

## *Research*

Following the story of bread, from the harvest  
of grain towards the warmth of the oven

Research of the location:  
Bressoux, Liege, Belgium





*“This has overwhelmingly led to late-capitalist ‘winner takes it all’ societies of which rapidly growing inequality is striking”. And: “For a large group of people - the unemployed, migrants, refugees, youths, minorities - it is increasingly difficult to find them a place in the ‘**winner-takes-all**’ system in which everyone wants to be a winner, but only 1 percent is.”*

Liege, Bressoux, 2022  
own photograph



*“Every loaf has a multi-layered story to tell. Bread is so twined with culture that one can start from a loaf of bread and find oneself talking about some of the largest issues of history and society.”*





← Popeye

"I buy my  
bread by  
the Arabian."



"Why?  
Because it is  
only one euro and  
it is fresh!"

"So I'm not  
going to the  
Belgium supermarket,  
where it costs two  
euros. And I don't  
know if it is  
fresh..."



*“We make around 800 loafs a day”*

*“People from Maastricht come here to buy bread, they don't have a good Moroccan bakery”*

Bakeries in Bressoux, 2022  
own photographs



*“White flour had always represented a clear case of conspicuous consumption, white bread was reserved for the elites”*

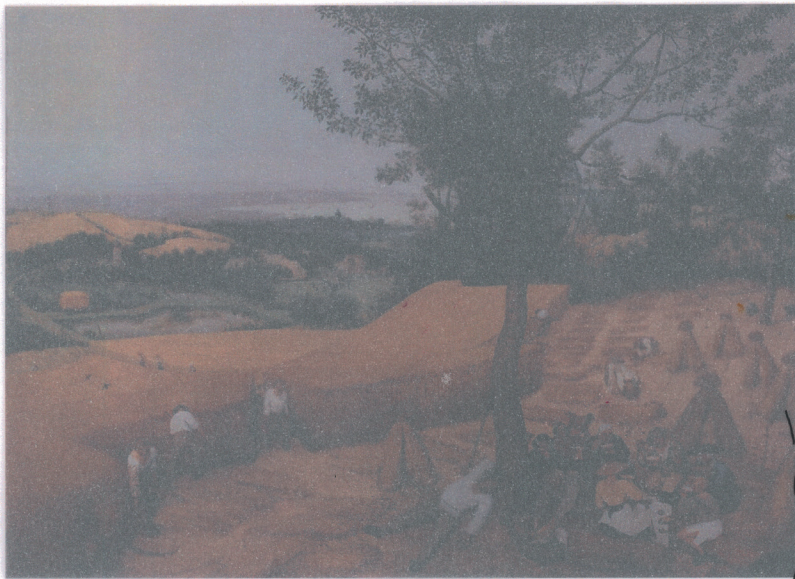
*“Wheat was favored over all other grains. The rich preferred light, white, wheat breads to dense, dark, bran-filled ones.”*



Supermarkets in Bressoux,  
2022, own photographs



Historical and cultural  
research of grain & bread



Pieter Bruegel  
Belgium, 1565



*"Adam and Eve, expelled from the Garden of Eden, world organized around gathering, into a world where agricultural labor of providing themselves with bread, the creation myth's staple food, will always have to be a harsh punishment."*

(Rubin, 2004)



*“Bread history starts in Fertile Crescent. Land between the two great rivers, The Tigris and the Euphrates, world’s first urban cultures developed. Bread was their foundations.”*

Oldest found bread crumb,  
Amaia Arranz-Otaegui,  
Jordan, 2018





Wenzel Peter,  
Adam and Eve in the garden of Eden,  
c.a. 1800



*“Adam and Eve, expelled from the Garden of Eden, world organized around gathering, into a world where agricultural labor of providing themselves with bread, the creation myth’s staple food, will always be felt to be a harsh punishment.”*

*“People have been healthier as hunters and gatherers and that embracing agriculture - bread as staple - was not the best choice for everyone. Adaption of farming implied slavery.”*

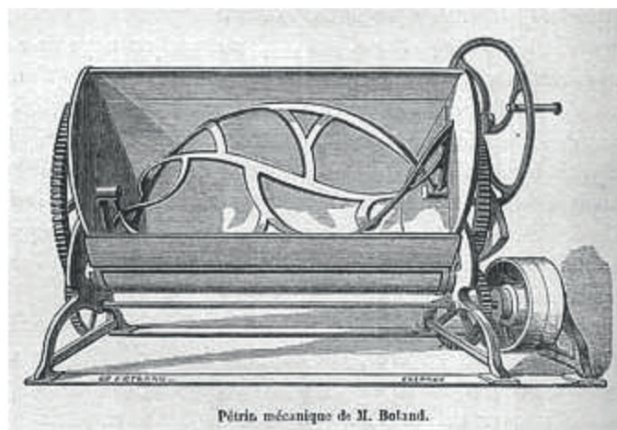
*“You can see how hard life farming was and that bread, life’s staple, and thus a blessing, has also from the dawn of agriculture until recent times been a curse to the subsistence farmers who lived off the grain they grew, the growing of it only the beginning of the labour to turn it into bread.”*



Pieter Bruegel,   
België, 1565



*“Bread, staple of the daily diet, was still prepared in the first half of the 19th century as centuries before, by hand, with flour from local grain ground in the village or town mill, with ingredients and according to recipes that varied from region to region and had been handed down from generation to generation.”*



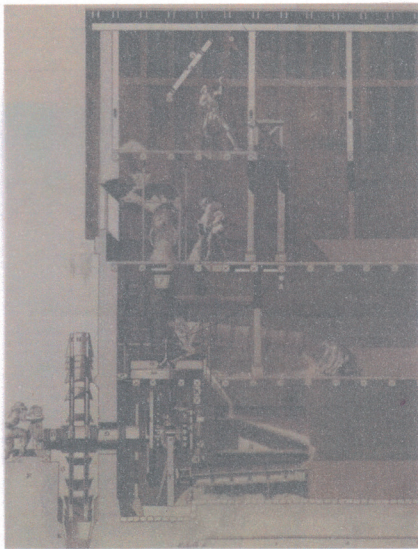
French mechanical kneader, late 19th century.



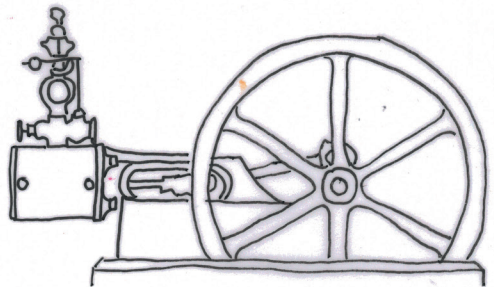
French bakery, mid-19th century.

Historical and cultural  
research of milling



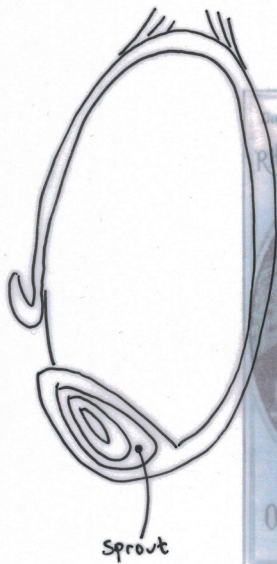


Mill-wright & Millers guide  
Oliver Evans, Philadelphia, 1795



*"Cheap white flour came available in the nineteenth century, when industrial revolution brought together higher grain yields and steel roller mills."*

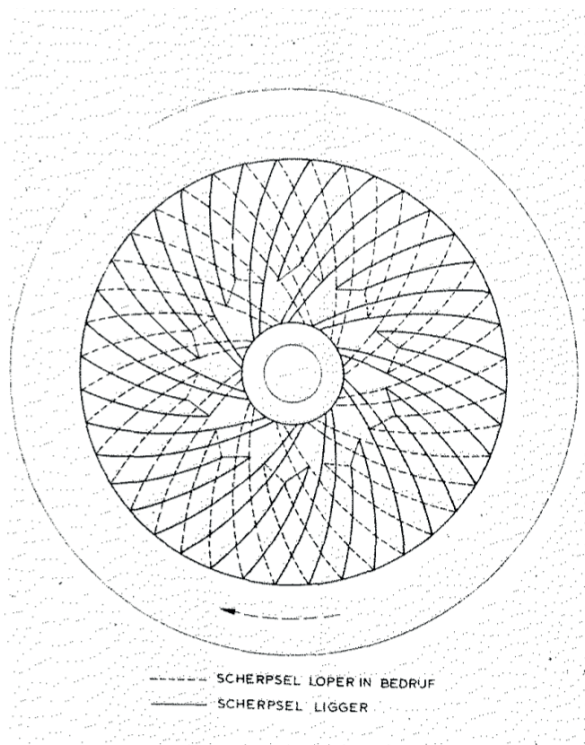
(Rubel, 2011)

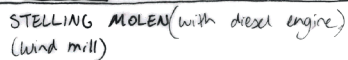


Maatschappij voor Meel & Broodfabrieken  
De Volksvliet, Amsterdam, 1856

*“Milling as prevalent in the Netherlands until the mid-nineteenth century had also not changed since the eighteenth or even seventeenth century. The grain was crushed between two roughened stones. In rural areas, the miller ground the grain grown in his area. In some port cities, grain from overseas also reached the millers.”*

Millstone,  
History of technology in  
the Netherlands. The genesis  
of a modern society  
1800-1890,  
1992

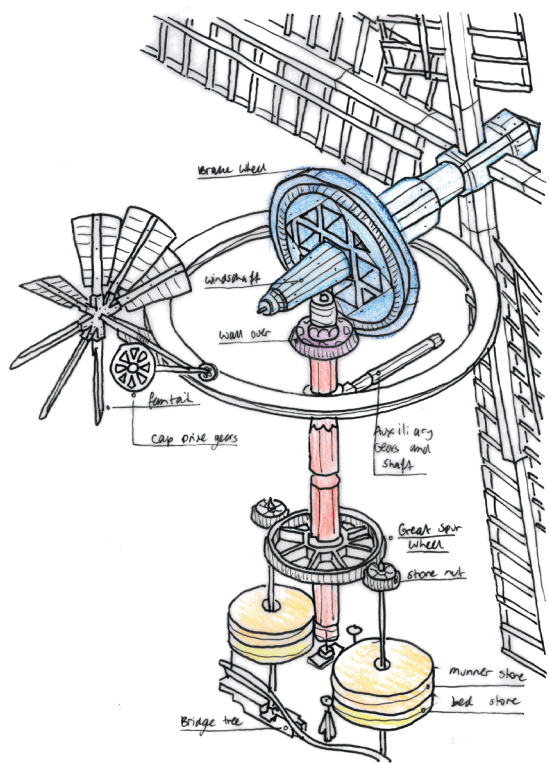




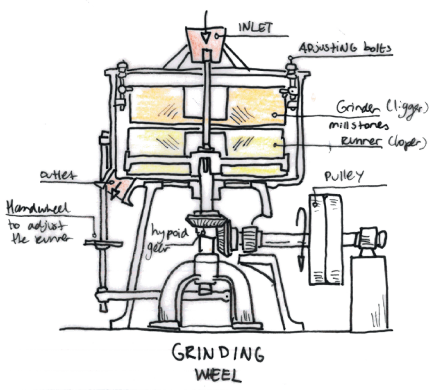


*“As industrialization took hold in Europe and North America agricultural practices became more efficient and ever fewer of us worked the land, milled grain or baked bread. One can say that as industrialization progressed both individually and collectively we grew further removed from grain agriculture, grain processing and the necessity of baking our daily loaf.”*

Windmill,  
Isometric drawing,1820,  
traced drawing

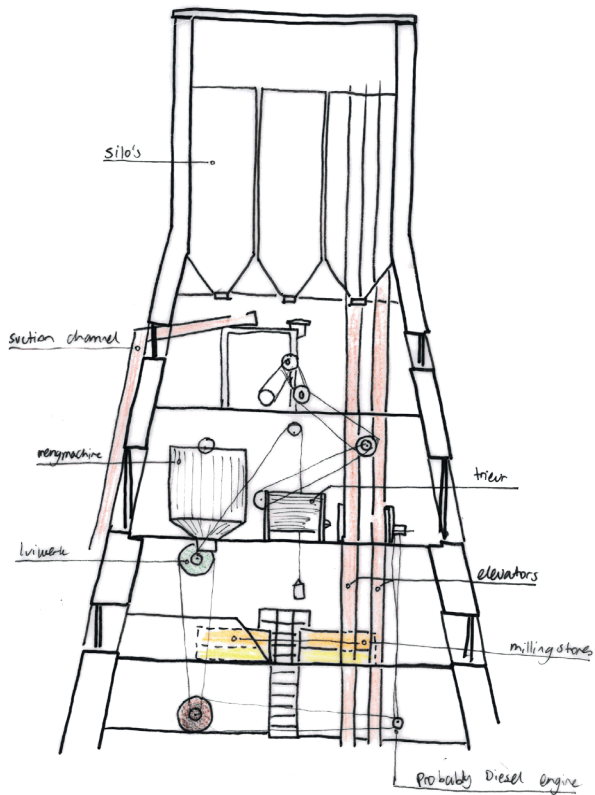


ISOMETRIC OF MACHINERY (1820)  
BEEBE WINDMILL



GRINDING  
WHEEL

Diesel engine mill,  
c.a. 1750,  
traced drawing

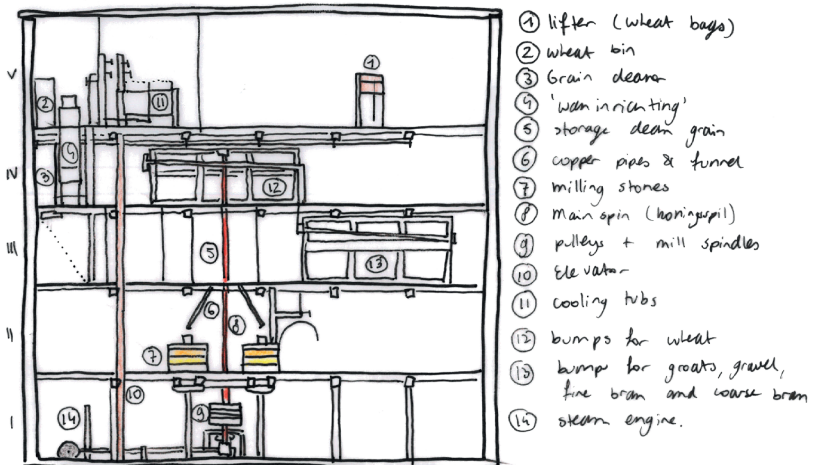


Amsterdamse Meel- en  
broodfabriek,  
1855

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Amsterdamse Meel- en  
broodfabriek, 1855,  
traced drawing

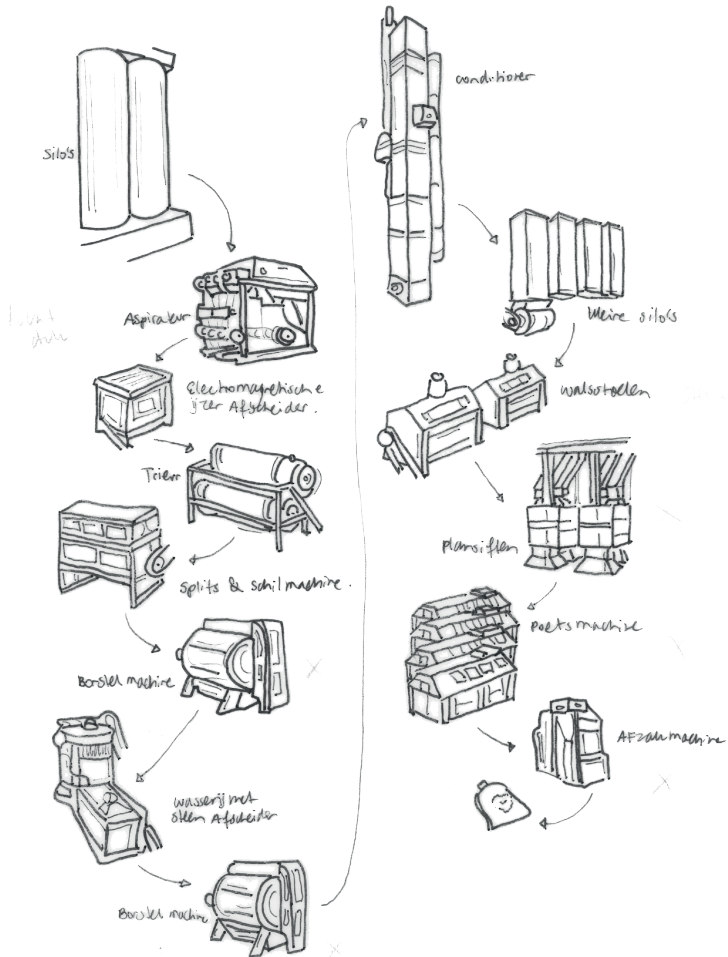


Amsterdamse  
Meel- en Broodfabriek (1855)

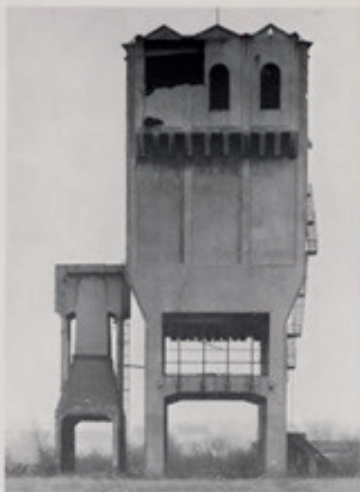
*“Cheap white flour came available in the nineteenth century, when industrial revolution brought together higher grain yields and steel roller mills.”*

In industrial milling with steel rollers, the sprout in the kernel - which contains most vitamins - is taken out.

Electric Mill,  
Kepelse meule, 1931,  
traced drawing



Bechers,  
Silo's, 1998



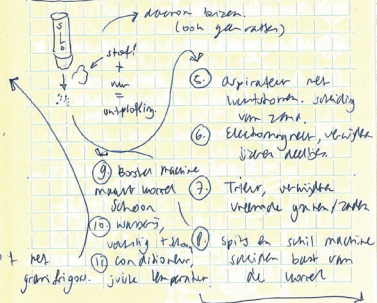


Bechers,  
Silo's, 1998



- moderately ✓  
batter (multiple points  
specific rec'd)
- fabrics ✗

h. Gramm dräger. (mit Stromwunderhalter) o f net  
↳ durch gelben Wärme  
Licht gebildet (gerogen gram)



Notebook,  
Milling process on  
industrial scale

→ 2000 (1000)

(12) kleine silo's, juiste  
huy schakeling voor bloem  
→ mechanisch mengapparaat

(13) gerijpte walsen, wordt door  
gemalen  
→ sterke cilinders worden worden tot  
gries en meen

(14) Plansifter, uitzeven

(15) bots machine

(16) Gladde walsen, 2<sup>de</sup> keer maken  
→ zorgt voor beste kwaliteit  
bloem.

(17) Afzet machine

\* Verbaan Vision - meeting 14/12/22

- vergoeding
- gieten
- parkeren
- halteren e publieke transitie / verbinding
- assen?

→ op een kaart. kennen.  
morgen, na de  
lunch bespreken.

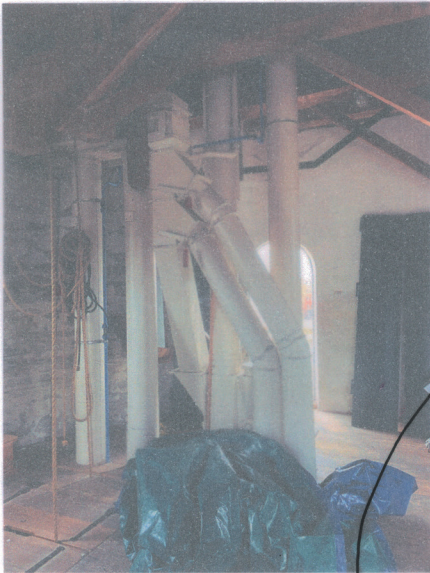
\* molen bedrijf / meelfabriek 14/12/22

- Hermus Molen, (WB)  
× 1902 m<sup>2</sup>

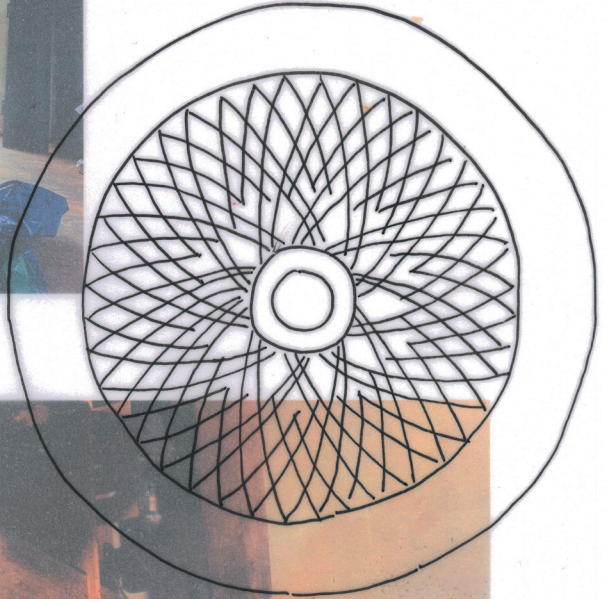
- Molens van Oudenaarde (W)  
× 1350 m<sup>2</sup>

→ 3.5 (11 m)  
→ 3.5 (9 m)  
→ in de buurt

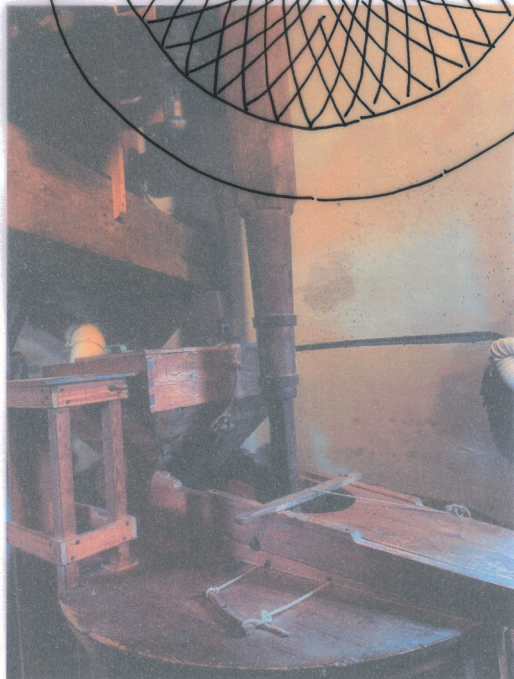
Visit & interview:  
Erwin, windmill Delfshaven, Rotterdam



Electric mill on generator  
Molen Delfshaven, 2023



"Mostly French,  
Italian and Ethiopian  
people come here  
to buy flour."  
Erwin,  
(working at the mill.)



Input shaft for the stone mill  
Molen Delfshaven, 2023



*“Mostly French, Italian and  
Ethiopian people come here to  
buy flour.”*

*“Most of the time the same  
faces, it is a bit more expensive  
than in the supermarket.”*

Flour types,  
Mill Delfshaven, 2023  
own photograph



Stone mills,  
Mill Delfshaven, 2023  
own photograph





Traditional & modern  
technology,  
Mill Delfshaven, 2023  
own photograph

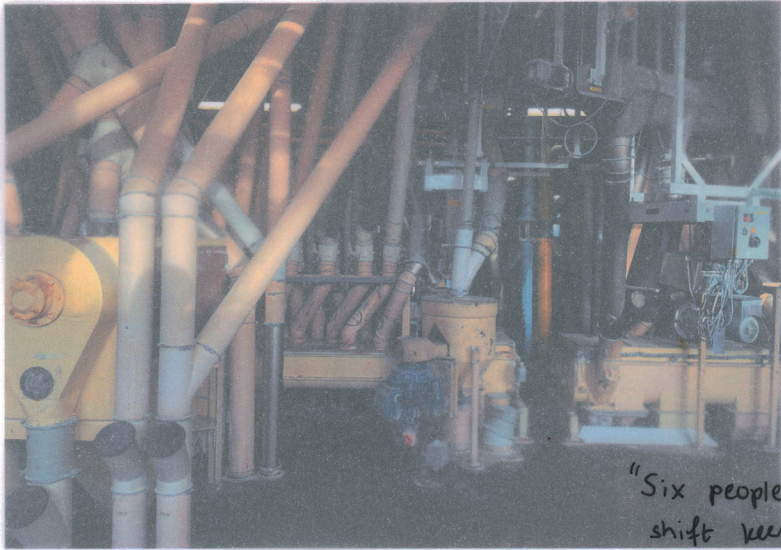


*“The mill works, but we don’t  
use it because it is very difficult  
to play even or let alone, make  
profit with the mill”*

The shop,  
Mill Delfshaven, 2023  
own photograph



Visit & interview:  
Ad, Dossche Mill, Rotterdam



System of shafts  
Dossche Mill, Rotterdam, 2023

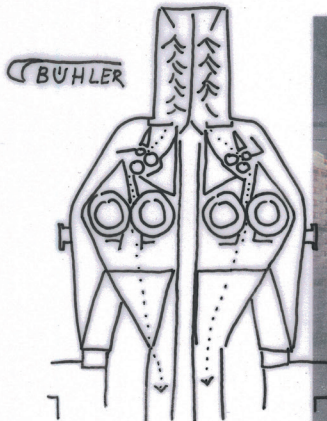
"Six people per  
shift keep the  
mill running."

*"As industrialization took hold in Europe and North America  
agricultural practices became more efficient and ever fewer of  
us worked the land, milled grain or baked bread."*

(Rubel, 2011)

Ad

(Employee for 53  
years at Dossche mill)



Packed flour  
Dossche Mill, Rotterdam, 2023



Dossche Mill,  
Rotterdam, 2022,  
own photographs

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Dossche Mill,  
Rotterdam, 2022,  
own photographs







*“Six people per shift keep the mill running”*

*“There used to work a lot more people at the mill, it is getting more efficient.”*



*“We are able to produce more  
than 250 different types of flour  
and wheat.”*

Dossche Mill,  
Rotterdam, 2022,  
own photographs

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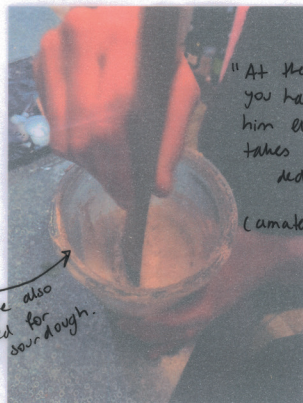
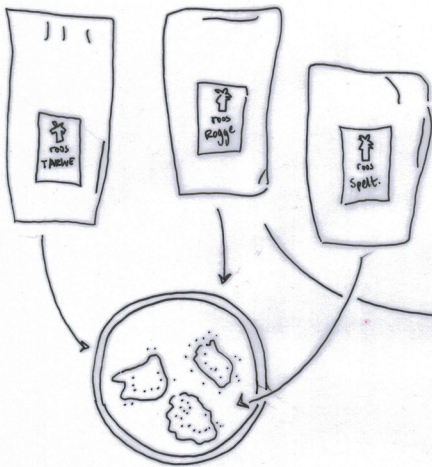


*“We produce 600.000 ton of  
wheat per year. Albert Heijn and  
Jumbo are typical customers.”*

*“we are not able to make it  
organic”*

Interview & baking:  
Home bakers Hannah & Asli

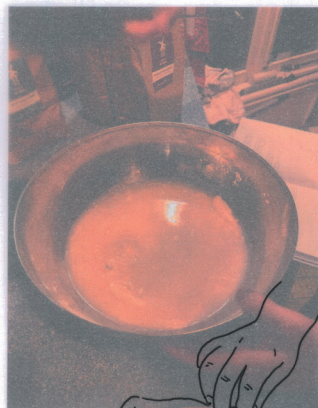




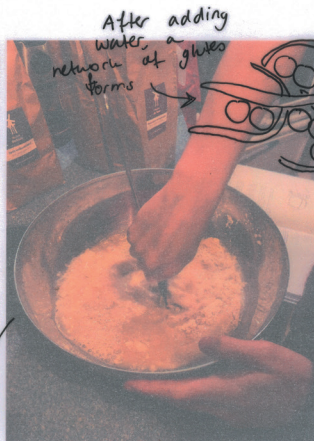
"At the beginning, you have to feed him every day. It takes time and dedication."  
- Hannah (amateur home-baker)

Rogge also used for the sourdough.

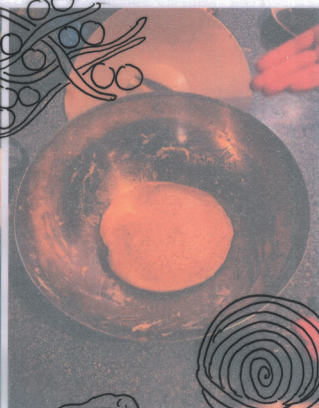
Feeding the sourdough  
Hannah, Delft, 2022



Mixing the ingredients  
Hannah, Delft, 2022



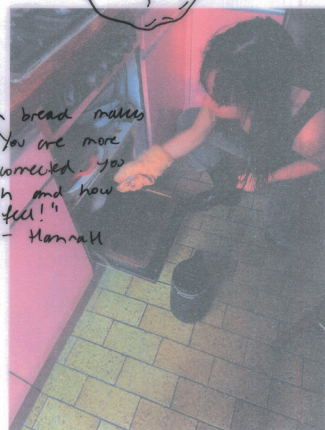
After adding water, a network of gluten forms



"Eating your own bread makes you feel proud. You are more in touch and connected. You know the dough and how it should feel!"  
- Hannah

"While country breads may never have had much relation with breads of the court and the upstairs table of wealthy households, the demise of these ancient relationships between growing, milling, baking and eating is yet another indication that in many ways we as humans have entered a new phase in our cultural lives, one profoundly different from that of our ancestors."

(Rubel, 2011)



Putting the bread into the oven  
Hannah, Delft, 2022

*“While country breads may never have had much relation with breads of the court and the upstairs table of wealthy households, the demise of these ancient relationships between growing, milling, baking and eating is yet another indication that in many ways we as humans have entered a new phase in our cultural lives, one profoundly different from that of our ancestors.”*

Hannah,  
Baking at home, 2022,  
own photographs





Notebook,  
Making a sourdough  
starter, 2022,  
own drawing

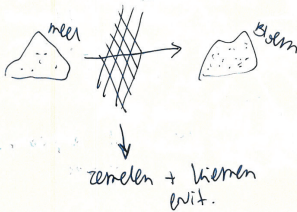
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- Sourdough starter, patience  
only technology,  
so perfect for first bread  
bakers.

- sourdough cultures can  
be shared, easy to  
disseminate.

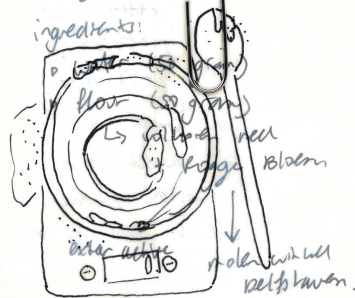
similar to flora of beer  
fermenting.

\* meet vs. bloem



## D making a starter.

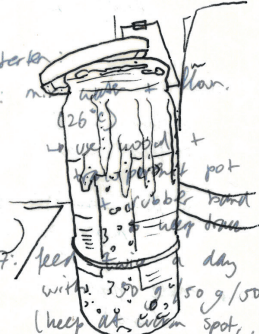
### ingredients:



### steps:

- name starter

Day 1: mix water + flour.



Making sourdough  
starters, 2022,  
own photographs



Making sourdough  
bread, 2022,  
own photographs

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*“Yeast and sugar makes it  
fast as possible, it changed  
the way we consume bread.”*

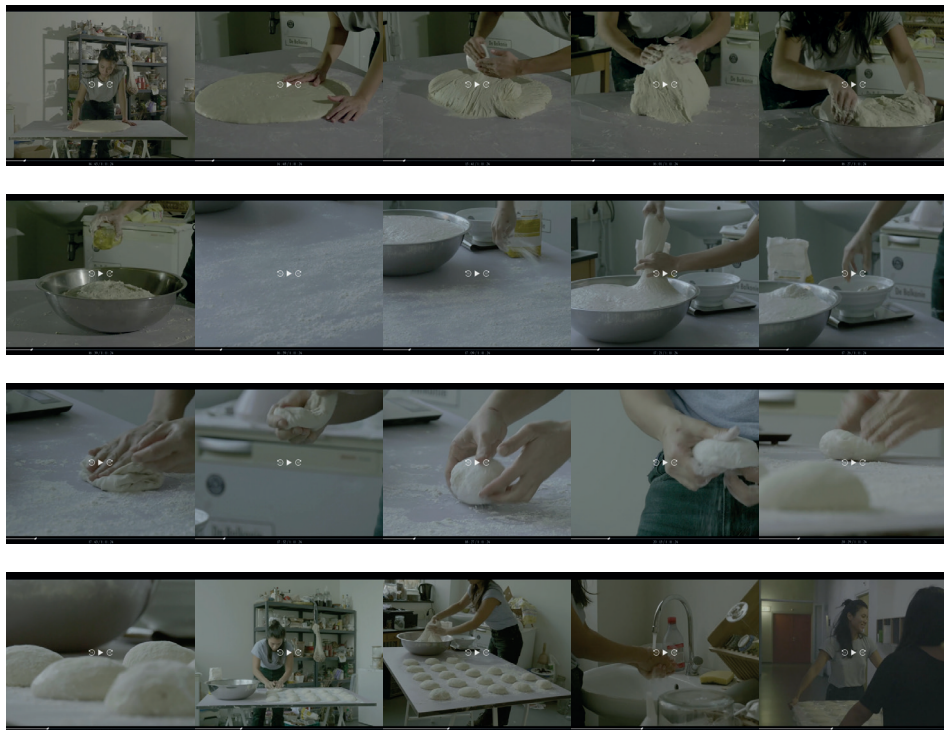
*“Bread can be a tool, sharing  
a bread, can bring people  
together”*

Asli Hatipoglu,  
Time to harvest, 2020

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Asli Hatipoglu,  
Time to harvest, 2020



Visit & interview:  
Bart, Bakkerij de Eenvoud in BoTu, Rotterdam



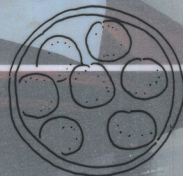


"I was always at home, now I know more neighbours"  
- Ayşe

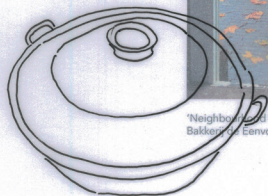
Drinking tea while waiting  
Bakkerij de Eenvoud, Rotterdam, 2022



"We know the skills for baking bread from our parents and grand-parents."  
- Ayşe  
(Resident Bospolder-Tuindijken)



Tasting the bread with butter and cheese  
Bakkerij de Eenvoud, Rotterdam, 2022



"Neighbourhood concierge" picking up the bread  
Bakkerij de Eenvoud, Rotterdam, 2022

"It takes time before people join the baking. After Ayşe, slowly more Turkish women followed. The network is getting stronger."  
- Bort.

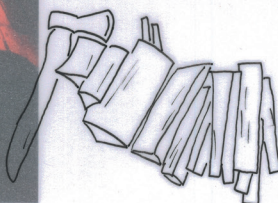
"As one moved up the social ladder the breads came to be more like the breads we know today and were more likely to be baked in domed, wood-fired bread ovens - the same technology urban elite artisan bakers use today"

(Rubel, 2011)

"We made the oven ourselves. It can be cheap with the use of local materials. It brings people together. Using the oven makes it feel 'simple', back to the basics and it warms up the space!"

- Bort

(Co-founder Bakkerij de Eenvoud)



Baking the bread  
Bakkerij de Eenvoud, Rotterdam, 2022

Visit BoTu,  
Neighbourhood oven,  
2022, own photograph

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*“People are searching for simplicity, its brings people together and it warms up the space!”*

*“It takes time before people join the baking, as soon as Ayse joint, more Turkish women followed. You have to earn peoples trust.”*



Interview Ayse,  
Resident of Bospolder en  
Tussendijken, 2022

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*“We know the skills of baking  
bread from our mothers and  
grandmothers.”*

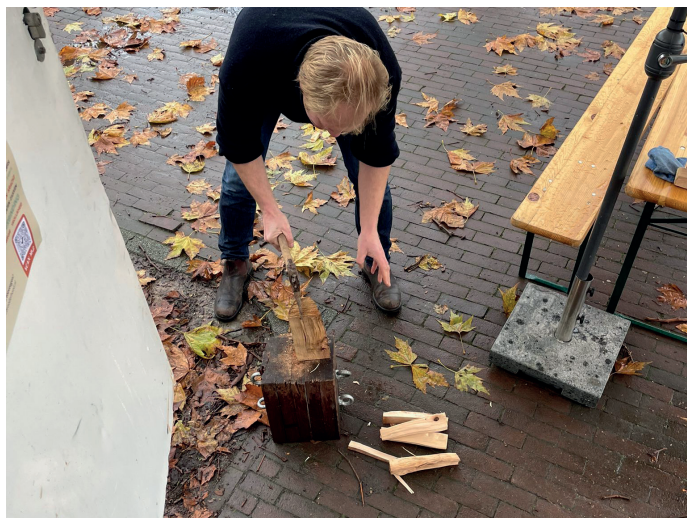
*“First I felt alone, now I know a  
lot of neighbors.”*

Visit BoTu,  
Neighbourhood oven,  
2022, own photograph



Visit BoTu,  
Neighbourhood oven,  
2022, own photograph

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Interview Bart,  
BoTu and Bakkerij de Een-  
voud, 2022

& Interview  
Asli Hatipoglu, 2023

*“You need a ‘Stoker’. Someone responsible for putting on the fire, people don’t do that by themselves.”*

*“Stoker should be someone from the community. Leave it to the people, how would they share it? What would happen with it?”*

Visit BoTu,  
Neighbourhood oven,  
2022, own photograph

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*“Bakeries have to keep the price of a bread under 1 euro, otherwise people don’t come. With the rising gas prices this gets more and more difficult. So they put in more and more sugar in the dough to rise faster to keep the bread cheap.”*

*“Making your own bread is not cheaper, but it is healthier!”*



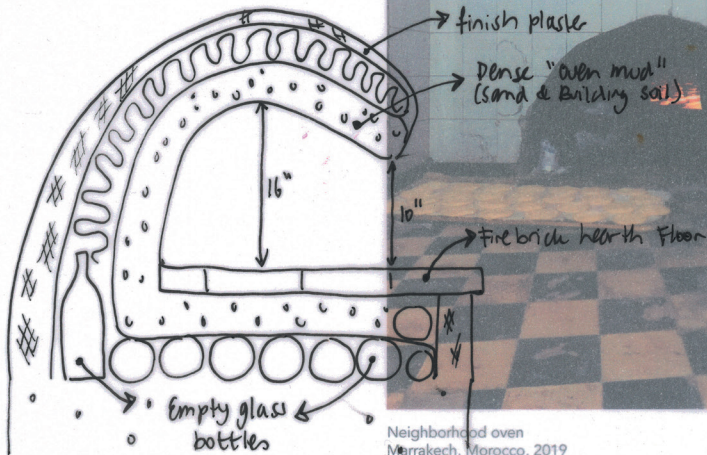
Visit BoTu,  
Neighbourhood oven,  
2022, own photograph

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*“We bake the bread with people  
from the neighborhood as an activ-  
ity. Our ‘neighborhood concierge’  
knows which people are in need  
and hands out the bread to them”*

Research of communal and  
neighborhood ovens



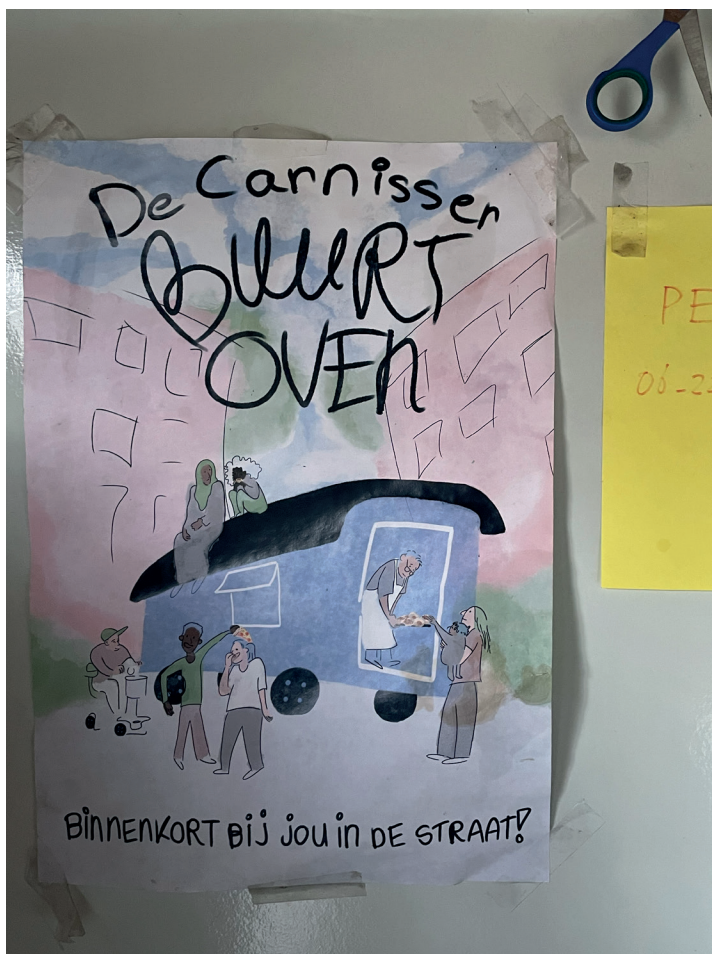
Communal oven, future perspective  
Melle Smets, Bospolder-Tussendijken

"Walk" a board all around the form  
to make it firm, smooth, and beautiful."

*“People have different life styles,  
baking bread in a communal  
oven can be an excuse to meet. It  
can motivate to continue baking  
bread.”*

*“I do it as a ritual, I share bread  
with friends and surroundings.”*

Visit BoTu,  
Neighbourhood oven,  
2022, own photograph





*“Morocco is a good example for communal ovens, many neighborhoods still have one. Having your own oven is only for the rich, it takes a lot of energy and space.”*

*“I don’t promote baking at home. It costs a lot of energy and a waste of heat.”*

Communal oven,  
Marrakesh, 2019,  
own photograph



Melle Smets,  
BoTu on Humanpower,  
ngoing



*“Loneliness is almost applicable everywhere and always a good argument.”*

*“Our individualism is wonderful, but it has to come to an end.”*

Research by design:  
wood-fire oven, Veldkersweg, Rotterdam

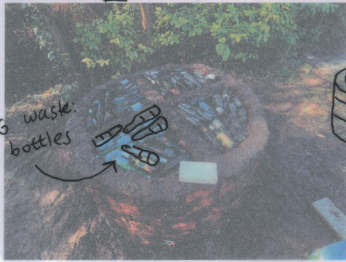




MUD subFloor



RE-USING BRICKS



USING waste: glass bottles



bottles insulant.



Dense subFloor strong enough for heavy bricks.



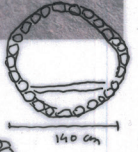
insulation between the gap.

Re-using materials from site or other places: clay, bricks, bottles



USING CLAY From site

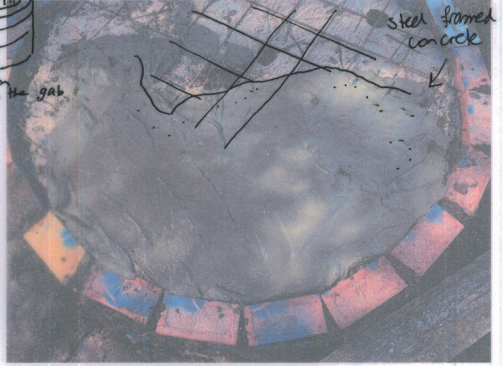
Building the base



140 cm



05 cm



steel framed concrete



20 cm



Making the dome out of sand



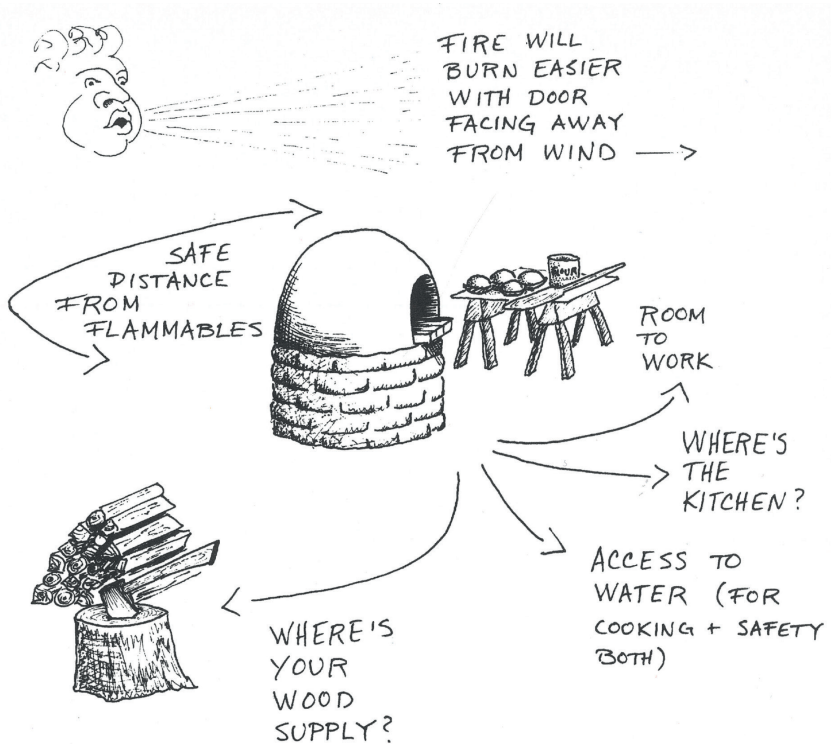
Fire proof brick

Making the top layer of the base with steel-framed concrete/clay and finishing it with fire-proof bricks





Kiko Denzer and  
Hannah Field,  
Built your own earth oven,  
2007



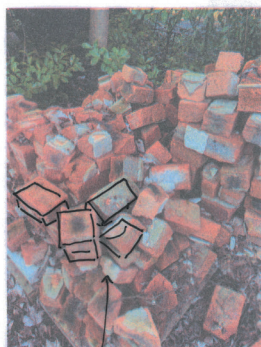
## LOCATING YOUR OVEN

Might it be the center of a beautiful (cob?) enclosure? If a living sod roof is too ambitious, consider a garden wall to embrace the oven and the eaters....  
(see photo, p. 95)



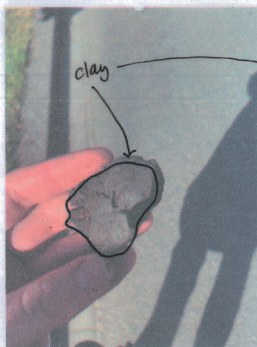
Searching local materials,  
Veldkersweg Rotterdam,  
2023, own photographs

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Bricks

VELDKERS.



materials found in  
the area to built the  
oven with.

can this method be used  
for the material (bio-based)  
of the housing and mill?



Building oven,  
Veldkersweg Rotterdam,  
2023, own photographs



Building oven,  
Veldkersweg Rotterdam,  
2023, own photographs

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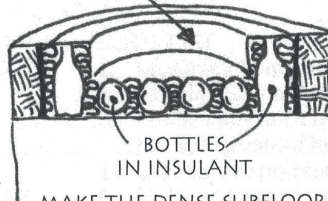
Building oven,  
Veldkersweg Rotterdam,  
2023, own photographs



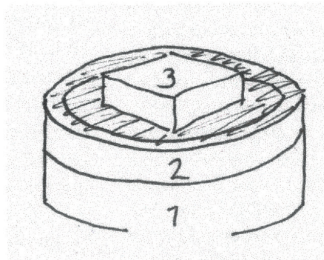


Kiko Denzer and  
Hannah Field,  
Built your own earth oven,  
2007

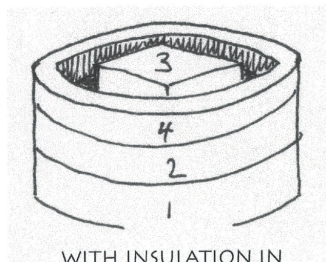
A DENSE "OVEN MUD" SUBFLOOR  
BIG ENOUGH TO SUPPORT ALL  
THE HEARTH BRICKS  
GOES HERE



MAKE THE DENSE SUBFLOOR  
BEFORE OR AFTER YOU MAKE THE  
RINGS; IT CAN ALSO BE SQUARE OR  
ROUND, DEPENDING ON WHAT  
MAKES MOST SENSE FOR YOUR  
SITUATION & MATERIALS



DENSE SUBFLOOR ON  
INSULATION; IT SHOULD  
BE BIG ENOUGH TO  
SUPPORT ALL THE  
HEARTH BRICKS



WITH INSULATION IN  
THE GAP BETWEEN (3)  
AND (4), THIS WILL BE  
READY FOR SCREEDING &  
HEARTH FLOOR BRICKS

Building oven,  
Veldkersweg Rotterdam,  
2023, own photographs



Building oven,  
Veldkersweg Rotterdam,  
2023, own photographs





Building oven,  
Veldkersweg Rotterdam,  
2023, own photographs



Building oven,  
Veldkersweg Rotterdam,  
2023, own photographs



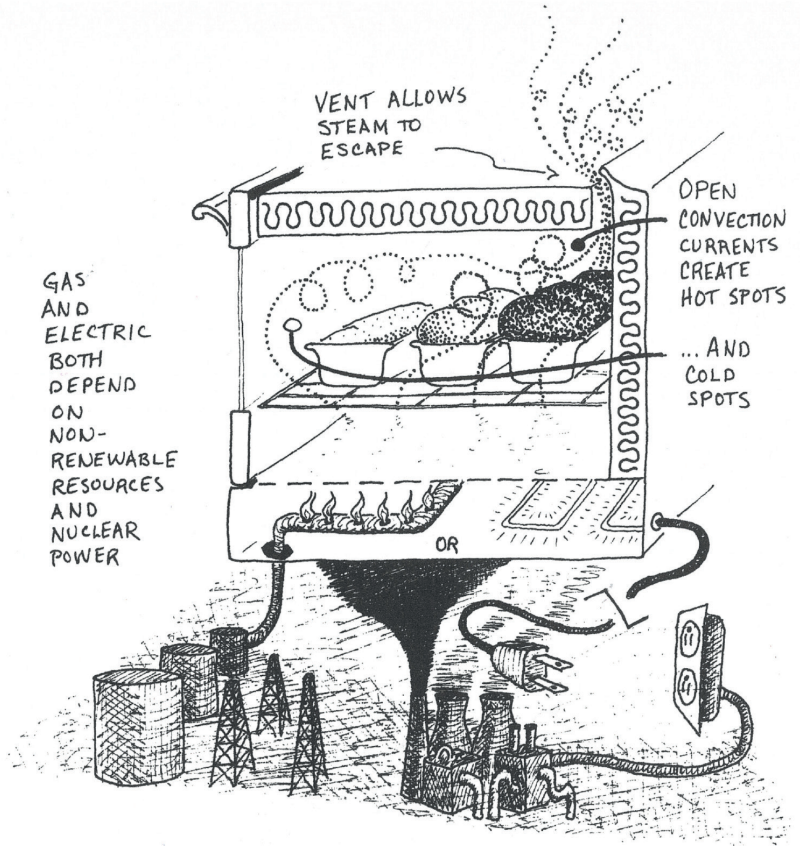
Building oven,  
Veldkersweg Rotterdam,  
2023, own photographs





Kiko Denzer and  
Hannah Field,  
Built your own earth oven,  
2007

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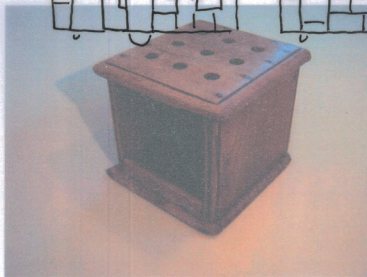
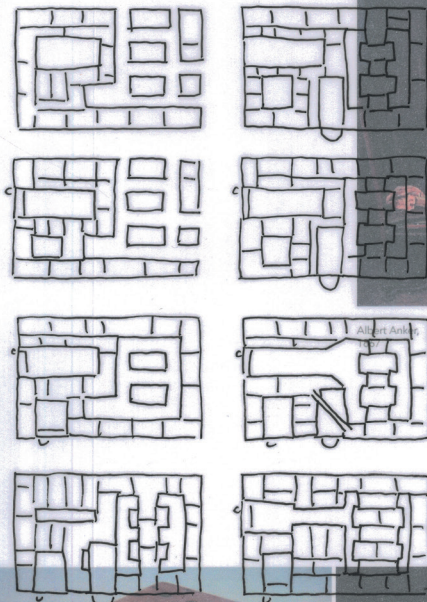


Building oven,  
Veldkersweg Rotterdam,  
2023, own photographs

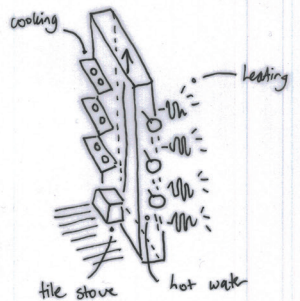


Research on central (wood-fire)  
heating systems for housing

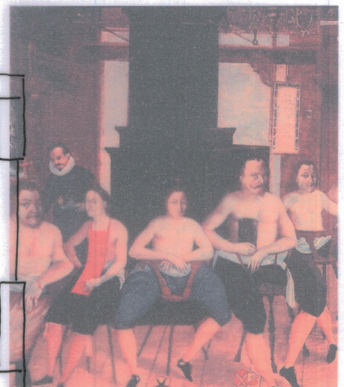
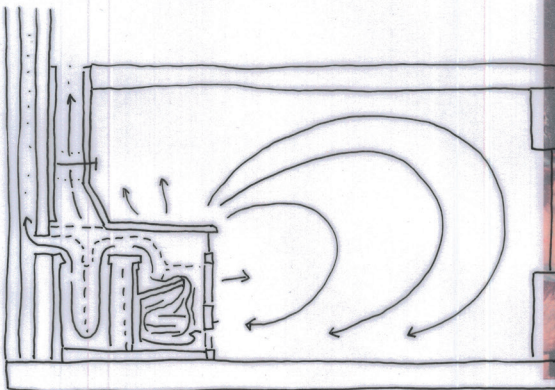




Dutch foot stove &  
Young woman warming her hands by Caesar van Everdingen



"These days, we provide thermal comfort in winter by heating the entire volume of air in a room or building. In earlier times, our forebear's concept of heating was more localized: heating people, not places."



Painting Russian stove, unknown

Painting Albert Anker,  
gathering around the  
tile stove, 1867

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Painting Albert Anker,  
gathering around the  
tile stove, 1895



*“These days, we provide thermal comfort in winter by heating the entire volume of air in a room or building. In earlier times, our forebear’s concept of heating was more localized: heating people not places”*

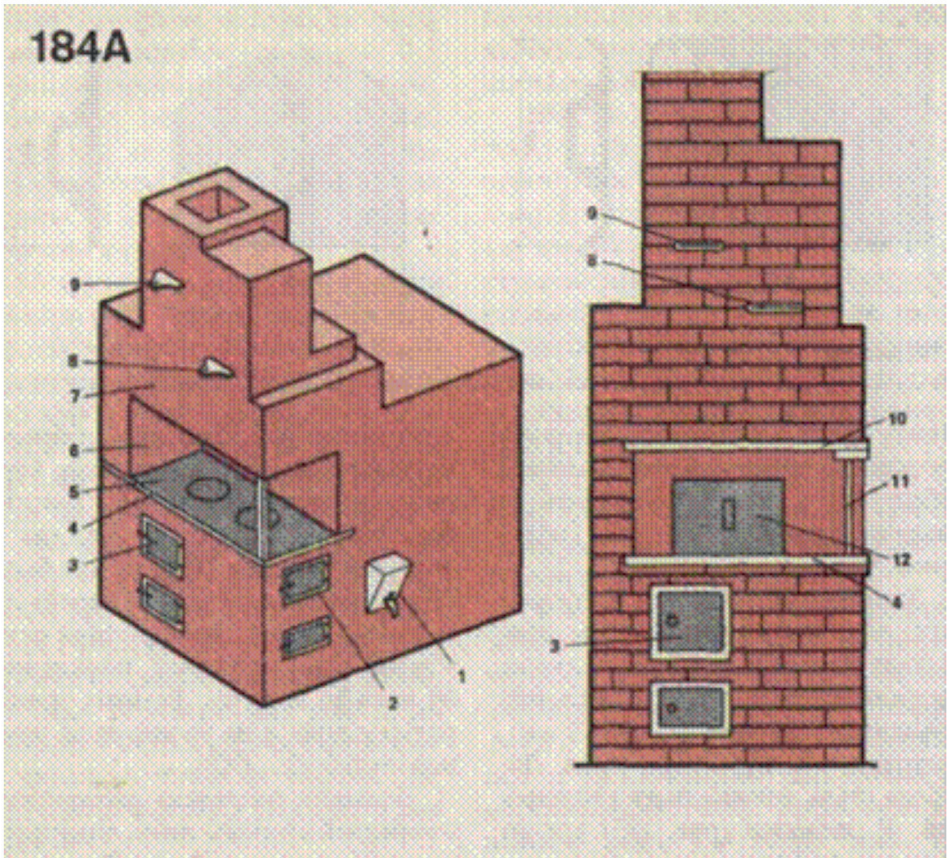
Contemporary Tilestove,  
Scotland, 2018

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Russian stove  
'Housekeeper'

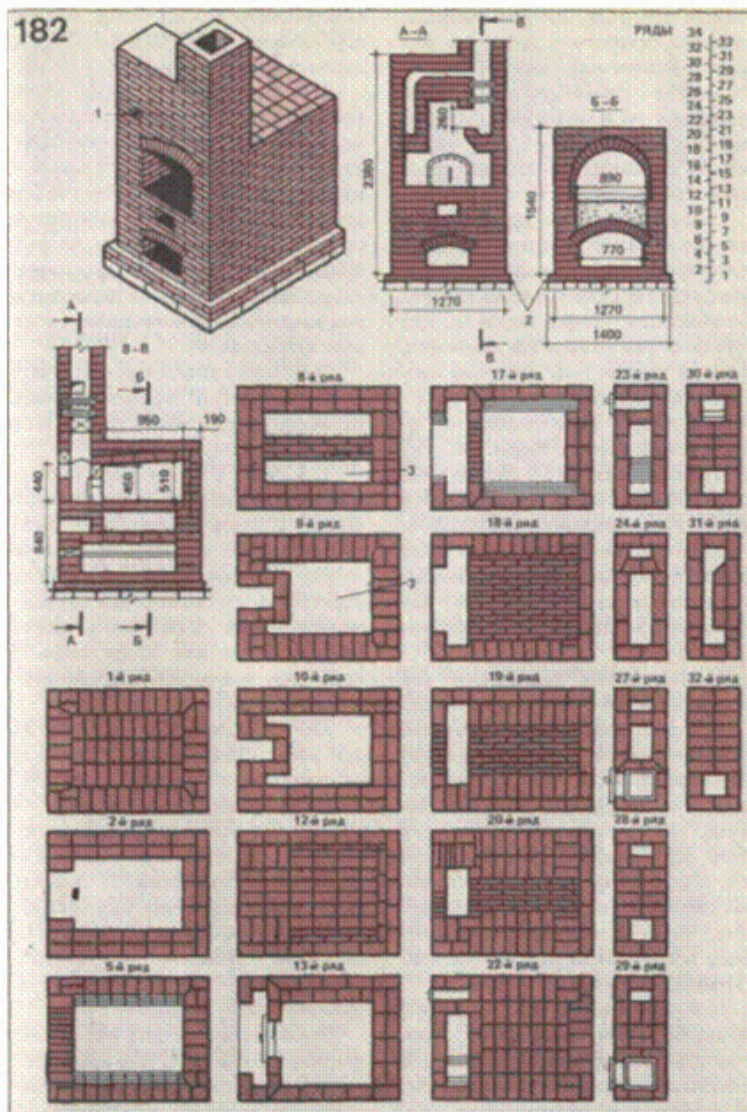
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184. Russian stove "Housekeeper"

1 - hot water box; 2 - small firebox; 3 - large firebox; 4 - "faience"; 5 - cast iron plate; 6 - six; 7 - overtube; 8 - ventilation valve; 9 - smoke valve; 10 - strip or angle steel; 11 - rack; 12 - damper; 13 - ventilation duct; 14- overlap; 15 - a gap in the hearth; 16- brick partition; 17 - under the cooking chamber; 18 - holes in the upper part of the hearth; 19 - adobe; 20 - holes (roll-ups); 21 - grates

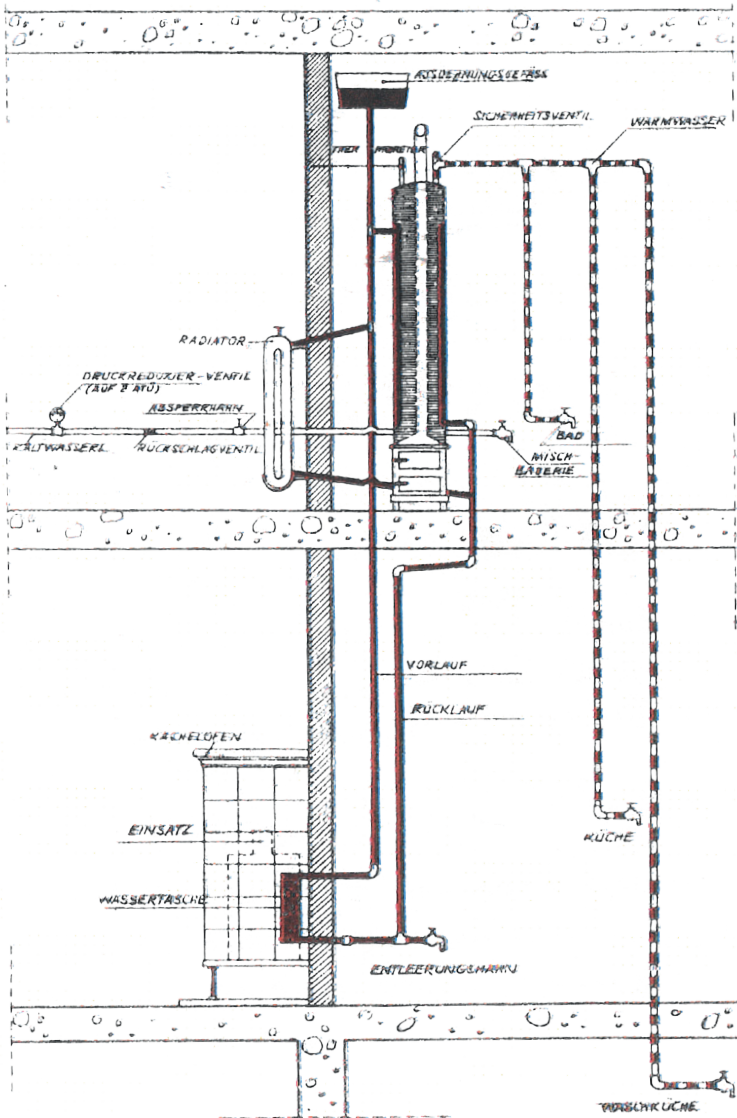




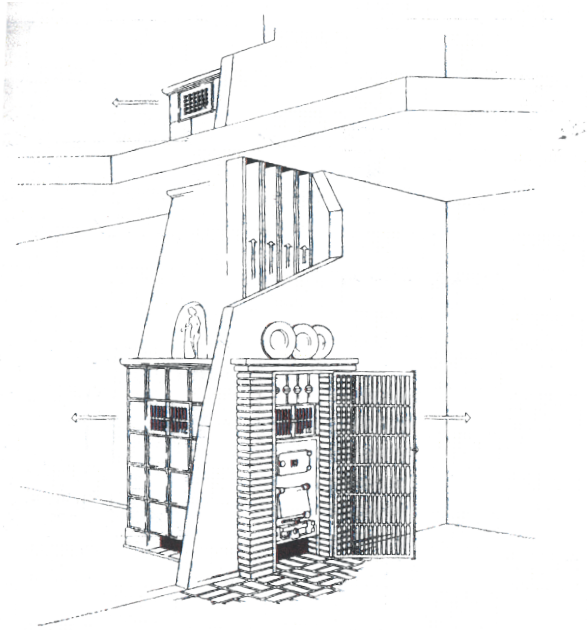


# Heating system tile oven, History of heating systems

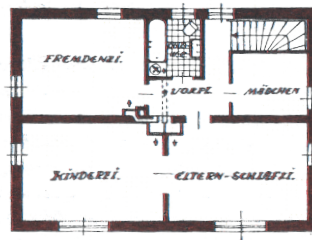
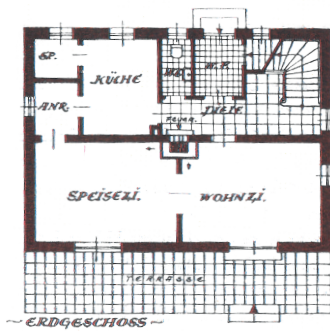
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# Heating system tile oven, History of heating systems



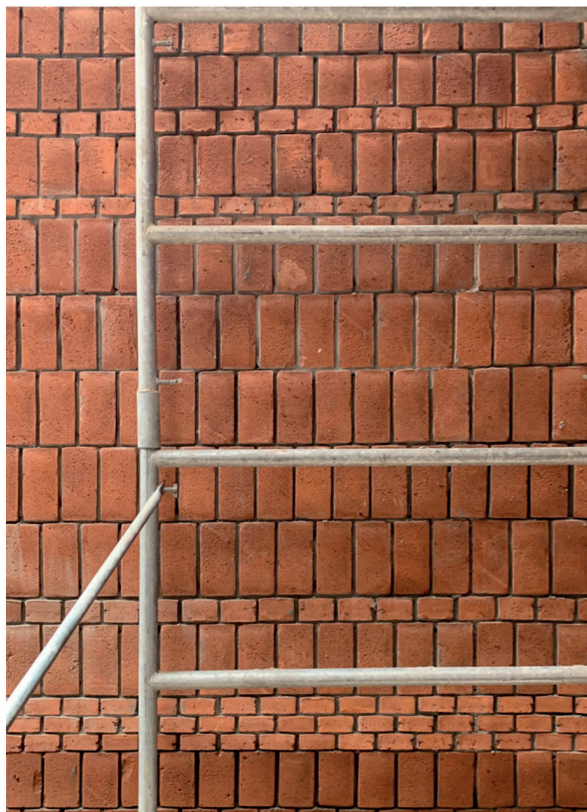
Ansicht der Feuerstelle in der Diele (Projektierung Heinsteinwerk).



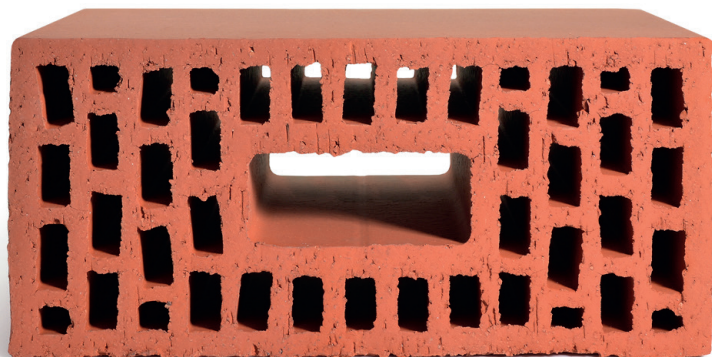
Schema einer Kachelofen-Mehrraumbeizung für ein zweigeschossiges Eigenheim.

Werfstraat Brussel,  
Bovenbouw

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Decoblok,  
Ploegsteert



Refuge II,  
Wim Goes Architectuur

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## FRAICHES EN ÉTÉ, CHAUDES EN HIVER, LES MAISONS DE PAILLE SONT AVANT TOUT ÉCONOMIQUES

Par Gustave LAMACHE

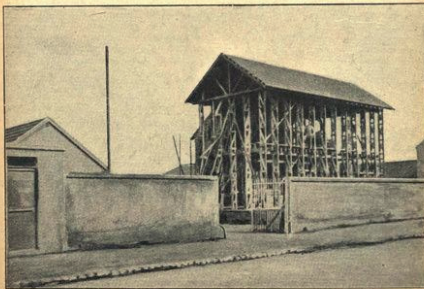
**L**a maison de paille ! L'association de ces deux mots est bien de nature à provoquer de l'étonnement, même chez les personnes les mieux préparées aux hardiesses de la conception dans l'art de construire. Et cependant, il n'en est pas moins acquis, à l'heure actuelle, que la maison de paille est une réalité visible et palpable, déjà reproduite en France à plusieurs exemplaires et dont la ville de Montargis a eu la primauté au cours du dernier automne.

Je note tout de suite qu'il ne s'agit ni d'une « paillette » comme ceux qui sont allés aux Indes en ont pu voir, ni d'une de ces maisonnettes entourées et recouvertes de ghil et baptisées chalet normand ou suisse, sans

doute parce que nulle part, en Suisse, on ne voit de maisons aux toitures de chaume.

Les visiteurs qui viennent se rendre compte eux-mêmes, à pied-d'œuvre, remportent l'impression qu'un chapitre nouveau s'est ouvert au livre de la construction et qu'une activité féconde ne tardera pas à sortir de l'idée originale que vient de réaliser M. Feuillette, inventeur de la grenade à fusil et créateur de la maison de paille.

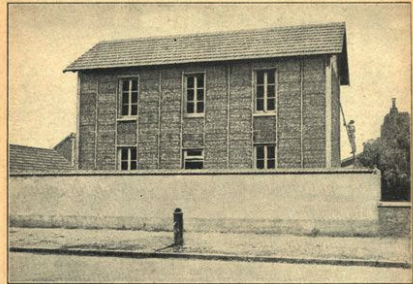
La reconstruction des fermes et des habitations paysannes dans les régions dévastées par l'ennemi peut se trouver accélérée par l'utilisation de matériaux abondants et peu coûteux, et le problème des maisons ouvrières peut être résolu par la même méthode.



OSATURE DE LA MAISON DE PAILLE DITE ISOTHERMIQUE.

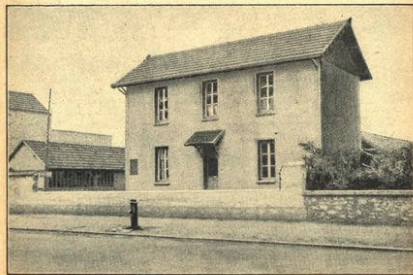
La toiture est complètement achevée, alors que les murs, les portes et les fenêtres n'existent pas encore.

LA SCIENCE ET LA VIE



LA MAISON ISOTHERMIQUE EST COMPLÈTEMENT CLOSE ET COUVERTE.

Les murs attendent leur enduit; mais telle qu'elle est, la construction est déjà suffisamment engageante.



VOICI MAINTENANT LA MAISON VERMINÉE; TOUTE TRACE DE PAILLE A DISPARU.

Non seulement la maison est totalement achevée, mais les habitants en ont déjà pris possession.