

THE GLASGOW SCHOOL OF ART

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FRAGMENTS: RESTORING MACKINTOSH'S ICONIC LIBRARY LIGHTS

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DIPARCH STAGE 4 RESEARCH PROJECT**

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INTRODUCTION

The Glasgow School of Art is one of Glasgow's most famous buildings, often considered Charles Rennie Mackintosh's masterpiece. Built in two phases between 1897 and 1909, the Grade A listed building was severely damaged by a fire in May 2014. The building is now undergoing a restoration, ultimately based on its 1910 configuration, however, each room will be treated slightly differently and its hundred years of history is also intended to be evident.¹ There will be modern 21st century incursions such as fire doors, modern WC's, lighting (in part) and Wifi. However, the overriding aim is to give an opportunity in a select few spaces to feel what it was like in 1910. Throughout the building, the intention is to celebrate the 1910 interior whilst equipping the building for its 21st century life.¹

The decision to restore the building, as opposed to a modern re-working or a new building was declared by Muriel Gray, the then Chair of the Board of Governors at the school. In an interview with Channel 4 news the day after the fire took place she stated about the building: "The Library was one of the greatest works of art in a space... Mackintosh did not work in precious materials, Mackintosh worked in precious ideas and that can be rebuilt... What was wonderful and beautiful about Mackintosh wasn't the stuff it was made of, it was the way the space was arranged. And the beautiful objects and how he manipulated them within that space and so that will be recreated for everybody to enjoy again."² This decisive and public decision arguably prevented the School from finding itself in limbo debating what to do with the building. Given there will usually be a debate around any choice made, with people often having contrasting views.³

It is one of these components - the 'Library light fittings' - which are the focus of this research project, and more specifically their process of restoration and the methodology behind the restoration.

To understand the constraints and opportunities and to offer an opportunity for the public to be heard, the school held two symposiums entitled 'Building On: Mackintosh'. One of these occurred at the Venice Architectural Biennale - a city where Mackintosh himself went to sketch during his time as a student in 1891.⁴ Fittingly, the symposium was held in the Querini Stampalia - a sixteenth century building restored in 1961 by Carlo Scarpa. Here, one speaker, Chris Platt, then Head of the Mackintosh School of Architecture, discussed Venice's St. Marks Campanili which was also rebuilt in 1912 after its collapse, to the same form it was previously.⁵ A later symposium was held at the Glasgow School of Art providing an opportunity for local public - who would be greatest affected by the building - to have their say.

¹ Sarah MacKinnon, e-mail message to author, 7th April, 2017.

² Muriel Gray, interview with Channel 4 News 24th May, 2014.

<https://www.youtube.com/watch?v=CJfU4rNKKbY>

³ To read more about this:

<http://www.bbc.co.uk/programmes/articles/4tR37dg3bZtcWltqPRD8cfZ/mackintosh-library-to-be-restored-a-lost-opportunity>

⁴ Elaine Grogan, *Beginnings: Charles Rennie Mackintosh's Early Sketches*. (The National Library of Ireland, 2002), p169.

⁵ <https://buildingonmackintosh.wordpress.com/presentations-18-ottobre/>

ORIGINS

Much has been theorised regarding Mackintosh's influences and inspirations for his designs. His use of geometric forms are not so obvious in terms of their root origins; none more so than the Library light fittings.

Mackintosh's use of metal as a material for light fittings was not new at the art school. When considering his previous works, metal was used predominantly - brass was readily available and very economical. This made it an excellent choice to be used in the school, with its tight budget and history of overspending in the previous phase.

Metalwork was a focus for his wife Margaret Macdonald who worked extensively with decorative metalwork. Being familiar with such techniques would most certainly have had an influence and could easily have provided inspiration into a more practical form to suit its intended use. The malleability of soft metals was also an advantage in both designing and fabricating simple form light fittings. Mackintosh's earlier Ingram Street Tea Rooms, 1908, which contains the Oak Room, incorporated wall fitted electrical lighting.⁶ These fittings, whilst very simple in form compared with the Library's contained a brass frame, which featured much greater amount of glazing to enable a greater emittance of light. The beaten metal finish can be seen throughout his designs both at a domestic scale in his perspective drawings for House for an Art Lover and the public Tea Rooms previously mentioned. Like many of his fittings, they were fabricated with a brass frame, which was detailed with a far greater proportion of glazing to provide a greater emittance of light. These simple

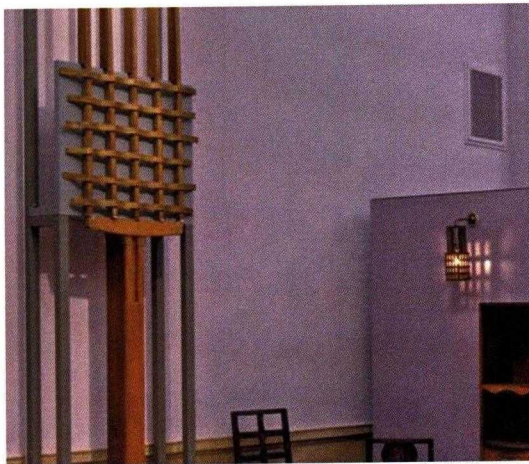


Fig.1 Ingram Street Tea Rooms features. Display in Kelvingrove Museum. From: The Kelvingrove Museum, <http://www.glasgowmackintosh.com/attraction/kelvingrove-art-gallery-museum> (accessed April, 2017)

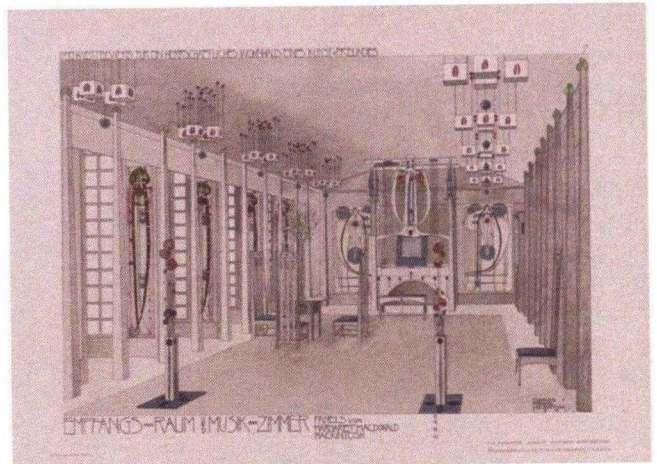


Fig. 2 Mackintosh, House For An Art Lover Perspective of reception and music room. From: Mackintosh Architecture, http://www.mackintosh-architecture.gla.ac.uk/catalogue/drawings/display/?filename=d399_007&xml=dra (accessed April, 2017)

forms are far from the exuberant nature of the Library lights, whose design was a new form altogether; Mackintosh had previously stated: "we must clothe modern ideas with modern dress..."⁷

⁶ "Glasgow Mackintosh tearoom to be restored at V&A Dundee," accessed 10th April 2017, <http://www.bbc.co.uk/news/uk-scotland-tayside-central-33443999>

⁷ William Buchanan et al, *Mackintosh's Masterwork The Glasgow School of Art*. (Richard Drew Publishing Ltd, 1989), 23.

Perhaps given the bold forms and design throughout the school and in particular the library with the invention and progression of electrical lighting a bold form was important. The design variety for these light fitting exhibits Mackintosh ability and desire to produce many differing forms and finishes - enhancing the intimate atmosphere he was creating within his public and private spaces.

RESTORATION PHILOSOPHY

There is no one correct way of conserving a building, and there is a multitude of complex issues to consider within any project. Christopher Platt, Head and Professor of Architecture, Mackintosh School of Architecture, described the restoration project challenges as: "A labyrinth of issues in this project... Issues about place and purpose. Issues about authenticity and the meaning of history. Issues about newness and sentimentality and loss."⁸ There are however guidelines and philosophies to consider and adhere to.

Two of the key authorities associated with the approaches and theories for conservation are the 'Historic England' publications (whose guidelines have also informed various Scottish conservation projects) and UNESCO. These publications are relevant to projects of all sizes and their approach to conservation – irrespective of whether they are deemed as either a restoration or conservation project.

Historic England breaks down conservation into four key elements:

"Evidential value: the potential of a place to yield evidence about past human activity. – existing drawings, photos and historic documentation of Mackintosh's work

Historical value: the ways in which past people, events and aspects of life can be connected through a place to the present - it tends to be illustrative or associative – the significance of Mackintosh influence as a designer/artist

Aesthetic value: the ways in which people draw sensory and intellectual stimulation from a place – the significance of the lighting design

Communal value: the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory – the significance of the Library and the light fittings."⁹

These 'values' can all be attributed to the Library light restoration in with differing importance, but all are relevant.

⁸ "Building On: Mackintosh," Christopher Platt, accessed 15th February 2017, <https://buildingonmackintosh.wordpress.com/presentations-18-ottobre/>

⁹ "Conservation Principles, Policies and Guidelines," *Historic England*, accessed January 2017, <https://historicengland.org.uk/advice/constructive-conservation/conservation-principles/>

The evidential value is perhaps the most important in the restoration of the Library, with existing drawings, photos, and the recovered evidence being available to best understand the significance of the place and inform the most appropriate conservation philosophy to be adopted.

Whilst UNESCO uses the term 'intangible heritage', which focusses more on the ambience and emotion associated with an asset, not just necessarily physical "They might be objects that can be held and buildings that can be explored, or songs that can be sung and stories that can be told. Whatever shape they take, these things form part of a heritage, and this heritage requires active effort on our part in order to safeguard it."¹⁰ This is considered in regards to the importance in the use of materials, colour and detail in creating the ambience of a 'place' within the Library as a whole. As well as the importance of lighting – ambient and working – and its unique ability to affect a person's perceived sensibilities and mood, given this is so important to the Library and what Mackintosh aspired to achieve.

Professor Tom Inns (Director of the GSA) said: "We will look to build it as closely as possible to Mackintosh's design... There may be 21st century technology integrated into that design but we are looking for the return of the Mackintosh Library."¹¹ The fact that the Library was to be a restoration, as opposed to another principle, meant that the evidential value of anything existing was vital to the design team.

The exhaustive research which has been carried out due to the fire has led to some discoveries which have challenged some of the previously held thoughts of how Mackintosh had originally intended the Library to appear, and that which was familiar to all those who have known it. Given the design is to be restored to its 1910 configuration, this has meant a reconsideration as to how the light fittings are to be reinstated, with no one alive having seen them at this time.

The restoration process has encouraged people to question what was considered fact within the building as evidence has been unearthed which contradicts what had been previously written and believed. Particularly in regards to the materials used, published evidence stated that oak furnishings were used throughout the Library, where in reality this turns out not to be the case.¹² Revelations such as these highlight the importance of scrutinizing all previous documentation that exist in order to inform and best understand the 1910 appearance.

One of the findings whilst cleaning the brass was the markings discovered within the finish, unseen under the black paint. The metal was beaten in random places with a circular hammer, the pattern, which differs from piece to piece is not included on any existing drawing and its origin, much like the fitting itself, can only be speculated – perhaps a piece gone wrong was noticed and approved by Mackintosh, or the marks were formed by cramps. Given Mackintosh's attention to detail, it is unlikely that he did not desire this finish – with the idea of a smooth, plain finish, seeming unlikely.

¹⁰ "What is Intangible Cultural Heritage," *UNESCO*, accessed January 2017, <http://www.unesco.org/culture/ich/doc/src/01851-EN.pdf>

¹¹ Phil Miller, last modified 13th March 2015, http://www.heraldscotland.com/news/13205489.Mackintosh_Library_to_be_rebuilt_to_the_original_design__art_school_director_says_as_full_toll_of_fire_revealed/

¹² Sarah MacKinnon, interview with author, 16th February 2017.

An important part of the restoration process for the lights was completing tests on the recovered fittings to better determine their original state when installed. One such set of testing was an X-ray F: “Energy dispersive X-ray fluorescence technology (ED-XRF) provides... the determination of the chemical composition of many types of materials.”¹³ The purpose of this testing was to understand the composition of the metal but also to find out whether the fire had had any significant impact on the metal. It discovered that some pieces of brass had significantly lower levels of zinc, which might be due to the heat of the fire driving the zinc out. It may just be however, that the makers of the lights used brass from many different supplies and there was no consistency of type.¹⁴

A further test is being completed on the paintwork; unfortunately, the results are yet to be determined at the time of writing. This would enable a further layer of knowledge into their story, and may provide a greater insight into how they changed over time and whether anything else happened to them in their history.

The date the restoration in the library is based on is 1910. Sarah MacKinnon, the project manager of the Mackintosh Restoration Project, explained the reason for this date was a combination of factors: the evidence available, coupled with the fact that Mackintosh would have approved it in this state as his design would not yet have been altered realistically since its completion in 1909 and 1910 pretty much concluded Mackintosh’s direct involvement with the library. There also exists photographs taken in 1910 by Bedford Lemere. These photos have been a very important reference, although it would appear that they were staged; the spaces are dressed to look good and the lighting appears deceptive, so caution is taken and are therefore not relied upon too heavily. They have still provided a considerable amount of visual evidence of the room at that time but the design team have also made reference to drawings, bills and receipts as well as the physical evidence left by the fire. This has given them a very high degree of certainty about the configuration of the library in 1910.¹⁵

There does, however, remain surprisingly few working drawings, a theory from Kevan Shaw for this and for the drawings being subtly different to how the light fittings were finished is that perhaps due to Mackintosh’s use of craftsmanship and craftsmen. It would be reasonable to assume that small changes in design may have been discussed and agreed directly between Mackintosh and the artisan, as opposed to representation on a drawing. In addition, working drawings could easily be destroyed during the fabrication process, with only limited drawings surviving.¹⁶

Speaking personally with MacKinnon, was most helpful and gave a great insight into many of the discoveries surrounding the lights. Historically, a light fitting had been retained as part of the Mackintosh Exhibition at The Lighthouse; this fitting had always assumed to be from the Library. However, it is now believed the fitting was not from the Library at all, but rather a prototype or a copy. The reasoning for this belief relates to the differences between it and those recovered from the fire, with it being a different type, and having a heavier brass gauge as well as having slightly different tooling marks than those within the Library. Notwithstanding this, this surviving fitting

¹³ Spectro, accessed April 2017, <http://www.spectro.com/products/xrf-spectrometer>

¹⁴ Sarah MacKinnon, e-mail message to author, 7th April, 2017.

¹⁵ Ibid.

¹⁶ Kevan Shaw, interview with author 27th February, 2017.

example was one of the greatest pieces of reference for the design interpretation and refabricating of the lights.

PROCESS

Post fire, the Library was subjected to an almost archaeological process, with a 1m² grid laid out across the room, with each item recovered documented, labelled and its position recorded. This process has been key to informing the fabrication of the replacement Library light fittings. With around 630 individual pieces of light fittings recovered, each in a varying state of destruction, which would, where possible, almost all be used in the new build.¹⁷

With the decision being made to restore the building, and therefore the Library and its interiors, the recovery of varying fragments from the lights, led to the question: could these pieces be restored, and if so, to what extent?

Sarah MacKinnon explained that from this starting point there was a workshop held alongside Polly Christie (Project Lead for the Archives & Collections Recovery Project at GSA) and other individual experts, to discover how the restoration would be best possible and whether these fragments were in fact usable.¹⁸ The fragments had suffered a varying amount of damage – whether that was directly from the fire, from crushing, and/or impact damage from their fall. During this workshop, it became clear that these pieces could in fact be used to create new light fittings to be relocated into the Library.¹⁹ According to MacKinnon, the philosophical reasoning opined:

One: We're going to put lights back [restoring the library]. Two: We've got these fragment we know we can put them together. Three: We know where these fell and there is a logic in trying to put them back with other objects that fell with them, because then they might go back in as the same light. Four: Sometimes that isn't going to work and we'll end up with a box full of bits, so as a last resort will we integrate bits from other zones to make up complete lights...That was how the philosophy built up and it was a practical thing rather than something that you can think about beforehand. Whether, if I was faced with the same situation again, whether I could work that out from the beginning I'm not sure, I am not sure it would be possible to work out that route without actually going down it.²⁰

According to McKinnon, the cataloging and noting of the fragments location within the Library was key to their restoration in being as close to their original location as was possible. The early process of recovery and documentation was one of reasoning problems out as they went along almost, with the possibilities as to restoration and reuse of component pieces unknown originally.

To start, the light fragments were collected and organised together with batches of similar type fragments i.e. the same part of light fittings together from all over the room. It quickly became apparent that this was not a practical way of collating them. Instead, using the evidential approach,

¹⁷ Sarah MacKinnon, interview with author, 16th February, 2017.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid.

the fragments were grouped to as best as possible into 'kits'. The logic was that using information from the archeological grid, which MacKinnon used to draw out and map the location of the fallen fragments, recorded where each piece fell, and what each piece was. Knowing which pieces were required to form a full light fitting, a set of pieces could be grouped together to best form as much of a full collection needed, from within a close proximity of one another, to create a fitting. The hope being that some of the restored lights may be an original set. Obviously, some pieces were totally lost in the fire, and these pieces would have to be made new, but again in keeping with the restoration philosophy, these would accompany incomplete sets of fragments rather than creating a full fitting from new. MacKinnon explained that this philosophy was "easier said than done."²¹

The primary difference discovered about the 1910 light fittings was their finish. In living memory, the lights had always been painted with a black finish, however, is not believed to have always been the case. The Bedford Lemere set of photographs from 1910²² have been a key source of information for the study of the Library's appearance, and within these photos it can be deduced that the lights appeared to have a metallic finish. This perhaps shouldn't really be such a surprise given the treatment throughout the rest of the building, Steele wrote "Mackintosh's decision to leave the iron exposed was bold, considering the ubiquitous use of wood elsewhere, and consistent with his determination to combine traditional elements with industrial materials, most clearly seen at GSA."²³ It would also be unlike any finish applied to his earlier designs, whereas a metallic finish has been seen before albeit in a less stylised fitting.

Colour within the Library and art school was paramount to Mackintosh, with walls painted a variety of different colours dependent on the rooms function. The fact that the Lamere photographs which existed of these rooms are in black and white, and no longer in living memory, has perhaps caused an assumption of original white walled studios. In addition, the fact that Mackintosh's appreciation has only really been fully recognised during the past 30 or so years, and an evolving art school allowed for changes to be made in practical terms, with little value placed on the original finishes. From a practical point of view on the lights, lighting designer Kevan Shaw, could see no reason or gain occurring in the fittings being painted black. Perhaps they were painted to cover wear and tear caused over time with them being taken down and put back up,²⁴ No reasonable explanation appears to exist.

REMAKING

Rodney French is a metalworker and restorer, who is responsible for creating the new light fittings as well as piecing together the existing fragments.

Whilst today there is only one person fabricating all of the restored light fittings, it is unlikely this would have originally been the case. This view is supported not just in the practical terms of

²¹ Sarah MacKinnon, interview with author, 16th February, 2017.

²² Available at <http://www.mackintosh-architecture.gla.ac.uk/catalogue/browse/display/?rs=133&xml=img>

²³ James Steele, *Charles Rennie Mackintosh Synthesis in Form*. (Academy Editions, 1994), 41.

²⁴ Kevan Shaw, interview with author 27th February, 2017.

manufacture, but close inspection and measurement of the remaining pieces has proven that no two pieces were exactly identical - there were a couple of millimeters difference between some pieces.²⁵

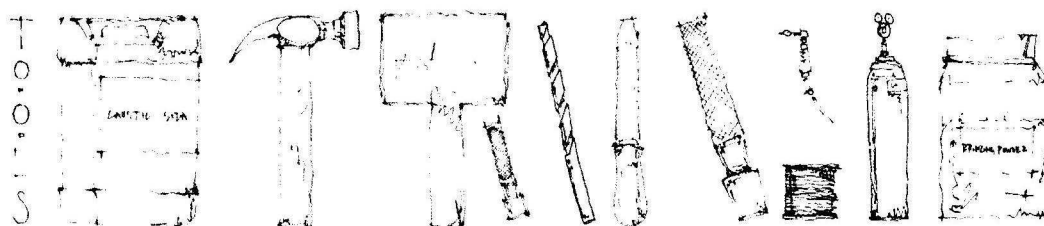


Fig. 3 Author, sketch of the tools used in the process, 2017.

Speaking with French, it was explained that the first thing that is required for the fire-damaged pieces is to remove all the soot, dust, and any remnants of the paint on the lights. This is achieved by soaking in caustic soda, which is a non-corrosive solution when applied to brass, and allows all the additional, unwanted, historic substances adhered to the metal to be easily removed. Due to the type of damage received, once they are cleaned, the brass must be annealed.²⁶ Annealed metal is where the brass has lost some of the zinc contained within it due to the extreme heat it was exposed to during the fire. The effect this has on the metal in practical terms is that the ductility of the material is reduced making it more flexible and malleable.²⁷ The process can be somewhat reversed by repeated beating of the material. Once this completed, the difference between it and a new piece of brass is almost non-existent, only being detectable if handled and with physical force applied – visually, the two would be undistinguishable.

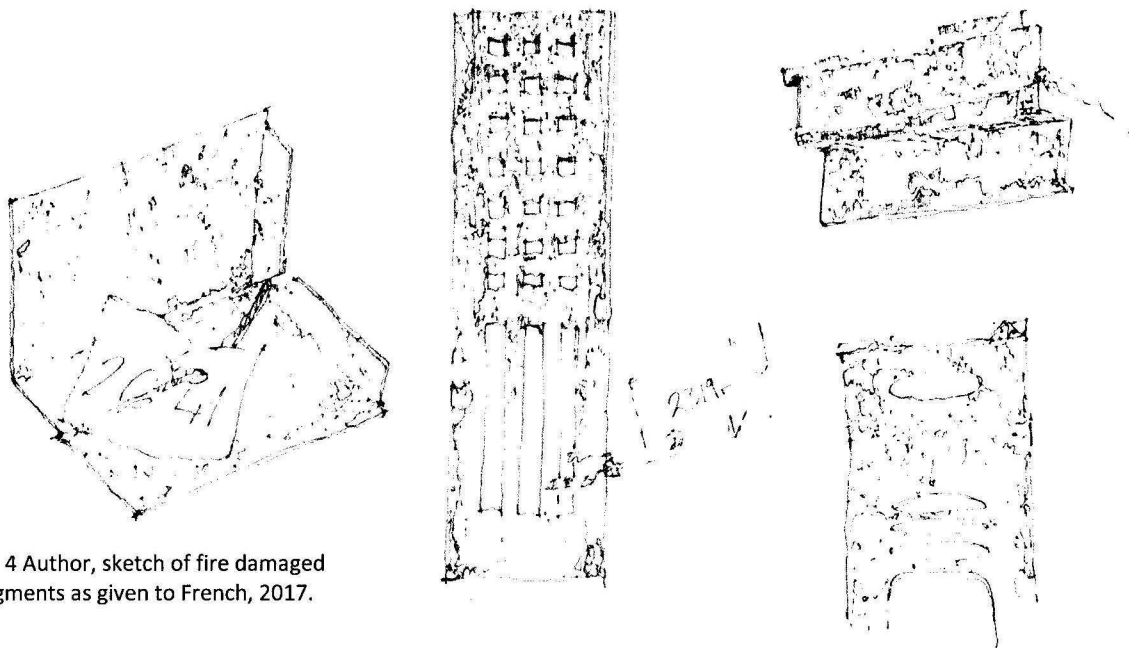


Fig. 4 Author, sketch of fire damaged fragments as given to French, 2017.

The pieces fabricated from new are based on the existing pieces as well as the existing light fitting exhibited within the Lighthouse. The method for making each individual piece is intended (and naturally anyway given that methods remain largely the same for such pieces) to be almost identical

²⁵ Rodney French, interview with author, 27th February, 2017.

²⁶ Ibid.

²⁷ Encyclopaedia Britannica, last modified 20th July, 1998. <https://www.britannica.com/science/annealing-heat-treatment#ref104703>

to those used originally, with there being a surprisingly small range of tools required given its complex form. A square punch – for the repeat gridded vertical elements, which is a repeated dimension across all of the pieces – the punch automatically leaving the concave metal perimeter profile. For the oval form, the metal is pin-drilled to remove as much of the metal as is possible close to the form, then simply filed down into the desired shape. Once a piece is punched, the newly discovered round hammer marks are added. The punches themselves offer no practical use, but are purely a decorative addition. The positioning of the punches are spontaneous, almost to provide a random lay out pattern, with each hammer blows force determining the size and depth of indentation. The tool that was originally used for this is unknown, as it is unmarked on any existing drawing – this has led to much trial and error by French in trying to recreate it as close as is possible – but a part of the issue is its fluctuation from one piece to the next, with no real consistency besides its inconsistency. This repeated testing has led French to manipulate existing tools in his attempt to create a piece which best replicates the original marks, and provide the necessary variations.²⁸

The following step is to solder the pieces together using a soft solder, as was used originally. In some places an alternative silver solder was used, which could suggest there being different people working on different elements with different preferences. There is no real difference in the soldering methods used on the finish, just that a silver solder requires more heat and is stronger – this might have assisted with the fittings remaining intact when they fell. But for its function as a light fitting, that will rarely be touched or moved, there would be no real advantage gained in using this method today. The brass is joined using an oxy-acetylene weld which is “a mixture of oxygen and acetylene, which burns as an intense / focussed flame.”²⁹ This soldering method for each piece was a difficult and time-consuming process due to the nature and form that the soldering required.³⁰ At some point in their history, it is apparent that reflectors added into the light fittings to increase its emitted light;³¹ perhaps the silver solder was utilised when these components were added.

The next step is to brush on bronzing powder: each fitting requires three coatings, and achieving an even layering around such a unique form has proven to be a painstaking task. Each coating takes around three or four hours to complete, and must be left to dry before the next can be added. The final step is polishing the surfaces.

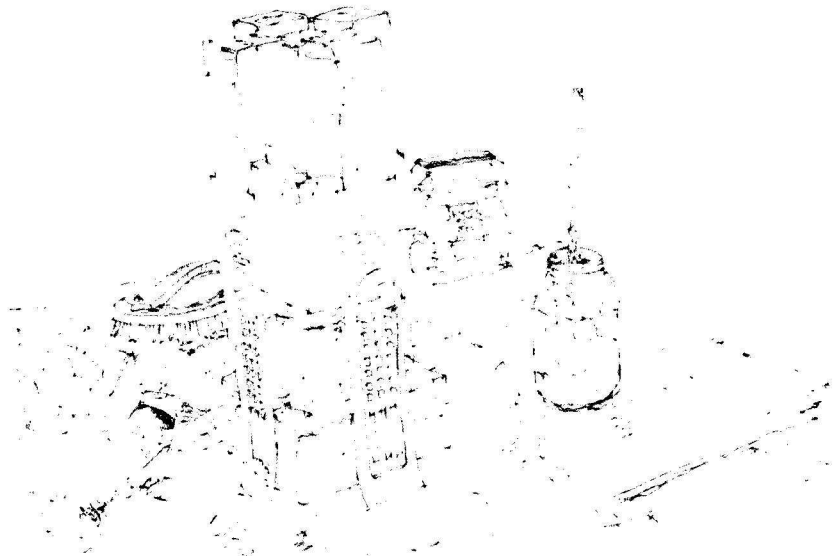


Fig. 5 Author, sketch of part of French studio, 2017.

²⁸ Rodney French, interview with author, 27th February, 2017.

²⁹ “Gas Welding – oxyacetylene” accessed April 2017, http://www.technologystudent.com/equip_flsh/acet1.html

³⁰ Sarah MacKinnon, interview with author, 16th February, 2017.

³¹ Kevan Shaw, interview with author, 27th February, 2017.

The process adopted for restoring the recovered fragments and the new ones is almost identical, creating an indistinguishable set of light fittings. French himself stated that if he was to view any two fittings side by side, he would not be able to tell whether it was a completely restored, partially restored or new one.³² However, more importantly in terms of restoring the Library to its intended finish, using the evidence that exists, it is testament to the conservation research, together with the applied craftsmanship, that it has been possible to create lighting fittings almost identical to those which were installed in 1909, to Mackintosh's original design intent approval.

Mackintosh's philosophy of working closely with craftsmen was a hugely influential part of his design. However, he himself is not understood to have made any furniture or fittings of his own designs. This naturally led to subtle variations from one piece to the next, particularly when there is naturally differences both through the tools and through the artisan's finish; these variations within manmade pieces are to be expected and enjoyed. Mackintosh's influences originally came from the arts and crafts movement which was focused around these honest design imperfections. The process of creating the lights sounds simple, but each individual fitting takes around 2 days to complete.

RESTORATION PROPOSALS

An important philosophical restoration issue is what the final lighting levels should be provided in the restored light fittings. Originally, the library lights were only intended to be in use when necessary – as much as possible only in the evening.³³ However, in the intervening years, health issues and legislation has seen artificial minimum light levels increased almost exponentially. Comparing the typical output of lux from a bulb in the days of 1910, when electrical lighting was in its infancy, to today's required output would be totally unacceptable and unrecognisable against today's practical requirements. This has transpired following increases in lux emission, the invention of LED lighting and technological progression.

There was also debate as to the type of luminaire to be used, with contrasting evidence for each of those being considered. From the photographs taken in 1910, it is clear to see the bulb installed protruding from the base of the fitting. Given Mackintosh would have agreed to the installation of the larger bulb, this may well have been due to performance rather than aesthetics, but today the same performance can be achieved using alternate forms. Mackintosh's practical designs within his buildings would surely have had an impact on this decision. On Mackintosh's drawings a smaller bulb is illustrated, however technology had advanced between this being drawn and the building being completed – although a compromise might be considered to utilise bespoke bulbs to replicate the size and shape of Mackintosh's drawing, whilst also offering a greater acceptable light output. The same issue is relevant in regards to the restoration today, due to the pace of change in the LED market means that a final decision will not be made until as late as possible. What is known is that it will be an adaption of the bulb shown in the drawings held in the Hunterian Museum.

³² Rodney French, interview with author, 27th February, 2017.

³³ Kevan Shaw, interview with author, 27th February 2017.

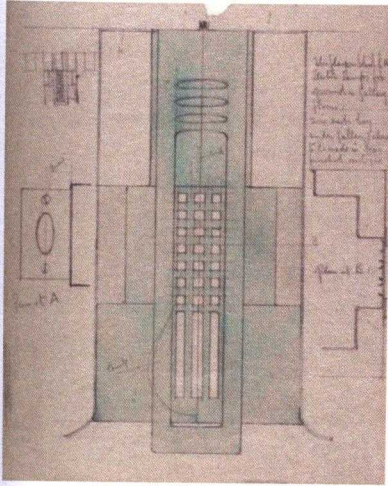


Fig. 6 Existing Light Fitting Drawing. 1909. Huntarian Museum. From: http://www.huntsearch.gla.ac.uk/cgi-bin/foxweb/huntsearch_Mackintosh/De-tailedResults.fwx?searchTerm=41746 (Accessed April, 2017)

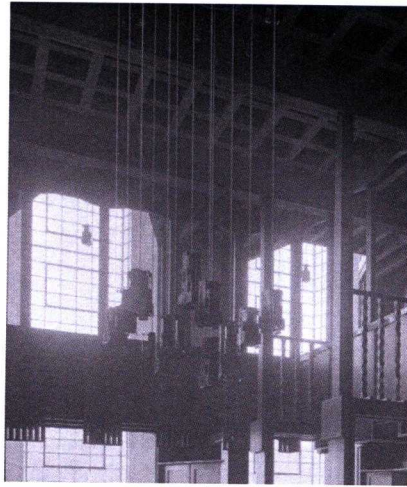


Fig. 7 Interior of Library, 1910. Bedford Lemere. From: http://www.mackintosh-architecture.gla.ac.uk/catalogue/images/?filename=a156_030&xml=img (Accessed April, 2017)



Fig. 8 Potential bulb type being used in restoration. From: Sarah MacKinnon, e-mail message with author, 7th April.

The potential solution in respect to the light levels emitted by the bulbs currently being considered is to utilise dimmer controls. These would provide readers with what they require, whilst also being able to represent light levels as they originally were as required.

SUMMARY CONCLUSION

Whilst a totally identical restoration of the Library cannot be guaranteed, the light fittings which are currently being fabricated by Rodney French are remarkable, and shall be as close to the original design as practically possible. This is especially true given the surviving evidence collected following the disastrous 2014 fire. This evidence has constantly been referenced, considered and informed all decisions in relation to the fittings.

The scheme will be completed in summer 2019 and will welcome students the following September, at a total project course cost of approximately £40million³⁴. The Library will then once again take centre-stage at Mackintosh's most iconic building. It should however be remembered that the 2014 fire in itself is of great significance in this buildings history, and as such, must be recorded and interpreted for future generations.

In total 53 light fittings are being fabricated. There is one 'kit' of fragments being retained for public display; this set contains a composite piece that was one of the most intact/recognisable pieces to have been recovered.³⁵ A fixture that will both remind people the buildings history, but also help reveal the almost unimaginable process and transformation both as a whole and into the restored fittings.

³⁴ Sarah MacKinnon, e-mail message to author, 7th April, 2017.

³⁵ Sarah MacKinnon, interview with author, 16th February, 2017.

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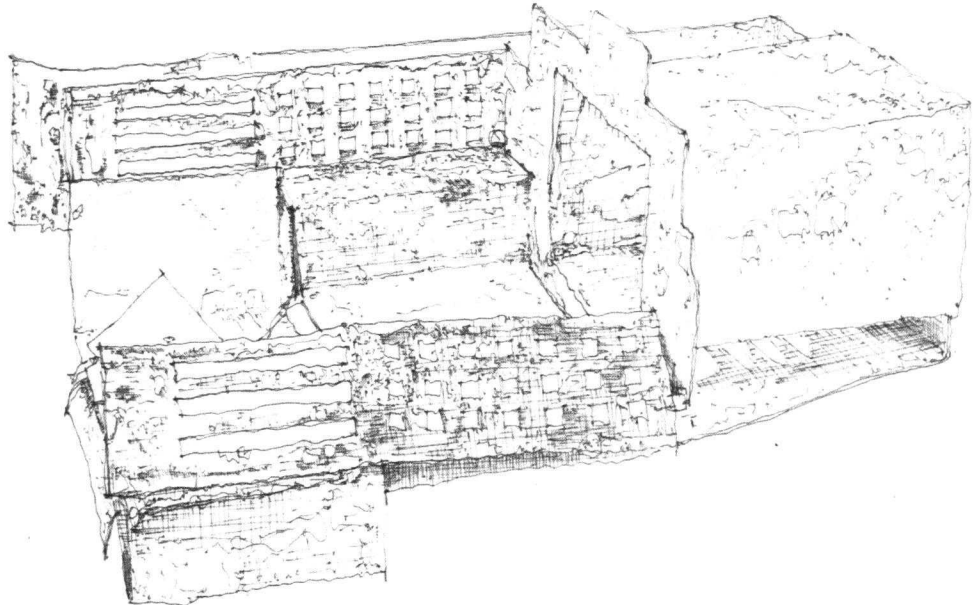
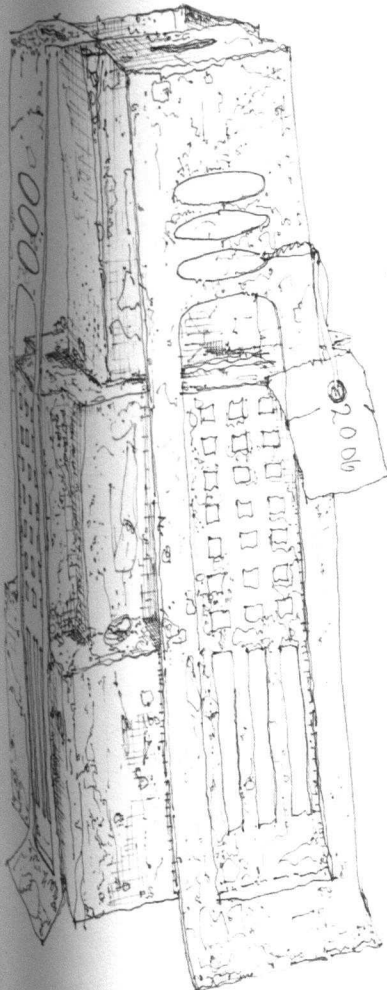
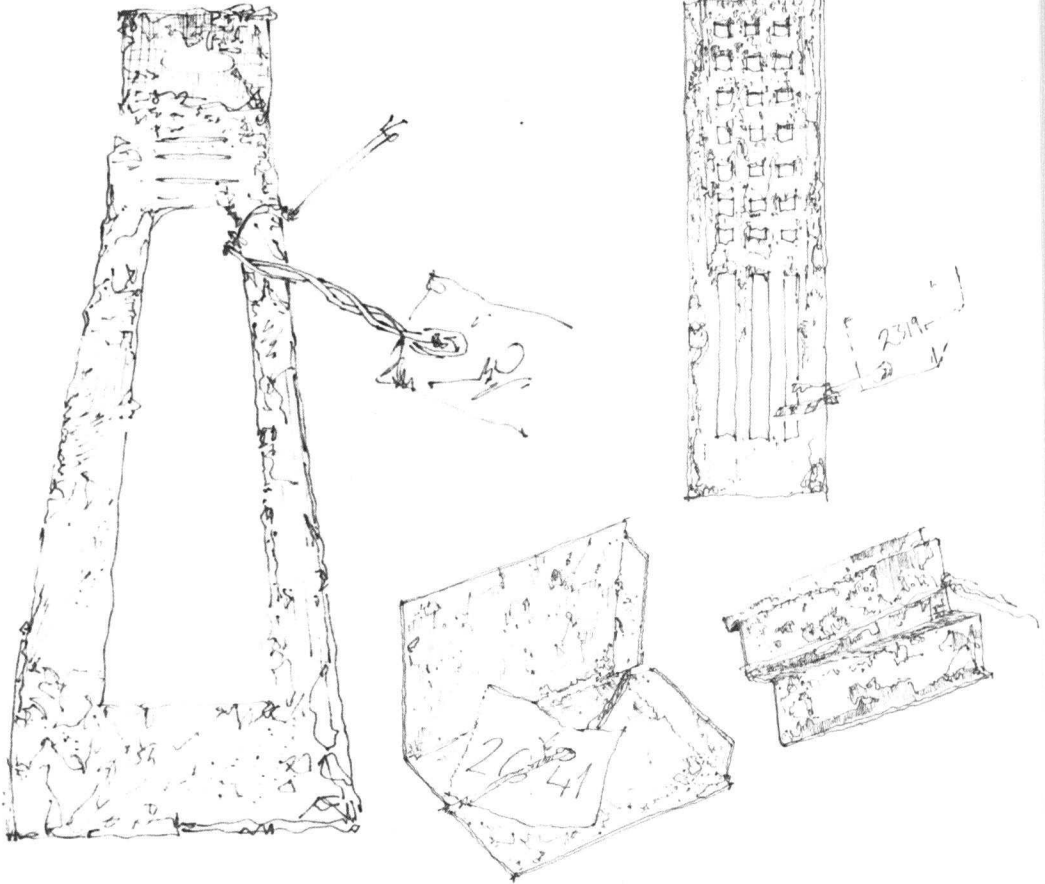
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THE GLASGOW SCHOOL OF ART MACKINTOSH LIBRARY LIGHT FITTINGS

FRAGMENTS RECOVERED
POST FIRE THE LIBRARY WAS GRIDDED
OFF INTO A 1m LAYOUT. ALL
RECOVERED ITEMS AND OBJECTS
WERE NOTED AND CATEGORISED. THIS
LED TO THE RECOVERY OF AROUND
630 SEPARATE PIECES OF LIGHT FITTINGS
- EACH WITH A DIFFERING DEGREE OF
DAMAGE. MOST OF THESE PIECES HAVE
BEEN RE-USED IN THE RESTORATION



19 04
20 17

RESEARCH
SHEET
1 OF 3
FRAGMENTS

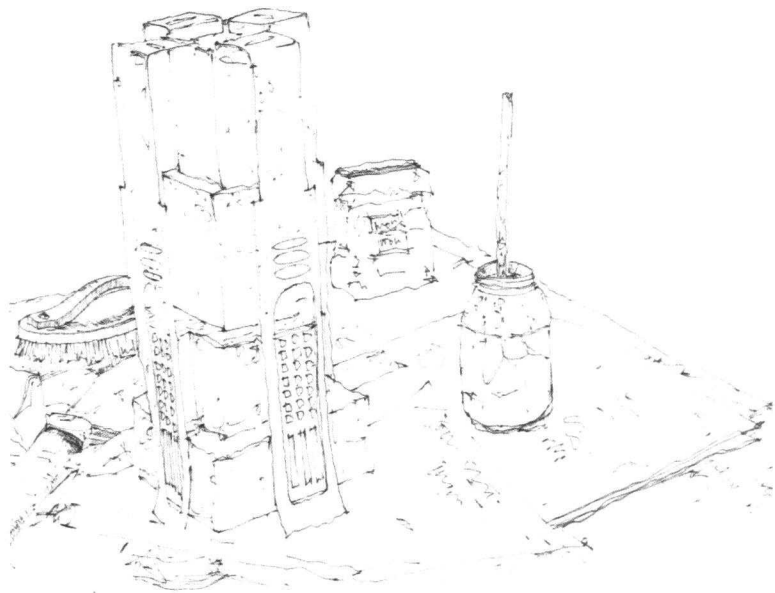
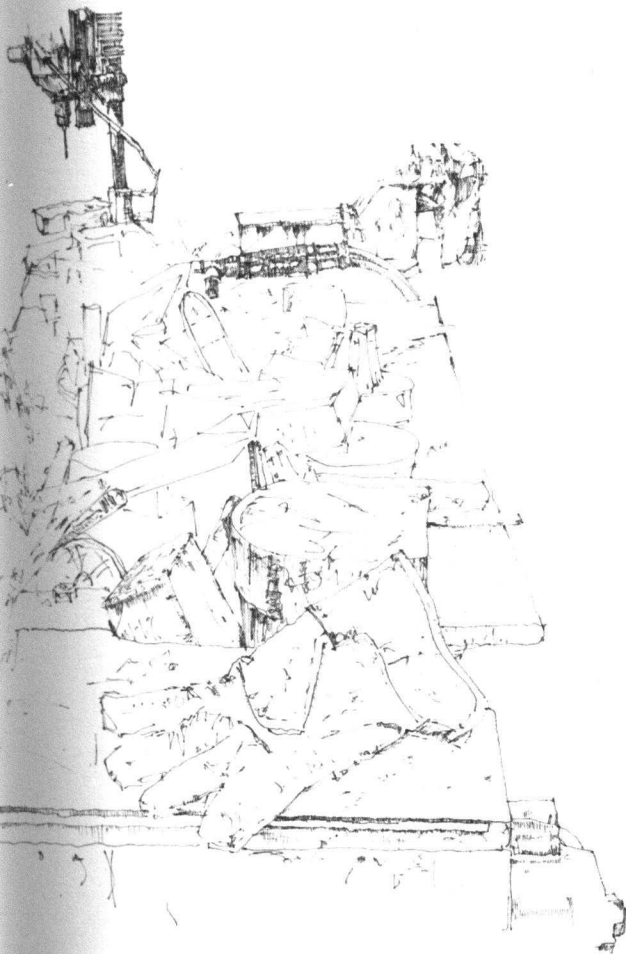
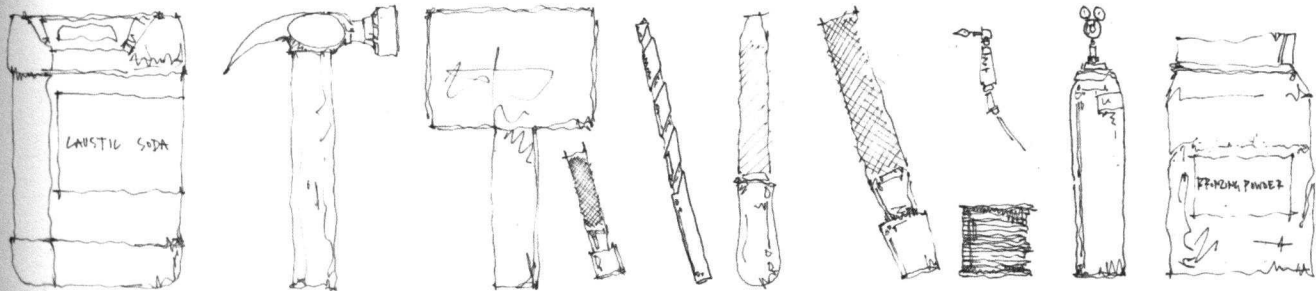
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THE GLASGOW SCHOOL OF ART MACKINTOSH LIBRARY LIGHT FITTINGS

LONSDALE & DUTCH

PROPRIETOR: RODNEY FRENCH

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S



1. CLEANING THE DAMAGED PIECES ARE CLEANED IN CAUSTIC SODA
 2. ANNEALED THIS EFFECT IS REVERSED THROUGH HAMMERING
 3. PIECES MADE FROM NEW SQUARE PUNCHES ARE HAMMERED INTO THE BRASS AND OVALS DRILLED, CUT, THEN FILED
 4. CIRCULAR PUNCHES DISCOVERED UNDER THE PAINT
 5. SOLDERING THE PIECES - NEW OR EXISTING - ARE SOLDERED TOGETHER
 6. BRONZING POWDER THREE COATS ARE APPLIED TO EACH FINISHED FITTING
- ORGANISED CHAOS ONE OF RODNEY'S WORK BENCHES (LEFT)

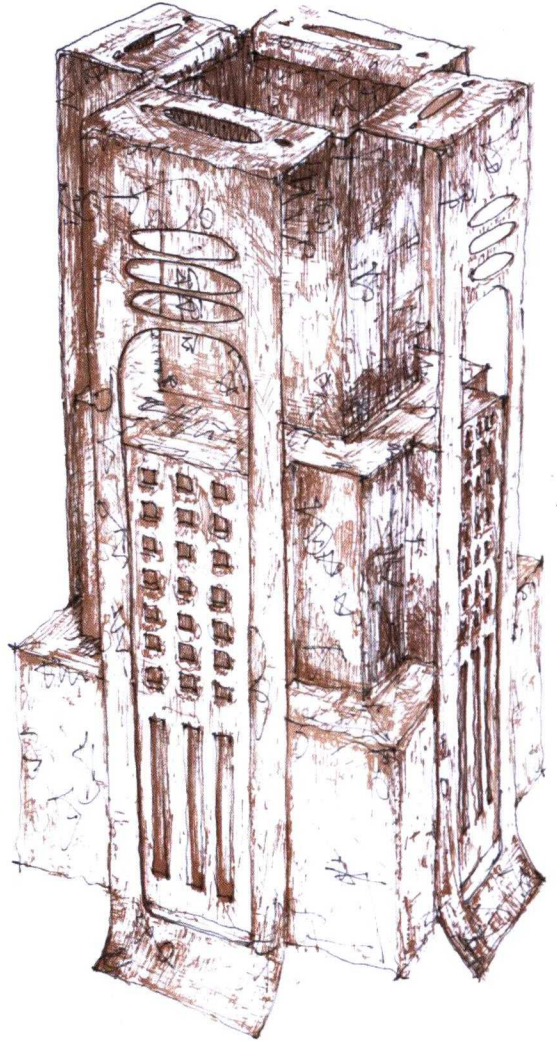
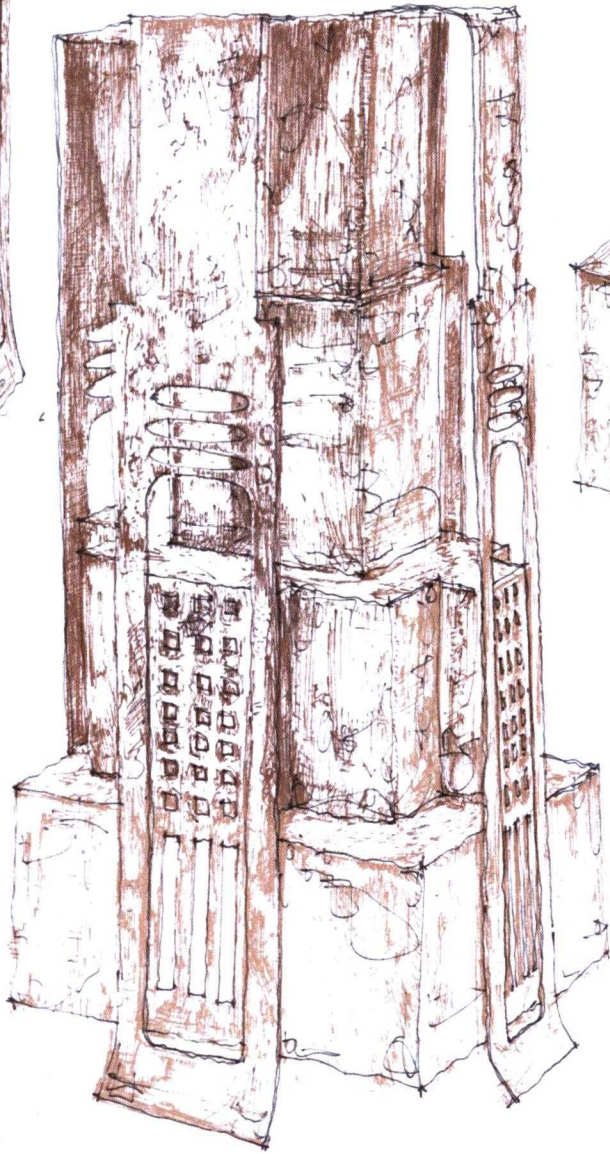
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RESEARCH
SHEET
2 OF 3
WORKSHOP

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THE GLASGOW SCHOOL OF ART MACKINTOSH LIBRARY LIGHT FITTINGS

FINISHED FITTINGS
RESTORED TO THEIR ORIGINAL
FINISH AND USING EVIDENCE
FROM THE RECOVERY PROCESS
RETURNED TO THEIR ORIGINAL
PLACE WITHIN THE LIBRARY
AS ACCURATELY AS POSSIBLE

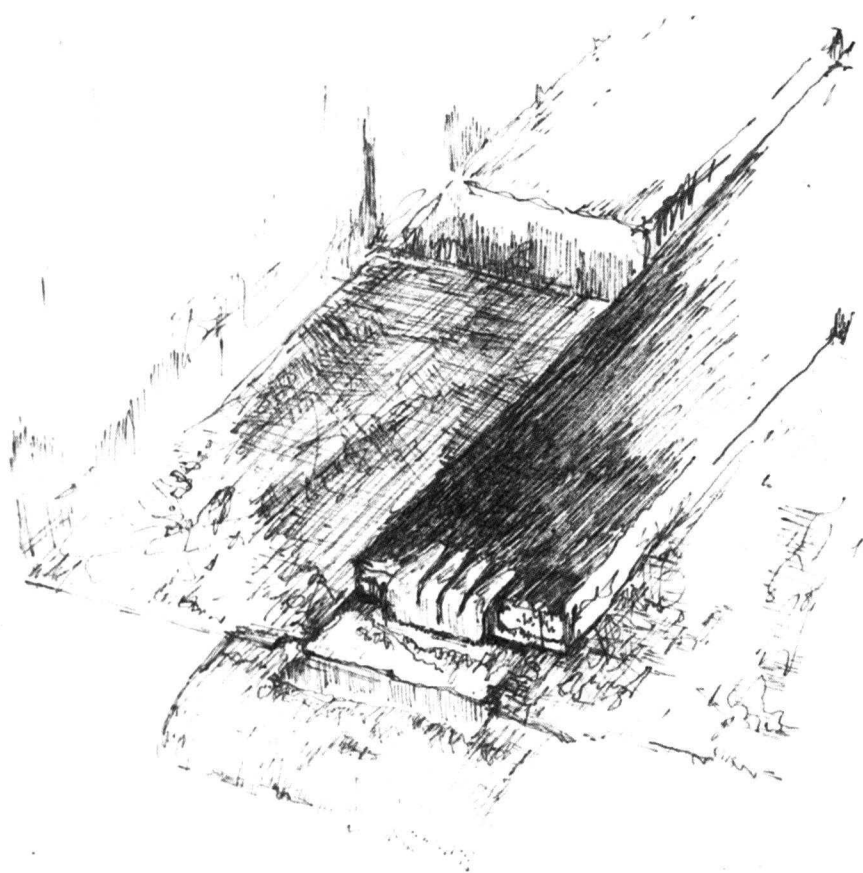


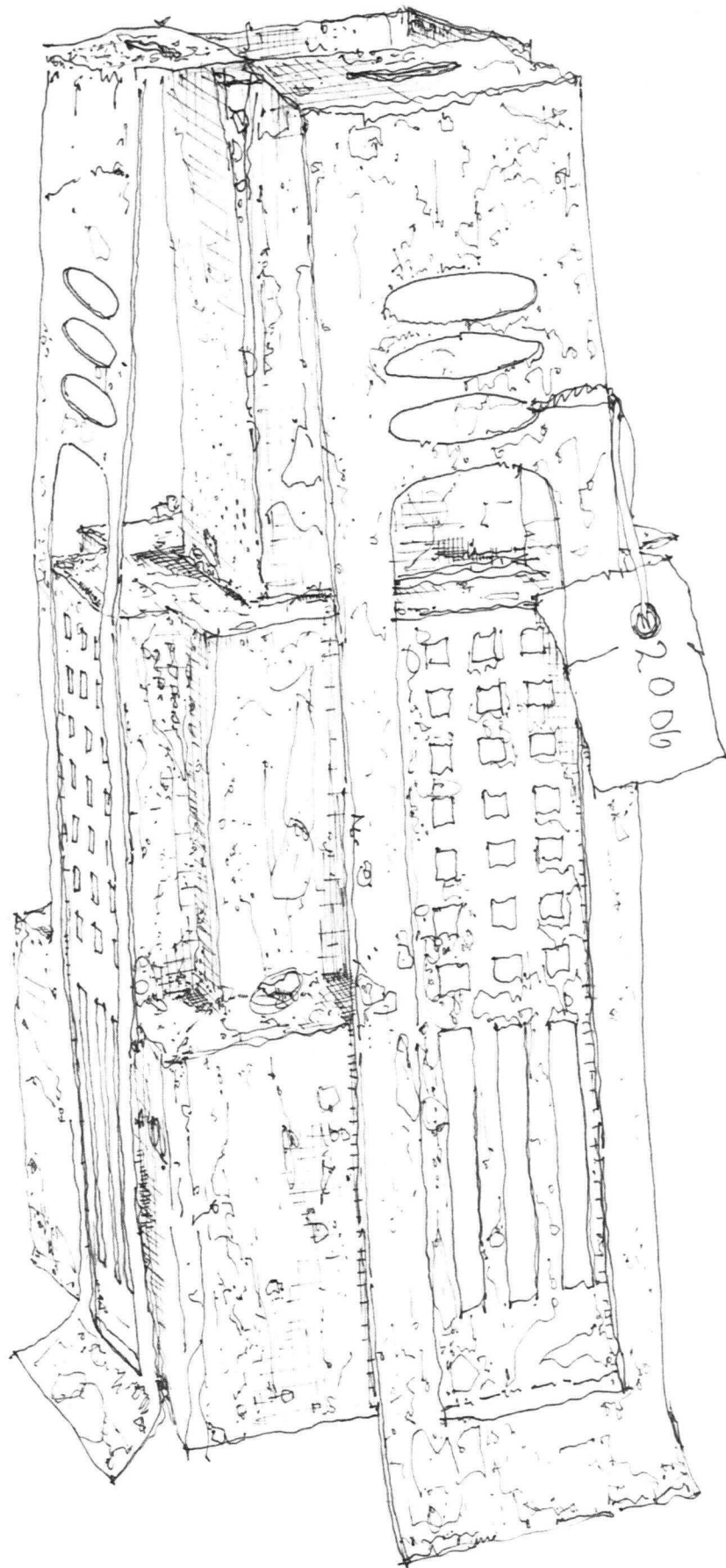
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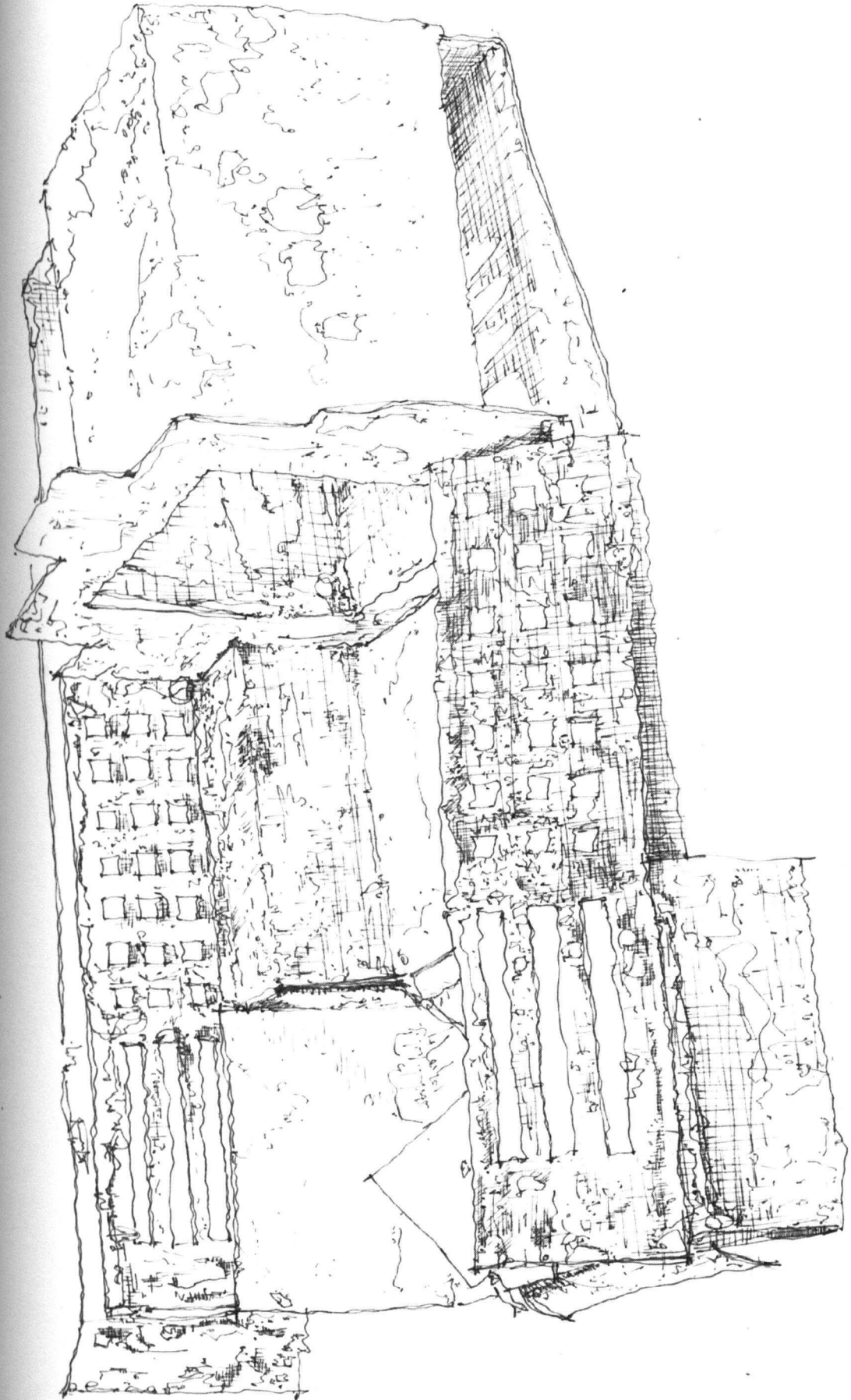
RESEARCH
SHEET
3 OF 3
FINISHED

J
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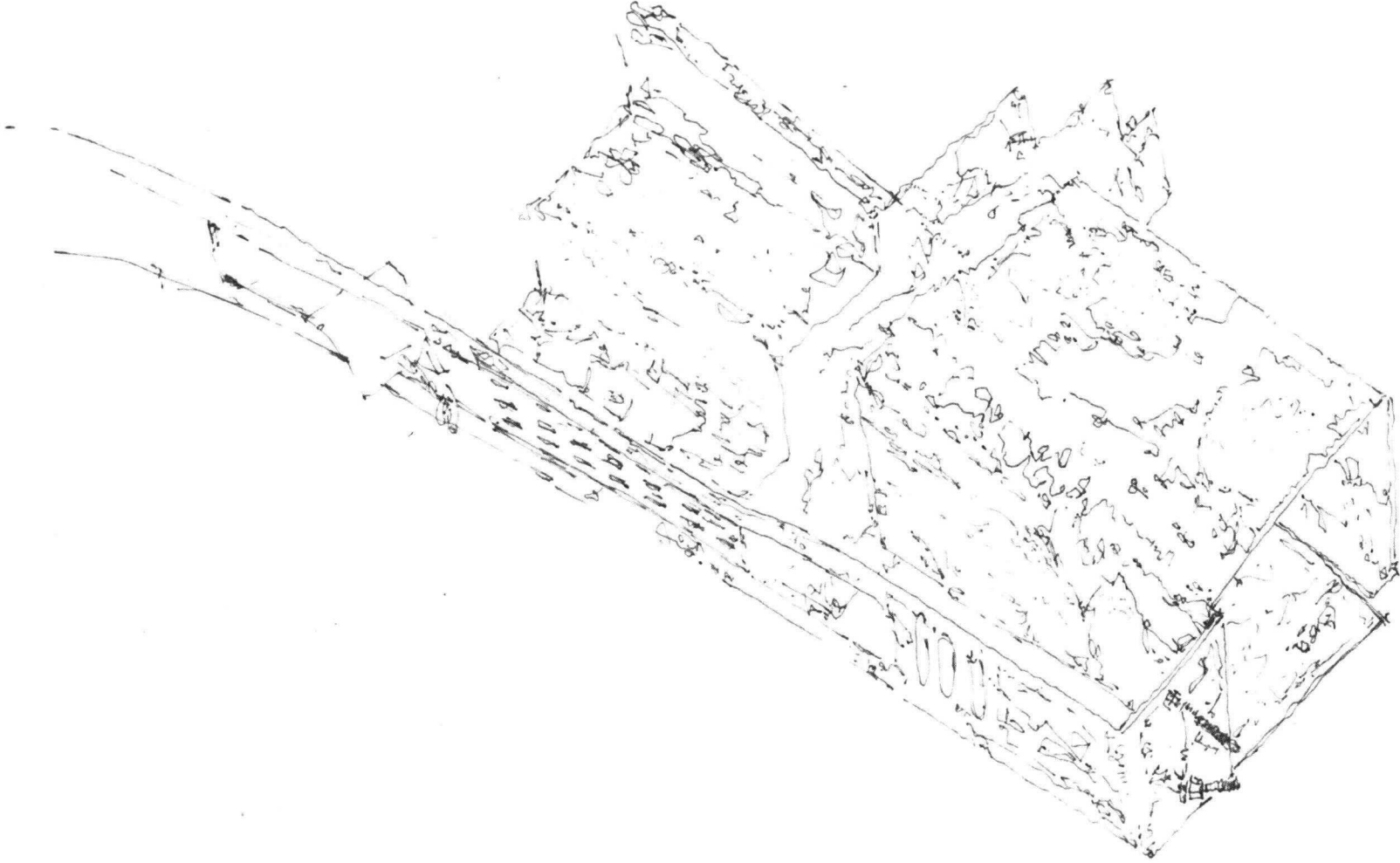
'SKETCHBOOK'

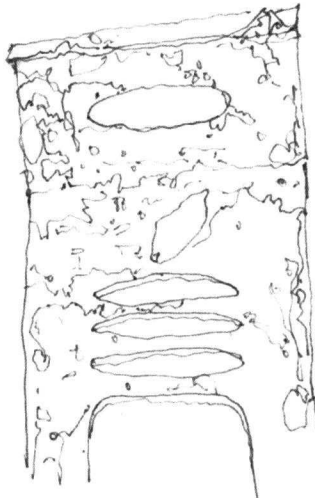
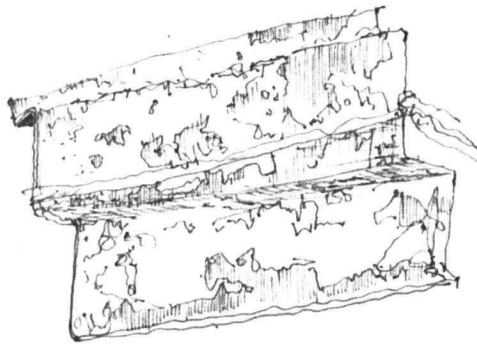
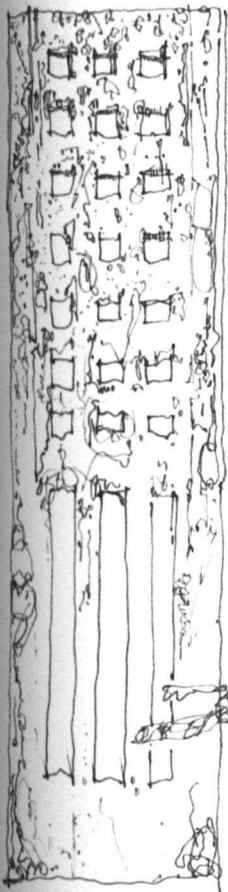
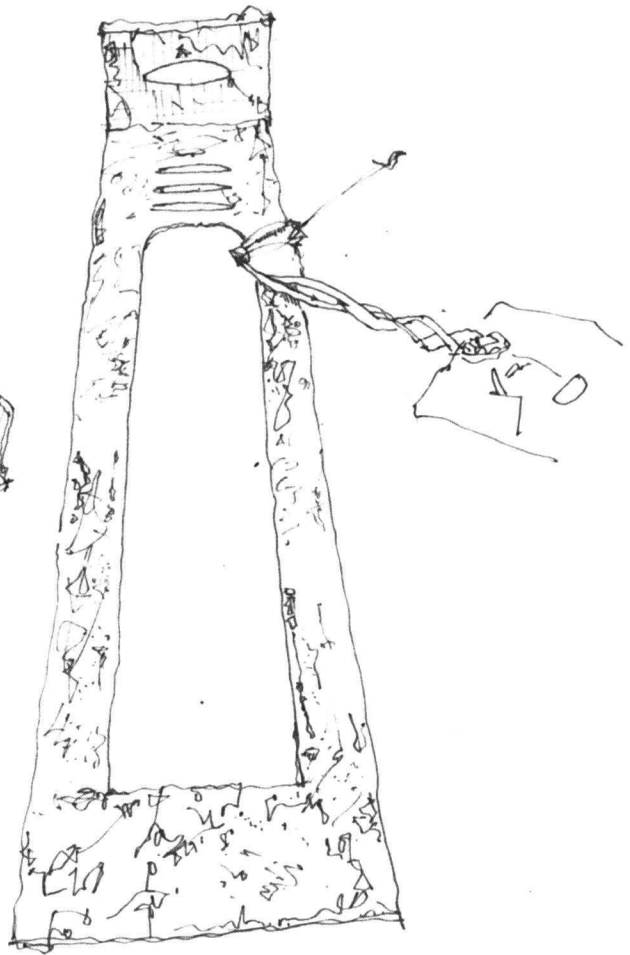
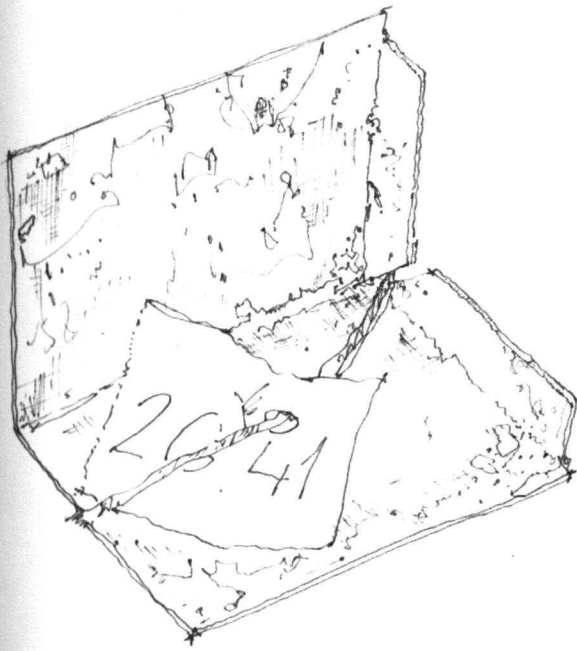




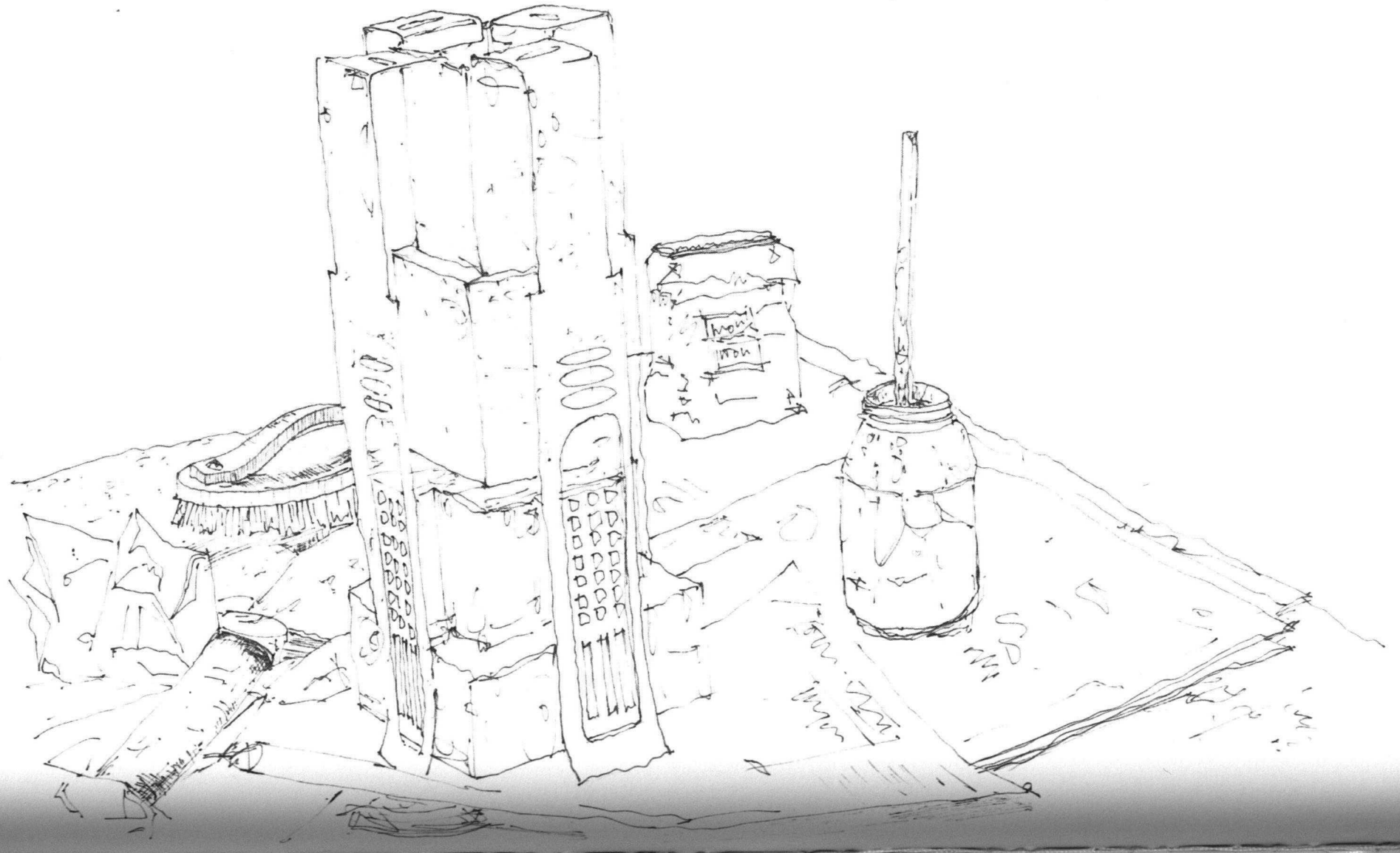


Existing medium sized fire damaged fitting fragment

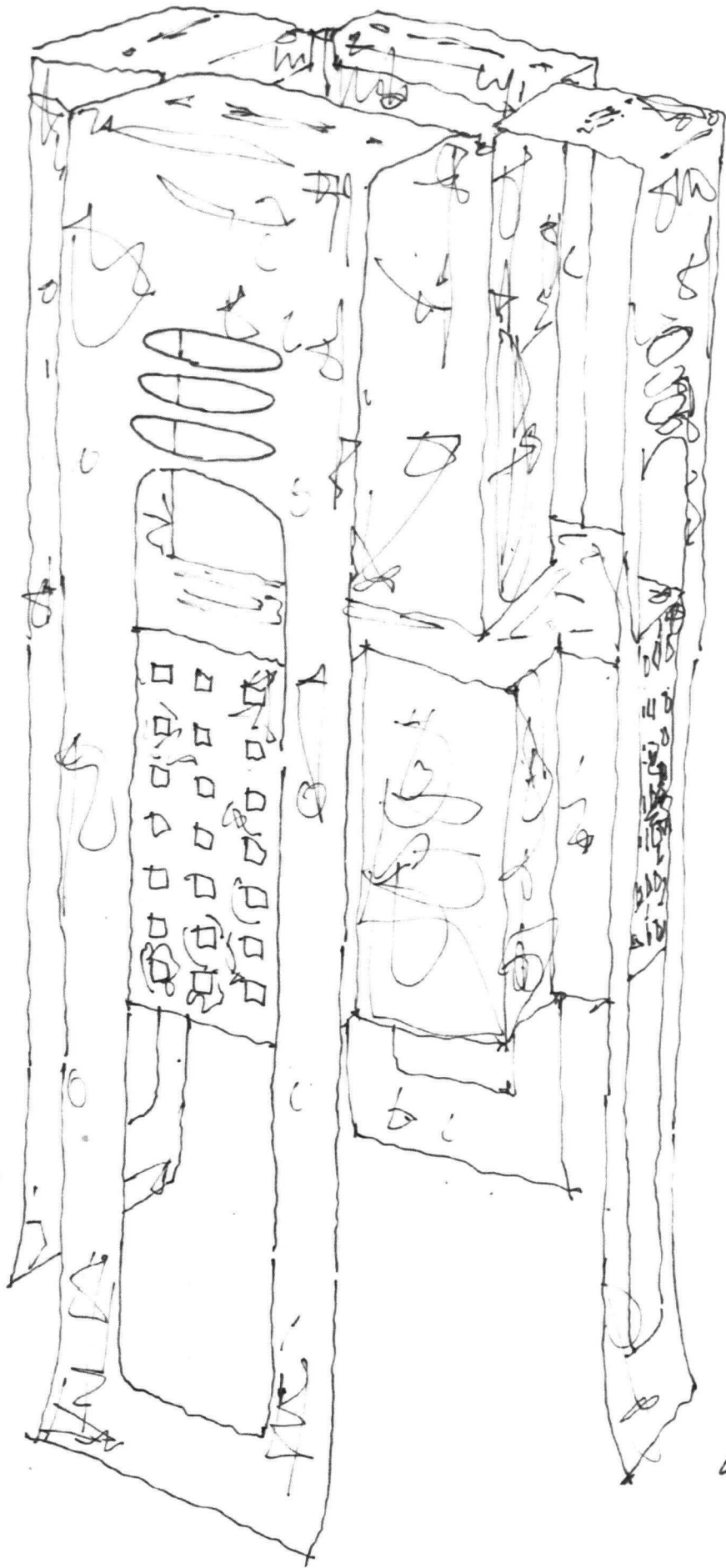




BRONZING POWDER BEING APPLIED







4



