

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Gijs Boer
Student number	4861833

Studio		
Name / Theme	Architectural Engineering	
Main mentor	Thomas Offermans	Architecture
Second mentor	Paddy Tomesen (BT), Mo Smit (Research)	Building technology (AE+T), Research
Argumentation of choice of the studio	The studio offers the freedom to explore self-chosen topics within the build environment. The theme of flows does fit the theme of (regenerative) landscape processes, building materials and craftsmanship.	

Graduation project	
Title of the graduation project	Als de klokken niet meer luiden
Goal	
Location:	De Heilige Driehoek, Oosterhout NB, Netherlands
The posed problem,	Three adjacent monumental monasteries and surrounding cultural landscape are threatened by many processes such as inclination of the number of religious inhabitants, lowering water tables for agriculture and eutrophication.
research questions and	The research goes into restoring the value chain of earth building materials, as the location is close to disappeared brick industry. The research should provide a program for one of the monasteries. <u>Main question</u> - How can the value chain of geobased materials be restored through a social-ecological-technological system framework analysis, enhancing the

	regional landscape, and built environment? <u>Sub questions</u> - How did brickmakers' craft guilds historically operate in regional ecosystems? (1300-1798) - How does the value chain of bricks currently operate? (post-1920) - What are the contemporary dynamics and future pathways in the value chain of geobased building materials? - How can the geobased building materials value chain be improved based on new insights?
design assignment in which these result.	The monasteries on the Heilige Driehoek and craftsmanship are precious and deserve to be handled with kid gloves, through designing an 'Institute for Traditional Crafts and Landscape Relations' and secondly a proof of concept; a building that arises from this institute. Moreover, a landscape design and meshwork of design principles for the region will be designed.
Process	
Method description	
<u>Research</u> This qualitative research compares the value chains of bricks and geobased building materials on a social, ecological, and technological level. The aim is to gain insight into the development and application of geobased materials over time, focusing on the interplay between these three aspects within the framework of the SETs analysis (Social, Ecological, Technological). SETs analysis is an interdisciplinary research method, in which the social aspect describes collaborative systems, the ecological describes landscape and ecosystem services, and the technical aspect describes tectonic systems, focusing on the production and implementation of building materials. This paper should be conceived as an overview of the evolution within the field of earth building materials. It dives into an integrated system, from which aspects are taken, described and untangled. The primary data collection method will be desk research. This will include three key components: 1. Literature Review 2. Prototype (Bold Vision) 3. Interviews <u>Design</u>	

How can an institute on geobased materials help to revitalize the landscape of De Heilige Driehoek throughout introducing a reshaped model of a craft guild and new productive landscape typologies, while maintaining the cultural identity.

Design themes

1. Material culture (material + craftsmanship) - processing, manufacturing, building elements
2. Landscape architecture (ecosystems and culture landscape)
3. Heritage, community and contemplation

Program

The program is divided into four categories, differing in scale and level of detail.

- The outcome of the project should provide a design for 'the Institute for Renewed Craftmanship and Landscape Relations'. The project should partially make use of existing buildings, but should not purely become a heritage value project.
- Proof of concept: a new cemetery building for Leijsenakkers (build out of geobased materials).
- Additional program will be part of a meshwork of interventions in the region. The following program might be added to the existing stock; covered market hall, ateliers (maakstad), museum, senior co-living, arboretum, landscape experience follies, material bank, drying houses (drooghuisjes), signage, doorhandles and lanterns.
- A landscape design will be presented with cultural extraction landscape typologies. Creation of a set typologies will pick up all available local combinations of landscapes and their production potential (silvopasture, permaculture, paludiculture, arboretum, vineyards allotment, graveyards)

Literature and general practical preference

Geobased Materials, Landscape and Architecture

- **Heringer, A., Howe, L. B., & Rauch, M.** (2022). *Upscaling Earth: material, process, catalyst*. <https://doi.org/10.54872/gta/4531>
- **Huizenga, Hilde.** (2013). *Oogst van de landschappen van rivieren en kust*. Peredour.
- **Islam, S., & Moatazed-Keivani, D.** (2023). *Mosaic Landscape*. Material Cultures. <https://materialcultures.org/design-ecosystem-fellowship/>
- **Material Cultures.** (2022). *Material reform: Building for a Post-carbon Future*.

Communities

- **Leclercq, E. M., & Smit, M. J.** (2023). *Circular Communities: The circular value flower as a design method for collectively closing resource flows*. TU Delft OPEN Publishing. <https://doi.org/10.34641/mg.62>
- **Smit, M.J., Groenendijk, R., Köbben, R., Vélú, D.** (2022). *Stichting Bouwtuin Naar een Nieuwe Streekarchitectuur*.

Guilds and Craftsmanship

- **Crevels, E.** (2024). *Epistemologies of Making: A theory of craftsmanship for architecture*. [Dissertation, TU Delft].

- **Epstein, S. R., & Prak, M.** (2008). *Guilds, Innovation and the European Economy, 1400–1800*. Cambridge University Press.
- **Epstein, S. R.** (2008). *Craft Guilds in the Pre-Modern Economy: A Discussion*. *The Economic History Review*, 61(1), 155–174. <http://www.jstor.org/stable/40057560>
- **Epstein, S. R.** (1998). *Craft Guilds, Apprenticeship, and Technological Change in Preindustrial Europe*. *The Journal of Economic History*, 58(3), 684–713. <http://www.jstor.org/stable/2566620>
- **Frayling, C.** (2017). *On craftsmanship: Towards a New Bauhaus*. Oberon Books.
- **Harreld, D. J.** (2008). [Review of *Craft Guilds in the Early Modern Low Countries: Work, Power, and Representation*, by M. Prak, C. Lis, J. Lucassen, & H. Soly]. *The Sixteenth Century Journal*, 39(1), 133–135. <http://www.jstor.org/stable/20478759>
- **Kilburn-Toppin, J.** (2021). *Crafting identities: Artisan culture in London, c. 1550–1640*. Manchester University Press.
- **Lucassen, J., De Moor, T., & Van Zanden, J. L.** (2008). *The return of the guilds*. <https://ci.nii.ac.jp/ncid/BA89581701>
- **Ogilvie, S.** (2008). *Rehabilitating the Guilds: A Reply*. *The Economic History Review*, 61(1), 175–182. <http://www.jstor.org/stable/40057561>
- **Sennett, R.** (2009). *The craftsman*. Penguin UK.

Location

- **Gorisse, J. J. A. M.** (2023). *De Heilige Driehoek: kloosterenclave te Oosterhout*.
- **Gorisse, J. J. A. M., & Paulusabdij, S.** (2006). *Liber amicorum: Deo gratias*.
- **Gorisse, J.** (2004). *De pottenbakkers van de Sint-Paulusabdij*.
- **Gorisse, J. J. A. M., Trommelen, M., & Oudenhoven, B.** (1997). *Het verleden dat aan Oosterhout voorbijging*.
- **Mähler, M.** (1991). *De Sint-Paulus Abdij van Oosterhout: onder het bestuur van haar eerste abt dom Jean de Puniet 1907-1941*.

Books

- **Cultures, M.** (2022). *Material reform: Building for a Post-carbon Future*. (pp. 29, 31, 90, 92).
- **Dethier, J.** (2020). *The Art of Earth Architecture: Past, Present, Future*. (pp. 24, 358).
- **Epstein, S. R., & Prak, M.** (2008). *Guilds, Innovation and the European Economy, 1400–1800*. Cambridge University Press.
- **Hollestelle, J.** (1961b). *De steenbakkerij in de Nederlanden tot omstreeks 1560*. (pp. 23, 38, 40, 41, 43, 44, 56, 69, 78, 98).
- **Kapfinger, O., & Sauer, M.** (2022). *Martin Rauch: Refined Earth: Construction & Design of Rammed Earth*. (pp. 56, 63, 65).
- **Koninklijk Verbond van Nederlandse Baksteenfabrikanten (KNB).** (2021). *Van Klei tot Baksteen*. (p. 6).
- **Lewis, P., Tsurumaki, M., & Lewis, D. J.** (2022). *Manual of Biogenic House Sections*. Oro Editions (pp. 233, 234, 235).
- **Stenvert, R.** (2012). *Biografie van de baksteen, 1850-2000*. (pp. 19, 22, 29, 31, 32).
- **Van Hunen, M.** (2012). *Historisch metselwerk: Instandhouding, herstel en conservering*. Rijksdienst voor het Cultureel Erfgoed, WBOOKS (pp. 24, 31, 32).

Papers/Reports

- **Chester, M.V., Miller, T.R., Muñoz-Erickson, T.A. et al.** (2023). *Sensemaking for entangled urban social, ecological, and technological systems in the Anthropocene*. npj Urban Sustain 3, 39. <https://doi.org/10.1038/s42949-023-00120-1>
- **Deltares / TNO Geological Survey of the Netherlands, Van Der Meulen, M. J., Wiersma, A. P., Van Der Perk, M., Middelkoop, H., & Hobo, N.** (2011). *Sedimentbeheer en de vernieuwbaarheid van klei als grofkeramische grondstof*. Retrieved 10 December 2024 from <https://www.knb-keramiek.nl/media/266273/rapportage-duurzame-kleiwinning.pdf>
- **Koninklijke Nederlandse Bouwkeramiek.** (2017, May). *Rapportage duurzame kleiwinning*. Retrieved from <https://www.knb-keramiek.nl/media/266273/rapportage-duurzame-kleiwinning.pdf> (p. 68).
- **Van Gassen, T.** (2012). *De ambachten van de metselaars en timmerlieden in laatmiddeleeuws Gent* (Master's thesis). Universiteit Gent, Faculteit Letteren en Wijsbegeerte (pp. 32, 125).

Websites

- **Ministerie van Binnenlandse Zaken.** (2024b, 5 July). *Christina Eickmeier: Geobased - van aarde*. Projecten | College van Rijksadviseurs. <https://www.collegevanrijksadviseurs.nl/projecten/nieuwe-bouwcultuur/aan-het-woord/christina-eickmeier>
- **NOS.** (2024, 4 December). *Bouwen met biologische materialen is trendy, maar bouwwereld is er niet klaar voor*. <https://nos.nl/nieuwsuur/artikel/2545581-bouwen-met-biologische-materialen-is-trendy-maar-bouwwereld-is-er-niet-klaar-voor>

Other

- **Mulder, K.** (2025, 7 January). *Persoonlijk interview*. Faculteit Bouwkunde.
- **Van der Linden, J.** (2024, 27 September). *Earth Discovery Day* [Workshop]. Organised by BC Materials, Brussel, België.
- **Nijs, L.** (2024, 19 September). *MasterClass Baksteen: Lieven Nijs, BLAF architecten - Big Brick Hybrid Tannat* [Video]. YouTube. <https://www.youtube.com/watch?v=gBCkapYevKM>

Reflection

1. The studio explores innovation in the themes of

- Make (digital manufacturing, product development, structures, façade, craftsmanship)
- Stock (existing buildings, second life, adaptive reuse)
- Flow ((urban) ecology, climate design, building physics, etc)

My architectural design and research project is in line with 'make', researching value chains of geobased materials (responsibly extracted earth building materials) and explores craftsmanship in a design.

Also, the landscape architectural design fit the theme of 'flow', looking at regenerative landscape features.

2. There is a larger social and professional and scientific relevance in my graduation project because of the research gap on the value chain of geobased materials. Also, there is a physical relevance in making a vision for the Heilige Driehoek area.