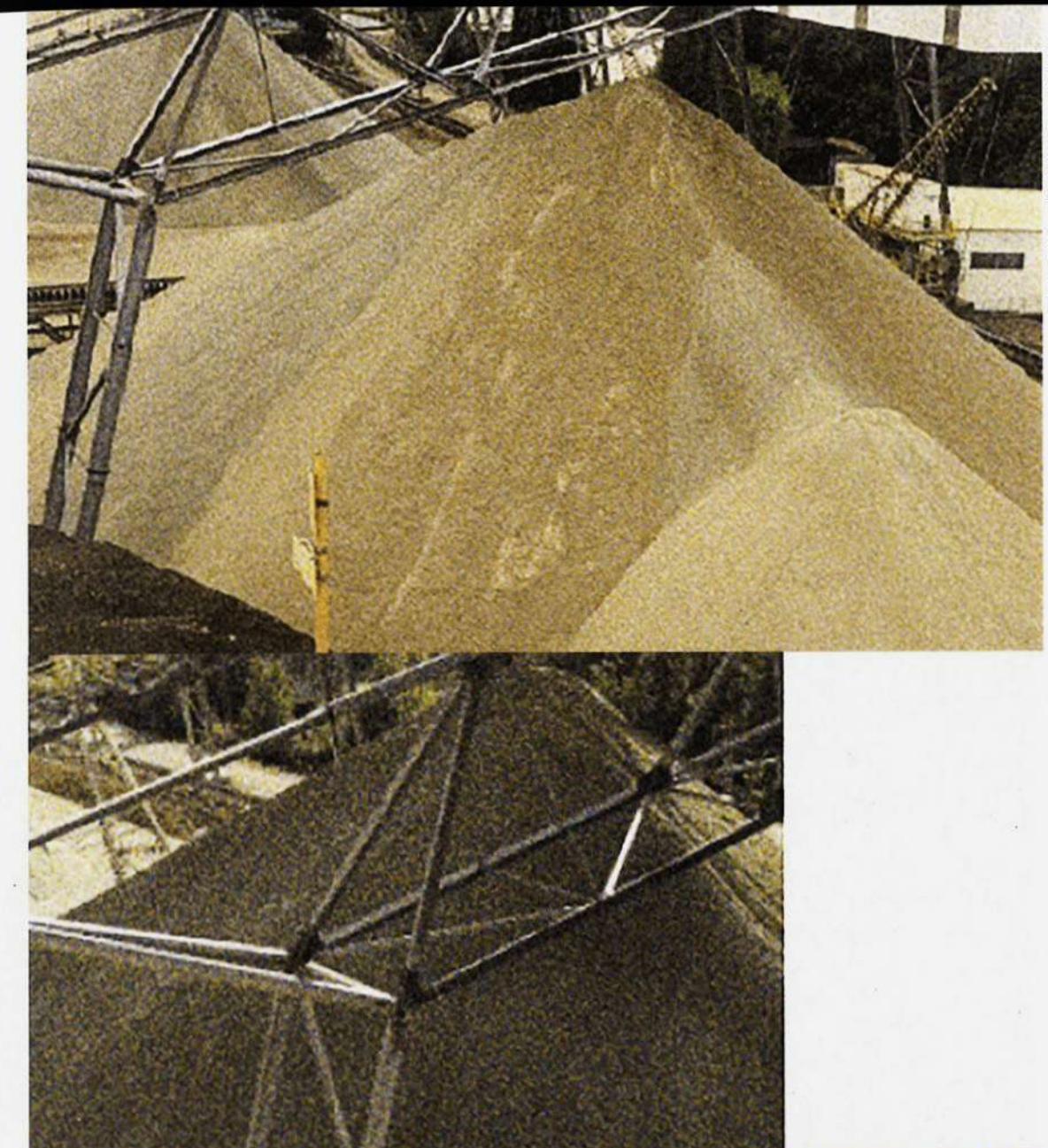


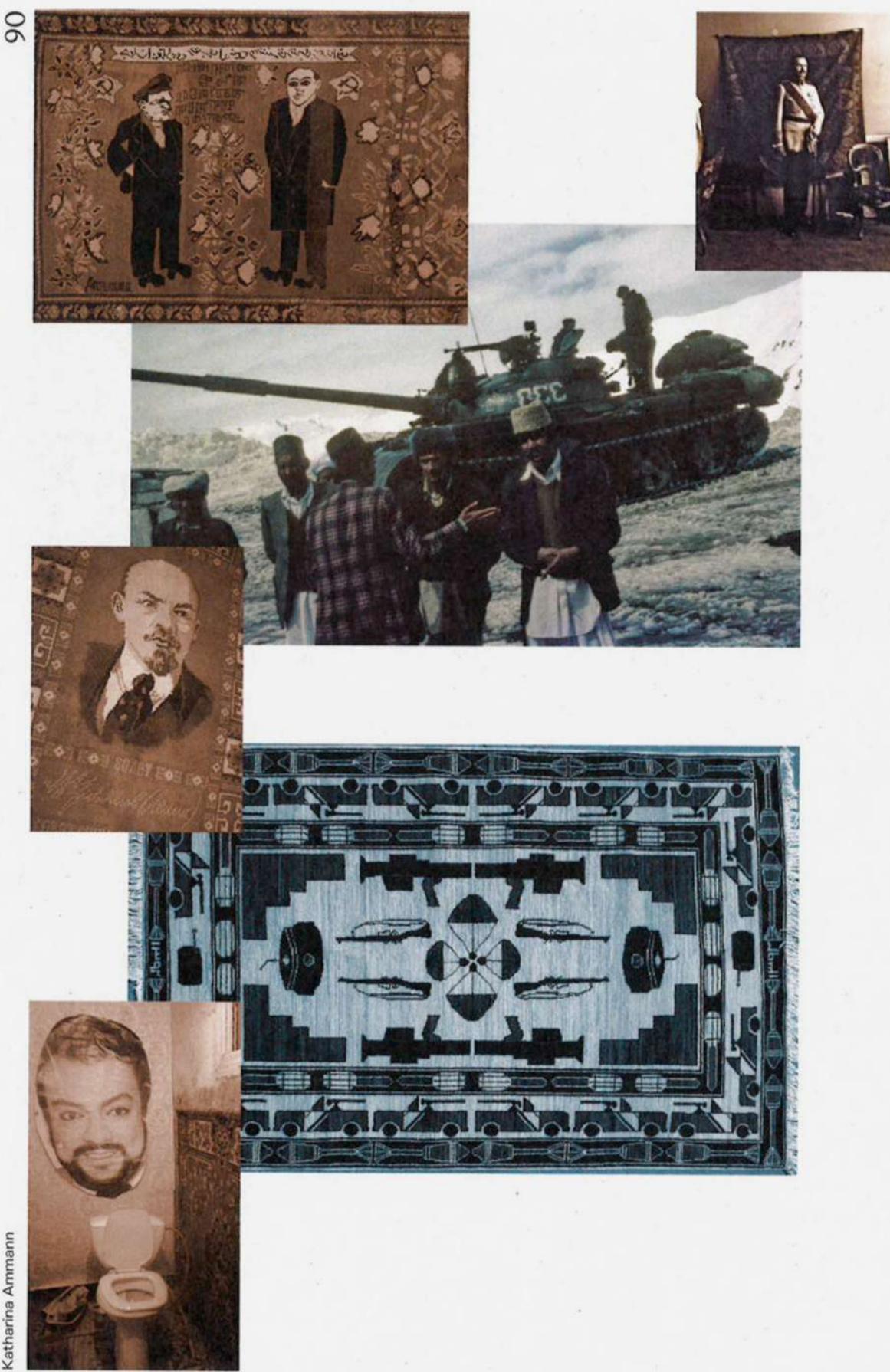
5. Bone needle (Kuczkowo, late 3rd millennium BC)
6. Pipeline marker (Leszczyna, c. 1999 AD)



7. Plastic bottle with hidden packing (Modia, c. 2022 AD)
8. Pottery vessel (Zegotki, late 6th millennium BC)

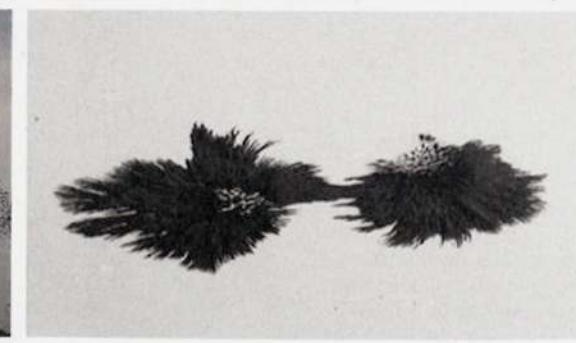
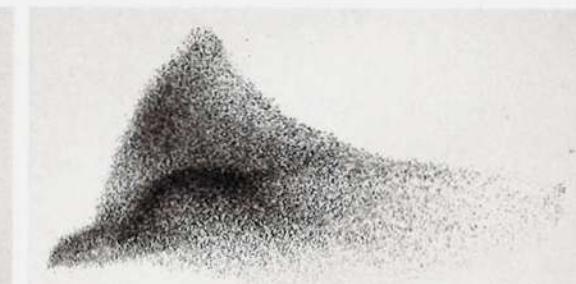
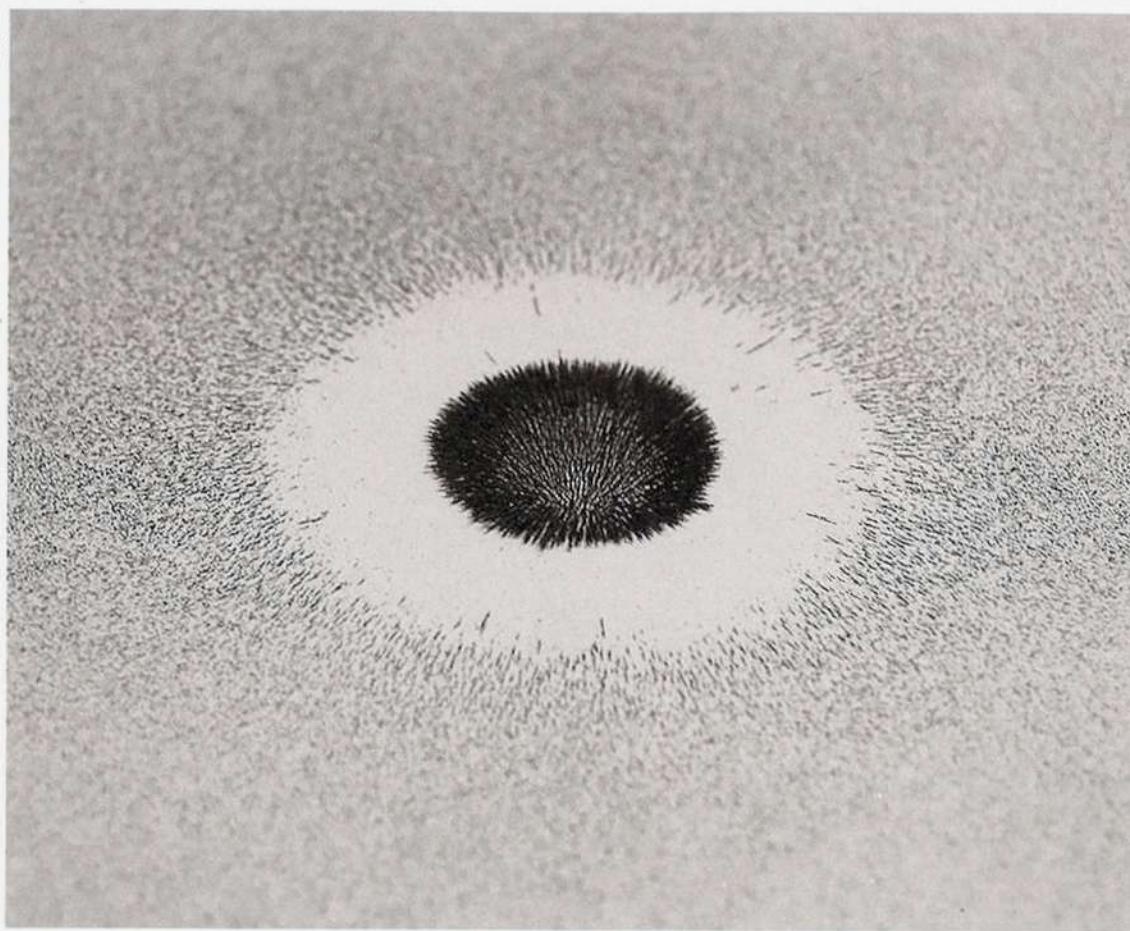






Katharina Ammann

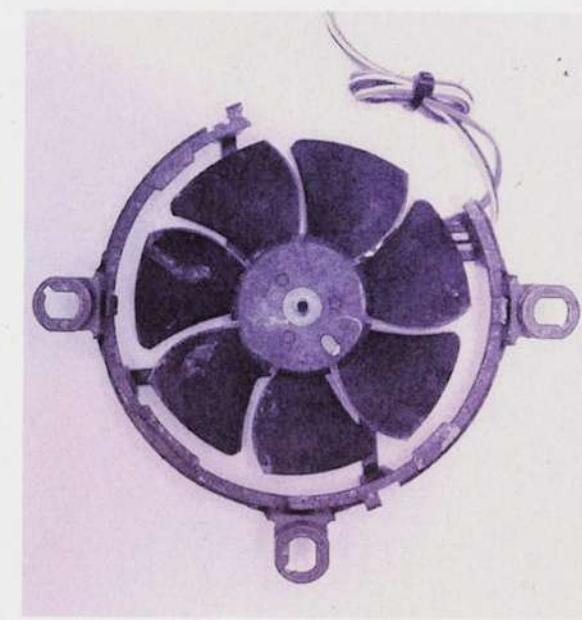
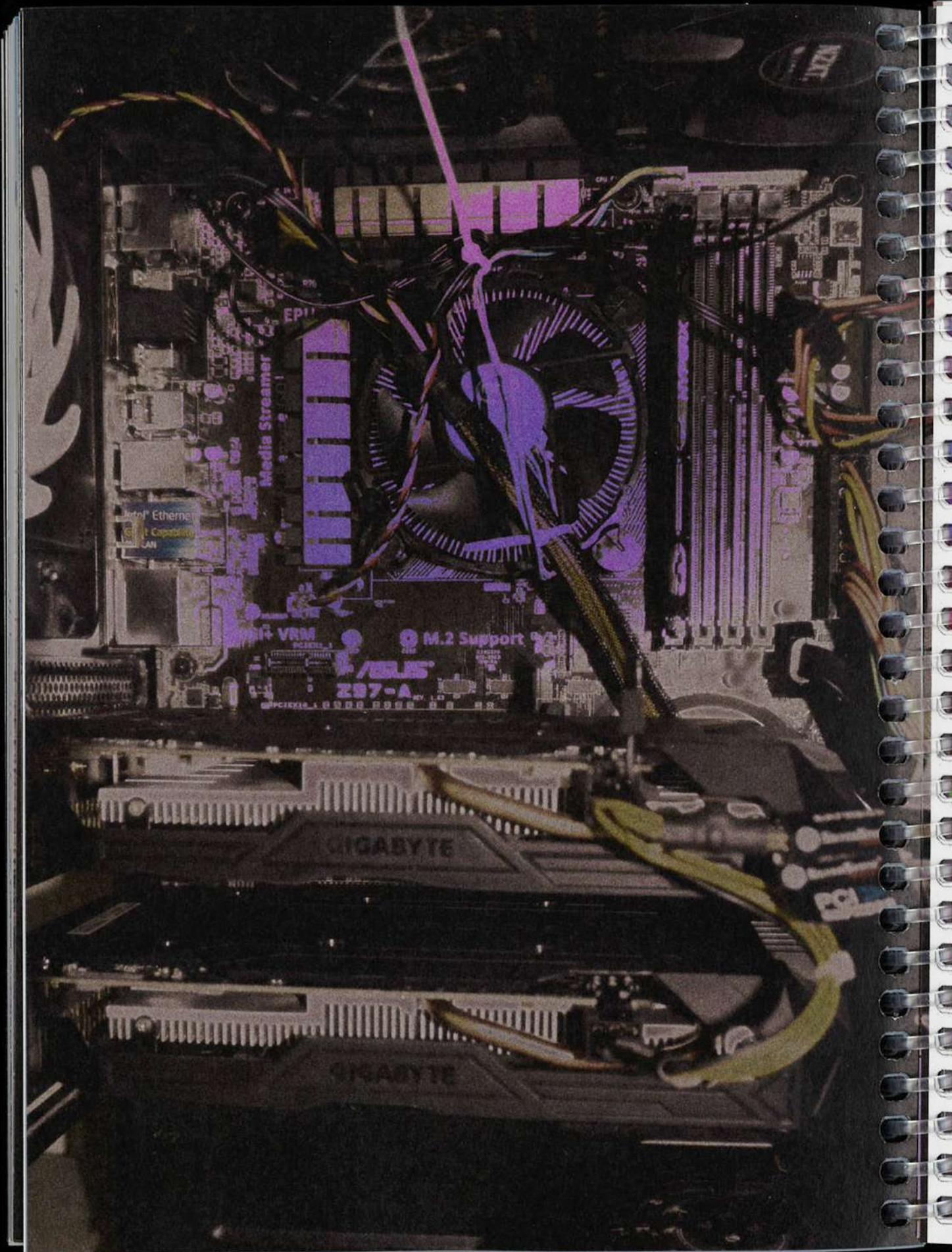




112 network—
invisibility—
extraction

Ana Mikadze





Left: Cryptocurrency mining computer inside view.
Right: CPU Fan of a mining computer.

238 disaster— politics—electricity

Nelly Kleijer



2000
disaster
politics
electricity



Tashkent 1980



TASCHKENT

TASCHKENT

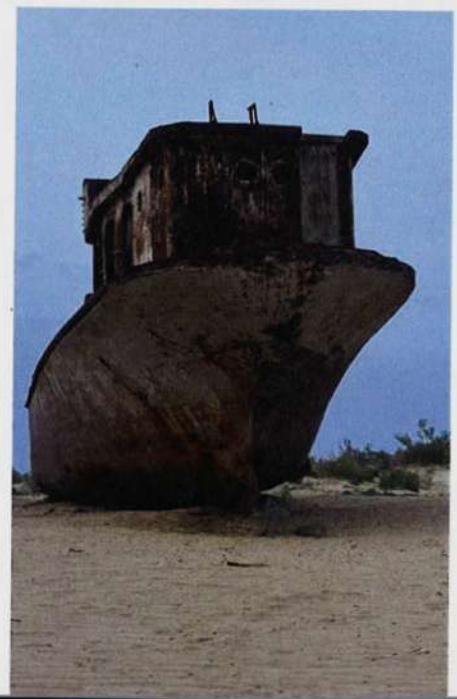
TASCHKENT



Ship on the bottom of the Aral Sea in 1998.



Ship on the bottom of the Aral Sea in 2022.





Cleaning of the streets with fresh water.
Tashkent, Uzbekistan 2021



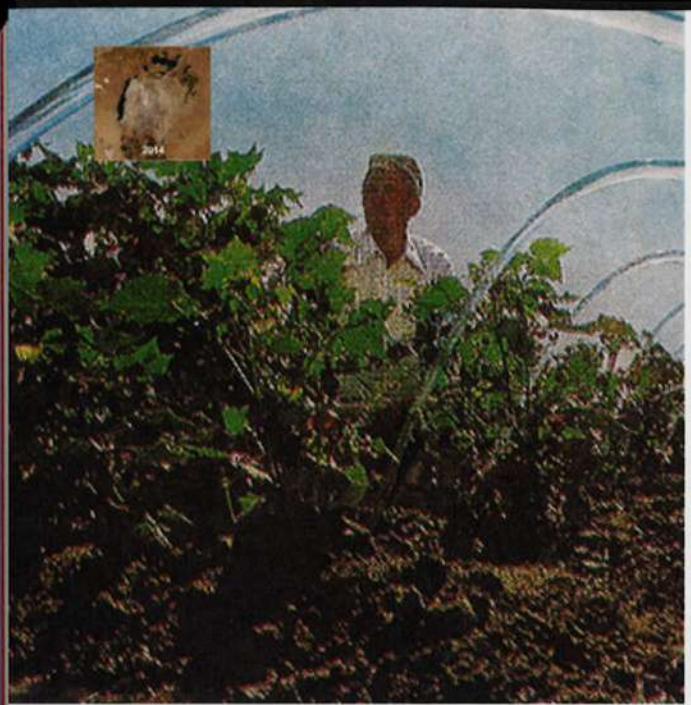
Nelly Kleijer

disaster politics electricity

At night Uzbekistan is lit up by structures and decorations symbolizing national pride. Illustrations of cotton are, not only, seen in light decorations but also in tapestries, ceramics and most noticeably on buildings. This symbol was propagated by the USSR since the early 1970's, today, the same cotton-propoganda is seen on the streets of Tashkent.

In its symbology, it's reffered to as "white gold", since the crop brought a lot of economical growth to the country in 1960's. Over the time that this plant was grown and harvested, Uzbekistan became the 8th largest producer of cotton world wide. This achievement was accomplished at the cost of the "Aral Sea". To allow a more personal insight into this prolonged crisis the images used were collected from old web archives, post-cards and photographs taken by friends and family.

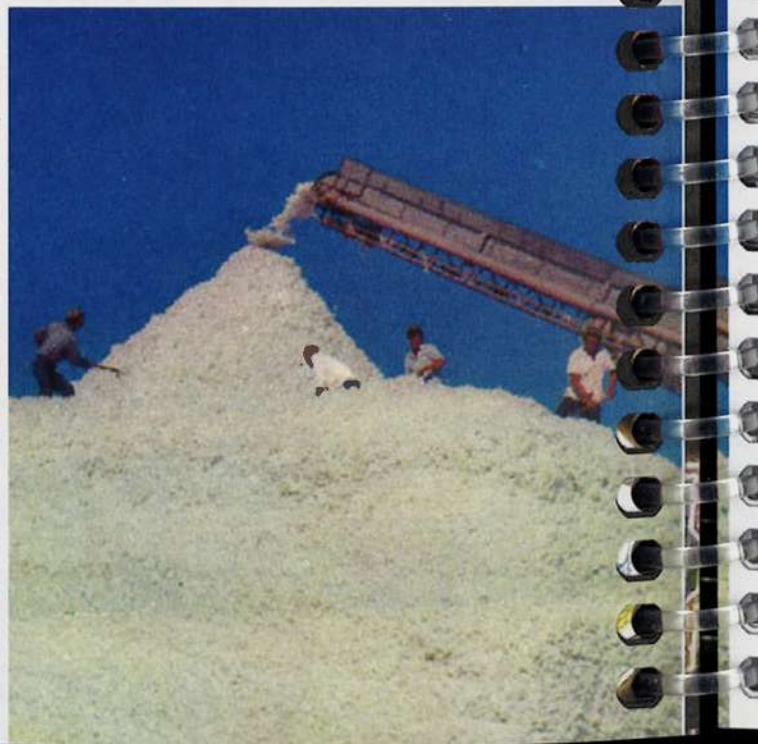
62 years have past since the lake began to shrink, where now lies a vast desert. To this day, conservation of water resources in Uzbekistan is not taken seriously.

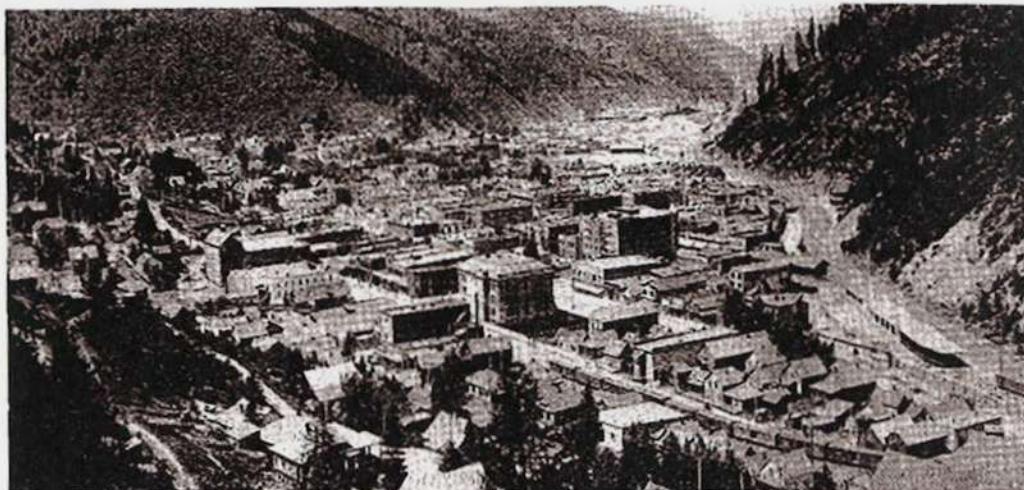


disaster politics electricity

White Gold. Cotton irrigation and harvest in 1981. Uzbekistan

Impacts of cotton irrigation on the Aral sea 1998-99. Uzbekistan



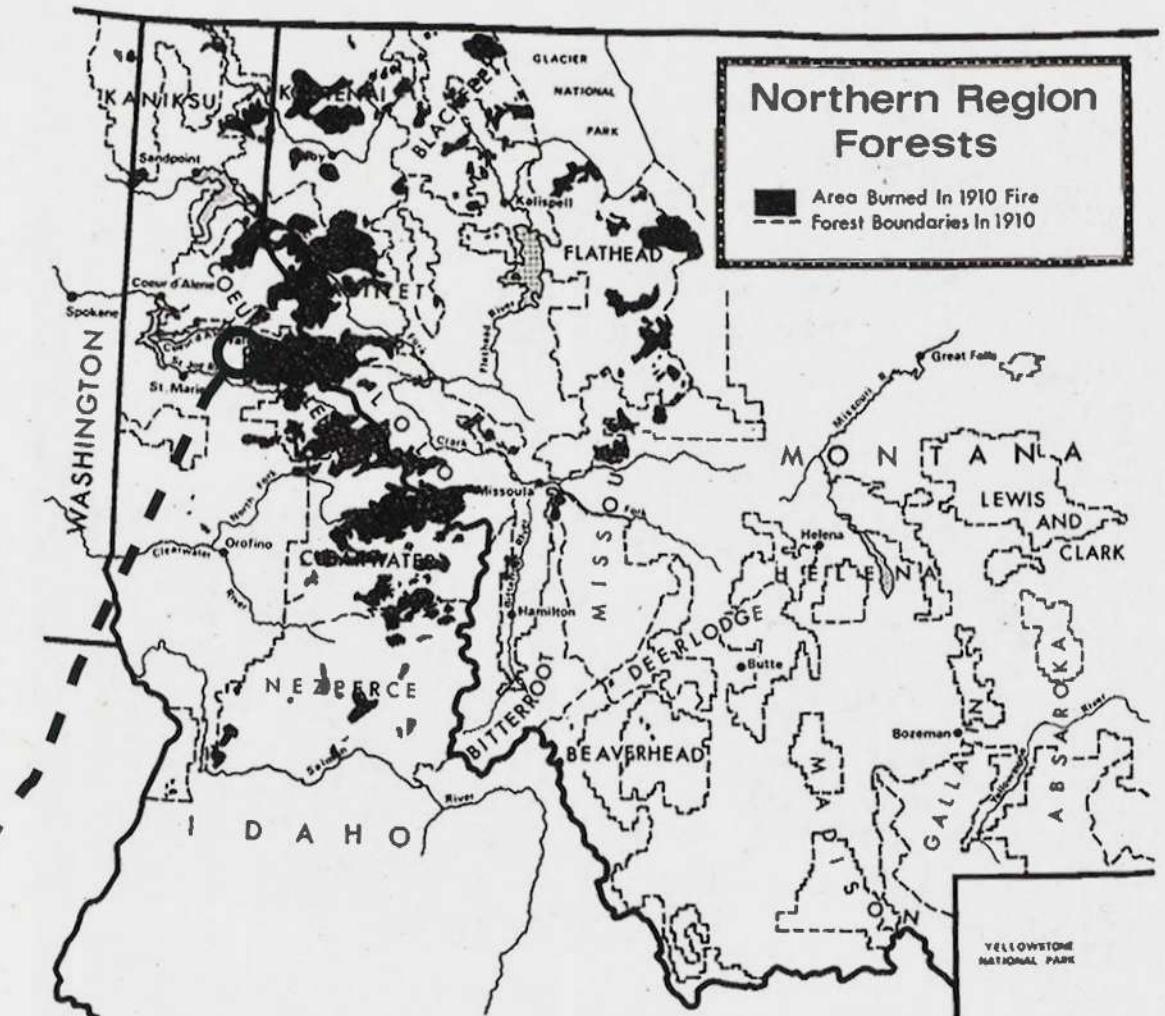


Wallace, Idaho- Taken before the fires of August 20.



Wallace, Idaho- Taken September 12, 1910- Damage caused by the fires.

Areas effected by forest fires (1910)

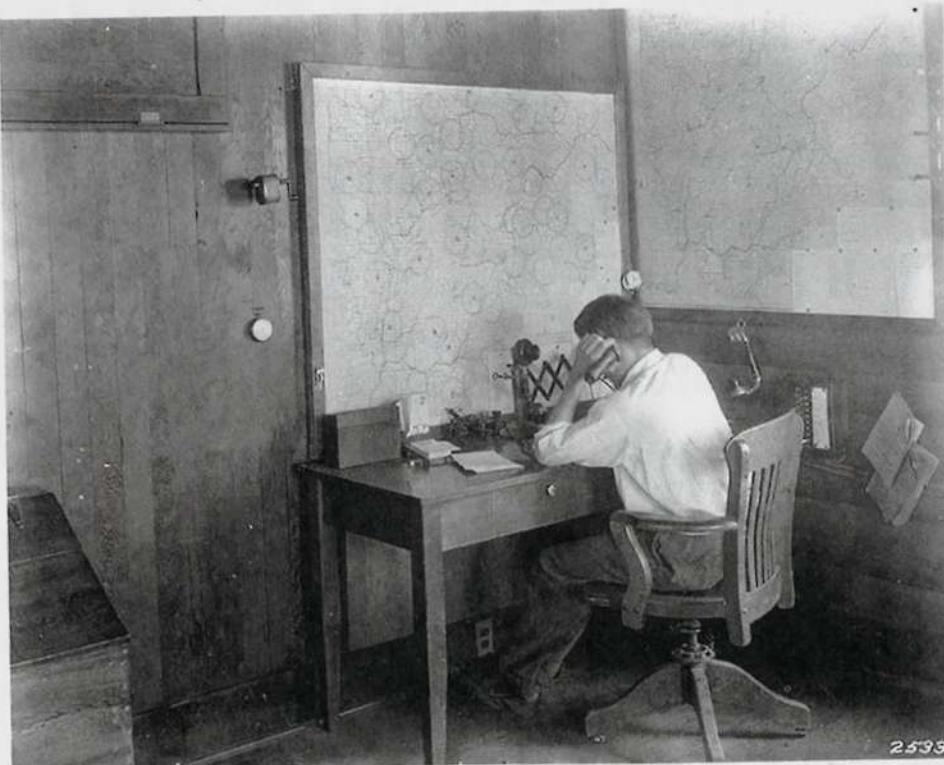


FIRE COMMUNICATIONS TECHNOLOGY



Two forest rangers signaling with heliograph. A heliograph is a communication system that signals by flashes of sunlight (generally using Morse code) reflected by a mirror.

Hyacinthe Pairault



Central dispatcher locates forest fire from radio report.

FIRE-FIGHTING TECHNIQUES: BACK-FIRING



A back fire is a fire that is deliberately initiated in front of an active fire front, usually a forest fire, grass fire, or some other type of wildfire.

„Backfiring seems always to be a risky business. One can never tell when the wind is going to turn, and if it does the chance are very thin that the fire can be controlled“

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Second enlarged edition 2002

JOURNAL OF NATURAL SCIENCE

RESTORING AND HEALING THE WORLD THROUGH RESPONSIBILITY AND COMMITMENT, IN ACCORD WITH NATURAL AND DIVINE LAW



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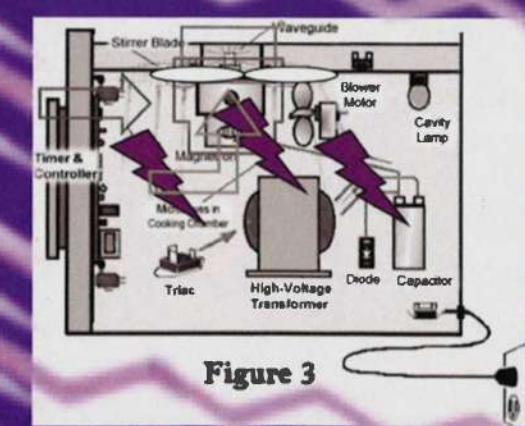
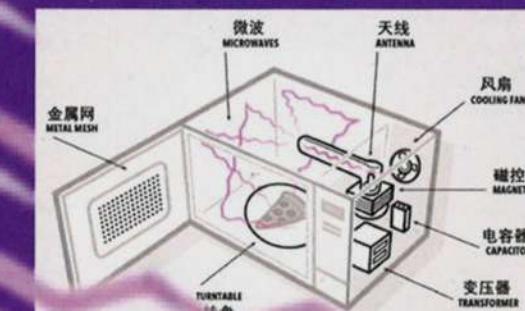
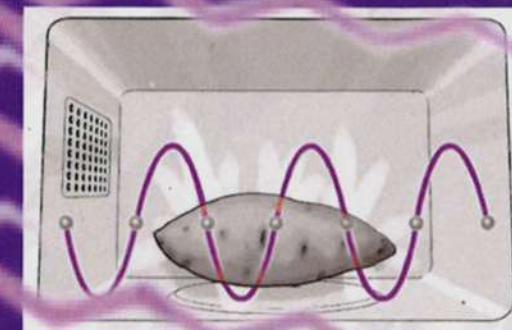
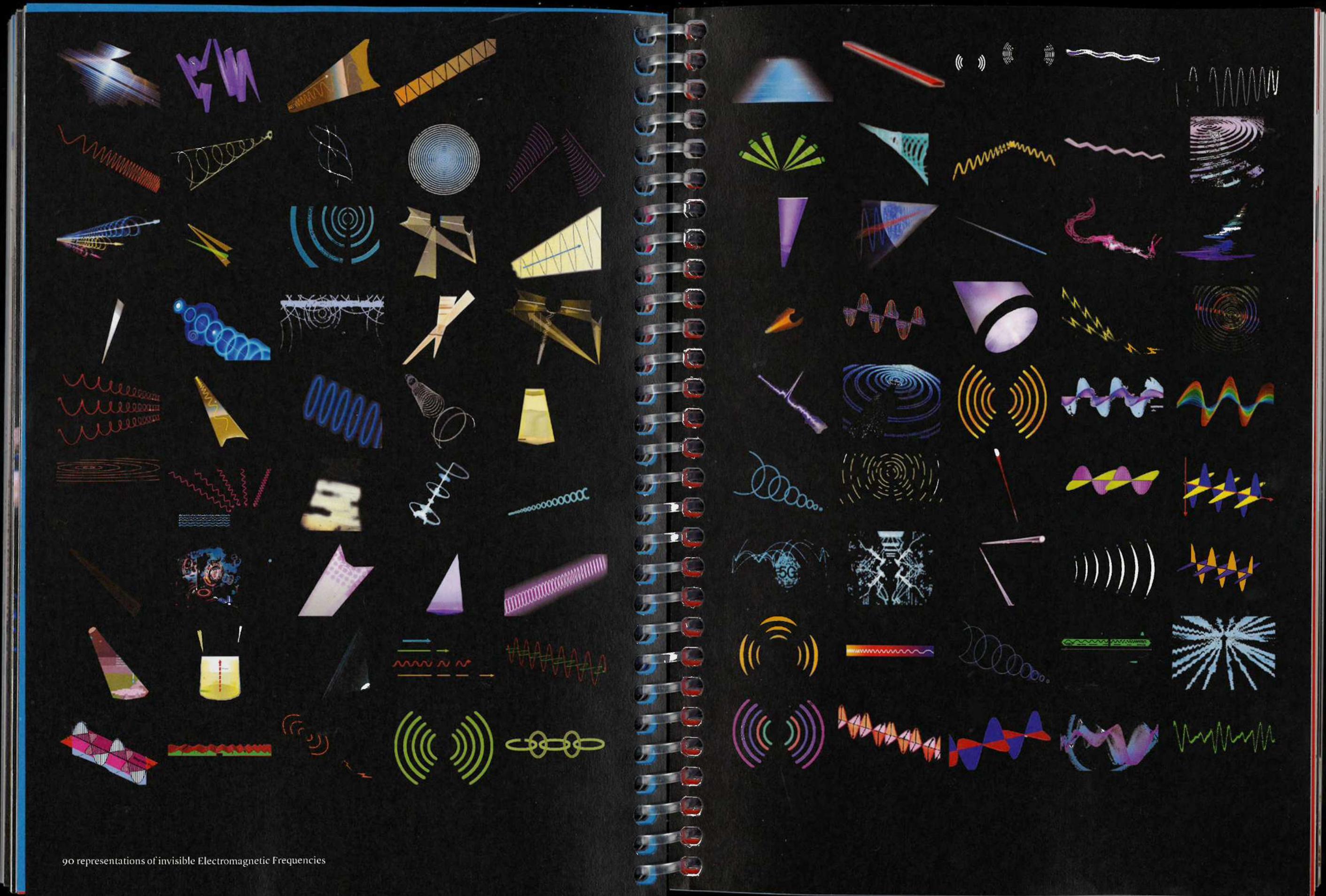


Figure 3



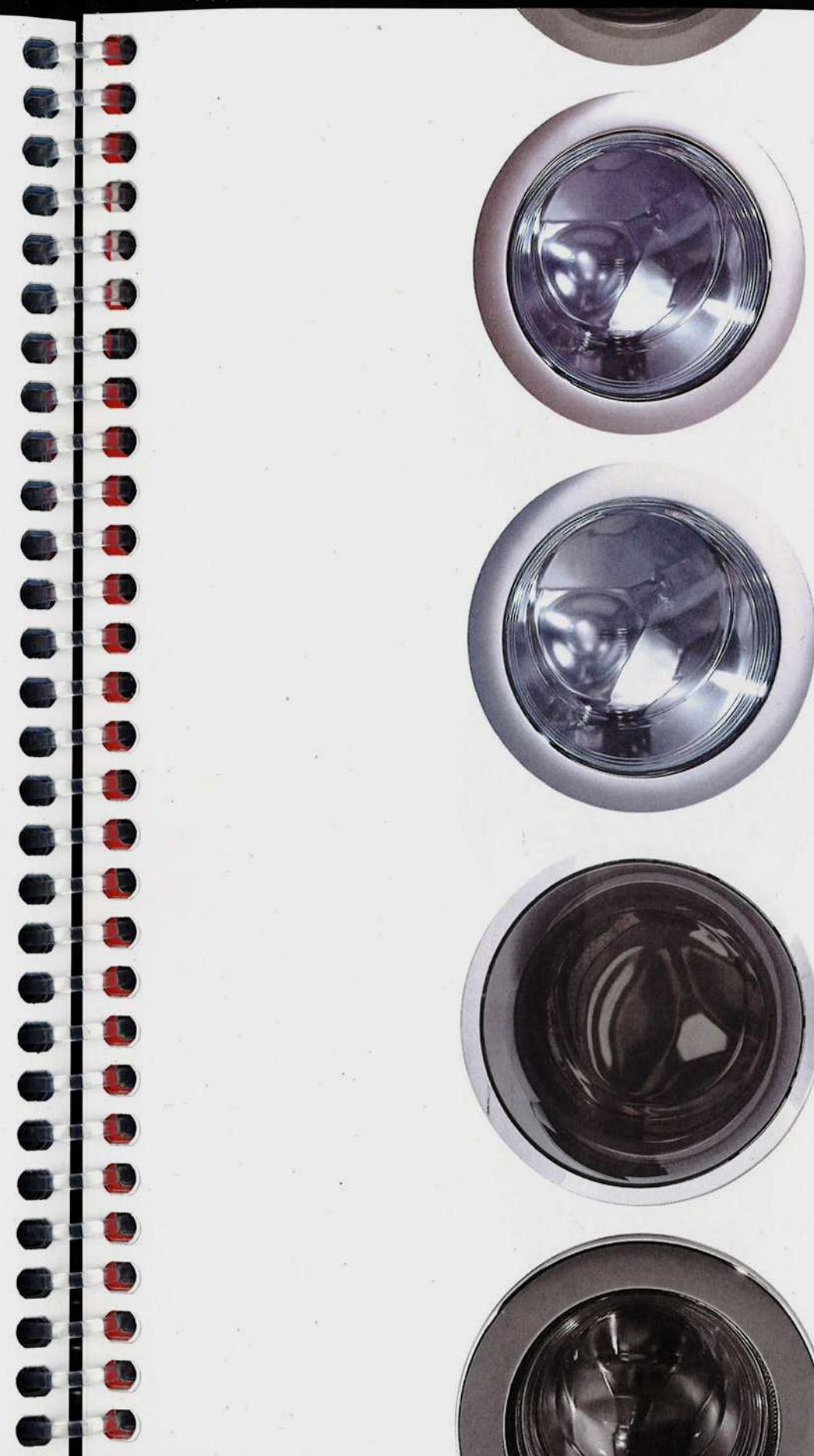
90 representations of invisible Electromagnetic Frequencies

WFVC 8440UC VISION 800 SERIES

PW5065

ENERGY STAR

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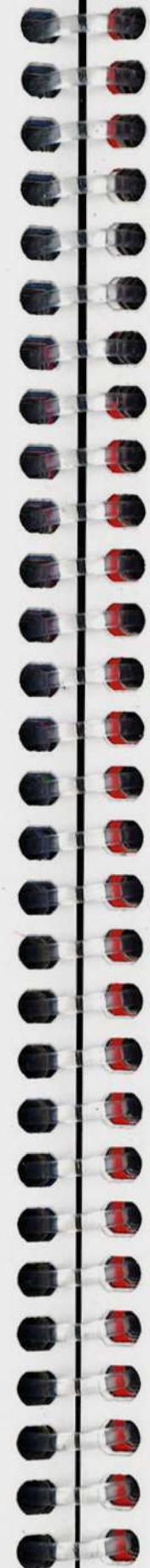


WW71J42EoBX Front Loading with EcoBubble

Serie | 8 silver enox

FFB 8448 WV UK

STUDIO



WF45R6100AP/US

WF50A8800AV/US

WF45K6500AV/A2



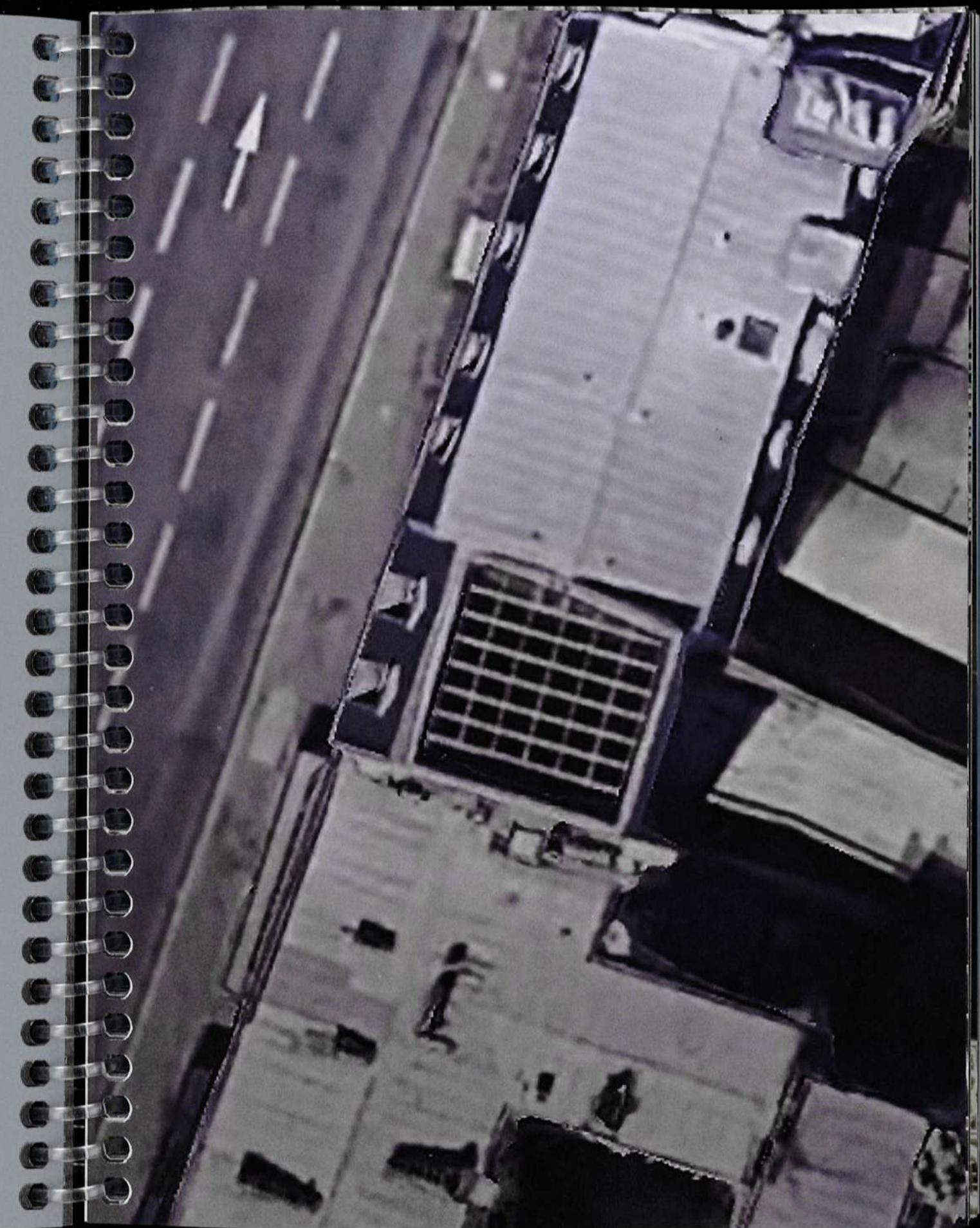
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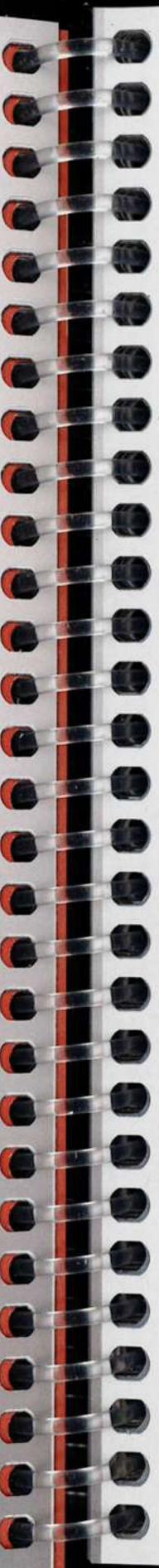
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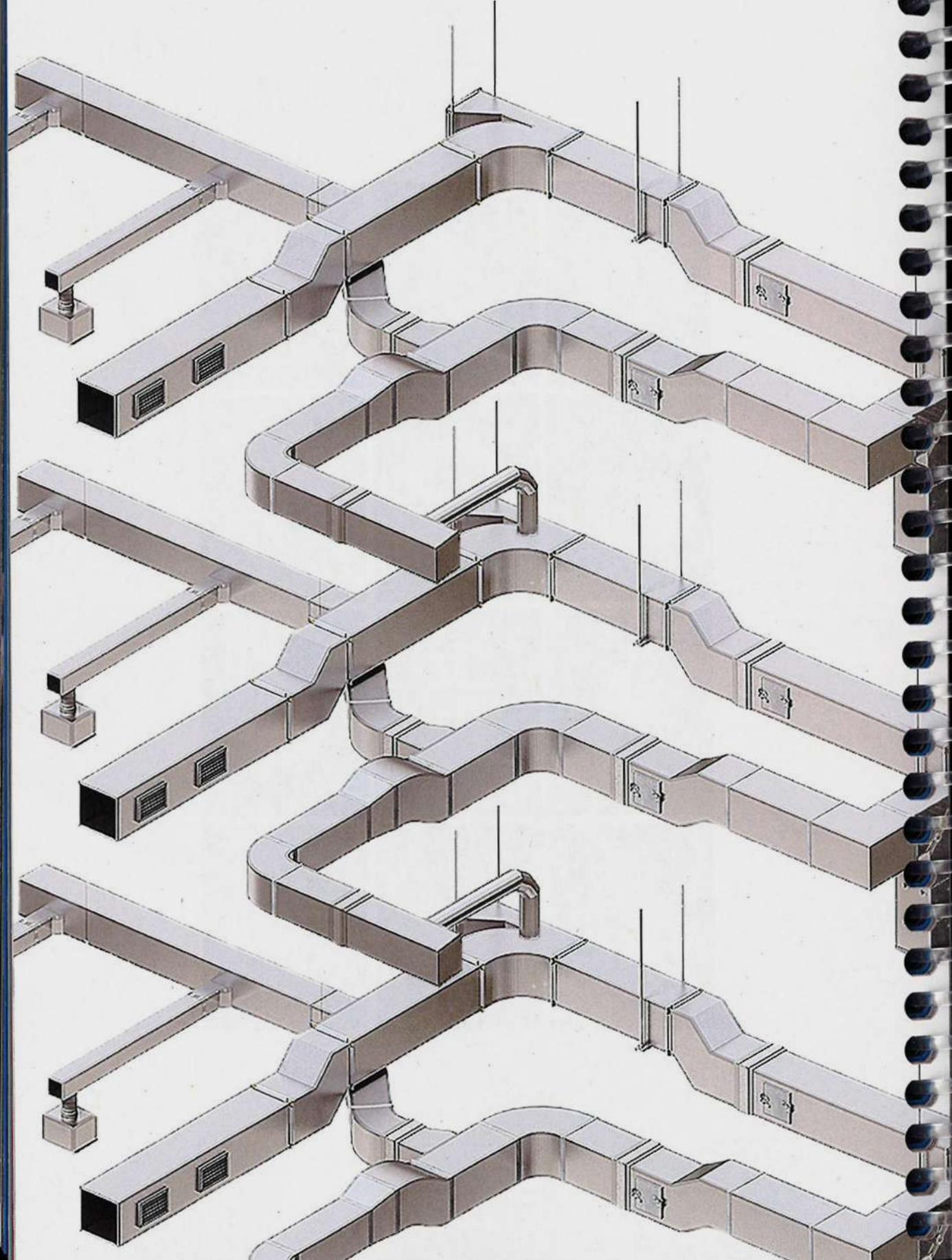
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176 function— invisibility— infrastructure



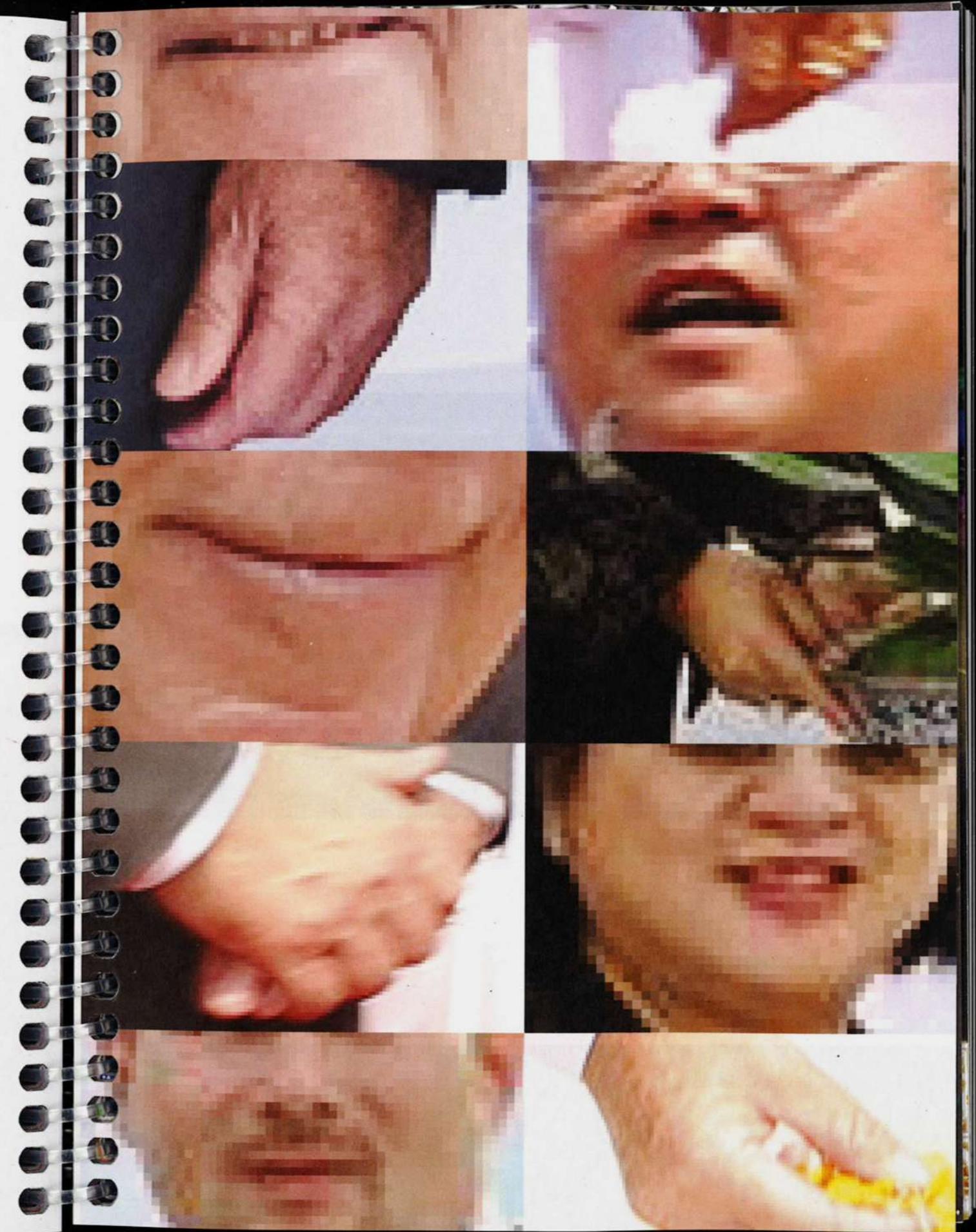


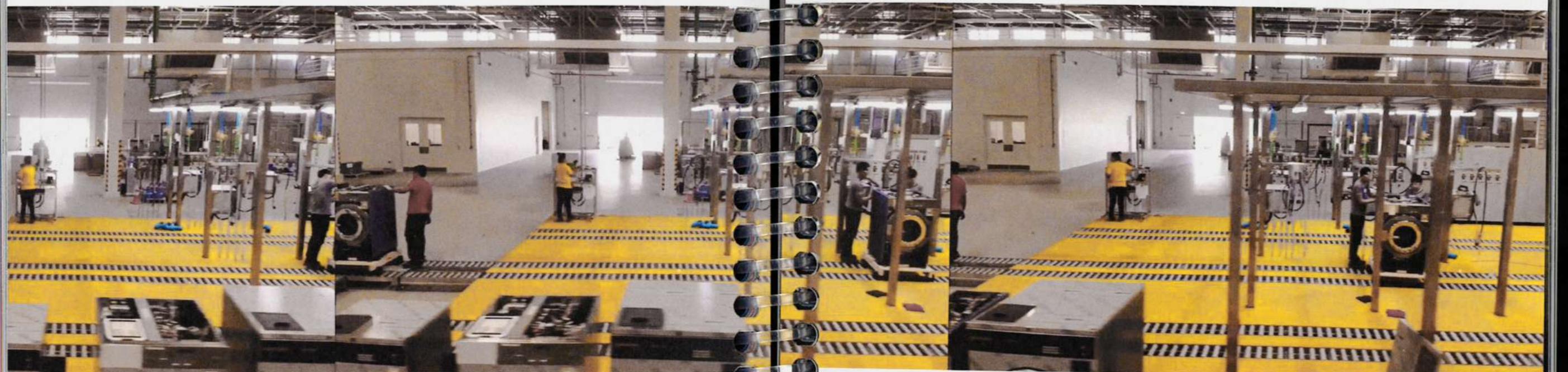


The omnipresence of Haussmannian façades through the streets of Paris creates a sense of historical, cultural and aesthetic harmony. The presence of windows, balconies, entrance codes and door bells indicate apartment units. Or so we would think. Behind at least five of these buildings acquired by the RATP—Paris's public transport company—are hidden the towering ventilation shafts of its metro network. At 145 rue La Fayette, 174 rue du Faubourg-Saint-Denis or 44 rue d'Aboukir, the façade acts solely as a display sealing off the industrial ductwork from the eyes of the passers-by. Subtle absurdities such as metal doors shaped and painted to imitate wood, industrial grids behind the windows or absence of door handles reveal the altered and disguised function of these buildings.



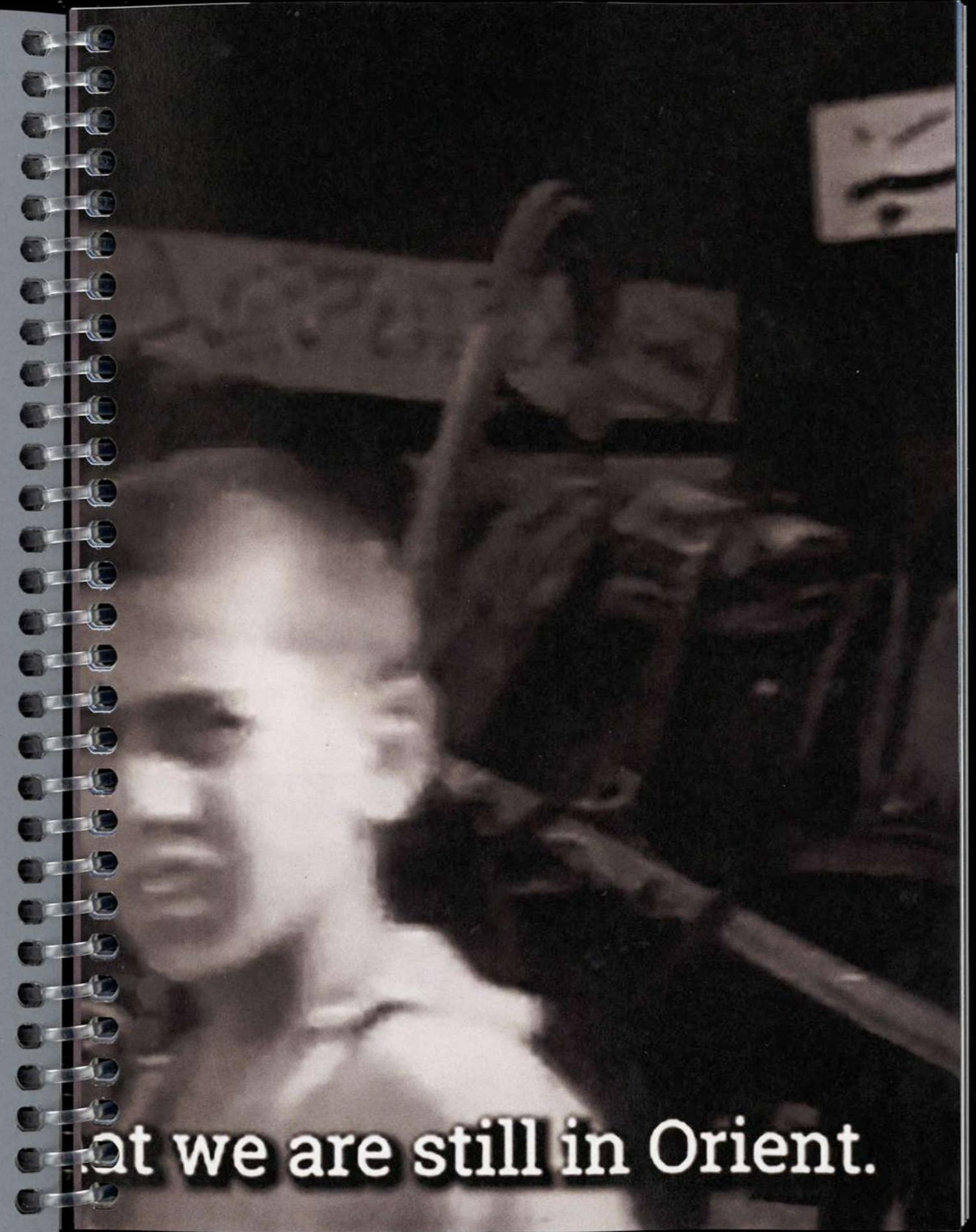




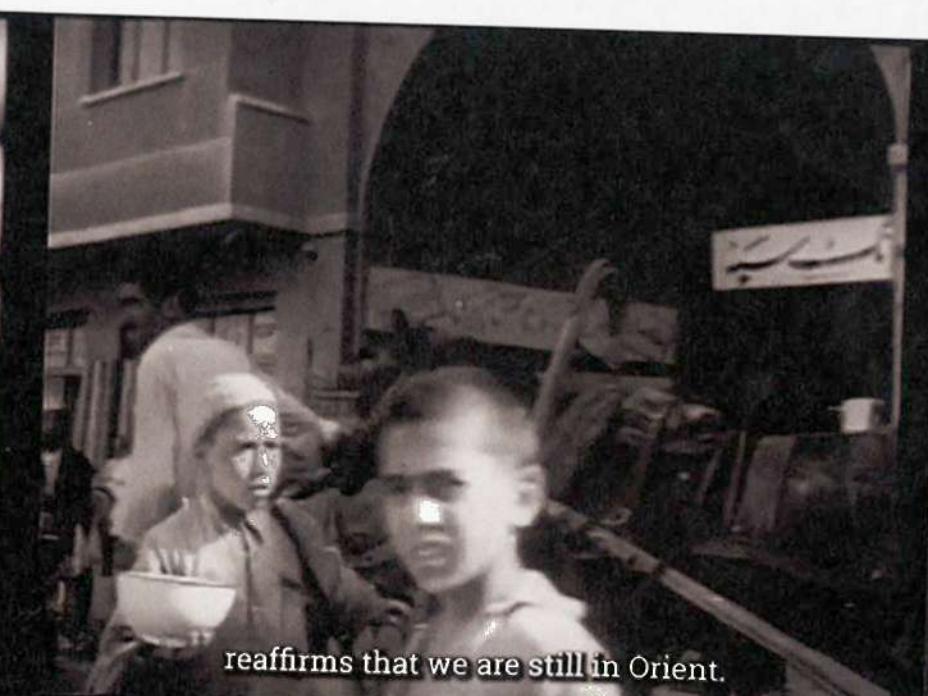
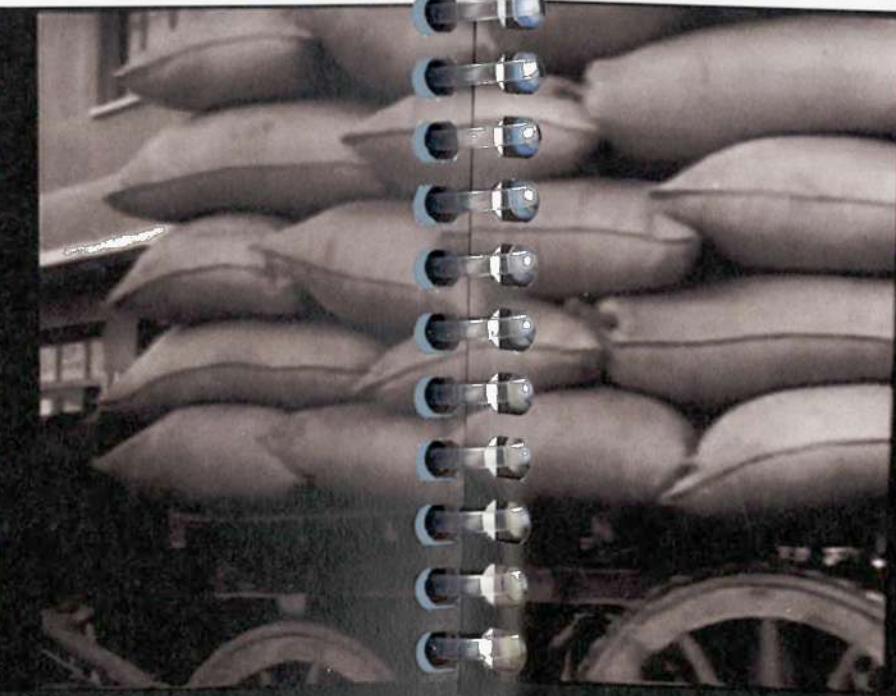
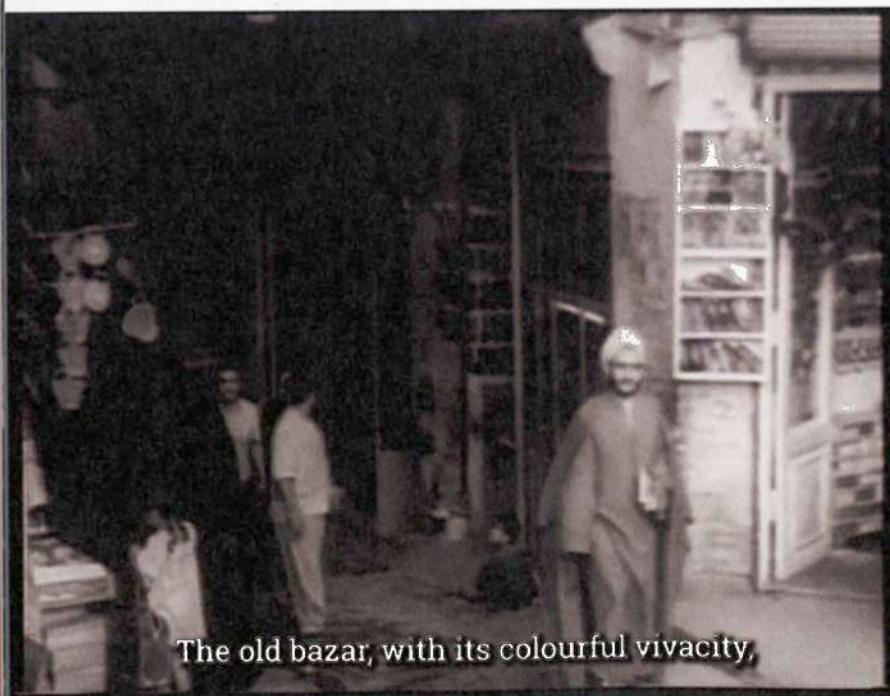
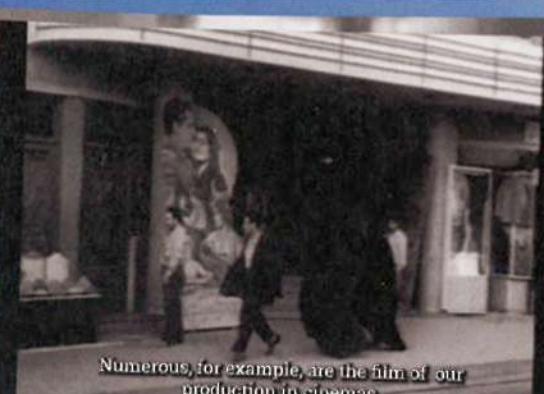
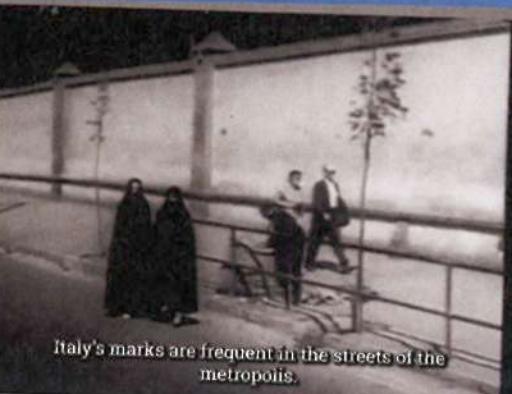


266 archive—
human—
manipulation

Filippo Zimmermann

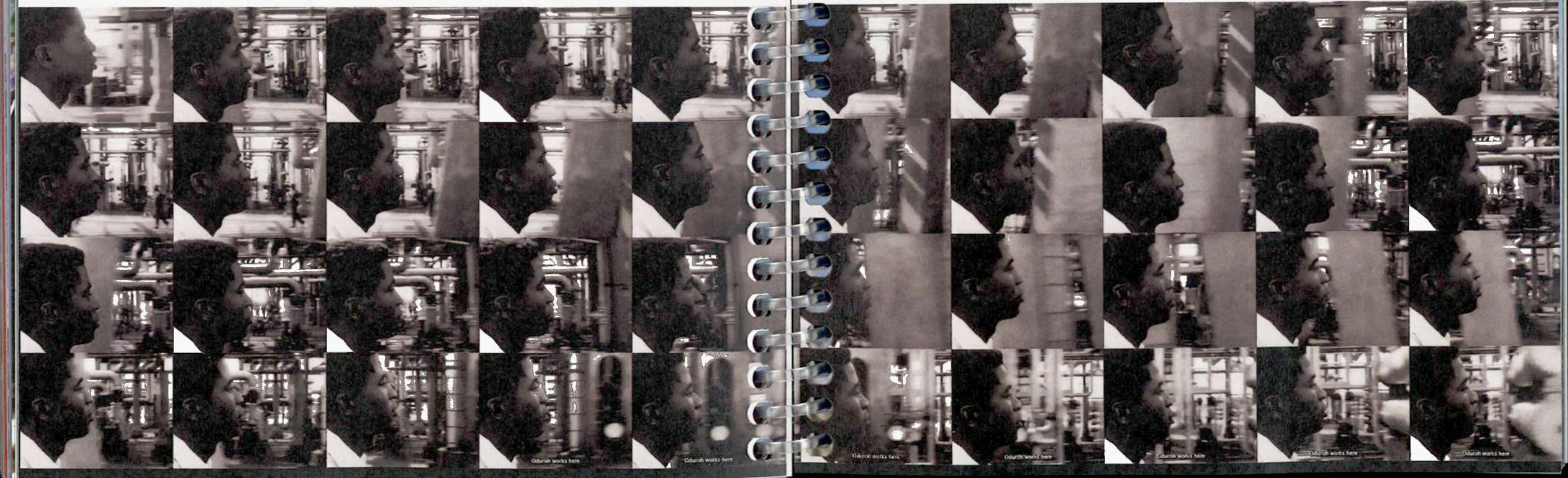
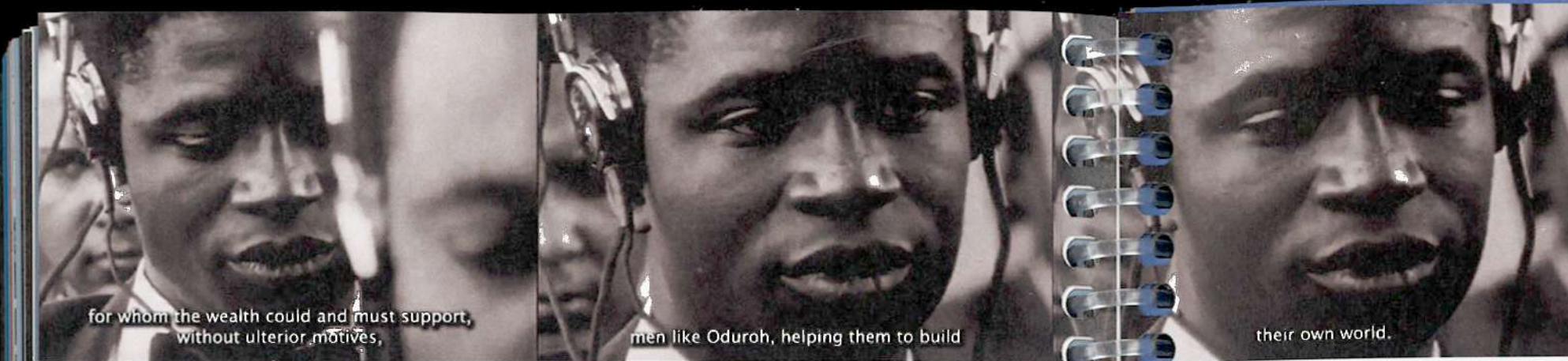


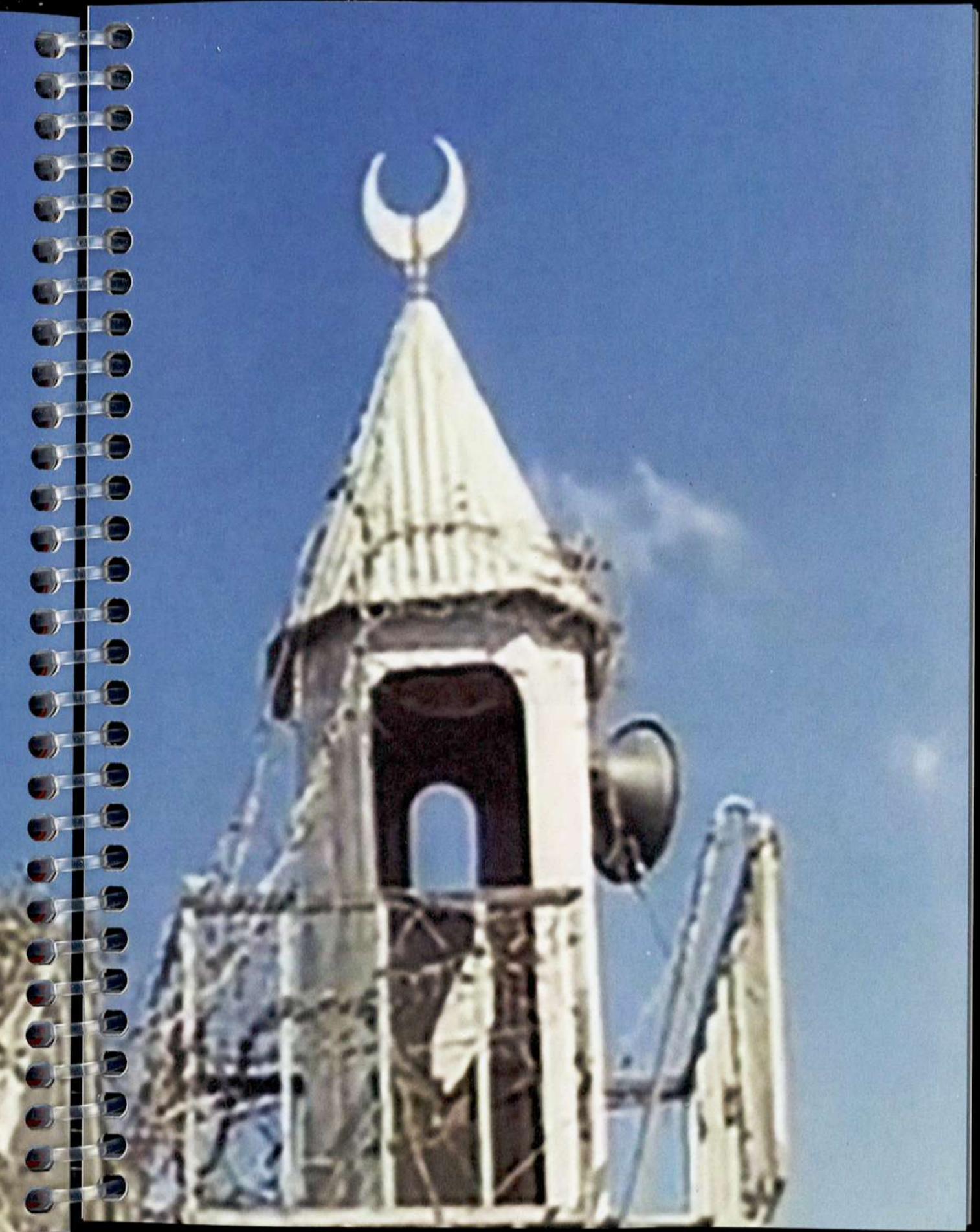
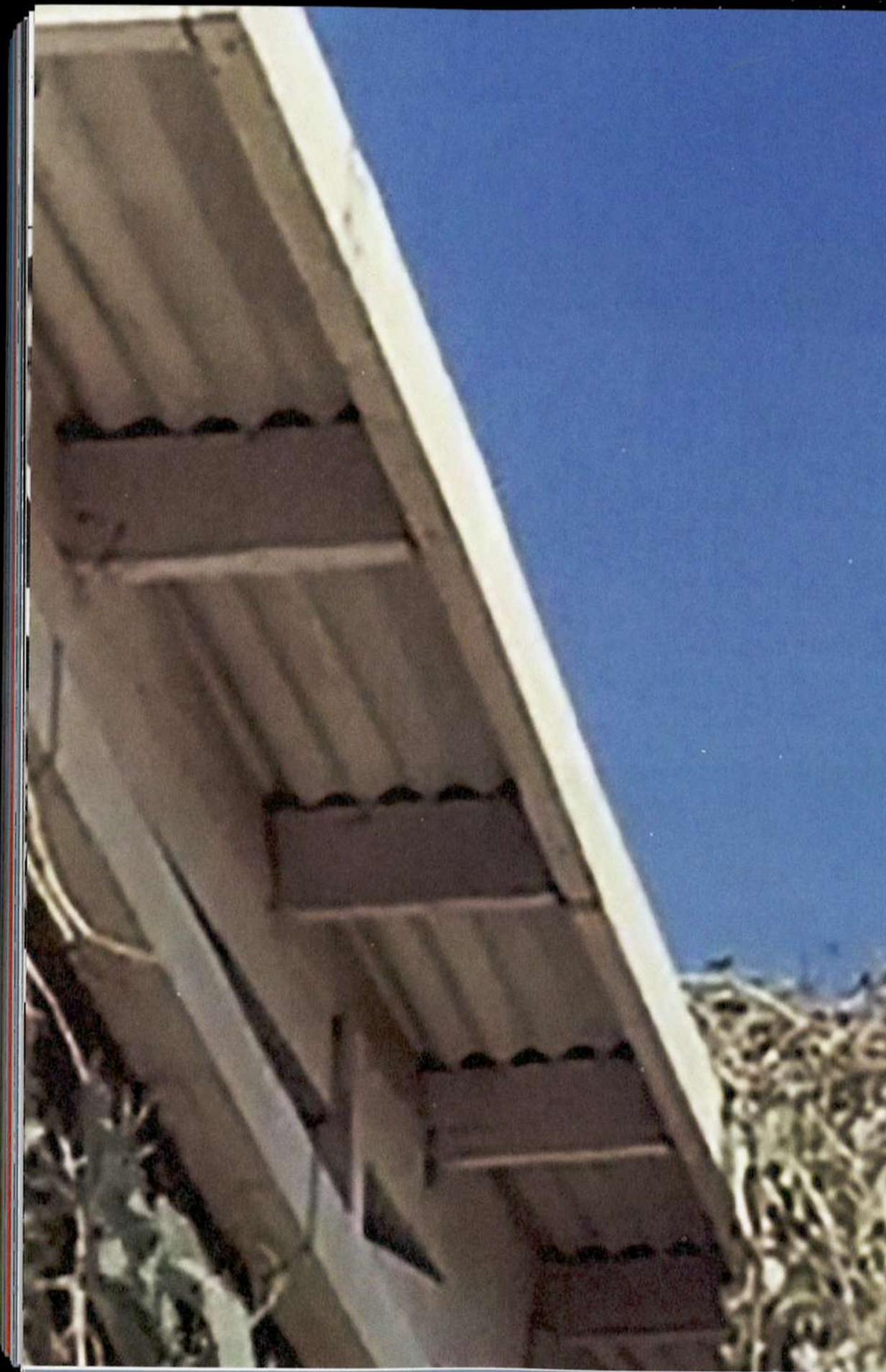
at we are still in Orient.

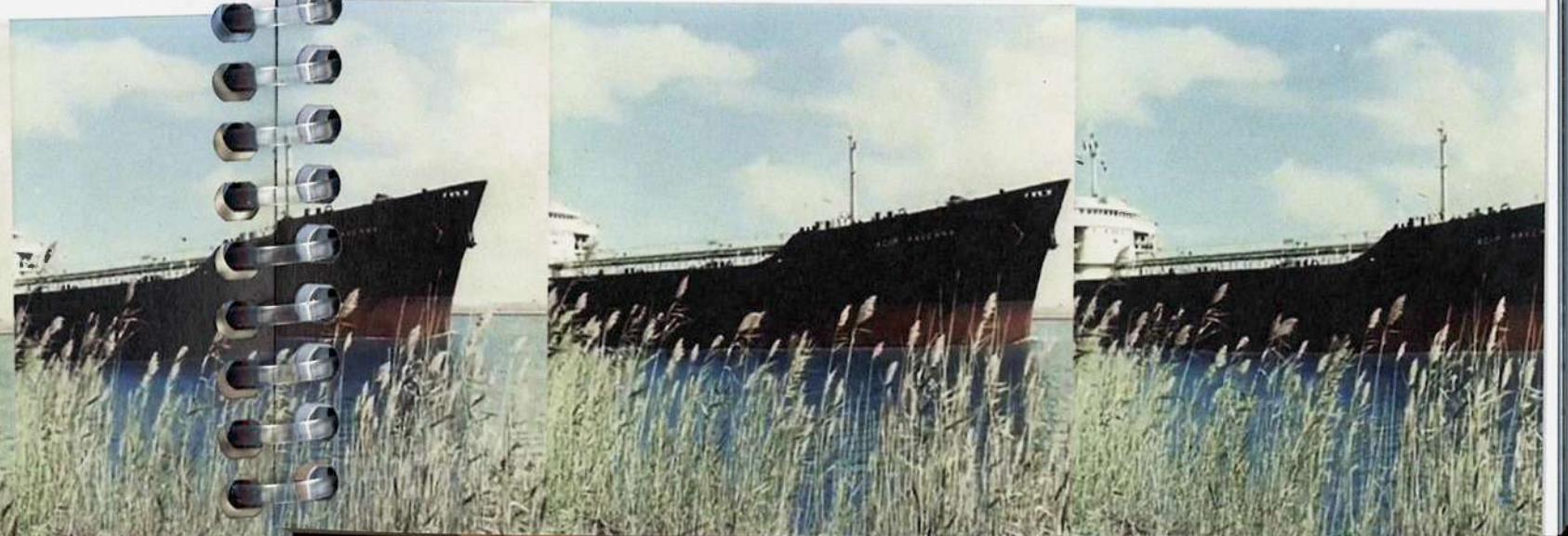


The old bazar, with its colourful vivacity,

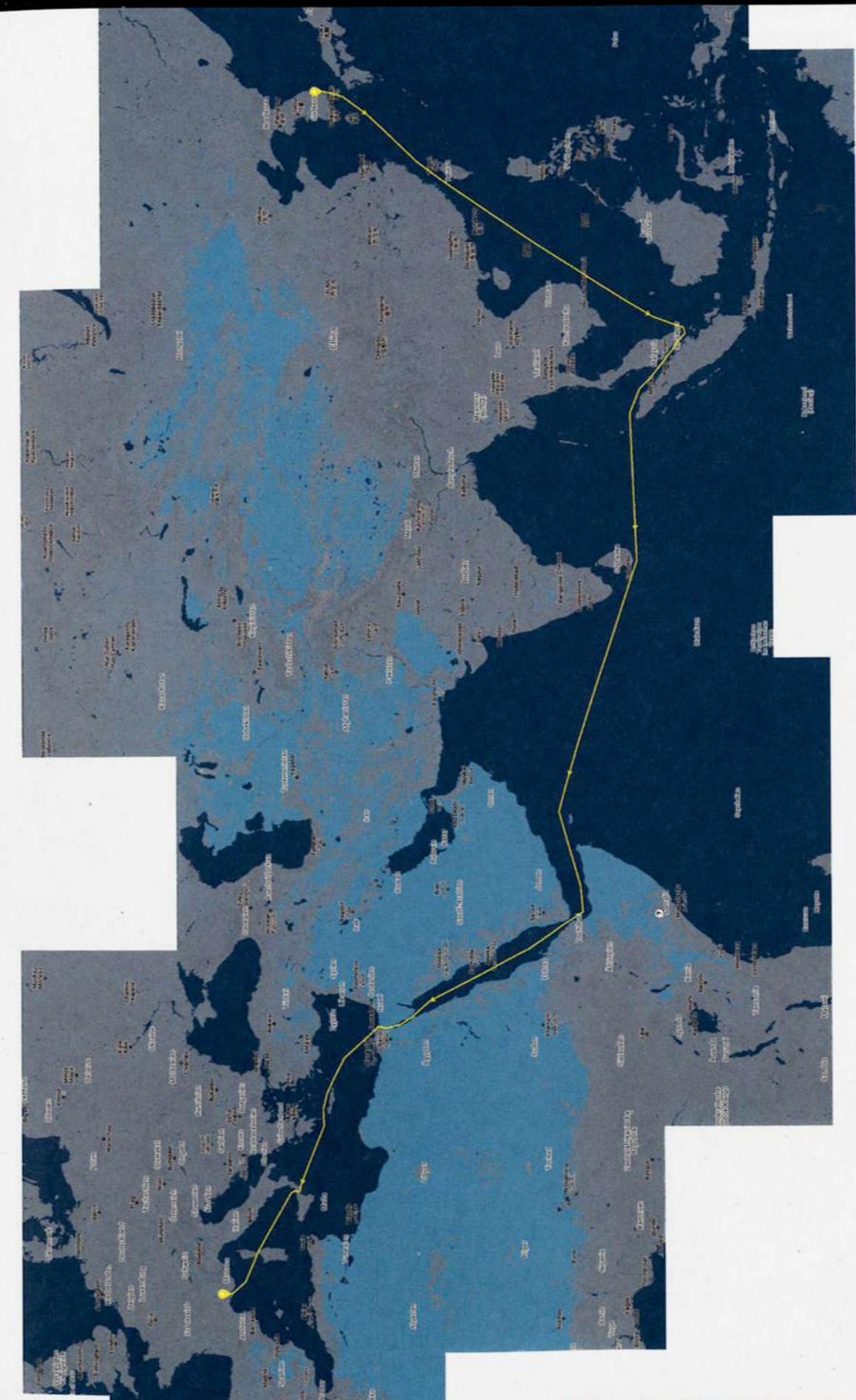
reaffirms that we are still in Orient.

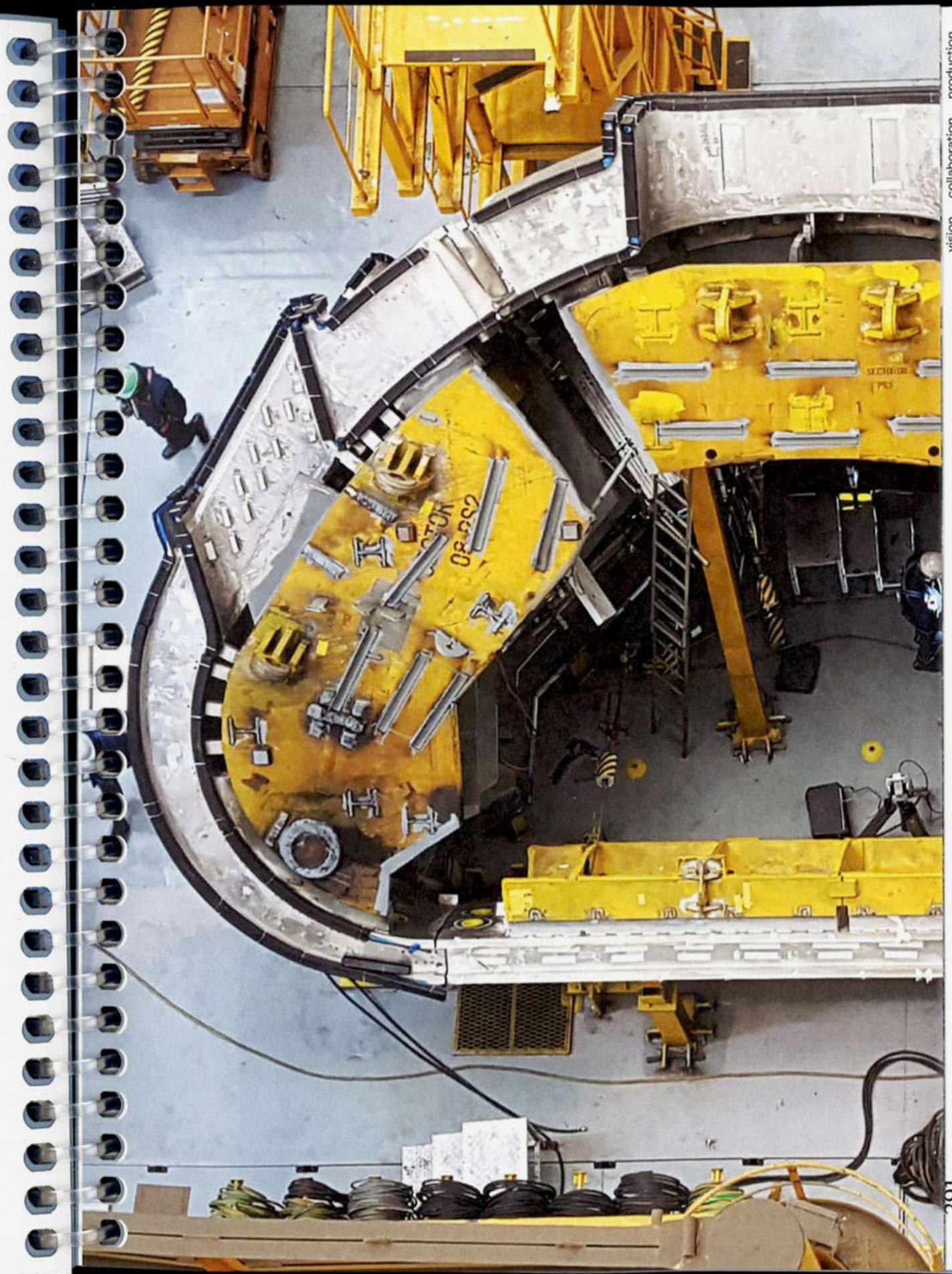


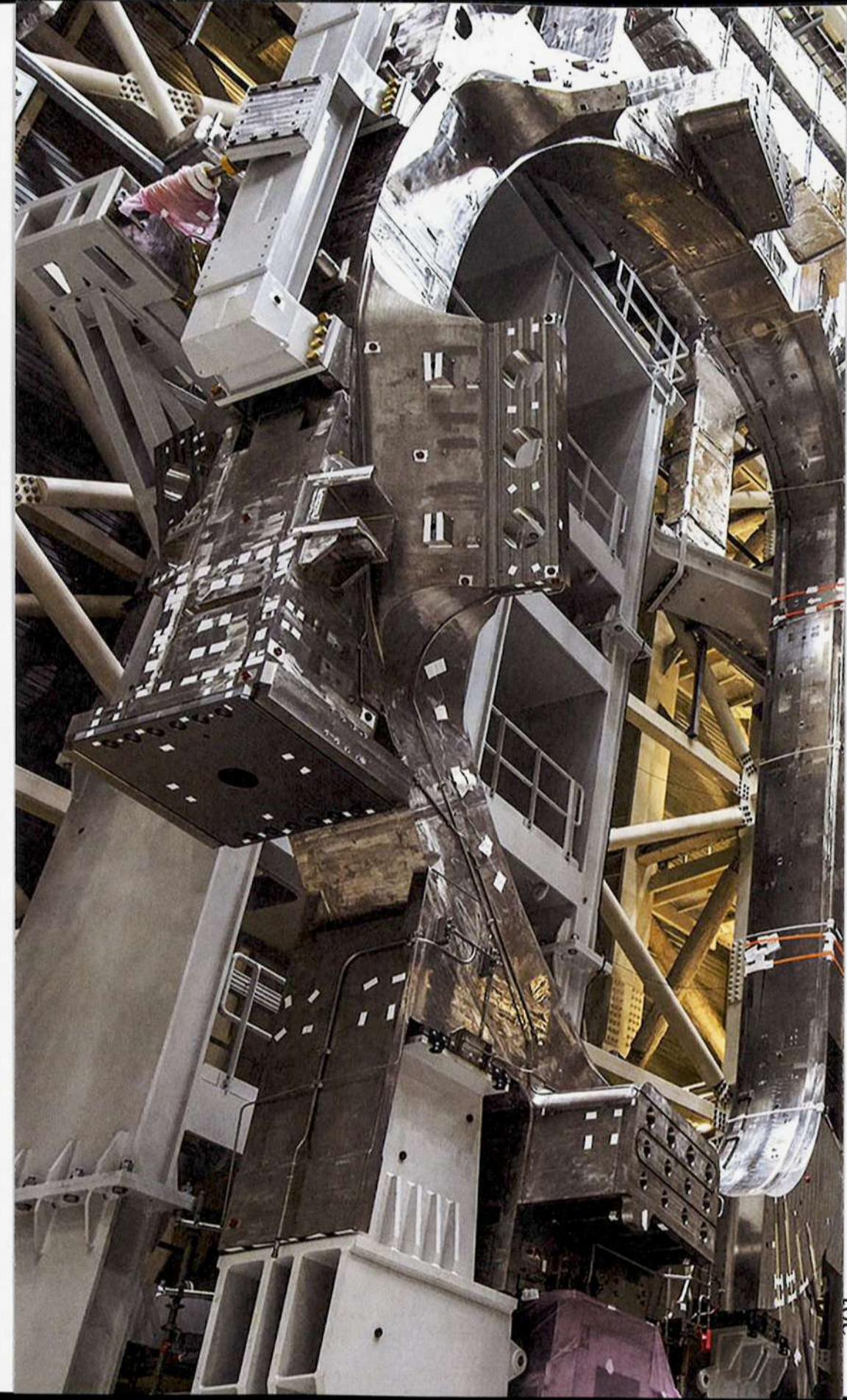
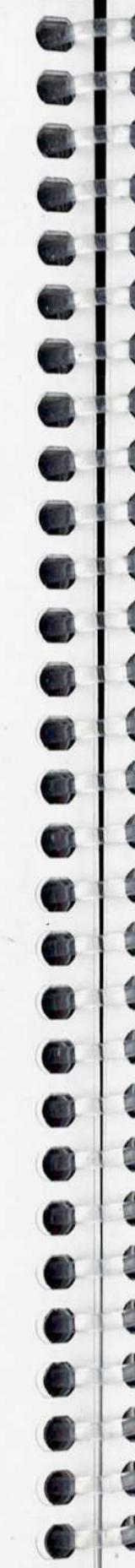
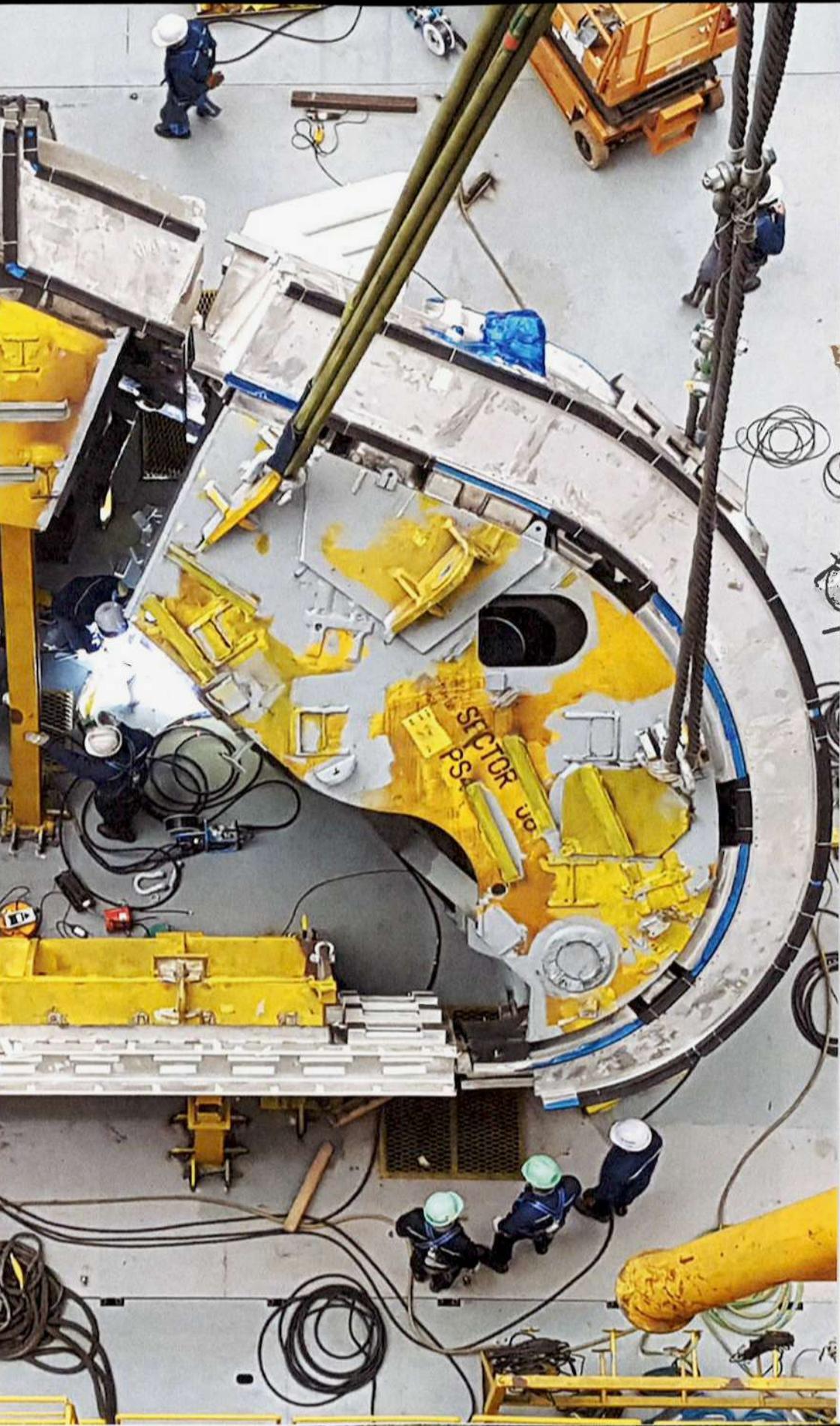




280 vision— production— collaboration









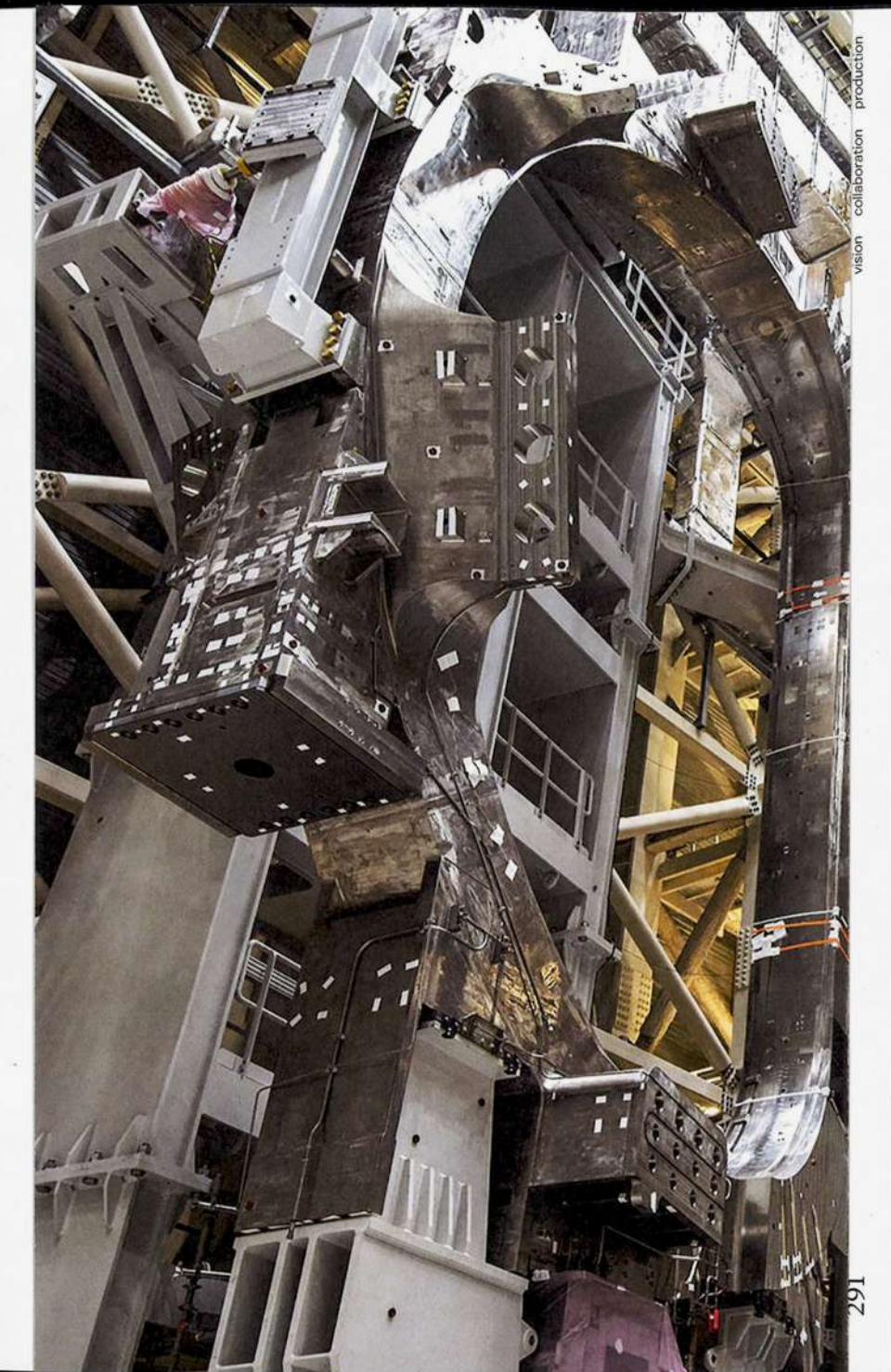
like in JUNE 2020 #6 Korea prepares to ship Vacuum Vessel Sector #7

28 May 2021



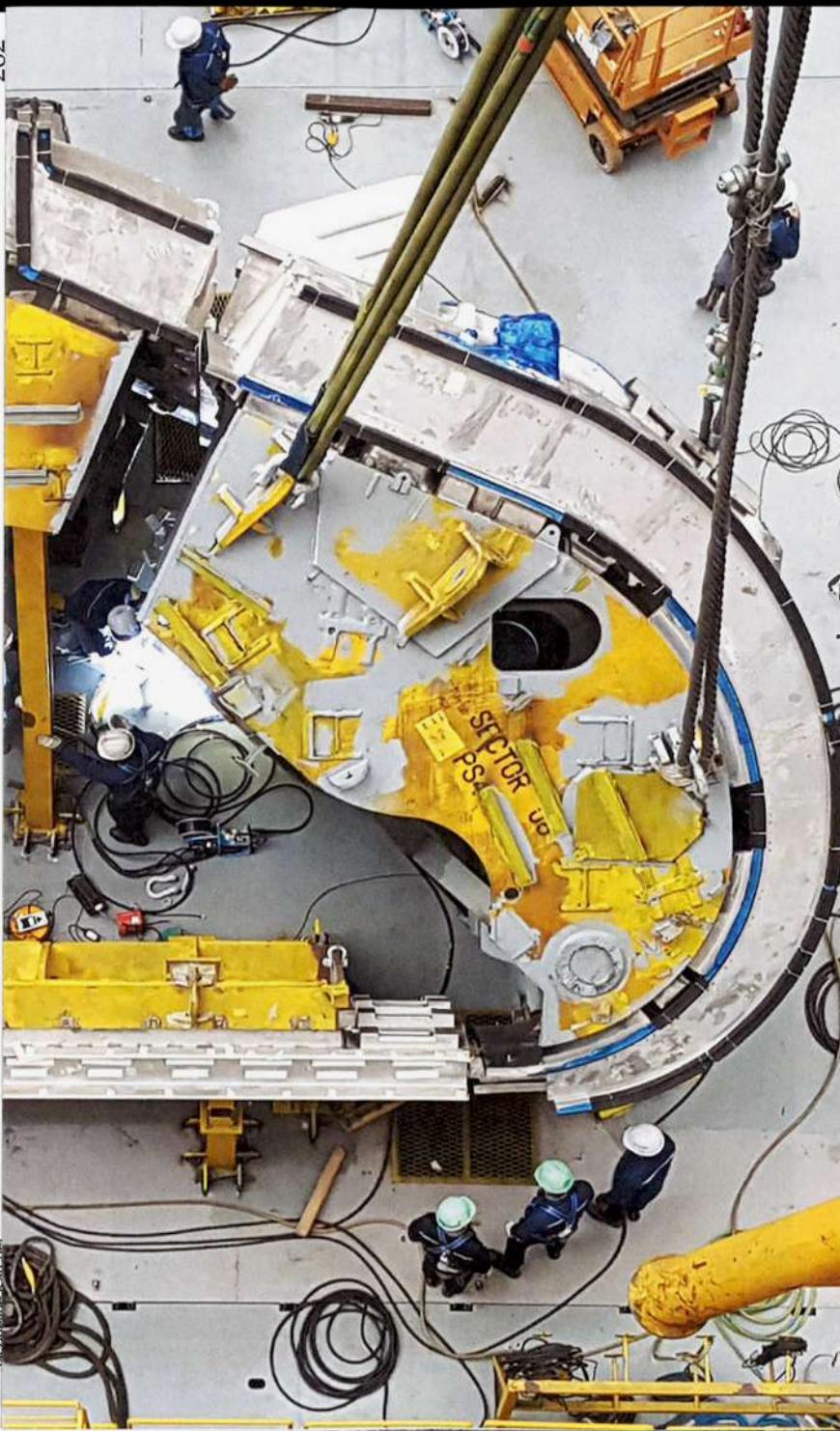
another Vacuum Vessel Sector is about to reach ITER

16 August 2021



291

vision
collaboration
production



Jacqueline Karcher

major machine component travels across Provence

24 August 2021

delivered on Friday, sector #1(7) was unpacked the next day

27 August 2021





like in JUNE 2020 #6 Korea prepares to ship Vacuum Vessel Sector #7

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