

GRADUATION PLAN // LAURA ROSEN JACOBSON

# "RETHINKING THE UNWANTED"

EXPLORING THE POSSIBILITIES OF REUSING  
WASTE-MATERIALS IN THE CONSTRUCTION  
OF NEW ARCHITECTURE



ARCHITECTECTURAL ENGINEERING // STUDIO 12 // JOB SCHROEN, BOB GELDERMANS // STUDENT NR: 1360779

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A green recycling symbol consisting of three arrows forming a triangle.

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**PRE-INDUSTRIAL REVOLUTION:**  
CRAFTS, HIGH VALUE OF MATERIALS AND PRODUCTS

**INDUSTRIAL REVOLUTION:**  
START MASS PRODUCTION  
MECHANISATION OF PROCESS

**GLOBALISATION:**  
RAW MATERIALS AND PRODUCTS TRAVEL THE WORLD

**MASS PRODUCTION**  
PRODUCTION IS FAST AND CHEAP

**NOW!**

**SUSTAINABLE CONSUMPTION**  
BACK TO LOCAL PRODUCTION, MATERIALS AND CRAFTS

**START RISE OF RAW MATERIAL PRICES**

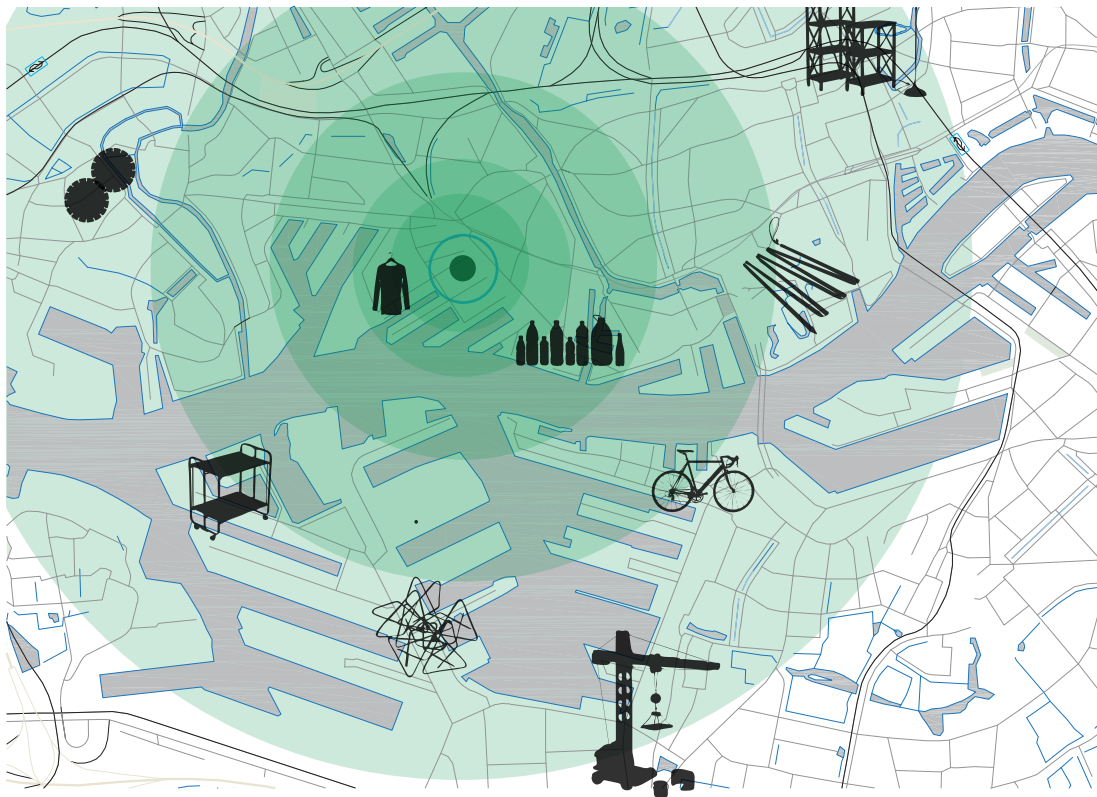
## LIFE CYCLES OF WASTE-FLOWS

THE WORD 'WASTE' HAS A NEGATIVE CONNOTATION IN ITSELF, IT LITERALLY MEANS 'UNWANTED MATERIALS'. IN HOLLAND WE YEARLY PRODUCE ABOUT 60MILLION TONS OF THESE UNWANTED MATERIALS, VARYING FROM PLASTIC CUPS TOT BUILDING COMPONENTS. MOST OF THIS WASTE GOES STRAIGHT TO THE BLAST FURNACES WHERE IT BURNED TO PRODUCE "GREEN" ELECTRICITY. BUT IS THAT REALLY THE MOST WE CAN GET OUT OF THESE MATERIALS? I THINK ARCHITECTURE CAN PLAY AN IMPORTANT ROLE IN PROLONGING THE LIFESPAN OF PRODUCTS AND MATERIALS BY REUSING WASTE MATERIALS AS A BUILDING MATERIAL.

WE CALL IT A CONSUMER SOCIETY. EVERYTHING IS ABOUT CONSUMPTION. OUR WHOLE ECONOMIC SYSTEM IS FOCUSED ON MAKING PRODUCTS AND GETTING THEM TO OUR FRONT DOOR. BUT 99% OF THE STUFF THAT WE BUY IS THROWN AWAY WITHIN 6 MONTHS (STORY OF STUFF)! WHAT HAPPENS TO THE OBJECTS AFTER THAT IS SOMETHING WE ARE NOT USED TO THINK ABOUT VERY MUCH. AS LONG AS WE PUT OUR GREY BAG ONTO THE STREET ON THE RIGHT DAY AND OCCASIONALLY TAKE A WALK TO THE GLASS-CONTAINERS WE FEEL WE ARE DOING TO THE RIGHT THING.

WHAT WE DON'T TEND TO REALISE IS THAT WE DISPOSE A WHOLE LOAD OF VALUABLE MATERIALS AND RESOURCES. THROWING AWAY A PLASTIC BOTTLE IS DISCARDING A SMALL AMOUNT OF FINITE CRUDE OIL THAT NATURE HAS WORKED BILLIONS OF YEARS ON TO FORM OUT OF FOSSIL RESTS. THE SAME ACCOUNTS FOR CARDBOARD, METALS, TEXTILES AND MUCH MORE. IN A TIME WHERE SCARCITY OF RESOURCES IS TO BE ONE OF OUR MAIN ISSUES (VD DOBBELSTEEN), IT IS NECESSARY TO ADDRESS WASTE FROM A DIFFERENT PERSPECTIVE. TO SEE WASTE AS A RESOURCE OF VALUABLE MATERIALS. THE EUROPEAN UNION DEFINES WASTE AS "AN OBJECT THE HOLDER DISCARDS, INTENDS TO DISCARD OR IS REQUIRED TO DISCARD" BUT AS KEVIN MCCLOUD STATES "WASTE IS JUST STUFF IN THE WRONG PLACE".



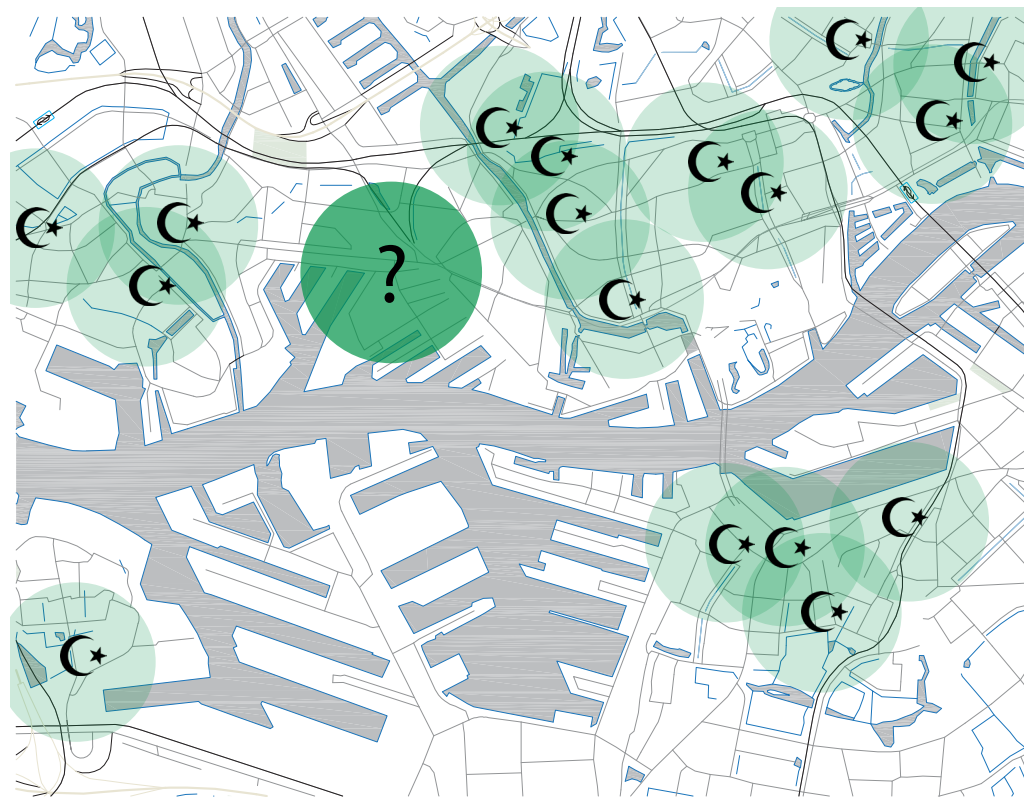


## // RESEARCH OBJECTIVE

THE RESEARCH OBJECTIVE IS TO CREATE A SET OF GENERIC GUIDELINES ON HOW TO INCORPORATE WASTE-MATERIALS IN THE DESIGN OF NEW BUILDINGS WITH A FOCUS ON HARBOUR-AREAS IN TRANSITION.

IT IS MY AIM TO SHOW WHICH WASTE-FLOWS AND ABUNDANT MATERIALS CIRCULATE IN HARBOURAREAS AND RESEARCH INTO WAYS OF TRANSFORMING OR REUSING THOSE MATERIALS AS BUILDING MATERIALS.

THE OBJECTIVE IS TO DEMONSTRATE THAT ARCHITECTURE CAN PLAY AN ACTIVE ROLE IN SUSTAINABLE WASTE-MANAGEMENT AND REDUCING TRANSPORT-EMISSIONS BY INCORPORATING LOCAL WASTE-MATERIALS IN ARCHITECTURAL DESIGN.



## // DESIGN OBJECTIVE

WASTE HAS A NEGATIVE CONOTATION. IT IS NOT ONLY UNWANTED BUT ALSO A MATERIALFLOW THAT IS UNPREDICTABLE AND NOT HOMOGENEOUS. TO CREATE BEAUTIFUL ARCHITECTURE OUT OF IT WILL BE A CHALLENGE.

TO ME, THE SUMMUM OF BEAUTIFUL ARCHITECTURE LAY IN THE ISLAMIC WORLD WHERE ORNAMENT AND NATURAL LIGHT CREATE A MAGICAL INNER SPACE WHILE ITS DOME STRUCTURES DEFINE A CITIES HORIZON. IT IS A DEFINED TYPOLOGY WITH A RICH HISTORY BUT ALSO A VIVID PRESENT-DAY DISCUSSION ON ITS APPEARANCE IN WESTERN SOCIETIES.

THE OBJECTIVE OF MY DESIGN IS TO BRIDGE THIS APPEARANT CONTRADICTION AND CREATE AN ARCHITECTURE THAT SHOWS THAT ANY TYPE OF AESTHETICS OR BUILDING TYPOLOGY CAN BE BUILT OUT OF WASTE-MATERIALS.

## // MAIN RESEARCH QUESTION & SUB-QUESTIONS

MAIN  
RESEARCH  
QUESTION

HOW CAN WASTE-MATERIALS FROM THE CURRENT INDUSTRIES OF THE MERWE-VIERHAVEN AREA BE REUSED IN THE BUILDING OF A NEW MOSQUE FOR ITS FUTURE INHABITANTS?

STEP 1:  
GENERAL RESEARCH



### TECHNIQUE

HOW DOES THE COLLECTION, SEPERATION AND RECYCLING OF WASTE WORK (IN NL)?

WHICH MATERIALS ARE SUITABLE FOR REUSE (WITHOUT RECYCLING) AND WHICH ARE NOT?

HOW HAVE REALIZED BUILDINGS DEALT WITH WASTE-MATERIALS?



### CONTEXT

WHAT ARE THE CURRENT INDUSTRIES AND FUNCTIONS OF THE AREA?

WHAT ARE THE FUTURE PLANS FOR THE AREA BY THE MUNICIPALITY?



### USE

WHAT DEFINES THE TYPOLOGY OF A MOSQUE?

HOW DO EXISTING MOSQUES DEAL WITH MATERIALITY?

STEP 2:  
GENERATING DESIGN  
CONDITIONS

WHICH WASTE-MATERIALS CAN BE FOUND IN THE AREA OF MERWE-VIERHAVENS?

WHAT SHOULD THE ARCHITECTURE OF A LOCAL DUTCH MOSQUE LOOK LIKE?

STEP 3:  
CONCLUSIONS  
FROM RESEARCH  
= INPUT FOR DESIGN

WHICH AVAILABLE WASTE MATERIALS IN THE AREA OF MERWE VIERHAVENS CAN BE USED IN THE DESIGN AND CONSTRUCTION OF A LOCAL MOSQUE?

## // METHODOLOGIES PER SUBQUESTION



HOW DOES THE COLLECTION, SEPARATION AND RECYCLING OF WASTE WORK (IN THE NETHERLANDS)?



- INTERVIEW WITH HENDRIK VD VIJVER (VAN GANSEWINKEL)
- POSSIBLY CONTACT PROFESSORS OF THE MASTERCOURSE OF WASTE-MANAGEMENT AT THE UNIVERSITY OF WAGENINGEN



- LITERATURE RESEARCH
- LECTURE ABOUT "OUR DAILY WASTE" IN THE THEME OF THE 'CIRCULAR CITY' AT PAKHUIS DE ZWIJGER IN AMSTERDAM



SITE VISIT TO A SEPERATION LINE, WASTE COLLECTION AND MILIEUPARK



WHICH MATERIALS ARE SUITABLE FOR REUSE (WITHOUT RECYCLING) AND WHICH ARE NOT?



- INTERVIEW PEOPLE IN THE WASTEMANAGEMENT
- INTERVIEW DESIGNERS AND ARCHITECTS THAT HAVE WORKED WITH WASTE-MATERIALS



MOCKUPS AND TESTS WITH MATERIALS



HOW HAVE REALIZED BUILDINGS DEALT WITH WASTE-MATERIALS IN DESIGN AND CONSTRUCTION?



INTERVIEW ARCHITECTS THAT HAVE REALISED BUILDINGS/ PROJECTS WITH WASTEMATERIALS:  
JAN JONGERT / SUPERUSE STUDIOS  
ARIE VAN ZIEL / STUDIO CONTENT  
BAS VAN DE BERG / DE BENDE  
DUZAN DOEPEL/ DOEPEL STRIJKERS ARCHITECTEN  
DENIS OUDENDIJK / REFUNC



LITERATURE STUDY ("SUPERUSE", "FROM WASTE TO ARCHITECTURE",...)



ANALYSING PRECEDENT PROJECTS/BUILDINGS WITH WASTE-MATERIALS



WHAT ARE THE CURRENT INDUSTRIES OF THE AREA OF MERWE-VIERHAVEN?



SITE VISITS TO MERWE-VIERHAVENS AND MAPPING THE AREA



DESKTOP RESEARCH ON CURRENT INDUSTRIES



WHAT ARE THE FUTURE PLANS FOR THE AREA?



LITERATURE AND DESKTOP RESEARCH IN PAPERS AND STUDIES BY THE MUNICIPALITY



WHAT DEFINES THE TYPOLOGY OF A MOSQUE?



LITERATURE STUDY ABOUT THE ARCHITECTURE MOSQUES



ANALYSING 2 OR 3 EXISTING MOSQUES



HOW DO EXISTING MOSQUES DEAL WITH MATERIALITY?



LITERATURE STUDY AND DESKTOP RESEARCH ON THE ARCHITECTURE OF MOSQUES BUILT MERELY WITH LOCAL RESOURCES: VERNECULAR ARCHITECTURE.

## // RELEVANCE

IN OUR CURRENT WORLD OF OVERCONSUMPTION AND CLIMATE CHANGE, I BELIEVE IT IS NECESSARY TO LOOK AT A WAY TO MAKE BETTER USE OF THE MATERIALS THAT ARE LOCALLY AVAILABLE.

WASTE-MATERIALS ARE TO BE FOUND EVERYWHERE AND OFTEN THEIR QUALITY AND PROPERTIES ARE UNDERESTIMATED. WE AS ARCHITECTS ARE NOT USED TO THINK IN TERMS OF REUSING MATERIALS FOR OUR BUILDINGS. WE PREFER TO DESIGN SOMETHING, THAN THINK OF A NICE MATERIALISATION AND THEN GO AND ORDER IT FROM WHEREVER THEY PRODUCE IT. BUT I THINK RECYCLING AND REUSING WILL BECOME AN IMPORT ISSUE IN THE COMING DECADES.

IF ARCHITECTS WOULD BE ABLE TO SAVE MATERIALS FROM LANDFILLS AND BLAST FURNACES AND GIVE THEM A NEW LIFE IN BUILDINGS, I THINK WE ARE MAKING A BIG STEP FORWARD TOWARDS A MORE SUSTAINABLE WORLD WHERE RESOURCES ARE USED IN A CIRCULAR PROCESS RATHER THAN A LINEAR ONE. MY GRADUATION PROJECT WILL BE A DESIGN FOR A SPECIFIC USE IN A SPECIFIC CONTEXT BUT MY AIM IS TO CREATE MORE GENERAL AWARENESS. IN MY RESEARCH I WILL FOCUS THEREFORE ON FINDING SOLUTIONS THAT CAN BE APPLICABLE IN OTHER CONTEXTS AND OTHER USES ALSO; A SET OF GENERIC GUIDELINES FOR THE USE OF WASTE-MATERIALS IN BUILDING CONSTRUCTIONS.



IMPORT OF MATERIALS FROM ALL OVER THE WORLD: EMISSIONS, USE OF FOSSIL FUELS ETC.



MAKING USE OF LOCALLY AVAILABLE MATERIALS AND RESOURCES TO LOWER IMPACT ON ENVIRONMENT

## // LITERATURE

- *"SUPERUSE - CONSTRUCTING NEW ARCHITECTURE BY SHORTCUTTING MATERIAL FLOWS"*, VAN HINTEN, PEEREN EN JAN JONGERT, 010 PUBLISHERS, ROTTERDAM, 2007

- *"RE MATERIAL - FROM WASTE TO ARCHITECTURE"*, A. BAHAMON, WW NORTON, 2010

- *"ARCHITECTURE OF THE CONTEMPORARY MOSQUE"*, I. SERAGELDIN, ACADEMY EDITIONS, 1996

- *"THE ARCHITECTURAL REPRESENTATION OF THE ISLAM- MUSLIM COMMISSIONED MOSQUE DESIGN IN THE NETHERLANDS"* E. ROOSE, AMSTERDAM UNIVERSITY PRESS, 2009

- *"PIONIEREN AAN DE MAAS: GEBIEDSPLAN MERWE-VIERHAVENS"*, STADSHAVENS ROTTERDAM, 2009