

OPALIS UK

Developing the market for
second-hand building
components in the UK

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Rotor

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There isn't any such thing as a building. A building properly conceived is several layers of longevity of built components.

Frank Duffy, cited in Cairns, Stephen, and Anne M. Jacobs. *Buildings Must Die*, p. 124



Summary

So where are we now? Well, in terms of reclamation the world has gone backwards. Salvage used to be fairly easy and popular. The quantity of reclaimed building material reused in new modern sustainable and eco-friendly buildings is now miniscule. While demolition has increased, reuse has decreased. Indeed, a five star rated green building is allowed to have no reclaimed building material at all.

Thornton Kay, on Salvoweb.com

Today in NW-Europe, less than 1% of building elements are recirculated after their first use. Although a large number of elements are technically reusable, they end up being either down-cycled or landfilled. This results in a high environmental impact, and a considerable loss of economic value.

Rotor has taken on the challenge to double, by 2032, the amount of recirculated building elements in Northern France, Belgium, the UK and the Southern Netherlands. This territory houses thousands of companies specialised in the reclamation and supply of recovered building elements. Despite their obvious potential for the circular economy, these operators are facing important challenges. For instance: visibility, access to markets, or a fluid integration into contemporary building practices. In the context of a European grant application (Interreg), Rotor has partnered with technical institutions, trade associations, research centres, architecture schools and public administrations. The effort is rooted in earlier initiatives that were started up, successfully, in Brussels. The ambition, in the long term (2032), is the diversion of 1,75 million tons of waste on top of the baseline, thus creating a value of € 300 million or 4.000 new jobs.



The effort will require the participation of a wide range of protagonists in the building sector: deconstruction professionals, materials suppliers, commissioners, consulting engineers, etc. Among these, architects hold a particular position. As authors of building specifications, they choose which materials to prescribe in their projects and thus hold the key to whether or not salvaged goods can find second lives. To make this a common practice, we think that within a 20-year period it should be as easy for an architect to prescribe a salvaged material as it is today to prescribe a new material.

This unit at the AA is seen as a preliminary investigation, and will focus on the UK.

Why reuse?

In a crisis we would immediately adopt all of these [reuse] strategies, to conserve the value in existing materials. In our economy at present, manufacturing is so efficient that any reuse requiring additional labour is unlikely to compete with the use of new material, and therefore most of these options are dormant.

Allwood, Julian M., and Jonathan M. Cullen. *Sustainable Materials: Without the Hot Air*, p. 219.

Reusing building elements is often seen as a key feature of a future circular economy in the EU. In many policies, it is a top-priority strategy (e.g. Directive 2008/98/EC on waste). In practice, we see that most efforts in the last decades to 'close the loops' in the building sector were limited to the promotion of recycling processes which imply crushing or melting materials. Yet there are good reasons to develop reuse. Life-cycle analysis (LCA) studies reveal that reclaimed elements often have a drastically lower environmental impact compared to newly produced equivalents. Reuse also preserves most of the economic value, technical qualities and cultural significance of a building product. It also generates locally rooted economic activities.

Today in North-Western Europe the circulation of reclaimed building elements is mainly performed by small and medium-sized enterprises (SME's) occupying a discrete segment of the building industry. In the countries involved in this project (Belgium, Holland, France, the

UK), some 2200 companies facilitate the reuse of 1.2 million tonnes of building elements each year. In comparison, this amount represents 1.1% of the total construction and demolition (C&D) waste generated in the same territory. The reclamation activities generate €250m per year, directly sustaining 3000 full-time equivalents, and involve 15,000 persons in total. Despite their evident significance to the circular economy, these operators face important challenges:

1. **lack of visibility.** Specialists in dismantling, preparing and supplying reclaimed products are generally overlooked by building professionals. As a result, they operate in a niche market, when their products and services could be applied to large-scale projects as well.
2. **low recovery rate of reusable elements.** The current practices in demolition favor the sorting of C&D waste flows, but lack a strategy to manage reusable elements. As a consequence, large quantities of potentially reusable elements are being discarded as waste.
3. **a weak demand for reclaimed products.** Today, the demand for reclaimed products remains often limited to small-scale projects, because no methods have been developed to integrate reused components in formal contexts such as public tenders or technically demanding applications.



Spolia / Opalis

[...] In the context of the prolific production and consumption of commodities in mid-twentieth century America, the reuse of consumer products was negatively charged with implications of backwardness and social marginality. New products made of newly manufactured materials were promoted as more efficient, cleaner, safer, and more aesthetically appealing. If the discarded products of this and other hyper-productive societies were reused, it was elsewhere, on their own impoverished peripheries, or in the so-called Third World. By the end of the century, however, concern for managing the waste created by the constant replacement of once-new products by ever newer ones was reversing the negative charge one reuse and investing it instead with positive moral value. Yet because the "psychology of abundance" that accompanied the earlier "throwaway spirit" is still prevalent, reuse is noticeably non-conformist, exceptional, and ideological, rather than systemic and neutral.

Brilliant, Richard, and Dale Kinney. *Reuse Value Spolia and Appropriation*, p. 2.

Spolia is the term that has been used by archeologists and historians since the Renaissance to designate fragments of Greek and Roman monuments that were salvaged and reused, by subsequent cultures, in new buildings. The term was also applied to architectural salvage and reuse in later eras. Yet the notion bears an explicitly negative connotation because of its association with the idea of *spoliation* (the act of ruining, robbing or destroying something). The focus is on the loss of the original rather than on the smart reintegration into a new compound.

When Rotor set up, in 2012, the project of an on-line for inventory of all professional resellers of salvaged building materials in Belgium, the idea was to refer to the notion of *spolia*, without suffering the negative connotations. That's why it was decided to use an anagram. OPALIS sounded neutral enough.

Constantly updated since 2012, and gradually extending beyond the Belgian territory, the online guide opalis.be now lists more than 120 professional suppliers in second-hand building materials from Belgium, South-Holland and France. The idea of the project is to map out, on behalf of architects and commissioners on the lookout for batches of quality reclaimed materials, companies that can supply trustworthy building materials, competently salvaged from buildings slated for demolition. These companies offer quality guarantees and remanufacturing services for a smoother integration of the goods in a new building. The Opalis database is the outcome of an



extensive field research where every reseller has been visited and interviewed.

Opalis' vocation is:

- to familiarize building professionals with these companies; to advertise their individual competences and expertises
- to federate the salvage industry, which, until now, has hardly been able to push its own agenda
- to provide inspiring examples and concrete tools meant to facilitate the integration of reused components in new projects

Studio aims / year overview

Whatever the pleasures and prodigious efforts associated with erecting architecture, the art of causing it to disappear can be equally compelling or satisfying.

Keller Easterling, *Subtraction*, p. 1.

The aim of the studio is to let students actively participate in the efforts to map the existing professional reuse sector for architectural components in the UK, and more particularly in the greater London area. They will also assess where potential for further development of the sector lies by identifying bottlenecks that could be overcome through design.

This work will constitute a first exploration in view of the development of **opalis.ac.uk** as a fully functional digital portal, meant to further professionalize the UK sector of salvaged architectural components, and increase its accessibility for professional designers and commissioners.

In the **first term**, students will realise an extensive inventory of the existing practices and stakeholders on the territory. Site visits will allow for the in-detail documentation of a selection

of innovative practices. The focus will be on the array of materials available at the different resellers. At the end of the term, the students will set up a collective exhibition presenting a representative sample of readily available salvaged materials on the market.

During the **second term**, the focus will be on analyzing the supply chain for a chosen material or component characteristic of the contemporary offer. What is the nature of the operations involved in identifying, dismantling, transporting, remanufacturing and remarketing the said component? What is the nature of the assembly (say roof, wall or floor system) that the component will typically enter? And how could either the supply chain for this reclaimed material, or the assembly system for architectural use, be improved by redesign?

During the **final semester**, on the basis of the research and analysis conducted during the first two terms, the students will develop an architectural design for a concrete site and commissioner that demonstrates the feasibility and desirability of putting one or several reused component systems to use.

The final design will integrate the knowledge accumulated through field research, through the interviews with the resellers and with other experienced professionals, and through constant feedback from the studio supervisors and peer students.



Term 1

Mapping the existing reuse sector.
Focus on sample materials

12 weeks (24.09.2018 - 14.12.2018)

All men by nature desire to know. An indication of this is the delight we take in our senses; for even apart from their usefulness they are loved for themselves; and above all others the sense of sight. For not only with a view to action, but even when we are not going to do anything, we prefer sight to almost everything else. The reason is that this, most of all the senses, makes us know and brings to light many differences between things.

Aristotle, *Metaphysics*, Book I, 980a.21

During this term the students will first be introduced to the topic: what is building component reuse? Where did it originate, why has the tradition been lost? Why would it make sense to push reuse today? What are the major obstacles, from an economic, sociological and design point of view? This introduction will also present the work that Rotor has conducted in Belgium and France to galvanise the reuse sector. The digital platform Opalis, which summarizes much of these efforts, will be analyzed in detail.

A. Investigation / Road trip

(per group of 4 students)

The first set of assignments for this term will send out the students, in groups of 4, to roam the British countryside in the Greater London area in order to visit a substantial number of companies engaged in the reuse, repair and reconditioning of salvaged building components. The purpose of this 'Safari' is to map, for a territory to be collectively defined, the existing network of professional resellers and other key

economic protagonists.

This survey will be conducted through interviews, photography, note-taking and artefact collection. The student groups will report, on a weekly basis, to the tutors and the other groups. Modes of investigating, questioning, and reporting will be constantly and collectively monitored.

B. Presenting results / Group show

The concrete results of the investigation will be made public through two channels:

1. A draft version of Opalis.co.uk, a website meant to become a well-established portal for the reuse sector in the UK. Students will be briefed on how to write succinct but complete presentation sheets of the visited businesses, including a carefully edited photographic report.

2. Group show. At the end of the term, an exhibition will be set up collectively by the studio, showcasing some of the most representative materials available today on the reuse market. Students will be tutored in sample presentation, caption editing and overall exhibition design during the production stages of this exhibition, to be unveiled during the jury at the end of the term.



Term 2

Analysing supply chains Focus on assembly systems

11 weeks (07.01.2019 - 22.03.2019)

We can see our forests vanishing, our water-powers going to waste, our soil being carried by floods into the sea, and the end of our coal and our iron is in sight. But our larger wastes of human effort, which go on every day through such of our acts as are blundering, ill-directed, or inefficient, and which Mr. Roosevelt refers to as a lack of "national efficiency," are less visible, less tangible, and are but vaguely appreciated.

F.W. Taylor, *The Principles of Scientific Management*, 1911, p. 5

During the second term, drawing on the field-work of term 1, the students will each focus individually on specific salvaged materials. Through research in literature and additional interviews with stakeholders (demolition contractors, retailers, building contractors, designers, ...), they will map the supply chain for the material, from its source until its potential reuse, and identify possible process bottlenecks. These could be the critical absence of certain middlemen, logistic challenges, economic feasibility, legal or psychological (taste) hurdles, etc.

The focus will lie on the development of an optimal architectural application for the element/material in question, in the form of an assembly system ready for integration in new projects.

At the end of the term, the students will come up with a detailed presentation of the analysis, including a mock-up of the assembly system, and a proposal for larger scale application of the system in the current building market.



Term 3

Tackling a concrete design challenge
Focus on integrated architectural applications

9 weeks (23.04.19-21.06.2019)

In any urban society there is a massive stock of available materials from demolition and industrial waste that is currently discarded but has potential value. Although the infrastructure to locate and use these resources is currently lacking, some industry leaders are establishing design strategies, materials recovery processes, construction management approaches and manufacturing systems to create innovative new ways of using them in the built environment.

Mark Gorgolewsky, *Resource Salvation : The Architecture of Reuse*, foreword.

During the third term, the attention will entirely go to the development of an architectural project that integrates one or several assembly systems as defined during term 2.

Students will identify, in dialogue with the tutors, a specific and plausible architectural brief (with concrete commissioner, program and site situated in the United Kingdom), for which they will design an architectural project.

The project will be grounded in the realities of today's architectural practice with an understanding of the construction processes involved in the proposal as well as the quantity and nature of labor solicited for its execution. A particular attention will be given to detailing. The project should demonstrate a pragmatic approach of sustainable architecture. The choice of building materials, assembly systems and building engineering options in the project should be fully functional, but also motivated from an economic, social and aesthetical point of view.



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