

Why Paper?

Frans Drewniak

In this essay, I speculate about architecture and the ecology of assembling readymades in a post-extractive society.

The material chosen for this dialogue and this building experiment is paper. More precisely, cardboard tubes, sourced as an industrial and recyclable material, with a low environmental footprint. In the building experiment *Paper architecture - Saint Jerome in his study*, focus will be to explore if the alchemy of playing with what from a starting point has a low value and esteem can gain importance in a time where our present material hierarchy is challenged by the high ecological footprint and poor quality of the present building industry.¹

I discuss theory and references for building the installation *Paper architecture - Saint Jerome in his study*. A small study space created for the *Works + Words biennale*, surrounded by students, teachers, researchers and other visitors inside the library of Aarhus School of Architecture.

The role of this essay is twofold. One is to communicate to students, colleagues and exhibition visitors the thoughts and ideas behind *Paper architecture - Saint Jerome in his study* and why a temple in paper. The many quotes from architectural history and theory, in this text, is meant as a hint for especially students and colleagues to come to the library and the installation and discuss theory, praxis, form and materials. The second is the essay as a writing instrument to fuel the experiment that is about to start.

At the time of writing this essay, the first drawings [fig.1] have been produced and meetings with manufacturers and suppliers have been held. But nothing is certain and everything is *Work + Words* in progress.

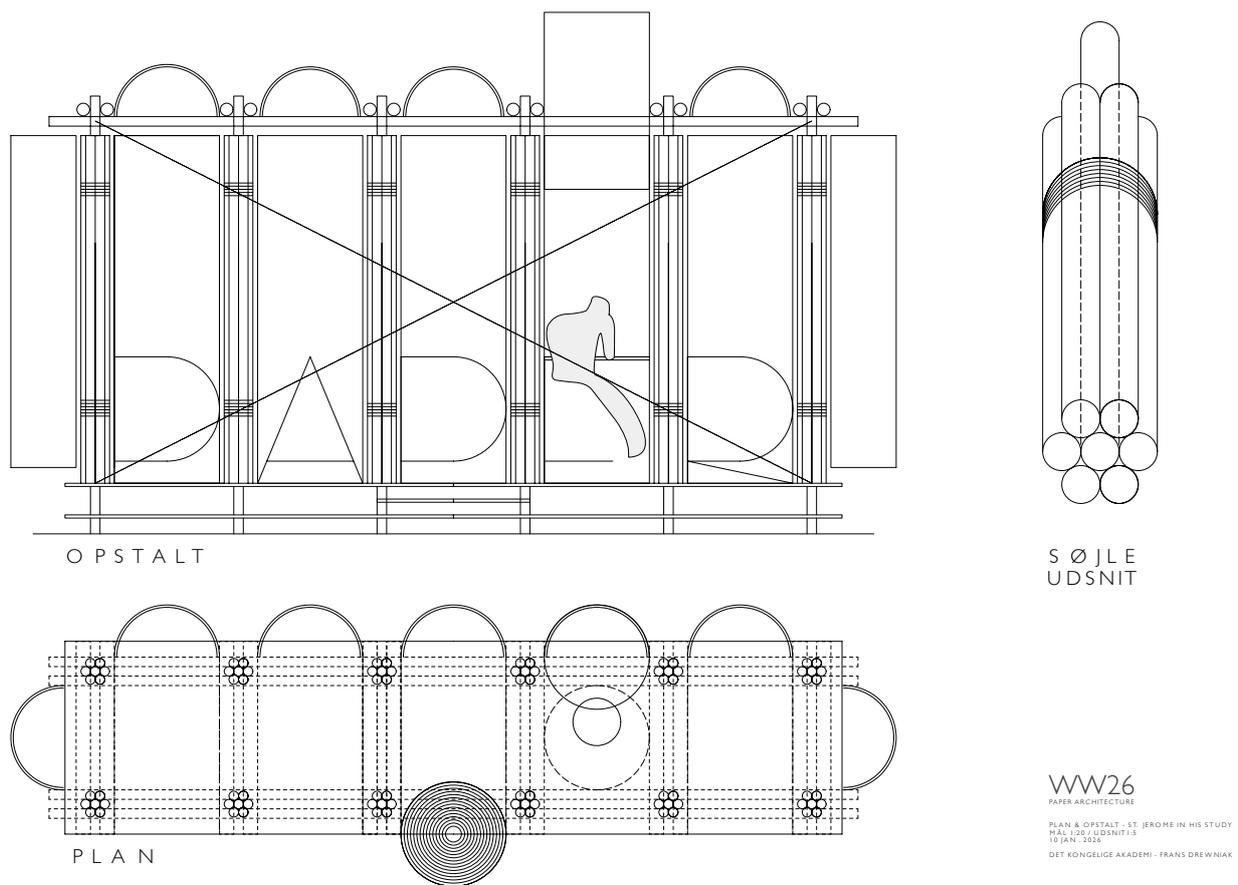


Figure 1. Paper architecture - Saint Jerome in his study. Plan, elevation and detail © Frans Drewniak

ECOLOGICAL READYMADES

The Readymades do not only aim to bring industrially produced technology into the space of art. Their utopia is perhaps even more to bring art-influenced technology into everyday space [...] Although Duchamp, with his almost ecological recycling of already created things, does away with the modernists' eagerness to create the never-before-seen ex nihilo, he is no less innovative than they are. He simply revives a repertoire of mysticism – from the virgin birth in the Christian tradition to medieval alchemy – in which all sorts of used things can miraculously regain their virginity.

[Marcel Duchamps readymades: Art as Sabotaged Technology, Jacob Wamberg. ^{2]}

Writing this essay, I came across Wamberg's *Art as Sabotaged Technology*. With this lens, I am looking through the various works of artistic research that I have previously produced spanning different (building) materials, laminated wood, raw steel plates, light brick blocks, clay blocks rammed earth, nettle, hemp, flax and eelgrass?

For example, in my previous exhibition experiments with standard steel plates [fig.2], at Rødovre Library 2017 and light brick blocks [fig.3] (Copenhagen Contemporary 2023 & Royal Danish Academy 2023–2024), where I distorted and twisted available industrial products to point at alternative futures.



Figure 2. Rødovre Library 2017 - Exhibition with distorted industrial steel plates © Frans Drewniak

And thus, new questions arise that might inform and fuel the experiment of building *Paper architecture - Saint Jerome in his study*:

Can a strategy of sampling or sabotaging vitalise readymades of reuse in ways like the alchemy that Wamberg detects in the art of Duchamp?



Figure 3. Royal Danish Academy 2023 - Exhibition with distorted light brick blocks © Frans Drewniak

Could an installation of cardboard tube make us fall in *love* and *care* for reuse with the same or even a stronger attachment than we feel (and suffer from) in virgin materials extracted from finite resources?

PAPER

Paper is made from cellulose, a sugar compound that forms the cell walls in plants. Lots of substances can be used to make paper: linen, wood, bark, grass, cotton, silk, rice, straw, hemp, bamboo, rattan, seaweed. ³ Paper production has been dated back to second-century China, and in this sense, relatively late had its preindustrial birth in Europe in the 13th century. And early modern production of large continuous paper rolls of more 'perfect' bleached paper began around 1800.

Today paper comes to us as the emblematically new material, so much so that the proverbial 'blank page' is a byword for what is unmarked, pristine and non-historical. No doubt the tendency to see it this way is reinforced by modern manufacturing methods and its production from wood pulp. [Liquid Paper, Mark Dorrian. ⁴]

Paper has had many applications; hats, kites, lanterns, fans, money, umbrellas – and for much of its history wrapping, including insulating, was paper's primary function. ⁵

In *Liquid Paper*, Mark Dorrian briefly tells us the story of preindustrial paper production and how the process of recycling from old linen, ropes, shirts or dirty socks made clothing return in the form of paper. And hereby how waste from all ends of society, high and low, would end up being assembled to paper and even occasionally having poetry printed on it.

Paper was also used to build the traditional Japanese home. This was another idea imported from China.... Instead of glass windows, there were translucent paper panels called shoji, and instead of interior walls separating rooms, there were sliding opaque decorative panels called karakami. [Paper: Paging Through History, Mark Kurlansky.⁶]

In architecture, the most common use today is that of insulation material in more ecological constructions aiming at better indoor climate. Paper wool uses surplus and recycled newspapers, which consist of hollow cellulose fibres.

More bespoke recent architecture by the Japanese architect Shigeru Ban has enlarged the aesthetic and structural use of cardboard tubes, including introducing new structural norms and regulations of cardboard tubes for housebuilding.

Ban's houses of cardboard tubes are treated with a varnish to sustain water and outdoor climate. *Paper architecture - Saint Jerome in his study* benefits from being a house within a house within a house: Saint Jerome in his study within the library within Aarhus School of Architecture. Surrounded by books, words and drawings.

METAMORPHISM

One, or rather two, architects stand out in modern history when it comes to exploring and enriching the aesthetic vocabulary of building with biogenic materials before this became an ecological imperative. Aina and Alvar Aalto, and the metamorphosis of forms and materials in Villa Mairea,

house of the Finnish wood and paper industry mogul Harry Gullichsen and his wife Maire Gullichsen.

The forest industry was not only the major force in the Finnish economy but also the main patron behind Aalto. Since his introduction to Harry Gullichsen in 1935, Aalto received large commissions from the industry, including the Varkaus and Sunila pulp mills, housing areas for the Ahlström paper company, and a few smaller but related ones, such as the Lapua Forest pavilion and the Villa Mairea. In response, he thematized wood in his buildings with eclectic brilliance that went far beyond the Finnish vernacular tradition of building.

[The use and abuse of paper, Kari Jormakka, Jacqueline Gargus, and Douglas Graf.⁷]

Villa Mairea is thus a symphony of forms and materials, where the forest and tree trunks translate into building inside and outside.

Next to the tree, there is a bundled column of four milled pieces of lumber. Together they imitate the size of the tree trunk and recall the Kalevala's cosmology in which the single tree is transformed into the forest, as the particular becomes the prototype for the general.

[The use and abuse of paper, Kari Jormakka, Jacqueline Gargus, and Douglas Graf.⁸]

In the extensive study, *Metamorphism – Material Change in Architecture* by Ákos Moravánszky, we can find diverse and rich sources and understanding of the phenomenon Gottfried Semper named *stoffwechsel*: “The theory of *Stoffwechsel* is based on an approach which starts with the ability of a form to slip from one material to another. The theory of mimesis which was formulated by the Greeks as a basic gesture of all art appear to contradict the law of being true to materials.”⁹ The *metamorphism* or *stoffwechsel* is a powerful lens for discovering how forms, patterns and geometries move from one material to another and the aesthetic potentials of articulating similarities and differences when building and joining.

This inexhaustible theme with no clear beginning or end is here framed by Goethe with an artistic potential and notion of complexity deriving from Goethe's meticulous study of plants.

Architecture is not an art of imitation, but rather an autonomous art; yet at the highest level it cannot do without imitation. It carries over the qualities and appearance of one material into another: every order of columns, for example, imitates buildings in wood; it carries over the characteristics of one building into another: for example, by the union of columns and pilasters with walls; and it does this for variety and richness. And just as it is difficult for the artist to know whether he is doing the right thing here, so it is difficult for the connoisseur to know whether the right thing has been done.

[Johann Wolfgang von Goethe, On German Architecture. ¹⁰]

Structural forms and geometries, as for example the circular column in *Paper architecture - Saint Jerome in his study*, have been transformed and interchanged between different materials, including the need of other materials to produce or construct the ideal circular form.

The fluting of the column, which I doubt not was the Greek symbol of the bark of the tree, was imitative in its origin, and feebly resembled many canaliculated organic structures.

[John Ruskin, The Seven Lamps of Architecture ¹¹]

The circular column in *Paper architecture - Saint Jerome in his study* is made of seven bundled cardboard tubes. The central cardboard tube attaches the column to the structure below and above, while the six other cardboard tubes form the fluted middle part of the column. This design imitates cast iron columns in the bay windows of *Sir John Soane's House* in London. [fig.4]

These chains of relations, intersections and correlations are endless, and so is the artistic potential when the architect engages with the process of making.

In the case of the modern cardboard tube, the metamorphism studied in the project relates back to prehistoric wood construction, ancient stone temples, early preindustrial cast iron columns, and, for example, that of Alvar and Aino Aalto's architecture and furniture.

The industrial cardboard tubes are produced of recycled paper, winding around circular steel tubes in multiple layers applied either diagonally or in parallel bands. The diagonal bands are visible and becomes tectonic traces of the industrial production as well as they resemble organic structures and spiralling columns in architectural history. [fig.5]



Figure 4. Sir John Soane Museum London
Bundled cast iron column © Frans Drewniak



Figure 5. La Lonja. Palma de Mallorca
'Palm tree', sandstone column © Frans Drewniak

In the process of making the installation *Paper architecture - Saint Jerome in his study*, we aim to discuss and articulate the tectonic potentials, the ambiguity of the form and the material history. Or, to put it otherwise, the oscillation between *kernform* & *kunstform*, as Karl Bötticher described it.

Bötticher envisaged a kind of reciprocally expressive joint that comes into being through the appropriate interlocking of constructional elements. At once articulate and integrated, these joints were seen as Körperbilden, not only permitting constructions to be achieved but also enabling these assemblies to become the symbolic components of an expressive system. In addition to this syntactical/ constructional concept, Bötticher, as we have noted, distinguished between the Kernform and the Kunstform, the latter having the task of representing the constructional and/or institutional status of the former.

[Kenneth Frampton, *Studies in Tectonic Culture*.⁽¹²⁾]

EXHIBITION AS EXPERIMENT AND METHOD

The emphasis is on the connection between idea, experiment, and material within an ecological discourse, and a crucial element is the site- and material-bound experiments.

In this case, developing, drawing and building the installation, we will try to entangle a network of relations between the world of paper shared between the installation and the library of books and drawings, including the wooden structure and shelves.

The cardboard tube as the dominant building component represents the simplicity of the first known architectures, and the universal geometry evokes many connotations. Among them are writings on papyrus, bundled columns and archiving architectural drawings on paper.

Paper architecture or *paper projects* is also a term, widely used among architects and scholars, when referring to unbuilt projects where experiments are carried out before being applied in practice. The main motif, a classical temple with two pr. six columns, emphasizes the importance of studying history and theory when imagining alternative futures.

Could some of the most needed 'new' ideas also be 'old' ideas that we have forgotten? How can we resist the neglect of history in the dominant consumer society that we now suffer from?

Like in *Saint Jerome in his Study*, the installation may contain a condensed collection of drawings, texts and objects that refer to processes, projects and artistic methodology and teaching methods. Why paper? Well, let's see (and feel). Let the experiment begin! Visit the library!

Notes

1. Adrian Forty, "Love and Loathing Among the Stones: On the Affective Nature of Materials," in *Imaginary on Matter: Tools, Materials, Origins*, ed. Thomas Bo Jensen, Carolina Dayer, and Jonathan Foote (Baunach, Germany: AADR, 2023), 55-64
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3. Adam Smyth, "Ropes, Shirts or Dirty Socks", *London Review of Books*, accessed January 5, 2026 <https://www.lrb.co.uk/the-paper/v39/n12/adam-smyth/ropes-shirts-or-dirty-socks>
4. Mark Dorrian, "Liquid Paper", *Drawing Matter*, accessed January 5, 2026. <https://drawingmatter.org/liquid-paper/>
5. Smyth, "Ropes, Shirts or Dirty Socks."
6. Mark Kurlansky, *Paper: Paging Through History* (W. W. Norton & Company, 2016), 60
7. Kari Jormakka, Jacqueline Gargus, and Douglas Graf, *The use and abuse of paper*, *Essays on Alvar Aalto*, Tampere University of Technology, DATUTOP Nr. 20 1999, 21
8. Jormakka, Gargus, and Graf, *The use and abuse of paper*, 50-51
9. Ákos Moravánszky, *Metamorphism—Material Change in Architecture*, (Birkhauser va, 2017), 25.
10. Johann Wolfgang von Goethe, "On German Architecture (1772)", transl. by John Gage in Gage (ed.) *Goethe on Art*, (University of California Press, 1980), 197
11. John Ruskin, *The Seven Lamps of Architecture* (Dover Publications, 1989), 106
12. Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*. (MIT Press. 1995), 82

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BIO:

Frans Drewniak is an architect, associate professor with teaching and artistic development at the Royal Danish Academy and a member of the Academy of Fine Artists. Through his own works, exhibitions, articles and books, he participates in a critical discussion about architecture and ecology. Recent exhibitions includes Terra Hybrid at Royal Danish Academy 2025-2026, The Sandiness of Sand at COAIB, Mallorca 2025, Better building Blocks at Form/Design Malmö 2024 & Royal Danish Academy 2023-24, Reset Materials at Copenhagen Contemporary 2023, Columns worth stealing at Charlottenborg Spring Exhibition 2020, and Public Air at Venice Architecture Biennale 2016.