

Les Petites Affiches: textilisation of architectural memory through the transformation of rubble

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This paper will introduce a practice-based and design-led investigation using *Les Petites Affiches* – a rehabilitation project by the architectural agency SCAU – as a key site of experimentation for a PhD project fully integrated in the daily life of the agency. The research, informed by a textile design practice, investigates new modes of transmission based on the in situ transformation of rubble – as an alternative to «*tabula rasa*» or strict restoration. Instead of being thrown away, rubble are conceptually and materially integrated in the new architectural project as for instance : pigments, fabrics or floor surfaces. The transmaterialised memory of the past building therefore becomes a constitutive component of the future structure.

In the case study of *Les Petites Affiches*, a Parisian building dating back to 1922 and subject to rehabilitation between 2017-2018, 111.39 kg of rubble were collected to explore how they could be textilised. In other words, the experiment – developed during an on-site-residency –, focused on how these rubble could be appropriated through textile processes to give life to new architectural materials. For example, some fragments were grinded and sieved to achieve the fine grain of a pigment before being mixed with a binder. The ink obtained, charged with the site's history, was printed on textile using silk screen methods. Bringing together two materials: textile and stone as a mean to reveal the different strata of the site's story, the outcomes of this process will be the occasion to discuss the potential of conceiving and materialising an architecture informed by its past but also imbued with more suppleness.

Additional Key Words and Phrases: rubble, up-cycling, textile design, architectural memory, rehabilitation

1 RUBBLE AS HERITAGE AT THE TIME OF THE ANTHROPOCENE

In the nineteenth century, the stratigraphic study of soils revealed the existence of a prehistoric humanity found in the traces of bifaces forms trapped in old sedimentary strata. This period – characterised by the Industrial Revolution – marks for the meteorologist and chemist Paul Josef Crutzen the beginning of the Anthropocene [1]. Since then, the timeframe of this geological era understood as succeeding to the Holocene period by inscribing the global and sustainable impact of humans on Earth deep down into its stratigraphy – has been constantly debated in the scientific community¹. At the time of the issues raised by the Anthropocene and its diversions², the transmission of an artificialized world has become a source of inspiration for a new generation of designers [2] who see in anthropogenic materials such as plastic waste, residues of agro-industry or biological pollution, a deposit of raw materials in becoming, concretion and inheritance of the era of the "waste makers" [3].

Just as the unprecedented concretions of these material deposits testify of the impact of industrial activities, the mass-production of rubble constitutes one of modern architecture main's legacies. In the aftermath of two World Wars, mechanical demolition machines replaced the workforce that was dismantling buildings stone by stone. These new tools developed and perfected during war times as well as the Great Reconstruction gave shape to new forms of ruins or "non-ruins" (referring to the analysis of Vincent Michel about « concrete that does not ruin [but] explode. [...] crushed, milled, it becomes a simple waste used for compacting new landscaped areas » [4]) quickly leveled off and shipped to landfills, without regard. Let's just recall here the scale of this rubble production. The European building sector represents 50% of natural resource's consumption and almost 40% of waste production within European territories [5].

¹ At the Great Acceleration (1945), the James Watt's invention of the steam engine (1784), the European conquest of the Americas (1492), the Neolithic Revolution (14,000 years ago)?

² "Capitalocene" popularized by the historian Dipesh Chakrabarty to precise capitalism's responsibility, "Oliganthropocene" an expression of the geographic professor Eryk Swyngedouw to precise the responsibility of a small group of human, and the "Hyper-Anthropocene" used by the climatologist James Hansen to specify the recently acceleration of the world's anthropisation.

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Fig. 1. Worksites & the analogy of the quarry, (at left) The worksite of Les Petites Affiches (2018) / (at right) The famous marble quarries of Carrara (2017) © Anna Saint Pierre

However, for whom knows how to make it speak, rubble are not mere waste, deprived of identity. An edifice's matter gives an account of its long chain of fabrication, of its successive episodes of transformation from its geological origin. Extracted, transformed into a material, itself shaped to be integrated to an architectural whole, the architectural substance is progressively charged of the stories and lives it shelters (whether they are personal, collective or factual events) before being deformed by the building's demolition, following urban mutations. Yet, as much as ruins, rubble « contain the story of its past existence and of the forces that partially demolished it »[6]. It is charged with the historical value, commemorative value, use value, art value and age value ; 3described by the art historian Aloïs Riegl in *The Modern Cult of Monuments* [7] at the beginning of the 20th century when looking for tools to inventory the architectural heritage. His work anticipates the spectacular increase of patrimonialization in Europe throughout the twentieth century.

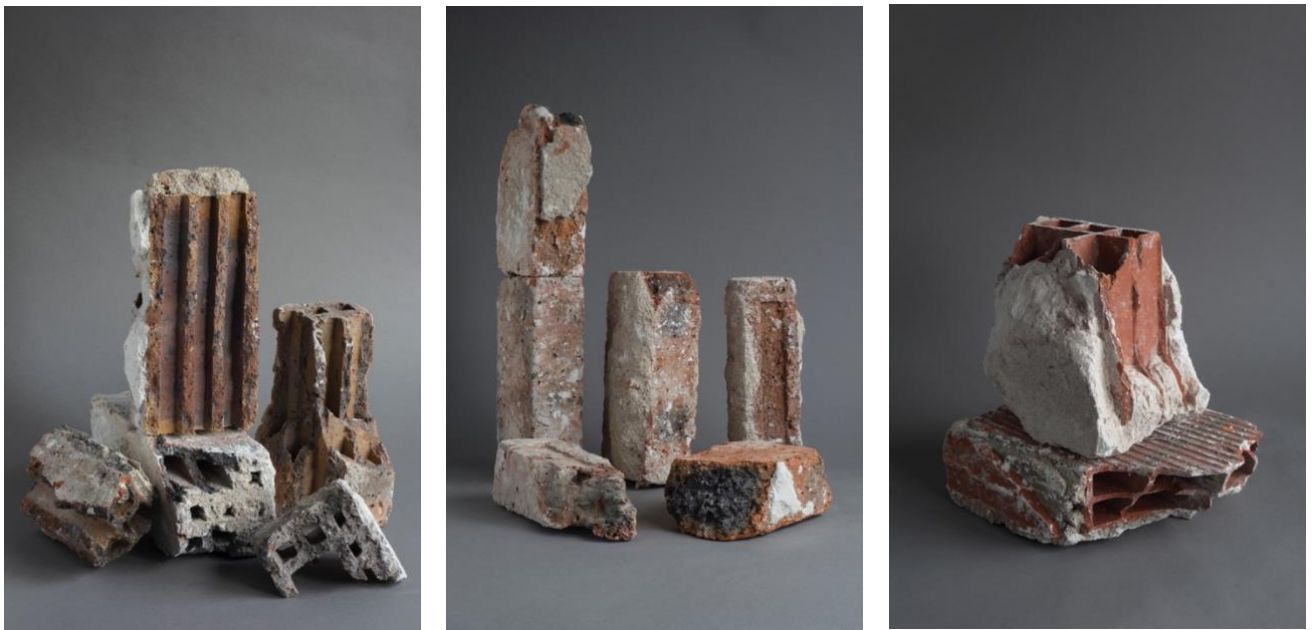


Fig. 2. Rubbles of bricks, collected from the worksite of Les Petites Affiches (2018) - © Anna Saint Pierre

If rubble are not yet clearly understood as heritage, the notion of historical heritage has, since Aloïs Riegl, extended its typological perimeter (from material to immaterial), its proportions (from the object to the city, to the planet), its motivations (commemorative, then artistic and historical) and its regulations (at different scales: regional, national, international, universal). What to do with this heritage? « Conserve or restore? »[8], was already asking Italian architect and engineer Camillo Boito in 1893 by picturing a dialogue between John Ruskin (conservation side) and Eugene Viollet-le-duc (restoration side). Between these two approaches, other paths exist: recycling is one, providing it includes the stories and memories contained by the concerned stones. Recycling can become an alternative to conservation or restoration practices in search of authenticity. Rubble transformation can indeed be seen as a solution to face the accumulation of architectural objects or materials deprived of their *use-value*. Such is at least the position defended in « *Les Déblais en héritage, matière à l'oeuvre* »⁴, a design-led PhD research which uses *Les Petites Affiches* as a key site of experimentation.

³ The *age value* as defined by Alois Riegl does not attach itself to the "original state" (in the opposition to historical value), but "to the representation of time elapsed since its creation" and is translated by "the marks of its age".

⁴ This title can be translated as "*Rubble as heritage, Matter of design research*"

2 IN SITU RECYCLING OF RUBBLE AS A NEW MODE OF TRANSMISSION

Sitting at the intersection of textile design and architecture, this PhD project relies on a practice-based and design-led methodology [9][10] informed by the textile and material design background of its main investigator as well as the past, current and future projects of the architectural agency SCAU, in which this research is primarily developed. In this context, the textile designer acts both as a designer and a researcher, collaborating with the agency's architects and all stakeholders who contribute to the architectural projects development and archiving (property developers, supervisors, clients, economists, engineers, industrialists, and craftsmen). Central to this approach is the collection of site-specific deconstruction materials (blocks, fragments, gravel, sand, dust etc) that are subsequently sorted and transformed to become part of a new architectural cycle on the same place. Pointing at this furtive moment where the status of building materials is being transformed, this project explores how to give to these deposits in-becoming a second life by investigating site-specific loops of remanence able to nurture the conception, building and experience of a new edifice or its rehabilitation.

Once collected and selected, several transformation protocols at the cross of craftsmanship and industrial knowledge are developed to transform rubble into a new architectural materiality. This process is adjusted for each project, leading to specific materials primarily manufactured from the hyper-local resources of the deconstruction site. As such, the demolished building physically informs the conception and materialization of a new edifice under the forms of fillers, aggregates or pigments that will determine part or totality of the new material and therefore built environment's colour, matter, the texture, weight etc. In this way, the trans-materialized memory of the building becomes one of its constitutive components.



Fig. 3. Rubbles of slate, collected from the worksite of Les Petites Affiches (2018) transformed in pigments and ceramic enamel - © Anna Saint Pierre

In correlation with economic changes, the building industry continually substitutes old materials by newer : since the late 19th century, the use of cut stone has been gradually replaced by concrete, glass and bricks, due to their technical prowess and superior performance capabilities; clay and slate tiles have been replaced by sheet metal and synthetic materials. This cyclic process is described by the economist Walter Carl Labys (American economics and philosophy doctor, which researches focus on the modeling mineral and energy market) while introducing the trans-materialization concept : “ Instead of a once and for all decline in the intensity of use of certain materials, trans-materialization suggests that materials demand instead experiences phases in which old, lower quality materials linked to mature industries undergo replacement by higher quality or technologically more advanced materials”. In this cyclic perspective, one of the research keys is to consider the “in situ” notion: the existing site, its memory and its mutation. We will no longer speak of a brick in a generic way, but a dated and located brick. It integrates the transformation protocol, creating on-site recycling scenarios or producing second-life objects reintegrated to the site after their off-site transformation. The memory contained in these stones follows the evolution of the materials used in architecture through the recycling of matter: as an alternative to the tabula rasa or

Les Petites Affiches

strict restoration. The natural linear model of life and death' cycles («from cradle to grave»), is replaced by a loop, relying on systems of survival, remanence, and return of matter.

3 TEXTILISATION OF RUBBLE AS A DESIGN STRATEGY

In his book *Der Still* [11], the German historian of art and architecture Gottfried Semper returns to the first dwellings to demonstrate the textile arts primacy over construction techniques. Permeated with Darwinian doctrines of his time, he developed an evolutionary theory of manufacturing techniques : the first interlaced branches would have resulted over time to different forms of walls: the Wand. In Semper, the Wand concept refers to the woven partition, from which comes the essential function of spatial separation, as opposed to the Mauer, the massive and carrier wall, which would provide only "secondary spatial qualities" (carry, support, defend). Thus, the first walls would be based on the application of the coating principle, either as such or by dressing the Mauer. Following Semper's footsteps, Tim Ingold in his book « *Marcher avec les dragons* » [12] goes back to these construction origins with the example of the "Conical Hut", extending this manufacturing conception of the wall to that of the world. He tells us how the Mauer, the incarnation of the stereotomy: "the assembly of elementary solid blocks", have spread in the collective imagination since the 19th century, to the detriment of the Wand, belonging to tectonics "weaving of materials". The anthropologist proposes another understanding of the world through analyzing the textile crafting: textility, defined by Ingold as "connecting moving materials" rather than "projecting a shape onto a material".

Today, life and death cycles of architectural matter are subject to ever shorter temporalities, in "the accelerating cycles of economic global"[13]. Whether we have to resist to limit the contemporary obsolescence of buildings, we also have to adapt our building system to the new uses. Is the historical and conventional architecture, dominated by the permanent, able to adapt to these cultural and societal changes ? The authors report postmodern theories of space, dominated by a "dynamic, interactive and flexible paradigm" and suggest that architectural space should be reoriented, metaphorically and literally, from a model based on the solid state to a model based on liquid and gaseous states. Can we identify concretely in the life cycles of architectural matter this moment of transition referenced to postmodern concept ? This research seizes the opportunity presented by the building state change to create new materialities, according to trans-materialization (the evolution of architectural uses). Within the architectural life-cycle, the second-life of materials are closely linked to the subtracted methods ; the techniques of dismantling, cutting, demolition, determine the shape of the extracted material and therefore its "second-life". From a brick wall example, the diagram below shows the correlation between the subtraction method, the shaping of the material and its second-life. Architects and engineers from Rotor, Bellastock and Encore Heureux (pioneers of the genre) have been looking for a few years to revitalize re-employment practices by intervening at the end of life of the building "the tomb", with the development of re-employment channels and platforms (linking sellers and purchasers), and at its birth "the cradle", through the eco-design of reversible constructive systems ("deconstructible") anticipating the end of the building's life. If re-employment is considered more virtuous than recycling, it is reserved for certain types of deposits

compatible with deconstruction techniques⁵. It is generally applied to the components of the second work, extracted from the site during the cleaning (we speak then of dismantling).

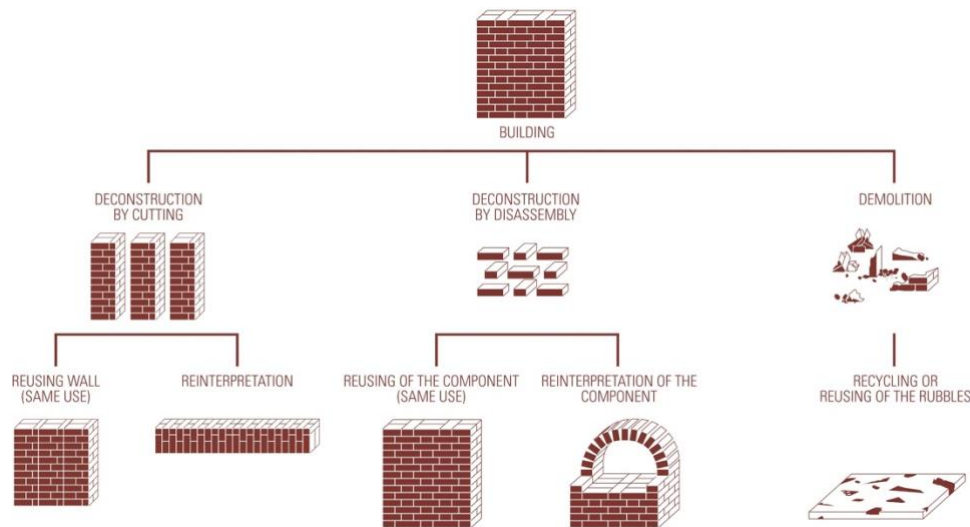


Fig. 4 : From a brick wall example, the diagram below shows the correlation between the subtraction method, the shaping of the material and the second-life of materials.

Demolition - dominant subtraction method - results in the loss of the original form of materials, which was associated with uses, properties and values. Its acquire new forms (and reciprocity others properties, values and uses in becoming) : an alveolar brick fragment joining plaster, gravels of breeze block or burstone, a marble block grasped by a concrete layer. If they cannot be re-employed in identical use, taking into account their new morphology and composition can give rise to new uses : by recycling (integrated in the manufacture of new materials), or diverting (recovered for a new use). During the building transformation, the architectural ensemble is broken down into grains of different size/granulometry grains. The grain material has the physical characteristic of behaving as both a solid when taking into account a unit - a grain of sand - and liquid when considering its plurality - a handful of sand. It is here - in this transition stage - that the "textilisation" of the architecture takes place, inserting the memory of the site into a new historical stratum (the contemporary trans-materialization of the solid architecture to the liquid) : to keeping traces while enabling the making of new meanings to live. The use of textiles allows forms to emancipate from the solid and the permanent, by its potential to create a «variety of spatial situations»[14]. Textiles combine properties of "surface continuities", flexibility, lightness, adapted to the expression and realisation of this new "spatio-theoretical paradigm" : materials will be considered, not as immutable blocks - *Mauer* -, but in a flexible language - *Wand*.

⁵ Deconstruction - which aims to separate the components of the frame one by one - allows the material to retain its formal integrity and to be reused for identical use.



Fig. 5 : Textile printing from architectural rubble (bricks), 1.5m x 3m, (2016) © Anna Saint Pierre

4 LES PETITES AFFICHES AS A (DE)CONSTRUCTION SITE FOR THE RESEARCH

Exceptions aside, the elapsed time between the first steps of an architectural competition and the end of its construction largely supersedes the timeframe of a PhD project⁶. In order to adapt the rhythm of this research to that of the architectural agency while preserving a chronological insight on the architectural creative process, it relies on rolled-out projects situated at distinct steps of conception and fabrication. *Les Petites Affiches* constitutes the first (de)construction site chosen as a ground for this research. It was invested during the construction work's stage⁷ as a residency space between December 2017 and March 2018⁸. The undertaken experiments have not been integrated to the architectural programme, the latter having already been acted prior to the start of the PhD. So, it was agreed that they would be exploited in order to develop new protocols of material transformation. The following experiments have therefore been developed outside the temporalities and constraints of the project. They nonetheless mobilise a concrete research context and its material resources and focus on the development of new materials and uses in an anticipation approach.

⁶ Usually three years in France.

⁷ After its remediation/decontamination and its cleaning.

⁸ This includes the access to the site, the provisioning of a working and storing space during the whole period.



Fig. 6 : Vertical stratigraphy from the work site Les Petites Affiches (2018) - © Anna Saint Pierre

Les Petites Affiches is a building located within the 1st arrondissement of Paris, nearby the Palais Royal and in front of the Ministry of Culture⁹. Subject of rehabilitation by the architectural agency SCAU, the building was originally designed in 1922 by French architect Roger Gonthier. Commissioned by the company *Les Petites Affiches* -a daily newspaper for legal advertisements, the building was soon developed as a multi-storey construction including 8-floors, 2 basements and the ground floor in order to gather workshops and offices.

Prior to this, the land registry testifies of a rich multi-layer use of the place. For long occupied by the Saint-Honoré cloister in the Middle Ages, the site was requisitioned during the French revolution. Proclaimed as a national possession (1792), it was sold in 1796, like many ecclesiastic heritages. It was soon decided to design on this plot the nowadays Montesquieu street (1802) in order to facilitate the transport of goods in the area. Progressively, the place is occupied by residential buildings and small shops. Numerous are the numbers of printing workshops to settle in the neighbourhood at the beginning of the 20th century.

⁹ It is more precisely located at the cross of the Montesquieu and Croix-des-Petits-Champs streets.
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Les Petites Affiches

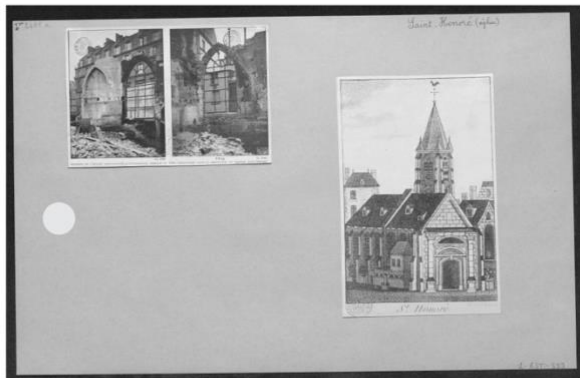
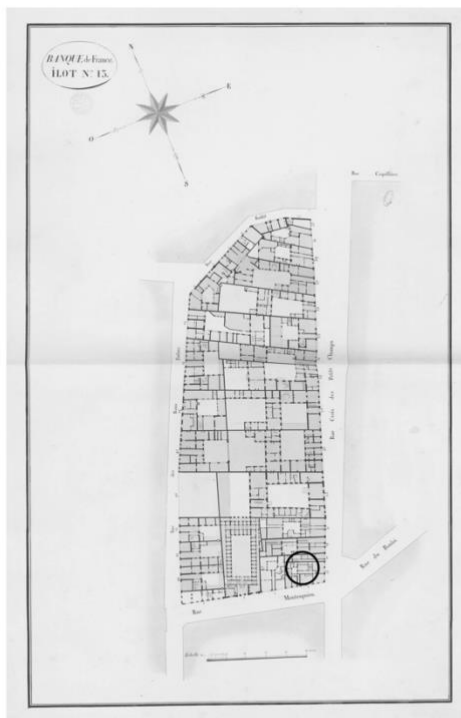
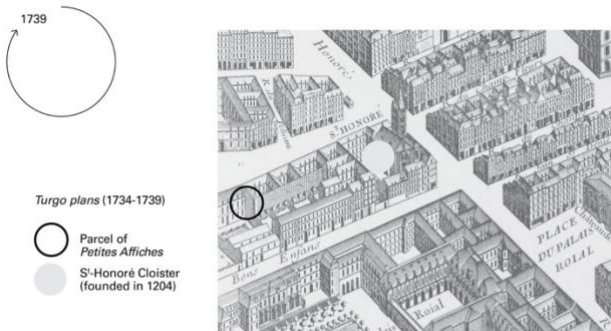


Fig. 7 : Historical strata of the plot illustrate by some documents from Bibliothèque Historique de la ville de Paris et des Archives Départementales de Paris.

Nowadays property of the “Montesquieu” grouping, the building has been lately transformed by SCAU to optimise the surfaces and accommodate new uses. The rehabilitation implied numerous demolitions. For instance, the ground floor -originally raised by half a level compared to the street in order to host printing machines and linotypes- has been relocated at the street-level to facilitate disabled people’s access; the facades have been renovated (insulation, change of frame). As a consequence, the extraction, section and cutting down operations have revealed the underlying principles of construction of the original building, offering a view on the metallic mesh foundations, influence of the industrial architecture of the Benedictines train station built few years before by the architect. This deconstruction work also exhibit layers of insulation materials, pipe networks, basements, a strongbox, waste stored within walls and flooring as filling elements, low quality bricks made out of clinker.



Fig. 8 : The existing site (2016)



Fig. 9 : Images of the project - © SCAU architecture

5. EXPERIMENTS

This (de)construction site was used to question how textile can be used to embody the memory of a past building and how mineral matter can be metaphorically and materially textilised?

5.1 Step 1 : Sampling, archiving and analysis of rubble

The building of the Petites Affiches belongs to the movement "Art Déco", with Haussmanian influence. As most Parisian building constructed before the fifties, it is composed of materials extracted from regional quarries : clays, millstones, limestone, gypsum. This local supply reveals some geological strata of the Parisian Basin¹⁰. 111.39 kg¹¹ of material samples have been collected during the building work, allowing the typologic identification of debris produced : solid brick, concrete with volcanic rock, concrete, plaster, pouzzolan, clinker, hollow brick, slate, marble, limestone, perforated brick and cork. They were both used as archival documents and as raw materials for practical experimentation.



Fig. 10 : Rubbles collection from Les Petites Affiches (2018) - © Anna Saint Pierre

¹⁰ These materials come to us from distant geological ages (the miller is excavated from the "Rupélien" floor, whose morphogenesis dates from 30 million years ago and the Paris stone from the Lutetian floor, dating from 45 million years ago). In the era of Anthropocene theories, consideration of the geological history of these materials leads to a more attentive look at their entire life cycle (original value).

¹¹ These rubble consists of materials produced by selective demolition - this does not concern preserved materials (wire mesh) and materials extracted from the site during the depollution (contaminated with lead and/or asbestos) and cleaning (false ceiling, carpets, tiles...).



Fig. 11 : Bricks focus - The brick was used on site in filler structured by wire mesh poles. Under the orange shell, their cut-out reveals a colours diversity and intensity : a red to black gradient punctuated by aggregates due to cooking differences and the integration of clinker - industrial waste - in the clay paste. - © Anna Saint Pierre

5.2 Step 2 : Transformation, from matter to the creation material

Once collected and photographed, the materials were transported¹² to the Manufacture de Sèvres research laboratory. This workspace is equipped with specific tools for the mineral grain: crushing, grinding, sieving, porphyzation. These tools are used to process small volumes and experiment at the object, prototype or sample scale. The objective is to concretely archive the colourful range of the site from its rubble. Colour-materials are sorted according to their nature - chemical composition - and by particle size fractions¹³.

- **Crushing**

Most of the rubble was fragmented by a low-flow laboratory jaw crusher. The jaw - activated by a mechanical system - compresses the stone until it bursts¹⁴.

- **Sieving**

The aggregates are sorted by grain size thanks to a series of sieves with variable mesh openings: 5 mm, 2 mm, 0.5mm and 0.08 mm, sorting the grains into 5 different grain sizes: coarse gravel (>5 mm), medium gravel (<5 mm ; > 2mm), fine gravel (<2 mm ; >0,5mm), coarse medium and fin sand (< 0,5 mm ; > 0,08mm), silt and clay (> 0,08mm).

The various particle sizes obtained will be distributed by application.

¹² About 15 kilometres from the site

¹³ Note that the finer the particle size, the more the colour tends to bleach

¹⁴ Fragmentation processes, by which the size of the object decreases, depend on the effort on its parts, its nature, its initial shape (thickness and geometry), its hardness and the initial defects present.
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Les Petites Affiches

- **Grinding (porphyrised)**

Finally, an optional step of grinding by pivot jar (industrial scale equivalent: ball mill, a classic equipment of large cement factories) reduces the size of all the aggregates into silt and clay granulometry and achieves homogeneous granulometry : from a rubble we obtain its equivalent in pigments.



Fig. 12 : Rubbles of bricks crushed, sieved, classified in ascending order of grain size and archived.



Fig.13: The crushed material is inserted into the jar with pebbles and water. The jar rotation, operated by a roller system, produces a mechanical shearing and shelling phenomenon that reduces the material into pigments. - © Anna Saint Pierre

4.3 Step 3 : Printing stones

The range of colouring materials from *Les Petites Affiches* were transported to the textile screen-printing workshop of EnsAD¹⁵ to experiment with its textilisation.

- **Textilisation : from *Mauer to Wand* / a brick = x m² textile ?**

Quantitative issues were first explored by investigating how many square meters of textile can be printed from a single brick ? An intact brick (1.24 kg) from the *Petites Affiches* site was crushed and grinded. The 1.23 kg of pigments obtained (< 0.08 mm) were incorporated into a screen-printed pigment base (solvent-free): 30% pigments (1.23 kg) and 70% base (2.87 kg), leading to an ink loaded and coloured by the *Petites Affiches* site (4.1kg). The printing of a ¼ m² (50x50cm). After printing 10 squares (or 2,5 m²), we were able to deduce that 0.156 kg of brick pigments were needed for printing 1 m² of textile. A brick = 7.9m² of printed textile.



Fig. 14: Pigments produced from the rubbles of bricks incorporated into a screen-printed base.

¹⁵ About 16 km from the Manufacture of Sèvres.
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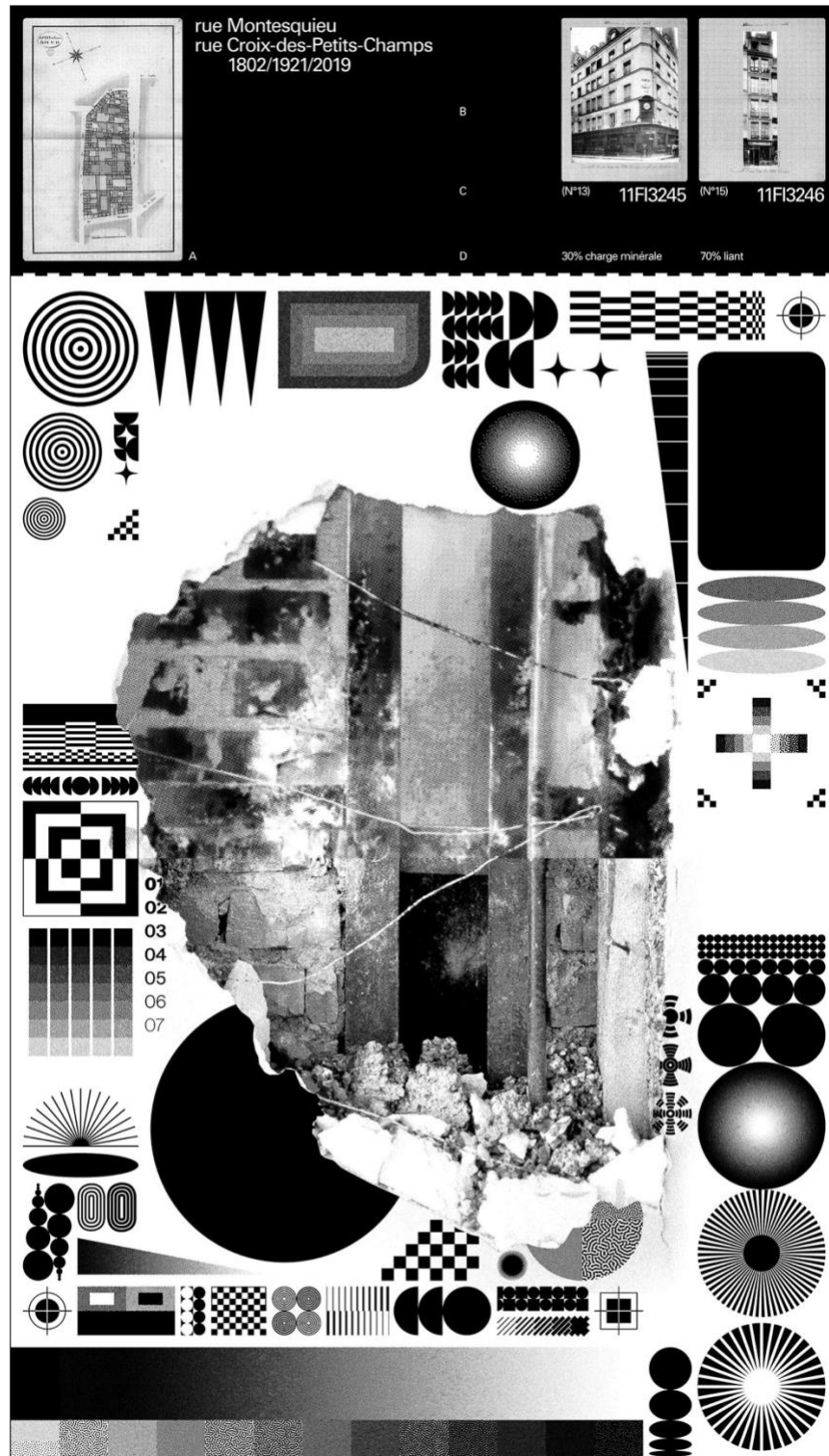
Fig. 15: Sample, recipe and formulation



Fig. 16: Process of the textile screen printing, in the workshop

- **A mnemonic pattern**

While the first part of this experiment quantified the volume of rubble needed to print a precise surface in flat form, the second stage aimed at applying this protocol to a more complex pattern able to express the history of the Petites Affiches building. This design -developed in collaboration with the graphic design studio Rimasù- is inspired by the systems of targets, frames and patterns used by the printing industry.



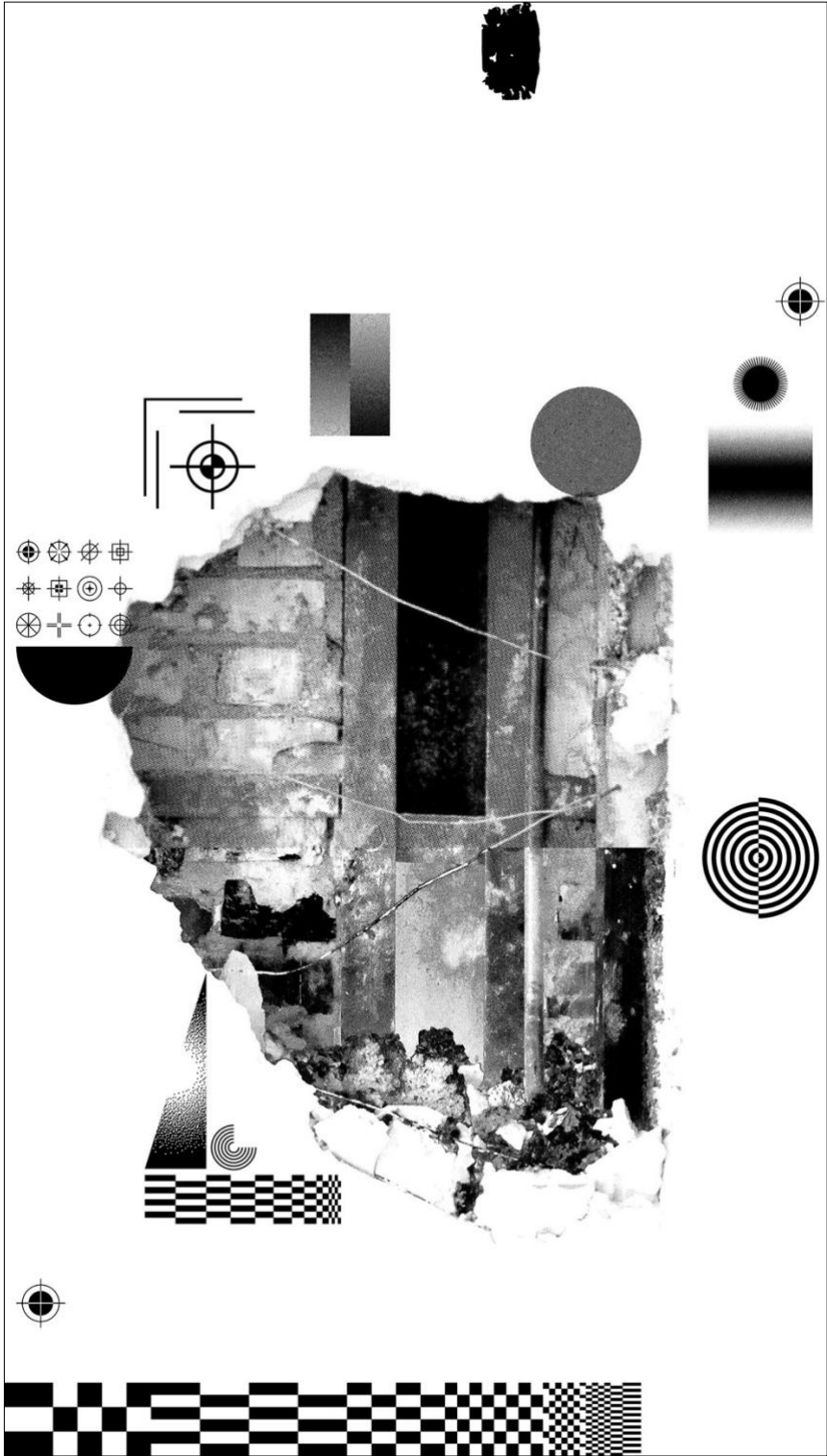


Fig.17 : The pattern design with studio Rimasùu, constituted by two screen printing frame

The overall print design is conceived as a tool, allowing the experimentation and evaluation of effects produced by the overlay of two screen printing frame (colours, graphic frames, printing thicknesses) and the inks characteristics. A range of inks was formulated from two distinct pigments from the Petites Affiches' rubble: brick and slate pigments - associated with different binders ("pigment ink", "puff" and "thermo-settable" binders), in order to play with different sensory aspects: granular, smooth or shiny, inflated surface. The development of these formulations takes into account the conservation of the materials sensory specificities¹⁶.

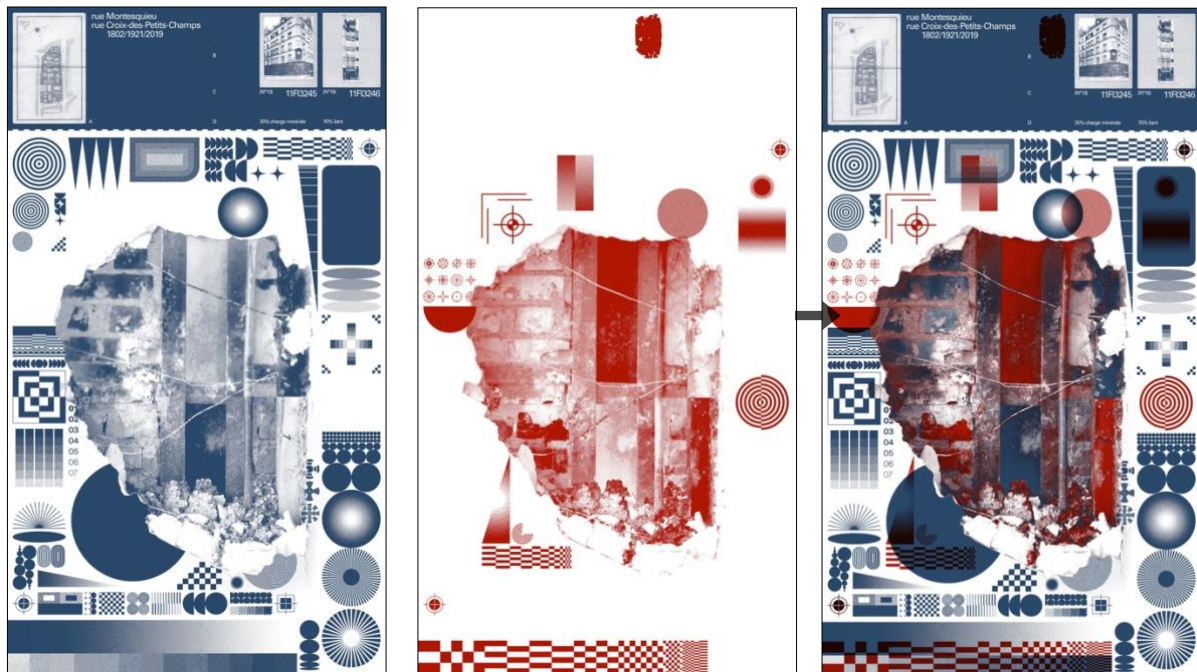


Fig.18 : The simulation of the superimposition of the two screen printing frame

Beyond this graphic and textured research, this experiment is associated with a reflection on the memory of the site, giving the textile a new mnemonic use. This means that the pattern becomes of personal and factual the support for narratives. The architecture of the existing site had been designed to accommodate the newspaper's printing workshops and its machines and these elements were removed from the site during the rehabilitation. The ground floor has been upgraded ; the Petites Affiches sign has been removed. Inspired by the printing history of the building, the designed pattern acts as a reminiscence of the void left by the site new configuration. Other fragments of stories evacuated from the site a long time ago, but preserved in the form of paper archives are also embedded into the printed pattern: plans of the Saint-Honoré cloister, building permits, photographs, newspapers...

Becoming "Manifest-materials", they integrate different reflections on the evolution of architectural matter and its cycles. Brick and slate reintegrate the new building in another form: the textilization of stones as a trans-materialization of the memory. Clues and signs to which a mnemonic function has been conferred, signal the urban mutation of place. Printed textiles obtained are designed for the architectural space, especially the original building, as a curtain or claustra, suspended and weighted down by some rubbles.

¹⁶ For example, slate stone, which belongs to the shale family, has an iridescent and "changing" appearance due to its leaf structure. The transition to pigments (crushing, grinding) deconstructed this "configuration". The ink printed with a classic binder called "pigment ink" does not allow to find the iridescent aspect of the original material. I therefore used another base called "thermo-settable", which allows to artificially smooth the printed surface by heating it to 170° for 1 minute in the thermal press with a sheet of silicone. The sensory properties of bricks surface (consisting of ceramics: clays and other components mixed, shaped and then cooked) can be considered preserved using a pigment binding base; the rough, slightly porous and matt surface is restored after printing. Nevertheless the attachment of pigments to the canvas is precarious.



Fig. 19 : Textiles exhibited at the WantedDesign Brooklyn, New York (2019) - © Anna Saint Pierre

In parallel, the finest particles, which represent small volumes, have been the subject of other experiments related to material *textilisation*, such as the manufacture of a variable nozzle opening extruder to make composite filament from rubble pigment and polymer waste. These protocols, included in a small-scale approach, do not aim to have a quantitative impact on the rubbles's volume but are rather part of a transformation work close to craftsmanship. However, the larger particles allow applications involving larger volumes; as such gravel and coarse were used as loadings in the formulation of a polished concrete.

With the help of a specialised company, we made a series of concrete samples loaded with bricks, concrete and marble from les Petites Affiches¹⁷.



Fig. 20 : Concrete samples exhibited at the WantedDesign Brooklyn, New York (2019) - © Anna Saint Pierre

6 CONCLUSION

The Petites Affiches's experiments were conducted "off-project" (not included in the architectural programme). Besides, in order to free the creative research, they allowed us to anticipate further needs for following research-projects included in the architectural programme. These experimentations have been integrated into various agency projects, themselves constrained by limited regulatory, economic and temporal challenges and requiring effective solutions. In this case, the innovation lies in the integration of a "second-life" material (memory charged) within the formulation of a common material in architecture and the adaptation of a protocol for an on-site implementation (design of mobile tools). Thus, the "concrete samples research" carried out on "les Petites Affiches" allowed anticipating certain needs for the *Granito, an Office Stratigraphy's* project research, which should be realised in 2020 on the « Parissy »¹⁸ rehabilitation: in order to adapt the building to thermal insulation standards, the stapled stones facades will be replaced by metal panels. They represent a deposit of about 2000 m² or 182 us tons, which will be re-used in situ to make granito (granite terrazzo) on the atrium's floor, forming a fifth façade, visible and identifiable from the street¹⁹. In this perspective, we hope to be able to implement the screen-printing protocol in a future project of the agency (included into the architectural program). The aim is also to develop a palette of materials and tools out of rubbles for artists, architects and designers.

¹⁷ This formulation is going to be used for another construction site.

¹⁸ Twenty-two years after its construction (1997), the seven-story office building «Parissy», is about to undergo a major renovation. This project highlights the impact that the ever-shortening life of tertiary real estate programs has on the life and death cycle of the materials used.

¹⁹ If, based on methods commonly used in the management of building waste, we calculated that this operation was equivalent to 133 tonnes of CO2 avoided, the virtuous value of in situ recycling lies in the reduction of new materials extraction in soils and subsoils and the energy cost of their transport.

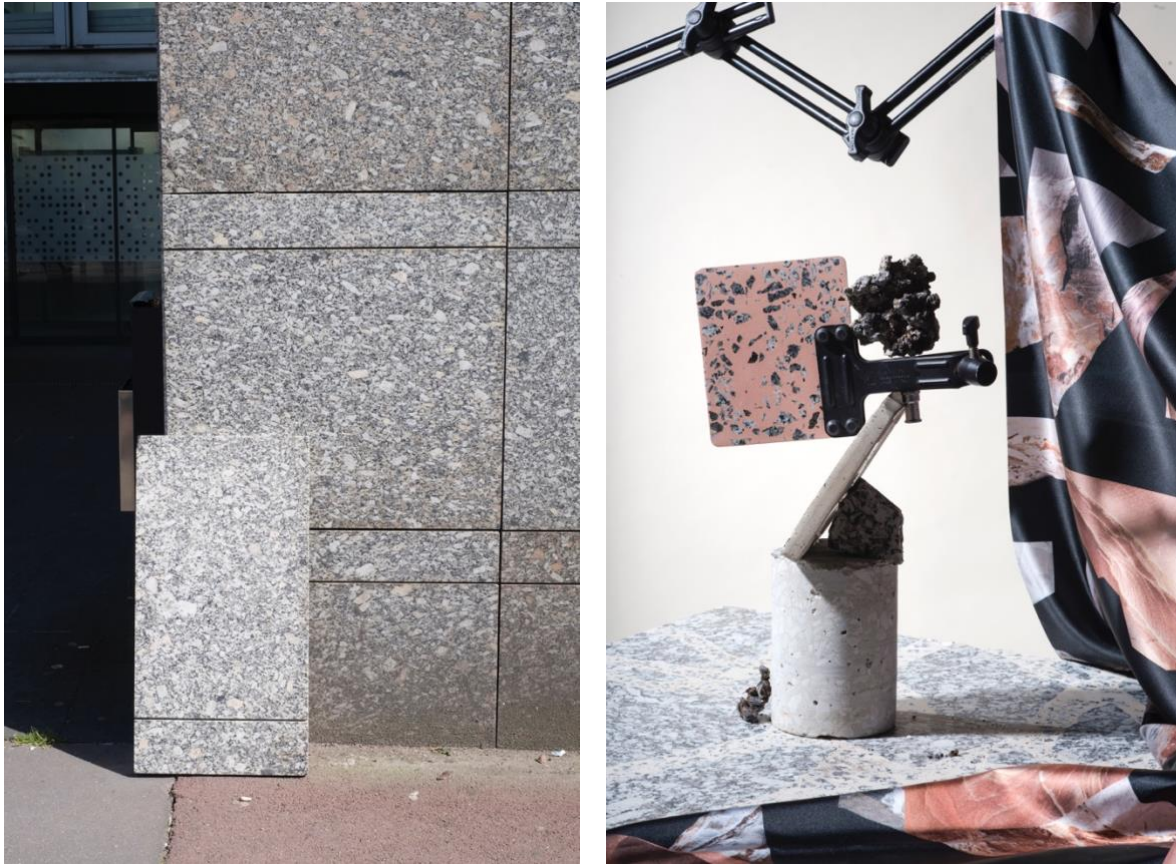


Fig. 21 : (at left) Parissy's granite facade. A mix selection of french materials (Brittany) : Celtic gray granite and blue granite of Lanhelin. (at right) Granito sample made with Parissy facade stone - © Anna Saint Pierre with Rimasùu

As detailed previously by following the different steps of experiments, the transformation process of *Les Petites Affiches* characterised by *textilisation* places the action of research at the intersection of architecture, object and textile design. It investigates new modes of transmission based on the *trans-materialization* of rubble - as an alternative to «tabula rasa» or strict restoration. Instead of being thrown away, rubble are conceptually and materially integrated in the new architectural project in the form of textile. In this textile design practice, I have approached the notion of “textility” by “making” (as advocated by Tim Ingold[15]) : that is by *textilisation*. The use of the textile material is an expression of these states of permanent flux of the material: the liquidity. I have experimented with different ways of transforming architectural matter using tools and skills specific to textile crafts: screen-printing, finishing, weaving. At the time of the Anthropocene, understood as a transition state of conception, “making” is a new way to understanding the word by the practice. Referring to Tim Ingold’s *textility*, how *textilisation* become another meaningful way of shaping and inhabiting the world? How this *textilisation* can be a way to “make” with the (accumulated) material heritage? Borrowing the words of artist and researcher Svetlana Boymin in *The Future of Nostalgia* (2002)[16], the approach introduced with the « Petites Affiches » relates more to the implementation of a “reflexive” nostalgia than to a “restorative” practice, turning recycling strategies into a source of creation for architectural projects as well as a process through which questioning the evocative power of materials, what can perhaps be called a *textilisation of nostalgia*?

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REFERENCES

- [1] Paul J. Crutzen. 2002. Geology of mankind. *Nature* 415 (January 2002), 23.
- [2] Kate Franklin, Caroline Till. 2018. *Radical Matter, rethinking materials for a sustainable future*. Thames & Hudson, Londres.
- [3] Vance Packard. 1960. *The Waste Maker*. David McKay Publications, New York.
- [4] Vincent Michel. 2010. Pourquoi recyclage et urbanité ? In: P. Leandri, *L'esprit des matériaux, architecture et philosophie, n°2 Recyclage et urbanité*. Éditions de La Villette.
- [5] Michaël Ghyoot, Lionel Devlieger, Lionel Billiet, André Warnier. 2018. *ROTOR Déconstruction et réemploi Comment faire circuler les éléments de construction*. Presses polytechniques et universitaires romandes, Lausanne.
- [6] Léopold Lambert. 2016. *La politique du bulldozer, la ruine palestinienne comme projet israélien*. Ed. B2, collection Territoires.
- [7] Aloïs Riegl. 1984. *Le culte moderne des monuments Son essence et sa genèse*. Ed. du Seuil, Paris.
- [8] Camillo Boito. 2013. *Conservare ou restaurare (1893)*. Ed. de l'encyclopédie des nuisances, Paris.
- [9] Carole Gray. 2004. *Visualizing Research : A Guide to the Research Process in Art and Design*. Ashgate Publishing, New-York.
- [10] Aurélie Mosse, Jean-François Bassereau. 2019. Soft Matters: En quête d'un design textile et matière plus résilient, *Développement durable. Sciences du design* 9 (May 2019), 50-63.
- [11] Gottfried Semper. 2007. *Du style et de l'architecture, Écrits, 1834-1869*. Parenthèses, Marseille.
- [12] Tim Ingold. 2013. *Marcher avec les dragons*. Zones sensibles, Paris French & An ontology of Tim Ingold articles, translated in french by Pierre Madelin
- [13] Mark Garcia, (Ed. John Wiley & Sons). 2006. *Architextiles. Architectural Design magazine*. 76, 6. (Nov./Dec. 2006).
- [14] Sylvie Krüger. 2009. *Textile architecture*. Belin, Jovis, Berlin.
- [15] Tim Ingold. 2017. *Faire. Anthropologie, Archéologie, Art et Architecture*, Ed. Dehors, Paris.
- [16] Svetlana Boym. 2001. *The Future of Nostalgia*, Ed. Basic Books, New York.