



Reframing Stone Waste: Material Evidence, Craft and Custodianship

Marlo Lyda

George Alexander Foundation Fellowship, 2026

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Table of contents

01	Acknowledgements	1
02	Executive Summary	3
03	Fellowship Background	4
04	Fellowship Learnings	7
05	Personal, Professional and Sectoral Impact	27
06	Recommendations and Considerations	30
07	Dissemination and Stakeholder Engagement	32
08	Conclusion	34
09	References	35
10	Appendices	37

01

Acknowledgements

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02

Executive Summary

This Fellowship examined why physically useful stone becomes waste and how fragments can be reused without removing all evidence of their earlier life. It developed from Marlo Lyda's Remnants furniture collection, made since 2022 from stone recovered from fabrication skips.

From October to December 2025, Lyda undertook research in the Netherlands, Greece, Italy, Spain and the United Kingdom. The program combined quarry, workshop, museum and architectural visits with a two-week technical residency at the Centro Integral para el Desarrollo del Alabastro (CIDA) in Albalate del Arzobispo, Spain.

The research found that stone becomes waste when its size, shape, finish, location or handling requirements no longer suit the production system around it. Carrara revealed the distance between stone's luxury image and the industrial scale of extraction, including material reduced to calcium-carbonate filler. Psychoyos and Cava Valsora demonstrated that retaining value depends on storage, machinery, relationships and deliberate operational choices.

Historic fragment practices provided a second finding. Pikionis's Acropolis paths, the Unswept Floor mosaic, Siena Cathedral and Florentine pietre dure each use partial pieces as deliberate design material. The Unswept Floor was a particular turning point: the scraps of a banquet remain the subject of an exceptionally skilled work. It clarified that remnants can carry evidence of extraction, fabrication, use and time, rather than functioning only as material diverted from disposal.

Workshop visits kept this position practical. Fabio Bordi demonstrated the value of sorting, repeated cutting and specialist knowledge in mosaic. Barbany Artesans showed how CNC processes work alongside stone selection and hand finishing. At CIDA, Lyda tested relief carving, translucency, masking, alabaster plaster, inlay and graphic methods. Romano Bianchi's Volterra workshop then showed how these qualities can be translated into lighting through turning, drilling, CNC cutting, hand finishing and the assembly of smaller sections.

The Fellowship recommends documenting usable stone before it enters mixed waste, classifying it by colour and scale, designing from known inventories and involving fabricators before forms are fixed. At sector level, these actions point towards a custodianship model through which stone remains identifiable and specifiable as it moves between suppliers, recovery services, designers, fabricators and clients.

For Lyda, the next step is to redevelop Remnants as an adaptable production system: repeatable enough to work within fabrication constraints while retaining the marks and variations that give each fragment value. Sustainability is an outcome of this approach; the central design finding is that reuse becomes more meaningful when the material remains legible.

03

Fellowship Background

Context and purpose

Lyda's practice spans furniture, lighting and objects developed through direct material research. Remnants began in 2022 after she recovered pieces of marble, granite, limestone and onyx from stone-fabrication skips. The pieces varied in thickness, surface finish and geometry. Steel frameworks and copper bindings were developed around those differences rather than cutting every piece back to a standard shape.

This method produced resolved furniture, but it also exposed gaps in knowledge. The studio was working at the end of a long chain, after extraction, importation, specification and fabrication had already occurred. The source of a fragment was often unknown. Existing drill holes, polished faces and broken edges indicated previous processes, but the decisions that produced them were rarely recorded. Access to suitable offcuts depended on informal relationships and timing.

The Fellowship was proposed to extend this practical experience. Its purpose was to understand where stone becomes surplus, how irregular material has been used historically, what tools and skills allow it to remain intact, and how these findings could inform Australian design practice. It was not intended to produce a universal waste-management model. The scale of the inquiry was that of a designer-maker: close observation, material testing and the development of credible methods for future work.



Figure 1. First Remnants tables in process. Image credit: Marlo Lyda.

Research questions

- At what point, and for what practical reasons, does usable stone become waste?
- How have historic and contemporary practices worked with fragments without first making them uniform?
- Which tools, facilities and forms of craft knowledge are required to use irregular stone?
- How can the evidence already held in a fragment contribute to the final design?
- Which findings can be applied realistically through Lyda's studio, teaching and Australian industry relationships?

Methodology and period

The Fellowship ran from 15 October to 16 December 2025. Research began at Dutch Design Week and continued through Greece, Italy, Spain and the United Kingdom. It included direct observation, photographic documentation, discussions with craftspeople and designers, quarry and workshop visits, analysis of historic surfaces and buildings, and a two-week practice-based residency at CIDA.

The sites were selected to place different scales of stone work in relation: quarry landscapes and large monoliths; public pavements and structural stone; small tesserae and inlay; established alabaster lighting production; and workshop tests concerned with thickness, carving and light. The observations are presented as case studies rather than as comprehensive accounts of national industries.

Fellow biography

Marlo Lyda is an Australian-born designer-maker, curator and university educator based on Gadigal Country in Sydney. She graduated from the Man and Well-Being department at Design Academy Eindhoven in 2021. Her graduation project, *Scraptopia*, investigated the recovery of copper from electronic waste through small-scale electrochemical processes.

Her collections include *Remnants*, developed from discarded natural stone; *Turning*, which used invasive camphor laurel and woodturning; and *Toile*, a family of textile lighting works that leaves seams and internal construction visible. Lyda received the NSW Design (Early Career) Fellowship delivered by Powerhouse with Create NSW and was selected for the NGV Rigg Design Prize in 2025. She is the founder of MATTERS, an exhibition platform presented during Melbourne Design Week from 2023 to 2025, and teaches at UNSW Art & Design.

Definitions

CIDA: Centro Integral para el Desarrollo del Alabastro, a training and residency centre in Albalate del Arzobispo, Teruel, Spain.

Fabrication remnant or offcut: A section left after a slab or block has been cut for another project. It may retain a finished face, drill holes, tool marks or an irregular edge.

Marmettola: Fine marble slurry or dust produced during quarrying and processing.

Opus sectile: A technique using shaped pieces of stone fitted together to form geometric or pictorial designs.

Pietre dure: A highly refined inlay technique in which selected stones are cut and fitted to create images or patterns.

Spolia: Architectural or decorative material removed from an earlier context and reused in a later one.

Tesserae: Small pieces of stone, glass, ceramic or other material used in mosaic.

A&D: Architecture and design; used here to refer collectively to architects, interior designers, designers and specifiers.

Dimension stone: Natural stone quarried and prepared as blocks, slabs or components for architectural and design use.

Graffito: A decorative technique in which lines are incised into a stone surface and filled with a contrasting material.

Kerf: The cut or slot made by a saw, including the material lost through the width of the blade.

04

Fellowship Learnings

1. Stone becomes waste through decisions

The first finding was that waste is not a fixed material category. Stone becomes waste for practical reasons: a flaw interrupts the intended cut; a remnant is too small for the next order; an irregular block cannot be handled by standard machinery; storage costs more than a likely sale; or a buyer is not available when the space is needed. None of these conditions necessarily means that the stone is unusable.

Carrara: extraction and value

In the Apuan Alps, quarrying is visible at landscape scale. White cuts interrupt the darker mountain, while roads, stockpiles, workshops and nearby towns reveal a region organised around extraction. The visit made the distance between an interior sample and its source difficult to ignore.

Historic quarrying relied on specialist roles, physical risk and slow transport. Diamond wire, drilling and heavy machinery now separate and move blocks with far greater speed. These tools allow more precise extraction, but they do not prevent large quantities from falling outside the dimension-stone market. Research into the Carrara basin describes substantial quarry waste and the movement of marble slurry through the region's permeable karst systems (Piccini et al. 2019; Tazzini et al. 2024).

Carrara also exposed a contradiction within the global stone trade. At Graziani Marmi, imported and local stones sat side by side, revealing a supply chain extending far beyond Italy. Blocks from regions including Turkey, Iraq and Afghanistan are shipped in full to be cut in Italy, where expertise and machinery are aligned with Western market expectations. Raw stone may therefore travel long distances before and after processing, placing much of its value at the point of refinement rather than origin.

Marble is marketed internationally as a rarefied architectural finish, yet a substantial secondary industry reduces high-purity stone to calcium carbonate for paper, paint, plastics, pharmaceuticals and other products. Powder and slurry have legitimate uses when stone can no longer remain whole. More concerning was the speed with which a material carrying geological, cultural and craft value could become an anonymous industrial filler.

That luxury image sat uneasily beside visible economic strain in parts of the surrounding community. Extraction has transformed the landscape, while ownership, processing and value increasingly extend beyond the local craft economy. The concern was not only material loss, but the erosion of knowledge and skilled work in the place from which the stone's prestige is drawn.

For the Australian A&D community, the lesson is to look beyond the sample board. Material education should include origin, quarry conditions, extraction yield, processing location and the labour retained locally. Better specification begins with better questions about where value accumulates and what is left at the source.



Figure 2. Apuan Alps quarry landscape, Carrara. Image credit: Marlo Lyda.



Figure 3. Quarried Carrara blocks awaiting selection. Image credit: Marlo Lyda.



Figure 4. Imported and local slabs crated for shipment to Australia at Graziani Marmi, Carrara. Image credit: Marlo Lyda.

Cava Valsora: observation changed the operation

At Cava Valsora, Laura Angeloni explained how a rain-fed lake had formed in an earlier waste pit. The water supported Chara algae and the Apuan Alpine newt. Rather than continue an open-cut path through the area, the quarry redirected extraction into the mountain. Its Symbiosis project, established in 2018, placed active extraction beside a protected habitat.

The visit did not suggest that quarrying becomes harmless through one intervention. Its value was more specific. A condition first read as an inconvenient remnant of earlier work was observed carefully enough to alter subsequent decisions. Environmental care here was attached to quarry planning, access and finance, not added later as a statement.



Figure 6. Apuan Alpine newt in the Cava Valsora bio-lake. Tour led by Laura Angeloni. Image credit: Marlo Lyda.



Figure 5. Cava Valsora bio-lake and quarry exterior; the lake formed in a former quarry-waste pit. Tour led by Laura Angeloni. Image credit: Marlo Lyda.

Theodore Psychoyos: the labour of retaining large remnants

Theodore Psychoyos's studio offered the clearest contemporary example of designing from large pieces that had already been rejected or left behind. The stone was not ordered to match a finished drawing. Available monoliths were assessed for scale, stability, surface and the least intervention required to make them usable.

This apparent simplicity concealed substantial labour. Large remnants require storage, lifting equipment, transport, safe positioning and a workshop capable of cutting or drilling mass. They also require relationships with quarry operators and closed or disused yards. Salvage at this scale is not inexpensive material followed by inexpensive production. The cost removed from extraction or purchase is often reallocated to handling, judgement and craft.

This distinction is important for Lyda's practice. Recovered stone should not be presented to clients as a cheaper version of new stone. Its value lies in the material already available and in the work required to retain its particular form.

2. Fragments can remain legible

The historical research showed that fragments have long been used for practical, decorative and political purposes. Mosaic, opus sectile, pietre dure, graffito and spolia each provide a different way of working with the partial piece. They also show that reuse is not automatically modest or sustainable. Fragments can communicate wealth, conquest, devotion and technical mastery.

Pikionis: composition without uniformity

Dimitris Pikionis's paths around the Acropolis were constructed between 1954 and 1958 using local and recovered material, including fragments from demolished nineteenth-century Athens (Cope 2017). Broken pavers, worked stone and irregular pieces are composed into paths, landings, walls and drainage details. At first glance the arrangement appears loose. Walking it reveals repeated alignments, changes in scale and carefully managed transitions.



Figure 7. Theodore Psychoyos's studio, showing monolithic forms and remnant details. Image credit: Marlo Lyda.



Figure 8. Detail of Pikionis's pathway showing mixed fragments. Image credit: Marlo Lyda, 2025.

The lesson was not that fragments should be placed randomly. Pikionis established order without requiring identical units. Existing edges and earlier work remained visible, while the composition gave them a new relationship. This is directly relevant to recovered-stone furniture and interiors, where visual coherence is often assumed to depend on standardisation.

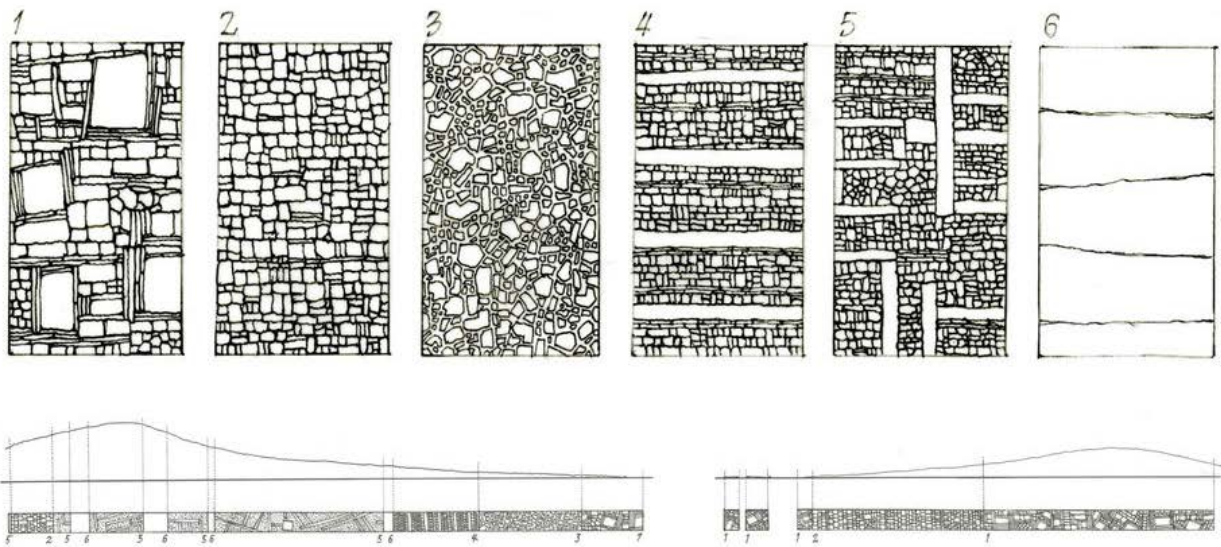


Figure 9. Dimitris Pikionis, paving studies for the Acropolis and Philopappos paths, 1954–57. Benaki Museum, Neohellenic Architecture Archives. Source: Copeland 2022.



Figure 10. Detail of Pikionis's pathway showing bore holes. Image credit: Marlo Lyda, 2025.

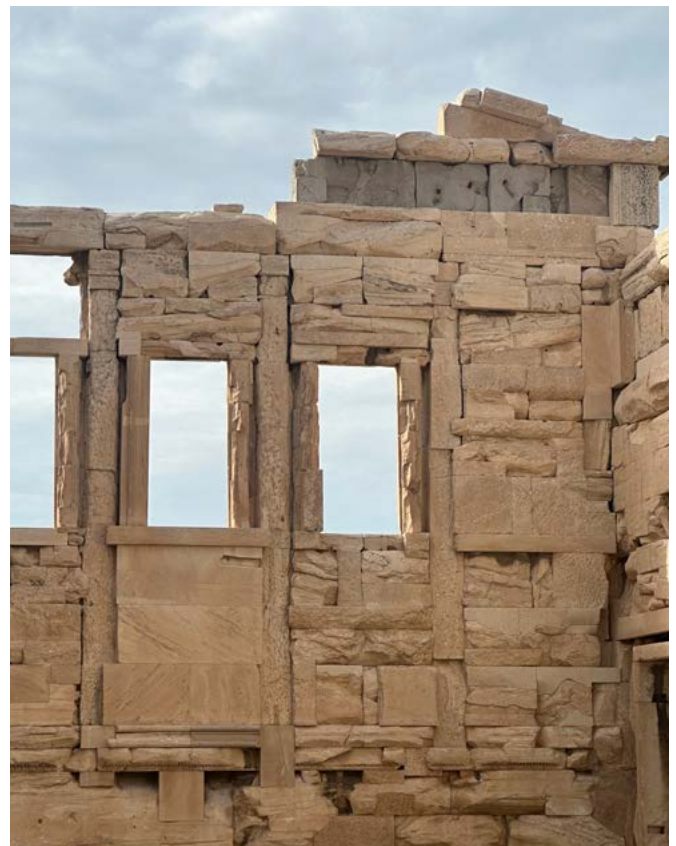


Figure 11. Spolia used at the Acropolis, Athens. Image credit: Marlo Lyda, 2025.

The Unswept Floor: waste as the subject

The Asàrotos òikos mosaic in the Gregorian Profane Museum at the Vatican dates to the Hadrianic period and is signed by Heraclitus. It depicts the remains of a banquet: shells, bones, fruit and a mouse eating a walnut. The subject refers to an earlier mosaic by Sosus of Pergamon described by Pliny the Elder (Pliny 1962; Vatican Museums n.d.).

The work is technically precise. Tiny coloured tesserae describe broken shells, reflective surfaces and shifting shadows. The scene looks casually scattered, yet every fragment has been selected and placed. It also contains social information. Imported food and the Murex shell signal wealth and trade; the unswept floor implies the labour of slaves who would clear it; and the banquet remains can be read as a reminder of mortality.

For the Fellowship, the mosaic changed the emphasis of the research. The initial question concerned how waste might be returned to use. The mosaic demonstrated a more specific possibility: waste can remain the subject after it has been remade. The scraps are not processed until their origin disappears. Extraordinary craft keeps their status as evidence in view. In a contemporary context, the radical act is not simply to use a discarded material, but to allow what was already available to direct the design.

This is not a claim that every offcut must carry a story or that visible damage is inherently beautiful. It is a design test. When a bore hole, broken edge, polished face or change in thickness records the earlier life of a piece, removing it may also remove useful information. The designer can decide which traces contribute and which must be altered for safety, performance or clarity.



Figure 12. Asàrotos òikos mosaic, Gregorian Profane Museum, Vatican Museums. Image credit: Marlo Lyda.



Figure 13. Tesserae detail, Asàrotos òikos mosaic, Gregorian Profane Museum, Vatican Museums. Image credit: Marlo Lyda.

Mosaic, Siena and pietre dure: techniques of selection

At Fabio Bordi's Rome workshop, mosaic was understood less as an image made from uniform pixels than as a repeated process of cutting, sorting and adjustment. Tesserae vary in colour, thickness and surface, and the craftsperson maintains a working rhythm while responding to those differences. Bordi's collection of salvaged ancient stone demonstrated why even very small pieces retain value. Many colours used in imperial Rome are no longer quarried or available from their original sources. To repair historic work, or remain faithful to Rome's established material palette, artisans recover fragments through demolition salvage and resale. This relies on a shared visual and material education: the ability to recognise significance in a piece too small for conventional fabrication and retain it as part of the city's material history.

The floors of Siena Cathedral employ several related approaches. Early panels use graffito, with lines incised into pale marble and filled with dark material, while later works incorporate coloured stone and inlay. The surface operates like a drawing at an architectural scale. Graffito was especially relevant because it creates a strong graphic effect through relatively little removal or disruption of the stone itself. Circles, triangles and straight-edged sections can similarly be produced through repeated saw cuts or core-drilling, then arranged with considerable richness.

The mosaic floors throughout the Vatican Museums demonstrate the range possible through repeated geometries. They move from finely detailed monochrome images to broader compositions of recurring shapes that frame central motifs. Elsewhere, large stone sections approach the logic of palladiana flooring, defining thresholds, directing movement and framing how works are encountered. Each floor is specific to its setting. The recurring unit may arise from the careful use of small remnants or, in more ceremonial settings, from an abundance of material chosen to impress.

At the Museo dell'Opificio delle Pietre Dure in Florence, the natural pattern of each fragment is selected as part of the image: a vein becomes a fold, a patch of colour becomes a leaf, and tonal variation produces depth. The material is studied closely enough to direct the image—a kind of crystallised biomimicry. The fitting is extraordinarily precise, often making the joint nearly disappear. For Lyda, the practical principle is transferable even when the finish is not. Existing pattern, thickness and geometry can direct placement; the joint does not always need to be concealed to demonstrate care.



Figure 14. Mosaic in progress at Fabio Bordi's workshop. Image credit: Marlo Lyda.



Figure 15. Selection of ancient stones no longer quarried, Fabio Bordi's workshop. Image credit: Marlo Lyda.

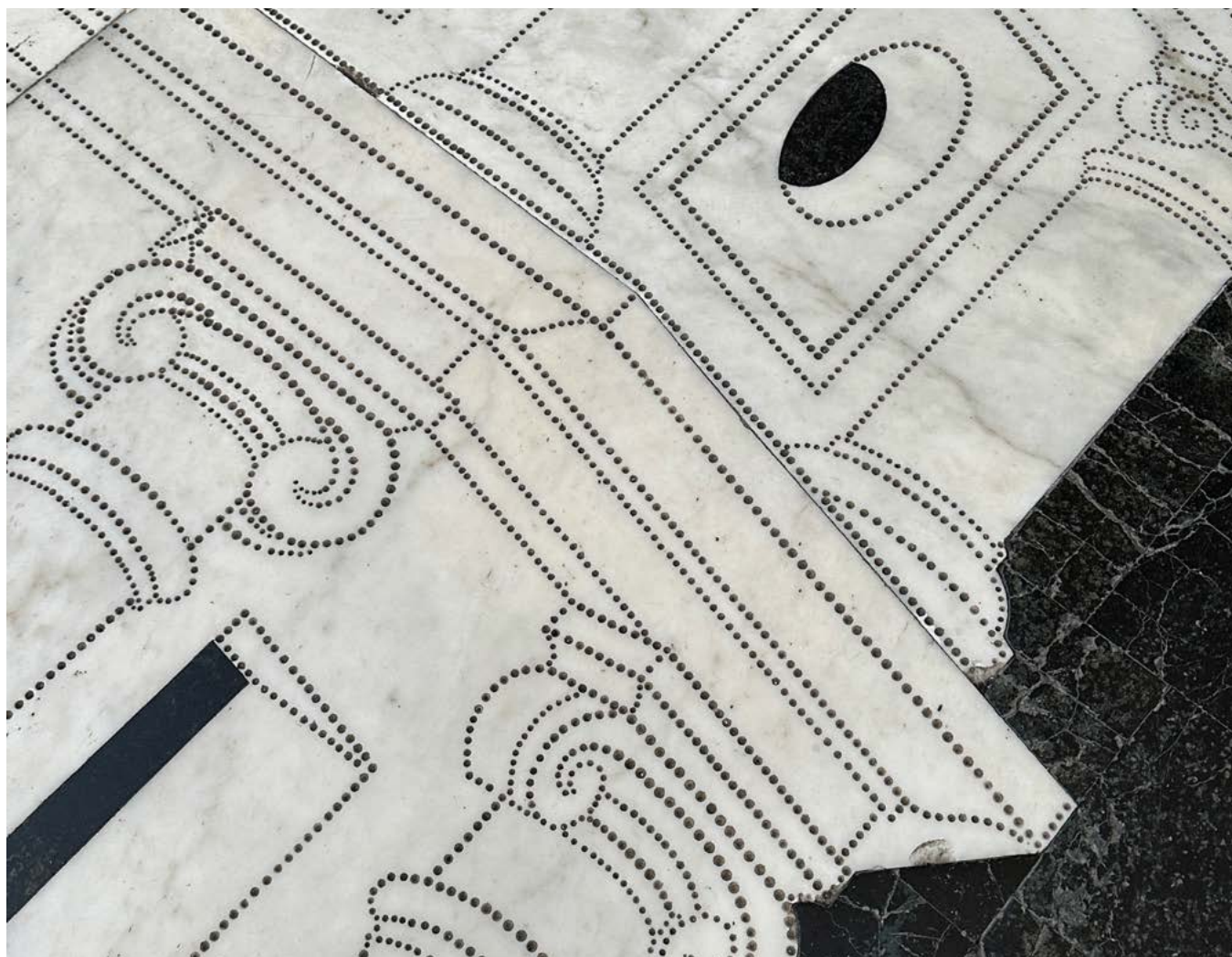


Figure 16. Graffito detail, Siena Cathedral. Image credit: Marlo Lyda.



Figure 17. Finely detailed mosaic floor, Vatican Museums. Image credit: Marlo Lyda.



Figure 18. Geometric mosaic floor, Vatican Museums. Image credit: Marlo Lyda.



Figure 19. Palladiana-style mosaic floor, Vatican Museums. Image credit: Marlo Lyda.



Figure 20. Display of stone variation and inventory at the Museo dell'Opificio delle Pietre Dure. Image credit: Marlo Lyda.

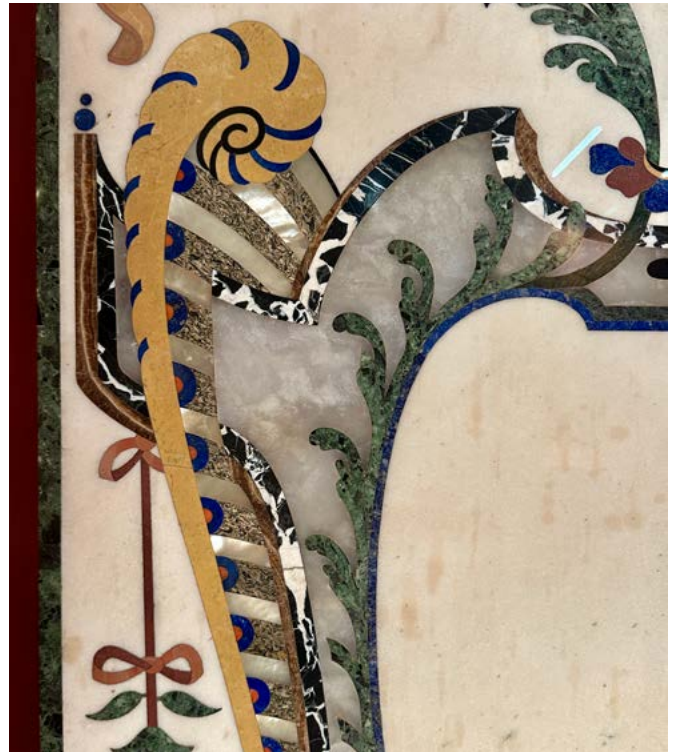


Figure 21. Pietre dure detail at the Museo dell'Opificio delle Pietre Dure. Image credit: Marlo Lyda.



Figure 22. Pietre dure detail showing the selection of natural veining, Museo dell'Opificio delle Pietre Dure. Image credit: Marlo Lyda.

Technique index: reuse opportunities

The techniques below translate the historic and workshop research into possible applications for recovered stone. They are not proposed as fixed products, but as starting points for prototyping with Australian fabricators and available material.

Technique	How it works	Reuse opportunity	Possible application
Mosaic	Small fragments are cut, sorted and set in mortar or another stable bed.	Uses pieces below slab scale; colour and surface variation become part of the composition.	Furniture surfaces, wall or floor inserts, panels and lighting bases.
Dry-fit assemblage	Brick and stone fragments are shaped and held through gravity, compression or reversible fixings.	Combines inconsistent pieces without permanently bonding every element.	Plinths, side tables, shelving, screens and low-load interior structures.
Simplified pietre dure / CNC inlay	Fragments are selected for colour and veining, digitally mapped, cut and fitted into a larger composition.	Allows irregular stock to contribute to a repeatable image or pattern while keeping selected joints visible.	Tabletops, cabinet fronts, wall panels and lamp bodies.
Graffito or incision	Shallow lines are cut into a surface and filled with a contrasting material.	Adds narrative or graphic detail with limited loss of stone.	Furniture tops, tiles, wall panels and architectural inserts.
Core drilling and turning	Small quarry sections or offcuts are drilled into blanks, then turned, cut or nested.	Creates standard component families from modest pieces and can generate smaller secondary blanks.	Lamp components, vessels, feet, handles and fixings.
Alabaster assembly	Smaller sections are accurately joined, then cut, turned, polished or CNC finished as one component.	Makes larger or more consistent forms possible without requiring one large flawless block.	Translucent shades, columns, panels and decorative objects.
Relief, masking and staining	Thickness, carved relief, opaque masks or tested stains control colour, shadow and light transmission.	Uses clouding and tonal variation as active features rather than defects.	Wall lights, lamp shades, illuminated panels and small inserts.

3. Technique depends on the workshop around it

The Fellowship reinforced that stone knowledge is distributed across people, tools and facilities. A designer may propose a way to reuse a fragment, but its feasibility is shaped by the saw, drill, lifting equipment, extraction system, bench space and safety procedures available. Material-led work therefore requires early discussion with the people who will make it.

Barbany Artesans: digital and hand knowledge

Barbany Artesans in Llinars del Vallès has produced complex stone components for the Sagrada Família. The workshop demonstrated a production sequence in which digital models and CNC cutting establish geometry, while stone selection, tool-path decisions, checking and hand finishing remain dependent on specialist judgement (Barbany Artesans 2020).

The visit resisted a simple opposition between machine production and craft. Digital tools can reduce repetitive removal, record complex forms and improve accuracy. They do not make the stone predictable. Veins, inclusions, tool access, support during cutting and the required finish still affect the result. The relevant question is not whether a process is traditional or contemporary, but whether it extends or overrides material knowledge.

For remnant work, digital scanning and modelling could help fit a design to an existing irregular piece. This would be useful only if the cost of scanning, programming and setup remains proportionate to the work. Hand measurement and full-scale templates may be more effective for one-off pieces.



Figure 23. Sagrada Família façade component being CNC-machined at Barbany Artesans. Image credit: Marlo Lyda.



Figure 24. Craftspeople discussing hand finishing for a Sagrada Família façade, with reference templates in view at Barbany Artesans. Image credit: Marlo Lyda.

CIDA: practical research in alabaster

The two-week residency at CIDA was the Fellowship's most sustained practical component. Alabaster from Aragón is a compact form of gypsum that can be carved with modest hand tools, ground into plaster and made translucent when thinned. These qualities suit lighting, although the material bruises easily, responds poorly to water and may contain fissures that redirect a cut or fracture thin sections.

A visit to a nineteenth-century house built from alabaster stone, with ground gypsum used as mortar, revealed a vernacular application of the material. Alabaster functioned as both stone and binder, showing how local construction once drew directly from what was available.

Rather than producing one resolved object, Lyda developed practical tests centred on translucency and the available hand tools. She documented the tools as an experimental inventory, then used their shapes as recurring motifs across carving, masking, shadow and image-making.

Masking tests explored how opaque areas interrupt transmitted light and cast silhouettes across the stone. These developed into cyanotypes using the tools and their negative spaces. Informed by Romano Bianchi's experiments with pigments, Lyda also attempted to stain alabaster with cyanotype chemistry. Although unsuccessful, the test demonstrated the difficulty of applying water-based treatments to gypsum.

Relief carving tested how changes in thickness affect light transmission, allowing images to emerge through illumination rather than colour. Ground alabaster was trialled as a plaster, while a small *pietra dure* experiment combined differently coloured pieces. The inlay required greater precision, specialised tools and tacit knowledge, but demonstrated potential for combining colour, jointing and translucency in future lighting.

The residency also revealed practical constraints. Language differences sometimes affected instruction, while the workshop was primarily equipped for conventional sculpture. Supports and machinery suited to solid blocks did not always accommodate the thin sections and lighting applications Lyda proposed. Some tests were therefore smaller or less resolved than planned. This became a useful finding: a workshop is not neutral, and its equipment shapes what can be made.



Figure 25. Experimental inventory of alabaster-working tools at CIDA. Image credit: Marlo Lyda.

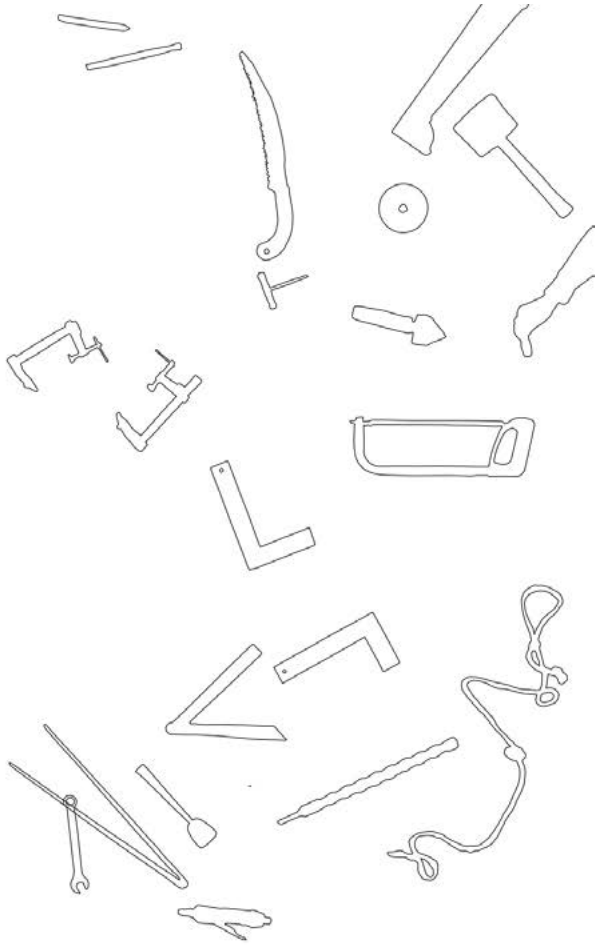


Figure 26. Graphic study of the hand tools available at CIDA.
Image credit: Marlo Lyda.

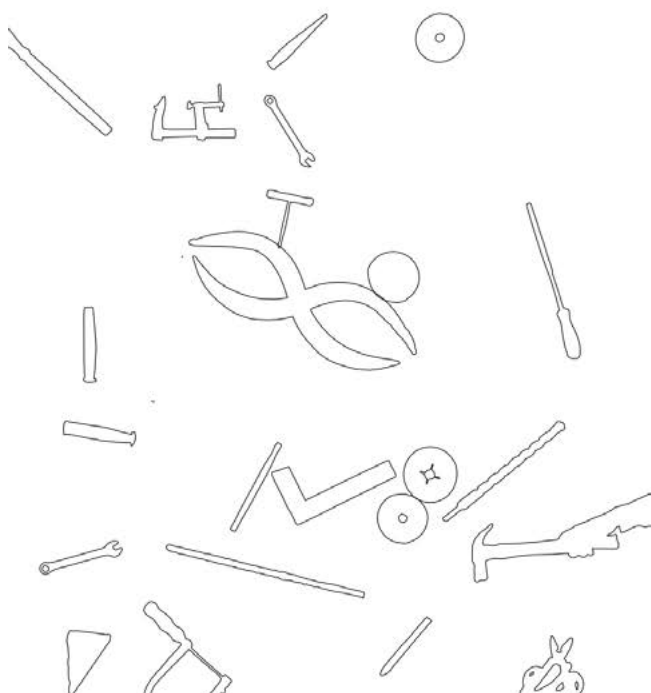


Figure 27. Lyda undertaking silhouette and masking tests. Image credit: Santiago Martínez.

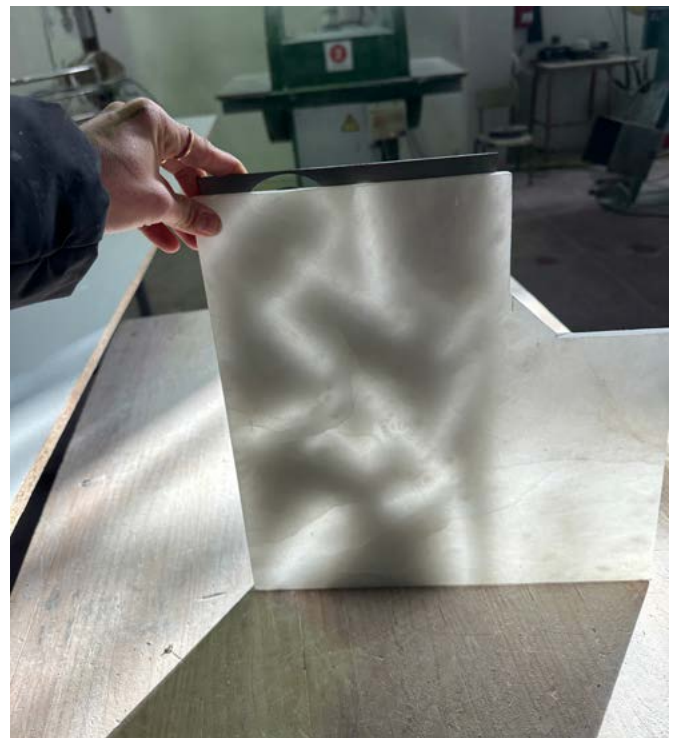


Figure 28. Alabaster masking and translucency test. Image credit: Marlo Lyda.



Figure 29. Cyanotype study using alabaster-working tools. Image credit: Marlo Lyda.



Figure 30. Relief-carving test using a tool motif, in progress. Image credit: Marlo Lyda.

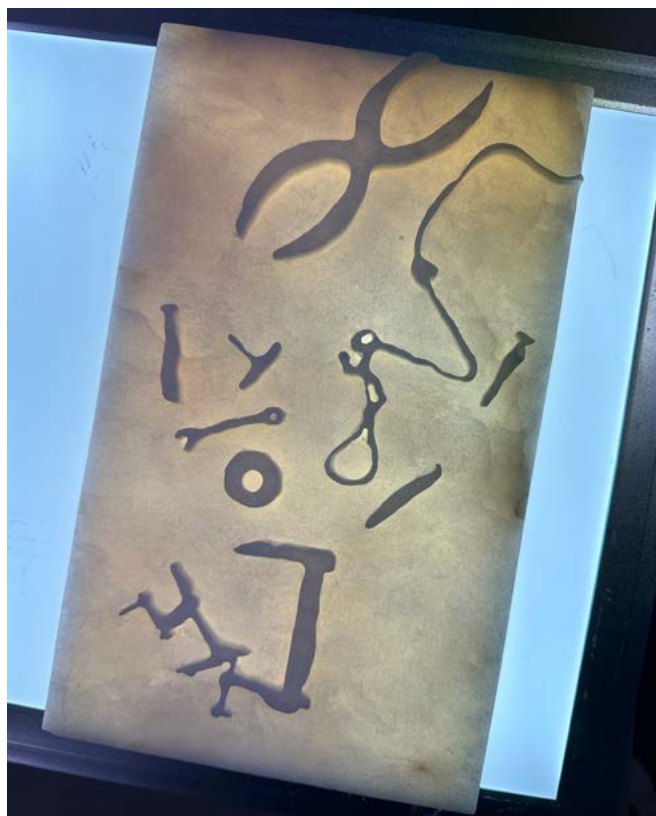


Figure 31. Completed relief-carving and translucency test. Image credit: Marlo Lyda.

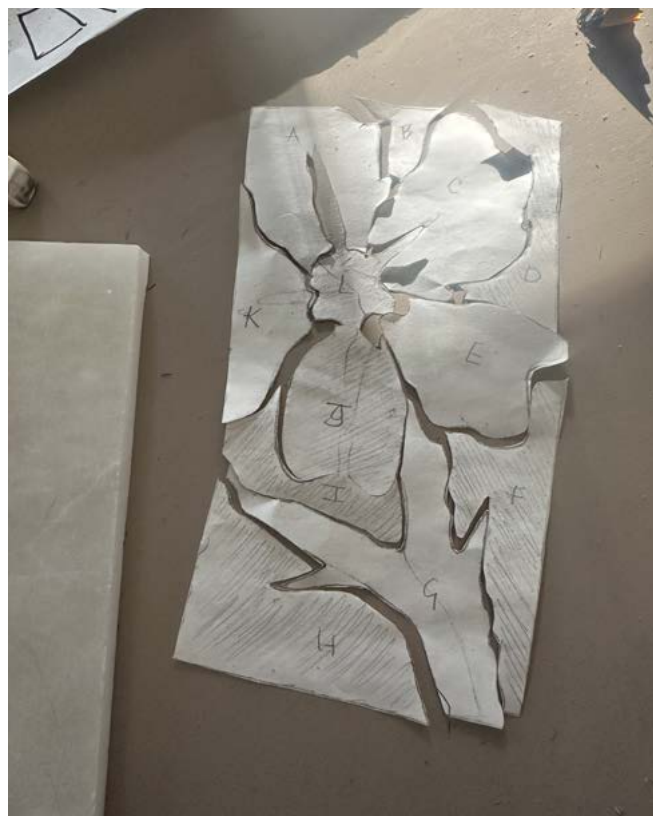


Figure 32. Template for an alabaster pietre dure test. Image credit: Marlo Lyda.



Figure 33. Completed alabaster pietre dure test. Image credit: Marlo Lyda.



Figure 34. Nineteenth-century house constructed from alabaster stone, with ground gypsum used as mortar. Image credit: Marlo Lyda.

Romano Bianchi: alabaster in production

A visit to Romano Bianchi's workshop in Volterra provided an important comparison with the CIDA residency. Founded in 1959 and sustained as a family practice, the workshop specialises in alabaster objects and lighting, working from locally sourced stone through to finishing (Romano Bianchi n.d.). Bianchi was notably generous with practical information and open to future collaboration.

The modest workshop was well equipped. Small quarry sections were drilled into blanks, turned, sawn, CNC-cut and polished. Digital machining improved accuracy and repeatability, then gave way to handwork where judgement mattered. Smaller sections were also joined so precisely that the assembly was almost imperceptible. Reuse was embedded in the production logic, with each piece directed towards a form appropriate to its size.

The visit also broadened the decorative possibilities of alabaster. Inlay brought together translucent sections of varied colour, extending pietre dure principles through a material that also carries light. Bianchi's staining experiments suggested another way to intensify colour while retaining the material's clouding and natural



Figure 35. Industrial hole-saw drill used to cut alabaster blanks for turning and handwork. Image credit: Marlo Lyda.

variation. The encounter was both technical and relational: it established a credible fabrication pathway for future lighting components and a practical connection beyond the Fellowship.



Figure 36. Romano Bianchi holding a turned alabaster work in progress. Image credit: Marlo Lyda.



Figure 37. Finished alabaster lighting components. Image credit: Marlo Lyda.



Figure 38. Dyed alabaster tests. Image credit: Marlo Lyda.



Figure 39. Romano Bianchi holding a recently completed alabaster pietre dure bowl made by his wife. Image credit: Marlo Lyda.



Figure 40. CNC-cut alabaster lighting components before hand finishing. Image credit: Marlo Lyda.

Display alters how stone is read

Several visits concerned less with waste than with presentation also proved useful. Florence's Museo Stefano Bardini was assembled by the dealer and collector as a setting for historic objects. Saturated blue walls, controlled daylight and dense arrangements are far from the neutrality of a contemporary gallery. Stone, timber, metal and architectural fragments are read through colour, proximity and atmosphere. The display does not change the material, but it changes the attention given to it.

Sir John Soane's Museum in London offered a related example at greater density. Casts, fragments, architectural models, capitals and carved details are fitted throughout the house. A partial cornice or copy need not perform as a complete monument to remain useful; it stores proportion, technique and reference. This was relevant to Lyda's growing collection of offcuts and failed tests: a fragment can operate as a working archive when its source and process are recorded.

At 15 Clerkenwell Close, designed by Groupwork under Amin Taha, limestone forms a load-bearing structural frame rather than a thin applied finish. Quarry and sawn conditions remain visible across parts of the exterior. The project was not verified during the Fellowship as using recovered stone and is not presented as a salvage precedent. Its relevance is the fuller use of stone's structural capacity and the way unfamiliar surface conditions were made part of the architecture.

Together, these visits showed that value is partly produced by context. Classification, lighting, adjacency and explanation determine whether an irregular piece reads as evidence, a sample or simply damage. For future exhibitions and client presentations, recovered stone should therefore be shown with enough information to be understood: where it came from, what process left the mark, what was retained, and what new work was required.



Figure 41. Recovered busts, cornices, columns, sculpture and reproductions at the Museo Stefano Bardini, Florence. Image credit: Marlo Lyda.

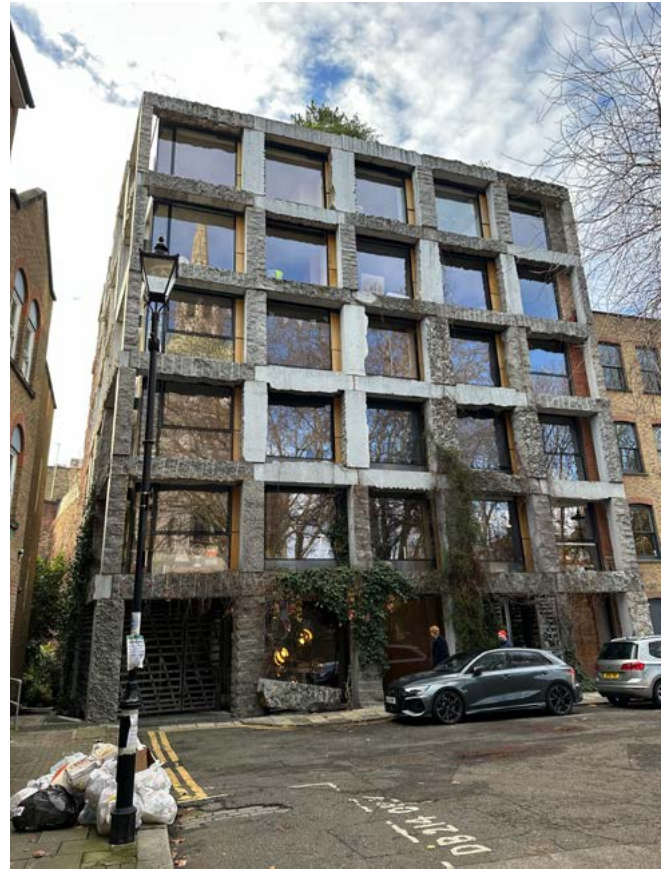


Figure 42. 15 Clerkenwell Close, London, designed by Groupwork under Amin Taha. Image credit: Marlo Lyda.

4. Reuse changes the design process

Conventional specification begins with a drawing and sources material to match it. Remnant-led work begins with an inventory. The available piece is measured, photographed and assessed before proportions and joints are fixed. This reversal may appear minor, but it changes authorship, scheduling and client expectations.

A fragment contains decisions made by geology, machinery, an earlier project and previous use. Its edge may determine the span of a table. A core-drilled hole may become a fixing point or a decorative interruption. A polished face may sit beside a sawn one. The designer's role is to decide where those conditions can remain and where new work is necessary.

The main commercial obstacle is not technical but visual expectation. Clients often approve stone from a small sample and expect uniformity. Recovered material requires a different agreement: variation must be established early and shown at scale through photographs, samples and mock-ups.

Labour must also be accounted for. Irregular pieces take time to measure, move, match and join. Salvage may reduce new material use while increasing skilled work - not an inefficiency, but a redistribution of value from uniform stock to craft.

Australian waste data provides scale but not always clarity. The National Waste and Resource Recovery Report recorded 26.8 million tonnes of building and demolition waste in 2022–23, with recovery above 80

per cent (DCCEEW 2025). Recovery may include crushing masonry into aggregate - valuable where reuse is impractical, but not equivalent to retaining intact slabs or components.

The Fellowship did not identify a single missing technology. The barriers are cumulative: materials are not measured before disposal; ownership is unclear; storage is limited; transport can outweigh value; and project timelines are set before stock is found. These conditions favour uniform new slabs, even when suitable remnants exist. A design response must work within these constraints, rather than rely on the virtue of the material alone.

Material evidence: a working index

The Fellowship identified recurring traces that can be recorded before a stone fragment is altered. The index below is intended as a studio and teaching tool rather than a fixed aesthetic rule.

A basic record should include photographs at a consistent scale; overall dimensions and thickness; approximate weight; material type where known; surface finish; holes, fixings and repairs; visible fissures; source and date of recovery; and lifting or handling requirements. Recording should occur before cleaning or cutting, while the earlier condition remains legible. The record can then distinguish inherited marks from new interventions, supporting design development, client approval and later repair. It also prevents an appealing narrative being attached to a piece after the evidence has been removed.

Trace	What it records	Possible response
Broken or quarry edge	Previous splitting, extraction or damage	Retain as an outer edge; stabilise only where required. Avoid using a friable edge at a load or contact point.
Sawn face	Machine direction and an earlier fabrication stage	Place beside a polished face to show process; hone only where cleaning, touch or sealing requires it.
Polished face	Former intended presentation surface	Use as a point of contrast or evidence of prior use. Check sealers and staining before rebonding.
Core-drilled hole	Earlier fixing, service penetration or slab cutting	Use as a fixing, cable route, shadow detail or compositional marker if location and edge distance are safe.
Chisel, point or claw marks	Hand removal and finishing	Retain where stable; repeat selectively to connect old and new work without imitating age.
Fissure or vein	Geological formation and possible weakness	Use light or placement to reveal it, but assess stability. Reinforcement should be disclosed where it changes future repair.

Stain, weathering or patina	Exposure, handling and previous environment	Clean only to the level required for hygiene, adhesion and legibility. Test cleaning on a small area.
Irregular thickness	Earlier cutting, breakage or wear	Use packing, adjustable brackets or a stepped joint rather than grinding the whole piece to one thickness.
Small coloured fragment	Rare material or remnant of a larger decorative scheme	Sort by colour and thickness for mosaic, repair, inlay or samples. Keep provenance where known.
Powder and slurry	Material already reduced below component scale	Consider plaster, casting or aggregate only after intact reuse is no longer practical; test binders, dust risk and durability.

05

Personal, Professional and Sectoral Impact

Personal and professional impact

The Fellowship clarified both the direction of Lyda's practice and the role she is best placed to take within the wider issue of stone reuse. She began by looking for techniques that could extend Remnants, but returned with a stronger understanding that design outcomes depend on the systems surrounding the material: how it is classified, stored, communicated and made available.

The research confirmed that Lyda is not positioned to operate the logistical infrastructure required for large-scale recovery. Her value lies in making the opportunity visible through design, material research, education and exhibition. This distinction has given the work a clearer professional direction: to test what a custodianship system could enable, demonstrate value through objects and connect the idea with suppliers, fabricators, specifiers and potential operators.

Practically, the Fellowship strengthened Lyda's knowledge of extraction, stone processing, digital fabrication, mosaic, inlay and alabaster. It also established new relationships with specialist practitioners, including a possible pathway into translucent stone lighting with Romano Bianchi.

The research will now inform four connected areas of practice: redevelopment of Remnants as an adaptable system; material research into Carrara and calcium carbonate; teaching focused on the knowledge required to work with reclaimed material; and public programs that bring industry and wider audiences into the discussion. Together, these outcomes extend Lyda's practice from using available fragments towards actively shaping how their value is understood and communicated.

Educational impact

The research established that working effectively with reclaimed material requires its own knowledge and craft practices. Designers must learn to identify inherited marks, work with irregular dimensions, understand previous processing and consult those who hold relevant material knowledge.

These are behavioural as much as technical skills. Introduced early in design education, they can help students approach reclaimed material as a viable commodity rather than a compromised substitute for virgin material. The Fellowship provides historical precedents, contemporary case studies and practical techniques through which this capacity can be developed.

Broader relevance

Australia's stone-waste problem is not only a question of volume. It is a failure of value transfer. Useful remnants are often retained informally by suppliers in the hope that a visitor may find a use for them. Once storage becomes difficult, however, they enter mixed waste. Relatively little material is recovered through incidental selection, while limited amounts are collected for secondary processing into aggregate or other products.

Once a remnant enters mixed waste, information about its material, colour, dimensions, finish and origin is usually lost. Without that information, it becomes difficult to specify, store or sell regardless of its physical quality. Greater reuse therefore depends on recognising and categorising the material before disposal.

This presents an opportunity for an independent service positioned between stone suppliers, fabricators and the A&D sector. Such a business could collect, document, sort and store remnants, potentially with in-house capacity to process material into aggregate, terrazzo or moulded elements. Suppliers already bear the cost of handling and disposing of waste; a reliable collection service could reduce this burden while retaining material within a higher-value market.

The system would need to work with the consistency expected by specifiers. Exact stone types and tones are difficult to guarantee, particularly across smaller fragments. Instead, material could be organised into broad 'house' colour ranges, allowing controlled variation within a clearly understood palette. Clients would select a colour range while accepting the natural differences within it.

Classification should also preserve the largest viable use. Large sections could remain available for interiors, architectural elements, furniture or complete product reworking. Medium fragments could supply palladiana, mosaic, terrazzo or composite surfaces. Only material unsuitable for intact reuse would be crushed into aggregate.

Colour-specific aggregate is particularly important. Terrazzo manufacturers and specifiers rely on controlled palettes, and decorative chips are commonly sourced to meet those expectations. Locally recovered stone could support comparable finishes if collected, separated and processed consistently. The value of this product stream could, in turn, help sustain the wider recovery system.

A custodianship record or material passport could remain with the stone as it moves between supplier, recovery service, designer, fabricator and client. This would preserve available information about origin, processing and previous use while making responsibility for the resource clearer at each stage.

The sectoral opportunity is not to ask individual designers to become salvage operators. It is to establish a legible connection between existing waste streams and professional specification, allowing reclaimed stone to become a reliable material category rather than an occasional discovery.

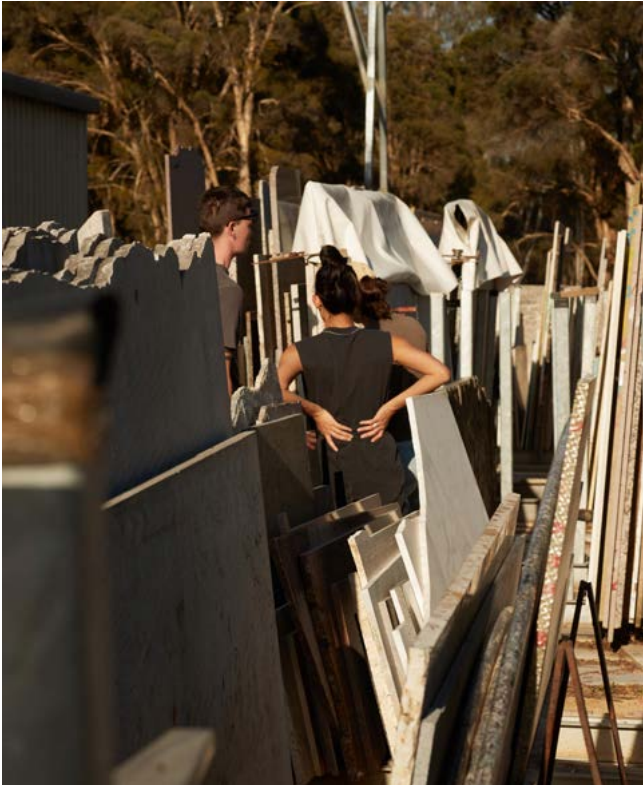


Figure 43. Second Edition, Natural Brick Co. and Lyda sourcing remnant stone for several projects at a regional stone yard, 2024. Image credit: Traianos Pakiufakis.



Figure 44. Bore-hole edge on a Remnants piece during the same sourcing trip, 2024. Image credit: Traianos Pakiufakis.

06

Recommendations and Considerations

1. Test a small-scale custodianship model

Lyda should initiate discussions with a small group of stone suppliers, fabricators and reclamation businesses to test a local pilot. Natural Brick Co., Second Edition and selected stone and aggregate suppliers provide useful starting points for examining collection, storage, processing and market demand.

The pilot could operate through one supplier, separating usable remnants as they are produced and arranging collection before they enter mixed waste. Lyda's role would be to help frame and communicate the model, not to operate the eventual service.

2. Develop a practical classification system

Stone should be recorded at recovery by broad colour range, material type where known, dimensions, thickness, finish and condition. It should then be divided according to its largest viable use: intact sections, medium fragments and material suitable only for aggregate.

A digital inventory, supported by consistent photographs and custodianship records, would allow architects and designers to assess available material. Broad colour ranges would provide the controlled variation required for specification without imposing unrealistic uniformity on reclaimed stock.

3. Demonstrate value through design

Lyda should redevelop Remnants using repeatable frames, joints and digital templates that can respond to a changing inventory. This would demonstrate how a recognisable collection can be produced without requiring standardised stone.

A separate project focused on Carrara is also called for. The Fellowship raised serious environmental and social questions about its continued use as an uncomplicated symbol of luxury, particularly when substantial quantities are reduced to inexpensive calcium carbonate filler.

Further material research into calcium carbonate could explore this contradiction directly. Using the substance into which marble waste is commonly reduced would provide a way to examine the distance between Carrara's cultural image, its patterns of extraction and its ordinary commercial afterlife.

4. Establish three pathways for knowledge transfer

The research should be shared through three distinct formats: a university course or lecture series that builds foundational knowledge of reclaimed materials; a one-day workshop for practising architects, interior designers and specifiers; and an exhibition and public program that convenes industry, practitioners and wider audiences. Each addresses a different point of influence: future practice, current specification and broader sector discourse.

07

Dissemination and Stakeholder Engagement

University education

Lyda will develop a term-long university course, supported where appropriate by shorter lectures, for students in product design, interiors and architecture. The course will build the capacity to read reclaimed materials for their existing value rather than treating them as inferior substitutes for virgin stock.

Students will begin with reclaimed stone or another material carrying evidence of previous use. Through research and consultation with suppliers, fabricators or reclamation professionals, they will identify its likely origin, processing, former application and technical constraints. They will then develop a product, finish, interior element or system in which this history informs the work.

The material-evidence and technique indexes will support this process. Historical examples including mosaic, pietre dure, graffito and the work of Pikionis will demonstrate that designing with fragments relies on established forms of selection, arrangement and craft knowledge. The aim is to establish reuse as a learned design capacity and a normal starting point for practice.

A&D industry workshop

A separate one-day workshop will be developed for practising architects, interior designers and specifiers. Its focus will be on decisions made early in a project: what stone is specified, where it comes from and how associated remnants can be retained within the same interior or building.

The workshop will examine how slab offcuts might be redirected into furniture, shelving, thresholds, details, palladiana, terrazzo or other surfaces before disposal occurs. It will also address terrazzo and aggregate products as practical alternatives where fragments are too small for intact reuse.

Participants will be introduced to the proposed colour-range and custodianship system and invited to identify its limitations and opportunities from a specification perspective. This will help establish what information, consistency and technical assurance the A&D market requires before reclaimed stone can be adopted more widely.

Exhibition and industry forum

Lyda will explore an exhibition or pavilion proposal with Craft Victoria through its Conscious Craft initiative, potentially aligned with Melbourne Design Week. It would be conceived as a site of enquiry rather than a conventional display of finished work.

The exhibition could bring together stone remnants, material records, process photography, technical experiments and prototypes with contributions from people working across the material chain. Possible participants include stone suppliers, fabricators, reclamation businesses, terrazzo and aggregate producers, architects, interior designers, artists working with mosaic and stone, educators, and systems thinkers such as George Alexander Fellows Lauren Crockett and Raphael Karanikos.

For public audiences, the exhibition would communicate the larger story of geological time, extraction, luxury, labour and waste. For industry, it would provide a place to examine the proposed recovery pathway and identify where responsibility, knowledge and infrastructure are missing.

Talks and focused stakeholder workshops would accompany the exhibition. The objective would not be to present a complete solution, but to develop partnerships, test the custodianship model and identify an individual or business capable of taking the operational opportunity further. Lyda could facilitate and co-curate this process while contributing research, prototypes and design knowledge.

Writing and public discussion

A design essay will examine Carrara marble and the distance between its luxury image and the environmental, social and material conditions revealed through the Fellowship. Lyda will approach Aleesha Callahan about developing this conversation through an essay, interview or podcast.

The Carrara and calcium-carbonate project could extend this research through physical work, allowing the material itself to communicate the contradiction between rarefied architectural surface and inexpensive commercial filler. Together, the writing, exhibition and material research would make the Fellowship findings accessible without reducing them to a single proposed solution.

08

Conclusion

The Fellowship began with a practical question about stone waste and returned with a more precise account of how value is lost and retained. Carrara set the speed and scale of extraction against the material's long formation. At Psychoyos's studio and Cava Valsora, difficult remnants remained useful because people reorganised work around them. At CIDA, Barbany Artesans and Romano Bianchi's workshop, tools expanded what could be made but did not replace judgement.

Historic fragment practices made the central design finding clear. Pikionis, mosaic, graffito and pietre dure do not treat the partial piece as an embarrassment. They select, arrange and work with it. The Unswept Floor gives this position its sharpest form: the remains are not merely the raw material of the work; they are its subject.

For Australian architecture and design, the issue is not simply a shortage of reuse ideas. Useful stone is already held in fabrication yards, but its value is difficult to transfer once material information is lost and storage becomes impractical. A viable recovery pathway must document stone early, preserve its largest possible use and provide enough consistency for specification. Broad colour ranges, a shared inventory and custodianship records offer practical starting points, while colour-specific aggregate and terrazzo could help support the system economically.

Lyda's role is to make this opportunity visible rather than operate the eventual infrastructure. Through Remnants, further calcium-carbonate research, university education, an A&D workshop and a public exhibition, she can test the ideas at different scales and bring suppliers, fabricators, designers, educators and potential recovery operators into the same conversation.

The Fellowship therefore offers more than a method for Lyda's own practice. It identifies a design, education and business opportunity through which reclaimed stone could become a legible and specifiable resource. The question carried forward is not only what should remain visible when stone is used again, but what forms of custodianship are required to keep it in use.

09

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Fellowship fieldwork and discussions

Angeloni, L. 2025, site tour and discussion, Cava Valsora, Apuan Alps, Italy, November.

Barbany, A. and Barbany Artesans 2025, workshop visit and discussion, Llinars del Vallès, Spain, November.

Bordi, F. 2025, workshop visit and discussion, Fabio Bordi Mosaici Artistici, Rome, Italy, November.

Romano Bianchi workshop 2025, workshop visit and discussion, Volterra, Italy, November.

Centro Integral para el Desarrollo del Alabastro staff and practitioners 2025, technical residency and discussions, Albalate del Arzobispo, Spain, 17–28 November.

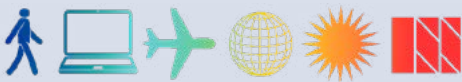
Psychoyos, T. 2025, studio visit and discussion, Piraeus, Greece, November.

10

Appendices

Appendix 1: Fellowship itinerary

Date	Country	Location	Research focus
15–20 October	Netherlands	Amsterdam and Dutch Design Week, Eindhoven	Contemporary material practice, exhibition and industry context
30 October–5 November	Greece	Athens and Piraeus	Disused stone yards; Theodore Psychoyos; Pikionis paths; Acropolis and museum
6–10 November	Italy	Rome	Vatican Museums; Unswept Floor; historic pavements; Fabio Bordi
11–14 November	Italy	Siena, Carrara, Volterra and Florence	Siena Cathedral; Apuan quarry research and Cava Valsora; Romano Bianchi alabaster workshop; pietre dure and museum research
15–17 November	Spain	Barcelona region	Barbany Artesans workshop and large-scale digital stone fabrication
17–28 November	Spain	Albalate del Arzobispo	Two-week practical residency at CIDA
5–10 December	United Kingdom	London	Sir John Soane's Museum; 15 Clerkenwell Close; MINT Gallery



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