



Fig1. Conceptual image of Gilliland's dream

Gilliland's Dream

Dendrologist's New Dialogue With
Derry's Ecological Archipelago

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Design Report Summary

If there is one word that conclude everything this essay and project do. It must be "dream". An awareness of history, a sense of ecology and methodology of fulfilling the dream-that's what this project wants to discuss.

David Gilliland, a plant collecting and research enthusiasts, was a native of Derry. Hailing from this historic city, his journey reflects a profound connection to its rich heritage. From Gilliland's perspective, what kind of Derry can we glimpse in his dreams?

In the heart of the old Derry which is actually an arboreal realm, Gilliland's dream as well as dendrologist's dream unfolds. The dream is about understanding intertwines with the forest's secrets, unlocking the history of growth rings and whispered stories held within the bark. The dream is about capturing fleeting moments with bold strokes and delicate smudges drawn by charcoal. The dream is about refiguring dust and chaos which are created by fire. The dream is about history, returning and reforestation.

The city changes and theories about urban designing keeps developing as relentlessly as times passes by. This project is going to capture those old times and create a retro dream in this historical archipelago.

Contents

Introduction

Inspired by Patrick Geddes

Explore ecological urbanism of Derry through various dimensions and scales

Chapter 1 Back to the origin of Derry

Back to the origins of the city-the oak grove

Gilliland's Collection Fever

Chapter 2 Charcoal and dust

"Yakisugi"

From recapturing history by charcoal to new visualization

From dusting Derry to new visualization

Chapter 3 Unwrapping and Seeding

Archiving by LiDAR scan and unwrapping

Reforestation by seeding the fragments of Brook Hall

Chapter 4 Smudging

Referring to the graphite drawing by Francesco Borromini

Drawing board

Tracing and Smudging

Chapter 5 Refiguring charcoal chaos

Creating disorder

Remodel different parts of project with chaos

Chapter 6 Three ecologies in four scales

Conclusion

Glossary

Bibliography

List of image

Appendix

3

4

8

22

22

24

32

32

34

38

40

40

46

50

50

51

52

57

57

60

70

90

92

94

95

97

2

Introduction

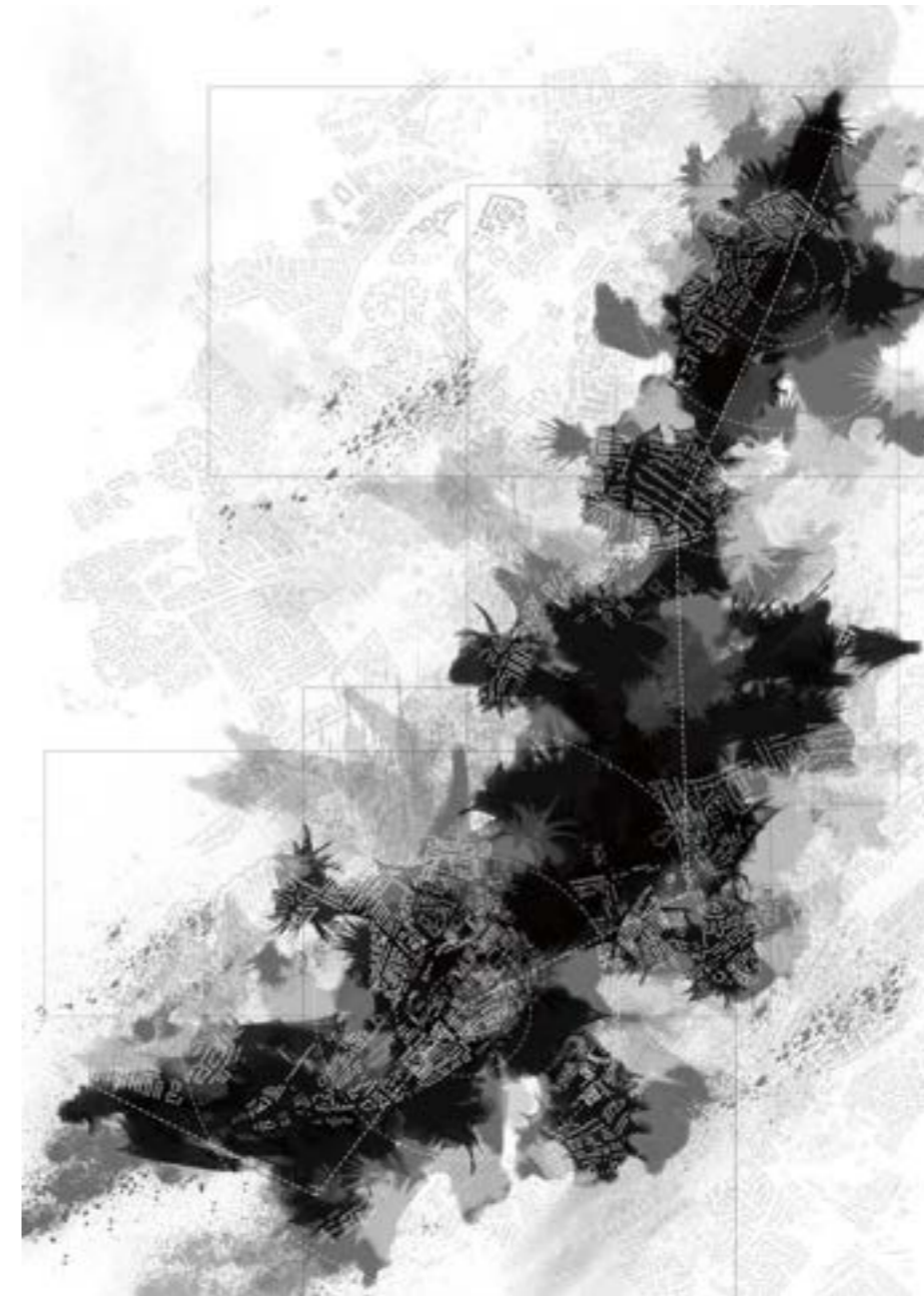


Fig2. Conceptual drawing of ecological urbanism in Derry

1. Annie Proulx, *Barkskins*, Charles Scribner's Sons, 2016, p13.
2. Geddes, Patrick. *Cities in Evolution*. London: Williams, 1915.

“It is the forest of the world. It is infinite. It twists around as a snake swallows its own tail and has no end and no beginning. No one has ever seen its farthest dimension.”¹ In her book, Annie Proulx describes the forest in this way. Whether it is the forest, the sea, or the streams and soil, they have all been gifts from nature to mankind for thousands of years. However, as human society has developed, the neglect and even destruction of the natural environment has become more and more serious. How can we make a difference in terms of architecture and urban planning?

The rapid urbanization and its associated challenges have necessitated a reimagining of our cities, where harmony between humans and the environment takes center stage. In the quest for sustainable urban development, the concept of ecological urbanism has emerged as a visionary approach. Rooted in the work of eminent thinker Patrick Geddes, ecological urbanism offers a holistic framework that transcends traditional notions of city planning, integrating social, cultural, and ecological dimensions.²

Chapter 2 Charcoal and dust

"Yakisugi"



Fig32. Photos in the process of "Yakisugi"²⁰

20. Walker, Christopher. "Myth-Busting the Meaning of Yakisugi." Popular Woodworking, December 14, 2021. <https://www.popularwoodworking.com/finishing/yakisugi/>.

"Yakisugi" can be literally translated as "burned cedar". It has been used as a traditional method to protect timber siding surfaces, mostly for exterior cladding on traditional Japanese houses, when there was still no means of chemical wood protection. This method of Yakisugi improves siding longevity by preventing decay; insect and mould infestation; makes the planks more dimensionally stable and improves fire retardancy.

By slightly charring the surface of the wood without combusting the whole piece, the wood becomes water-proof through the carbonisation and is thus more durable, however there is conflicting evidence that this method of wood preservation does not improve durability or fire resistance. It also protects against insects, as well as making the wood fire retardant.²¹

In order to continue to develop ecological urbanism and ultimately realise Gilliland's dream, the first step we need to take is to protect the existing trees and wood. Until then, we propose "yakisugi", a method of preserving wood by burning it, which will undoubtedly give us a valuable by-product - charcoal.

21. Gottschlich, Martin. "YAKISUGI (SHOU SUGI BAN)." JAPAN WOODCRAFT ASSOCIATION, n.d. <https://japanwoodcraftassociation.com/traditions/techniques/yakisugi-shou-sugi-ban/>.

From recapturing history by charcoal to new visualization



Fig33. Historical map reference of charcoal drawing(1689)²²

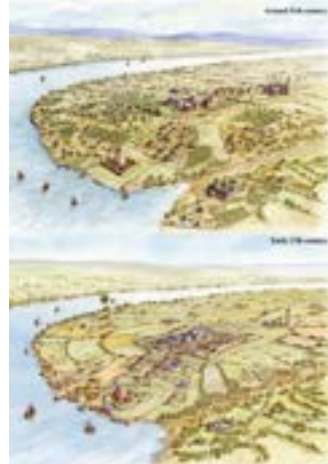


Fig34. Historical map reference of charcoal drawing(1007)²³



Fig35. Historical map reference of charcoal drawing(1799)²⁴

Charcoal, a time-honored artistic medium, will serve as our starting point in the endeavor to depict Derry's rich historical ecological map. Through this venerable tool, we embark on a creative journey, breathing life into the past as we meticulously render the city's environmental narrative. The choice of charcoal as our archival language is deliberate, infusing the act of representation with a contemporary twist.



Fig36. Photos of charcoal drawing process:Tracing-Cutting-Drawing-Smudging-Fixing



Fig37. Overlaid drawing of historical charcoal map in different period

Firstly we selected four very representative periods in Derry's history, the 11th century, the 17th century, the 18th century and the present, and drew the outlines of the different plant-covered areas in the different periods in charcoal according to the historical maps. Then different texture drawn by charcoal fills were used to represent different areas: forests, plantations, gardens, farmland, etc. Then we got four historical Derry's map in charcoal which present the ecology in it.

Next, we overlaid the four charcoal drawings together, from which we obtained our New Visualization 1, and can see that Derry's plant cover has gradually declined over time, whether it be forests or gardens or farmland, and has been gradually replaced by anthropogenic artefacts in the course of the city's development.

When we prostrate on the huge paper and draw such huge city maps by hand with charcoal, it is a kind of transition from TLML scale to body scale, these maps contain not only the city level information, but also the information of subtle brush strokes, fingerprints and drawing poses, which is a very exciting process for us.

Many parts of the world, such as the Amazon, are suffering from reduced wetlands, climate change, and reduced biodiversity caused by deforestation.²⁵ Therefore, it is reasonable to believe that, as a local dendrologist and plant lover in Derry, Gilliland's dream is to deforestation, to collect trees from all parts of the world and plant them here, so that this place can become a real Derry forest.

22. Part of Londonderry and environs, 1689, by Thomas Phillips; original scale 8 furlongs to an inch(1:80,640), reduced by approximately one third.

23. Philip Armstrong, Derry/Londonderry (Northern Ireland, UK) Around 11th century vs early 17th century, 2022.

24. 'City and suburbs of Londonderry with the Waterside', 1799, by Robert Porter; original scale 70 perches to an inch(1:17,640), enlarged by approximately one fifth.

25. Proulx, Annie. Fen, Bog&Swamp. Scribner, 2022, p20.



Before 17th Century
Derry in Growth



17th Century
Chaos and Debris

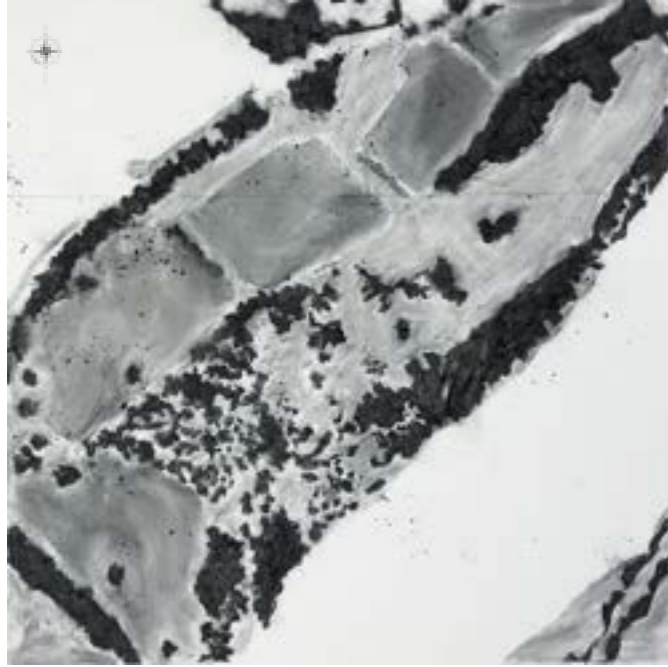


18th Century
Reforming and Rebuilding



Present
Towards the Future

Fig38. TLML scale-1:2700 charcoal drawings



Brook Hall and its Surroundings
Forests and Fields



St Columb's Park House and its Surroundings
Forests and Parks



City Walls
Trees - Garden - Fields - City



Near River Foyle
Trees - Fields - City

Fig39. SET scale-1:1000 charcoal drawings



Fig48. New visualization2 drawings

Referring to the book “Through Vegetal Being: Two Philosophical Perspectives”, the authors advocate for a reevaluation of the significance of plants in our lives and the broader ecological context.²⁷ What David Gilliland and Gilliland family trying to do also reflects the ideas in the book. Gilliland's dream is to spread trees and forests throughout Derry city, starting with the Brook Hall Estate, to create an ecological system. In order to achieve this, the city needs to be constructed with elements, the methodology of which is to deconstruct Brook Hall through LiDAR scanning, reorganize the fragments and disperse them throughout the city, using them as an agency for introducing or expanding the forest.

The agency can be classified as four categories-Factory, Amenity, Bed and Butt. Through the above understanding of Gilliland's dream, we used the fragments of Brook Hall's LiDAR scan as a basis for reassembling and reshaping them to form various FABB agencies with different functions.

The strategic dissemination of these elements throughout diverse city zones serves as a catalyst for gradual outward influence, radiating from the core to the periphery. This orchestrated dispersion acts as a transformative force, facilitating the organic expansion of lush vegetation and thriving forests. In this visionary approach, the cityscape evolves into an interconnected tapestry of greenery and life. Furthermore, it introduces a novel perspective, sparking innovative ways of new visualization 2.

Chapter 4 Smudging

Referring to the graphite drawing by Francesco Borromini

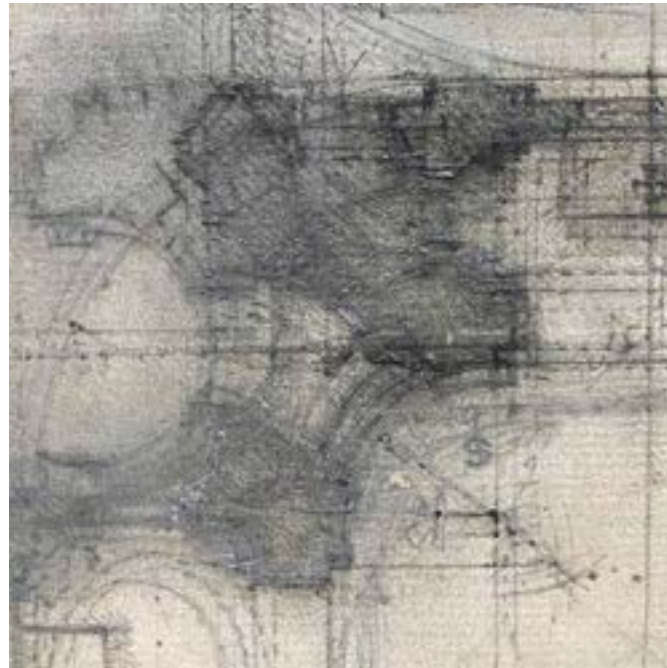


Fig49. Plan of Cappella dei Re Magi, detail, c.1660. Graphite on paper²⁸

Referring to a drawing by Francesco Borromini which is so overdrawn and compressed with a graphite pencil that in some areas the paper is creased into a pulpy contusion.²⁹

Amidst the plans and grandiose designs, Borromini's intimate graphite sketches appear as windows into his creative mind. With meticulous brushstrokes, he explored spatial dimensions and architectural subtleties, foreshadowing his masterpieces.

28. Francesco Borromini, plan of Cappella dei Re Magi, detail, c.1660. Graphite on paper, 49.5 x 66.6 cm. AzRom889, The Albertina Museum, Vienna
29. Foote, Jonathan. "DMJ – Borromini's smudge." Drawing matter, November 12, 2022. <https://drawingmatter.org/dmj-borrominis-smudge/>.

Ecological drawing board



Fig50. Photos in the process of making drawing board



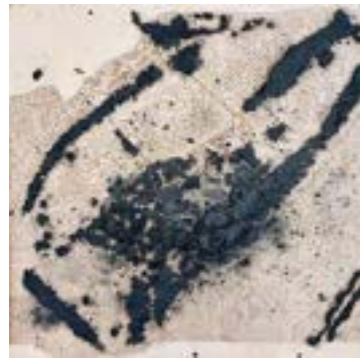
Fig51. Drawing board

We acknowledge another methodology of using different forms of charcoal- graphite pencil-to develop those agents to our studies. Before starting drawing, we need to create drawing boards.

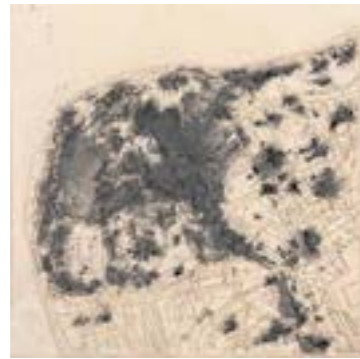
Firstly, we represent the different functional areas of the three important areas of the city with different textures, the upward raised part of the drawing board is the existing forest or trees, and the downward depressed part is the River Foyle, and we engrave the existing urban texture, such as the outlines of buildings and roads, engraving onto the remaining boards, thus forming an ecological drawing board that can represent the current ecological status of the city.

The ecological drawing board, meticulously conceived and intricately detailed, stands as the foundational bedrock upon which our graphite drawing takes shape. This visionary platform embodies a synthesis of ecological principles and artistic expression, serving as the canvas for our creative endeavor.

Tracing and Smudging(SET Scale)



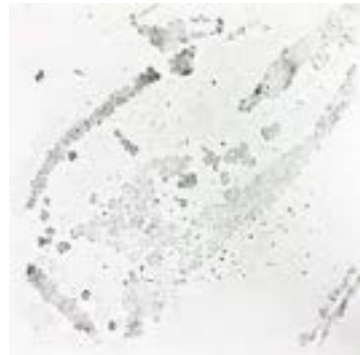
Charcoal on Brook Hall Area



Charcoal on St. Columb's Park Area



Charcoal on City Wall Area



Graphite tracing of Brook Hall Area



Graphite tracing of St. Columb's Park Area



Graphite tracing of City Wall Area



Charcoal smudging of Brook Hall Area

Fig52. Graphite drawings in SET scale

"Borromini's smudgy graphite marks as by-products in the progression from rough to precise geometrical resolutions – the teasing out of form from formlessness, a theory of creation inherited from Giorgio Vasari. For example, by extracting a rigid framework of lines, arcs and circles to discover the underlying geometric apparatus, hidden, as it were, by a cloud of dust."³⁰

Tracing and smudging are two transformative techniques in graphite painting that lend an ethereal allure to the paper canvas. Tracing brings precision, allowing artists to capture intricate outlines with great detail. Conversely, smudging is a gentle touch that invigorates shadows and softens harsh lines.

For this project, we started by highlighting the forest area on the drawing board with charcoal, as this is the starting point for us to continue to expand outwards and return the forest. Secondly, we covered the drawing board with paper so that the charcoal could be printed on it, and then traced the board with a graphite pencil as a way to get a more precise outline. Then, using another method, we smudge the charcoal on the paper to get a richer texture representing the different ecological states. Finally these drawings were overlaid to get SET ecological plans.

Tracing and Smudging(Building Scale)



Fig53. Photo of a building scale drawing board



Fig54. Photo in the process of tracing a building scale drawing board

The same methodology not only can be applied in SET scale drawings, but also can be used in building and body scale drawings.

I transform the initial study model in body scale, which is developed from FABB agency and Brook Hall fragments, to drawing board as well. Trace it with precise graphite lines and smudge it with charcoal, and then overlay them together to get new development of spaces in building scale and body scale.



Fig55. Graphite drawings in building scale



Fig56. Overlaid graphite drawings in building scale



Fig57. Photos of building scale model 1:50



Fig58. Building scale plan



Fig59. Building scale plan



Fig60. Building scale section



Fig61. Building scale elevation

Chapter 5 Refiguring charcoal chaos

Creating disorder



Fig62. Plate XIV from *Cerceri d'invenzione*.³¹

As highlighted earlier, the partial, fragmented, and stochastic model derived from the Brook Hall LiDAR scan serves as the foundational blueprint for the architectural conception of the structure. This model's inherent incompleteness vividly illustrates the presence of intricacies and uncertainties within the realm of architectural design. Its fragmented nature unveils the complexity and challenges entwined with harmonizing artistic vision and practical implementation. This tangible representation of disorder becomes a pivotal touchstone, guiding the creative process toward innovative solutions. The Brook Hall LiDAR scan not only informs architectural aesthetics but also catalyzes a profound exploration of the delicate equilibrium between creativity and precision in the architectural realm.

Prianesi's design reflects this to some extent as well. "Eisenstein sees Piranesi in terms of montage. He sees the entire series of *Carceri* as 'discontinuous' fragments of a single sequence."³²

In the realm of architectural design, chaos and disorder transcend mere randomness, becoming potent tools for innovation. Here, the conventional boundaries of symmetry and predictability yield to a dynamic interplay. Chaotic elements introduce a sense of raw energy, ushering in the unexpected, while disorder challenges traditional spatial arrangements, fostering engagement and exploration. Amidst the structured tapestry of form and function, controlled chaos births captivating complexity, echoing the intricate beauty of natural landscapes. Disorder, a deliberate disruption, invites occupants to interact and interpret, breathing life into static spaces.

31. Allen, Stanley. *Piranesi's Campo Marzio: An Experimental Design*. The MIT Press, 1989, p91
 32. Allen, Stanley. *Piranesi's Campo Marzio: An Experimental Design*. The MIT Press, 1989, p92

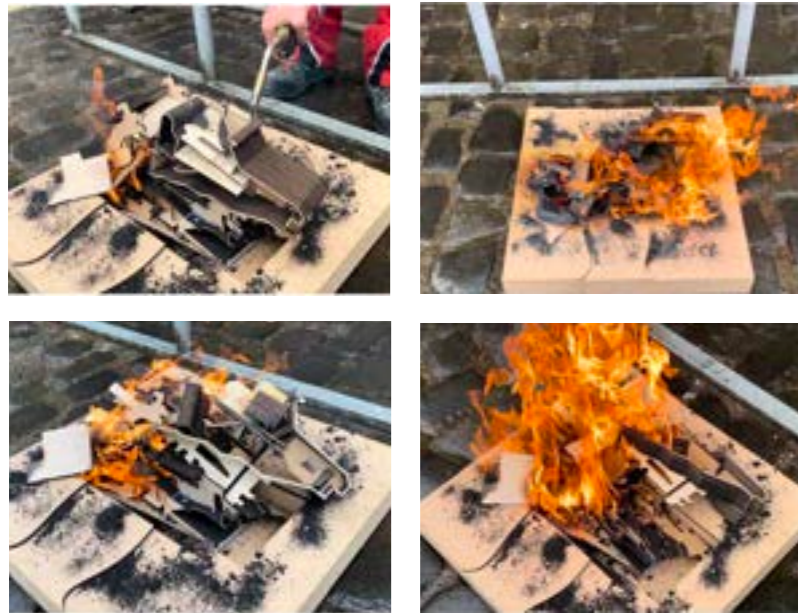


Fig63. Photos in the process of creating chaos

Referred to the book "Order Out of Chaos" written by Ilya Prigogine and Isabelle Stengers, this book explores the profound concept of creating chaos through the metaphor of fire. It delves into the idea that chaos, in the form of intense heat and energy, can act as a catalyst for transformation and the emergence of new patterns. By invoking the imagery of fire's destructive yet generative power, the book highlights how chaotic processes can lead to the birth of novel and unpredictable structures, shedding light on the intricate dance between order and disorder in the natural world.³³



Fig64. Photos of chaos model

Numerous avenues exist for invoking chaos, yet our deliberate choice of combustion is grounded in purpose. As previously noted, charcoal drawing constitutes a pivotal facet of our project's methodologies, with charcoal emerging as a by-product of trees through the transformative process of combustion. Thus, our intention to foment disorder aligns with this elemental force of fire. By harnessing combustion, we evoke a controlled maelstrom that resonates with the very essence of nature's transformative power. The act of engendering chaos through fire becomes an elemental symphony, echoing the intricate interplay of creation and destruction, forging a profound connection between artistic expression and the organic world.

When the models are burned, the once tightly knit pieces become detached and scattered irregularly in various areas forming a kind of chaos, and the charcoal texture caused by the burning is also present on each of the pieces. The nature of the charcoal also makes each piece fragile, creating new chaos after a second fracture. And burning also makes the individual pieces incomplete, or bend, turning objects that had a regular form into random shapes.

These chaos will also be the basis for the further development of architectural design.

Remodel different parts of project with chaos

The methodology of remodeling disorder chaos is a harmonious blend of artistry and restoration, breathing new life into charred remnants while honoring their history, demonstrating the resilience of craftsmanship in the face of adversity.

When we separate and organise these architectural fragments that have been reshaped by fire, we find that these chaos, which once seemed to have no logic or pattern, seem to have a creativity. So I proposed to re-use and figure these fragments in architectural design.

Being burned by the flames fills these fragments with random contours and rich textures, and makes transformation more possible. By rescaling these fragments, they conform to the various parts of the building, such as the ground, the garden, the outer skin, and so on. This will make the whole building more organic.

Another way to create this is to pick parts of the overall chaos, extract, organise and reshape their contours so that all these uncontrollable disorder become logical parts of the building.

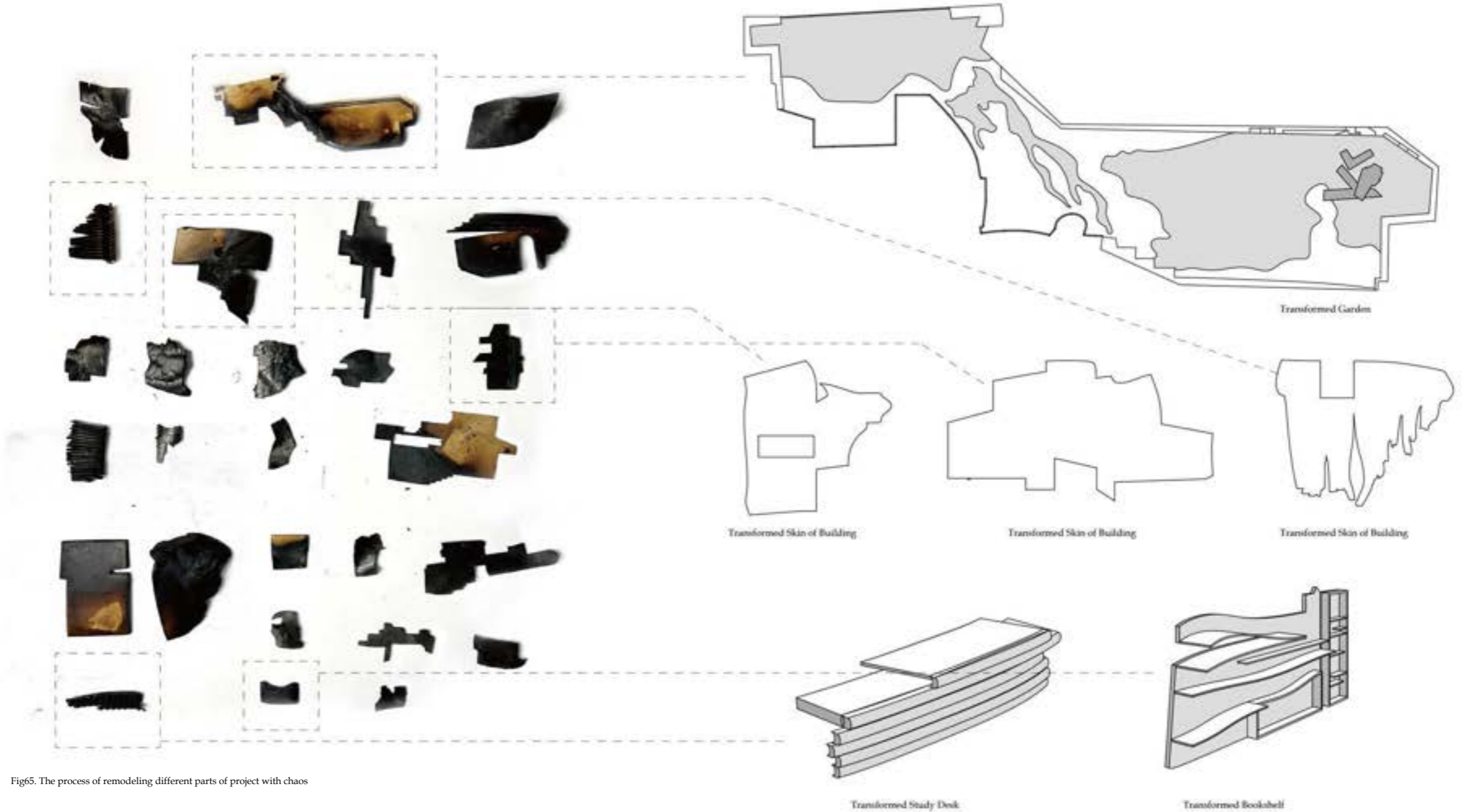
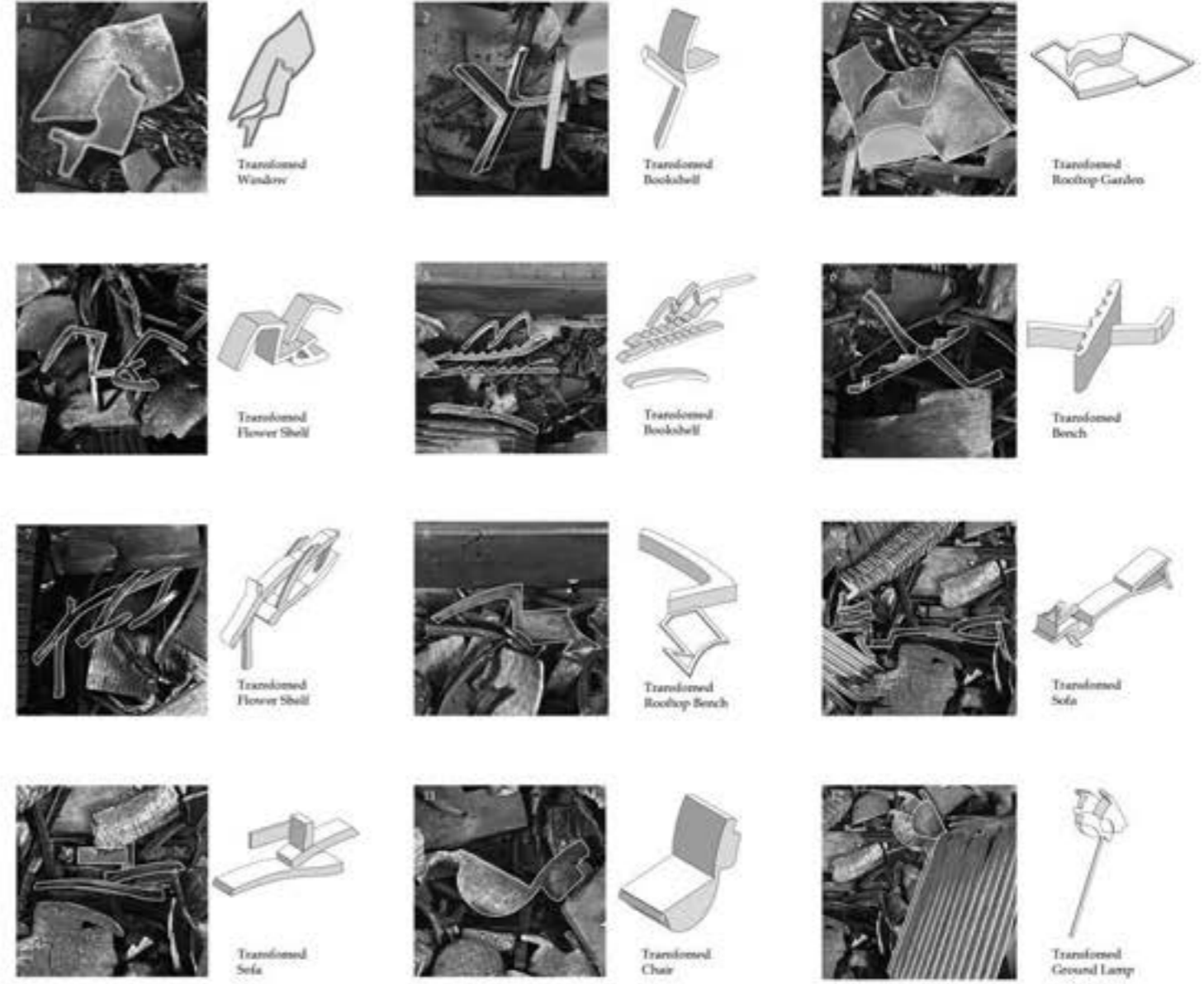


Fig65. The process of remodeling different parts of project with chaos



Fig66. The process of transforming chaos to furniture in the building



The registration of oak in Brook Hall



Fig67. Plan of Brook Hall Estate and the location of trees

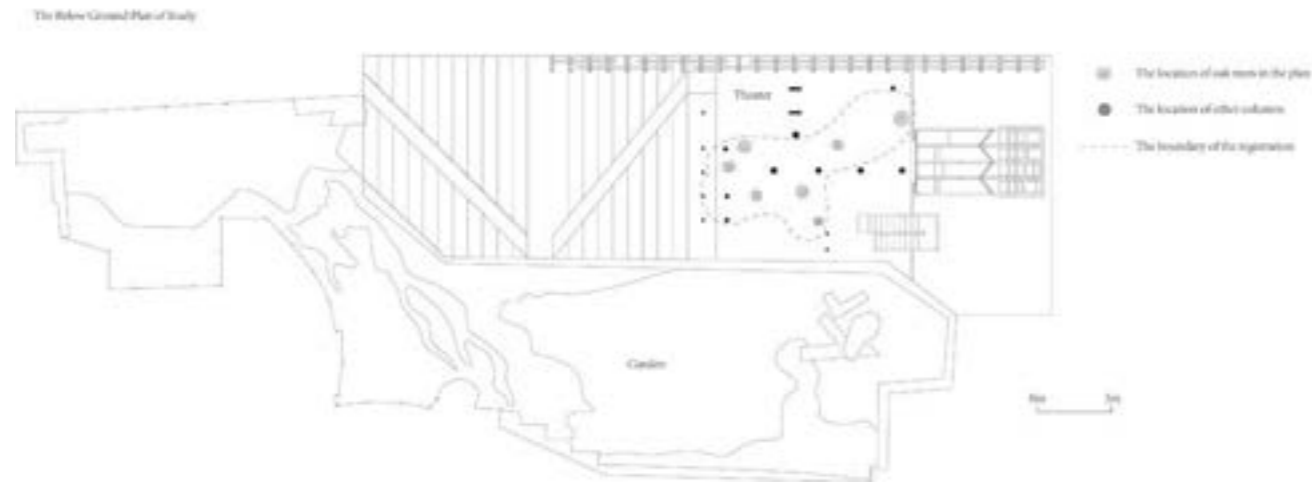


Fig68. Plan of theater in Study

An additional avenue through which we archive and transmute historical or contemporary elements within our projects is the method of registration. This archival approach becomes a bridge between eras, enabling a dynamic transformation that encapsulates the essence of evolution. With each meticulously recorded facet, the narrative gains depth, underscoring the profound impact of precision and scrutiny in breathing new life into the fabric of time.

At the outset of the project we suggested that Derry's origins were in an oak forest, and that the oak tree was therefore of great significance in Derry's past, present and future. The Brook Hall Estate has had a profound impact on the conservation of oak trees and the introduction of new species.

During our visit to Brook Hall and conversations with members of the Gilliland family, we gained a lot of information about the oaks within estate, such as the two different species of oaks in front of Brook Hall, the largest oaks within Northern Ireland at the moment, and a few anecdotes about the process of introducing oaks to David Gilliland. These are enough to show that oak trees do matter.

Therefore, during the design process of the project, I deliberately designed a theatre subterranean space that introduces Brook Hall to be a space in which to register oak trees in Brook Hall Estate. I re-scaled the location and extent of the oak trees recorded in Brook Hall to fit the actual size of the project, and placed columns at the locations of the oak trees to register them. In order to give a real sense of the design intent, I turned some of the non-load bearing columns into oak tree trunks to create an immersive effect.



Fig69. Capriccio(outside)



Fig70. Capriccio(Inside)

Chapter 6 Three ecologies in four scales

The book "Three Ecologies" proposes environmental ecology, social ecology and mental ecology. It also explores the interconnection within these three dimensions and encourage us to change at all these three levels.³⁴

While from the perspective of architectural and urban design, the three ecologies also have profound relevance. The book's insights inspire a reimagining of cities as dynamic ecosystems, where physical spaces harmonize with social structures and mental well-being. And this are exactly what this project wants to realize and the Gilliland's dream wants to depict.

The strategic utilization of diverse scales in both drawings and models assumes a pivotal role, functioning as a linchpin for enhanced comprehension of the overarching project. This methodological approach serves as a beacon, guiding observers through the intricate web of interconnections between architecture, landscape, and urbanism. By juxtaposing varying scales, we unravel a panoramic tapestry that reveals the intricate dance of elements at play. This comprehensive insight enables a nuanced understanding, facilitating the appreciation of the symbiotic relationship between built structures, their surrounding natural contexts, and the urban milieu. Thus, this deliberate blending of scales becomes a key to unlock the project's multidimensional narrative. Therefore, I will explain the architecture, landscape and urbanism of this project next through four scales - TLML scale, SET scale, Building scale and Body scale.



Fig71. TLML scale-New visualization 3

34. Guattari, Felix. The Three Ecologies. Bloomsbury Academic, 2014.

TLML Scale drawing of Daire University



The TLML(The Loving Metropolitan Landscape) scale drawing shows the whole Derry city and the new visualization of Daire University.

In our projects, we proposed four studies in three colleges-dendrologist study, hydrologist study, soil researcher study and bio-power station. The dendrologist study and bio-power station are both in the Dair College. The soil researcher study is in the Cuilenn College. The hydrologist study is in the Aball College.

These four studies located in different parts of Derry will cooperate with each other to make Gilliland's dream come true.They will start their impact from the surrounding land, starting forestation with the studies as the centre, and this impact will gradually expand to the whole college and until it spreads to the whole city, completing the forest renaissance.

These three colleges are representative of seven colleges that were requested, and through them we hope to show the trend across the forestation

Fig72. TLML Scale drawing of Daire University



- 1 Soil Researcher's Study
- 2 Soil Researcher's Garden
- 3 Existing Forest
- 4 Predicted Forest
- 5 St. Columba's House
- 6 Existing Grassland

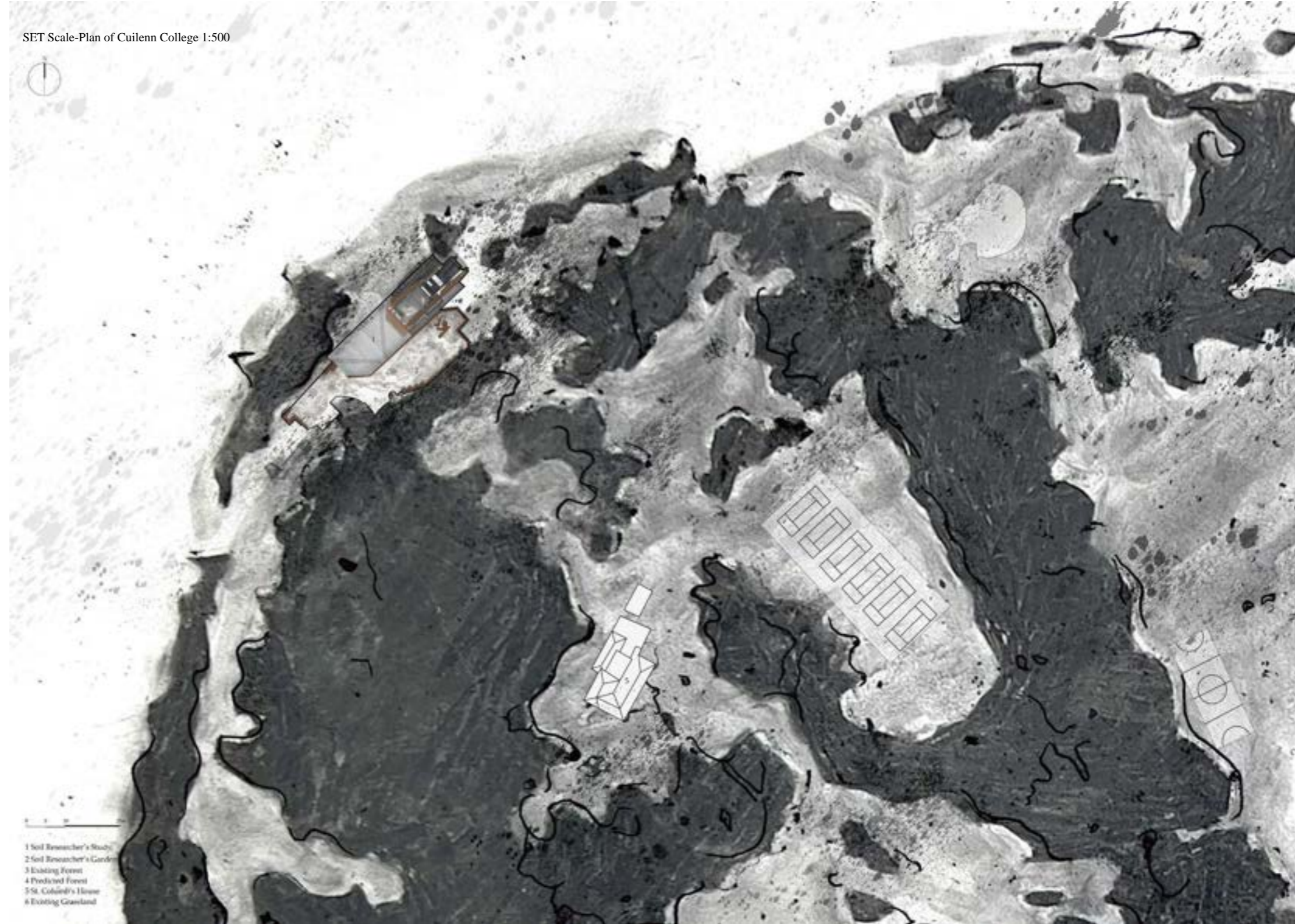
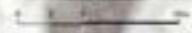
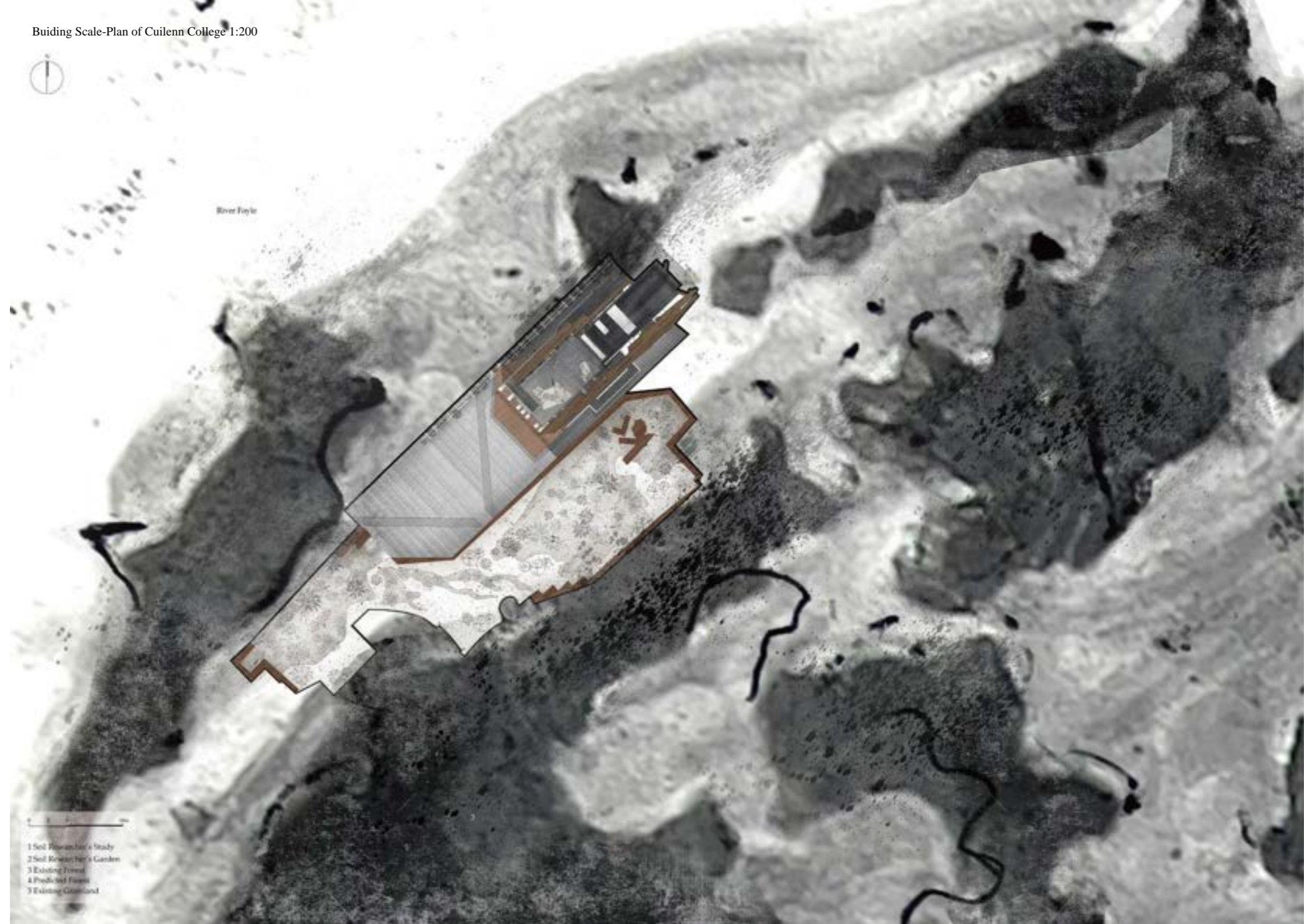


Fig73. SET Scale Plan of Cuilenn College
74-75



River Foyle



- 1 Soil Researcher's Study
- 2 Soil Researcher's Garden
- 3 Existing Forest
- 4 Predicted Forest
- 5 Existing Glassland

Fig74. Building Scale Plan of Cuileann College
76-77



Fig75. Body Scale Plan of Soil researcher's Study(First Floor)
78-79



Fig76. Body scale Plan of Soil researcher's Study(Second Floor)
80-81



Fig77. Body scale Section of Soil researcher's Study 82-83

SET Scale-Section of St. Columb's Park, River Foyle and city wall 1:500

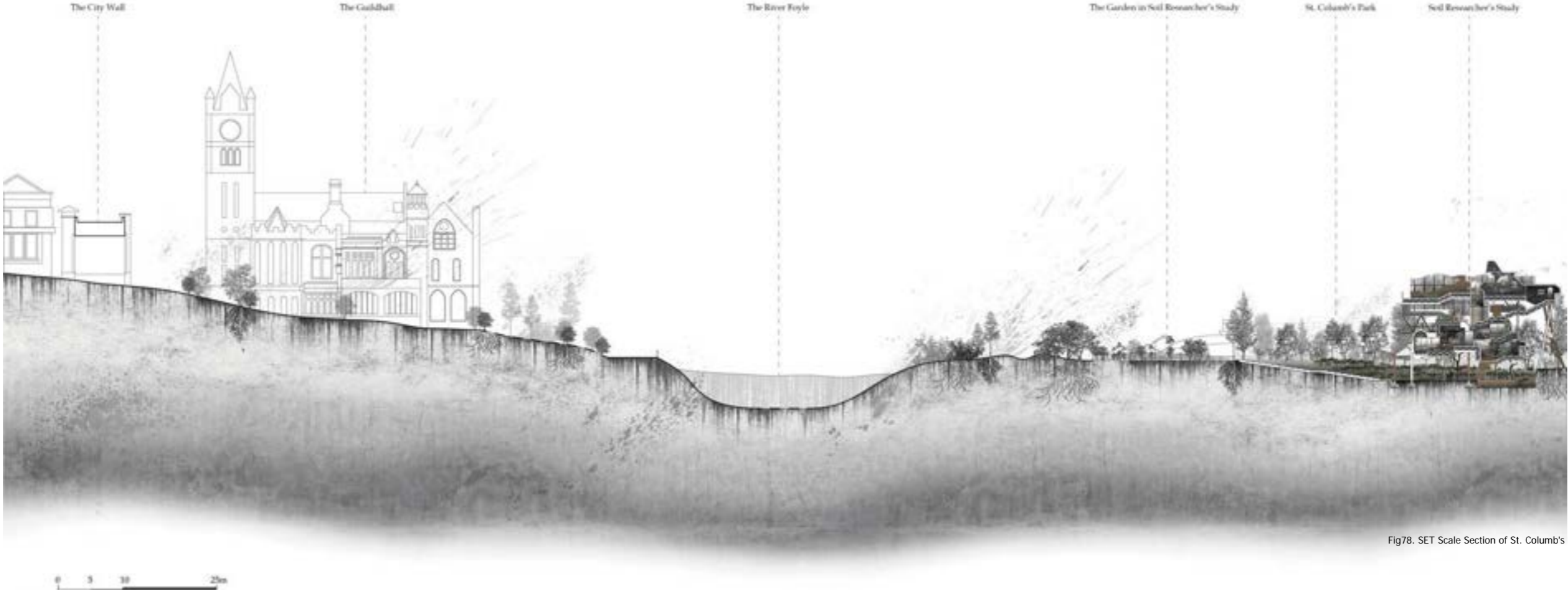
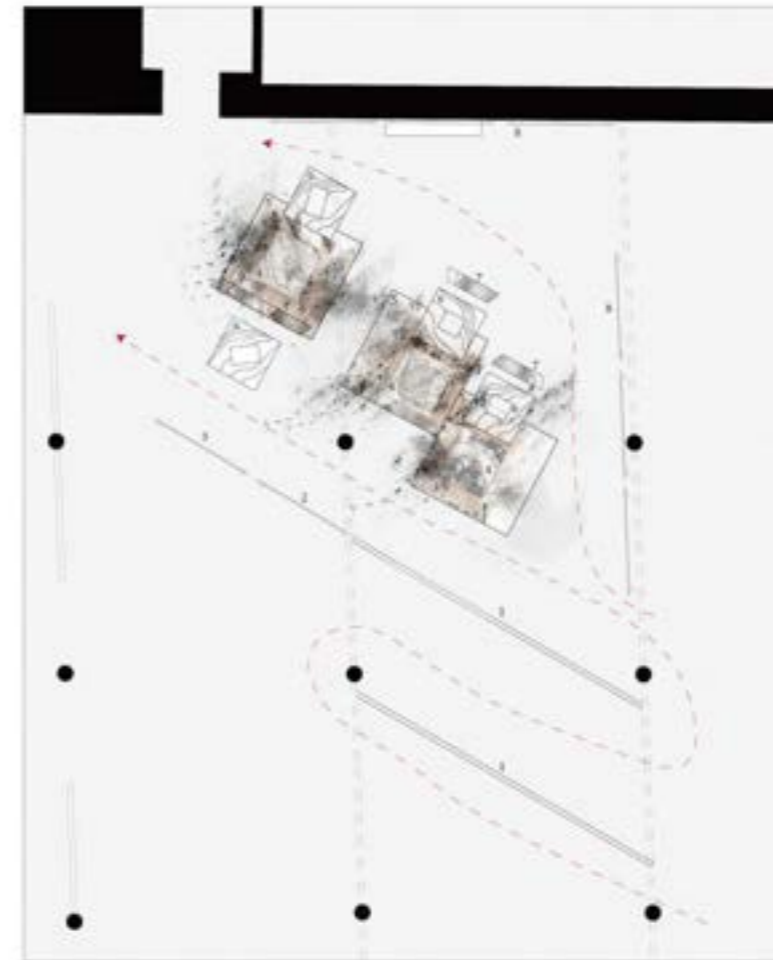


Fig78. SET Scale Section of St. Columb's Park, River Foyle and city wall 84-85

Different scales of models could be possible to visualise the details of the architectural design and the relationship between the buildings in urban design. What models and drawings do in the curation is that it cultivates a narrative, guiding viewers through a thoughtfully crafted journey.

Therefore, in our project, we use three different scales-1:1000, 1:200, 1:100. Firstly, we print three parts of Derry which are actually three colleges area and stick it on the ground. This helps to show the whole urban design and the locations of four projects. We also discharge charcoal on the ground to inform the impact of college to the surroundings. And we put the drawing board model on it. Then we make 1:200 section model of study and college to emerge height changes in the landscape. Last but not the least, the 1:100 study model is going to make people explore more information about the project, like structures, materials and so on.

In order to reproduce the real building as much as possible, I "contaminated" the clean model with black plaster and ink, which makes the whole model look like it has passed through time and echoes the real climate, which is also more in line with our subtitle-refiguring dendrological dust in Derry.



- | | |
|---|-----------------------------------|
| 1 New visualized charcoal drawings | 5 1: 1000 Parts of Derry city map |
| 2 Tracing and rubbing of drawing boards | 6 Body scale study models |
| 3 1: 5000 New visualization 3 | 7 SET scale section models |
| 4 1: 1000 Drawing boards | 8 Individual study drawings |

Fig79. Plan of curation in studio



Fig80. Photos of curation in studio

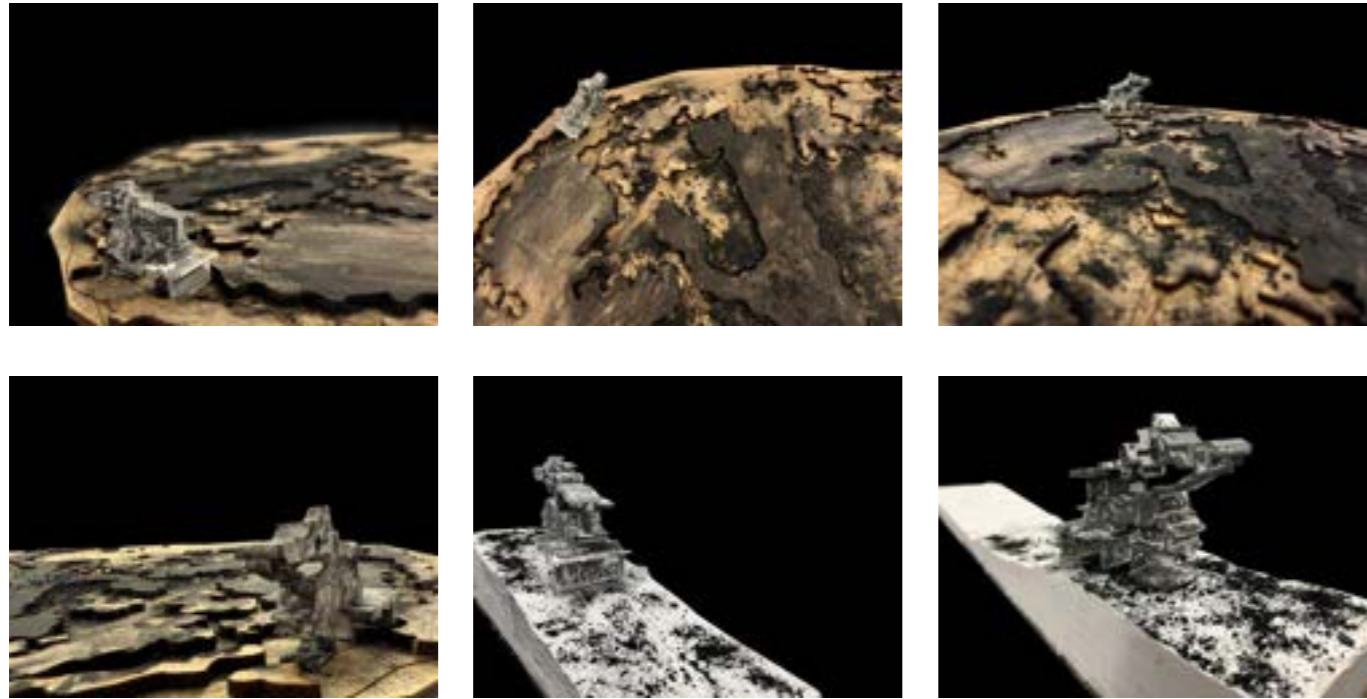


Fig81. Photos of SET scale model

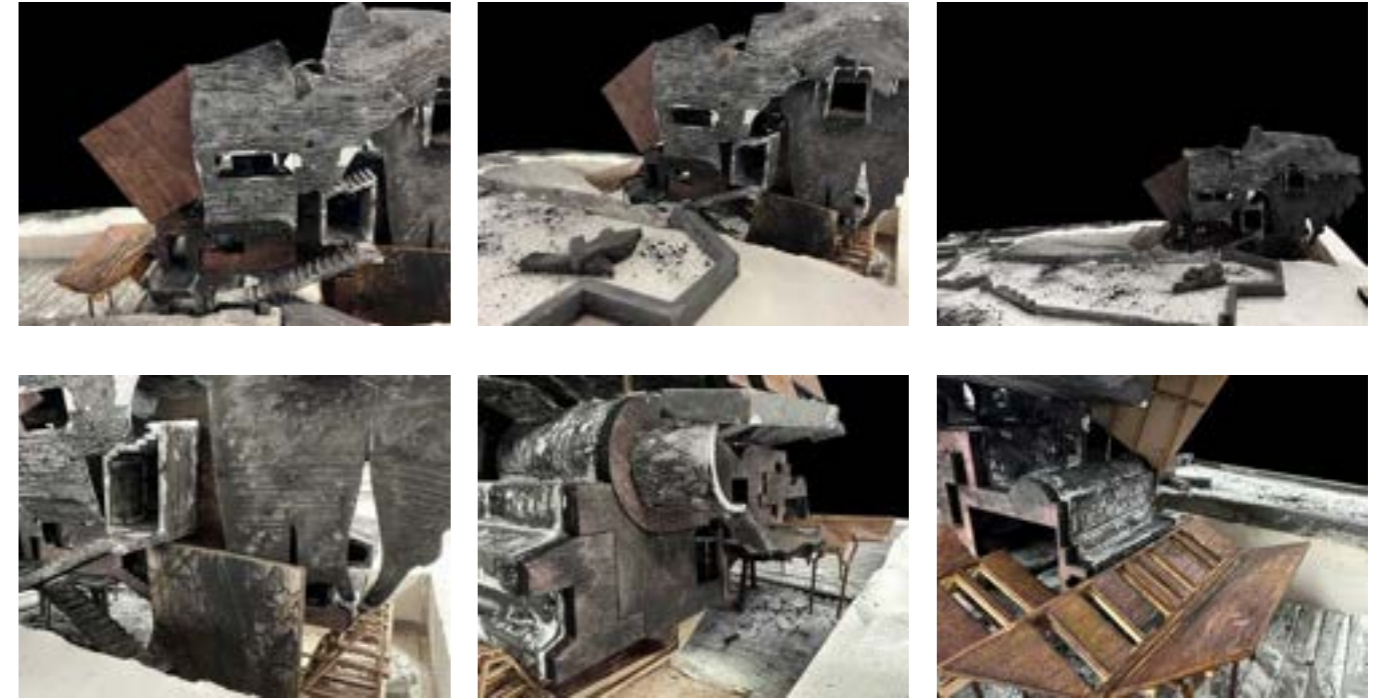


Fig82. Photos of body scale study model



Fig83. Charcoal drawing of Derry map

Conclusion

Designing with nature, optimizing resource use, and fostering human participation redefine urban spaces. Through understanding those ecological maps in history, analysing it and learning about it, we know more about the importance of natural systems in three ecologies. The methodology embedded in it matters as well.

Dust, which comes from charcoal, provides a window into Earth's ecological history, offering valuable data for understanding shifts in ecology and climatic trends, contributing to our comprehension of environmental changes over time. However, the process of turning a tree into charcoal which might be thought of as a kind of damage to the environment, actually give it a life.

But it's not about dismissing everything that came before and starting over, this project is about exploring, renewing and retrofitting. Just like what Annie Proulx said in her book "Fen, Bog and Swamp": "In ancient days fens, bogs, swamps and marine wstuaries were the earth's most desirable and dependable resource places, attracting and supporting myriad species."³⁵ Therefore what this project is really trying to do is return the forest, back to those days when the harmony among all things still exists all around.

In the end, this interdependent relationship underscores the potential for resilient and thriving urban environments, placing sustainability, human well-being, and planetary conservation at the forefront. As we integrate ecological understanding, historical context, and innovative methodologies, we forge a path toward a harmonious coexistence between urbanization and the natural world.