

*MATTER,
SPACE,
STRUCTURE*

3

*RESEARCH
EXPOSITION*

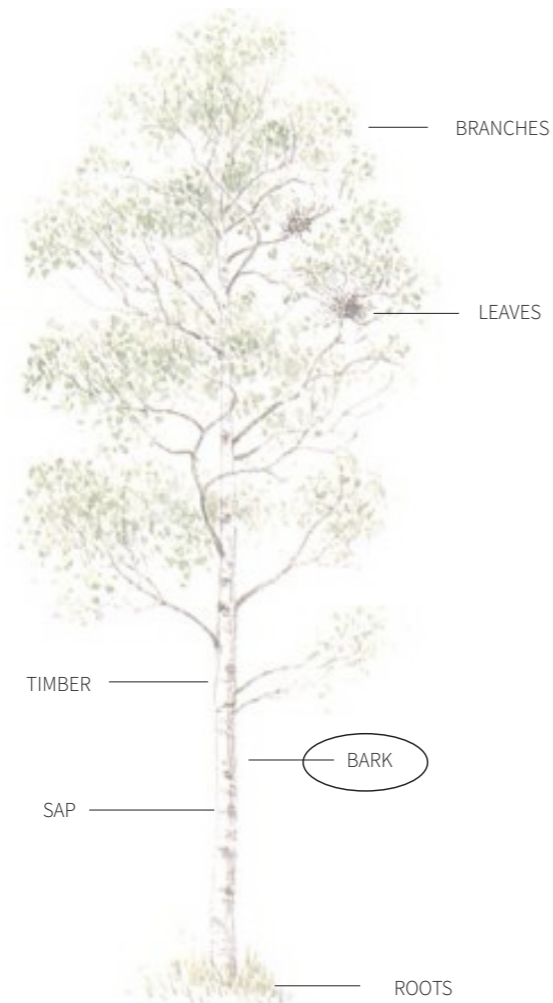
*SOFIA FREDRIKSSON
FS21*

*Investigations for master
thesis project "Birch bark
unwrapped" SS22*



WHY BIRCH BARK?

12%
Of the Swedish tree population (Silver birch + Downy birch)



BETULA PUBESCENS, DOWNY BIRCH
North: 80-90%
South: 50-70%*

INCENTIVES TO INCREASE THE USE OF BIRCH IN SWEDEN

- Aim to increase the amount of deciduous trees in Swedish forests. (Sveaskog)
- Possibility to support the glass birch population with the restoration of wet land areas.
- Exploring a greater diversity in wooden products.
- Potential to extract natural raw materials without deforestation.
- Promote locally sourced materials to restore the connection between natural resource and consumer.
- Pedagogical potential in showing the visible traces of bark harvest in the landscape.

*www.skogskunskap.se

AIM

To investigate the potential use of birch bark through a thorough material exploration. Guided by the diverse qualities of the bark, the aim is to produce a range of material samples showcasing its different possibilities.

QUESTIONS

How can birch bark be used in product design and architecture today?

How can new ways of looking at materials encourage a more sustainable extraction of natural resources?

METHODS

Take inspiration from sloyd and traditional methods, as well as contemporary investigations within the field.

Focus on research by design-produce physical material samples as a way of getting to know the material.

DISCOURSE

- Sustainable production chains
- Regenerative design
- Seasonal architecture
- Local context
- New materiality

LAYERS



OUTSIDE



OUTER LAYER REMOVED



BACKSIDE



TRADITIONAL USE

INDOOR



COASTERS - HEAT RESISTANT



FOOD CONTAINERS - ANTISEPTIC



BAGS - DURABLE, REPLACEABLE PARTS

OUTDOOR



LIGHT, ROT RESISTANT IN CONTACT WITH WATER



BIRCH TAR - WATER RESISTANT, ADHESIVE, DISINFECTANT



WATERPROOF, ISOLATING

HARVEST



Traditional harvest of a Swedish birch.



Birch bark harvest in the early 20th century.

The bark is traditionally harvested from the tree in May or June when the sap is rising. If it is done without harming the cambium layer beneath, no vital damage is done to the tree. In 8-10 years, the harvested bark is replaced with a new thicker layer. Thus, the marks of the harvest remains visible in the forest landscape, as the appearance of the trunk is permanently altered.

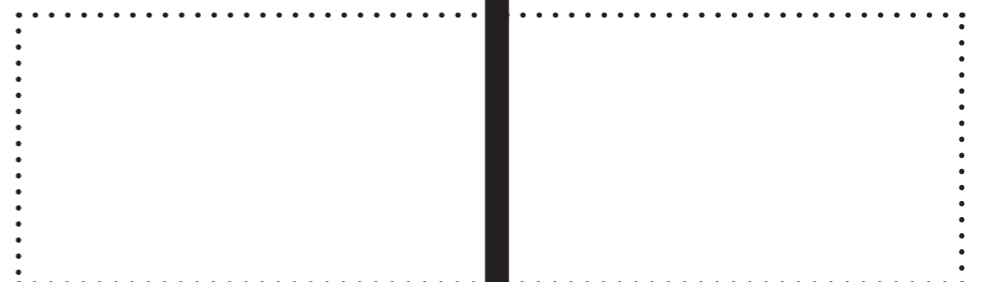
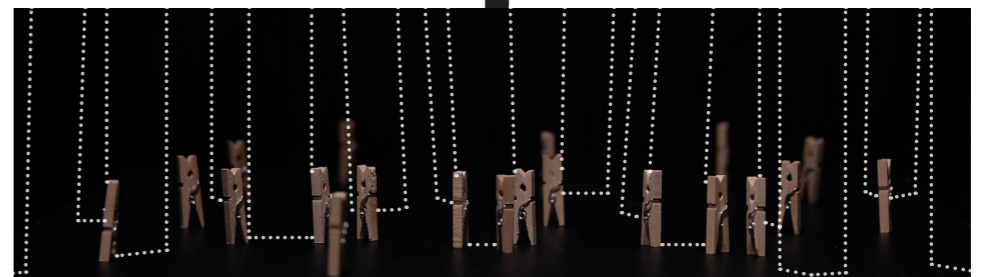
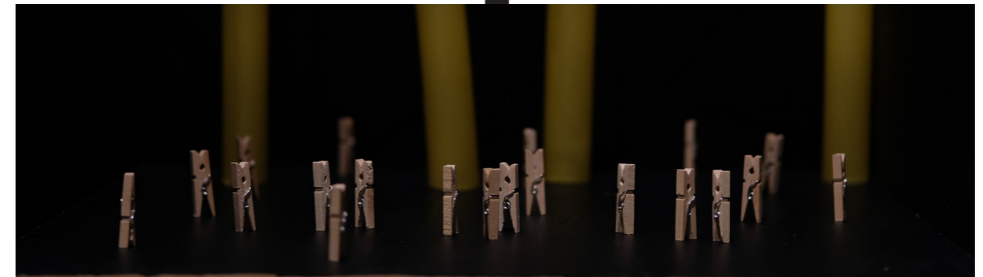
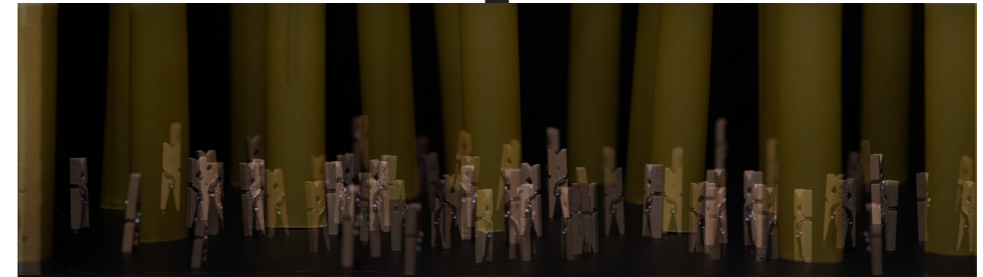
This procedure offers a way to extract naturally sourced materials from the forest while maintaining the ecological habitat surrounding the trees. This potential cycle of harvest, as well as some of the material qualities of the bark, bear a resemblance to that of the cork oak.



Cork oak



Harvest markings on birch trunks.



Cycles of disappearance and regrowth.



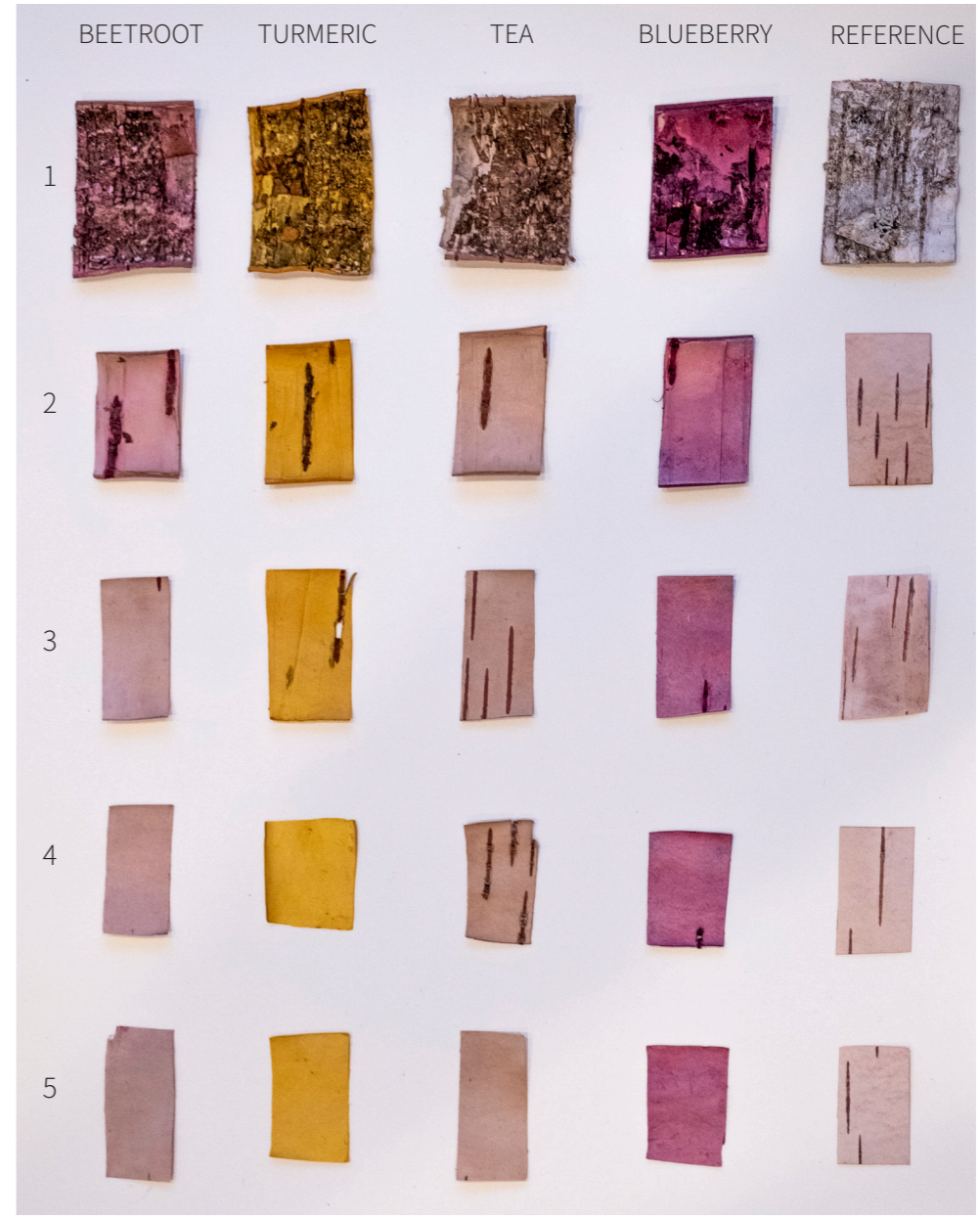
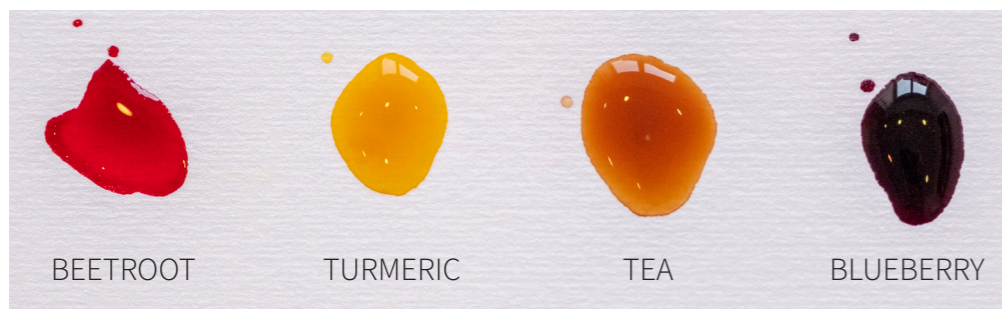
THE IMITATION GAME

MANIPULATION TO FRAME THE MEMORY OF A MATERIAL

Trying to recall the memory of the birch. Pasta, clothespins and photoshop are used to recreate the experience of the tree and the forest.



DYE



When working with dyeing the bark, sample pieces were cut up and placed in jars containing extract from beetroot, turmeric, black tea or blueberry. The bark was soaked in 1-2 days before being washed with cold water and dried flat.

TRANSPARENCY



Single sheets of bark glued together to shape a thin surface, allowing light to come through.

TEXTILE QUALITIES



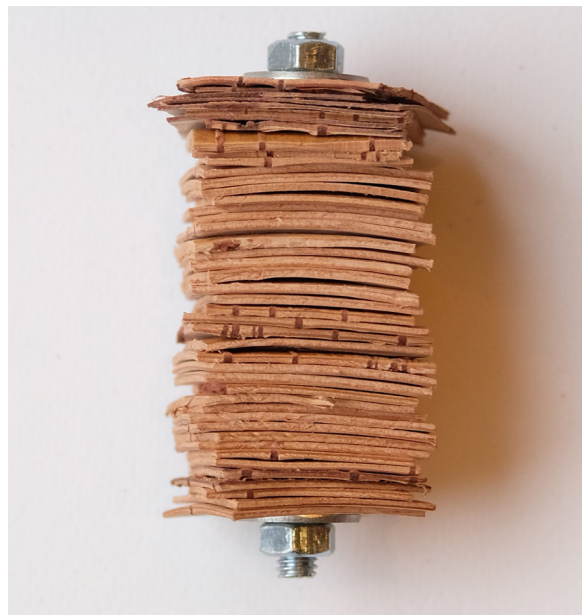
Fragments of bark was sewn and pleated together to create bendable shapes.



PRESSING AND SCULPTING



41 pieces
35 x 35 mm
Pressure and electric
multi tool used for
sculpting.



PRESSING AND TURNING



102 pieces
50 x 50 mm
Heated in
oven under
pressure.



PRESSING AND HEATING



The left over material from the turning and sculpting experiments was packed in metal cooking forms, filled with water, pressed and heated in an oven at 100°C for thirty minutes.

POTENTIAL APPLICATION



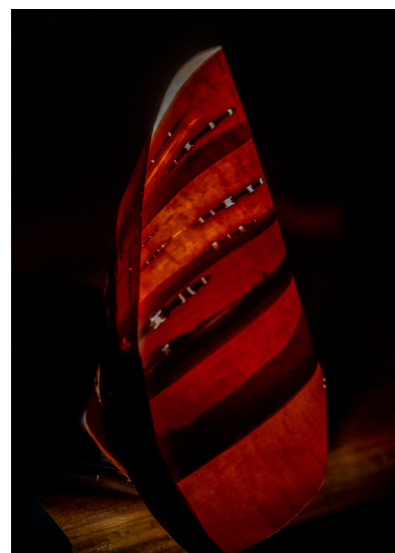
SKIN,
CLADDING, DETAILS



BOARDS,
INDOOR WALLS,
SOLID BLOCKS



STRUCTURAL
ELEMENTS,
ORNAMENTS



LIGHT FIXTURES,
GLASS PANELS



VESSELS,
ORNAMENTS



DRAPING,
WALL DIVISIONS

SPECULATIVE USE



The combination of birch bark and water is very intriguing to me. Because of its hydrophobic qualities, it is highly resistant to rot and can be submerged in water for long periods of time. There is the possibility of using this quality to work with architectural elements placed in the natural habitat of the birch, which is often nearby water.



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DIGITAL MATERIAL

Hölgman, P. (2021-05-29). *Nomadisk Paviljong: Om näverns potential*. [video file]. Retrieved from <https://southernswedendesigndays.com/sv/event/about-birch-bark>

Bonnevier, K.. (2013-08-09) Fasad. Bångstyriga byggnader. [podcast] Retrieved from <https://sverigesradio.se/avsnitt/230723>

BOOKS

Bennett, J. 2010 *Vibrant matter, A Political Ecology of Things*.

Dahlqvist, E. 2018 *Näver. Fläta, tampa vika*. Natur och Kultur. Stockholm.

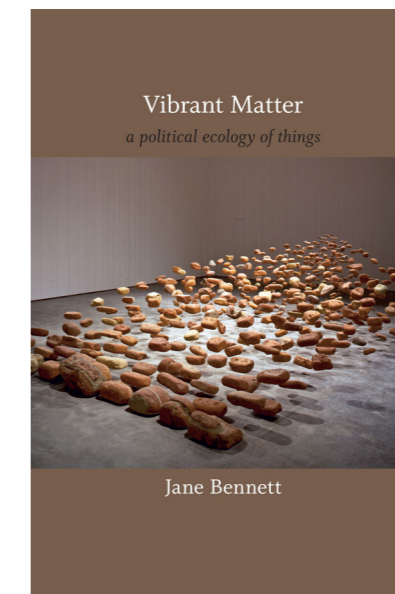
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MAGASINES

Hemslöjd nr 1. 2019

Hemslöjd nr 5. 2019

IN RELATION TO NEW MATERIALITY



Discussing the meaning of things
”...recognizing the active participation of nonhuman forces in events”

REFERENCE PROJECTS



PLASTIC ISLAND

Erik Hadin, Emily-Claire Nordang. 2018

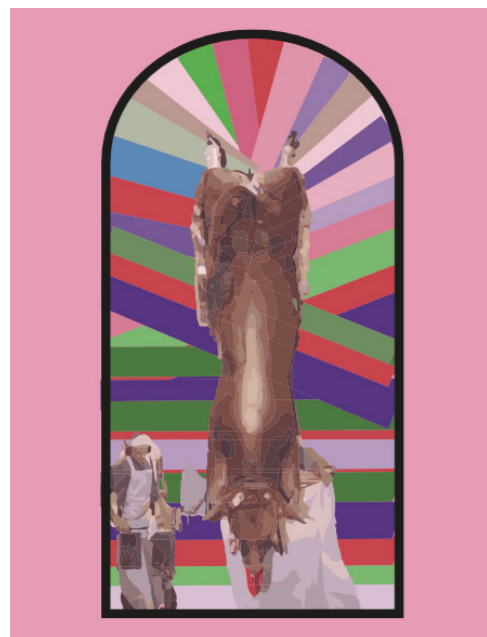
- Example of working continuously with one material, both speculatively and with an outcome which can be applied to the built environment.



MAINTAINABILITY - WITH TIME AS A DESIGN TOOL

Matilda Hansson Jessen. 2020

- Addressing the product in a longer perspective, post- production



THE TEMPLE OF CARNISM

Carl Darenlind. 2018

- Designing with a critical perspective.
- Drawing attention to a cultural phenomena.
- Addressing cultural values.

REFERENCE PROJECTS



CAMBIO

Forma Fantasma 2020

"Cambio is an ongoing investigation conducted by Studio Formafantasma into the extraction, production and distribution of wood products, commissioned by Serpentine Galleries and currently on show at Centro Pecci in Prato, Italy. The website collects the research outcomes and compiles an archive of documents, videos, books and articles on the topic."

- Experimental design using a wide range of materials, some of which can be considered unorthodox such as using cow bladders as light fixtures.



Brodsky A, Utkin Y. Contemporary Architectural Art Museum 1988

PAPER ARCHITECTURE

Inspiration drawn from the concept of Paper Architecture as a way of questioning a theme or event. Alexander Brodsky and Ilya Utkin among others used experimental designs and fantastical drawings as a way of criticizing the role of the architect in Soviet Russia.



THANK YOU

