

Facets of the Crystalline: Study of a Motif 1900-2020

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Acknowledgments

My interest in the crystalline stems from my Master's dissertation which included a section on Robert Smithson's *Spiral Jetty* (1970). I concluded then that Smithson understood the crystalline as a means of resisting entropy, but there was insufficient scope at Master's level to investigate this fully. This became the germ of an idea, propagated via discussions with my supervisor, Margaret Iversen, to whom I am very grateful. Margaret has pitched questions to challenge me, made suggestions to guide me, and been generous with her time and ideas.

I shall not downplay the role of luck, or more accurately, the seizing of chance opportunities, has had in this dissertation. The most crucial was a period of sabbatical in the autumn of 2016 which permitted a lengthy stay in Washington DC. While there, I immersed myself in Smithson's archive, and visited the Great Salt Lake to witness *Spiral Jetty* first hand. I am indebted to my partner, Scott Adams, who has always been a willing participant in (countless) gallery visits and expeditions to far flung places. His confidence in me outshines my own, and is the main catalyst behind my seizing (and sometimes, making) opportunities. Thank you to my daughters, Giulia and Sadb Marrani for having patience with me and for being forgiving when my attention has been elsewhere. I am grateful to my family for their support; to Fran, for everything; to Brendan for patiently asking me about my progress and reminding me that the champagne is on ice; and to Cian who has helped with German translations. My close friends, particularly Una and Melanie, have been towers of strength. Una's robust determination has been inspirational. Melanie has engaged me in numerous discussions about nuanced detail, which have helped me to organise my thoughts and strengthen my arguments. I am indebted to staff in the School of Philosophy and Art History at the University of Essex for creating a rich scholarly environment and for awarding me scholarships for both my MA and PhD. And to my employer, Anglia Ruskin University, I give thanks for allowing time to complete this research alongside my full-time role as Director of Studies.

This acknowledgment would be incomplete without mention of my mentor Jules Lubbock. Reflecting on my experience as a student and then a teacher has helped me identify why Jules has been so inspirational to me. Many years ago, Jules was leading a seminar for a group of second year art historians on Masaccio's Brancacci Chapel frescos (1422-8). Despite being a subject expert, Jules welcomed opinions from all directions. This instilled the idea that no idea can be disregarded without due consideration, and that value is not determined by experience or appearance.

Abstract

In 1908, the German art historian, Wilhelm Worringer (1881-1965) published *Abstraktion und Einfühlung* (*Abstraction and Empathy*), a book that would have far reaching consequences. He claimed that the history of art alternates between inorganic and organic forms; from 'abstraction' or 'primitive' art to Classical, humanist art. For Worringer, the crystal exemplified the inorganic, meaning that, in art history, the crystalline motif expressed a rejection of humanist art. Worringer was not the first to identify the crystal's symbolic potential. The controversial Ernst Haeckel (1834-1919) had already inspired crystalline forms amongst the Berlin avant-garde in the 1890s. Nonetheless, it was Worringer's thesis that drove the development of the motif among the new generation of German Expressionists. In early twentieth century work, it symbolised a rejection of classical ideals while retaining a notion of transcendence. It optimistically heralded a new order with some proponents even predicting crystalline landscapes. This utopian vision faded in the Twenties and the motif was largely dormant until Robert Smithson (1938-73) revived Worringer's interpretation in the Sixties. As an autodidact, Smithson harvested ideas from a variety of disciplines and, in doing so, he evolved the motif, placing it centre stage in several key works. Discontent with Worringer's time-limited view, Smithson sought to encompass aeons of development. In his mature work, Smithson rejected a traditional artist's palette, instead manipulating the physical world. Smithson's use of the crystalline motif reaches a climax in *Spiral Jetty* (1970) through its interaction with the Great Salt Lake. The work of contemporary artist Josiah McElheny (b.1966) also centres on the crystalline motif, reflecting and evolving its meaning. Consequently, references to Expressionists and Smithson abound. As a skilled glassmaker, McElheny maximises glass' material characteristics. He uses the crystalline to shatter any sense of the past as a single narrative, suggesting instead a multitude of possibilities.

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Chapter One - Introduction

Crystalline motifs are remarkably common in art practice and theory.¹ They have been used as a revolt against humanist art, to symbolise the afterlife, to argue the transformative power of art, to resist entropy and, most recently, to question historical narratives. Yet, despite this proliferation, there has been no systematic attempt to study the crystalline in art. Art and architectural historians, such as Mark Cheetham (b.1954), Rosemarie Haag Bletter (b.1939) and Jeffrey T. Schnapp (b.1954), touch upon it but it is mainly subsumed within other studies. For example, even the title of Schnapp's "Crystalline Bodies: Fragments of a Cultural History of Glass", merges the crystalline with glass. Schnapp listed reasons why glass holds a particularly strong cultural significance. It mainly stems from its apparent equivalence to crystal gemstones, specifically, its "long-standing affiliation with precious and semiprecious stones contributes to the identification of glass with higher forms of materiality (spiritual bodies) and their attributes, real or imagined: cleanliness, health, moral probity, resoluteness, magical powers, and strength."²

Cristallo, the original fifteenth century Italian name for clear glass, was derived from the word for rock crystal.³ Glassmakers' desire to produce clear glass paralleled the alchemists' quest and was equally shrouded in secrecy. Although the successful manufacture of clear, or indeed coloured glass, can never fully replicate its natural

¹ Mark Cheetham (b.1954) remarked that "the use of crystal as form and metaphor recurs in the plastic arts so commonly that we can rightly think of it as an obsession." See Mark Cheetham, "The Crystal interface in Contemporary art: Metaphors of the Organic and Inorganic" *Leonardo*, 43, 3 (2010): 251.

² Jeffrey T. Schnapp, "Crystalline Bodies: Fragments of a Cultural History of Glass", *West 86th: A Journal of Decorative Arts, Design History, and Materials Culture*, 20, 2 (Fall-Winter 2013):176.

³ Guy Turner, "'Allume Catina' and the Aesthetics of Venetian 'Cristallo'." *Journal of Design History*, 12, no. 2 (1999): 111-122. The Italian for rock crystal, a type of quartz, is *cristallo di quarzo*.

counterpart, references to transmutation linger in some applications of the crystalline, as we shall see. Schnapp's article, written as part of a proposed larger study on architectural materials crucial to modernism, provided a compelling argument that, "materials are never simply *spoken for* within a given cultural-historical setting. They *talk back*. They talk back *as they are being spoken for*."⁴ If glass suggests certain attributes because of its jewel-like qualities, then the crystalline manifests those qualities directly, perhaps magnifying their intensity.

Despite the visual similarities between glass and crystals, they are not the same. Glass is an amorphous solid, meaning that unlike most other inorganic substances, it lacks the ordered structure inherent in the crystalline.⁵ The regular structure of particles within a crystal accounts for its relative strength. Twentieth century methods of strengthening glass have helped counter problems of fragility, but the second distinction between the two materials is not so easily overcome. This factor is crucial to understanding of the crystalline in art. Crystals *grow*.⁶ They are inorganic matter yet they have life-like properties. For some, therefore, crystals bridge the gap between living and dead matter and representations of them, or forms based upon their principles (faceted or geometrically abstract shapes), have been interpreted as having a living dimension. Ignoring the molecular level, glass can, of course, act as simulacra for the crystalline, but without understanding the crystalline, nuanced meanings, such as those Schnapp alludes to, remain unheard.

⁴ Schnapp, "Crystalline Bodies" 176.

⁵ The internal structure of crystals was identified by the Braggs (see footnote 12), leading to the conclusion that all inorganic substances, with the exception of artificial alloys like glass (called an amorphous solid), have regular crystalline structures which fall into one of 7 types. See Moritz Ingwersen, "Solid-State Fiction: J.G. Ballard and the Crystallization of Life." *Narrating Life: Experiments with Human and Animal Bodies in Literature, Science and Art*, edited by Elisabeth Friis & Stefan Herbrechter, (Brill/ Rodopi, 2016), p 77.

⁶ Crystals accrue proportionally, whereas the growth of organic matter occurs at different, less predictable rates. See Donna Jeanne Haraway, *Crystals, Fabrics, and Fields: Metaphors that Shape Embryos* (Berkeley, North Atlantic Books, 2004), 99.

In contrast to Schnapps' materialist study, this thesis is a study of a motif that references characteristics of crystals.⁷ Examples discussed within these pages range from depictions abstracted to appear faceted; texts with crystal metaphors; landscapes filled with jagged crystals; ideas and forms derived from crystallography; or the use of materials which are crystal-like. The crystal as representation, I propose, has the capacity to speak louder than the material itself. It is unencumbered by the physical limitations of the material allowing, for example, the architect German architect Bruno Taut (1880-1938) to imagine vast crystalline landscapes. The motif combines references to development of the material, its special characteristics, how artists have represented it and any associated critique. The artist, through an understanding of this complex language, shapes the narrative.

Cheetham's article, which I quoted at the beginning, provides a very brief sketch of the crystalline in philosophy, science and art history.⁸ In doing so, he highlighted some of its key proponents and concluded that, "crystals appear so widely and potently in art today because they help us to articulate the line between the animate and the inanimate."⁹ For Cheetham, Arthur Schopenhauer's (1788-1860) account of the crystal was "a unique example in his attempt to understand the gradation of nature from inorganic to humanity."¹⁰ Further exploration into how and why the crystalline came to be adopted for this purpose in art history is outside the scope of his study..

⁷ There are times, of course, when the materiality of glass is relevant to the discussion, but it is the special characterises of the crystalline that occupies me.

⁸ Cheetham, "The Crystal interface", 251.

⁹ Ibid.

¹⁰ Ibid. Schopenhauer described even simple crystals as "an abyss of incomprehensibilities and mysteries for our searching consideration and investigation", Arthur Schopenhauer, *The World as Will and Representation: Volume 2* (New York, Dover Publications, 1966), 195.

Schopenhauer considered crystals as an echo of 'will.' He explained, "In the formation of a crystal we see, as it were, a tendency to life, an attempt thereat, though it does not attain to it..."¹¹ Predating an understanding of crystalline structure by almost a century, Schopenhauer concluded that crystals had a momentary glimpse of life at the point of creation but are distinguished from organic substances because they do not have *ongoing* movement.¹² In essence, Schopenhauer placed the crystal at the threshold of life.¹³ Fifty years later, the evolutionist Ernst Haeckel's (1834-1919) monist views led him to suggest more connections between organic and inorganic forms. Haeckel's theories circulated amongst the Berlin avant-garde and were extremely influential to a number of key figures including Edvard Munch (1863-1944) and the writer and painter August Strindberg (1849-1912). Strindberg found visual evidence to support Haeckel's views while others took a different, more theoretical, approach. Wilhelm Worringer (1881-1965), one of the latter group, understood the crystalline as a formal counterpoint to organic or humanist art. The timing of Worringer's theory could hardly have been more timely. It coincided with general movement away from traditional art forms and was, at least partly, responsible for the proliferation of crystalline forms that appeared in art practice in the early Twentieth Century. The second chapter establishes these roots and identifies the various branches which arose, each bearing a slightly different significance for the crystalline motif.

¹¹ Ibid, 297. The full quote reads, "In the formation of a crystal we see, as it were, a tendency to life, an attempt thereat, though it does not attain to it, because the fluidity of which, like a living thing, it consists at the moment of that movement, is not enclosed in a *skin*, as with a living thing is always the case; accordingly, it does not have *vesse/s* in which that movement could continue, nor does anything separate it from the outside world. Therefore, coagulation at once seizes that momentary movement, of which only the trace remains as crystal."

¹² Father and son physicists William Henry Bragg (1862-1942) and William Lawrence Bragg (1890-1971) were awarded the Nobel Prize for Physics in 1915 for determining the structure of crystals using x-rays.

¹³ Erwin Schrödinger (1887-1961) and Robert Smithson were also interested in the crystalline because it contains this germ of life force, this point is elaborated fully in Chapter Three.

Bletter's frequently cited essay, "The Interpretation of the Glass Dream - Expressionist Architecture and the History of the Crystal Metaphor," traced the use of the crystal motif in architecture from Solomon's Temple to Philip Johnson's (1906-2005) glass buildings of the Seventies.¹⁴ Emine Özen Eyüce, who is also an architectural historian, continued Bletter's work by looking at contemporary architectural practice.¹⁵ Bletter's work focused on Expressionist architecture and discussed the evolution of the crystalline motif up until the 1920s but concluded, that, in architecture at least, later examples were stylistic only; namely they borrowed a faceted form but did not develop its meaning. Bletter's research was a helpful starting point, but neither Bletter nor Eyüce acknowledge the possible use of the crystalline motif as a counterpoint to organic art. On the contrary, Eyüce argued that the introduction of computer aided design technologies facilitated the evolution of inorganic crystalline shapes into something akin to living organisms. She concluded that the crystalline is not an alternative to organic architecture, but an extension of it.

Spyros Papapetros, yet another architectural historian, recently published *On the Animation of the Inorganic: Art, Architecture, and the Extension of Life*.¹⁶ As the title suggests Papapetros focused on animation which, he concluded, increased in response to the demise of empathic art in the modern period. There is a link between this and the increase in crystalline motifs in art theory and practice during the same

¹⁴ See Rosemarie Haag Bletter, "The Interpretation of the Glass Dream - Expressionist Architecture and the History of the Crystal Metaphor" in *Journal of the Society of Architectural Historians*, Vol. 40, No.1 (Mar. 1981): 20-43. Regarding Philip Johnson, Bletter touches upon three of his projects including the Crystal Cathedral, or Garden Grove Community Church in California from 1980.

¹⁵ See Emine Özen Eyüce, "Allure of the "Crystal: Myths and Metaphors in Architectural Morphogenesis" in *International Journal of Architectural Research*, Vol. 10, Issue 1, (March 2013):131-142.

¹⁶ Spyros Papapetros, "The Afterlife of Crystals" in *On the Animation of the Inorganic: Art, Architecture, and the Extension of Life*, (Chicago, University of Chicago Press, 2016). Papapetros received his graduate diploma in Architecture from the Architectural association in London before completing his PhD partly under Anthony Vidler at Berkeley.

period. Papapetros is one of the few contemporary writers to give anything more than lip service to Worringer. Rather than concentrating on the polarity of Worringer's thesis, which I will outline in Chapter Two, Papapetros' book extrapolates its finer details to develop the idea of animation. Basically, using Gothic architecture as a prime example, Worringer noted its capacity to suggest life via the continual interplay of its mechanical forces.¹⁷ It is the suggestion of life, or animation, which interests Papapetros and he traces its gestation and evolution. While doing so, he makes several references to the crystalline but as with the other studies already mentioned, the crystalline is tangential to the main argument.

Thus far, I have clarified why the crystalline is distinct from glass, hinted at its special properties and provided an overview of current literature on the topic, which is scarce. Returning to Schnapp's idea that materials talk back, my aim is to listen, to give voice to this motif and explore how and why particular artists or critics used the crystalline. The second chapter examines a period fertile with crystalline forms when practitioners and theorists used the crystalline for their own purposes. Having established a foundation, Chapters Three and Four follow the motif's subsequent evolution. Chapter Three explores a reawakening of the crystalline in Sixties America, where Robert Rauschenberg (1925-2008) developed the motif to fulfil his individual pursuits. The fourth chapter provides an in-depth analysis of work by the contemporary artist, Josiah McElheny (b.1966) who purposefully works with the complex language of the crystalline. McElheny, as an expert glass maker, combines mastery of the material

¹⁷ Worringer's view was shared by many others including Gottfried Semper and Heinrich Wölfflin. See Wilhelm Worringer, *Abstraction and Empathy: A Contribution to the Psychology of Style*, (Translated by Michael Bullock. 3rd ed. New York, International Universities Press), 1953, 112-3.

with an interest in historical critique. His work therefore alludes to topics which I discuss in the earlier chapters and so neatly concludes my research.

* * *

Chapter Two, The Crystalline Motif 1897 - 1921 identifies three figures who were the main catalysts behind the rise of crystalline motifs in the late Nineteenth and early Twentieth Centuries. The three characters are interlinked, as we shall see, but each had a different interpretation of the crystalline motif. These variations are evident in the work of their followers which will be discussed.

I begin by discussing Haeckel whose ideas circulated in the Bohemian group known as *Das Schwarze Ferkel* in Berlin during the 1890s. Haeckel's monist worldview meant he did not make a clear distinction between organic and inorganic matter. For him, one was simply more organised than the other. Artists directly influenced by these ideas, such as Edvard Munch (1863-1944), Peter Behrens (1868-1940) and, to a lesser extent Paul Klee (1879-1940), tended to use the crystalline as a symbol of transformation between states of being. The second, and perhaps most influential catalyst for the use of the crystalline, was Worringer. Worringer's early influence is most notable in the generation of German Expressionists. In 1921 however, Worringer famously declared that Expressionism was dead.¹⁸ This signalled a sudden decline in the use of Expressionist tropes, including the crystalline, and concludes the period discussed in the chapter.

¹⁸ Wilhelm Worringer, "Art Questions of the Day" (1921) translated and printed in *The Criterion*, Vol VI, No. II, (August 1927): 101 – 117, and reprinted in T.S Eliot, (ed.), *The Criterion 1922-1939, Vol. VI: July 1927 - December 1927*, (London, Faber and Faber, 1967).

In 1908, Worringer published *Abstraktion und Einfühlung* (*Abstraction and Empathy*), a kind of manifesto that simultaneously proposed an all-encompassing history of art and influenced avant-garde artistic debates of the period.¹⁹ Paul Ernst (1866-1933), a popular German writer, reviewed it for a leading contemporary art magazine, *Kunst und Künstler*, opening with the claim, “This little book deserves a lot of attention. It contains nothing less than a program for new aesthetics.”²⁰ The timing of Worringer’s book was crucial, according to Ernst. He predicted an end to ‘naturalism’ in the visual arts, and a rise of ‘*Stilkunst*’, or art derived from the will to abstraction.²¹ Worringer’s “little book” provided a historical and philosophical explanation and justification for this.²² As such, it was an immediate success.

Fundamentally, Worringer claimed that the history of art alternates between inorganic and organic forms; from ‘abstraction’ or ‘primitive’ art to Classical, humanist art. He based this conclusion on observations of the development of Western art from primitive beginnings. To a certain extent, he foretold the shift from Expressionism to Functionalism in the Twentieth Century. Worringer’s book drew on the Austrian art historian Alois Riegl’s (1858-1905) theory of *Kunstwollen* or artistic volition. Worringer argued that there are two types of artistic volition, ‘abstract’ and empathic. Empathetic art is dominant in periods when man is in harmony with his environment or

¹⁹ Worringer, *A&E*.

²⁰ Quote “Es enthält nichts weniger als ein Programm neuer Ästhetik.” Translated from German by author. Paul Ernst, “W. Worringer, *Abstraktion Und Einfühlung*” Review of *Abstraktion Und Einfühlung* by Wilhelm Worringer. *Kunst und Künstler*, Vol 6, issue 12, (1908): 529.

²¹ In the book review, Ernst’s ‘naturalism’ is defined as idealised work influenced by Greek antiquity and the Renaissance. Ernst, “W. Worringer, *Abstraktion Und Einfühlung*” 529.

²² “Wir haben in den bildenden Künsten sowohl, wie in der Dichtung den äussersten Punkt des Naturalismus erreicht; der Pendel wird jetzt nach der andern Seite schlagen und es ist das Verdienst der Worringerschen Arbeit, diesen Vorgang historisch-philosophisch erklärt zu haben.” Translated from German by author with assistance from Cian O’Dunlaing. *Ibid*.

surroundings. Worringer declares forms to be organic if they are based on laws found in the natural world, such as symmetry and proportion.²³ The viewer is able to enter into an empathic relationship with this type of art.

Worringer argued that periods of disharmony, which he understood to include the period before the classical era, give rise to 'abstraction'.²⁴ The 'abstract' volition produces art of a different order, whose purpose is not to reflect the world but to provide a refuge from it. This type of art incorporates inorganic natural forms. Following Riegl, Worringer recognised the crystalline as the pinnacle of inorganic perfection. Consequently, Worringer's idea of 'abstraction' rejects the three-dimensionality of the natural world and instead embraces crystalline inorganic forms. In *Abstraction and Empathy*, Worringer described a technique for abstraction which involved faceting and flattening to allow artists to break away from the classical tradition. For Worringer, and those influenced by him, the crystalline motif became a key signifier for non-humanist art, and its appearance, or disappearance, a signal of shifting aesthetic interests.

Worringer's book was embraced by contemporary German Expressionists because it resonated with their artistic aims. Unlike Worringer, for reasons I will outline later, these figures have attracted significant attention from art historians, so a full-scale study of this movement is beyond the current scope. However, a discussion of Worringer's influence illuminates their use of the crystalline and adds to the

²³ One may note that Worringer's view seems to correspond with Vitruvius's ideas as outlined in Vitruvius, Book III, Chapter I, "On Symmetry: In Temples and in the Human Body" in *The Architecture of Marcus Vitruvius Pollo in Ten Books* (London, Lockwood and Co, 1874), 63-7.

²⁴ Worringer's 'abstract' predates twentieth-century abstract art which is distinguished by being non-representational. Worringer's 'abstract' is not non-representational, instead it uses crystalline forms and flattens any illusion of depth.

understanding of their work. Consequently, Worringer's legacy is explored via a selection of key Expressionist works that include the crystalline and contribute to its evolution.²⁵

Worringer and the German writer Paul Scheerbart (1863-1915) were linked through their affiliation with the *Der Strum* gallery and journal. Scheerbart was a popular figure during his life, but has been largely forgotten in English literary studies, and is perhaps obscurer still in art history.²⁶ Yet, his work is fundamental to a study on the crystalline and forms the third and final part of the chapter. Scheerbart's ideas were disseminated mostly through the Expressionist architect Bruno Taut. Like Worringer, Scheerbart was interested in Gothic architecture. However, while the art historian attempted to argue for parity between different periods in art's history, Scheerbart stood outside this art historical debate. He was simply interested in the spiritual aspects of Gothic architecture which he located in their use of coloured light. This led him to form a utopian vision where solid architecture was eradicated in favour of glass crystalline structures. Scheerbart, and Taut who gave form to his ideas, viewed this new crystalline architecture as having positive psychological effects.

More recently, there have been pockets of interest in Scheerbart's writing, with the first of his novels *The Grey Cloth* (1914) being finally translated to English in 2001. McElheny, the artist featured in the fourth chapter, has now shone a spotlight on

²⁵ The reader may note that, for example, Cubism does not feature in my discussion, despite being contemporary and having a fragmented appearance. Applying Worringer's lens to Cubist work would be an interesting avenue for future enquiry, but unhelpful to this study which aims to examine the strength of Worringer's ideas circulating amongst *Der Strum* circle and its affiliates. Although my focus was very much on German art, I uncovered no links between Worringer and the Cubists in the course of my research.

²⁶ His first notable mention in recent times came from Rayner Banham (1922-88) in 1959 in a much-quoted article on the Taut. See Rayner Banham, "The Glass Paradise" in the *Architectural Review*, Vol. 125, (Feb 1959): 88.

Scheerbart, through the publication of three books directly and indirectly linked to the writer, as well as a number of artworks connected with his ideas. Chapters Two and Four are linked via Scheerbart.

Use of the crystalline motif declined in the Twenties when expressive 'primitive' forms gave way to a more rational aesthetic. The resultant architecture was functionalist, and the corresponding art was described by Alfred Barr (1902 - 81) as "intellectual, structural, architectonic, geometrical, rectilinear and *classical in its austerity and dependence upon logic and calculation.*"²⁷ By the Sixties a renewed interest in the crystalline began to emerge. For example, the main protagonists in J.G Ballard's *The Crystal World*, connect the forest's crystallisation with a resurgence of non-Classical, or specifically Byzantine, ideals. In the novel, the character Suzanne Clair writes to Dr. Sanders describing the crystallised trees as similar to the domes of Hagia Sophia (537 CE).²⁸ A few days later, Dr. Sanders noticed that, much to the disgust of his chaperone Father Balthus, the market in Port Matarre was filled with figurines in a primitive style. They were either teak or ivory embellished with crystalline by-products from the local mining industry. He remarked that "the sculptors had abandoned all pretence to Christian imagery and produced squatting idols with pendulous abdomens and grimacing faces."²⁹ For Worringer, the abstract tendency of the crystalline precedes organic or Classical art, so it seems fitting that Ballard's natives reverted to

²⁷ Writing between 1906-8, Worringer did not foresee that abstract art would be later interpreted as logical (organic) or intuitive (inorganic); instead he focused on artists' innate desire to abstract their world which, he claimed, predated Classical periods. Barr made distinctions between various forms of abstraction which are relevant to Worringer's thinking. He differentiated pure abstract art which is non-representational from the method of abstraction which 'abstracts' and condenses a scene into a composition. Worringer, as we will see in Chapter 2, discussed a type of abstraction that approximates the inorganic, but his variant is based on intuition or feeling rather than rational principles. Barr calls this the second strand of abstraction, to which Kandinsky belonged. Alfred H. Barr, *Cubism and Abstract Art*, (New York, Museum of Modern Art, 1936): 19 [my emphasis].

²⁸ J. G Ballard, *The Crystal World*, (London, Flamingo, 1993), 18.

²⁹ *Ibid*, 33.

this basic volition in the wake of the crystallisation of the forest. Their artistic volition follows Worringer's prediction that the "urge to abstraction is the outcome of a great inner unrest inspired in man by the phenomena of the outsider world."³⁰

The connection between Ballard and Worringer's use of the crystalline has also been noted by the cultural theorist Moritz Ingwersen. Ingwersen identified the use of the crystalline in literature through a case study on Ballard's *Crystal World*.³¹ Failing to recognise the significance of the primitive idols mentioned above, Ingwersen concluded that Ballard's interest was primarily in scientific developments.³² This led him to conclude that the characters' confusion over the crystalline petrification of the forest and aligned this with "a fundamental divergence and multiplication of the scientific disciplines that have in one way or another incorporated the crystal into their epistemic repertoire."³³ For Ingwersen then, Ballard's book was a commentary on how science attempted to use and understand the crystalline metaphor.

The American artist Robert Smithson (1938-73), began to use crystalline forms in 1963 and he later evolved the crystalline motif significantly. Consequently, an in-depth study of the inorganic motif in his work forms the basis of the third chapter, "Entropy and the Crystalline in the work of Robert Smithson." Drawing on Worringer's ideas, Smithson developed the motif making use of his multidisciplinary interests, which included the natural sciences. As a result, he changed the time-scale of the discussion. For Worringer, the crystalline was a motif relevant to art history from

³⁰ Worringer, *A&E*, 15

³¹ Ingwersen also recognised the influence Ballard had on Robert Smithson and codified the Spiral Jetty as "an entropic monument to the power of time to arrest and create form." Ingwersen, "Solid-State Fiction", pp. 71-91.

³² *Ibid*, 83.

³³ *Ibid*, 77.

primitive times. Smithson was interested in its geological significance and discussed it in relation to natural forces and systems, specifically entropy. Crystals were, according to Aidan Tynan, “the main ways he [Smithson] achieves a break from organic time in his art,” though Tynan’s article does not speculate why the artist did this.³⁴ Chapter Three closes this gap in the literature. Smithson, as we shall see, was influenced by George Kubler’s (1912-96) work and therefore sought to sever the link between art and biological time.

Like many of the artists mentioned in the second chapter, Smithson has attracted much discussion. This might have made it challenging to find a new perspective. However, focusing on the crystalline motif in his work provided an original approach and, I hope, a convincing reinterpretation of his work. I draw out themes in his early work which revolve around organic / inorganic tensions and consider ideas of entropy and the crystalline in the later work. Chapter Two relied heavily on primary and secondary sources available via various galleries and libraries. For Smithson, that approach would have provided only meagre pickings upon which to build my argument. It proved necessary to immerse myself in the Smithson archive, held by the Smithsonian Institution in Washington DC. There I was able to sift through the material looking for clues that would illuminate Smithson’s thinking about the crystalline motif. Art historians Philip Ursprung (b.1963) and Jennifer Roberts both concluded that Smithson interpreted the crystalline as “the antithesis to naturalism and historicism,” but how Smithson reached this conclusion is not elaborated.³⁵ This study

³⁴ Aidan Tynan, “Ballard, Smithson and the Biophilosophy of the Crystal.” *Green Letters: Special Issue: J.G. Ballard and the 'Natural' World* 22, no. 4 (2018): 404.

³⁵ Philip Ursprung and Fiona Elliot, *Allan Kaprow, Robert Smithson and the Limits to Art*, (Berkeley, University of California Press, 2013), 130. Also see Jennifer Roberts, *Mirror-Travels: Robert Smithson and History*, (New Haven, Yale University Press, 2004), 36-59.

uncovers some links back to Worringer which may have informed the artist. However, as the reader will see, examining the crystalline in the context of Smithson's oeuvre demonstrates how he adapted Worringer's ideas to his own ends. Art historian, Eric de Bruyn (b. 1955) described Smithson's use of the crystalline along the same lines as Ballard, "like Ballard, he [Smithson] inverted the crystalline metaphor of modernism – rather than augur of a utopian future, it became harbinger of an obsolete tomorrow."³⁶ Looking at the development of the motif in Smithson's work led me to a less pessimistic conclusion, explained in detail in the chapter. In Smithson's 1967 essay "A Tour of the Monuments of Passaic, New Jersey," the last monument is a child's sandbox. He described it as a place of "infinite disintegration and forgetfulness", a model for the "sullen dissolution of entire continents" where every "grain of sand was a dead metaphor".³⁷ He uses the sandbox to visualise the entropic process of the irreversible mixing of black and white sand to become a uniform grey. By 1970, Smithson's sense of the inevitability of entropy is countered by the use of the crystalline in his work.³⁸ I argue that, by the time of his death, the mood of dystopian hopelessness, such as that described by De Bruyn, had dissipated.

³⁶ Eric de Bruyn, "Constellations: On Josiah McElheny's Island Universe" in Louise Neri and Josiah McElheny, (eds.), *Josiah McElheny: A Prism*, (New York, Skira Rizzoli, 2010), 112.

³⁷ Robert Smithson, "A Tour of the Monuments of Passaic, New Jersey" (1967) in Robert Smithson and Jack Flam, *Robert Smithson: The Collected Writings*, (Berkeley: University of California Press, 1996): 74

³⁸ Certain crystals resist entropy.



Figure 1, Robert Smithson, *Untitled*, 1964³⁹

The contemporary American artist Josiah McElheny is the focus of Chapter Four, “Josiah McElheny and Alternative Histories.” Harvesting ideas from former artists and architects, McElheny exploits the crystalline both for its formal characteristics and its metaphorical qualities. McElheny transforms the motif from one closely associated with inorganic art forms, to one that indicates a general scepticism toward linear theories of history.

McElheny’s work brings together multiple threads from the earlier chapters. In 2010, he curated a show for the Andrea Rosen gallery called, “Crystalline Architecture” where the chosen pieces were grouped into three periods. The first roughly corresponds with the period covered by Chapter Two, including material such as prints of the Bruno Taut’s *Alpine Architecture* (1919). The second phase focused on 1964-66, most notably Smithson’s *Untitled* (1964) [Figure 1], and a May 1966 copy of

³⁹ Image taken from Karen Rosenberg, “Crystalline Architecture” Review of “Crystalline Architecture” exhibition at Andrea Rosen Gallery curated by Josiah McElheny June 30 - August 20, 2010. *New York Times*, (August 6, 2010). Accessed October 30, 2018. <https://www.nytimes.com/2010/08/06/arts/design/06galleries-002.htm>

Harper's Bazaar containing Smithson's essay "The Crystal Land." The third section explored contemporary work, including some by McElheny that provides what he described as an "alternative model" to rationalism.⁴⁰ McElheny uses history (amongst other things) as medium, highlighting how its significance varies over time. Sometimes, he re-stages or re-makes pieces by other artists. In cases where the originals have been discussed in earlier chapters, they are re-examined in Chapter Four to draw out the meaning of McElheny's appropriations.

Like Smithson, McElheny is interested in time on a vast scale; his astronomical time-scale is comparable with Smithson's geological one. Molly Nesbit's "A Fact and an Object" links McElheny to Kubler and, Kubler to Smithson. Nesbit specifically mentioned Smithson's illustrated essay "Quasi-Infinities and the Waning of Space" which she interpreted as the artist "posing the problem of the expansion and contraction of the universe for his reader," not unlike the theme of McElheny's 2008 work, *Island Universe* [Figure 2] which attempts to represent time from the big bang until the present day.⁴¹ *Island Universe*, is the title of a series of five sculptures, in chrome and glass, plus a film.⁴² The sculptures were inspired by the forty or so chandeliers made in 1965 for the Metropolitan Opera House, New York, by the

⁴⁰ Ibid.

⁴¹ Molly Nesbit, "A Fact and an Object," in Neri and McElheny, (eds.), *A Prism*, 92 and Robert Smithson, "Quasi-Infinities and the Waning of Space," in Smithson, *Collected Writings*, 34-7.

⁴² In 2009, McElheny's *Island Universe* was shown in the Palacio de Cristal (Crystal Palace) in Madrid. As with many of McElheny's themes, he tends to produce numerous works around the same subject. The *Island Universe* project comprising five chandelier type sculptures and a film of the same name date from 2008. Earlier in 2005, he was commissioned by the Wexner Centre for the Arts to create two pieces. This resulted in *An End to Modernity*, which was the first chandelier type work based on the Met chandeliers and it represents the history of the universe from the big bang, and an accompanying film called *Conceptual Drawings for a Chandelier* which includes schematic sketches of cosmology and footage of the original Met chandeliers. In 2006, he made *The Last Scattering Surface*, another of these glass and chrome sculptures, but this one can be distinguished because the central orb is studded with lights. *The Last Scattering Surface* and the component sculptures of *Island Universe* depict specific moments in the history of the cosmos. The Palacio de Cristal was completed in 1887 as a glasshouse for tropical plants. In keeping with other glass houses of the time, most notably, Joseph Paxton's Crystal Palace in London (1851), it is an iron and glass modular construction, manufactured off site.

Viennese glass company J & L Lobmeyr.⁴³ De Bruyn described McElheny's film *Island Universe* in crystalline terms. In a catalogue essay, he wrote, "rotating in a dizzying aerial ballet around the chandeliers and moving at times deeply into the space between the clusters of shimmering crystals, the camera of *Island Universe* does not anchor the spectator within the interior space of the opera house."⁴⁴ With the substitution of a few words this could easily describe Smithson's film *Spiral Jetty* (1970), discussed in detail in Chapter Three. Like Nesbit, De Bruyn also suggests links between Smithson and McElheny, but does not adequately address the issue. The second half of Chapter Four redresses this situation, and highlights themes central to both artists with the aim of illuminating McElheny's ongoing development of the crystalline motif.



Figure 2, McElheny's *Island Universe*, 2008, installation view, Palacio de Cristal, Madrid⁴⁵

⁴³ McElheny was aware that Lobmeyr also made products for the Austrian architect and theorist, Adolf Loos (1870-1933) who also interests him. See Josiah McElheny and Scott Rothkopf, "1000 Words," in Neri and McElheny, *A Prism*, 60.

⁴⁴ de Bruyn, "Constellations", in *ibid.*, 66.

⁴⁵ Image from "Josiah McElheny: A Space for an Island Universe", Museo Nacional Centro de Arte Reina Sofía, Accessed October 18, 2018. <http://www.museoreinasofia.es/en/exhibitions/josiah-mcelheny-space-island-universe>

McElheny's wrote the press release for his "Crystalline Architecture" exhibition, explaining why he found the crystalline attractive: "Together, these works propose that the fractures, reflections and the natural, imperfect geometry contained in the crystalline represent a way of thinking and building that encourages myriad solutions."⁴⁶ While other artists discussed in this thesis used the crystalline as an alternative to naturalism or classical art, McElheny sees it as offering a means of fragmenting historical narratives. He uses the motif to challenge univocal historical narratives, preferring instead to "represent a multitude of possible viewpoints and not a single universal one."⁴⁷ The contemporariness of McElheny's work brings my research into the use of the crystalline motif up to date, and my research to a close, for now.

⁴⁶ McElheny, "Crystalline Architecture".

⁴⁷ Ibid.

Chapter Two – The Crystalline Motif 1897 - 1921

During the late Nineteenth and early Twentieth century, there was a sudden rise in the use of the crystalline motif. It appears in familiar pieces, such as the Peter Behrens' (1868-1940), *AEG Trademark* from 1908 [Figure 10] or Lyonel Feininger's (1871-1956) *The Cathedral of Socialism* from 1919 [Figure 32].¹ However, Behrens and Feininger used the crystalline in very different ways. Behrens' trademark was forward looking, efficient and 'modern' whereas Feininger's work is tinged with nostalgia for a pre-industrial past. This chapter untangles various strands of thinking about the crystalline motif and arranges them into three categories associated with the thoughts and ideas of a key figure. The first section traces the work of the evolutionist Ernst Haeckel (1834 - 1919) and the dissemination of his theory amongst artists in Berlin. Haeckel observed crystalline forms in nature and so concluded that the organic and inorganic were connected. This spawned an early use of the crystalline motif which substantially differs from later interpretations. The second section considers the influence of the art theorist Wilhelm Worringer (1881-1965), specifically his PhD thesis published as *Abstraktion und Einfühlung (Abstraction and Empathy)* in 1908.² Worringer also drew on Haeckel's work, merging his broad concepts with the Austrian art historian, Alois Riegl's (1858 - 1905), art theory. Worringer made the crystalline central to his argument, heralding it as a counterpoint to organic art. As we shall see, his ideas generated considerable interest amongst German Expressionists.

¹ More commonly known as the Bauhaus Manifesto Frontispiece.

² Wilhelm Worringer. *Abstraction and Empathy a Contribution to the Psychology of Style*. Trans. Michael Bullock. 3rd ed. (New York: International Universities Press, 1953).

The final section focuses on the work of the utopian writer Paul Scheerbart (1863-1915), who knew Worringer through their mutual association with *Der Sturm*. Scheerbart is a relatively unknown literary figure who is currently enjoying a small resurgence of interest via the contemporary artist Josiah McElheny (b.1966), whose work I examine in Chapter Four. Scheerbart believed that the crystalline produced positive psychological effects and this idea inspired a generation of architects, until Functionalism became the prevailing style and these ideas died out. This chapter covers the period from 1897 until 1921.

* * *

Ernst Haeckel

Ernst Haeckel, sometimes referred to as the German Darwin, was a controversial figure. Haeckel's early biographer, close friend and former student, Wilhelm Bölsche (1861-1939) published his biography in 1900. The book was translated into English in 1906 with a foreword that explains why Haeckel's work attracted criticism.³

His intense idealism, his sense of what he felt to be wrong and untrue, inflamed by incessant travel and communion with men, drove him into the field of battle. In the din and roar of a great conflict his name has passed on to a million lips and become the varied war-cry of fiercely contending parties. A hundred Haeckels, grotesque in their unlikeness to each other, circulate in our midst to-day.⁴

Haeckel held four doctorates and was the recipient of several gold medals in science.⁵

Following his father's wishes, Haeckel studied medicine, however, his real interest lay in the natural sciences and he always intended to research rather than practice as a

³ For more on Haeckel's reputation see, Alan L Mackay, "Introduction of "Crystals Souls – Studies of Inorganic Life"" in *Forma*, Vol. 14, Nos. 1, 2, (1999):11-29.

⁴ Wilhelm Bölsche, *Haeckel, His Life and Work*, Trans. Joseph McCabe, (London: T.F. Unwin, 1906).

⁵ His doctorates were awarded by Berlin, Jena, Edinburgh, and Cambridge. See *ibid*, 10.

physician.⁶ As a student, Haeckel was particularly inspired by field work expeditions led by the zoologist Johannes Müller (1801-58). During one such trip, students collected small marine animals. As a keen artist, Haeckel quickly set about sketching his findings. Müller praised this practice, which Haeckel continued throughout his career, frequently illustrating his own books.⁷ A near death experience at sea led an aging Müller to leave his study of radiolaria to Haeckel who published on the subject in 1862.⁸ Radiolaria are tiny sea organisms (up to 2mm in diameter) with silica skeletons. Haeckel's book demonstrated that these skeletons are elaborate crystalline structures. When they die their skeletons either sink to the seabed or wash ashore, meaning that a pinch of sand viewed under the microscope reveals these miniature works of art.⁹

Despite being a quarter of a century younger, Haeckel enjoyed a relationship of mutual respect with Charles Darwin (1809 - 1882).¹⁰ He was inspired by Darwin's *On the Origin of Species* (1859). However, Bölsche maintains that "Haeckel's position was incomparably more radical than Darwin's from the very first. He no longer believed in a Creator, either in whole or in part."¹¹ For Haeckel,

The animal or the plant was a wonderful outcome of the same laws that had built the crystal or the globe. The sharp distinction between living and dead matter fell into the waste-basket, where so many other Dualistic tags lay, cut off by the shears of science.¹²

⁶ The botanist Alexander Braun was a family friend who often visited their home in Berlin. Haeckel would accompany Braun on botanical expeditions even before he studied medicine. Ibid.

⁷ Ibid, 70.

⁸ Ibid, 95-100

⁹ Ibid, 96.

¹⁰ Ulrich Kutschera, Georgy S. Levit, and Uwe Hossfeld. "Ernst Haeckel (1834–1919): The German Darwin and His Impact on Modern Biology." *Theory in Biosciences* 138, no. 1 (2019): 3.

¹¹ Bölsche, *Haeckel*, 135.

¹² Ibid, 136.

Haeckel's family were members of an Evangelical Church, but the young Haeckel was a sceptic. In his next book, *Generelle Morphologie Der Organismen* (*General Morphology of Organisms*), published in 1866, Haeckel wrote, "Man creates God in his own image."¹³

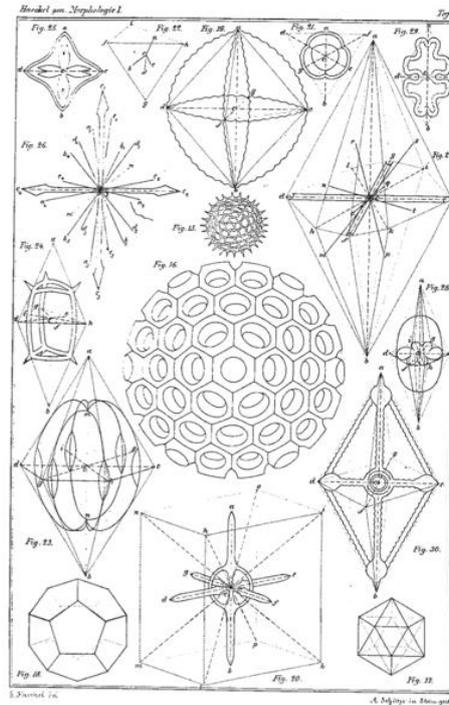


Figure 3, Ernst Haeckel, Plate from *General Morphology*¹⁴

General Morphology developed Haeckel's theory from his earlier study of radiolarian.¹⁵ He concluded that if the simplest creatures have a crystalline structure then all matter, living or dead, also has its basis in the crystalline. "Crystals," Haeckel said, "were matter striving for life".¹⁶ Bölsche firmly embraced Haeckel's views writing,

When I say that life arose one day out of the inorganic, or that a crystal was turned into a cell, my statement really involves the complementary truth that the inorganic potentially contains life in itself. Otherwise we have the old miracle

¹³ "Der Mensch schafft Gott nach seinem Bilde", in Haeckel, *Generelle Morphologie Der Organismen*, 1886, p.174, quoted from Mackay, "Crystals Souls", 13

¹⁴ Ernst Haeckel, *Generelle Morphologie Der Organismen*, Vol 1, (Berlin, Walter de Gruyter & Co., 1866, reprinted 1988), plate II.

¹⁵ Ibid.

¹⁶ Todd H Weir, "The Riddles of Monism" in *Monism: Science, Philosophy, Religion, and the History of a Worldview*, ed. Todd Weir, (New York, Palgrave Macmillan, 2012), 11. Although the basis of this conclusion is different, it still correlates with Schopenhauer's view of crystals discussed in the previous chapter.

over again of something being produced out of nothing, in spite of our spontaneous generation. Haeckel has always been clear on this point.¹⁷

Haeckel had been introduced to Monism while at university. His allegiance to this philosophical position was clearly expressed in *General Morphology*, though Bölsche claims that many misinterpreted it to the detriment of Haeckel's legacy.¹⁸ Haeckel's bestseller, *Die Welträthsel*, 1899 (*The Riddles of the Universe*) was written for a general reader. It was hugely successful, translated into several languages and sold over half a million copies, much to the excitement of Haeckel's supporters and the despair of his opponents.¹⁹ In 1905, Joseph McCabe, who translated Haeckel's biography into English remarked,

He [Haeckel] had in 1900 a few thousand thoughtful readers in several countries beside his own. Today he is read by hundreds of thousands in Germany, England, France, and Italy, and the fourteen different translations of his most popular work have carried his ideas over the whole world. To-day the thoughts of this professor of zoology in an obscure German town are discussed eagerly by bronzed and blackened artisans in the workshops of London, Paris, and Tokio [*sic*], as well as throughout Germany.²⁰

Acknowledging the popularity and beauty of his illustrations, Haeckel published *Kunstformen der Natur* (*Art Forms in Nature*) in 1899.²¹ The work comprised lavish coloured prints with short explanations for each category. His monist views caused Haeckel to emphasise, or even exaggerate, the crystalline properties of natural forms. The crystallographer Alan Mackay (b.1926), a translator of Haeckel's work, observed that Haeckel's illustrations of organisms were intended to ignite interest in the form and development of natural forms.²² Similar titles appeared in England but not until

¹⁷ Bölsche, *Haeckel*, 204-5.

¹⁸ *Ibid.*, 207.

¹⁹ Joseph McCabe, "The Crowning Years" in Bölsche, *Haeckel*, 303-4.

²⁰ *Ibid.*, 294.

²¹ Ernst Haeckel, *Kunstformen der Natur*, (Leipzig und Wien, Verlag des Bibliographischen Instituts, 1899).

²² Mackay, "Crystals Souls", 12.

later. Most notable amongst these were James Pettigrew's (1834-1908) three volume illustrated work, *Design in Nature*, published shortly after his death in 1908 and D'Arcy Wentworth Thompson's (1860–1948) on *Growth and Form* from 1916.

In 1906 Haeckel became chairman of the newly formed German Monist League (1906-1934), a group whose aim, according to historian Nolan Heie, was to “disseminate to the wider public a unified world-view based on the natural sciences, one that rejected all dualistic distinctions between matter and spirit, living and non-living, or God and universe.”²³ Unsurprisingly, these radical views attracted severe criticism. The botanist and Prussian House of Lords member, Johannes Reinke (1849-1931) derided the group as a “horde of fanatics” and warned of the moral consequences of a view that dramatically opposed Christian teachings. Reinke soon formed the Kepler Union of Christian scientists to counter the monists, and the two organisations vied for supremacy.²⁴

In 1915, father and son physicists William Henry (1862-1942) and William Lawrence (1890-1971) Bragg, published *X-rays and Crystal Structure* which earned them the Nobel Prize for Physics the same year. The book was the result of studies carried out over the previous three years into the structure of crystals. The Braggs found that the molecules with inorganic substances (with the exception of amorphous liquids) are arranged according to one of 7 crystalline types, whereas organic matter was found to lack such an ordered structure.²⁵ This discovery rendered Haeckel's views obsolete. Despite this, Haeckel's last book, *Kristallseelen (Crystal Souls)* was published in 1917. Haeckel, who was an old man by this time, continued to develop his earlier theory and argued that all matter, organic or inorganic had a soul.²⁶ *Crystal Souls* has recently

²³ Heie Nolan, “Ernst Haeckel and the Morphology of Ethics” *Journal of the Canadian Historical Association*, Vol 15, no. 1 (2004):2. Nolan studied Haeckel for her PhD thesis.

²⁴ Sheridan Gilley and Brian Stanley, *World Christianities, C.1815-C.1914*. The Cambridge history of Christianity. Vol. 8, (Cambridge: Cambridge University Press, 2014), 180.

²⁵ Moritz Ingwersen, “Solid-State Fiction: J.G. Ballard and the Crystallization of Life.” *Narrating Life: Experiments with Human and Animal Bodies in Literature, Science and Art*, edited by Elisabeth Friis & Stefan Herbrechter, (Brill/Rodopi, 2016), 77. The discovery of the structure of DNA challenged this clear distinction.

²⁶ Niles R Holt, “Ernst Haeckel's Monistic Religion,” *Journal of the History of Ideas* 32, no. 2 (1971): 279.

been reconsidered by the scientific community. In the simplest terms, it argued that a crystals' form is derived from the forces or bonds between its molecules. However, organic matter has a less well understood ordering structure. Alan Mackay suggested that Haeckel's work and our analysis of DNA structure, can help to advance the study of organic structures.²⁷

Haeckel's Influence on practice

Haeckel's ideas were disseminated amongst Berlin's avant-garde circle in the 1890s through Bölsche and the Polish writer, Stanislaw Przybyszewski (1868 - 1927), though they still had some currency amongst the Expressionists, which I will touch on later.²⁸ Bölsche, and Przybyszewski frequented the Berlin tavern, *Das Schwarze Ferkel (The Black Piglet)* where they socialised with Edvard Munch (1863 - 1944), the Swedish playwright and painter, August Strindberg (1849 - 1912), (whom Munch painted in 1892), and the writer Paul Scheerbart, who is the third key figure to be discussed in this chapter.²⁹ Bölsche shared Haeckel's monist views and so he thought that the crystalline structure permeated all works of art by default. In his biography of Haeckel he wrote,

The recurrence of sharp stereometric structures, not only in the crystal, but also, if less clearly, in the biological world, will one day prove an important source of knowledge, in a sense that is not even clear in Haeckel himself.

²⁷ Mackay, "Crystals Souls", 12.

²⁸ Haeckel was also popular in America and a known influence of the Chicago based architect, Louis Sullivan (1856-1924). See, Barry Bergdoll, "Of Crystals, Cells, and Strata: Natural History and Debates on the Form of a New Architecture in the Nineteenth Century" in *Architectural History*, Vol. 50 (2007): 23. For the dissemination of Haeckel's study of radiolarian specifically, including on the Scottish biologist and mathematician D'Arcy Wentworth Thompson, see, John R. Jungck et al, "Art Forms in Nature: radiolaria from Haeckel and Blaschka to 3D nanotomography, quantitative image analysis, evolution, and contemporary art" in *Theory in Biosciences*, Vol. 138, (2019): 159-87.

²⁹ Strindberg was incredibly popular. Between 1913-1915 over one thousand performances of twenty four of his plays were staged in Germany. See Raymond Furness, "Religious Element in Expressionist Theatre" in Shulamith Behr et al (eds.) *Expressionism Reassessed*, (Manchester, Manchester University Press, 1993), 165. Munch owned a copy of Bölsche's biography of Haeckel.

We are already entering upon a period that has a glimpse of the truth that the deepest power of Beethoven's music, or Goethe's poetry, or Raphael's painting, or Micheal Angelo's [*sic*] sculpture is a mysterious revelation of the most subtle mathematical effects – produced without conscious perception of these relations, though a human mind is at work in them. In spite of all our “consciousness”, the obscure intuitive power at work in these human artistic achievements differs very little from the curious force with which a radiolarian builds up its little house in the deep sea or a caseworm fits on its fine, rhythmic, snail like coat. In both we have the same profound, crystal-like constructive power that brought forth the wings of the butterfly, the feathers of the bird, the bodily frame of all the animals and plants, that harmonises so well with strict mathematical forms....The aesthetics of the twentieth century will take up these ideas.³⁰

Przybyszewski began his career as a medical student studying with Haeckel at the University of Berlin sometime between 1890 and 1893. The historian, Robert Michael Brain, outlined the nature of the friendship between Przybyszewski, Strindberg and Munch, and specifically Przybyszewski's influence over the other two.³¹ He recounted that, “Under Przybyszewski's guidance, the circle [at *Das Schwarze Ferkel*] read widely in the biological and psychiatric literature” including, “Haeckel's writings on biology and monist philosophy”.³² Strindberg also attempted to study medicine while Munch, who grew up in a household of doctors, was widely read. Consequently, both were deeply interested in the concepts discussed.

³⁰ Bölsche, *Haeckel*, 215-16.

³¹ For a full account of the friendship between these three men see, Sue Prideaux, *Edvard Munch: Behind the Scream*, (New Haven, Yale University Press, 2005).

³² Robert Michael Brain, “How Edvard Munch and August Strindberg Contracted Protoplasmania: Memory, Synesthesia, and the Vibratory Organism in Fin-De-Siècle Europe” in *Interdisciplinary Science Reviews*, Vol 35, (March 2010): 18.

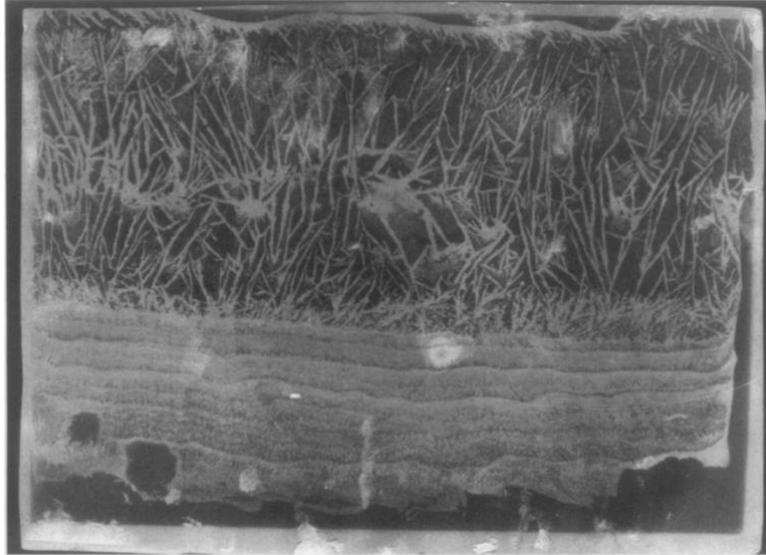


Figure 4, August Strindberg, Photogram of crystallization, 1892-96.³³

During this period, Strindberg enjoyed experimenting with the medium of photography, finding evidence to support of Haeckel's monist vision. Between 1892 and 1896, Strindberg made photograms [Figure 4] by allowing saline to dry on glass plates before preserving this image on photographic paper.³⁴ Around the same time, he wrote an essay called "Sigh of the Stones" in which he reminisced about seeing ice-ferns on a window while on a walk in Berlin. As Eszter Szalczar, professor of theatre studies, summarised, "To his astonishment, the patterns of the ice ferns seemed to imitate the evolutionary grades of plants, encompassing the complete botanical system from algae and moss, to ferns, grass, and palms."³⁵ Strindberg believed that he could see organic forms in the inorganic ice crystals. He understood, from Haeckel, that matter could not be created but only changed from one form to another. Consequently, he considered that the saline solution formed leaf-like patterns due to residual memories

³³ Eszter Szalczar, "Nature's Dream Play: Modes of Vision and August Strindberg's Re-Definition of the Theatre" in *Theatre Journal*, Vol. 53, No. 1, Theatre and Visual Culture (Mar., 2001), 43.

³⁴ Strindberg captured images directly, without mediation through the camera lens or even the eye. Szalczar concluded that Strindberg's method eliminated "the tyranny of perspective" and that "his attempts at capturing images, not as we see them but as they are, anticipated a switch of aesthetics that would become central to many artists of the avant-garde who felt that our vision had been fettered by convention for centuries. By the 1910s, German Expressionists (and indeed other modern artists) were liberated from the use of perspective, although they did not reject it completely. Ibid, 43-5.

³⁵ Ibid, 47.

from its former state (as a plant).³⁶ The inorganic developed into the organic, or vice versa.

In *Edvard Munch and the Physiology of Symbolism*, Shelley Wood Cordulack discussed Munch's interest in the physiology of death and the afterlife.³⁷ Cordulack partially attributed this interest to the influence of his father's religiosity; however, it is only by referring to Haeckel's theory that one can interpret Munch's use of the crystalline.

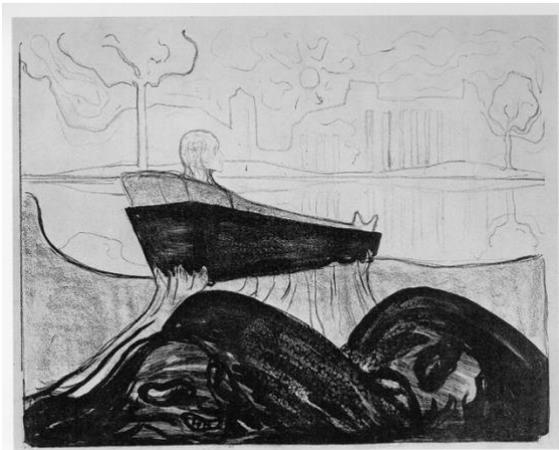


Figure 5, Edvard Munch, *In the Land of Crystals*, Lithograph, 1897³⁸

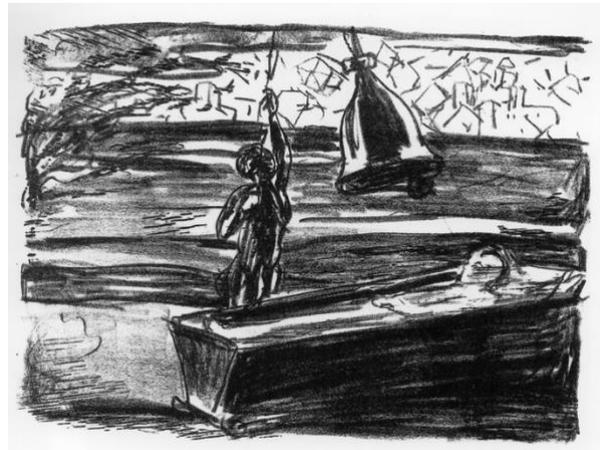


Figure 6, Edvard Munch, *Crystallization*, Lithograph, 1928³⁹

The crystalline motif appears several times in Munch's career, with the earliest visual example, *In the Land of Crystals*, stemming from the period of his friendship with Strindberg.⁴⁰ Later, in 1928, crystals reappear in another lithograph entitled, simply,

³⁶ Furness's described the theme of Strindberg's *To Damascus* (1898-1901), as "the soul's struggle to find and transcend itself" which may have been inspired by Strindberg's photograms. Furness, "Expressionist Theatre". 166.

³⁷ Shelley Wood Cordulack, *Edvard Munch and the Physiology of Symbolism*. London: Associated University Presses, 2002, 96.

³⁸ Image from Gred Woll, *Edvard Munch: The Complete Graphic Works*, (London, Orfeus Publishing, 2012), 132.

³⁹ Image from *ibid*, 423.

⁴⁰ The Munch museum has aligned this work with others from 1896-8. These are of similar composition or containing similar elements, such as the coffin or figures in the foreground, for example, see, *Funeral. Variation on "In the Land of Crystals"* Munch Museum, Oslo. Accessed February 02, 2020. <https://munch.emuseum.com/objects/38390/begravelse-variasjon-over-i-krystallandtet>

Crystallization. Both scenes depict a coffin in the foreground and a crystalline skyline in the background. The coffin in *In the Land of Crystals* is diagonally positioned suggesting movement towards the crystalline scene behind. Studies for the finished work show that the element below the coffin comprises figures, or more precisely, hands holding the coffin aloft in its funeral procession towards the crystalline skyline.⁴¹ These lithographs depict the dead transitioning to an inorganic landscape after life, suggesting that, in these works at least, Munch's ideas align with Strindberg's (and Haeckel's) views. Munch explained this in a 1906 letter to the art collector Gustav Schiefler (1857-1935) declaring, "Death is a transition to life. The dead body goes over in new crystal form."⁴² Munch included a print of the early lithograph, *In the Land of Crystals*, in a notebook entitled *The Tree of Knowledge of Good and Evil* dated 1930 - 35. The notebook's text explains his thinking and the function of the bell in *Crystallization*,

There was a casket on a hill. Inside of it was a corpse. A mother stood ringing a large bell
The mother sang go now into the land of crystals. A procession of men and women walked below repeating [the refrain]: Go now into the land of crystals
The sky opened and became illuminated – A great kingdom of crystals could be seen reflecting all the colours of the rainbow through crystals clear as diamonds large and small.⁴³

Later in the same sketchbook he elaborates further, in the following extract,

Crystals are born and formed like children in a mother's Womb. Even in the hardest stone the flame of life blazes
death is the beginning of life – of a new Crystallisation
we do not die, the world dies from us...⁴⁴

⁴¹ See for example, *Funeral March*, black crayon, c.1897-1900 and *Funeral March*, lithograph, 1897.

⁴² Letter from Munch to Gustav Schiefler quoted in Cordulack, *Edvard Munch*, 96.

⁴³ Edvard Munch, "Extract MM T 2547, Fol. 000-A5 from Munch's *Tree of Knowledge of Good and Evil* Sketchbook." Munch Museum, Oslo. Accessed October 24, 2015. http://emunch.no/TRANS_HYBRIDMM_T2547.xhtml#.ViplZUKdLzI.

⁴⁴ Edvard Munch, "Extract MM T 2547, Fol. 025-A31 from Munch's *Tree of Knowledge Sketchbook*." Munch Museum, Oslo. Accessed October 22, 2015. http://emunch.no/TRANS_HYBRIDMM_T2547.xhtml#.ViplZUKdLzI

The poem is illustrated by a line drawing [Figure 7], which is repeated later in the sketchbook with added clarity. The image depicts a head peeking out from a faceted rock, or crystal. The inorganic crystal gives birth to organic life.

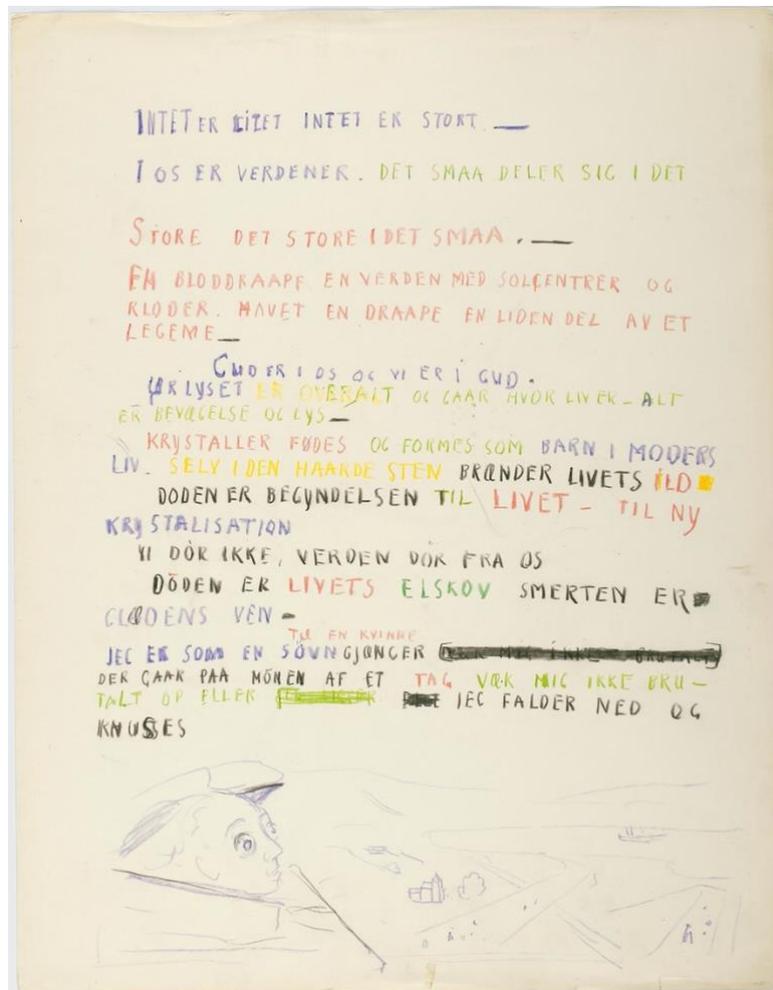


Figure 7, Munch, Extract from *The Tree of Knowledge of Good and Evil* Sketchbook, c.1930-35⁴⁵

These examples demonstrate Munch's idea of the crystalline motif in relation to life and death in the period from the late 1890s until the 1930s. However, he used it in another guise too, one which appears to resonate more closely to the use of the motif in the work of Behrens and the German Expressionist groups, who will be discussed

⁴⁵ Image from Munch Museum, Oslo online at https://emunch.no/TRANS_HYBRIDMM_T2547.xhtml#ViplZUKdLzI
 Accessed February 04, 2020.

below. In 1907, during Munch's peaceful eighteen month stay in the coastal town Warnemünde, he wrote:

Art and Nature

Art is the opposite of nature.

A work of art comes from the inner soul of a human being.

– Art is the picture's form materialised through human nerves – heart – brain – eye.

– Art is the human craving for crystallization.

Nature is the infinite realm from which art takes its nourishment. –

Nature is not only that which is visible to the eye – it is also the inner images of the soul – images on the back side of the eye.⁴⁶

In the line, "Art is the compulsion of man towards crystallisation," Munch appears to echo Bölsche's view, quoted earlier from Haeckel's biography, that the artist has an instinctual drive to create crystalline forms.

Munch was very influential in avant-garde circles early in the century. In Germany, he was catapulted into prominence in 1892 when his first German exhibition at the Verein Berliner Künstler closed after only a few days, due to protest from the Artists' Union who attempted to uphold traditional views.⁴⁷ In the September 1912 Sonderbund exhibition, thirty-two of Munch's works were exhibited, the greatest number by any living artist. One of the organisers of the Armory show in New York, the artist Walt

⁴⁶ Extract from Munch's notebook from 1907-08, translations available via the Munch Museum at http://www.emunch.no/TRANS_HYBRIDMM_UT0013.xhtml#.Vi0CMEJXLzK (last accessed 25.10.15).

An undated extract from Munch's journal has a very similar subject matter. See Edvard Munch *Private Journals of Edvard Munch: We are flames which pour out of the earth*, ed. & trans. J. Holland, (Wisconsin, The University of Wisconsin Press, 2005), 60-1:

"One doesn't paint after nature— one takes from it or scoops out of its rich vat

Style and Impressionism— In art lies men's desire for crystallization —Things decompose in nature in order to take shape later— in the meantime Impressionism especially is a decomposing unfolding of power—seeks at the same time to fix itself in the style of the form."

⁴⁷ By 1962, the German architect and last director of the Bauhaus, Mies van der Rohe, had collected eighty-one Munch prints.

Kuhn (1880 - 1949), met Munch on the closing day of the exhibition. Kuhn later wrote to his wife saying that “He [Munch] is on top of the wave in Europe.”⁴⁸ Despite this recognition, and his connections to Der Blaue Reiter in particular, Munch’s understanding of the crystalline motif as linking life with death, did not become widespread.

Behrens’ Crystalline Motif

Haeckel and Behrens were co-signatories of the 1914 “Manifesto of the 93” which supported Germany’s actions in Belgium in August that year, but that appears to be the only time their views coincided. In contrast to Munch, Behrens’ crystalline motif was not a direct appropriation of Haeckel’s organic / inorganic connection. Behrens use of the motif shares the idea of transformation between states, but his ideas derived from other sources.

⁴⁸ Letter from Walt Kuhn to his wife dated October 02, 1912, quoted in Elizabeth Prelinger and Michael Parke-Taylor, *The Symbolist Prints of Edvard Munch*, (Toronto, Yale University Press, 1996), 34. Here it references the letter from reel D240, Walt Kuhn Family Papers, Archives of American Art, Smithsonian Institution.

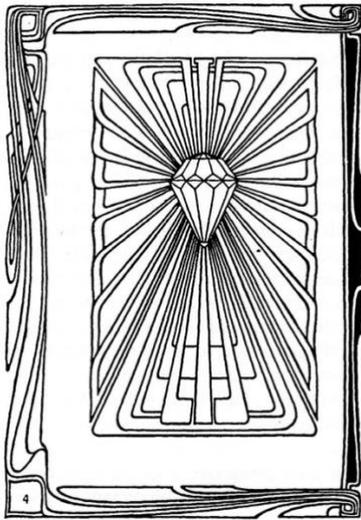


Figure 8, Frontispiece to *Ein Dokument Deutscher Kunst: Die Ausstellung der Künstler-Kolonie in Darmstadt, 1901*⁴⁹

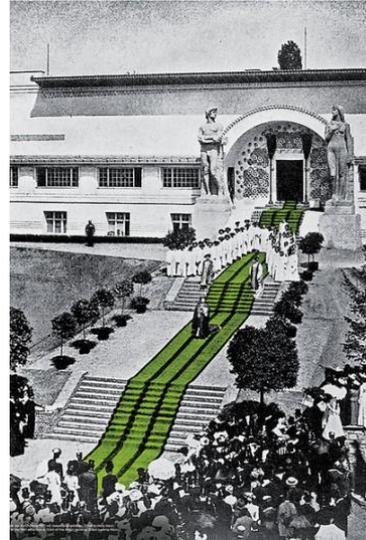


Figure 9, Darmstadt Opening Ceremony, 1901

Behrens' illustrations for the Darmstadt Artists' Colony in 1901 featured a crystal to symbolise the transformative power of art [Figure 8].⁵⁰ The colony was a centre for the Jugendstil movement, founded by the Grand Duke of Hesse, Ernst Ludwig in 1899, with the intention of reinvigorating German applied and decorative arts. Behrens staged a play, called *The Sign (Das Zeichen)*, written by the art critic Georg Fuchs (1868-1949) as part of an opening ceremony to mark the first Darmstadt exhibition.⁵¹ It took place on the front steps of the colony's main building, designed by Joseph Maria Olbrich (1867-1908), who had designed the Vienna Secession building in 1898. *The Sign* made the importance of the crystal motif clear. Behrens recited the following two verses as he descended the steps whilst holding a crystal [Figure 9].

As dust, sealed by force
 Becomes diamond from a blind core,
 Firmly formed, reflecting the change,
 Light in light, star in star

⁴⁹ Image from the University of Heidelberg, available online at <http://digi.ub.uni-heidelberg.de/diglit/behrens1901/0004> Accessed October 1, 2015.

⁵⁰ Darmstadt Artists' Colony was founded in 1899 by the Grand Duke of Hesse, Ernst Ludwig. The aim was to encourage the development of a German equivalent to the Arts and Crafts movement in England.

⁵¹ Stanford Anderson, "Behrens' Changing Concept", *Architectural Design*, Vol. 39, (Feb. 1969), 73.

The diamond, symbol of a new life
 Under this sign is unveiled
 A new age of young souls,
 The time has come, you have not waited in vain.⁵²

The crystal was used to announce the colony as a place of artistic transformation. Sanford Anderson (1934-2016), former Head of the Department of Architecture at MIT, explained why this particular material was an appropriate choice.

The symbolism of the crystal relies on a metaphorical relationship between transformations which take place at the micro and macrocosmic levels; for example, just as mere carbon under intense conditions assumes a particular crystal structure and becomes the prized diamond, so the power of art may transform everyday life into a resplendent life filled with meaning.⁵³

In another context, Anderson provided a more romantic account of Behrens introduction of the motif at the Darmstadt colony.⁵⁴ Anderson linked Behrens use of the crystal to the French writer, Stendhal (Marie-Henri Beyle, 1783-1842) and his theory of crystallisation. Stendhal's introduced this concept in *De l'amour* (1822), where he explained the formation of feelings of love. According to Stendhal, one goes through stages from admiration in the first instance, to love and then crystallisation. Crystallisation begins when one projects positive attributes onto the love object. He provided the following analogy and explanation,

At the salt mines of Salzburg a branch stripped of its leaves by winter is thrown into the abandoned depths of the mine; taken out two or three months later it is covered with brilliant crystals; the smallest twigs, those no stouter than the leg of a sparrow, are arrayed with an infinity of sparkling, dazzling diamonds; it is impossible to recognise the original branch.

I call crystallisation the operation of the mind which, from everything which is presented to it, draws the conclusion that there are new perfections in the object of its love.⁵⁵

⁵² Frederic J Schwartz, *The Werkbund: Design Theory and Mass Culture Before the First World War*, (New Haven & London, Yale University Press, 1996), 173.

⁵³ Anderson, "Behrens' Changing Concept", 74.

⁵⁴ Sanford Anderson, *Peter Behrens and a New Architecture for the Twentieth Century*, (Cambridge, MIT Press, 2000), 33.

⁵⁵ Stendhal *On Love*, trans P.S Woolf & C.S Woolf, (New York, Brentano's, 1915), 22-3. The introduction to a 1915 edition of Stendhal's *On Love*, includes the quote, "Crystallisation has become an integral part of the world's

In applying these ideas to design, Anderson suggested that the use of the crystal allowed Behrens “to be a willing partner in the beneficial deception that art could perform.” This explains its place in the opening ceremony of the Darmstadt exhibition in 1901.⁵⁶



Figure 10, Peter Behrens, *AEG Trademark*, 1908⁵⁷

A few years later, in 1907, Behrens was employed by AEG (Allgemeine Elektrizitäts-Gesellschaft) to refashion their corporate identity and design household electrical products. Behrens began his career producing Jugendstil art. As he matured, however, his work became increasingly abstracted from its natural origins, as demonstrated by crystalline AEG logo [Figure 10]. The company’s aim of bringing well designed, mass-produced products into every German home was closely aligned with Behrens’s own views, promoted through his establishment of the Deutsche Werkbund in the same year.⁵⁸ His AEG company trademark featured a crystal which the art historian Frederic J Schwartz has argued is a simplification the Darmstadt crystal. In Darmstadt, there was to be positive change through the arts, for AEG the trademark

equipment for thought and expression” which is an interesting literary interpretation of this symbol in 1915. See xviii.

⁵⁶ Anderson, *Peter Behrens*, 33.

⁵⁷ Image from Frederic J Schwartz, “Commodity Signs: Peter Behrens, the AEG, and the Trademark” in *Journal of Design History*, Vol. 9, No. 3 (1996): 168.

⁵⁸ The Deutsche Werkbund was formed in Munich, in October 1907. During its existence, its membership included Peter Behrens, Hermann Muthesius, Henry Van der Velde, Theodor Fischer, Friedrich Naumann, Bruno Taut and Walter Gropius. The Werkbund was established to promote a correlation between art and industry. Although influenced by the Arts and Crafts movement in England it also embraced new materials and technology, similar to the Jugendstil. Gropius exhibited a model factory in the 1914 Werkbund exhibition in Cologne. Tensions arose in the Werkbund almost from its inception perhaps due to Muthesius’ concern with mass production whilst Van der Velde favoured artisanal products.

advertised beneficial transformation through its products which found their way into German homes. Schwartz linked Behrens's trademark to a passage from Alois Riegl's (1858 - 1905) *Spätrömische Kunstindustrie*, which describes a crystal.⁵⁹ Behrens was very familiar with Riegl's work and a keen proponent of his views. Schwartz has also suggested that Behrens may have been interested in the recently discovered benzene ring.⁶⁰ In 1865, the German organic chemist, August Kekulé (1829-96) hypothesized that the structure of the benzene molecule (C₆H₆) was hexagonal.⁶¹ While this may suggest an organic basis for the crystalline, he doesn't seem concerned with the organic / inorganic division. Behrens was, however, very interested in crystalline stereometry, and he devoted his attention to it after his appointment as director of Düsseldorf Arts and Crafts School in 1903.⁶²

The architect and historian, Detlef Mertins (1954-2011) argued that instead of following Haeckel's ideas, Behrens had "a more conservative agenda, reiterating the transcendent claims of classicism through a neo-Kantian schematism."⁶³ While this may indeed be the case, historian Andreas Killen stated that the rapid modernisation of Berlin around the turn of the century, created anxiety amongst the populace which

⁵⁹ Schwartz, "Commodity Signs", 169. Schwartz points to a passage from Alois Riegl, *Spätrömische Kunstindustrie*, (Österreichische Staatsdruckerei, Vienna, 1927), 343. It is unlikely that Behrens read Worringer's thesis before its publication in 1908 or that Worringer's ideas indirectly influenced his work. It is however possible that Worringer's views influenced later interpretations of the AEG motif.

⁶⁰ See Schwartz, *Werkbund*, 178. For further discussion, see Joseph Masheck, "Abstraction and Apathy: Crystalline Form in Expressionism and the Minimalism of Tony Smith" in Neil Donahue ed., *Invisible Cathedrals: The Expressionist Art History of Wilhelm Worringer*, (Pennsylvania, Pennsylvania State University Press, 1995), 48.

⁶¹ August Kekulé was born in Darmstadt and had originally studied architecture before moving to chemistry. His early interest in architectural structures are seen as fundamental to his theories in molecular structure.

⁶² Anderson, *Peter Behrens*, 33. While there Behrens approached Wassily Kandinsky (1866-1944) offering him a position overseeing the class for decorative painting. Peg Weiss, "Kandinsky and the 'Jugendstil' Arts and Crafts Movement," *The Burlington Magazine*, Vol. 117, No. 866, Special Issue Devoted to Twentieth-Century Art (May, 1975): 271.

⁶³ Detlef Mertins, "Bioconstructivisms" in Jenny Sabin and Peter Lloyd Jones (eds.) *LabStudio: Design Research between Architecture and Biology*, (New York, Routledge, 2018), 7

required a bold approach.⁶⁴ Behrens' pared-down designs, without all the Jugendstil frill, were more in tune with a faster pace of modern urban experience.⁶⁵ Behrens' appointment to AEG, therefore, presented both an opportunity and a challenge. Killen provides a fascinating account of the mild hysteria that circulated in Berlin, as a consequence of modernisation. This resulted in companies routinely sending employees off to convalesce in suburban sanatoria.⁶⁶ As one of two main electrical suppliers in Berlin, AEG (the other was Siemens) felt called upon to provide public reassurance. Behrens was therefore tasked with providing a symbol that would encourage the public to embrace emerging technologies.⁶⁷ The AEG crystal symbolised positive transformation, encouraging public acceptance of modern technology.

As a motif, both Darmstadt and AEG crystals represent transformation, but the latter may also be interpreted as a stylistic example of the type of design that Behrens hoped would emerge. Behrens's Turbine Factory from 1909, also for AEG, is a key modernist building without ornamentation. The sign *Turbinenfabrik*, and the crystalline trademark are all that adorn its façade. According to Schwartz, "Wolf Dohrn, managing director of the Werkbund, claimed that Behrens's new trademark was used with 'great enthusiasm in the workshops...The workers want nothing to do with the old, conventional trademark, for they regard the new one as the true symbol of their labor.'"⁶⁸

⁶⁴ Andreas Killen, *Berlin Electropolis: Shock, Nerves and German Modernity*, Berkeley, University of California Press, 2006. See Chapter One, "Berlin Electropolis" 15-47.

⁶⁵ *Ibid*, 24.

⁶⁶ *Ibid*, 67-8.

⁶⁷ *Ibid*, 22 & 68 for background on AEG and Siemens.

⁶⁸ Schwartz, "Commodity Signs", 175. Schwartz references the original source for the quote as Wolf Dohrn, "The example of the AEG", *März*, vol. 3, no. 17, (1909), in Tilmann Buddensieg (ed.), *Industriekultur: Peter Behrens and the AEG*, trans. Iain Boyd Whyte, (Cambridge, MA, MIT Press, 1984).

Like Munch, Behrens was influenced by scientific discoveries. Behrens, however, was not faithful to one idea and his work responded to the wider context of modern life. As the century progressed, Behrens' use of the crystalline as a symbol of transformation was largely overshadowed by the German Expressionists' use of the motif, which I will discuss next. Behrens' use was not altogether extinguished, however, and traces of his interpretation of the crystalline were most likely disseminated through his role in the Deutsche Werkbund, or through his atelier where influential twentieth-century architects, such as Walter Gropius (1883-1969), Le Corbusier (1887-1966) and Ludwig Mies van der Rohe (1886-1969), worked.

Wilhelm Worringer⁶⁹

In 1907 Wilhelm Worringer (1881-1965) completed his doctoral thesis entitled *Abstraktion und Einfühlung (Abstraction and Empathy)*. Paul Ernst (1866-1933), a popular German writer, acquired a copy and wrote a review in the December 1908 edition of *Kunst und Künstler* (1902-33) a lavishly illustrated monthly art magazine.⁷⁰ He remarked that it “contains nothing less than a program for a new aesthetics.”⁷¹ The piece was sandwiched between reviews of Henry van de Velde's (1863-1957) *Von Neuen Stil* (1907) and Hermann Muthesius (1861-1927) three volume book, *Das Englische Haus* (1904), placing the young art historian amongst the work of

⁶⁹ Additional research on this and the next subheading is provided in endnotes located at the end of the thesis, see Table of Contents for the page number. These are differentiated from footnotes by the use of Roman numerals.

⁷⁰ In the preface to the 1948 edition, Worringer tells the story that a copy of his unpublished thesis fell into the hands of the German writer Paul Ernst who wrote a favourable review of it in *Kunst und Künstler*. This, according to Worringer, resulted in its publication as a book, though this seems unlikely as the review was in December 1908 and the book was published that same year.

⁷¹ Quote “Es enthält nichts weniger als ein Programm neuer Ästhetik.” Translated from German by author. Ernst, “W. Worringer, Abstraktion Und Einfühlung” 529.

established cultural influencers.⁷² Ernst sold Worringer's treatise as a handbook for understanding emerging new aesthetics freed from classical principles, and in this respect it was remarkably successful. Worringer's theory of 'abstraction' hinges on the crystalline as a counterpoint to empathic or Humanist art.⁷³ This attracted German Expressionist groups who used Worringer's interpretation of the crystalline motif frequently in their work, as we shall see.⁷⁴ Published in 1908, Worringer's book remained in print for the rest of his life. In 1953, it was finally translated into English by Michael Bullock (1918-2008), a prolific English writer, and published in America.ⁱ

Worringer was born in Aachen, Prussia, in 1881 and died in Munich in 1965.⁷⁵ Biographical details are sparse, and his archives incomplete because he fled his home twice leaving many of his belongings behind. He had one older sister, the artist Emmy Worringer (1878-1961) and it was likely that he met his wife, Marta Schmitz (1881-1965), also an artist, through her.⁷⁶ Rhys W. Williams, an expert in Twentieth Century German literature observed how Worringer's two early books, *Abstraction and Empathy* and *Form in Gothic* (1912), completely overshadowed the remainder of his

⁷² Van de Velde co-founded the Grand Ducal School of Arts and Craft in 1905 in Weimar (the precursor to the Bauhaus) while Muthesius was an advocate of the Arts and Crafts movement and was connected to the establishment of the Deutsche Werkbund where he served as chairman from 1910-16.

⁷³ The connection between crystalline and non-Humanist art, specifically Gothic art, did not originate with Worringer. Schopenhauer noted, "an often-observed analogy" between Gothic architecture and the crystal because, like the interior of a Gothic church, it's "formation also takes place with the overcoming of gravity." Arthur Schopenhauer, *The World as Will and Representation: Volume 2* (New York, Dover Publications, 1966), 417. Schopenhauer was certain that Gothic architecture is inferior to Classical architecture styles, however he did note the positive aspects of Gothic churches interiors, writing, the "vault is borne by slender, crystalline, aspiring pillars and with the disappearance of the load, promises eternal security." Ibid, 418.

⁷⁴ Quote "Es enthält nichts weniger als ein Programm neuer Ästhetik." Translated from German by author. Ernst, "W. Worringer, Abstraktion Und Einfühlung" 529. The historian Mary Gluck stated that, "Worringer's treatise has been alternatively described as the founding text of German Expressionism, as the intellectual catalyst of Anglo-British modernism, as well as the theoretical forerunner of twentieth-century formalism." Mary Gluck, "Interpreting Primitivism, Mass Culture and Modernism: The Making of Wilhelm Worringer's *Abstraction and Empathy*," *New German Critique* 80 (Spring Summer, 2000): 154.

⁷⁵ Mies Van der Rohe was also born in Aachen five years later. Interestingly, Robert Vischer, the originator of the term *Einfühlung* who will be discussed later, held a professorship at the Technische Universität at Aachen from 1885-1892 but as details of Worringer's life are so few there is no record of any connection between them.

⁷⁶ He married Schmitz in 1907.

academic portfolio.⁷⁷ After the First World War, Worringer taught at the University of Bonn (until 1928), at Königsberg (until 1944) and at the University of Halle until 1950 when he moved to Munich, where he remained for the rest of his life.⁷⁸

Abstraction and Empathy's immediate success amongst practitioners resulted in the book's commercial publication within months.⁷⁹ It also meant that, initially, Worringer's ideas tended to be naturalised rather than criticised.ⁱⁱ The architectural historian Richard Padovan explained,

The derisive name 'Cubism' was given to the new tendency by Henri Matisse in response to an exhibition of landscapes Georges Braque brought back from an expedition to L'Estaque in 1908; and in 1909, the year that Worringer's thesis was published, Picasso made his first fully Cubist paintings during a summer spent at Horta del Ebro. In 1911 Wassily Kandinsky published his own abstractionist manifesto, *Concerning the Spiritual in Art*. And by 1913 Piet Mondrian was producing completely abstract compositions derived from seascapes and cityscapes. These works demanded theoretical justification, and Worringer's book supplied it.⁸⁰

Before its translation, Worringer's ideas were first disseminated in English through T.E. Hulme (1883-1917), specifically his *Speculations*, published posthumously in 1924.ⁱⁱⁱ Hulme, an English aesthetician, literary critic and poet, stumbled upon a reference to Worringer whilst reading Ernst. Then, in Berlin around 1912, Hulme heard Worringer lecture and had the opportunity to speak with him.⁸¹ In a 1914 article, Hulme discussed Worringer's ideas and acknowledged both his and Riegl's influence.⁸²

⁷⁷ Rhys W Williams, "Wilhelm Worringer and the Historical Avant Garde" in ed. Dietrich Schennemann, *Avant-Garde / Neo-Avant-Garde*, (Amsterdam, Rodopi, 2005), 60. For example, Worringer's third book *Lukas Cranach*, also dating from 1908, exists only in a single German edition. Christian Weikop, "Brücke and Canonical Association" in *Brücke: The Birth of Expressionism in Dresden and Berlin, 1905-1913*, (Ostfildern, Hatje Cantz Verlag, 2009), 103-127, particularly, 123.

⁷⁸ Biographical details on Worringer are scarce. These are gleaned from Williams, "Wilhelm Worringer", 60 and Donahue, *Cathedrals*, 4.

⁷⁹ Williams, "Wilhelm Worringer" 55.

⁸⁰ Richard Padovan, *Proportion: Science, Philosophy, Architecture*, (London, Routledge, 1999), 19.

⁸¹ T.E Hulme, *Further Speculations*, ed. Sam Hynes, (Lincoln, University of Nebraska Press, 1962), 120.

⁸² He wrote, "At that time, in an essay by Paul Ernst on religious art, I came across a reference to the work of Riegl and Worringer. In the latter particularly I found an extraordinarily clear statement founded on an extensive knowledge of the history of art, of a view very like the one I had tried to formulate. I heard him lecture last year and

Hulme's *Speculations* was published from notes compiled, edited and introduced by the English poet and art critic Herbert Read (1893-1968). Read's introduction to Hulme's book remarks that Hulme "knew very certainly that we were at the end of a way of thought that had prevailed for four hundred years."⁸³ In *Speculations*, Hulme followed Worringer's argument to the letter, predicting the end of the Renaissance legacy in favour of a more vital form of expression, and this was already taking place in the visual arts.⁸⁴ The literary critic William Spanos (1924 – 2017), in one of the earliest English evaluations of Worringer's work, concluded that upon reading Worringer's thesis,

Hulme came to see the work of European artists influenced by the Egyptian, Byzantine, Japanese, and primitive African plastic arts - painters and sculptors such as Whistler, Epstein, Gaudier-Brezska, and Lewis - as harbingers not only of a new abstract and inorganic art and literature that would displace the organic art of the romantic-naturalists European tradition but also of an analogous emergence of a transcendental *Weltanschauung* that would displace the sentimental humanist of Western culture.⁸⁵

Read was introduced to Worringer through Hulme's notes which he read while preparing *Speculations*. Sometime between 1922-24, Read, having by then learnt German, began corresponding directly with Worringer and they became lifelong friends.⁸⁶ This ultimately resulted in Read's translation of *Form in Gothic* in 1927.^{iv} In the late Forties, Read reframed Worringer's *Abstraction and Empathy* and applied it to modernist art, beginning what Spyros Papapetros described as "the modernist

had an opportunity of talking with him at the Berlin Aesthetic Congress. I varied to a certain extent from my original position under the influence of his vocabulary, and that influence will be seen in some, at any rate, of the articles." T.E Hulme, "Modern Art – II. A Preface Note and Neo-Realism" in *The New Age*, (12 February 1914): 467–9.

⁸³ Hulme, *Speculations*, xv.

⁸⁴ Williams wrote that Worringer supplies "a theoretical justification for the revival of interest in Early German art and for the simultaneous discovery of primitivism", although I would certainly argue that this interest predates Worringer by several decades. Williams, "Wilhelm Worringer", 52.

⁸⁵ William V. Spanos, "Modern Literary Criticism and the Spatialization of Time: An Existential Critique" in *The Journal of Aesthetics and Art Criticism*, Vol.29, No. 1, (Autumn 1970), 93. Spanos provides an in-depth account of the impact of Worringer on what he terms the 'Imagist theoreticians'. Worringer had also suggested that the European study of Japanese art could save Western art from the narrow viewpoint of Classical art, *A&E*, 55.

⁸⁶ Michael Hollington, "Some Art Historical Contexts" in eds. Giovanni Cianci and Jason Harding, *T. S. Eliot and the Concept of Tradition*, (Cambridge, Cambridge University Press), 139.

repackaging of Worringer.”⁸⁷ As part of this rebranding exercise, post-war editions replaced the medieval book cover design with abstract compositions.⁸⁸ Worringer’s influence on Sixties American art is discussed in next chapter on Robert Rauschenberg. This chapter focuses on Worringer’s historical study and the effect of those ideas on contemporary German art.

Rhys W. Williams, an expert in twentieth-century German literature, noted that the stylistic dichotomy in *Abstraction and Empathy*, was later read as correlating too closely with the National Socialist views, making it uncomfortable territory for discussion as the century progressed.⁸⁹ Williams points to, “Statements like: ‘the land of the pure Gothic is the Germanic North,’” which could be misinterpreted when taken out of context.⁹⁰ However it was not simply Worringer’s writing style that exposed him to this interpretation.^v In a study on attitudes to Expressionism during the Thirties, art historian Rose-Carol Washton Long noted, “the charge that Expressionism could not be a revolutionary art form and that, as the product of imperialist capitalism, it bore the responsibility for fascism, stems from a 1934 essay by the Marxist theoretician Georg Lukács.”⁹¹ Geoffrey C.W. Waite, professor of German, also traced the impact of Lukács’s (1885-1971) criticism of Worringer.⁹² Lukács, who studied under the sociologist Georg Simmel (1858 - 1918) around 1910, was in correspondence with Worringer (and Ernst) at least from 1911 until 1914. The Lukács / Worringer relationship was marked by mutual respect in this early period; however, this changed as Lukács’s philosophy evolved after reading Immanuel Kant’s *Critique of*

⁸⁷ Papapetros, *Animation*, 144.

⁸⁸ *Ibid*, 152.

⁸⁹ Williams, “Wilhelm Worringer,” 55.

⁹⁰ *Ibid*.

⁹¹ Rose-Carol Washton Long, ed., *German Expressionism*, (Berkeley, University of California Press, 1993), 312.

⁹² Waite, “Worringer’s *Abstraction and Empathy*”, 19-20.

Judgement.⁹³ From this point, Lukács embarked on a venomous and sustained attack on Worringer lasting over 40 years. Lukács's criticism of Expressionism and of Worringer specifically was saturated with prejudice. Lukács wrote, "Expressionism is undoubtedly only one of the many tendencies in bourgeois ideology that grew later into fascism, and its role in the ideological preparation is no greater – if also no less – than that of many other simultaneous tendencies."⁹⁴ Richard Sheppard, emeritus Professor of German, remarked that "the sheer quantity of Lukács's annotations in the extant copy of *Abstraktion und Einfühlung* suggests that he read and re-read that particular work, determined at all costs to find passages which he could misread for his own, polemical purposes."⁹⁵ As the theoretical spokesperson of Expressionism, Worringer was the target of Lukács's remarks. According to Lukács's misreading, Worringer championed Germanic values above all else thereby providing support for Nazi views, even though the Nazis would ultimately condemn all Expressionist art as degenerate. Waite makes a valid point that, although heralding Germanic ideas was not at all what Worringer was suggesting, the very *possibility* of this interpretation was enough to create an exclusion zone around Worringer's work.⁹⁶ This, coupled with a general distaste for Expressionism for reasons I will discuss towards the end of the chapter, meant that Worringer's original theory has continued to evade academic scrutiny with just a few exceptions.⁹⁷

⁹³ Richard Sheppard, "Georg Lukács, Wilhelm Worringer and German Expressionism" in *Journal of European Studies*, Vol. 25, No. 3, (1995), 250.

⁹⁴ Georg Lukács, "Expressionism: Its Significance and Decline", *Internationale Literatur*, 1934, extract reprinted in Long, *German Expressionism*, 314.

⁹⁵ Sheppard, "Georg Lukács", 272.

⁹⁶ Waite, "Worringer's *Abstraction and Empathy*", 20.

⁹⁷ By original theory I mean Worringer's historically focused study, not its application to modern art.

Abstraction and Empathy is often cited in texts tackling the development of modernist ideas in art and literature, but discussions tend to be cursory or superficial and do not acknowledge the crucial role played by the crystalline in Worringer's theory.⁹⁸ Books in which one might have expected an analysis of Worringer's abstraction, such as Briony Fer's *On Abstract Art*, omit him altogether.⁹⁹ The inaccessibility of key texts and the misapprehension of central figures has not helped matters.¹⁰⁰ Riegl, who provided some of the foundations for Worringer's argument, was overlooked by historians partly due to Ernst Gombrich's (1909 - 2001) negative opinion until books published by Margaret Iversen and Margaret Olin, in the early Nineties, rescued his legacy.¹⁰¹ Neil Donahue's edited book *Invisible Cathedrals* (1995), is an anthology of essays which aimed to save Worringer from obscurity, but had little effect.¹⁰² Papapetros' recently published book, *On the Animation of the Inorganic: Art, Architecture, and the Extension of Life*, provides the best English analysis of Worringer. Papapetros pursues two types of 'animation'; Aby Warburg's (1866-1929) external animation and inner animation from Riegl and Worringer, which I will discuss in greater detail later.¹⁰³

⁹⁸ Peter Lasko's book, *The Expressionist Roots of Modernism*, (Manchester, Manchester University Press, 2003), includes a chapter entitled "Theories of Abstraction" but yet only mentions Worringer twice. Key texts on Expressionism, such as Jill Lloyd, *German Expressionism: Primitivism and Modernity*, (New Haven, Yale University Press, 1991), includes a rich discussion on Worringer but the focus is on primitivism and Worringer's *Form in Gothic* (London, Putnam, 1927).

⁹⁹ Briony Fer, *On Abstract Art*, (New Haven, Yale University Press, 2008). In the introduction to the text, Fer outlines the scope of the project stating that it is not intended as a history of abstract art. Her objective was to "attempt to re-imagine the kinds of fantasies that may be involved in art that does not picture things in the world." It seems surprising therefore that Worringer's argument on 'abstraction' as a refuge did not feature. See page 4 specifically.

¹⁰⁰ Some of Riegl's work was not translated until the 1980s, while Semper's *Der Stil* remained untranslated until 2004. Many of Lipps works can only be found in their original German.

¹⁰¹ Margaret Iversen, *Alois Riegl*, (Cambridge, MIT Press, 1993), 4. And Margaret Olin, *Forms of Representation in Alois Riegl's Theory of Art*, (Pennsylvania, Pennsylvania State University Press, 1992). The neoclassical German architect, Gottfried Semper (1803-79) also fell victim to criticism, not least at the hand of Riegl, as will be outlined later.

¹⁰² Donahue, *Invisible Cathedrals*. Donahue is Professor of German and Comparative Literature. Donahue acutely notes that Worringer "seemed unconcerned with the empirical validity of his theses." Donahue, *Cathedrals*, 2. Worringer was also unconcerned with maintaining a strict referencing system. At times, it is unclear both who is speaking and the exact source of the quotations used.

¹⁰³ Papapetros, *Animation*.

The Crystalline – symbol of an absolute

Worringer's *Abstraction and Empathy* attempted to address systemic issues in the discipline of art history.^{vi} Criticising current practice, he wrote, "Our Aesthetics is nothing more than a psychology of the Classical feeling for art. No more and no less."¹⁰⁴ Rather than producing a history of art, the outcome of this approach, was, Worringer argued, a "history of *ability*" where art is judged according to the artist's technical proficiency in relation to a Classical ideal.¹⁰⁵ He made his intentions clear:

The aim of the ensuing treatise is to demonstrate that the assumption that this process of empathy has at all times and at all places been the presupposition of artistic creation, cannot be upheld. On the contrary, this theory of empathy leaves us helpless in the face of the artistic creations of many ages and peoples. It is of no assistance to us, for instance in the understanding of that vast complex of works that pass beyond the narrow framework of Graeco-Roman and modern Occidental art. Here we are forced to recognise that quite a different psychic process is involved, which explains the peculiar, and in our assessment purely negative, quality of that style.¹⁰⁶

Worringer found empathy suitable for discussing Classical or Humanist art, called organic art, but wholly inadequate for what he broadly described as inorganic art. To address this problem, Worringer borrowed Riegl's *Kunstwollen*, importing ideas about artistic creation into the discussion. Art historians who followed Johann Joachim Winckelmann (1717-68) championed classical Greek art as the high point in civilisation.^{vii} In contrast, according to Riegl's theory, art is an expression of the psychic state of the people who produce it, so measuring all art against a classical model serves no purpose.^{viii} Worringer defined *Kunstwollen*, translated in *Abstraction and Empathy* as artistic volition: by "'absolute artistic volition' is to be understood that

¹⁰⁴ Worringer, *A&E*, 123. Worringer continued by writing, "This mentally lazy and stereotyped assessment does violence to the real facts in a manner that cannot be allowed to pass without comment. For this way of looking at things form the narrow angle of our own era offends against the unwritten law of all historical research, that things must be evaluated not from our, but from their own presuppositions." Ibid, 124.

¹⁰⁵ Ibid, 9, original emphasis.

¹⁰⁶ Ibid, 7 - 8.

latent inner demand which exists *per se*, entirely independent of the object and of the mode of creation, and behaves as will to form.”¹⁰⁷ Worringer established two opposing urges, or types of artistic volition stating that “the history of art represents an unceasing disputation between the two tendencies.”¹⁰⁸

The urge to empathy produced organic art, and the corresponding mode of reception is empathic. Worringer adapted the aesthetic philosopher Theodor Lipps’ (1851 – 1914) notion of *Einfühlung*^x after attending Lipps’ lectures in Munich around 1904-05.¹⁰⁹ The literal translation of *Einfühlung* is ‘in-feeling’ and the English equivalent is *empathy*.^x According to Lipps, imitation is a vital component of an empathic relationship.¹¹⁰ In representational art, the viewer voluntarily projects the self into the art object, giving rise to a sensation of harmony, perceived as beauty.¹¹¹ In a rare use of in-text citation Worringer quoted from Lipps’ *Asthetik*,^{xi}

Only in so far as this empathy exists, are forms beautiful. Their beauty is this, the ideal freedom which I live myself out in them. Conversely, form is ugly when I am unable to do this, when I feel myself inwardly unfree, inhibited, subject to a constraint in the form, or in its contemplation.¹¹²

Worringer claimed that the urge to empathy appears at times where man feels safe and comfortable in the world: “the precondition for the urge to empathy is a happy pantheistic relationship of confidence between man and the phenomena of the

¹⁰⁷ Ibid, 9. Worringer refers to Riegl’s *Problems of Style (Stilfragen)*, 1893 and *Late Roman Art Industry (Spätromische Kunstindustrie)*, 1901 several times throughout the book.

¹⁰⁸ Worringer, *A&E*, 45.

¹⁰⁹ Juliet Koss, “On the Limits of Empathy”, in *The Art Bulletin*, Vol. 88, (March 2006): 146.

¹¹⁰ Gustav Jahoda, “Theodor Lipps and the Shift from “sympathy” to “empathy”.” *Journal of the history of the behavioral sciences* 41, no. 2 (2005), 155. Lipps provided an example of a person imitating the physical movements of another to achieve empathy.

¹¹¹ According to Lipps, empathy can only exist with free activation. One must have the desire to resonate with another or, in this case, with the work of art. Worringer’s analysis dismisses the voluntary aspect. For him, empathy is an involuntary reaction activated every time one is faced with a Classical work of art. Waite is critical of Worringer for what he termed, “a sincere ideologically motivated distortion of emphasis”. Waite, “Worringer’s Abstraction”, 25.

¹¹² Worringer, *A&E*, 7. This is a rare case of correct citation in Worringer’s book..

external world.”¹¹³ This urge is evidenced in Classical art that uses proportional systems found in either the human body or nature.^{xii} Worringer’s interpretation of Lipps’ theory substitutes voluntary for involuntary action; in Worringer’s analysis there is no free will.

The urge to abstraction, which produces inorganic, geometric or ‘abstract’ art, is Worringer’s counterpart to the urge to empathy. For him ‘abstract’ art was a form of representation that stylises or abstracts natural forms, and is distinct from later non-figurative or non-representational art. At the heart of inorganic art lies the crystalline.

Worringer clarified this principle, stating;

Just as the urge to empathy as a pre-assumption of aesthetic experience finds its gratification in the beauty of the organic, so the urge to abstraction finds its beauty in the life-denying inorganic, in the crystalline or, in general terms, in all abstract law and necessity.¹¹⁴

Papapetros suggested that Haeckel’s research, discussed earlier, led Riegl and subsequently Worringer, to adopt the crystalline as a “theoretical model for inventing new forms of interaction between subjects, art objects, and natural processes.”¹¹⁵

Worringer was familiar with Haeckel’s work through the Berlin avant-garde and his allegiance to Riegl is well documented. The crystalline is a major theme in Riegl’s *Historical Grammar of the Visual Arts (Historische Grammatik der bildenden Künste)* written between 1897-9. In a chapter devoted to motifs in art and ornament, Riegl stated that, because art must compete with nature, all motifs are derived from it. These then fall into two categories, organic (with life) and inorganic (without life). For Riegl, “Man creates inorganic motifs from the mineral mass known as dead matter. Nature

¹¹³ Ibid, 15.

¹¹⁴ Ibid, 4.

¹¹⁵ Papapetros includes the crystallographer Otto Lehmann in his discussion. Papapetros concluded that “Crystals in turn-of-the-century art historical texts are no mere metaphors, but analogical patterns consolidating systems of epistemic transformation.” Papapetros, *Animation*, 128-9.

has shaped this dead matter into crystals, bodies bounded by regular planar surfaces that conjoin at angles.”¹¹⁶ The inorganic crystalline has symmetrical properties which can be either planimetric or stereometric. Crediting the art historian Jakob Burckhardt (1818-97) and the architect Gottfried Semper (1803 – 79), Riegl continues by saying that the crystalline is the most natural and widely understood artistic motif. In *Der Stil*, Semper held that the work of art, or architecture, is determined by two sets of variables, those internal to the purpose, material and technique and an indeterminable quantity of external forces including place, time, and the artist’s personal influences. Yet, Semper noted that there is one exception to this rule, the crystalline,

The law of molecular attraction - ruling undisturbed, alone and all-embracing, and likewise indifferent to the outside, or rather rejecting all external influences - is most perfectly expressed in these crystal forms in their strict regularity and all embracing enclosure....Therefore these forms have been valued since time immemorial as symbols of the absolute and of perfection.¹¹⁷

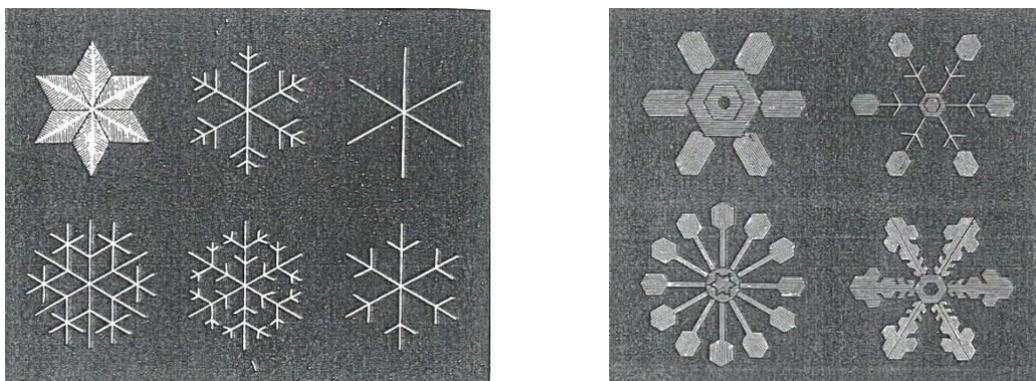


Figure 11, Images of simple crystals from Semper’s *Der Stil*¹¹⁸

Crystal structures are driven only by internal forces; therefore, they have the capacity to create a reference point free from external variables. Worringer, overlooks Semper’s influence on Riegl, writing, “Riegl speaks of crystalline beauty, ‘which

¹¹⁶ Alois Riegl, *Historical Grammar of the Visual Arts*, Trans. Jacqueline E Jung, (New York, Zone Books, 2004), 123.

¹¹⁷ Gottfried Semper, *Style: Style in the Technical and Tectonic Arts; or, Practical Aesthetics*, Trans. Harry Francis Mallgrave, (Los Angeles: Getty Research Inst., 2004), 84.

¹¹⁸ *Ibid*, 84.

constitutes the first and most eternal law of form in inanimate matter, and comes closest to absolute beauty”¹¹⁹ And then linking this to the urge to abstraction, Worringer, continued,

This urge was bound to find its first satisfaction in pure geometric abstraction, which, set free from all external connections with the world, represents a felicitation whose mysterious transfiguration emanates not from the observer intellect, but from the deepest roots of his somato-psychic constitution.¹²⁰

The absoluteness of the crystalline is central to the next part of Worringer’s theory. According to Worringer,^{xiii} whereas the urge to empathy is found in times of peace and harmony, the urge to abstraction, “is the outcome of a great inner unrest inspired in man by the phenomena of the outside world...”¹²¹ The aim of this absolute, according to Worringer, creates, “resting-points, opportunities for repose, necessities in the contemplation of which the spirit exhausted by the caprice of perception could halt awhile.”¹²² Worringer traced the urge to abstraction through history concluding that ‘savage’, ‘primitive,’ “certain culturally developed Oriental peoples,” Egyptian, Byzantine and Northern Gothic people expressed themselves in this way.¹²³ These periods are not defined by Worringer and his use of these terms must be read in their early twentieth-century context.^{xiv} Furthermore, Worringer argued that ‘savage’ and ‘primitive man’ were driven by a will to abstraction that existed before cognition.¹²⁴ Inspired no doubt by Haeckel’s research, Worringer wrote, that in ‘primitive man’, “the disposition to regularity, which after all is already present in the germ-cell, was able to

¹¹⁹ Worringer, A&E, 19-20.

¹²⁰ Ibid, 35.

¹²¹ Ibid, 15.

¹²² Ibid, 34-5.

¹²³ Ibid, 15.

¹²⁴ Ibid, 107. On the other hand, ‘Oriental man’ had this urge to abstraction because he was *above* cognition. The 1910 appendix provides some necessary clarification on this point, “The ancient cultural aristocracy of the Orient has always looked down with superior contempt upon the European upstarts of the spirit. Their deep-rooted instinctive knowledge of the problematic nature of phenomena and the unfathomableness of existence prevent the emergence of a naïve belief in the values of the physical world.” Ibid, 130-1. Worringer went on to say that ‘Oriental man’ was uninterested in organic art because he understood that he was not, and never would be, in harmony with the world.

find the appropriate abstract expression.”¹²⁵ This tendency to replicate universal laws is innate. As Worringer writes,

We cannot suppose man to have picked up these laws, namely the laws of abstract regularity, from inanimate matter; it is, rather, an intellectual necessity for us to assume that these laws are also implicitly contained in our own human organisation...¹²⁶

Riegl had also suggested that inorganic design predates organic art.^{xv} In *Problems of Style (Stilfragen)*, he speculated that the geometric style, seen in weaving, is the “most primitive artistic activity”.¹²⁷ This tendency predated the urge to empathy and was first employed by man in an attempt to make sense of the world. Basically, in the chaos of the primitive world, man was driven by a need to represent objects in a way that was absolute, not complicated by time or other relationships, so that he could make sense of his surroundings. Worringer explained:

Tormented by the entangled inter-relationship and flux of the phenomena of the outer world, such peoples were dominated by an immense need for tranquillity. The happiness they sought from art did not consist in the possibility of projecting themselves into the things of the outer world, of enjoying themselves in them, [as is the case with the urge to empathy] but in the possibility of taking the individual things of the external world out of its arbitrariness and seeming fortuitousness, of eternalising it by approximation to abstract forms and, in this manner, of finding a point of tranquillity and a refuge from appearances. Their most powerful urge was, so to speak, to wrest the object of the external world out of its natural context, out of the unending flux of being, to purify it of all its dependence upon life...to approximate it to its *absolute* value.¹²⁸

During these periods, the purpose of art is to provide respite from lived reality. Inorganic art must attempt “to suppress every element of the organic” by instead embracing crystalline forms driven by universal laws.¹²⁹

¹²⁵ Ibid, 19.

¹²⁶ Ibid, 20.

¹²⁷ Alois Riegl, *Problems of Style*, (New Jersey, Princeton University Press, 1992), 18.

¹²⁸ Worringer, *A&E*, 16 - 17.

¹²⁹ Ibid, 43. Worringer discusses the crystalline as anti-temporal and this is crucial to his argument. In a recent re-examination of J.G. Ballard's (1930-2009), *The Crystal World* (1966) Tynan also notes these properties imbued in the crystalline. Tynan summarised, “Crystallisation thus sees the emergence of matter without temporal duration of durability.” Aidan Tynan, “Ballard, Smithson and the Biophilosophy of the Crystal.” *Green Letters: Special Issue: J.G. Ballard and the 'Natural' World* 22, no. 4 (2018): 404.

Worringer needed to describe a corresponding mode of reception for the urge to abstraction but, unlike his discussion on the empathic response to organic art, Worringer's book does not extrapolate in detail. He focuses instead on the reception of one particular type of inorganic art, Gothic. Having established a spectrum of artistic creation from empathic to abstract, Worringer found that Gothic expression lies between these two volitions, taking characteristics from both. Its form is life denying (inorganic), yet it represents life through the play of forces within it, which Papapetros interprets as animation.¹³⁰ Worringer was not the only historian to value Gothic architecture around this time, but where we see Gothic expression and crystalline forms united, it is the likely result of Worringer's influence.^{xvi} According to him, 'Northern man', struggled in the world and was therefore unable to resist the appeal of Christianity. He had no hope of achieving the abstract clarity of ancient Egypt, so a new expression emerged that involved, "abstraction on the one hand, and the most vigorous expression on the other."¹³¹ While organic art follows the Vitruvian principles of Order, Arrangement, Eurythmy, and Symmetry, this is not the case with Gothic architecture.^{xvii} Within Gothic architecture, "no organic harmony surrounds the feeling of reverence toward the world, but an ever growing and self-intensifying restless striving without deliverance sweeps the inwardly inharmonious psyche away with it into an extravagant ecstasy, into fervent excelsior."¹³² To discuss the reception of this art, Worringer sought inspiration from Lipps, specifically his 1903 concept 'negative *Einführung*' which equates to feelings of disharmony which are life-denying. Lipps explained,

¹³⁰ Papapetros, *Animation*.

¹³¹ Worringer, *A&E*, 109.

¹³² Worringer, *A&E*, 115.

I see...a person looking, not proudly but arrogantly. I experience within myself the arrogance contained in that look. It is not just that I imagine this inner conduct or inner condition; it is not just that I know about it; rather, it obtrudes, forces itself into my experience. But within myself I work against it. My inner being objects; *I feel in the arrogant look a life-denial or life-inhibition affecting me, a denial of my personality. Because of that, and only because of that, the arrogance can hurt me. My feeling of discomfort rests on that negative.*¹³³

This disharmonious reception mirrors the “great inner unrest” that generated the urge to abstraction in the first place.¹³⁴ In 1948, forty years after its original publication, Worringer added a new foreword to *Abstraction and Empathy* in an attempt to draw parallels between Northern man’s experience and contemporary times. In what is most likely a fictitious tale, Worringer recounted a trip to the Trocadéro Museum in Paris while he was deciding on his dissertation topic. While there he encountered Georg Simmel (1858 - 1918), who he knew only in passing from Berlin.¹³⁵ Worringer could have chosen any number of people from the scores who were interested in his theory, including Ernst, Hulme, or Wassily Kandinsky (1866-1944) who’s *Concerning the Spiritual in Art* from 1912 touches on a similar subject matter. Yet Worringer cleverly chose Simmel for several reasons. Firstly, in retribution for Lukács’ criticism. Lukács, we recall, was a student of Simmel’s and what better rebuke than to suggest a close affinity with his teacher. Worringer may also have wished to align himself with Simmel because of the latter’s Jewish heritage. In the post war period this could help dispel notions that Worringer was ever sympathetic with National Socialist ideals.

More importantly however, Simmel was renowned for his acute observations of modern life, and Worringer wished to align himself with this.¹³⁶ Worringer suggested

¹³³ Translated in Jahoda, “Theodor Lipps”, 158. My emphasis.

¹³⁴ Worringer, *A&E*, 15.

¹³⁵ Simmel died in 1918 so could not validate the story.

¹³⁶ As it happened, Ernst later sent a copy of *Abstraction and Empathy* to his friend Simmel, perhaps because he recognised the resonance between it and Simmel’s “The Metropolis and Mental Life” from 1903. Georg Simmel, “The Metropolis and Mental Life” in *Rethinking Architecture*, ed. Neil Leach, (London Routledge, 1997), 69-79.

that his book was an unconscious reaction to the needs of the age, a sort of volition; “Thus at the time, without knowing it, I was the medium of the necessities of the period, the compass of my instinct had pointed in a direction inexorably preordained by the dictate of the spirit of the age.”¹³⁷ By introducing Simmel at this point, Worringer proposed that he too scrutinised modern life and the result was bound up in a dissertation which, while being apparently historical in focus, was really about contemporary life. Williams concurred,

He is attempting...to suggest that his analysis of the crisis faced by modern man in the metropolis and projected by him into his definition of primitive man, is more sociologically acute than readers at the time appreciated. He is, as it were, claiming for himself the kind of social analysis which Simmel displays in essays more or less contemporary with *Abstraktion und Einfühlung*.¹³⁸

In *The Metropolis and Mental Life* Simmel described life in the city as a bombardment of “violent stimuli”, not unlike the chaos Worringer attributed to the ‘primitive’ world.¹³⁹ In contrast, Simmel spoke about life in a small town as resting “more on feelings and emotional relationships”.¹⁴⁰ This equates to the harmony Worringer found in the Classical world and the resultant urge to empathy. In the metropolis, Simmel described how the money economy helps remove uncertainty by providing a necessary “unrelenting hardness”.¹⁴¹ Therefore, he said, “the interests of each party acquire a relentless matter-of-factness, and its rationally calculated economic egoism need not fear any divergence from its set path because of the imponderability of personal relationships.”¹⁴² Simmel proceeds to theorise how this money economy alters the nature of relationships so that they begin to take on the characteristics of transactions. In order for this system to function correctly, certain arbitrary stabilising

¹³⁷ Worringer, *A&E*, vii-viii.

¹³⁸ Williams, “Wilhelm Worringer”, 61.

¹³⁹ Simmel, 70.

¹⁴⁰ *Ibid.*

¹⁴¹ *Ibid.*, 71.

¹⁴² *Ibid.*

structures, such as strict time-keeping, are necessary. The systemisation of the daily routine in the city aims to reduce the organic nature of life. When Worringer described the two methods of achieving abstraction, which I will discuss in the next section, he too emphasised how they aim to remove organic elements.

In Simmel's construct, metropolitan man adopts an antipathic attitude, but it comes at a price. Man loses his personality and, Simmel warned, "becomes a single cog as over against the vast overwhelming organisation of things and forces which gradually take out of his hands everything connected with progress, spirituality and value."¹⁴³ Yet Simmel argued that metropolitan man evolved to overcome this lack of individualism. By embracing the money economy, an inorganic system, man enters into a transactional relationship with others. This corresponds with the extraordinary effect of Gothic architecture, in Worringer's account:

And only in this heightened movement of forces, which in their intensity of expression surpass all organic motion, was Northern man able to gratify his need for expression, which had been intensified to the point of pathos by inner disharmony. Gripped by the frenzy of these mechanical forces, that thrust out at all their terminations and aspire toward heaven in a mighty crescendo of orchestral music, he feels himself convulsively drawn aloft in blissful vertigo, raised high above himself into the infinite.¹⁴⁴

In Gothic architecture, Worringer observed, "it is not the life of an organism which we see before us, but that of a mechanism."¹⁴⁵ This mechanism elicits a shared, *compulsive* response to overcome the chaos in the world. Accordingly, Worringer's mechanism is similar to Simmel's money economy. However, while Worringer

¹⁴³ Ibid, 78.

¹⁴⁴ Worringer, *A&E*, 113.

¹⁴⁵ Ibid, 114-5.

embraced this, Simmel viewed it as negative.¹⁴⁶ Papapetros also noted their contrasting attitudes,

Instead of disparaging estrangements like Simmel (and later Kracauer), Worringer essentially celebrates it. While for Simmel estrangement is a malaise of modern life, Worringer transfers the same affliction to the Gothic, turning it into a necessary condition for being in the world and making art. While Simmel's metropolitan subjects are fundamentally bewildered by the "overstimulating" environments they inhabit, Worringer's equally confounded Goths turn their bewilderment into "sublime hysteria."¹⁴⁷

The art historian Juliet Koss reflected on Worringer's treatise and concluded that, "he placed discomfort at the heart of the aesthetic response, thereby constructing a conceptual hinge between *Einfühlung* and the articulations of estrangement that would describe the communal aesthetic experience of the mass audience in the 1920s and 1930s."¹⁴⁸

Worringer's influence on practice

Although, as we have seen, Worringer's *Abstraction and Empathy* was mainly historical in focus, it became the theoretical basis for some German Expressionist groups. As a result, the crystalline motif appears frequently in their work. They used it to signal their escape from tradition and to represent the absolute. As Ernst promised, Worringer's book became "a program for a new aesthetics."¹⁴⁹ Worringer even provided practitioners with practical methods for producing 'abstract' art of absolute value. The first method omits representations of depth because the merest suggestion of depth, provided by shading or foreshortening, entangles the viewer in

¹⁴⁶ Michael North noted that, "Worringer adapted to art history one of Simmel's central ideas, the split between subjective and objective culture" but does not explain how this occurs. Michael North "Eliot, Lukacs, and the Politics of Modernism" in Ronald Bush (ed.) *T.S. Eliot: the Modernist in History*, (Cambridge, Cambridge University Press, 1991), 171

¹⁴⁷ Papapetros, *Animation*, 144.

¹⁴⁸ Koss, "Limits of Empathy", 148.

¹⁴⁹ Quote "Es enthält nichts weniger als ein Programm neuer Ästhetik." Translated from German by author. Ernst, "W. Worringer, Abstraktion Und Einfühlung", 529.

an experiential relationship with the work. This simulates viewers' lived experience and induces an empathic response rather than the desired respite from the world. He identified, the artists "primal need to free the sensuous object from the unclarity imposed upon it by its three-dimensionality".¹⁵⁰ Worringer, echoing Riegl, held that the ancient Egyptians demonstrated a complete urge to abstraction when they succeeded in translating three-dimensional space into planar relations. As Worringer claimed,

The original tendency of the ancient cultural peoples was therefore, to win from the unclear factors of perception, which is what really imparts to the external thing its relativity, an abstract of the object, capable of forming a whole for the imagination and of affording the spectator the tranquillising consciousness of enjoying the object in the irrefragable necessity of its closed material individuality.¹⁵¹

The principle means of expressing depth that Worringer found problematic was, of course, linear perspective, a practice which dominated fine art since it was codified by Leon Battista Alberti (1404-72) in *De Pictura* (1436). Nineteenth Century artists such as Henri de Toulouse Lautrec (1864-1901) or Paul Cézanne (1839-1906) had begun to distort perspective for dramatic effect, but some German Expressionist artists omitted it altogether.

The second method of achieving abstraction, prescribed by Worringer, is to adopt stylised geometric forms influenced by the crystalline. In this way, the work would achieve "emancipation from all the contingency and temporality of the world-picture"¹⁵²

As a result, man can find respite. He wrote:

Thus all transcendental art sets out with the aim of de-organicising the organic, i.e. of translating the mutable and conditional into values of unconditional

¹⁵⁰ Worringer, *A&E*, 22. See also page 37 for the same points. Evidence of the dominance of the humanist tradition is clearly seen in the standard use of perspective in the visual arts since its codification by Leon Battista Alberti in *De Pictura* in 1435.

¹⁵¹ *Ibid*, 41.

¹⁵² *Ibid*, 44.

necessity. But such a necessity man is able to feel only in the great world beyond the living, in the world of the inorganic. This led him to rigid lines, to inert crystalline form. He translated everything living into the language of these imperishable and unconditional values. For these abstract forms, liberated from all finiteness, are the only ones, and the highest, in which man can find rest from the confusion of the world picture.¹⁵³

An example of this method is found by comparing the two works by Lyonel Feininger (1871-1956) below. In 1907, Feininger published a pen and ink drawing in the Parisian magazine *Le Témoin*.¹⁵⁴ Fifteen years later he returned to the subject, but this time stylised all natural forms into rigid crystalline shapes, as Worringer suggested, thereby removing all traces of the organic.

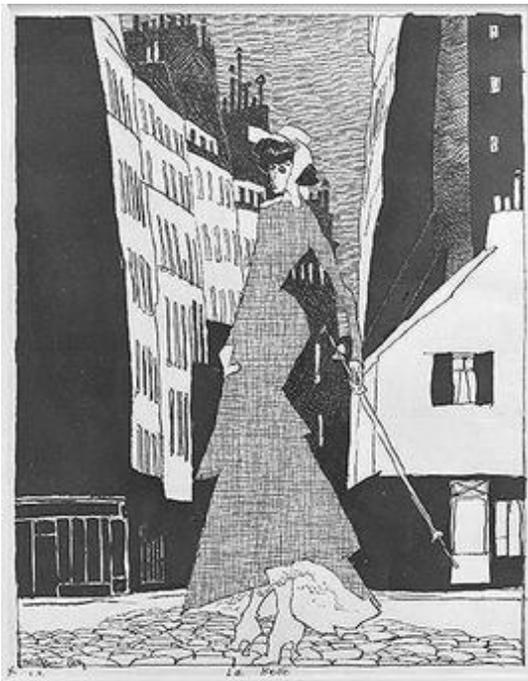


Figure 12 Lyonel Feininger, *La Belle*, 1906



Figure 13, Lyonel Feininger, *Lady in Mauve*, 1922

The Expressionist movement was not a conscious artistic collective, but a general term used to describe themes that emerged in the Sonderbund International Exhibition in

¹⁵³ Ibid, 133-4.

¹⁵⁴ Peter Vergo, *Twentieth Century Germany Painting*, (London: Sotheby's, 1992), 78. Vergo noted that Feininger was influenced by Cubism and Futurism, the possibility of Worringer's influence is not considered, nor is Worringer mentioned in Vergo's book.

Cologne of 1912. Although coming from a variety of perspectives, Expressionist artists were grouped because their art supposedly emphasised subjectivity over realism or objectivity. In 1914, the art historian Adolf Behne (1885-1948) gave a lecture to mark the opening of a *Der Sturm* exhibition in which he attempted to define the term, contrasting it to Impressionism.¹⁵⁵ Behne, who was heavily influenced by Worringer, linked Expressionism with Gothic art and architecture. He did not suggest that contemporary artists were adopting a particular style from a bygone era, but rather that they shared an attitude. He discussed a common “passion in presentation, urgency of imagination, [and] the sovereignty of the spirit,” surmising that, “what unites them is their love of expression.”¹⁵⁶ It is, according to Behne, the nature of expressive art to use a variety of forms because these artists prioritise expression over formal or other concerns. He wrote, “We have recognized the goal of the Expressionist picture is the expression of an experience. The Impressionist was satisfied with the impression, with the surface, the appearance. The Expressionist wants the spiritual quintessence of an experience.”¹⁵⁷

The architectural historian Iain Boyd Whyte, a specialist on German Expressionism, provided the context for artists’ discontent in the early twentieth century. He concluded that Expressionist architecture, with its utopian values, provided an alternative to the “negative aspects of German society as it had evolved after the unification of 1871.”¹⁵⁸ Germany was subject to rapid urban expansion after unification resulting in massive

¹⁵⁵ Adolf Behne, “German Expressionists, Lecture for the Opening of the New Sturm Exhibition,” in Long, *German Expressionism*, 60-3. Behne was the son of an architect and initially began to study architecture. Later he shifted to art history and studied under Heinrich Wölfflin and Georg Simmel in Berlin and received his PhD in 1912. He was close to all the leading architects at the time, in particular Bruno Taut who he knew from 1904.

¹⁵⁶ Ibid, 60.

¹⁵⁷ Ibid.

¹⁵⁸ Iain Boyd Whyte, “The Expressionist Sublime” in *The Built Surface 2: Architecture and the pictorial arts from Romanticism to the twenty-first century*, Karen Koehler ed., (Aldershot, Ashgate, 2002), 111.

overcrowding and unsanitary conditions for the working classes. Being somewhat divorced from the negative consequences of unification, the contented middle classes and a Prussian monarchy attempted to hold fast to the classical tradition. Avant-garde artists attempted to express public discontent while, at the same time, provide, through the use of a crystalline motif, respite from the world. In *Abstraction and Empathy*, Worringer declared that, “In the necessity and irrefragability of geometric abstraction he [man] could find repose,” and this proved a useful formula for those wishing to escape the problems of the present.¹⁵⁹ Looking back, Whyte explained, “Expressionist reason was to be guided by emotion, rather than the constraints of proof or objective analysis. As a symbol of messianic reform, the German Expressionists turned – as their Romantic forbearers had done before them – to the biblical symbol of purity, order and indivisibility: the crystal”.¹⁶⁰ Whyte’s conclusion and focus on the religious signification of the crystalline, echoes fellow architectural historian Rosemarie Haag Bletter’s argument; both fail to recognise the crucial importance of the crystalline in Worringer’s terms.¹⁶¹

In August 1911, Worringer published “The Historical Development of Modern Art” in the 75th edition of Herwarth Walden’s (1878-1941) journal *Der Sturm*. Here Worringer shifted focus from history to contemporary art practice, but his argument largely reiterated ideas from *Abstraction and Empathy*.¹⁶² *Der Sturm* was published from

¹⁵⁹ Worringer, *A&E*, 36.

¹⁶⁰ Whyte, “Expressionist Sublime”, 120.

¹⁶¹ Rosemarie Haag Bletter, “The Interpretation of the Glass Dream - Expressionist Architecture and the History of the Crystal Metaphor” in *Journal of the Society of Architectural Historians*, Vol. 40, No. 1 (Mar. 1981), 20-43.

¹⁶² Worringer extract from “The Historical Development of Modern Art” originally from *The Struggle for Art: The Answer to the “Protest of German Artists”* 1911, reprinted in Long, *German Expressionism*, 9. In the article, Worringer explicitly supported the rise of primitive influences because he saw primitive art, created under the urge to abstraction, as more fundamental to man. He advised that we should, “force ourselves to that primitive way of seeing, undisturbed by any knowledge or experience, which is the simple secret of the mystical effect of primitive art.” Worringer also pointed out that this return to an earlier means of expression was not a new phenomenon. As

1910 and was coupled with a gallery of the same name which mounted a busy schedule of exhibitions, including international work by the Cubists, Futurists and native work by Der Blaue Reiter and others.¹⁶³ Der Sturm was an avant-garde circle that included several artists' groups, the architect Bruno Taut (1880-1938), and Paul Scheerbart (1863-1915), who I will discuss in the last section of this chapter.¹⁶⁴ Many of the artists aligned with Der Sturm would eventually find their way to Gropius's Bauhaus. Worringer's article championed new artistic endeavours that attempted to break free from Renaissance tradition. The new breed of artists, and the dealers who supported them, were searching for something more fundamental than the representation of appearances. Worringer wrote,

We want art to affect us again, to affect us more powerfully than does that higher, cultivated illusionism that has been the destiny of our art since the Renaissance. In order to achieve this, we are trying to free ourselves from that rationalization of sight which seems to educated Europeans to be natural sight...¹⁶⁵

Die Brücke

In 1905, four architectural students, two of whom had recently qualified, banded together in Dresden to form Die Brücke. The original members comprised Ernst Ludwig Kirchner (1880-1938), Fritz Bleyl (1880-1966) (both just finished their architecture diplomas), Erich Heckel (1883-1970) and Karl Schmitt-Rottluff (1884-

we have seen, he described a pendulum swinging between the two poles outlined in *Abstraction and Empathy*. Yet, a pendulum does not rest, and Worringer foresees the evolution of art, "for this modern primitiveness is not supposed to be the last word. The pendulum does not rest in its extreme position. This primitivism should rather be understood as a long, deep breath, before the new and decisive word to the future will be pronounced." This cultural primitivism is seen to varying degrees in the work of numerous artists' groups, such as Die Brücke, Der Blaue Reiter, the Deutsche Werkbund and the Arbeitstat für Kunst. Many of these groups include a high proportion of architects turned artists, a consequence of the times perhaps, but also evidence of the active erosion of institutional boundaries between the arts. It is not surprising that several of their members were in conversation with each other, or that membership overlapped. These groups, and the others mentioned in this chapter, have been discussed at length in art historical literature. Quotes from Worringer, *Ibid*, 12.

¹⁶³ *Der Sturm* was published weekly from 1910 until 1914 when it became a monthly journal. In 1924 it became a quarterly publication. Both publication and gallery closed in 1932 with the rise of the Nazis and Walden's emigration to the Soviet Union.

¹⁶⁴ For more details see Long, *German Expressionism*, 55.

¹⁶⁵ Worringer, "The Historical Development of Modern Art" in Long, *German Expressionism*, 11.

1976).¹⁶⁶ Of the four, only Kirchner had any formal art training. As an anticlassical group, they championed primitive art and sought inspiration in medieval German art.¹⁶⁷

In 1906, Kirchner carved a program for Die Brücke into a woodcut calling for a movement amongst the young to overturn the dogma handed down by older generations and to engage with their genuine artistic volition. It read,

With a belief in continuing evolution, in a new generation of creators as well as appreciators, we call together all youth. And as youth that is carrying the future, we intend to obtain freedom of movement and of life for ourselves in opposition to older, well-established powers. Whoever renders directly and authentically that which impels him to create is one of us.¹⁶⁸

One of their main concerns was the reuniting of high and applied art. In 1911 they moved to Berlin to gain wider exposure until individual differences caused them to disband in 1913.

¹⁶⁶ Other members included, Emil Nolde (1867-1956) from 1906-7 and Max Pechstein (1881-1955), who had formal art training. Pechstein moved to Berlin in 1910 to be followed by other Brücke members. He was president of the New Succession in Berlin in 1910. Was also responsible for organising exhibition space for the Brücke in Berlin.

¹⁶⁷ The Brücke had much in common with the ideals of the Arts and Crafts movement in England, and John Ruskin, who sought the reunification of man and material. This point is particularly strong in Chapter Two "The Lamp of Truth" from John Ruskin, *The Seven Lamps of Architecture*, (London: Elder Smith, 1855). Ruskin objected to the exposed use of cast iron in contemporary railway stations, for example. He says that building materials should come from the surface of the earth, and the use of iron should be limited to tying a building together.

¹⁶⁸ Timothy Benson, *Expressionist Utopias: Paradise, Metropolis, Architectural Fantasy*, (Berkeley, University of California Press, 2001), 16.

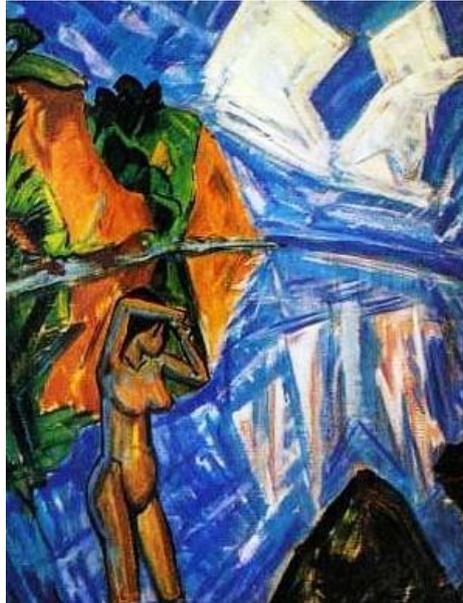


Figure 14, Erich Heckel, *Glass Day*, Oil on Canvas, 1913, Staatsgalerie Moderner Kunst, Munich

In 1913, Heckel painted *Glass Day* which, according to their program, was free of the “trappings of classical mythology and the historicism of the academic tradition.”¹⁶⁹

German born art historian Peter Selz (1919-2019) described Heckel’s intentions: “instead of representing earth and water, he communicates a sense of the structure of a crystal, which is his image of earth and water.”¹⁷⁰ Heckel de-organicised nature much in the manner Worringer described and abstracted it into prismatic forms; sky and water become angular rather than fluid. Rough brushstrokes emphasise the faceted surfaces which contrast with the curves of the figure placed in the foreground. The figure, with its voluminous hips and breasts, recalls primitive sculpture. As the art historian Donald Gordan observed,

Heckel chose to explore this issue [transcendence] in a group of works including the *Glassy Day* and the 1914 etching *Park Lake*. They focus on nature’s shimmering, prismatic, and other worldly forms. Such an approach to nature was probably prompted in the first instance, by Wilhelm Worringer’s views on the transcendental nature of abstraction....Heckel achieved this “transcendental” mood by reducing all of organic nature to hard-edged and rectilinear forms. Angular shapes are used for rocks, hills and clouds, while

¹⁶⁹ “Program of the Brücke” translated and printed in *Ibid*, 278.

¹⁷⁰ Peter Selz, *German Expressionist Painting*, (Berkeley, University of California Press, 1957), 137.

prismatic reflecting shapes appear in sky and water like so many pieces of fragmented or splintered glass.¹⁷¹

Heckel corresponded with Der Blaue Reiter's Franz Marc (1880-1916) in 1912 with a view to staging joint exhibitions. In a letter dated April / May 1912, Heckel wrote that he admired Marc's second essay in the art journal, *Pan*, and that he would like to have used it as a foreword to a Die Brücke exhibition.¹⁷² This demonstrates Heckel's enthusiasm for exchanging ideas between the two groups. Referring to *the Der Blaue Reiter Almanac*, he wrote, "it is a big help for all of us and for the movement; I for my part want to thank you and Kandinsky very much."¹⁷³

Der Blaue Reiter

Kandinsky established the Neue Künstlervereinigung München (NKV) in 1909 in conjunction with Gabriele Münter (1877–1962). The NKV held group exhibitions of unconventional art. However, by the third exhibition, internal tensions resulted in Kandinsky, Münter and Franz Marc (among others) leaving the group. Not long after, in 1911, they founded Der Blaue Reiter and the *Blaue Reiter Almanac* was published in the Spring of 1912. There were plans to produce an expanded second edition to include texts by Worringer, and others, but in the end the original version was reissued.¹⁷⁴ Der Blaue Reiter was a loosely formed organisation that promoted artistic freedom. Art historian Rose-Carol Washton Long summarised their view; "Wassily Kandinsky and Franz Marc believed that a new spiritual epoch would replace their decadent and anxious era. Art, by reflecting change and regeneration, was to play an

¹⁷¹ Donald Gordon, *Expressionism: Art and Idea*, (New Haven, Yale University Press, 1987), 51.

¹⁷² In 1958 the American artist Robert Smithson, produced covers for a quarterly poetry publication called *Pan*, edited by Alan Brilliant. These are discussed further in Chapter 3 and stem from Smithson's expressionist period. I didn't uncover any direct connection to Marc within Smithson's archive but it is plausible that Smithson was inspired by these avant-garde groups.

¹⁷³ Letter from Erich Heckel to Franz Marc, April/May 1912, reprinted in Long, *German Expressionism*, 30 & 32.

¹⁷⁴ *Ibid*, 45.

important role in this transformation.”¹⁷⁵ They achieved their aims through exhibitions and the diverse *Blaue Reiter Almanac* which included illustrations, essays, musical scores and a drama.¹⁷⁶

The group’s first exhibition in Munich in December 1911 involved 43 works by 14 artists. Kandinsky invited the French cubist Robert Delaunay (1885-1941) to exhibit five pieces to the exhibition.¹⁷⁷ The second exhibition was more encompassing, totalling 315 works, by 31 artists, including several who were affiliated with other known artistic groups, for example, Heckel and Kirchner from Die Brücke, New Secession artists, and others such as Pablo Picasso (1881-1973), Georges Braque (1882-1963) and Paul Klee (1879-1940).¹⁷⁸ Neither exhibition was well received by critics or the public. However, other artists and intellectuals had a different view. Long summarised their thoughts: “the contrasting colours and dissonant chords of NVK and Blaue Reiter works were viewed as a sign of the tension and conflicts of their age and consequently a possible tool in the struggle to build a better society.”¹⁷⁹

¹⁷⁵ Ibid, 37.

¹⁷⁶ The publisher for the *Blaue Reiter Almanac* was R. Piper & Co, who also published Worringer’s work. The last page of the Almanac is devoted to advertising Worringer’s and Kandinsky’s books. Kandinsky’s essay, “On the Problem of Form” (“Über die Formfrage”), was included. Kandinsky discussed the inner urge that creates form, “the human being seeks to find a material form for the new value which lives in him in spiritual form.” Wassily Kandinsky, “Über die Formfrage” from *Der Blaue Reiter*, (Munich, R. Piper, 1912), translated by Kenneth Lindsay and reprinted in Herschel Chipp, *Theories of Modern Art*, (Berkeley, University of California Press, 1968), 155.

¹⁷⁷ Delaunay was an important influence on the Blaue Reiter and German Expressionists more generally. Kandinsky’s invitation to exhibit such a high proportion of works to the Blaue Reiter’s first exhibition is evidence. Illustrations of his work were included in the *Almanac* and in 1913 Walden gave Delaunay his first solo show in Der Sturm gallery. See John Willet, *Expressionism*, (London, World University Library, 1970), 77-89.

¹⁷⁸ The cubist work of Braque and Picasso is outside the current scope, and I have had no success finding any information about the connections between these two artists and the Blaue Reiter, or which pieces Picasso or Braque exhibited at the second exhibition. The exhibition took place between February and April 1912, in the period where these artists developed Synthetic Cubism and began to introduce other materials to the canvas. It is likely therefore that the work was cubist, if not synthetic.

¹⁷⁹ Long, *German Expressionism*, 38.

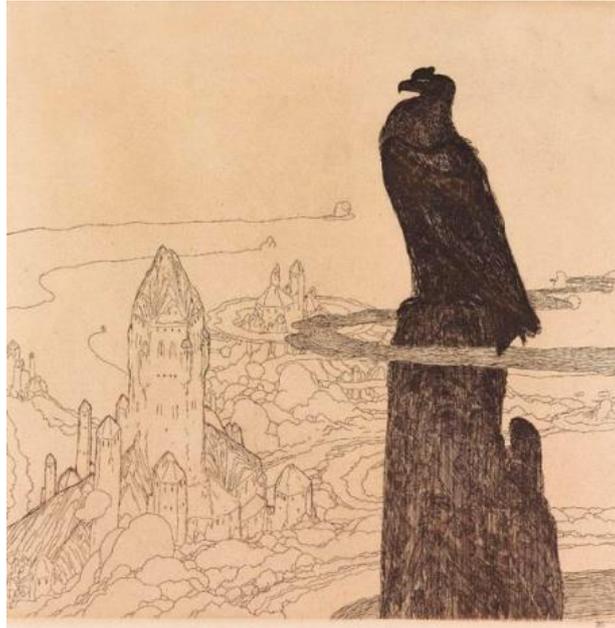


Figure 15, Wenzel Hablik, Etching from *Creative Forces*, 1909

The crystalline motif is seen in the work of several artists associated with Der Blaue Reiter, most notably, the artist and designer Wenzel Hablik (1881-1934). Hablik is an obscure figure who is consistently overlooked in scholarly texts, despite the breadth of his activities which would later include the Arbeitsrat für Kunst, membership of the Gläserne Kette and a close association with Bruno Taut.¹⁸⁰ Hablik became obsessed with crystals when he discovered a quartz during a childhood walk in the mountains near his home in Bohemia. This interest continued all his life and he amassed a large crystal collection.¹⁸¹ In 1909 he produced a folio of 20 etchings called *Creative Forces*, later described, by the art historian Timothy Benson, as “a voyage through an

¹⁸⁰ A starting point for research on Hablik is Ulrich Conrads et al, *The Architecture of Fantasy*, (New York, Praeger, 1964), the English edition of a German book published four years earlier. Reyner Banham’s book review noted that this book was indebted to the collective papers of Behne and Hablik as preserved by their widows. See Reyner Banham, “The Architecture of Fantasy by Ulrich Conrads, Hans G. Sperlich, Christiane Craseman Collins and George R. Collins” in *The Art Bulletin*, Vol. 47, No. 1 (Mar., 1965), 144-145.

¹⁸¹ Hablik was born in Bohemia, the present-day Czech Republic. Academic research on Hablik in English, is very scarce, see Benson, *Expressionist Utopias*, 309-10. The Wenzel Hablik Museum opened in Itzehoe in Germany in 1995 and attempts to promote both Wenzel and his wife, Elisabeth Hablik-Lindemann who was also an artist and member of the Arbeitsrat für Kunst. See <http://wenzel-hablik.de/museum/museum/>

imaginary universe of crystalline structures.”¹⁸² It was shown at Berlin’s *Der Sturm* gallery in May 1912, accompanied by an introduction written by the artist. He wrote:

I saw the shiny crystal, saw it extending in luminous vapors, saw the space before me envelop itself in thunderous clouds from which glittering pinnacles broke forth and separated. One thought moved mountains, one thunderous word hammered stars out of their orbits and, like the strong arms of the gods, it reached deep, deep into unlimited space, creating, forming with unbridled, eternal strength.¹⁸³

The buildings in the background of the etching shown above [Figure 15] seem to grow out of a rocky landscape. They resemble tower houses with crystalline tops surrounded by lower structures that suggest medieval flying buttresses. The scale of the main tower, in particular, recalls the massive scale of a Gothic cathedral. The predatory bird that looks down upon this crystalline utopia reinforces this Gothic imagery. Hablik was so prolific in his use of crystals that he wanted to replace the verb ‘to build’ by ‘to crystallize’.¹⁸⁴



Figure 16, Wenzel Hablik, *Crystal Castle in the Sea*, 1914

August Macke (1887-1914) was affiliated with the Blaue Reiter since its early days. The art historian, Peter Lasko (1924-2003), noted that Macke had personal

¹⁸² Benson, *Expressionist Utopias*, 310.

¹⁸³ Gordon, *Expressionism*, 51.

¹⁸⁴ Wolfgang Pehnt, *Expressionist Architecture*, (London, Thames and Hudson, 1971), 38.

connections with the Worringer family.¹⁸⁵ Worringer's mother ran a restaurant at the Zoological gardens in Cologne which Macke frequented with his sketchbook. He was also acquainted with the Worringer's artist sister, Emmy.¹⁸⁶ In 1912, Macke designed furniture and murals for the Worringer Tee-Salon.¹⁸⁷ Lasko quoted a letter Macke wrote to Franz Marc (1880-1916) in 1911 which reads, "Do you know the book by Worringer, "Abstraction and Empathy"? I have read it and find it partly quite fine. There are many things in it for us".¹⁸⁸

Marc, in turn, recommended Worringer's book to Kandinsky. In February 1912, Marc wrote to Kandinsky about "Worringer's acute mind and disciplined thinking". In 1913, Kandinsky recalls that Marc helped in the publication of *Concerning the Spiritual in Art* (1912) through "his fine, understanding, and talented spiritual cooperation and help."¹⁸⁹ It is clear that Kandinsky valued Marc's opinion, yet Lasko concluded that Kandinsky was not greatly influenced by Worringer's enthusiasm for mathematically regular abstraction.¹⁹⁰ According to Lasko, "Worringer is largely concerned with man's need of order in the face of the chaotic cosmos. He sees abstraction principally in terms of mathematical regularity, not in terms of personal creativity of self-expression."¹⁹¹ Lasko quoted a long passage from *Abstraction and Empathy* in support of this view.¹⁹² In isolating this section, Lasko misinterpreted Worringer. He saw *Abstraction and Empathy* as a guidebook for 'mathematically regular abstraction,'

¹⁸⁵ Lasko was raised in Berlin and eventually became the director of the Courtauld Institute, London, securing its residence at Somerset House. See Lasko, *Expressionist Roots* 100.

¹⁸⁶ Anna Meseure, *Macke*, (Cologne, Taschen, 2001), 43.

¹⁸⁷ Peg Weiss, *Kandinsky In Munich: 1896-1914*, (New York, Solomon R. Guggenheim Foundation, 1981), 46.

¹⁸⁸ Lasko, *Expressionist Roots*, 100. Lasko does not provide reference details for the original letters.

¹⁸⁹ Wassily Kandinsky, "Reminiscences" in *Modern Artists on Art*, edited by Robert L. Herbert. (Englewood Cliffs: Prentice Hall, 1964), 42.

¹⁹⁰ Lasko, *Expressionist Roots*, 100.

¹⁹¹ *Ibid.*

¹⁹² *Ibid.* The section Lasko quotes, which I will not reiterate here is from Worringer, *A&E*, 19.

but this is not what Worringer's book was about.¹⁹³ Certainly Worringer described the characteristics which tended to emerge from chaos, but he believed these were a natural response rather than a deliberate reaction. Worringer's main concern, derived from Riegl, is about artistic volition. Worringer stated that primitive man used abstract forms to try to make sense of the world. It was not a conscious decision but an unmediated expression of their psychic state. The sections of *Abstraction and Empathy* preceding Lasko's chosen extract make this point clear,

It would be a misconstruction of the psychological preconditions for the genesis of this abstract art form to say that a craving for regularity led men to reach out for geometric regularity, for that would presuppose a spiritual-intellectual penetration of abstract form, would make it appear the product of reflection and calculation. We have more justification for assuming that what we see here is a purely instinctive creation, that the urge to abstraction created this form for itself with elemental necessity and without the intervention of the intellect.¹⁹⁴

It is difficult to be certain what Kandinsky's interpretation of Worringer was, but his *Reminiscences* (1913) provide an insight into the evolution of his thoughts during this period.¹⁹⁵ Kandinsky said, "I felt more and more clearly that it is not a question in art of the 'formal' but of an inner wish (=content) which imperatively determines the formal." And moreover, he continued, this was "the solution of the problem of art exclusively on the basis of internal necessity, which was capable of overthrowing all known rules and limitations at any moment."¹⁹⁶ The correlation between this inner necessity and Worringer's 'urge' is clear. Long linked Kandinsky's attraction to Gothic art, and consequently its inclusion in the *Almanac*, to Worringer. She even noted that Kandinsky lifted some of these illustrations from Worringer's 1912 *Die altdeutsche Buchillustration* which, like the *Almanac*, was published by Reinhard Piper.¹⁹⁷ Selz

¹⁹³ We will see that the application of expressionist style would later lead to the death of Expressionism.

¹⁹⁴ Worringer, *A&E*, 19.

¹⁹⁵ See Christopher Short, *The Art Theory of Wassily Kandinsky 1909-1928*, (Oxford, Peter Lang, 2010) for a thorough analysis of Kandinsky's reading of Worringer.

¹⁹⁶ Kandinsky, "Reminiscences", 35.

¹⁹⁷ Rose-Carol Washon Long, "Kandinsky's Abstract Style: The Veiling of Apocalyptic Folk Imagery" *Art Journal*, Vol. 34, No. 3 (Spring, 1975), 217-228, 219 and 228, endnote 18.

made a passing reference to a meeting between Worringer and Kandinsky in Munich as early as 1908, saying that the meeting “was important for the further development of both men.”¹⁹⁸ There was certainly some on-going relationship between them, even if indirect. Worringer’s sister, Emmy, was the founder and director of the Gereon Club in Cologne which was committed to showing contemporary artists. Macke became a member of this club in 1911 and this association is likely to be the reason why the Blaue Reiter’s first exhibition was shown there after it left Munich in January 1912.¹⁹⁹

While Lasko is correct that Worringer attempted to describe the formal characteristics of abstract art, and that chief amongst these is art with “geometric-crystalline regularity”, it is the urge, not the effect, which was paramount in Worringer’s treatise.²⁰⁰ Further, this mathematical regularity was only one of two formal properties that resulted from this abstract urge. The second is the reduction of spatial relations to planar relations. Worringer stated, “a sharp distinction must be made here between intention and effect. This need for de-organicism plays an important role precisely in Northern art. That it is only a consequence of the urge to abstraction is immediately evident.”²⁰¹ Worringer did not stress the need for mathematical regularity, but rather, observed that the urge to abstraction *tends* to give rise to these formal characteristics. Kandinsky’s believed that allowing the inner voice to speak would determine the form, and that an abstract form had more relevance in the early 20th century than a mimetic organic form. The Kandinsky scholar, Peg Weiss (1933-1996) suggested that Kandinsky and Worringer came to these conclusions independently. She wrote, “Thus

¹⁹⁸ Selz, *Expressionist Painting*, 9.

¹⁹⁹ Wassily Kandinsky and Franz Marc, *The Blaue Reiter Almanac*, (London: Tate, 2006), 17 and Meseure, *Macke*, 57.

²⁰⁰ Worringer, *A&E*, 43.

²⁰¹ *Ibid*, 43-4.

Kandinsky is not likely to have seen the book [*Abstraction and Empathy*] in any case much before 1909, when his own ideas, [...], were already well formulated.”²⁰² Yet, in 1951, Kandinsky’s partner, Münter wrote to Worringer on his seventieth birthday. She recalled the depth of his influence on *Der Blaue Reiter*: “you prepared the intellectual ground. I still have from those early years the original copy of your book *Abstraction and Empathy*, which had at the time such a profound effect.”²⁰³

During *Der Blaue Reiter*’s period, Macke was in correspondence with *Der Sturm*’s Walden and Munch, whose use of the crystalline I discussed earlier. In 1913, Macke wrote to Walden about the *First German Autumn Salon* exhibition which Walden was organising. Macke said, “Munch wrote an extremely nice letter saying that he would like very much to exhibit together with us but that he is unfortunately already committed to the Secession where he shows his large ornamentations.”²⁰⁴ Around the end of 1914 and the beginning of 1915, *Blaue Reiter* member Klee introduced the idea of the crystalline in his notebook. His use of the motif brought together Worringer’s ideas and Munch’s association of crystals with a transformation of state. Klee wrote, for instance, “The heart that beats for this world seems mortally wounded in me. As if only memories still tied me to “these” things. Am I turning into the crystalline type?”²⁰⁵

And then:

One deserts the realm of the here and now to transfer one’s activity into a realm of the yonder where total affirmation is possible.

Abstraction.

The cool Romanticism of this style without pathos is unheard of.

The more horrible this world (as today, for instance), the more abstract our art, whereas a happy world brings forth an art of the here and now.

²⁰² Weiss, *Kandinsky in Munich*, 158 n. 25.

²⁰³ Letter from Münter to Worringer dated January 13th, 1951. Extract quoted in Juliet Koss, “Empathy and Abstraction at the Munich Artists’ Theatre” in *The Built Surface 2: Architecture and the pictorial arts from Romanticism to the twenty-first century*, Karen Koehler ed., (England, Ashgate, 2002), 110 n. 45

²⁰⁴ Letter from Macke to Walden, April 21, 1913, reprinted in Long, *German Expressionism*, 59.

²⁰⁵ Paul Klee, *The Diaries of Paul Klee, 1898-1918*, (London, Peter Owen, 1965), 313 (diary entry number 950).

Today is a transition from yesterday. In the great pit of forms lie broken fragments to some of which we still cling. They provide abstraction with its material. A junkyard of unauthentic elements for the creation of impure crystals. That is how it is today.

But then: the whole crystal cluster once bled. I thought I was dying, war and death. But how can I die, I who am crystal?

I, crystal.²⁰⁶

Klee, like Worringer, describes a chaotic scene which gives rise to an abstract art, “the more horrible this world... the more abstract our art”.²⁰⁷ Towards the end of the section Klee has transformed into a crystal, finding respite from lived reality. It is important to consider the historical context of Klee’s writing. He served in the German army during the war so the atrocities of war and the harsh reality of death were fresh in his mind. His close friend Macke, with whom he had visited Tunisia earlier in the year, was killed in September 1914 shortly after the war began. In 1916, another close friend, Marc, was also lost in battle.



Figure 17, Paul Klee, Frontispiece for Curt Corrinth's *Potsdamer Platz*, 1919

²⁰⁶ Ibid.

²⁰⁷ Ibid.

A few years later, in 1918/19, Klee used the crystalline motif more optimistically. He made a series of 10 lithographs as illustrations for Curt Corinth's (1894-1960) Expressionist novella *Potsdamer Platz*. The story, set in Berlin, told the tale of female liberation through sexuality. The frontispiece, with its shimmering crystal forms, retained the notion of the crystal as a symbol of transformation but without a suggestion of death.

Paul Scheerbart

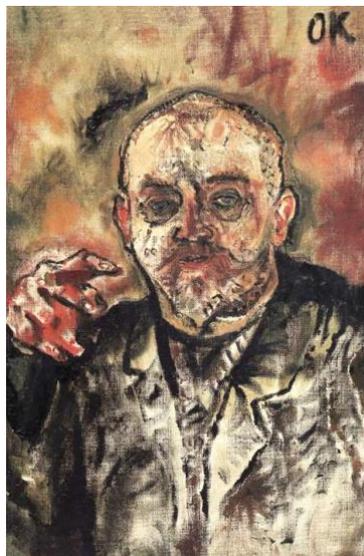


Figure 18, Oskar Kokoschka, *Paul Scheerbart*, 1910

This chapter has examined interpretations of the crystalline motif following the legacy of Haeckel and Worringer, both of whom inspired Expressionist artists. The final section traces the rise of crystalline forms in architecture, mostly paper architecture, before and after the First World War. Summarising why this occurred, Whyte declared that “the dreams of a new society and a new morality to be embodied in a revolutionary architecture of light and colour, were contrasted with the dystopian realities of contemporary Germany. It is a simple tale of good against bad, of the architect

dreamers against the forces of repression.”²⁰⁸ Structural advances, particularly reinforced concrete and cast iron, made possible the building of large-scale glass buildings to achieve these visions. The principal inspiration for glass in architecture amongst German Expressionist architects can be traced to the utopian writer Paul Scheerbart.²⁰⁹ Scheerbart was a German author of several science fiction stories. His work, best described as theoretical and visionary, featured glass or crystalline architecture from as early as the 1890s. Whyte explained why Scheerbart was an advocate for this type of architectural structure noting that “the transparent envelope was intended to promote self-transcendence by allowing thought to move from the sensuous level to the universal, through the medium of endless space.”²¹⁰

Scheerbart met Walden in 1904 and later became a member of the Der Sturm circle, publishing frequently in its journal.²¹¹ Oskar Kokoschka (1886-1980), another affiliate of the group, drew and painted his portrait [Figure 18]. The drawing appeared as a full page spread in edition twenty-seven of *Der Sturm*.²¹² Kokoschka recalled that Scheerbart’s “pet project was for turning Mont Blanc into a sculpture, shaped like a crystal.”²¹³ Scheerbart frequented *Das Schwarze Ferkel* from 1885 when he settled in Berlin.²¹⁴ Munch, as stated above, was also a regular at the café and the two knew each other.²¹⁵ Bletter suggested that the writer and artist were friends; however, little

²⁰⁸ Whyte, “Expressionist Sublime” 111. Whyte’s argument drew parallels between Expressionism and the Sublime. He specified that the Expressionists choose the crystal as symbolic of utopia following the Romantics but does not fully elaborate on the evolution of this motif. See page 120.

²⁰⁹ Scheerbart was born in Danzig (now Gdansk) and moved to Berlin in 1885 where he would remain for the rest of his life. He was the youngest of eleven children and lost both parents and all his siblings by the time he reached sixteen. See Paul Scheerbart, *The Grey Cloth*, (Cambridge, MIT Press, 2001), xvii.

²¹⁰ Whyte, “Expressionist Sublime” 120.

²¹¹ Scheerbart first published in *Der Sturm* on the 2nd June 1910 and then a further 11 times that year. From December 1919 until May 1911 he was featured in every issue.

²¹² Dating from 1st September 1910.

²¹³ Oskar Kokoschka, *My Life*, (London, Thames and Hudson, 1974), 61.

²¹⁴ Banham, “Glass Paradise”, 88 and Scheerbart, *Grey Cloth*, xxxiv.

²¹⁵ Michael Rössner, *Literarische Kaffeehäuser, Kaffeehausliteraten*, (Berlin, Böhlau, 1999), 110-11.

research has been done on their relationship despite their common use of the crystalline motif.²¹⁶

Scheerbart's work was highly regarded amongst avant-garde artists and writers including Walter Benjamin (1892-1940).²¹⁷ Despite this, and like Expressionism in general, he has been largely omitted from the narrative of modernist architecture. On the 17th of April 1919, the newly appointed Bauhaus Director, Gropius, wrote to the designer Hermann Finsterlin (1887–1973) and said, “you absolutely must read Paul Scheerbarth [sic]...in [his] works you will find much wisdom and beauty.”²¹⁸ This was the same month in which Gropius published the Bauhaus manifesto. It was not until the revisionist art historian Reyner Banham (1922-88) wrote a polemical essay about Scheerbart in the *Architectural Review* in 1959 that he resurfaced, although much of his work remains untranslated into English to this day. Banham suggested that Scheerbart's influence “cannot be comfortably fitted into the history of the modern movement – particularly if that history, like Giedion's is slanted for continuity.”²¹⁹ Bletter revived Scheerbart's legacy again a couple of decades later, when she suggested that he may have prompted Behrens's use of the crystal in the Darmstadt publications through a close relationships with artists from the colony.²²⁰ Scheerbart has attracted more recent attention through the enthusiastic interest of an American artist, Josiah McElheny, (b.1966) whose work is discussed in Chapter Four. McElheny

²¹⁶ Bletter, “Expressionist Architecture” 127.

²¹⁷ For Scheerbart and Benjamin see, Detlef Mertins, “The Enticing and Threatening Face of Pre Walter Benjamin and the Utopia” in *Assemblage*, No. 29 (Apr., 1996), 6-23 and Pier Vittorio Aureli, “The Theology Of Tabula Rasa: Walter Benjamin And Architecture in The Age of Precarity in *Log*, No. 27 (Winter/Spring 2013), 111-127. Whyte also mentions the friendship between Scheerbart and Rudolf Steiner, remarking how Steiner admired the writer. See Iain Boyd Whyte, *The Crystal Chain Letters: Architectural Fantasies by Bruno Taut and His Circle*, (Cambridge MA, MIT Press, 1985), 8.

²¹⁸ Scheerbart, *Grey Cloth*, xiii. Finsterlin entered the Exhibition for Unknown Architects hosted by the Arbeitsrat für Kunst, also in April 1919. He would then go on to join Taut's Crystal Chain group, writing under the pseudonym Prometheus. See Benson, *Expressionist Utopias*, 201-2.

²¹⁹ Banham, “Glass Paradise”, 87.

²²⁰ See Bletter, “Glass Dream”, 32 note 56.

is the editor of two recent books on Scheerbart, which together provide background on the writer and make some of his prolific writings available in English for the first time.²²¹ In a short biography included in one of these volumes, British writer Christopher Turner noted that Hans Richter (1888-1976) had traced Scheerbart's influence on the foundations of Dada and that Benjamin regarded him as a "natural precursor to Berthold Brecht."²²²

Scheerbart was obsessed with glass architecture. It was through this medium, that he, in a synopsis provided by architectural theorist John A. Stuart, "strove to integrate his spiritual and romantic leanings with the modern world."²²³ These ideas culminated in 1914 when Scheerbart wrote *Glasarchitektur (Glass Architecture)*, a book filled with 111 observations and possibilities of glass architecture. Scheerbart's fantastic notions include a world built of glass that would illuminate the sky to guide aeronauts. Yet, the book is not science fiction. Banham described it as "an unpredictable mixture of uninhibited vision and sharp practicality."²²⁴ On the practical side, Scheerbart was aware of the material effects of using glass as a building material. He recognised its poor insulating qualities and suggested using double-glazing to overcome this. He also predicted the widespread use of automatic doors, and the reduction of fire risk with the use of inflammable glass. More interestingly, however, *Glasarchitektur* traced architectural glass back to Gothic stained-glass windows, noted for their coloured light effects. It is to this specifically that Scheerbart attributed the transcendental effect of

²²¹ Josiah McElheny and Christine Burgin (eds.), *Glass! Love!! Perpetual Motion!!! A Paul Scheerbart Reader*, Chicago, University of Chicago Press, 2014 and Josiah McElheny, *The Light Club*, (Chicago, University of Chicago Press, 2010).

²²² See Christopher Turner, "The Crystal Vision of Paul Scheerbart" in McElheny *Glass! Love!!!*, 12.

²²³ John A Stuart, "Introduction" in Scheerbart, *Grey Cloth*, xviii.

²²⁴ Banham, "Glass Paradise", 88.

glass.²²⁵ Hence, Scheerbart advocated the use of glass for both its technical properties and its psychological effects. Scheerbart wrote,

...for it is not to be wondered at that these make an especially festive impression, but such an impression from coloured glass is inevitably inherent in glass architecture; its effect on the human psyche can accordingly only be good, for it corresponds to that created by the windows of Gothic cathedrals and by Babylonian glass ampullae. Glass architecture makes homes into cathedrals, with the same effects.²²⁶

In an article entitled, "Paul Scheerbart's Architectural Fantasies," Bletter noted that, for Scheerbart, "spiritual needs in the Middle Ages were met by glass architecture."²²⁷

Scheerbart considered that stained glass, with its crystalline quality and effects, provided the necessary spiritual reassurance for those who produced it. In addition, he thought that a widespread use of glass architecture would create an earthly paradise:

The surface of the Earth would change greatly if brick architecture were everywhere displaced by glass architecture. It would be as though the Earth clad itself in jewellery of brilliants and enamel. The splendour is absolutely unimaginable. And we should then have on the Earth more exquisite things than the gardens of the Arabian Nights. Then we should have a paradise on Earth and would not need to gaze longingly at the paradise in the sky.²²⁸

Worringer argued that the urge to abstraction produced inorganic art during times of spiritual turmoil as a means of finding solace. He identified the unifying effect of gothic crystalline expression. Scheerbart reached a similar conclusion with regard to the positive effects of Gothic architecture, but he identified coloured glass as the source.

²²⁵ A case could be made that Scheerbart perhaps misinterprets the intention of medieval cathedral builders who were not concerned with providing coloured light but rather with creating an effect which resembled precious jewels. See Abbot Suger on the reconstruction of St. Denis.

²²⁶ Paul Scheerbart and Bruno Taut. *Glass Architecture and Alpine Architecture*. Dennis Sharp ed. (London: November, 1972), 72.

²²⁷ Rosemarie Haag Bletter, "Paul Scheerbart's Architectural Fantasies" in *Journal of the Society of Architectural Historians*, Vol. 34, No. 2, (May 1975), 88.

²²⁸ Michael Bullock and Ulrich Conrads, (eds). *Programmes and Manifestoes on 20th-Century Architecture*, (London: Lund Humphries, 1970), 32.

Scheerbart's influence on practice

Scheerbart's fantastical ideas found form in the work of the German expressionist architect Bruno Taut (1880-1938).²²⁹ Taut was interested in the experience of architecture and its use as an instrument for social reform. The use of architecture, and particularly the Gothic style, for social reform was not unique to Germany. In his 1843 book, *Contrasts*, the architect Augustus Pugin (1812-52) promoted Gothic architecture as an alternative to the moral corruption he associated with Classical architecture. Thereafter, John Ruskin (1819-1900) and William Morris (1834-96) also saw the benefits of Gothic architecture: Ruskin, for its 'Honesty' and 'Truth' and Morris for its value as a *Gesamtkunstwerk*.²³⁰ Ruskin's extensive writings were available in German by the early Twentieth Century and Taut was an avid reader. In 1857, Ruskin delivered a lecture, "Influence of Imagination in Architecture," to the Architectural Association in London. He pondered imaginative possibilities, the creation of a new Style and proposed a project to cover London with a coloured glass dome. Two years later, in 1859, Ruskin remarked, "he [the artist] rejoices in a glowing mosaic of broken colour: for that is what the glass has the special gift of producing".²³¹ In 1896, the Prussian government sent a "cultural spy" to England to investigate art education and

²²⁹ In Scheerbart's writing, the architecture itself could have the capacity to become flexible. He tells tales of glass structures which had the capability to transform and adapt to climate or other conditions. This transformation symbolises the transcendental properties of the crystal. Again, these ideas found their way into Taut's work. During the Crystal Chain period he produced plans for a moveable glass house.

²³¹ See John Ruskin, *The Two Paths: Being Lectures on Art, and its Application to Decoration and its Application to Decoration and Manufacture Delivered 1858-9* (New York, John Wiley and Son Publishers, 1869), 117. The Architectural Association quote reads, "If your style be of the ideal kind, you shall wreath your streets with ductile leafage, and roof them with variegated crystal – you shall put, if you will, all London under one blazing dome of many colours that shall light the clouds round it with its flashing as far as the sea. And still, I ask you, What after this? Do you suppose those imaginations of your will ever lie down there asleep beneath the shade of your iron leafage, or within the coloured light of your enchanted dome?" (p.141). The second quote about glass is from a lecture entitled "Modern Manufacture and Design" (p.99). It seems clear that Ruskin, like Scheerbart was interested in coloured light. Ruskin discussed how this would create a coloured light that would reach to the sea, not dissimilar to Scheerbart's lighting of the sky for airships. Both Scheerbart and Ruskin noted the positive benefits of coloured light on the person, for Ruskin it enhances the imagination, for Scheerbart on the general psyche. See Ruskin, *Two Paths*, 117 (earlier quotes found on bracketed page numbers).

practice.²³² This mission may have helped support a rising appreciation of Gothic art in Germany. Whyte suggested that, in *Form in Gothic* (1910), Worringer held views similar to those circulating in England. He concluded that,

The appealing simplicity of a dialogue between good Gothic and bad classical led Worringer's followers to create an all-embracing ethos which combined Gothic, oriental, Egyptian and baroque architecture on the side of virtue and spirituality, and classicism on the side of superficiality and materialism.²³³



Figure 19, Bruno Taut, *Glashaus*, 1914



Figure 20, Interior view, lower level

In 1914 Taut designed a glass pavilion for the Deutsche Werkbund exhibition in Cologne. The exhibition opened in May but the *Glashaus* was not completed until July.²³⁴ Scheerbart had already published a review of the *Glashaus* the previous March based entirely on a scale model of the work.²³⁵ The design of the pavilion included a coloured roof, not unlike Ruskin's vision for London. The first verse from Scheerbart's *Glasarchitektur* was included in the pamphlet that Taut penned to accompany the pavilion. Bletter observed that, "In the Glass House, the literary

²³² Magdalena Droste, *Bauhaus: 1919-1933*, (Berlin, Taschen, 2011), 10.

²³³ Iain Boyd Whyte, *Bruno Taut and the Architecture of Activism*, (Cambridge, Cambridge University Press, 1982), 58.

²³⁴ McElheny, *Glass! Love!!* 98.

²³⁵ Paul Scheerbart, "Glashäuser: Bruno Taut's Glaspalast auf der Werkbund-Ausstellung in Cöln" (Anne Posten trans.) in McElheny, *Glass! Love!!* 92-97.

fantasises about glass architecture are, for the first time since Gothic architecture, again reinstated as built form.”²³⁶ Taut dedicated the pavilion to Scheerbart and several of the writer’s mottoes are inscribed around the base of the dome. Some extracts are as follows:²³⁷

Glück ohne Glas –
Wie dumm ist das!
Happiness without glass
How crass!

Das Licht will durch das ganze All
Und ist lebendig im Kristall.
Light permeated the Universe
It comes to life in the crystal.

Das Prisma is doch Groß;
Drum ist das Glas famos.
The prism is marvellous
That is why the glass house is great!

Das Glas bringt uns die neue Zeit:
Backsteinkultur tut uns nur leid.
Glass opens up a new age
Brick building only does harm

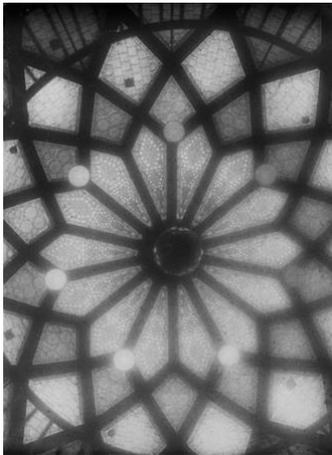


Figure 21, View under glass dome



Figure 22, *Glashaus*, staircase

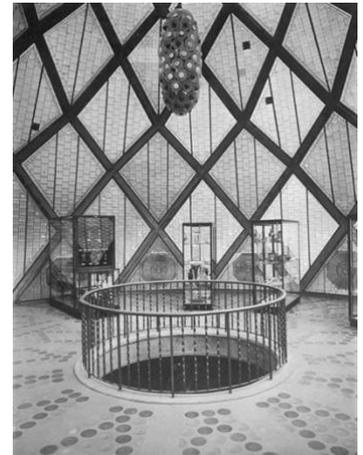


Figure 23, Interior view

²³⁶ Bletter, “Glass Dream”, 33.

²³⁷ The Werkbund was established in 1907 to promote a correlation between art and industry. Although influenced by the Arts and Crafts movement in England it also embraced new materials and technology, similar to the Jugendstil. Gropius exhibited a model factory in the 1914 Cologne exhibition.

While Scheerbart was interested in the use of glass to provide coloured light during the middle ages, Taut found in glass an inherent ability to defy its own materiality. The translucency of glass negates its material qualities; it becomes in essence, less 'material'. This 'spiritualised' it in a way similar to the effect of stone in Gothic architecture. Worringer wrote,

Spirit is the opposite of matter. To dematerialise stone is to spiritualize it. And by this statement we have made clear that the tendency of Greek architecture towards sensuousness is in direct contrast to the tendency of Gothic architecture towards spiritualization.²³⁸

In accordance with Werkbund principles, Taut's *Glashaus* showcased cutting edge materials and technology, in this case glass, as the Twentieth century replacement for stone. Taut referenced the Gothic influence in a statement about the Cologne pavilion, saying, "The Gothic cathedral is the prelude to glass architecture."²³⁹

²³⁸ Worringer, *Form in Gothic*, 104. See pp.104-5 for more discussion on how Gothic architecture is seen as a direct expression of artistic volition. The argument here is much clearer than that offered in Worringer's earlier book. Basically, Worringer states that the while Greek architects approached stone with a desire to allow it to express itself, Gothic architects used it to express their spirit, in this case the urge to abstraction. In doing so they were not concerned with allowing the stone to maintain its weighty properties.

²³⁹ From Bruno Taut, "Glashaus - Werkbund-Ausstellung Cöln 1914", quoted in See Bletter, "Glass Dream", 21.

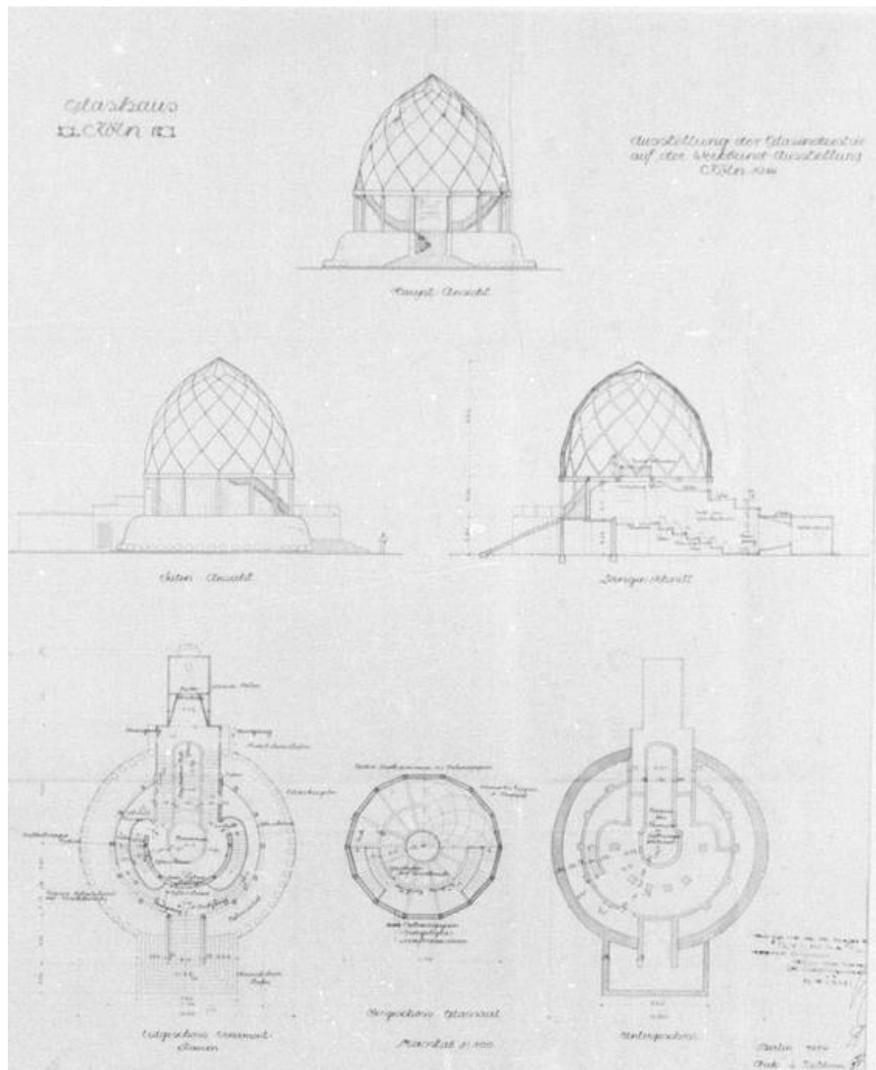


Figure 24, Bruno Taut, *Glashaus*, Planning drawings Cologne City Council, 1914

The pavilion was circular in plan, about three storeys high, and raised a further storey by a stepped plinth. It was topped by a pointed dome in coloured glass, the profile of which tended towards an ogee arch or onion dome. The copula was constructed using two layers of glass; a very advanced way of preventing heat loss, and as Taut argued, this prevented a greenhouse effect. His pamphlet explained, “Luckily, the sirocco winds ventilate the house well enough to overcome the greenhouse atmosphere one might justifiably fear in a glass house.”²⁴⁰ The dome’s concrete frame provided a

²⁴⁰ Bruno Taut, “Glass House: Cologne Werkbund Exhibition 1914” in McElheny, *Glass! Love!!* 102.

skeleton structure into which Luxfer prisims were placed. The *Deutsches Luxfer Prismen Syndikat* was a foreign branch of the American Luxfer Prism Company and the main sponsor of the pavilion, though Taut also funded it with his own money.²⁴¹ Luxfer prisms were specifically designed to reflect and refract light. This provides more than merely aesthetic benefits, it allowed natural light to penetrate deeper into buildings than standard glass.

On first appearance the pavilion seems like a simple domed space. However, the plan reveals a more complex organisation, accounting for Bletter's description of it as, "as a metaphor for spiritual transcendence".²⁴² Much of the limited floor space was devoted to staircases, made of iron and glass. Taut intended to lead the visitor through three internal levels. As a consequence, the visitor became disconnected with the external world and immersed in the architectural space. The architectural promenade, and sense of isolation from the outside, was enhanced using coloured light, music and flowing water. It culminated in a basement level kaleidoscope room where coloured light patterns were projected onto a screen. Behne, who was Taut's friend and fellow member of the Werkbund, wrote a review of the pavilion. He said,

The longing for purity and clarity, for glowing lightness, crystalline exactness, for immaterial lightness, and infinite liveliness found in glass a means of its fulfilment – in this most bodiless, most elementary, most flexible, material, richest in meaning and inspiration, which like no other fuses with the world.²⁴³

The Werkbund exhibition closed prematurely in August 1914 with the outbreak of war. Over the next few years, in a period with few architectural commissions, Taut's work was confined to paper. This allowed him freedom to fantasise about glass architecture and develop his utopian architectural theory. Bletter reflected that this time, and the

²⁴¹ Taut worked closely with this company for some time, and designed a glass toy for them in the 1920s.

²⁴² Bletter, "Expressionist Architecture" in Long, *German Expressionism*, 122.

²⁴³ Behne translated and quoted in Bletter, "Glass Dream", 34.

period after the war, provided fertile ground for the development of Scheerbart's utopian ideas.²⁴⁴ In 1914 Taut wrote an article for *Der Sturm* called "A Necessity" ("Eine Notwendigkeit") which Bletter described as "the earliest manifesto calling for an Expressionist architecture."²⁴⁵ In this piece, Taut observed that artists, in all media, were striving to produce a fundamental expression through abstract form. Taut, like Behne and Worringer, identified similarities with the Gothic period where artists were imbued with a similar artistic urge, expressed in the unity of the Gothic cathedral. For Taut, a Gothic cathedral merges structure and ornament that affects us more powerfully than Classical architecture. Taut explained,

One finds in this as well an affinity with the Gothic, the great works of which, on one hand, possess construction intensified into passion, and on the other, the search for what is most simple and economically and practically and yet most expressive. Within this tendency lies a degree of constructive intensity that goes far beyond the self-sufficient classical ideal of harmony.²⁴⁶

²⁴⁴ Bletter, "Fragments of Utopia" in McElheny *Glass! Love!!* 124.

²⁴⁵ Bletter, "Expressionist Architecture" in Long, *German Expressionism*, 124. An extract from "A Necessity" is also published here, pp. 124-6.

²⁴⁶ *Ibid*, 125.



Figure 25, Bruno Taut, Extract from *Alpine Architecture*, 1919²⁴⁷

Taut's theory was expounded in *Alpine Architektur*, a sort of illustrated poem. The book, dedicated to Scheerbart, was published in 1919, four years after the writer's death. I will discuss Taut's work in more detail in Chapter Four when I examine contemporary uses of the crystalline in the work of Josiah McElheny; here I wish to concentrate on tracing the crystalline motif during the early Twentieth Century. Taut's drawings depict a sublime mountainous landscape filled with crystalline architecture. Bletter summed up its theme: "The idea of transparency, transformation, and movement is achieved by means of an illuminated glass architecture, floodlit at night by coloured light beacons."²⁴⁸ She also highlighted the fact that Taut, following Scheerbart, supported communal involvement to realise these gigantic glass structures. She aligned this with a romantic vision of Gothic construction, one where whole communities achieved solidarity and peace through communal involvement in

²⁴⁷ Bruno Taut and Matthias Schirren. *Bruno Taut: Alpine Architecture: a Utopia*. Munich: Prestel, 2004.

²⁴⁸ Bletter, "Glass Dream", 35.

the building project.²⁴⁹ Taut, and his contemporaries, did not have nostalgia for the past, but rather a desire to use this model to improve society by combining technological innovation and the arts.

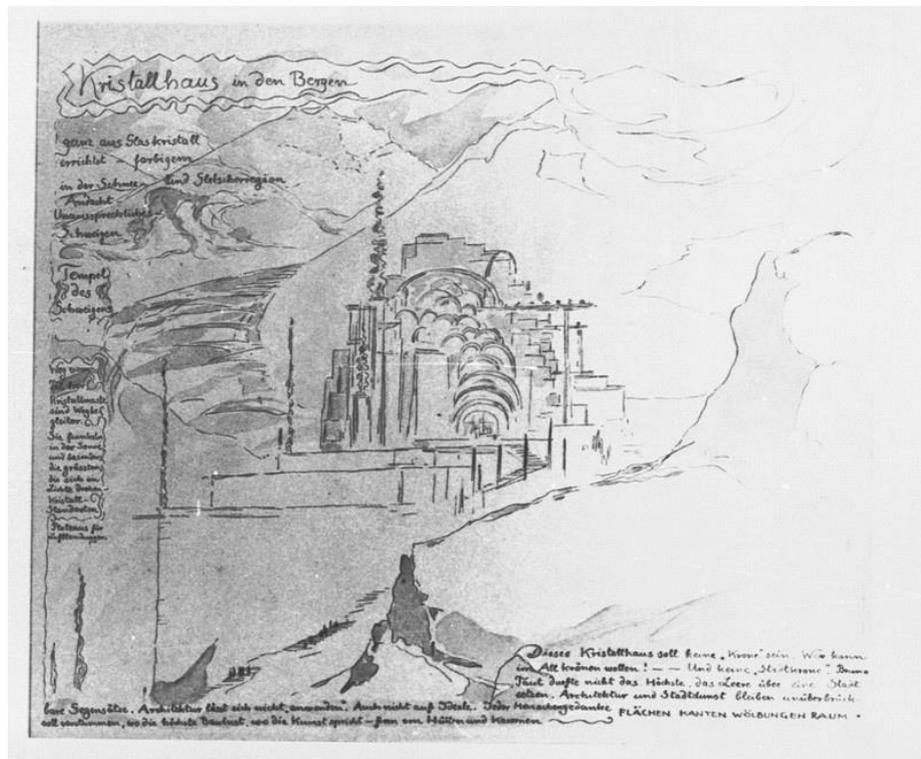


Figure 26, Bruno Taut, *Alpine architecture*, “Crystal house in the Mountain”, 1919

Around 1919, the collector and promoter of the arts, Karl Ernst Osthaus (1874-1921) assembled a team of leading architects to develop a site near Hagen into a garden city. This team included Taut, Henry van de Velde (1863-1957), Gropius and Behrens. Taut’s plan included a school, publishing house, farm and workshops, and most notably, a “House of Prayer” which was a tower of crystal. Despite the financial difficulties which, in the end, curtailed the project, Osthaus wrote to Taut saying, “Nothing is so important today as to set our sights as high as our imaginations will

²⁴⁹ Bletter, “Scheerbar’s Architectural Fantasies”, 96.

reach.”²⁵⁰ The crystal tower was intended as a symbolic centrepiece to represent widespread transformation through art.²⁵¹

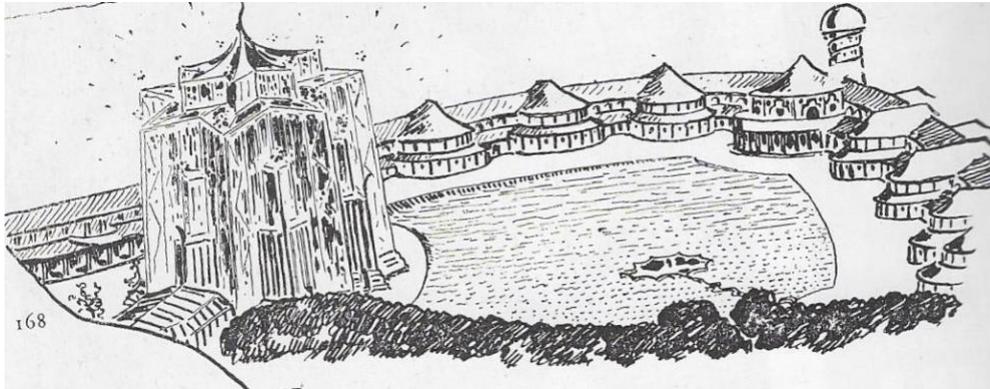


Figure 27, Bruno Taut, Crystal building, Hagen project, 1920²⁵²

Taut’s “Die Städtkrone” (“The City Crown”), of the same year, developed this idea.²⁵³

The ideal city, according to Taut, would be organised around a central community space that would contain gardens and cultural buildings. At the heart of this urban space stood a Kristallhaus that “is both the ultimate goal and starting point for all architecture.”²⁵⁴ The house had no practical function; its role was to facilitate an experience of space and to act as a symbol. The extract from “Die Städtkrone” below made the importance of the centrepiece clear. Although he did not specify it directly, Taut’s described a situation where the crystal house replaced the cathedral as the spiritual centre. It acts as a landmark which can be seen from afar, while its coloured light was reflected on neighbouring buildings.

²⁵⁰ Letter from Osthaus to Taut November 22, 1919 quoted in Pehnt, *Expressionist Architecture*, 77.

²⁵¹ *Ibid.*

²⁵² *Ibid.*, 78

²⁵³ Bruno Taut “The City Crown.” Trans. Ulrike Altenmüller and Matthew Mindrup. *Journal of Architectural Education*, 63, no. 1 (2009): 121-134.

²⁵⁴ Extract from Taut “Die Städtkrone” quoted in Whyte, *Bruno Taut*, 73.

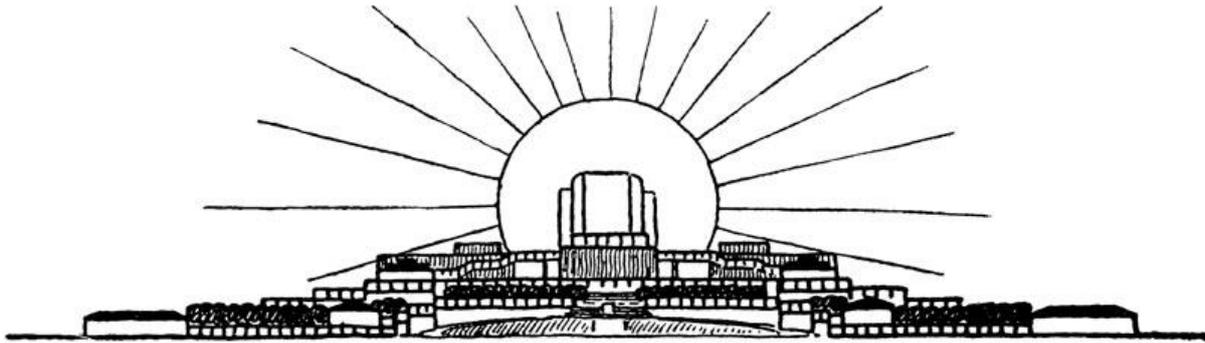


Figure 28, Bruno Taut, Drawing of the *Kristallhaus*, published in "Die Städtkrone", 1919

The light of the sun penetrates this crystal house, which reigns above the entire city like a sparkling diamond. [This house] sparkles in the sun as a sign of the highest serenity and peace of mind. In its space, the lonely wanderer discovers the pure bliss of the building art. While climbing up the stairs to the upper platform, he looks to the city at his feet and beyond to the sun rising and setting, towards which this city and its heart are so strongly directed.

Light wants to pass through the universe and is alive in the crystal. Emanating from the infinite, it is captured in the highest point of the city. It scatters and shines on the colored panels, edges, surfaces and concavities of the crystal house. This [house] becomes the carrier of cosmic feelings, a religiousness that reverently remains silent. It does not stand isolated, but is supported by buildings that serve the noble emotions of the people. These [buildings] are further separated in the forecourts by a more profane mechanism: realism and vitality surround the crystal, like annual markets and church fairs had once done in front of the church. The brilliance, the shining of the pure and the transcendental, shimmers above the festivity of the unbroken radiating colors. Like a sea of colors, the municipality spreads itself around [the crown], as a sign of the good fortune of new life.²⁵⁵

Gropius declared the Deutsche Werkbund dead in 1917 and in 1918, following the November revolution, a new, more radical group, the Arbeitsrat für Kunst (1918-21), was formed around Taut. The main objective was to abolish the isolation of individual arts. Taut's programme for the group specified that, "Art and people must form a unity. Art should no longer be the pleasure of a few but should bring joy and sustenance to the masses. The goal is the unison of the arts under the wings of a great architecture."²⁵⁶ To achieve these aims they sought greater public engagement in the

²⁵⁵ Taut, "The City Crown", 131-2.

²⁵⁶ Long, *German Expressionism*, 193-94.

arts, revisions to art education and the elimination of the boundaries between the arts. Behne would later write, “The Arbeitsrat does not consider utopian ideas to be ridiculous.”²⁵⁷ The signatories of the group included many prominent figures including Worringer, Gropius and Behne, who also acted as membership secretary; Hablik was also a member. By the spring of the following year, the group had grown to over 100 members and Taut relinquished his leadership to Gropius. A little earlier, in December 1918, Taut wrote an Architecture Programme for the group. It set out steps for reforming society through the medium of architecture, ideas that would resonate with Gropius’s forthcoming Bauhaus Manifesto. Taut wrote,

The disrupted tendencies can achieve a unity only under the auspices of a new art of building, in such a way that each separate discipline will contribute to it. At that point there will be no boundaries between the crafts, sculpture, and painting, all will be one: Architecture.²⁵⁸

He continued by calling for the introduction of experimental building sites where the public could visit, experience and contribute to radical architectural ideas.²⁵⁹

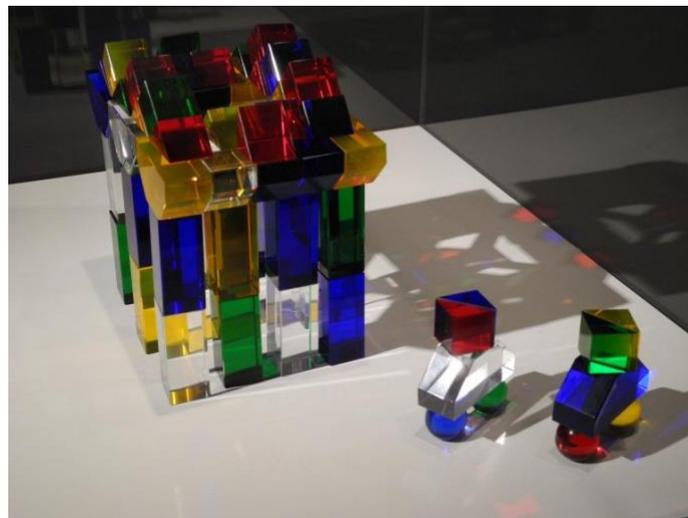


Figure 29, *Dandanah* building blocks, attributed to Bruno Taut, reconstructed 2003

²⁵⁷ Behne, Adolf, “Unbekannte Architekten” (“Unknown Architects”), *Sozialistische Monatshefte* 25, no. 4 (March 1919) extract reprinted in Long, *German Expressionism*, 201.

²⁵⁸ Bruno Taut, “An Architectural Program.” (1919) Accessed August 18, 2014. http://germanhistorydocs.ghi-dc.org/sub_document.cfm?document_id=4005.

²⁵⁹ Long, *German Expressionism*, Documents 195-7.

Around 1919 Taut was involved in the design of a glass building block set called the *Dandanah – The Fairy Palace*.²⁶⁰ The *Dandanah* aligned with Taut's intention to encourage wider public involvement in design and in coloured glass architecture specifically. It was intended for broad participation, unlimited by age or gender. Writing in 1921, Taut talked about the difficulties of changing old architectural habits but identified an ally in children; "we make children into our master builders with real playthings (for example my glass construction kits with colourful, nearly unbreakable glass blocks)."²⁶¹ The sixty-two solid coloured glass blocks were presented in a roughly octagonal wooden case with a sliding lid. It came with six sample designs by Taut, one of which is similar to the photograph above. Unfortunately, the majority of Taut's designs were not viable due to gravity or the slippery glass surfaces.²⁶² It was originally manufactured by the Luxfer-Prismen company which Taut knew from construction of the *Glashaus* five years previously. In 1925 Gustav E. Pazaurek, director of the Landesgewerbemuseum in Stuttgart, wrote,

One of our most imaginative architects, Bruno Taut, who wants glass and coloured glass to occupy a very large space in architecture, recently created very nice building blocks for children and introduced them to the market through the Luxfer-Prismen firm of Wissensee, Berlin.²⁶³

In actual fact, the toy never reached a wide audience and surviving examples are in poor repair with pieces broken and mislaid. In theory, Taut had found a way of fostering new ideas in glass, but in reality, the fragility of the blocks, with their delicate arrises, were just not suited to experimentation.²⁶⁴

²⁶⁰ See Artemis Yagou, "Modernist complexity on a small scale: The Dandanah glass building blocks of 1920 from an object-based research perspective", *Reprint*, 6, (2013): 15 where the author discusses other involvement in the design of the object. Few examples of the original toy survive; the image shows a limited reproduction of the set by the Vitra Design Museum from 2003.

²⁶¹ From Bruno Taut, "Glasarchitektur" originally published in *Die Glocke*, March 1921 and now translated by Anne Posten in McElheny *Glass! Love!!* 121.

²⁶² Yagou, "Dandanah", 20.

²⁶³ Originally from Gustav Pazurek, *Kunstgläser der Gegenwart*, 1925, page 246, translated by and quoted in Yagou, "Dandanah", 23.

²⁶⁴ An arris is an architectural term for the sharp edge where two surfaces meet. It is commonly used to describe the edges of blocks which are typically their weakest point.

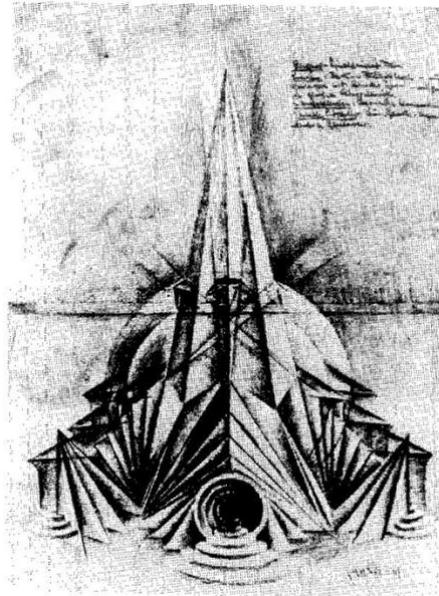


Figure 30, Johannes Molzahn, *Crystal Cathedral*, Included in exhibition for Unknown architects.

In April 1919, the Arbeitsrat für Kunst held an exhibition, “Ausstellung für unbekannte Architekten“ (“Exhibition for unknown architects”), for which Gropius, Taut and Behne invited entries from both architects and non-architects. According to Behne, this allowed the Arbeitsrat für Kunst the opportunity to assess existing ideas across the arts. He explained that

Painters and sculptors were also called upon to furnish architectonic works; because, of course, in order to collaborate in ways we have recognized as necessary, it is very important to know to what extent architectonic forces are already active in other arts.²⁶⁵

Instead of a catalogue for the exhibition, they produced a pamphlet containing statements by the three organisers, but sadly the list of exhibits has been lost.²⁶⁶

Gropius’s entry echoes his Bauhaus manifesto but was bolder and more visionary. He said that “ideas die as soon as they become compromises” and therefore architects, sculptors and painters should not be bound by technical realities but should aspire to

²⁶⁵ Adolf Behne, “Unbekannte Architekten” (“Unknown Architects”), *Sozialistische Monatshefte* 25, no. 4 (March 1919) extract reprinted in Long, *German Expressionism*, 203.

²⁶⁶ Pehnt, *Expressionist Architecture*, 91.

their dreams.²⁶⁷ Exhibition entrants were asked to provide examples of their work or “ideal projects.”²⁶⁸ Not surprisingly, crystalline forms featured in the entries. One such example was a pencil drawing by Der Sturm artist, Johannes Molzahn (1892–1965), depicting a crystal monument [Figure 30].²⁶⁹ Behne also referred to Oswald Herzog’s (1881-1939) model of a temple for art that had a glass crystalline roof.²⁷⁰

From amongst the participants in this exhibition, Taut formed a secret subgroup called the Gläserne Kette (Crystal Chain). In November of 1919, Taut invited fourteen members, from around Germany, to correspond with each other. Invitees included former Blaue Reiter member, Hablik, Gropius, Behne and brothers Hans Luckhardt (1890-1954) and Wassili Luckhardt (1889-1972). Each member was assigned a pen name and they corresponded for roughly a year. Taut wrote under the pseudonym *Glas*. They discussed the idea of societal reform through architecture, and the symbolic use of the crystal reoccurs in the text and accompanying sketches. In 1985, Whyte compiled and translated their correspondence. Collectively the members contributed to a body of ideas about the transformative possibilities of architecture that can be achieved by rejecting rational thinking and prescribed form and instead, embracing intuition and expression. As Wassili Luckhardt put it,

It is a wonderful feeling to try for once to reject everything to do with education and culture that lies latent in one, dimming the senses; to think of nothing, to be receptive, to let oneself be carried along by the mood of the moment – to try for once to be completely innocent.²⁷¹

²⁶⁷ Extract from the exhibition pamphlet in Benson, *Expressionist Utopias*, 292.

²⁶⁸ See Whyte, *Crystal Chain*, 13 for a translation of the original advertisement for the exhibition published in *Die Werkstatt der Kunst* in January 1919.

²⁶⁹ Molzahn was asked by Gropius to survey artistic work in Weimar region after WWI although he never became official member of Bauhaus. Molzahn did some graphics for Taut’s book *Die Neue Wohnung*.

²⁷⁰ Behne, “Unbekannte Architekten” (“Unknown Architects”), in Long, *German Expressionism*, 203.

²⁷¹ Letter from Wassili Luckhardt (Zacken), no date, reprinted in Whyte, *Crystal Chain*, 49.

There are obvious overlaps between this view and that of the avant-garde artists already discussed.



Figure 31, Ludwig Mies Van der Rohe, skyscraper project, Friedrichstrasse, Berlin 1920

Around this period, Taut was publishing the only journal devoted to Expressionist Architecture, called *Frühlicht (Dawn)*, 1920-22. Taut used this medium to popularise his ideas and reproduce some of the Crystal Chain's letters. He called it "our vehicle for public discussion."²⁷² It was here that Mies van der Rohe's familiar image of a glass skyscraper was first published in the summer of 1922; this will be discussed at length in Chapter Four.²⁷³ Whyte, whose name appears in relation to any research on the subject, discussed tensions within the Crystal Chain group concluding that they were divided by the split between rationality and intuition.²⁷⁴ Whyte maintained that,

²⁷² Letter from Taut (Glas) to other members of the Crystal Chain dated 13 March, 1920, translated and reprinted in *Ibid*, 73.

²⁷³ Images of the skyscraper project were published in *Frühlicht*, No. 4, (Summer 1922). The accompanying text, by Mies highlights that he was interested in the transparent qualities of the glass that allowed the structure of the skyscraper to be visible. He also exalted the undulating surface of the glass, which allows a multitude of constantly changing reflections. See Chapter 4 for more details on this project.

²⁷⁴ See Whyte, *Crystal Chain* 9.

“the division within the group clearly echoed the polarity between empathy and abstraction, which Wilhelm Worringer had described in his book of that title...”²⁷⁵



Figure 32, Lyonel Feininger, *The Cathedral of Socialism*, Bauhaus Manifesto Frontispiece, 1919

The Bauhaus is most often remembered as an institution which promoted a functionalist aesthetic, but this is only part of the story. Gropius became director of the newly formed Bauhaus in April 1919 and crystal iconography was fundamental to his original message. Lyonel Feininger’s (1871-1956) much reproduced frontispiece is arguably the most familiar use of the crystalline from this period. The manifesto echoed Taut’s Architecture Programme for the Arbeitsrat für Kunst, promoting the dissolution of boundaries between the arts and, initially, instruction was based on the model of medieval guilds. As Banham remarked, “eliminating the barriers between brain-worker and artisan, directly echoes” Scheerbart’s thinking.²⁷⁶ For Gropius, the new expression, “will combine architecture, sculpture, and painting in a single form,

²⁷⁵ Whyte, *Crystal Chain*, 9.

²⁷⁶ Banham, “Glass Paradise”, 89.

and will one day rise towards the heavens from the hands of a million workers as the crystalline symbol of a new and coming faith.”²⁷⁷ Following both Taut and Scheerbart’s ideas, Feininger’s woodcut features a Gothic cathedral of glass and many of the remaining the Bauhaus’ members were also initiated to this line of thinking.²⁷⁸ It is likely that the unifying quality that Worringer attached to the Gothic style, as already discussed, influenced Feininger’s choice of architectural form.²⁷⁹ This, combined with the utopian vision inherent in Taut’s conception of the crystalline, symbolised the Bauhaus’s original aim.

The Decline of the Crystalline Motif



Figure 33, Lunapark, Berlin, 1920²⁸⁰



Figure 34, Robert Wiene’s, *Das Cabinet des Dr Caligari* (1920), Film Still²⁸¹

²⁷⁷ Extract from Walter Gropius’ *Bauhaus Manifesto* from 1919.

²⁷⁸ Seen through a ‘Scheerbartian’ lens, Banham noted that the three stars on top of the spires in Feininger’s woodcut become “three navigational lights for Zeppelins.” In paragraph thirty-seven of *Glass Architecture* Scheerbart wrote, “All towers must therefore become towers of light” to guide aeronauts. Banham, “Glass Paradise”, 89. Scheerbart entitled this chapter, “Direction Finding for Aeronautics” and describes how glass towers will emit light to guide flying machines. See Scheerbart, *Glass Architecture*, 52.

²⁷⁹ Bauhaus scholar, Magdalena Droste (b.1948) argued that Worringer’s Form in Gothic in 1912 was a direct influence. See Droste, *Bauhaus*, 19.

²⁸⁰ Image from Landesarchiv Berlin, <http://www.landesarchiv-berlin-bilddatenbank.de/hida4web-LAB/search?keyword=lunapark&smode=simple#> (Accessed October 20, 2014)

²⁸¹ Actor Werner Krauss in *The Cabinet of Dr Caligari*, (dir. Robert Wiene), February 1920 from British Library, <https://www.bl.uk/20th-century-literature/articles/on-the-edge-of-the-volcano-culture-in-weimar-germany> (Accessed October 07, 2019).

By the 1920s crystal forms had become increasingly common in popular culture. Examples included an attraction at an amusement park in Berlin surrounded by forms reminiscent of Expressionist paintings and Robert Wiene's, *mise-en-scène* in *Das Cabinet des Dr Caligari* (1920), with its angular crystalline shapes. The Expressionist period was fuelled by artistic fervour, but this ended swiftly when its motifs were adopted by popular culture, causing its practitioners to distance themselves from it as quickly as possible.²⁸² Artists abandoned the movement and art history failed to recognise its importance until much later in the twentieth century. As Bletter noted,

By the mid-twenties most avant-garde architects had turned to rationalism or functionalism, a development later encompassed by the term International Style. It became unfashionable to recognise any relationship between Expressionism and the Neues Bauen [New Building] or to acknowledge that the anti-rational ingredient of Expressionism could in fact produce extremely sane solutions.²⁸³

Worringer declared Expressionism dead in an article entitled, "Art Questions of the Day" in 1921. It was translated and published in England in T.S. Eliot's (1888-1965), *The Criterion* in 1927 after Read brought it to Eliot's attention. Worringer wrote, "More and more the movements of Expressionism became a phantom play of empty gestures..."²⁸⁴ For Worringer, an understanding of *Kunstwollen* allowed the early Twentieth Century viewer to appreciate inorganic (Gothic, Baroque and Primitive) art in a way that was never previously understood.²⁸⁵ However, he lamented that "the

²⁸² Willet mentions that in 1924 where Ernst Ludwig Kirchner (1880-1938), one of the founding members of the Brücke, and a close associate of the movement, said, it was 'more degrading than ever...to be identified with Munch and Expressionism'. Quoted in Willet, *Expressionism*, 7, primary reference details are not provided in this source.

²⁸³ Bletter, "Expressionist Architecture" in Long *German Expressionism*, 122.

²⁸⁴ Worringer, "Art Questions of the Day" in Eliot, T.S (ed), *The Criterion 1922-1939*, Vol. VI: July 1929-December 1927, 102. Extracts of this text are translated as "Current Questions in Art" in Long, *German Expressionism*, however the Eliot translation is used as it is a more contemporary version of the text. Topic of this article is apparently similar to another lecture given in Cologne in March 1919 called "Kritische Gedanken aur Neuen Kunst" and published in *Genius I* (1919).

²⁸⁵ Speaking about modern art, Worringer said, "Whether these experiments lead to a positive result or turn out to be a useless expenditure of energy, a valuable piece of the actual inner life of our time has animated them. For this reason they deserve a place in our museums: a place not superior to, but certainly on a par with, the unproblematical art products that, as mentioned above, reflect the average character of our epoch and so force much of the finest and best into silence. Even failed experiments have their essential value and their historical

more deeply we penetrated into the world of these phenomena of the past, the sharper became our recognition that the modern repetition of the expressionist drama was after all merely played in the studio...²⁸⁶ Behne shared Worringer's view and did not hesitate to distance himself from what had become merely a style:

An architecture which aspires to be Expressionistic, in the sense of the currently popular Expressionism, would be atrocious. Examples of it are not entirely lacking in racketeering dance halls. We have nothing in common with this... The aim is objectively won form, which will rise above the smoke screen of subjective emotion.²⁸⁷

In 1923 Behne wrote *The Modern Functional Building (Der moderne Zweckbau)*, although it was not published until three years later. In this book, he traces the development of Functionalism to include Expressionism as a necessary component. He specifically referred to work by Taut and Hablik as "intermediate links in the evolutionary chain."²⁸⁸ Behne's book was not translated into English until 1996. In the interim, Behne's view of Expressionism was surpassed in favour of the two leading exponents of architectural history, Sigfried Giedion (1888-1968) and Nikolaus Pevsner (1902-1983), which I will outline in a moment.

If Gropius's enthusiasm for industrial prototypes in 1922 heralded a decline of Expressionism at the Bauhaus, the arrival of Theo van Doesburg (1883-1931) extinguished all traces of the movement. Art historian Michael White remarked that

meaning." In this article Worringer also discussed the problems faced by curating this new work. He advises that contemporary works are representative of their time and hence deserve to be treated equally with traditional works in the museums' collections. Wilhelm Worringer, "The Historical Development of Modern Art," from *The Struggle for Art: The Answer to the "Protest of German Artist"* printed in Long, *German Expressionism*, 13.

²⁸⁶ Worringer, "Art Questions", 104. By the end of the article, Worringer aligned art with the Law of Conservation of Energy, e.g. describing it as a closed system, which is the first law of thermodynamics. As we will see in Chapter Three, Robert Smithson was particularly interested in thermodynamics. While there are general threads that link Worringer and Smithson, which I will discuss, I have not uncovered a direct link between Worringer's 1921 essay and Smithson's work. This is not to say that one did not exist, but it would be difficult to prove particularly as Smithson's archive contains sparse coverage of his early period when he was producing expressionist work.

²⁸⁷ Adolf Behne, "Die Zukunft unserer Architektur" in *Sozialistische Monatshefte*, January 1921, extract translated and quoted in Whyte, *Bruno Taut*, 220.

²⁸⁸ Adolf Behne, *The Modern Functional Building*, (1926), Henry F. Mallgrave (ed.), Michael Robinson (trans.) (Santa Monica: Getty Research Institute, 1996), 127.

van Doesburg distanced himself from Expressionism in 1916, saying that Expressionist work could be seen as a symptom of mental ill health, unsuited to support the advancement of mankind.²⁸⁹ Although his influence over Bauhaus staff and students can be traced to an earlier period, van Doesburg taught at the Bauhaus between 1922 and 1924. As one of the founding members of the De Stijl movement, he sought to develop a universal artistic language. As such, the vocabulary was restricted to vertical and horizontal lines, primary colours, black, white and grey. In the aftermath of the First World War there was a certain comfort to be found in these limits. This universal language coincided with Gropius's intention to make the Bauhaus financially independent and not reliant on state funding. To this end, Gropius moved away from the Bauhaus's Expressionist origins towards a unity of art and technology. Ultimately, Gropius saw opportunities for the development of design prototypes that could be sold for commercial production.

Coinciding with this was the *Neue Sachlichkeit*, (New Objectivity) movement which lasted roughly from 1919-33. In contrast to Expressionists, or Taut's utopian dreams, these realists were rooted in the present. Consequently, disfigured war veterans, mechanised people and seedy urban scenes are familiar subjects in paintings from this period by the likes of Otto Dix (1891-1969) and George Grosz (1893-1959) [Figure 35].²⁹⁰ The loose brushstrokes, and reduced field that characterised Expressionist work was replaced with precision and renewed enthusiasm for perspective, even if it was sometimes distorted for effect. Worringer promised that inorganic, crystalline art

²⁸⁹ Michael White, "Theo van Doesburg: A Counter-Life" in *Van Doesburg & the International Avant-Garde*, eds. Gladys Fabre and Doris Wintgens Hötte, (London, Tate Publishing, 2009), 69.

²⁹⁰ According to White, Grosz either suffered from, or replicated a mental illness during the war. See Michael White, "The Grosz Case: Paranoia, Self-hatred and Anti-Semitism" in *Oxford Art Journal*, Vol. 30, No. 3 (2007): 433. This theme of paranoia discussed by White may equally apply to this work, specifically in the character peeking around the corner.

would provide a place of refuge, while Taut designed utopian crystalline cities for a better tomorrow. In practice, however, the Great War dissolved these visions. In its aftermath, when one might have anticipated a greater need to escape reality, the *Neue Sachlichkeit* took a different approach facing reality head on.



Figure 35, George Grosz, *Grey Day*, 1921²⁹¹

The polemical *International Style* exhibition, curated by the architect and critic Philip Johnson (1906-2005) and Henry-Russell Hitchcock (1903-1987) at the New York Museum of Modern Art in 1932, did nothing to encourage multiplicity within the modernist project.²⁹² MoMA was still in its infancy under the directorship of Alfred H. Barr (1902-81), who was renowned for turning history into cultural product. Barr heralded the exhibition as a cohesive study on modern architecture, downplaying its

²⁹¹ Image from Staatliche Museum, Berlin online at <http://www.galerie20.smb.museum/werke/964051.html> Accessed November 21, 2019.

²⁹² Philip Johnson is perhaps best known as an architect of contrasting styles, most notably his Miësian Glass House (1949) and post-modern AT&T Headquarters (1984). Johnson however began his career as an architectural critic, following a degree in Philosophy from Harvard and extensive European travel in the early Thirties. In 1932 he was appointed the first director of The Museum of Modern Art's Department of Architecture where he curated the *International Style* exhibition with Hitchcock. In 1940 Johnson returned to Harvard to study architecture under the two Bauhaus architects Marcel Breuer and Walter Gropius.

narrow focus in order to promote the idea of a universal *style*. In the preface to the catalogue, Barr's opening statement attempts to add academic weight to his argument. He compared the curators' method to that used in more traditional genres, "Mr. Hitchcock and Mr. Johnson have studied contemporary architecture with something of the scholarly care and critical exactness customarily expended upon Classical or Mediaeval periods."²⁹³ This approach contradicts Worringer's principle that the same method cannot be applied to both organic and inorganic art. In the end, it was simpler to edit the story and omit Expressionism altogether. Barr's codified 'style' was easily digested, and quickly adopted as the official account of the development of modern architecture.²⁹⁴

Barr was not alone in his thinking, both Giedion and Pevsner firmly considered Expressionism an anomaly in the development of modernism.²⁹⁵ In 1941, Giedion opened *Space, Time and Architecture* with a clear objective. His book was,

...intended for those who are alarmed by the present state of our culture and anxious to find a way out of the apparent chaos of its contradictory tendencies. I have attempted to establish, both by argument and by objective evidence, that in spite of the seeming confusion there is nevertheless a true, if hidden, unity, a secret synthesis, in our present civilization.²⁹⁶

With this goal in mind, Expressionism was not considered as part of the narrative. When he discussed Expressionism specifically, Giedion agreed that it stemmed from a period of unrest both before, during and, immediately after the First World War. This

²⁹³ Henry-Russell Hitchcock and Philip Johnson, *The International Style*, (New York: Norton, 1966), 11. The catalogue was originally printed in 1932 when the exhibition opened. At this point it had a fuller title, *The international style: architecture since 1922*.

²⁹⁴ The exhibition catalogue was reprinted in 1966. In its new foreword, Hitchcock reflected that the *International Style* exhibition omitted vast swathes of contemporary architecture. When the catalogue was reissued the original subtitle "architecture since 1922" was dropped. This subtitle had, at least, attempted to provide a caveat to the scope of the exhibition. Its omission in the Sixties suggests a willingness to maintain a simplistic version.

²⁹⁵ Gideon got his PhD under the supervision of Wölfflin (like Berne) in Munich. In 1938 he emigrated to take a position at Harvard University and was professor at Gropius' Harvard School of Design.

²⁹⁶ Sigfried Giedion, *Space, Time and Architecture: The Growth of a New Tradition*, (Cambridge, Harvard University Press, 1941), v.

appears to align with Worringer's urge to abstraction, however Giedion made no reference to Worringer at all. Giedion observed that Expressionism, "eloquently states the grievances of mishandled humanity and indicts a tragic situation."²⁹⁷ Giedion finally dismissed Expressionism as an inconvenient blip in the development of art,

But there is a fundamental difference between expressionism and other movements we have encountered – cubism, futurism, and the rest. Faustian outbursts against an inimical world and the cries of outraged humanity cannot create new levels of achievement. They remain transitory facts – however moving they may be – and not constituent ones. The other movements had the spirit of invention in them: they did not weep over a time out of joint; they pointed to the way out, found – amidst the chaos – concealed patterns for a new life.²⁹⁸

Bletter examined the impact of this view on modern architectural history, concluding that Giedion and Pevsner developed a "restrictive view of modernism" which was confined to examining only "the progress of a machine-age rationalism."²⁹⁹ While there may be many reasons for this, it indicates that Worringer's anxiety about the consequences of the dominance of humanism remained a valid concern.

* * *

This chapter explored the rise in crystalline expression in the Twentieth Century, and various interpretations of the motif. Faced with the challenges of modernity, and later, the political climate of the Weimar republic, Expressionist artists sought refuge in inorganic art. This was recognised as early as 1920 by the critic Paul Westheim in the periodical *Das Kunstblatt* (1917-1922). Westheim noted that the artists discussed here did not attempt to imitate the world. Instead, they were driven by another force which Worringer called the urge to abstraction; Westheim wrote,

²⁹⁷ Ibid, 393.

²⁹⁸ Ibid, 393-4. Gideon also claimed that from the start of the Bauhaus in 1919, "Gropius was instinctively aware of the inadequacy of expressionism and the need to escape from it." See Giedion, 394. Giedion wrote a Gropius biography in 1954, having worked with Gropius at Harvard and MIT.

²⁹⁹ Bletter, "Expressionist Architecture", 123.

...through its functional values it [their work] possibly speaks of angst and terror, of want and craving, of joy and goodness, of sublimity and eternity. If Munch, Nolde, Kirchner, Heckel, Meidner, and many others still paint landscapes, then it has to do most essentially with these.³⁰⁰

Although the means of escape from the “world of appearances” varied, the crystalline was a common motif.³⁰¹ Behrens, Munch, and later Klee, used the form of the crystal as a symbol of transformation, derived from crystallography (Behrens) or Haeckel’s discourse on evolution. Other groups followed Worringer’s theory more closely. To achieve a degree of abstraction from nature, the Blaue Reiter’s Heckel reduced nature to crystalline shapes and combined this with a primitive human figure and a flattening of the picture plane. Hablik merged Gothic forms and crystals to express unity. Meanwhile, Taut formed an alliance with Scheerbarth and used various fora to promote the possibility of coloured glass architecture to transform society. Taut merged the symbolic and formal aspects of the crystal to reinforce his ideas. His influence was felt in many areas, not least the Weimar Bauhaus. However, the strength of his vision suffered when it met the functional and financial restrictions of building. By 1927, Taut commented, “One can no longer decently and without irony utter such words as spiritualisation, ennoblement, and immersion in *Geist*.”³⁰² According to Whyte, by 1929 Taut too had, “dismissed the dreams of 1918 as symptoms of an illness.”³⁰³ Expressionism had become a tainted style, and in 1949, Gideon hammered the final nail in its coffin when he wrote, “The Expressionist influence could not be a healthy one or perform any service for architecture.”³⁰⁴

³⁰⁰ Quote from Benson, *Expressionist Utopias*, 22.

³⁰¹ Worringer, *A&E*, 20.

³⁰² Whyte, *Bruno Taut*, 223.

³⁰³ *Ibid.*

³⁰⁴ Gideon, *Space*, 418.

Chapter Three - Entropy and the Crystalline in the work of Robert Smithson

Despite a relatively short career, Robert Smithson (1938-1973) is a renowned amongst contemporary art historians, most particularly American writers.¹ There are several reasons for this. The body of work that he produced is multifaceted in physical form and in philosophy. This attracts interest from academics with varied specialties including art theory, philosophy, and all branches of fine art. From the mid-sixties, Smithson was a prolific writer and published several texts in journals, including *Harper's Bazaar*, *Arts Magazine* and *Artforum*. His essays were compiled by Smithson's wife, the artist Nancy Holt (1938-2014) and published together with a number of unpublished works in 1979.² Two further expanded editions of the artist's written work, as well as interview transcripts, were published in 1991 and 1996 respectively.³ Holt donated Smithson's personal papers to the Smithsonian Archives of American Art (AAA) in 1987, together with what remained of his multi-disciplinary

¹ Robert Smithson (1938-1973) was born in Passaic, New Jersey. His father, Irving Smithson, was Protestant while his mother, Susan, was Catholic. His unmarried aunt, Julia Duke, with whom he was very close, lived with the family and encouraged his Catholic upbringing. His parents lost their first child, Harold aged 9, to leukaemia two years before Smithson's birth and he was therefore raised as an only child. Smithson is regarded as one of the pioneers of earthworks, a movement, dating from the Sixties, defined by large scale sculptures in the landscape. His most famous example is *Spiral Jetty* (1970) located in the Great Salt Lake in Utah. However, Smithson's oeuvre, like his general interests, were multidisciplinary. His work included drawing, painting, film making, theoretical texts and education. The actor Jack Thibeu (b.1941), who was introduced to Smithson by their mutual friend the composer Philip Glass (b. 1937), said "he seemed to know almost everything about anything." The majority of Smithson's better-known work dates from the eight years prior to his untimely death on 20 July 1973, in a plane crash while surveying his work *Amarillo Ramp* (1973). See Alan Moore, "Chronology and Selected Exhibitions", in Susan Ginsburg, Kathy Ouwel, and Kathy Zempel eds. *Robert Smithson: Drawings* (New York: New York Cultural Centre, 1974), 31. For the quote from Thibeu; Jack Thibeu, "On Robert Smithson", Robert Smithson and Nancy Holt papers (RSNHP), at the Smithsonian Archives of American Art (AAA), location 3:97. Also "Oral History interview with Robert Smithson, 1972 July 14-19", RSNHP, AAA.

² Robert Smithson, *Writings of Robert Smithson: Essays with Illustrations*, Nancy Holt ed., (New York, New York University Press, 1979).

³ Eugenie Tsai, *Robert Smithson Unearthed: Drawings, Collages, Writings*, (New York, Columbia University Press, 1991) and Robert Smithson and Jack Flam, *Robert Smithson: The Collected Writings*. (Berkeley, University of California Press, 1996).

library.⁴ This material has proved invaluable for academic study.⁵ Finally, Smithson's tragic death left numerous unrealised ideas documented in his notebooks. This created a vacuum where his future possibilities lay.⁶ There is, of course, a danger that the wealth of attention already lavished on the artist could make new and original interpretation difficult. This chapter will overcome this by maintaining the focus of this research exploring the evolution of the crystalline motif. We will see that Smithson's use of this motif is not unrelated to Wilhelm Worringer's ideas discussed in the previous chapter.

This chapter prioritises research drawn from primary archival material and is not intended to provide a thorough examination of secondary literature on the artist, or indeed his oeuvre. Looking through Smithson's hand-written notes, draft versions of essays, his extensive library, correspondence with friends, other artists and gallery owners created a map of his attentions and pointed towards specific works of art for discussion. Although there are gaps in the archives, specifically around his early work, a sense of direction prevails. Smithson was adamant that he had a 'mature' period from 1964 when he became a "conscious artist" and prior work was infrequently mentioned in interviews.⁷ His 'mature' work marked a new departure in his career, as recognised by several Smithson scholars, yet, the early work provides a context for these ideas and specifically to what he was rejecting. This chapter will begin by examining his early influences in order to isolate his theoretical foundations later

⁴ For a full listing of his library holdings see Eugenie Tsai and Cornelia Butler, eds. *Robert Smithson*, (Berkeley: University of California Press, 2004), 249-63. For a catalogue of the collection which forms part of the Robert Smithson and Nancy Holt Papers (RSNHP), see Ann Reynolds, *Learning from New Jersey and Elsewhere*, (Cambridge MA, MIT Press, 2004), 297-345.

⁵ Access to selected extracts from the archive are available on microfilm through interlibrary loan agreements while the whole archive is accessible by appointment at the main AAA office in Washington DC.

⁶ Smithson's project *Floating Island to travel around Manhattan* (1970) was realised posthumously in 2005 in association with the Whitney Museum of American Art.

⁷ Robert Smithson and Paul Cummings. "Oral History Interview with Robert Smithson: 1972 July 14-19", RSNHP.

expressed through his use of the crystalline. Letters to gallery owner George Lester and postcards to his parents in 1961 supplement the underrepresented early period in the archive. Unpublished texts demonstrate how Smithson organised his thoughts through writing. Although a number of these pieces were made available in Jack Flam's compendium *Robert Smithson: The Collected Writings*, there remains a significant portion which are not yet examined and which proved valuable for this chapter.⁸ Going back to the primary sources has also highlighted inconsistencies between the collections of writings and information in the archive. This included a misinterpretation by the Smithson scholar, Eugenie Tsai, and several omissions from Flam's book; the importance of these missing links will be discussed as they arise.

Smithson's archive contains several iterations of the same point, or fragments that later reappear in published works. Some of the work is strongly reminiscent of Walter Benjamin (1892-1940), without acknowledgement, while other essays may reference a name or title with little discussion on content. Books from his library show that he rarely made in-text annotations. His personal friend, patron, and gallery owner, Virginia Dwan (b.1931) noted that he liked to tease his audience by referring to texts while deliberately omitting source details. Dwan wrote, "Often he quoted other authors such as Céline, Robbe-Grillet, Eliot, and Borges, while carefully omitting their names. Oblique references or additional quotes would emerge later, and eventually the listener was obliged to plead for their sources. This was teaching by teasing: a teaching by tantalizing."⁹

⁸ Robert Smithson, *Robert Smithson: The Collected Writings*, Jack Flam, ed. (Berkeley, University of California Press, 1996).

⁹ Virginia Dwan, "Reflections on Robert Smithson" in *Art Journal*, Vol.42, No.3, (Autumn 1982): 233.

A useful ancillary source of information for this chapter was the *Dwan Gallery: Los Angeles and New York 1959-1971* exhibition in Washington DC in the Autumn of 2016 and its associated events. Dwan was effectively Smithson's patron from 1966. This show provided two important elements useful for my research. The first was an outline of the context of the New York art scene in the 1960s, and the role of the Dwan Gallery in supporting Smithson's career. Secondly, Smithson was the most frequently represented artist in the exhibition. It offered an opportunity to see the film *Spiral Jetty* (1970), related sketches and other works, many of which were previously held in Dwan's private collection and were available together for the first time.¹⁰ A visit to the earthwork *Spiral Jetty* (1970) in Utah in October 2016 allowed a more rounded interpretation of this seminal piece. The timing of this journey could scarcely have been more fortunate. The geological condition of the lake and the consequences of this on the *Spiral Jetty* enriched readings of the work which will be explained fully towards the culmination of the chapter.

Art historians have recognised entropy as a central theme in Smithson's work and, on occasion, references to the crystalline are also found in the literature, particularly in the work of the art historian Jennifer L. Roberts. Yet, correspondence between these two concepts has not been made in any of the extensive literature. Understanding their relationship is crucial to interpreting Smithson's work. Further, in the case of *Spiral Jetty* (1970) in particular, these insights increase the relevance of Smithson's decisions about site, form, location etc. Smithson's ability to transform practical decisions into philosophical concepts and collaborate with the site of the gallery or the

¹⁰ Virginia Dwan donated 250 works from her private collection to the National Gallery of Art in Washington DC in 2013, however the gallery spaces in the East (modern) wing of the museum by the architect I.M Pei were closed for renovation during from 2013 to 2016. When its galleries reopened in September 2016, the Dwan exhibition was its inaugural show.

landscape continues to astonish. The work becomes a surface upon which discussions about time, (past, future and geological), historiography, and the institutions of art, collide.

Searching Smithson's archive with a particular lens corresponding to themes set out in Chapter Two has emphasised Smithson's early work as a rejection of the Humanist agenda that followed his reading of Wilhelm Worringer in 1964. Worringer, as discussed earlier, argued that a chaotic world gave rise to an urge to abstraction. This resulted in art which excluded representations of space (are without depth of field) and time (expressed through geometric form, the purest, or most eternal condition being the crystalline). Smithson's *Untitled*, 1964-5 [Figure 41] is a crystalline wall sculpture that plays with these ideas and demonstrates Worringer's influence on the artist. Smithson's first explicit text reference to Worringer appeared in "Quasi-Infinities and the Waning of Space" published in *Arts Magazine* in November 1966.¹¹ Here Smithson agreed with Worringer's view that space is the enemy of abstraction, but added his own criticism of contemporary art historians. Adhering to the views of George Kubler (1912-96), who will be discussed later, Smithson disapproved of art criticism that used biological metaphors.¹²

Within Smithson's archive there is a draft transcript for a piece called "Can Man Survive" which related to an exhibition at the Museum of Natural History in 1969-1970. In this text Smithson paraphrases Worringer again. He wrote, "The urge to abstraction, springs from a fear of nature. In modern art or all art since Cubism, one

¹¹ Reprinted in Smithson, *Collected Writings*, 34-7.

¹² *Ibid.*, 39, footnote 15.

might say that this fear has been forgotten, overlooked, or simply dismissed. Between abstraction and nature there is a fault.”¹³ The final version of this essay is published in *Flam*; in it Smithson inverted Worringer’s point but did not reference its source.¹⁴ He said, “The enclosed society that makes abstract art has become an esthetic slave to its own fear of nature.”¹⁵ In 1970, during an interview with Paul Toner (b.1948), Smithson continued to shadow Worringer and moreover, he described the contemporary situation as being in a state of fear.¹⁶ Smithson explained, “Most abstraction is a withdrawal from nature, from a fear of nature. The original idea of abstraction came from a book called *Abstraction and Empathy*. During the Renaissance man was confident in himself, he wasn’t frightened of what was out there. We are back to that state of fear again...”.¹⁷ By 1970, Smithson added additional meanings to the crystalline motif which Worringer, or the artists discussed in chapter two, could not have anticipated. He expanded its use to encompass other interests derived from his autodidactic reading. Exploring Smithson’s interest in the crystalline found in written fragments, oblique references, annotations in his library, and in his work exposed links between it and entropy and illuminated Worringer’s influence on the artist, which was sustained until his death in 1973.

Rejecting Humanism

As a young child, Smithson was fascinated by natural history and recounted enjoying regular visits to the Museum of Natural History in New York with his father. He amassed a collection of fossils, insects and shells, during family holidays around the

¹³ RSNHP, location 2:67.

¹⁴ Smithson, *Collected Writings*, 367-8.

¹⁵ *Ibid.*, 368.

¹⁶ At the time, Toner was a student of the curator and critic Lawrence Alloway (1926-1990), *Ibid.*, 383.

¹⁷ Robert Smithson interview with Paul Toner (1970), in Smithson, *Collected Writings*, 238.

United States, which he displayed in the basement at home. At the age of fourteen, Smithson had ambitions of becoming a zoologist, a testimony to these interests.¹⁸ In a later, much quoted, interview with Paul Cummings, part of the Smithsonian's Oral History Project, Smithson recalled his inclination to become an artist from the age of nine.¹⁹

The compartmentalised structure of public education, and art education in particular, did not suit Smithson's character.²⁰ This was compounded by what he described as the stifling atmosphere in the small New Jersey town where he grew up, although this cultural backwater would later inspire several projects.²¹ The dislike of conventional education made university an unattractive prospect for the young Smithson. When old enough, he migrated towards more fertile ground by winning a scholarship to the Art Students League in New York. Smithson's scholarship was gained on the basis of a series of woodcuts which he described as German Expressionist in style.²² This is not surprising as New York galleries were filled with German Expressionism in the Autumn of 1957 with no less than six exhibitions devoted to the movement or particular artists associated with it.²³

At the League, Smithson studied under the illustrator John Groth (1908-1988). In an undated Art Students League class evaluation report Groth gave Smithson high praise. He wrote, "One of three students of my ten years at the League whose work

¹⁸ Robert Smithson, "My Favorites," 1952, RSNHP.

¹⁹ Smithson "Oral History", RSNHP.

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

²³ Edith Hoffman, "Expressionism: Not a German but an international style" in *Art News*, Vol. 56, No. 7, (November 1957): 40. The Museum of Modern Art show entitled "German Art of the Twentieth Century," for example, included the Heckel work, *Glassy Day* 1913 discussed in the last chapter. The *Art News* article includes a colour plate of the work with the title *A Crystal Day*.

shows talent and gives real promise of future success.”²⁴ Groth’s drawings are generally defined by a loose expressive line. Smithson told Cummings that he was a “worthwhile teacher and he had a good sense of composition,” yet, in 1967, when he completed a survey for the Whitney Museum of American Art he said that “no teacher was influential.”²⁵ A confident drawing style is evident in Smithson’s early work, and was perhaps further influenced by the art dealer Federica Beer-Monti (1876-1980), originally Friederike Maria Beer. Beer, who was a Viennese socialite, sat for Egon Schiele (1890-1918) in 1914 and two years later commissioned Gustav Klimt (1862-1918) to paint her portrait. Describing his connection with her, Smithson remarked, “I was very much encouraged by Federica Beer-Monti who ran the Artists’ Gallery when I was sixteen or seventeen. She was an Austrian woman of the circle of Kokoschka and that crowd. She had been painted a lot by those people. She was very encouraging.”²⁶ In 1959, Smithson had his first solo show at the Artists’ Gallery in New York, a remarkable achievement for a young artist.²⁷ The Artists’ Gallery (1936-1962) was founded as a non-profit organisation with the purpose of exhibiting the work of artists who were not represented by commercial dealers. Beer-Monti was the director at the time of Smithson’s exhibition.

In New York, Smithson mixed with friends from the High School of Music and Art in New York who shared similar interests.²⁸ Later, his social circle expanded to include the actor and director John Cassavetes (1929-1989) and the poet and publisher Alan Brilliant (b. 1936) who introduced Smithson to other writers and people from Black

²⁴ John Groth “Robert Smithson’s Class evaluation report” circa ’56-’57, RSNHP.

²⁵ See both Smithson “Oral History”, RSNHP and Smithson’s response to the Whitney Museum of American Art in General Correspondence, RSNHP, location B2:38, AAA, Smithsonian Institution.

²⁶ Smithson “Oral History”, RSNHP.

²⁷ The show was held from October 17th until November 5th 1959.

²⁸ Smithson “Oral History”, RSNHP.

Mountain College.²⁹ Smithson also frequented the Cedar Tavern in New York, a venue renowned for attracting an artistic scene. In 1961, he was part of a group show of emerging artists at the Alan Gallery where four religious themed paintings were displayed. He also had his second solo show of paintings at the George Lester Gallery in Rome in the same year. This coincided with a visit to Europe.

Smithson manoeuvred himself from backwater New Jersey into the New York art scene. He established himself amongst that scene by making contacts, networking and forming an image which was carefully underpinned by a strict focus on his “mature work.” His philosophical writings, particularly the publications in art journals, and his later role as an educator at Yale and elsewhere helped to ensure this aim was realised. He told Cummings, “I began to function as a conscious artist in around 1964-65. I think I started doing works that were mature. I would say that prior to the 1964-65 period it was a kind of groping, investigating period.”³⁰ All interviews contained in his archive or published in the various editions of Smithson’s collected writings date from after 1968 and focus entirely on the ‘mature period’. Aside from the oral history interview, Smithson very rarely discussed his early period, and even then he was dismissive about his achievements. Surviving documentation in the Robert Smithson and Nancy Holt papers includes little that dates prior to 1965. Indeed, Smithson told art historian and filmmaker, Dennis Wheeler (1948-1977), that he destroyed many of

²⁹ RSNHP, 1905-1987, bulk 1952-1987. In a letter from Brilliant to Smithson dated 24 June ‘66 Brilliant said he gave Smithson much support when he was seventeen but that Smithson had a sense of entitlement. The letter also implies that the two had since lost touch. Brilliant asks Smithson to consider doing further book cover illustrations since their earlier collaboration on *Pan/ic*. Later on March 25th 1969 Brilliant wrote again, this time c/o Dwan Gallery rather than to Smithson’s home address. This suggested that they were out of touch. Brilliant asks Smithson if he remembers the early covers for *Pan* and how he feels about his early work. Unfortunately any responses are not included in the files.

³⁰ Smithson “Oral History”, RSNHP. It is surprising that Smithson used a biological metaphor (‘mature’) to describe his own work particularly in light of his views against this method.

the collages he did for his first solo show at the Artists' Gallery in 1959.³¹ One cannot help but wonder why Smithson was so careful to massage his public image and why his archive is, at first glance, homogenous in character. Although secondary to the current topic, an argument for Smithson's approach may be found amongst the pages of Kubler's *The Shape of Time* (1962). Kubler, as we shall see, warned that employing certain frames of reference for art criticism diminished the complexity of the work. The Smithson scholar, Tsai took a balanced view and acknowledged the importance of the artist's early successes in her 1991 publication, *Robert Smithson Unearthed: Drawings, Collages, Writings*.³² Despite this, a focus on his "mature period" still tended to dominate. Tsai suggested that this was because the success of the later work completely overshadowed his early accomplishments. The philosopher Gary Shapiro's 1995 book, *Earthwards*, a play both on the term *earthworks* and Craig Owen's 1979 essay "Earthwords" recognised the shortcomings in Smithson literature but the book's focus lay elsewhere.³³ It was not until 2003 when Ann Reynolds wrote *Learning from New Jersey and Elsewhere* that Smithson's work was considered in its entirety.³⁴ Reynolds research was led by materials found within the archives, and used a similar methodology to that used here. However, her scope was all-encompassing, whereas the focus here is narrower.

Tsai's revival of the early work was influenced by the 1985 exhibition in the Diane Brown Gallery, New York, called *Robert Smithson, The Early Work: 1959-1962*, and the 1986 *Early Works: Collage* show at International with Monument Gallery. Much of

³¹ "Four Conversations between Dennis Wheeler and Robert Smithson" in Smithson, *Collected Writings*, 211. None of the works exhibited in the 1959 show were shown at the 1985 Diane Brown show devoted to the artist's early work.

³² Tsai, *Unearthed*.

³³ Gary Shapiro, *Earthwards*, (Berkeley, University of California Press, 1995).

³⁴ Reynolds, *Learning from New Jersey*.

the work exhibited at the Brown Gallery had been hidden from public view since the early Sixties. All 24 of the paintings which comprised the 1961 George Lester Gallery exhibition were reshowed together with 15 other painted or collaged pieces. Tsai recounted how these two exhibitions surprised critics and public alike who were only accustomed to Smithson's 'mature' work. Omitting elements which do not fit with a restricted narrative is a tale familiar from the last chapter's discussion on Expressionism. Tsai wrote, "...the systematic repression of the first third of Smithson's career is also symptomatic of the strength the modernist viewpoint still exercises over the presentation of the artist and his work. In modernist terms, the early drawings and collages pose problems because of their representational imagery and references to the everyday world."³⁵

The Diane Brown exhibition met with mixed reviews. The most scathing was the critic Carter Ratcliff's (b. 1941) review in *Art in America*. These paintings did not fit with Ratcliff's manicured perception of the artist. As a result he described them as "inept," "vulgar" and "embarrassingly bad" and argued that they needed to be divorced from Smithson's later work lest they diminish his artistic accomplishment.³⁶ Although Ratcliff acknowledges that some of the motifs found in later work exists in the early paintings, ultimately he could not be reconciled with them: "Smithson the painter was just too bad at painting to belong in the company of his later self (or selves)."³⁷

³⁵ Tsai, *Unearthed* 5.

³⁶ Carter Ratcliff, "Robert Smithson at Diane Brown" exhibition review in *Art in America*, (July 1985): 135.

³⁷ Ibid. Interestingly, by 2000 Ratcliff had completely revised his earlier opinion in Carter Ratcliff, "Writer's Blocks; Robert Smithson's Drawings, 1962" in *Art on Paper*, 5, No.1, (2000): 58-63.



Figure 36, Robert Rauschenberg, *Blind Angel*, 1961

The *New York Times* and *Artforum* on the other hand, saw the early work as enriching Smithson's later work and his career as a whole, a view shared here.³⁸ Stuart Morgan's (1948-2002) review in *Artforum* attempted to put the paintings in the context of Smithson's theoretical view as developed over the span of his career. Morgan described this period as "influenced by Byzantine and Celtic decoration."³⁹ This is part of the story. Early paintings such as *Blind Angel* (1961) [Figure 36] combine Expressionist line, the scratched surfaces of Jean Dubuffet (1901-1985) and religious themes familiar to Smithson from his Catholic upbringing. In the catalogue to the show, the artist critic Peter Halley (b.1963) made an acute observation on Smithson's rejection of Humanism, that suggest Smithson's familiarity with *Abstraction and Empathy*.⁴⁰

The use of linear representation in those works with Christian themes effectively removes them from the world of Renaissance humanism, with its emphasis on weight, texture, and temporal lights, and places them in the realm

³⁸ Grace Clueck, "Art: Robert Rauschenberg, Pre-Minimal Paintings" in *New York Times*, (February 01, 1985) and Stuart Morgan, "Robert Rauschenberg's Early Work – a Resurrection" in *Artforum*, Vol. 23, No. 8, (April 1985): 67-69.

³⁹ *Ibid.*, 68.

⁴⁰ Wilhelm Worringer, *Abstraction and Empathy a Contribution to the Psychology of Style*. (New York: International Universities Press, 1953).

of the primitive, non-Western art where the use of rhythmic line and schematic colour creates a dehumanised sense of impersonal abstract forces at work.⁴¹

Around the time of the Lester exhibition in Rome, Smithson was interested in “that whole prewar circle of modernism” which included the writings of T. E. Hulme, T.S Eliot, Ezra Pound and Wyndham Lewis.⁴² The trip to Rome provided the opportunity to witness Italian Renaissance Art critiqued by these writers. Smithson described his experience, saying that he “was interested in a kind of notion of what Western art grew out of and what happened to it. I mean it was a way of discovering the history of Western art in terms of the Renaissance and what preceded it, especially the Byzantine” and “T.E. Hulme sort of led me to an interest in Byzantine and his notions of abstraction as a kind of counterpoint to the Humanism of the late Renaissance.”⁴³ Chapter Two described how Hulme built his views on the framework provided by Worringer. One may recall that, in *Speculations* (1924), Hulme wrote, “What follows is practically an abstract of Worringer's views.”⁴⁴ Smithson’s letter to Holt from Rome, [Figure 37] which he illustrated with falling remnants of Classical architecture (and Christian motifs), represents the collapse of the Classical legacy.⁴⁵

⁴¹ Peter Halley, Introductory essay to the catalogue *Robert Smithson: The Early Work, 1959-62*, (New York: Diane Brown Gallery, 1985), n.p.

⁴² Smithson “Oral History”, RSNHP.

⁴³ Ibid.

⁴⁴ T.E. Hulme, *Speculations: Essays on Humanism and the Philosophy of Art*, Herbert Read ed., (London, Kegan, Paul, Trench, Trubner & Co, 1936), 82.

⁴⁵ Smithson’s description of the black and white smoke mixing pre-empts his later sandbox metaphor for entropy.

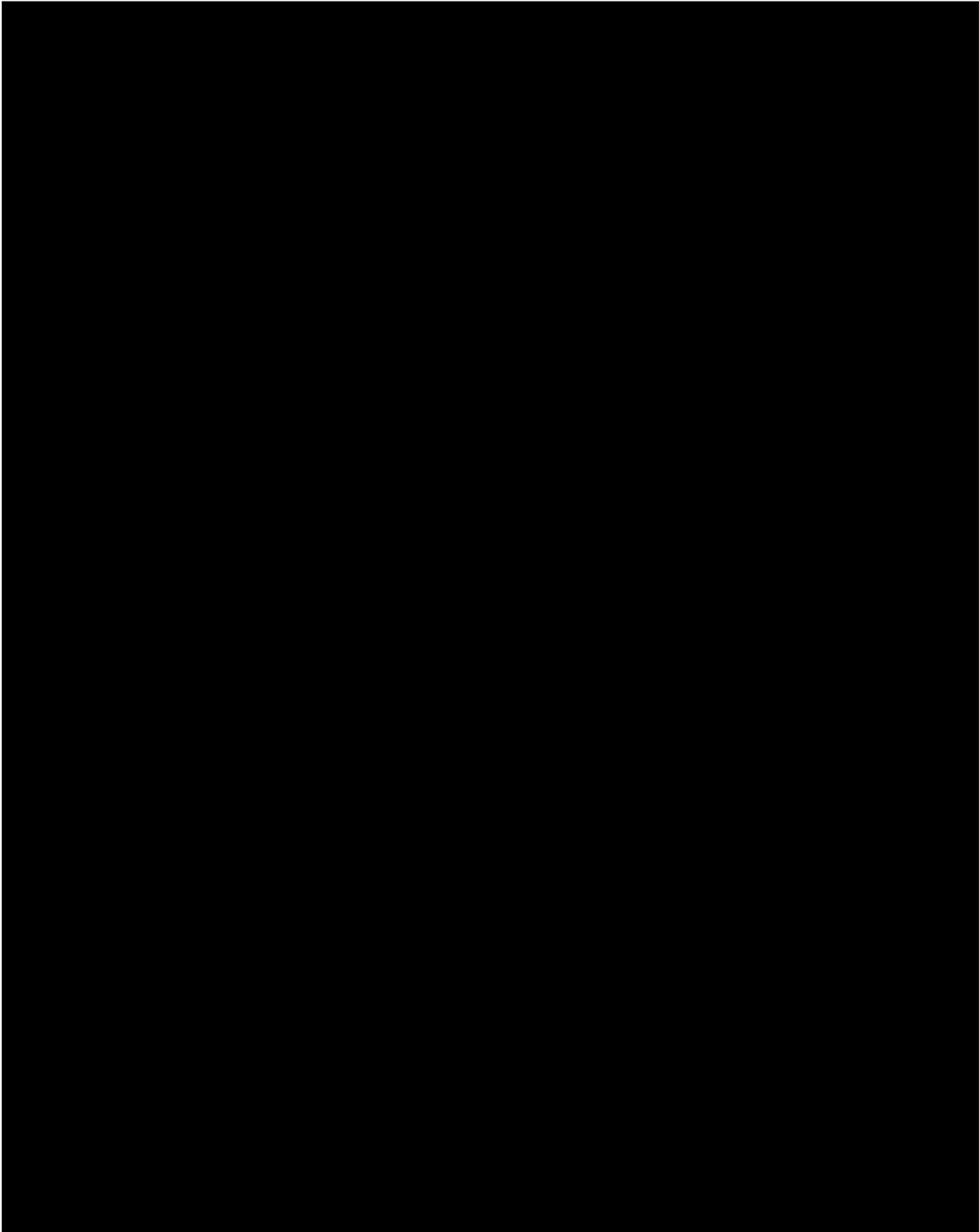


Figure 37, *Letter from Robert Smithson to Nancy Holt, July 29 1961*⁴⁶

⁴⁶ Letter from Robert Smithson to Nancy Holt, July 29, 1961. RSNHP, 1905-1987, bulk 1952-1987. Copyrighted imaged used here with permission from AAA. Needs additional permissions for publication.

Although Smithson may have attempted to escape Humanist influence his work would continue to be dominated by Christian themes until 1963. The Lester letters reveal Smithson's religious interests in 1961. A decade later, he told Cummings that he did not have a strict religious upbringing and was an atheist in high school. Yet, the archives contain evidence that his religious affiliation was deeper than he suggested or than recorded in the literature. For example, a list of biographical facts sent to Lester, while scant, clearly specify his religion as Roman Catholic. While in Rome he attended Papal mass at St. Peters, and there were several books Christianity in his library.⁴⁷ The letters which Smithson received from Lester are not part of the archival holdings but one can interpret their tone through Smithson's responses. In these, Smithson adamantly defends the religious aspect of his work and suggests new directions in the New York scene, "Remember the Alan gallery exhibited not my "modern" work but my spiritual works, all four paintings were religious. If the collectors in Milan are not aware of the changing trends, you must be aware of the new concern for the spirit in N.Y.C; and so you will be in a new epoch of art."⁴⁸ Then, in May 1961, he excitedly told Lester,

I have just made a very important contact with the publisher of Religious writing and art. Don't be afraid of the word "religion" the most sophisticated people in Manhattan are very much concerned with this. Anyway, Philip Sharper, Editor in Chief of Sheed + Ward books, was very very impressed with an idea of mine, concerning the incantation photos of the paintings I sent you (I had an extra set made for myself.) He said, if I could write 25 or so incantations similar to the

⁴⁷ Postcard from Smithson to his parents dated August 08, 1961, RSNHP, 1905-1987, bulk 1952-1987. Information in the archives suggests that Smithson travelled to London on June 29 before going on to Italy on July 04. He was back home by September 03. While in Rome he visited the usual sights and travelled to Sienna with Lester and his wife. He described the trip in postcards sent back to his parents where he also recounted meeting a priest and attending a Papal mass in St. Peters. The archive also includes correspondence from a Rev. Adrian Herbert in Saint Jean Baptiste RC Church in New York dating between 1966 and 1970 that are obviously responses to letters from Smithson. See also list of annotated books from Smithson's library included in the RSNHP, which features many religious books.

⁴⁸ Letter from Robert Smithson to George Lester, dated May 17, 1961, Robert Smithson letters to George B. Lester, 1960-1963, AAA.

one I sent you he would publish them in a book called *Incantations*; along with about 10-15 reproductions, including many of the ones that you own.⁴⁹



Figure 38, Robert Rauschenberg, extract from *Drawings from Shrovetide*, 1961-62⁵⁰

Drawings for Shrovetide [Figure 38] produced during 1961 and 1962 and published in the *Minnesota Review* in 1963 is embedded with both Catholic symbolism and fantastic demons.⁵¹ Shrovetide is the Catholic name for the period commonly associated with carnival before the beginning of Lent. It is traditionally understood as a period of frivolity before the strict sacrifices that define the forty days of Lent. The figures in Rauschenberg's drawings are formed with a confident line; they embrace and turn, while large demons feast on their flesh. In March 1962, Rauschenberg was staged at the Richard Castellane Gallery for a show entitled *Exhibition of Paintings and*

⁴⁹ Ibid. The letter continues with Rauschenberg reiterating how excited he is about this new opportunity and telling Lester that he will immediately start working on the written pieces. Rauschenberg suggests that his friend and bookshop owner Alan Brilliant will give the publication pride of place in his Manhattan store.

⁵⁰ Robert Rauschenberg, *Drawings from Shrovetide*, published in *The Minnesota Review*, Vol. 13, No. 2, (Winter 1963): 246-54, found in RSNHP.

⁵¹ Rauschenberg also had a show at the Castellane Gallery in 1961 between March 14th and April 6th entitled, *Drawings and Paintings for Lent*.

Drawings for Lent. Information about the content of the show is difficult to trace, however the poster comprised an ink drawing of winged creatures and other religious and mythical figures similar to those he sketched while in Rome the previous summer.⁵²

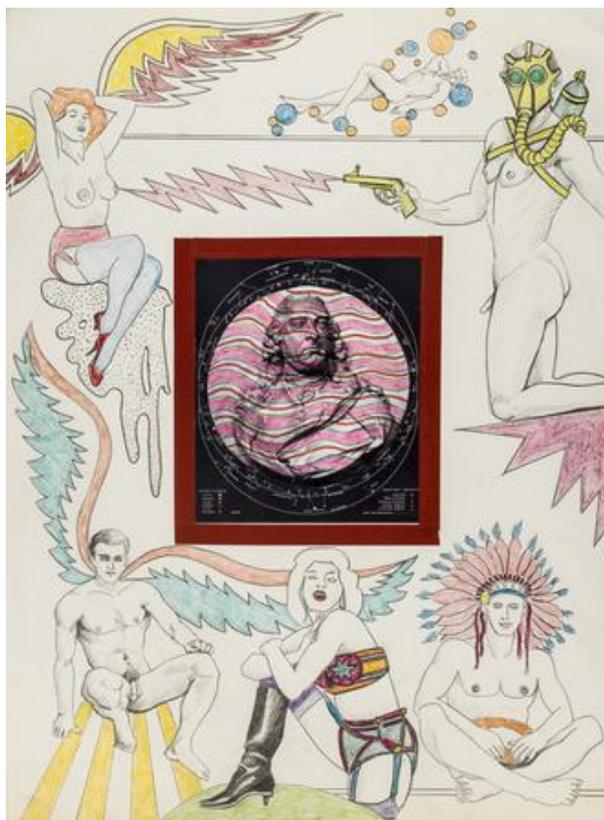


Figure 39, Robert Rauschenberg, *Untitled, (Man in colonial American dress and Indian)*, 1963⁵³

By November of 1962, Rauschenberg began to reengage his interest in science with a show entitled *Bio-icons, Specimens, Chemicals, Diagrams*, also at the Castellane Gallery, although his religious interests continued. In 1963, his approach was lighter and combined religious symbolism with popular culture. A recent exhibition, *Robert Rauschenberg: Pop*, held from December 2015 to January 2016 at the James Cohan gallery in New York, explored this aspect of Rauschenberg's work. The drawings and

⁵² Poster for the show found in the RSNHP, 1905-1987, bulk 1952-1987. AAA, Smithsonian Institution, location B8:26.

⁵³http://images.jamescohan.com/www.jamescohan.com/SMITHSON_Untitled_Man_in_colonial_American_dress_and_Indian_1963_RS1.jpg [Accessed 26.09.16]

collages in this show mix Christian iconography, American history, comic heroes and pornography. [Figure 39].

Smithson's anti-establishment attitude is evidenced in a dislike of formal education dating from his childhood and his objection to the institution of art. As his career progressed, Smithson became increasingly concerned with education and the dissemination of knowledge. He contributed, at least, to panels at Yale in 1966, Cornell in 1969 and in 1972 was awarded Visiting Professor of Architecture at the University of Utah. His objection to the institution of art can be seen in both his aversion to formalist criticism, particularly Michael Fried (b. 1939) and Clement Greenberg (1909-94), and of the institution of the gallery. The gallery space was challenged through pioneering sculptures which Smithson called *nonsites* (or sometimes non-sites) that functioned to shift focus away from the gallery interior, which will be examined later. His critique of art criticism emerged as a current in his written work from 1966.

Smithson told Cummings that he "gave up painting around 1963."⁵⁴ This was the first decisive step in shedding religious and Expressionist influences and finding a new means of representation. Kubler was very critical of over reliance on "adherent signals" in art criticism.⁵⁵ Roughly speaking, adherent signals can be understood as the expectations the viewer brings to the work of art based on their past experience of similar works.⁵⁶ Kubler felt that while they have a role to play in interpretation, there

⁵⁴ Smithson "Oral History", RSNHP.

⁵⁵ George Kubler, *The Shape of Time: Remarks on the History of Things*, (New Haven, Yale University Press, 1962), 24-5.

⁵⁶ In Kubler's obituary, Gordon Willey (1913-2002) described their differing, irresolvable but mutually respected views on artistic development. Willey, as an archaeologist, believed that scholars should use their knowledge of

was a danger that they could drown out vital autogenous clues. By adopting new methods (and media), Smithson could also manage to evade these unwanted signals. Consequently, Smithson broadened his perspective from a narrow focus on the history of Western art to a much larger geological timescale. In an unpublished essay, “A Refutation of Historical Humanism” Smithson wrote, “The very term Renaissance, meaning ‘rebirth’, is fallacious. When did art ever die? People die, but art is just art. Art exists in time and is either remembered or forgotten, but never dead or alive.”⁵⁷ The issue of the biological metaphor in art also came from his reading of Kubler which is re-examined in another unpublished essay, “Art and Time,” found in the archives. This essay is a draft version of the published work “Quasi-Infinities and the Waning of Space.”⁵⁸ The draft version offers a useful insight into his thoughts because it demonstrates the tenuous connections Smithson was making between entropy and the crystalline more explicitly than the published piece. Connections that would be explored further in the nonsites (from 1968) and brought to maturity in *Spiral Jetty* (1970).

Smithson combined the ideas of Worringer and Kubler, whom he referenced several times in his written work between 1964 and 1967.⁵⁹ Kubler was born in America to European parents and was educated in Europe and the United States. He completed his PhD at Yale, under the mentorship of the French medievalist Henri Focillon (1881-

the historical context to help determine meaning. In *The Shape of Time: Remarks on the History of Things*, Kubler challenged conventional thinking. Willey noted that, in the sixties, “a continuity from prehistoric to historic was assumed, and the prehistoric could best be understood by tracing such continuities from the historic horizon backward in time.” In contrast, Kubler saw the limits of this approach and noted that even within the same cultural tradition variations in meaning are possible. Gordon R. Willey, “George Alexander Kubler (26 July 1912-3 October 1996),” *Proceedings of the American Philosophical Society*, Vol. 142, No. 4 (Dec., 1998): 674

⁵⁷ Robert Smithson “A Refutation of Historical Humanism” undated by Smithson but presumed circa 1966-67, RSNHP, location B3:41. Reprinted in Smithson, *Collected Writings*, 336.

⁵⁸ Robert Smithson, “Quasi-Infinities and the Waning of Space,” in *Ibid.*, 34-7.

⁵⁹ Examples of references to Kubler are found in “Quasi-Infinities and the Waning of Space” (1966), “Ultra modern” (1967) and the unpublished “Eliminator” (1964) and “The Artist as Site-Seer: or A Dintorphic Essay (1966-67). All printed in Smithson, *Collected Writings*.

1943). Kubler's early work examined traditional western art, however his dissertation marked a shift in interest. In 1940 his PhD, *The Religious Architecture of New Mexico*, was published and by the sixties he specialised in Pre-Columbian art and architecture. In 1962, he published both *Art and Architecture of Ancient America* and *The Shape of Time: Remarks on the History of Things*.⁶⁰ The latter was Smithson's point of reference, used both explicitly and implicitly. The book may be broadly understood as a critique of historiography of art. Smithson was not alone in his admiration of Kubler, the art historian, Pamela M. Lee, noted that this book excited other contemporary artists and thinkers such as Erwin Panofsky (1892-1968) and Siegfried Kracauer (1889-1966).⁶¹ On the twentieth anniversary of its publication Kubler reconsidered the themes of the book. He agreed with the 1963 *Art Journal* précis which specified five main strands, the first three of which are of interest here; the book highlighted:

1. The need to bring together again the history of science and the history of art;
2. The irrelevance, to the purposeful nature of artistic invention, of metaphors of biology and cyclical happening;
3. The inadequacy of biographical and narrative approaches to the linkages among works of art.⁶²

These themes resonated with Smithson's attitude. From as early as 1961, Smithson specifically scorned a biographical reading of his art. In a letter to Lester, around the occasion of his 1961 exhibition in Rome, he wrote, "Concerning biographical information, I feel it would not be in the Best of Taste to publish such material. Better to print a photo of me. Of course, I will send a short history of facts for your files. If you want a photo of me, let me know. But at any rate leave the biographical material

⁶⁰ Willey, "Kubler", 673-4.

⁶¹ Pamela M. Lee, "'Ultramoderne': Or, How George Kubler Stole the Time in Sixties Art" in *Grey Room*, No. 2 (Winter, 2001): 46-77.

⁶² George Kubler, "The Shape of Time. Reconsidered," *Perspecta*, Vol. 19 (1982): 113.

out of the catalog.”⁶³ Smithson sent Lester a list of vital information from which Lester was instructed to select facts for publication.⁶⁴ By 1966, Smithson rejected not only the biographical reading but also any metaphor which approximated a life-cycle for evaluating art.⁶⁵ Kubler was instrumental in Smithson’s understanding of the biological metaphor as defined in *The Shape of Things*. For Kubler, “the biological metaphor of style as a sequence of life-stages was historically misleading.”⁶⁶ Shapiro summarised Kubler’s theory:

In addition to pluralizing the many surfaces and shapes of art-historical and artifactual time, Kubler also suggested a way of thinking about art that freed artworks from the usual centres and sources to which we attribute them, biography and the history of style, and provided a means of considering them as parts of orders that resemble mathematical series and sequences rather than narrative constructions.⁶⁷

Smithson’s “Art and Time” expanded on the idea of time in art as encouraging the biological metaphor found in “A Refutation of Historical Humanism.” In art history, he wrote, “Time as ideology has produced many uncertain ‘art-histories’ with the help of the mass media.”⁶⁸ He went on,

The biological metaphor has its origin in the temporal order, yet certain artists who have ‘detemporalized’ certain organic properties, and transformed them into solid objects that contain ‘ideas of time.’ This attitude toward art is more ‘Egyptian’ than ‘Greek --- static rather than dynamic. Or it is what William S.

⁶³ Letter dated April 7th 1961, Robert Smithson letters to George B. Lester, 1960-1963, AAA. American English. crystals to itt page of this book. link it seems reasonable that this fragment dates from then. Smithson wrote this fragment. h

⁶⁴ Ibid. The complete handwritten list was as follows:

Robert Smithson

“A Biographical Note

Born:	Passaic, New Jersey	1938
Confirmed:	Roman Catholic	1950
Graduated:	Clifton High School	1956
Studied:	Art Student’s League	
	Brooklyn Museum Art School	1956-57
Joined:	The US Army	1957
Traveled: [sic]	Through out the Western US and Mexico	1958-60
Exhibited:	At the Artist’s Gallery + Alan Gallery in New York City	1960-61

Now living in New York City.”

⁶⁵ Yet it is interesting that in 1972 Smithson still used a biological metaphor (“mature period”) in his conversation with Cummings.

⁶⁶ Kubler, *Shape of Time*, 8.

⁶⁷ Shapiro, *Earthwards*, 85.

⁶⁸ Robert Smithson, “Art and Time”, 5, RSNHP, location B2:61.

Burroughs calls, 'The Thermodynamic Pain and Energy Bank' --- a condition of time that originates inside isolated objects rather than outside.⁶⁹

It is not surprising that Smithson gave examples of Egyptian and Greek art as two opposing attitudes, as they recall those used by Worringer who he would reference later. A footnote connects the notion of time and entropy; "entropy is the cause of time in man."⁷⁰ Examples of artists who evoke time without any organic aspects were provided; however, Smithson did not derive a formulaic model or attitude from his analysis of their work. Instead he sought inspiration from Worringer and, in the footnotes, quoted three sections from *Abstraction and Empathy*. The first relates to the crystalline, but is omitted from the published article, perhaps because it was too direct and would not tantalise his audience. It reads, "Riegl speaks of crystalline beauty, 'which constitutes the first and most eternal law of form in inanimate matter, and comes closest to absolute beauty (material individuality)'"⁷¹

It is necessary to unpick another of Smithson's unpublished texts from around this time to illuminate this issue further. "The Pathetic Fallacy in Esthetics," dated 1966-67 by Flam, is heavily influenced by Worringer's views; indeed, the opening paragraph is effectively a summary of the introduction to *Abstraction and Empathy* concerning the problem with an empathic criticism of art.⁷² To briefly summarise a point from Chapter Two, Worringer argued that another mode of criticism (not based on Humanist ideals) was required for works which were inorganic or abstract. Smithson admonished Greenberg and Fried for their use of the biological metaphor, which

⁶⁹ Ibid., 3. The reference from Burroughs comes from his 1964 book, *Nova Express*.

⁷⁰ Ibid.

⁷¹ Ibid. and Worringer, *A&E*, 19-20.

⁷² Smithson had a copy of both Worringer's *Abstraction and Empathy* and *Form in Gothic* in his library. See Cavagnaro, Lori, "Robert Smithson's Library" in Reynolds, *Learning from New*, 305.

Smithson, in agreement with Kubler, felt gave rise to a misreading of abstract art.⁷³ The problem was that Greenberg relied on “experience” whereas Smithson argued that abstract art appeals only to the mind, not the emotions.⁷⁴ Worse still was the critics’ interpretation of pictorial space as expressive; “Critics that interpret art in terms of space see the history of art as a reduction of three-dimensional illusionistic space to the ‘same order of space as our bodies’ (Greenberg – Abstract, Representational and so Forth). Here Greenberg equates ‘space’ with ‘our bodies’ and interprets this reduction as ‘abstract.’”⁷⁵ Smithson disagreed with this, saying that equating ourselves with the work produces an empathic response which must be representational. His written response came from *Abstraction and Empathy*. He said, “As Worringer pointed out in his *Abstraction and Empathy* any will toward space is not an abstract concern.”⁷⁶ In “Quasi-Infinities and the Waning of Space” a footnote also touched on this point, but, as with the nature of that essay, the argument consists of fragmented multitudes.⁷⁷ Worringer’s own account makes Smithson’s argument clearer: “it is precisely space which, filled with atmospheric air, linking things together and destroying their individual closedness, gives things their temporal value and draws

⁷³ A draft response of the 1966 “Response to Questionnaire from Irving Sandler” is located in the RSNHP, location 1:23. In 1966 Sandler and Barbara Rose wished to repeat the exercise. One section elaborates on Smithson’s understanding of the biographical metaphor drawn from Kubler. It reads; “3. Has the sensibility of the sixties hardened into an academy? If so, what are its characteristics? The artists and critics of the 1950’s made all kinds of vitalistic [sic] excuses for art. They said, “Art and life are one.”, “The painting has a life of it’s own.”, a work of art had “power for life, or for death”, etc. The criteria of art depended heavily on the biographical metaphor and still does, not to mention biographical development, growth, or evolution. The very term Renaissance, meaning “rebirth” is fallacious. I agree with George Kubler, author of *The Shape Of Time: Remarks On History Of Things*, that “a system of metaphors drawn from physical science” would be more adequate than the “prevailing biological metaphors” for describing the situation of art. It seems that both artists and critics have been submerged or “involved” so long in the “guts” of things, that they no longer see but only feel them. A more inanimate criteria seems necessary if art is to survive. But the so-called avant-gardist seems determined to maintain both the myth of the Avant-Garde and the Academy by linking the New Art with Impressionism and Expressionism.” For the final version of the questionnaire see, “Response to Questionnaire from Irving Sandler” in Smithson, *Collected Writings*, 329-31.

⁷⁴ Robert Smithson, “The Pathetic Fallacy in Esthetics,” Smithson, *Collected Writings*, 337.

⁷⁵ *Ibid.*, 338.

⁷⁶ *Ibid.*

⁷⁷ “The biological metaphor is at the bottom of all ‘formalist’ criticism. There is nothing abstract about de Kooning or Pollack. To locate them in a formalist system is simply a critical mutation based on a misunderstanding of metaphor – namely, the biological extended into the spatial.” Quote from Robert Smithson, “Quasi-Infinities and the Waning of Space” footnote 15, in Smithson, *Collected Writings*, 39.

them into the cosmic interplay of phenomena....Space is therefore the major enemy of all striving after abstraction, and hence the first thing to be suppressed in the representation.”⁷⁸ Although Worringer only sought to make observations on inorganic or abstract art throughout the ages, he provided a formula which Smithson explored in his wall sculptures. Worringer wrote, “The two solutions we found were the maximally consistent rendering of closed material individuality within the plane and, on the other hand, amalgamation of the representation with the rigid world of the crystalline-geometric.”⁷⁹ Worringer claimed that removing any illusion of depth restricts an empathic response, and that material individuality is best represented by the crystalline. It comes as no surprise then that Smithson’s sculptures discussed below follow Worringer’s advice. Firstly, they call into question the perspective system responsible for representing depth in art, and secondly, they approximate crystalline forms.

In 1959 *Art News* published a piece entitled “Is there a New Academy?” for which seventeen artists were invited to contribute their views on contemporary art practice. In May 1966 the critics Irving Sandler (b. 1925) and Barbara Rose (b. 1937) sought to repeat the exercise and Smithson received a questionnaire from Sandler.⁸⁰ Smithson’s response was an abstract list of ten statements in response to each question. Each of the ten could be interpreted in a multitude of ways. This version is published in Flam’s compendium.⁸¹ However, Smithson’s archive contains earlier drafts which

⁷⁸ Worringer, *A&E*, 38-9.

⁷⁹ Worringer, *A&E*, 44.

⁸⁰ Letter from Irving Sandler to Robert Smithson, dated November 25th 1966, RSNHP, location 1:23.

⁸¹ “Response to Questionnaire from Irving Sandler” in Smithson, *Collected Writings*, 329-31. To appreciate the difference between the draft and the final version, it is worth comparing an example. In response to question 4, Smithson’s final version said:

“There is not one condition of the artist in the sixties, but ten conditions.

1. The condition of reiterating the misinterpreted.

explain his thoughts more fully. The following extract, available here for the first time, includes Smithson's original emphasis and punctuation:

4. Has a condition of the artist changed in the sixties? Has the speed-up of communications and the increased attention of mass media made yesterday's avant-garde today's academy? How has this affected the artist? Does the growing participation of art schools in colleges and universities make for a more academic situation?

At the present the art world is divided into two general attitudes. 1. The artists and critics that think about "things" in terms of the inorganic or inanimate. (The method of this thought tends towards mathematical and physical science.) 2. The artists and critics that feel things in terms of the organic and the animate. (The method of this feeling tends towards biology, psychology, and history.)

The second attitude has been dominant since the war. But the younger artists are dissatisfied with that attitude, and are asserting [asserting] the first attitude.

People that feel rather than think, consider the "mass-media" to be a threat to the myth of either the avant-garde or the academy. It seems that sooner or later, as the artist gains more consciousness, he will gain more control over certain kinds of media, and in so doing eliminate many of the myths that are bogging art down. Art is "humanised" in all our schools under the centre called "The Humanities". Humanism confuses and subverts all consciousness of art by opposing "life" to "art".

The "humanistic" notion that artists have "deep feelings" and "pure souls" is simply a way to keep the artist in his mythic state of isolation. The "studio" and the "class room" are artistic prisons, where easels, paint-brushes, and canvas are used. Humanism like Classicism should not determine the limits of art. The classic classroom and romantic studio are outmoded because they are too anthropomorphic and not abstract enough. The total environment seen in terms of art not "life" would be more adequate.⁸²

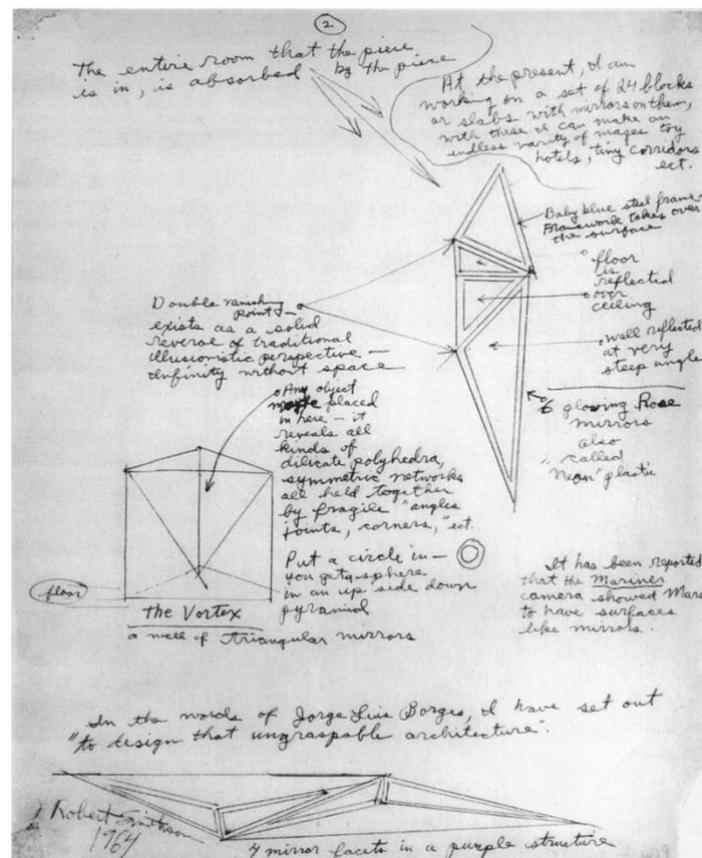
Smithson's dissatisfaction with the Humanist approach in art education and art criticism could scarcely be clearer. Essentially he reiterated the problem that

-
2. The condition of the nonentity.
 3. The condition of isolated systems at the dead level.
 4. The condition of unkempt bathrooms.
 5. The condition of provisional opacity ordered by The Grand Horizontal.
 6. The condition of smiling faces.
 7. The condition of One Hundred Mass-Mediae
 8. The condition of Standardisation.
 9. The condition of historical blind spots.
 10. The condition of codified nullity."

⁸² See draft responses to this questionnaire in RSNHP, location 1:23 (Emphasis and original punctuation is retained) or for the final version only, "Response to Questionnaire from Irving Sandler," Smithson, *Collected Writings*, 329-31.

Worringer outlined sixty years earlier: "Our aesthetics is nothing more than a psychology of the Classical feeling for art."⁸³ In order to escape a Humanist trajectory, he had to adopt new practices after 1963 when he abandoned painting and collage. As noted above, in "Art and Time" he told the reader about, "Certain artists who have 'detemporalized' certain organic properties, and transformed them into solid objects that contain 'ideas of time.'"⁸⁴ It is clear that he included himself in this group and by positioning his work in the "inorganic" he hoped to evade explicit representations of time or space.

The Problem with Perspective and Smithson's Crystalline Solutions



⁸³ Worringer, *A&E*, 123.

⁸⁴ Robert Smithson, "Art and Time", 3.

Figure 40, Robert Smithson, *Three Works in Metal and Plastic*, 1964⁸⁵

Tsai recognised that Smithson's work, after he ceased painting, was a crystalline "alternative to the biological forms and metaphors of Abstract Expressionism."⁸⁶ She suggested that through these works he "continued to explore in a more literal fashion the theme of blindness found in Smithson's early religious paintings."⁸⁷ However, it can also be argued that these sculptures made reference to and negated perspectival systems, in order to signify his rejection of Humanism. On his sketch, *Three Works in Metal and Plastic* (1964), Smithson discusses how the three sculptures use mirrors to create "infinity without space."⁸⁸ *Untitled* [Figure 41] is also the basis of the essay, "A Short Description of Two Mirrored Crystal Structures" from 1965 where he wrote, "Vanishing points are deliberately inverted in order to increase one's awareness of total artifice."⁸⁹ In the text, Smithson described the piece as exchanging three dimensions for two dimensions; the framework turns the sculpture into a "painting" and the mirrored facets make one "conscious of space attenuated in the form of elusive flat planes."⁹⁰ If one reads the piece as a two dimensional drawing, removing depth as Worringer suggested and Smithson described, then the genesis of the piece emerges. This can be seen more clearly when the structure is rotated 90 degrees. The blue frame transforms into construction lines for a two point perspective drawing. The extremities of the sculpture pinpoint the two vanishing points while the horizontal line which joins them is the horizon, as shown in Figure 42 below.

⁸⁵ Image taken from Mark Linder, "Sitely Windows: Robert Smithson's Architectural Criticism" in *Assemblage*, No. 39, (August 1999): 18.

⁸⁶ Tsai, Eugenie, "Robert Smithson: Plotting a Line from Passaic, New Jersey to Amarillo, Texas", in Tsai, *Robert Smithson*, 19.

⁸⁷ *Ibid.*

⁸⁸ Sketch reprinted in Linder, "Sitely Windows", 18.

⁸⁹ Robert Smithson, "A Short Description of Two Mirrored Crystal Structures", in Smithson, *Collected Writings*, 328.

⁹⁰ *Ibid.*

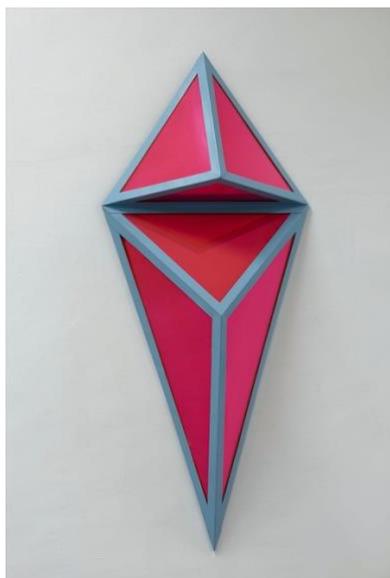


Figure 41, Robert Smithson, *Untitled*,
1964-65

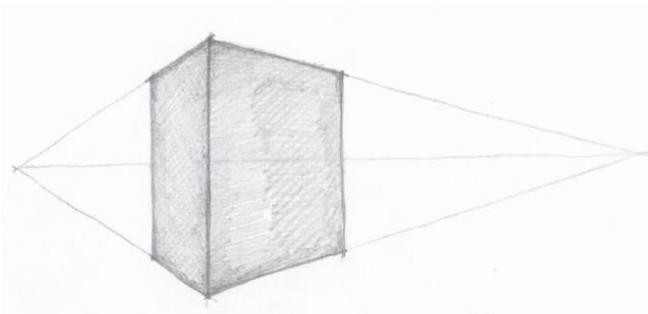


Figure 42, *Untitled* as perspective drawing

The apexes of the pyramidal shapes plot points along the horizon. When these points are extended vertically to meet the construction lines, as one does in a perspective drawing, a cube begins to emerge, the front edge of which is already defined by the line of vertical blue frame in the sculpture. This process transforms the sculpture into a perspective drawing of a three dimensional shape, specifically a cube. However, the cube is not there, but is merely represented; it is a *nonsite* of a cube. The significance of this cube did not go unnoticed. Consideration must be given to Tony Smith's (1912-1980) *Die* from 1962.⁹¹ The art historian, Joseph Masheck discussed the crystalline aspect of Smith's work and its relationship to Worringer and the architect Bruno Taut, who is discussed in chapter two.⁹² Smith's six foot square cube recalls the proportions of Leonardo Da Vinci's (1452-1519) *Vitruvian Man* (c.1490). If Smith

⁹¹ Although about 25 years younger than Smith, both artists hailed from New Jersey, attended the Art Students League and frequented the Cedar Tavern. An interesting avenue for further research is the link between Smith, Fried and Smithson. Smithson's letter to *Artforum* in October 1967 rebukes Michael Fried's earlier article "Art and Objecthood", which discussed Smith's Turnpike journey. Also, Smithson did an outline for a film, "The Monument" 1967 which includes a journey alone the Turnpike. See Smithson, *Collected Writings*, 357.

⁹² See Joseph Masheck, "Abstraction and Apathy: Crystalline form in Expressionism and in the Minimalism of Tony Smith" in *Invisible Cathedrals*, Neil Donahue ed., (Pennsylvania, Pennsylvania State University Press, 1995), 41-68.

questioned the aesthetic formula favoured in the Renaissance, based on ancient classical ideals, then Smithson went further than this. He erased these ideals altogether.

Smithson told Cummings about the moment when he specifically combined this negation of perspective with crystals,

I recognized an area of abstraction that was really rooted in crystal structure. In fact, I guess the first piece that I did was in 1964 [1965]. It was called the *Enantiomorphic Chambers*. And I think that was the piece that really freed me from all these preoccupations with history; and I was just dealing with grids and planes and empty surfaces. The crystalline forms suggested mapping.⁹³



Figure 43, Robert Smithson, *Enantiomorphic Chambers* 1965/1999 copy (original destroyed)

Smithson discussed *Enantiomorphic Chambers* [Figure 43] as a “bipolar notion that comes out of crystal structure” which were “also the indication of a kind of dialectical thinking that would later emerge very strongly in the non-sites.”⁹⁴ Although not explicit in Smithson’s remarks, the sculpture *Enantiomorphic Chambers* can be read as a rejection of the dominance of linear perspective that defined art since the Renaissance. The art historian Robert Hobbs (b. 1946) who wrote *Robert Smithson:*

⁹³ Smithson “Oral History”, RSNHP.

⁹⁴ Ibid.

Sculpture explained that “the term ‘enantiomorph’ refers to either of a pair of crystalline chemical compounds whose molecular structures have a mirror-image relationship to each other.”⁹⁵ *Enantiomorphic Chambers* is comprised of two wall units, which were mirror images of each other, made from coated steel and mirrors. They were hung adjacent leaving space for the viewer to stand between the mirrored surfaces. The work was first exhibited at the 1966 *Art in Process: The Visual Development of a Structure* show at the Finch College Museum of Art. The exhibition catalogue included a list of seven “Interpolation of the Enantiomorphic Chambers.”⁹⁶ The sculpture was intended to distort stereoscopic vision by replacing it with a series of reflections. The viewer is prohibited from seeing the two images that usually merge to create binocular vision. The vanishing point, which defines one-point linear perspective, was “split and reversed by the sculpture.”⁹⁷ Later, Smithson would describe how the process could translate impressions of space into crystalline structures,

My first physiological awareness of perspective took place when I built *Enantiomorphic Chambers*. In this work, the vanishing point is split, or the centre of convergence is excluded, and the two chambers face each other at oblique angles, which in turn causes a set of three reflections in each of the two obliquely placed mirrors. A symmetrical division into two equal parts is what makes it enantiomorphic; this division also exists in certain crystal structures.⁹⁸

⁹⁵ Robert Hobbs, *Robert Smithson: Sculpture*, (Ithaca, Cornell University Press, 1981), 60-1.

⁹⁶ Robert Smithson, *Art in Process* catalogue, (Finch College Museum of Art, May, 1966). RSNHP, location B8:28. Also reprinted in Smithson, *Collected Writings*, 39.

⁹⁷ *Ibid.*

⁹⁸ Robert Smithson, “Pointless Vanishing Points” available in RSNHP, AAA, location 3:62 or in Smithson, *Collected Writings*, 359.

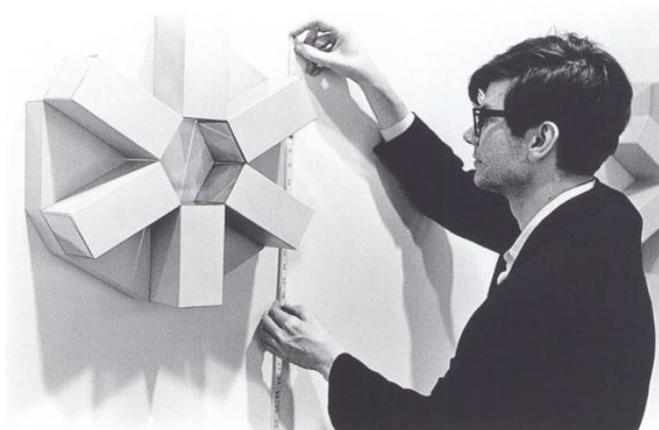


Figure 44, Installation shot of Robert Smithson and one of *The Cryosphere* modules, “Primary Structures” Show, Jewish Museum, New York, 1966

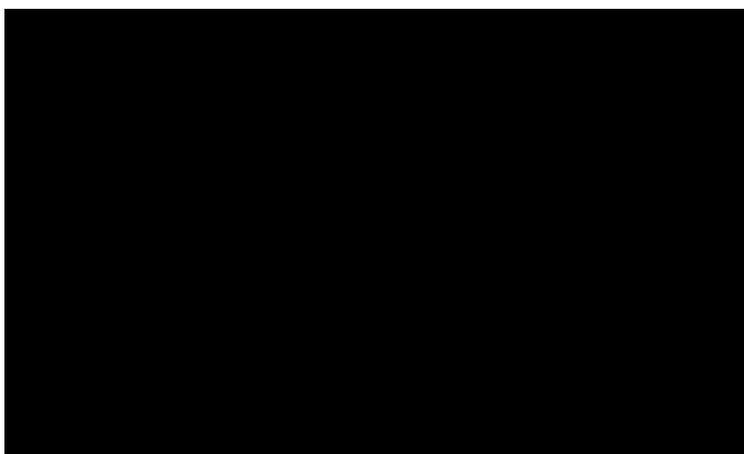


Figure 45, Smithson’s typed bookmark found in his copy of Dana & Ford, Dana’s *Textbook on Mineralogy*, explaining the connection between Enantiomorphic forms, hexagons and crystals.

Evidence of Smithson’s thoughts about enantiomorphic forms and crystals was found amongst his papers and library. A draft of the “Interpolation of the Enantiomorphic Chambers” includes two additional points, both of which may relate to the concurrent sculpture, *The Cryosphere* (1966) shown at the Jewish museum in 1966. *The Cryosphere* was a serial wall sculpture comprising six modules made from coloured steel with mirrored surfaces on both ends of each of its six arms. Although the

modules, strictly speaking, have twelve sides, Smithson described them as hexagonal to relate to “the hexagonal crystal system”⁹⁹ He wrote,

The symmetry is derived from reflexion rather than rotation. This places it in the hexagonal crystal system, that is sometimes called enantiomorphous. The reflections at the ends of each “block” on single modules are not superimposable on their own mirror-images in any place. This symmetry dislocation discloses an absence of axial movement.

Abstract breakdown of (the title) The CRYOSPHERE into three zones:

Skeletal-prismatic ice crystals
Intermediate solid ice crystals
Skeletal-tabular ice crystals.¹⁰⁰

Smithson was reading *Dana’s Textbook of Mineralogy* which he bought at the Museum of National History when he wrote these statements.¹⁰¹ Two clues support this. Firstly, Smithson highlighted a section on “Enantiomorphous forms” [Figure 46] in the book and secondly, a typed note found between these pages summaries the connection between the hexagonal *Cryosphere*, the structure of crystals [Figure 45] and enantiomorphic structures. Illustrations of crystals on the book’s subsequent pages resemble the hexagonal form of *The Cryosphere’s* modular units.

⁹⁹ RSNHP, AAA, location 4:28. He also described them to Cummings as hexagonal, see Smithson, *Collected Writings*, 292.

¹⁰⁰ Ibid.

¹⁰¹ Edward Salisbury Dana and William Ebenezer Ford, *Dana’s Textbook on Mineralogy*, (New York, John Wiley & Sons, 1949). RSNHP, Smithson’s library. A sticker from the Museum Shop at the American Museum of National History, New York is located inside the back cover.

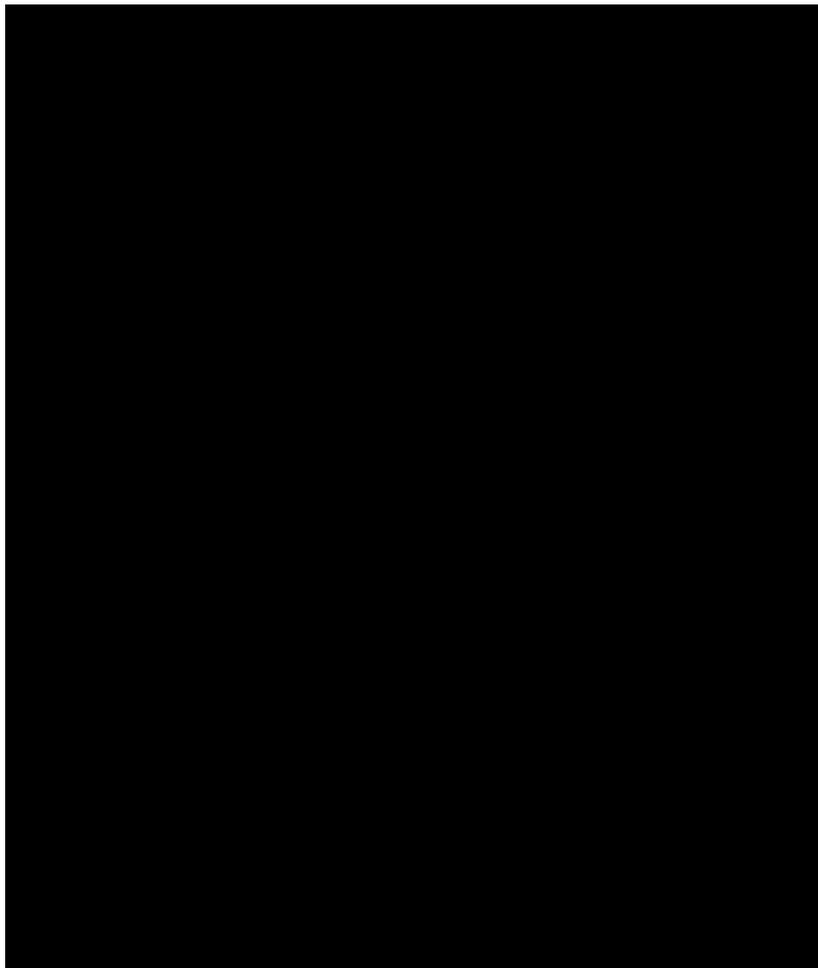


Figure 46, Dana & Ford, *Dana's Textbook on Mineralogy* with Smithson's highlighted passage.

Although now working in the realm of crystals, Smithson continued to use linear perspective to inform later minimalist works. His *10 exhibition*, at Dwan in March 1968 included at least three other works which were derived from or undermined the rules of perspective. A sketch for *Leaning Strata* (1968) showed the artist using two point perspective drawing to develop the concept for the work. Although it is possible that Smithson may have produced drawings similar to this to communicate his intentions with the piece's fabricators, it is more likely that these explorations in perspective helped him develop what the art historian Susan Ginsburg called, "the conceptual basis of a work of art."¹⁰² Similarly, *Pointless Vanishing Points* (1967) was critical in

¹⁰² Ginsburg, Susan, Introductory essay from catalogue for *Robert Smithson Drawings*, (New York, New York Cultural Centre, 1974), 7.

its title and in its form. In a working drawing for the sculpture, held by the Walker Art Centre, an inscription reads, “Each of the five units contains a three dimensional perspective, and going from right (the largest) to the left (the smallest) one finds a serial ‘regress’ of perspective.”¹⁰³



Figure 47, Robert Smithson, *Three-Sided Vortex*, 1965

Smithson also wrote an essay, “Pointless Vanishing Points” which was unpublished during his lifetime. Nonetheless, the opening statement makes his opinion clear, “one of the most fugitive concepts in art is perspective.”¹⁰⁴ The essay explained the workings of binocular vision explored in *Enantiomorphic Chambers*, and continued to discuss a history of perspective.¹⁰⁵ Smithson tells the reader about Paolo Uccello’s (1397-1475) use of perspective and that Piero della Francesca (1415-92) wrote the only “complete description of the methods of central perspective based on Euclid’s Xth proposition...”¹⁰⁶ The majority of the essay is reprinted in Flam transcribed from original pencil in Smithson’s notebooks, however, for some unknown reason, Flam left out two final paragraphs which discuss perspective in his *Three Sided Vortices* (1965/6) and

¹⁰³ Robert Smithson, *Working drawing for Pointless Vanishing Points/Non Site #2*, circa 1967, <http://www.walkerart.org/collections/artworks/working-drawing-for-pointless-vanishing-points-slash-non-site-number-2> Accessed October 18, 2016.

¹⁰⁴ Smithson, *Collected Writings*, 358-59. The essay also provides more details on the work *Enantiomorphic Chambers*.

¹⁰⁵ *Ibid.*, 359.

¹⁰⁶ *Ibid.*

Four Sided Vortex (1965).¹⁰⁷ Smithson specifically analyses these sculptures in terms of their visual representation and their criticism of Leon Battista Alberti's (1404-72) perspective system described in *De Pictura* (1436), and fundamental to art practice after Filippo Brunelleschi (1377-1446). Smithson quoted a book on the history of perspective, likely to be the source of much of his historical information including a previous estimate of della Francesca's birth year, which Smithson listed as 1420.¹⁰⁸ Smithson's source described Alberti's method of "a transparent plane through which one looks at objects, is intersected by visual rays contained in the pyramid of sight. He [Alberti] compares painting and drawing with an intersection of the pyramid by a vertical plane."¹⁰⁹ Smithson's *Three-Sided Vortices* (1965/6) and *Four-Sided Vortex* (1965) take Alberti's pyramid of sight and turn it upside-down. Further still, Smithson's pyramid comprised several triangular mirrored fragments which converge into a single point to represent and contravene the idea of a vanishing point. Smithson wrote,

My *Three Sided Vortices* of 1966 may be viewed as three dimensional examples of Leon Battista Alberti's idea of perspective as 'an intersection of the pyramid by a vertical plane' (See Perspective by G Ten Doesschate M.D) or what Euclid called a 'cone,' except in the case of my *Vortices* the pyramid is inverted and made of mirrored vanishing points that converge into a central perspective. As a result the planes of the vanishing points are reflected into a multiplication of faceted fragments, that radiate from a centre point – all this is contained within a steel box or a cubic *camera obscura*.¹¹⁰

¹⁰⁷ In the notebook Smithson calls this piece, *Four Sides Vortices*. Smithson's essay is written over eight pages which are numbered. Flam's transcription ends three quarters of the way down page seven at a point where Smithson, presumably, made an annotation in the margin. It is possible that Flam considered this to indicate the end of the 'finished' draft, however the content of the missing sections continues his earlier point.

¹⁰⁸ G. Ten Doesschate, *Perspective: Fundamentals, Controversials, History*, (Netherlands, Hes de Graaf Publishers, 1964).

¹⁰⁹ *Ibid.*, 123.

¹¹⁰ RSNHP, AAA, location 3:62.

Landscape as Media



Figure 48, Bruno Taut, plates from *Alpine Architecture* (1919) in MoMA's "Visionary Architecture" exhibition, September – December 1960, Installation view.¹¹¹

In late 1960, MoMA held an exhibition called "Visionary Architecture" curated by their director of the Department of Architecture and Design, Arthur Drexler (1921-1987). It included three categories of work ranging from the Twenties to the present day. In the press release, Drexler described it in similar terms to the Arbeitsrat für Kunst 1919 exhibition, "Ausstellung für unbekannte Architekten" ("Exhibition for unknown architects") where ideal projects are unhindered by technical or practical considerations. Although not listed in the checklist for the exhibition, Drexler's text noted Mies 1919 Skyscraper project[s], as being predictive of the future.¹¹² The show included drawings, models and photographs (of models). Being part of the artistic circle, and living in Manhattan at the time, it is entirely possible that Smithson visited this show, heralded by the New York Times as the most significant architecture show since its pivotal "Modern Architecture" exhibition in 1932.¹¹³ If so, Smithson would

¹¹¹ Image from https://www.moma.org/calendar/exhibitions/2554/installation_images/17693 Accessed October 02, 2018.

¹¹² Arthur Drexler, Press release for "Visionary Architecture" MoMA, 29 September – 4 December 1960, available at https://www.moma.org/documents/moma_press-release_326200.pdf Accessed October 02, 2018.

¹¹³ He wrote, "And sometimes a design that seems visionary announces developments already under way, as did Mies van der Rohe's 1919 study for a glass skyscraper." Ibid.

have seen plates of crystalline mountainous landscapes extracted from Bruno Taut's 1919 book [Figure 48] for which Drexler wrote the following wall label:

Alpine Architecture, 1917 [1919]

Taut's proposal was that the Alps be improved. This was to be done primarily by faceting the mountains into ranges of crystal-like forms, and secondly, by decorating them with monumental domes and arches of coloured glass. But not even Taut could escape being pursued by reality. Architects and engineers have now begun to think of architecture as beginning with the alteration of the earth's surface itself.¹¹⁴

Although never referenced by Smithson, these large-scale sculptures in the landscape fit the 1960s definition of *earthwork*, and may have been an early source of inspiration for his earthworks, alongside his role at Tippetts Abett McCarthy Stratton Engineers and Architects (TAMS).

In June 1966, Smithson was invited to a symposium in the School of Art and Architecture at Yale, an event which proved pivotal for his career. The title of the session was *Shaping the Environment: The Artist and the City*. Other panel members included the artist and critic Brian O'Doherty, John Hightower from New York State Council on the Arts, and Paul Weiss, a philosopher at Yale.¹¹⁵ Smithson described the occasion as the place where his thinking about the city in terms of the crystalline began to emerge. A second consequence of the symposium was Smithson's engagement as artist-consultant for TAMS. Smithson's involvement with TAMS began in July; he was initially contracted for six months but this was extended to a year.¹¹⁶ TAMS were a large New York based firm who described themselves as "covering the full range of civil, mechanical and electrical engineering, soils and foundations,

¹¹⁴ Ibid.

¹¹⁵ Poster for the event at RSNHP, AAA, Smithsonian Institution, location B8:21.

¹¹⁶ RSNHP, AAA, Smithsonian Institution, location 2:29.

architecture, planning, and engineering economics.”¹¹⁷ As this list suggests, the backbone of the firm centred around engineering projects, as opposed to architecture, as is sometimes suggested by Smithson and in the literature. TAMS’s commissions included: the design of harbours, bridges, dams, hydroelectric stations, highways, railroads, master-planning, airports and apartment complexes.¹¹⁸

Smithson was engaged with TAMS on the master planning of the Dallas-Fort Worth airport project. This is significant because at this stage of the project, the engineering-focused firm would have concentrated on a physical survey of the site and developing a functional layout for the terminal. In contrast, an architectural firm may have been more likely to prioritise a conceptual response over an in-depth physical examination of the location. TAMS method, which Smithson observed, would have necessitated: understanding ground conditions; mapping the morphology and topography of the site; analysing climate; consideration of access points for services and passengers; and an understanding of the functional requirements for an airport in terms of terminal layout, runways, servicing etc. All of this information would then be consolidated and an outline master plan, appropriate to the location, developed. Smithson’s work with TAMS was a turning point which he frequently referred to. It provided him with an understanding of scale, mapping, working with the landscape, and project management which proved fundamental to his later work. In June 1967, Smithson wrote a piece for *Artforum* that described the process of surveying the topography of the area, and soil investigations.¹¹⁹ Recalling his TAMS experience during the Earth

¹¹⁷ Tippetts Abbett McCarthy Stratton Engineers and Architects company brochure, dated circa 1966, RSNHP, AAA, Smithsonian Institution, location B17:6.

¹¹⁸ *Ibid.*

¹¹⁹ Robert Smithson, “Towards the Development of an Air Terminal Site”, *Artforum*, (June 1967), reprinted in Smithson, *Collected Writings*, 52-60.

Art Symposium at Cornell University in 1969, Smithson said, “I found myself surrounded by all this material that I didn’t know anything about – like aerial photographs, maps, large scale systems.”¹²⁰ And he later told Cummings, “that’s where the mapping and the intuitions in terms of the crystal structures really took hold in terms of large land masses where one is dealing with grids superimposed on large land masses. So that the inklings of the earthworks were there.”¹²¹

Evidence of TAMS influence on Smithson’s working practice can be found from 1966 when he began to use drawing techniques, such as perspectives, plans, sections, elevations and models for the nonsite containers.¹²² The 1967 *Scale Models and Drawings* show at the Dwan Gallery in New York was a response to an emerging trend towards large scale sculptures which did not fit into a conventional gallery space. Virginia Dwan responded to this by encouraging artists to submit models and drawings to express real or conceptual ideas. The show also marked the evolution of work linking the gallery to places beyond its confines. Smithson contribution was a scale model of an earthwork proposal in Philadelphia, *Tar Pool and Gravel Pit*, (1966).¹²³ Further examples of Smithson’s use of architectural conventions are found in a still unpublished essay “The Search for the Elusive Edge” which discussed Donal Judd’s (1928-1994) *Untitled (Pink Plexiglas Box)*, (1965) with the help of illustrations in plan, elevation and perspective.¹²⁴ Moreover, sketches for *Circular Plateau* (1969) show

¹²⁰ Transcript of Earth Art Symposium, Cornell University, 1969, RSNHP, AAA, Smithsonian Institution, location 2:48.

¹²¹ Smithson “Oral History”, RSNHP.

¹²² Examples are too numerous to list but a selection can be found in the catalogue to the *Robert Smithson, Drawings* exhibition held at the New York Cultural Centre, 1974.

¹²³ Emily Taub Webb, “Liberating Artists and Exhibition: Dwan Gallery and the Reconceptualization of Site” Paper presented at Public Symposium, Los Angeles to New York: Dwan Gallery, 1959-1971, National Gallery of Art, Washington DC, 19 November 2016.

¹²⁴ Robert Smithson, “The Search for the Elusive Edge,” RSNHP, AAA, location 3:43. The essay is undated but likely to be 1966 due to the similarity between its content and other essays from that date.

that he considered the practicalities of constructing sculpture in the landscape, such as temporary access for cement mixers.¹²⁵ This practical site experience culminated in the *Spiral Jetty* (1970) and *Partially Buried Woodshed* (1970) which combined Smithson's role as project manager and construction site supervisor.

In terms of artistic output for the Dallas-Fort Worth airport project, Smithson proposed a series of aerial artworks on the fringes of the Airport that included work by Robert Morris (1931-2018), Sol le Witt (1928-2007) and Carl Andre (b.1935). Smithson's proposal was a spiral lying flat on the ground made up of concrete triangles, this form would later translate into three dimensions to create *Gyrostasis* (1967). Although the airport project never came to fruition, it helped Smithson both to engage with outdoor works and consider art viewed from above. Aerial art recognized the shift from earth to air made possible through air travel. It was important for Smithson because it allowed the viewer to perceive a change of scale. He told Wheeler, "Every art is really a miniature, and when the earth itself becomes a miniature you can reverse it. You can look at a grain of sand as a gigantic boulder; it's just how you want to view it in terms of your scale sense."¹²⁶ Seen from this new vantage point objects can adopt a crystalline structure. In the spring of 1968, Smithson was part of a group show, *Minimal Art*, at the Hague Gemeentemuseum, and his "Aerial Art" essay was in the catalogue.¹²⁷ This was the second article discussing the Dallas-Fort Worth airport

¹²⁵ An illustration of this piece can be found in catalogue to the *Robert Smithson, Drawings*, 55.

¹²⁶ Smithson quoted from "Four Conversations between Dennis Wheeler and Robert Smithson" in Smithson, *Collected Writings*, 211. The date of these conversations is between 1969-1970. I mention this here because the metaphors Smithson used here in "Entropy and the New Monuments" and in "A Tour of the Monuments of Passaic, New Jersey" are very similar to those used by Rudolf Arnheim in his 1971 book *Entropy and Art*. Smithson was given a copy of this book by "Phil" presumably Phillip Leider (b.1929), founding member of *Artforum* on the 10th March 1971. See Smithson's copy in RSNHP. See Rudolf Arnheim, *Entropy and Art*, (Berkeley, University of California Press, 1971), 21. On the issue of scale, in 1972 Smithson wrote, "The Spiral Jetty", which defined that "Size determines an object, but scale determines art", see Smithson, *Collected Writings*, 147.

¹²⁷ It was reprinted in *Studio International* the following year with an additional section describing the proposal by Carl Andre.

project.¹²⁸ There he described the effect of aerial views on linear perspective with the comment,

The straight lines of landing fields and runways bring into existence a perception of 'perspective' that evades all our conceptions of nature. The naturalism of the 17th, 18th, and 19th century art is replaced by non-objective artifices. The landscape begins to look more like a three dimensional map rather than a rustic garden. Aerial photography and air transportation brings into view the surface features of this shifting world of perspectives.¹²⁹

Reading these thoughts, it is no coincidence that the video *Spiral Jetty* (1971) includes footage shot from a helicopter where details blur and overall structure emerges. Smithson defined a blurring of the boundary between architecture and art in this text, a repeat of a point made in the earlier *Artforum* piece. He wrote, "Art today is no longer an architectural afterthought, or an object to attach to a building after it is finished, but rather a total engagement with the building process from the ground up and from the sky down. The old landscape of naturalism and realism is being replaced by the new landscape of abstraction and artifice."¹³⁰ Read in the conjunction with the first essay, Smithson criticized the division between liberal and mechanical arts after the Renaissance, a view shared by Kubler.¹³¹ A fragment found in a notebook explores this point further; "the division of art into special areas of handicraft, such as painting, sculpture, and even architecture is being brought into question."¹³²

Other proposals for the Dallas-Fort Worth project can be found in literature on Smithson, particularly Hobbs's book.¹³³ However, Smithson sketched a further idea

¹²⁸ The first article is Smithson, "Towards the Development of an Air Terminal Site", *Artforum*, June 1967, and, *Collected Writings*, 52-60. The underlying theme of this piece was to contest the ongoing dominance of Humanism and suggest a crystalline alternative.

¹²⁹ Robert Smithson, "Aerial Art; Proposals for the Dallas-Fort Worth Regional Airport," in exhibition catalogue for *Minimal Art*, (Hague Gemeentemuseum, The Hague, Netherlands, 1968), 72.

¹³⁰ *Ibid.*

¹³¹ Kubler does not hold back on the consequences of the division of the liberal and mechanical arts, saying, "The separation has had most regrettable consequences." See Kubler, *Shape of Time*, 10.

¹³² RSNHP, AAA, Smithsonian Institution, location 3:64.

¹³³ Hobbs, *Sculpture*.

on a copy of TAMS's 1966 master plan presentation document, which was found amidst his personal archive.¹³⁴ This scheme included a spiral earthwork in the landscape, labelled *Spiral of Blue Rocks* at the end of one of the two proposed runways.¹³⁵ This was complemented by three other pieces, *Square of Red rocks*, *Rectangle of yellow rocks* and *Low Mounds of White Sand*. In addition he positioned TV cameras around the site to feed footage of the runway and earthworks back to stationary monitors inside the terminal building which Smithson labelled, *Terminal Museum*.¹³⁶ He also included a note to specify, "LOW EARTHWORKS NO HIGHTER THAN 5'."¹³⁷ This proposal locates three notable interests that developed in Smithson's later work: the form of the spiral re-emerged in *Spiral Jetty* (1970) and *Spiral Hill* (1971); the use of video to document the sculptures anticipated the use of video for *Spiral Jetty*; and the TV monitors to connect the sculptures outside to a location inside the gallery (terminal building) predicted Smithson's site/nonsite dialectic.

¹³⁴ Smithson's sketch layout dated 1966, found in, Tippetts, Abbott, McCarthy, Stratton Engineers and Architects, *Terminal Area Concepts: Dallas Fort Worth Regional Airport*, December 1966, RSNHP, location B17:6.

¹³⁵ Shortly after Smithson's death in 1974 the New York Cultural Centre held an exhibition of his drawings. All of which were produced during his 'mature' period. Included was another proposal for a spiral from 1967 for the airport project. This time it was a square spiral entitled *Asphalt Spiral*.

¹³⁶ Tippetts *Concepts*.

¹³⁷ *Ibid.*, original emphasis.



Figure 49, Yves Klein, *Le Monochrome* installation view, Leo Castelli Gallery, New York, April 1961.¹³⁸



Figure 50, Yves Klein exhibition at Dwan Gallery in Los Angeles, 1961.¹³⁹

As his career progressed Smithson combined his childhood curiosity in natural history with art, and drew inspiration from his eclectic reading habits. His childhood interest in collecting was shared with Virginia Dwan; for her birthday one year he sent her a gift of a smithsonite to add to her rock collection.¹⁴⁰ Sol LeWitt introduced Dwan to Smithson in 1965. Dwan had inherited a large sum of money from her father at the age of 28 and decided to open a gallery despite her very limited experience as a gallerist. At the time her main Los Angeles rival was Irving Blum's Ferus Gallery (1957-1966), and Dwan recalled that there was only six local art collectors to share between them.¹⁴¹ Dwan opened in Los Angeles in 1959, the same year that saw the introduction of nonstop commercial flights between New York and LA. In LA, Dwan worked with New York galleries to showcase international or east coast artists. One particular example was the Yves Klein *Le Monochrome* exhibition in April 1961, first shown at Leo Castelli's New York gallery and then at Dwan. Art historian, Julia Robinson

¹³⁸ Image from <http://www.castelligallery.com/history/4e77.html> Accessed November 24, 2016.

¹³⁹ Yves Klein exhibition at Dwan Gallery in Los Angeles, 1961, Courtesy Dwan Gallery Archives image from <http://blogs.getty.edu/pacificstandardtime/explore-the-era/locations/dwan-gallery-2/> Accessed November 24, 2016.

¹⁴⁰ Letter from Virginia Dwan to Robert Smithson and Nancy Holt, dated November 4th, RSNHP, location B1:31. He also gave Dale McConathy, editor of *Harper's Bazaar*, where Nancy Holt worked as an editor, a gift of a crystal. Undated note from McConathy to Smithson. RSNHP.

¹⁴¹ Virginia Dwan, "Conversation with Collectors: Virginia Dwan and James Meyer," Public Event, Los Angeles to New York: Dwan Gallery, 1959-1971, National Gallery of Art, Washington DC, 27 September 2016. Unpublished.

argued that Castelli, being an experienced gallery owner, choose to show works which expressed a cohesive theme that resonated with the expectations of the New York school, specifically, Abstract Expressionism.¹⁴² However, in contrast, Dwan was guided by the artist's intentions and a developing relationship with him. While in LA, Klein stayed in Dwan's Malibu beach-house and made several new works on the beach. The Dwan show included these new works with the other monochromes. In essence, Dwan's inexperience led her to take a more liberal approach to exhibitions and nurture the development of individual artists. This attitude would prove crucial to her role in Smithson's experiments beyond the gallery, specifically his *nonsites* and earthworks.

In 1965, Dwan opened a second space in New York, becoming the first bicoastal gallery. Dwan's inaugural New York show was the west coast artist, Ed Kienholz's (1927-1994), *The Beanery* (1965), which caused a storm in the New York press. Lee argued how Dwan, as an outsider to New York's gallery system, had to find artists who were not represented by other, more established, local galleries.¹⁴³ This fact also released her from any ties to an Abstract Expressionist legacy. In October 1966, Dwan New York was the first to exhibit minimalist work in the exhibition *10*. Dwan was personally attracted to minimalism because she was on a quest to find something in art that resonated with her deepest feelings; she recalled that the quiet, serene and contemplative art of minimalism fulfilled this need and was a relief from the outside world of war and revolutions.¹⁴⁴ The *10* show included one piece by each of the ten

¹⁴² Julia Robinson, "Learning from LA" Presented at Public Symposium, *Los Angeles to New York: Dwan Gallery, 1959-1971*, National Gallery of Art, Washington DC, 19 November 2016. Unpublished.

¹⁴³ Pamela Lee, "West Coast, East Coast" keynote address at Public Symposium, *Los Angeles to New York: Dwan Gallery, 1959-1971*, National Gallery of Art, Washington DC, 18 November 2016. Unpublished.

¹⁴⁴ Virginia Dwan, "Conversation with Collectors". This is an interesting observation by Dwan, which seems to correspond with what Worringer's had described as the purpose of abstract art.

artists including, Andre, Dan Flavin (1933-1996), Judd, Morris and Smithson's *Alogon* (1966). *Alogon* comprised 7 progressively larger units mounted on the gallery wall. They were made from painted stainless steel and each resembled an upside-down stair. Subsequent to this Smithson had three solo shows at Dwan before the gallery closed permanently in 1971.¹⁴⁵

In another pioneering move, Dwan was the first gallery to introduce earthworks to a wider audience in the show of the same name in 1968. Dwan shared Smithson's interest in work that was not confined by the limits of the gallery and in 1967 she attempted to purchase land in the Pine Barrens area for Smithson's site specific work.¹⁴⁶ Over the next few years, Dwan would accompany the artist and Holt on trips to search for suitable sites for artistic projects. Sometimes other artists, such as Andre or Morris, would also come along. These journeys began with Pine Barrens New Jersey, the location of Smithson's first nonsite, *A Nonsite, Pine Barrens, New Jersey* (1968) and later included Florida and the Yucatan in Mexico.

¹⁴⁵ Solo shows at Dwan were held in 1966, 1968 and 1970.

¹⁴⁶ Virginia Dwan sent 6 letters to Town Clerks around Pine Barrens in April 1967 to express an interest in purchasing land in the area. RSNHP, location B1:31.

Crystals and Entropy



Figure 51, Robert Smithson, *Nonsite, Pine Barrens New Jersey, Map 1967*¹⁴⁷



Figure 52, Robert Smithson, *Nonsite, Pine Barrens New Jersey, 1968*¹⁴⁸

The involvement with maps and large scale systems at TAMS influenced Smithson's approach to the nonsites. The nonsites date from 1968 and consisted of documentation of, and material from, a chosen site. The documentation and site material were exhibited in the gallery space. Hobbs linked the nonsites to his earlier crystalline sculptures noting that, "he created the Nonsite – among other things, a pun on nonsight. The idea of non-seeing, a fundamental element in his work, was important to him as early as 1965, when he created the *Enantiomorphic Chambers*."¹⁴⁹ Smithson told Cummings that the *Enantiomorphic Chambers* were an "indication of a kind of dialectal thinking that would emerge later very strongly in the nonsites."¹⁵⁰ The nonsites were intended to draw attention to the limits of the gallery by bringing real

¹⁴⁷ Taken by author at *Dwan Gallery: Los Angeles and New York* exhibition in Washington DC in the Autumn of 2016.

¹⁴⁸ Ibid.

¹⁴⁹ Hobbs, quoted from "Introduction" to exhibition catalogue for *Robert Smithson: Sculpture*, Cornell University, November 14th to December 21st, 1980, np.

¹⁵⁰ Smithson to Cummings, Smithson, "Oral History", *Collected Writings*, 292.

material from places beyond the gallery into its space. This material was contained within an artificial system of storage bins, which symbolised the artifice of the institutions of art; “to expose the fact that it is a system.”¹⁵¹ In 1972, Smithson explained the context to Cummings observing that, “the very construction of the gallery with its neutral white rooms became questionable.”¹⁵² This theme is played out in Smithson’s and Holt’s 1969 video *East Coast West Coast*. In the film, Smithson and Holt parodied the differences between a New York (East) and Los Angeles (West) approach to art. The conclusion being that New York was dominated by systems, economics and rationality, whereas LA was less encumbered by these issues.

A short extract from a 1968 interview with the artist Anthony Robbin (b.1943), which took place in Smithson’s New York studio, is printed in Flam.¹⁵³ However, the full recording provides a fuller picture of the dialectic Smithson was exploring through these works and how they challenged the ‘systems’ which prevailed in the New York art scene.¹⁵⁴ The interview took place amongst several nonsites, which were to be exhibited at Dwan early in 1969. The following extract is transcribed from that interview:

Robbin: ...I understand the pieces and what you are doing and how that is brought back and contained in structures, I understand the philosophy, the philosophical motivation of levels of abstraction and things like that but there is a gap in between that I am not quite getting.

Smithson: Yeah, Ok, well I have to tell you the nonsite and the site function as a dual system. You might say that the nonsite is the signifier and the site is the signified.

Robbin: Which is which? Which is the site and which is the nonsite?

¹⁵¹ Robert Smithson and Anthony Robbin, “Smithson’s Non-Site Sights” interview with Anthony Robbin, 1968, short extract in Smithson, *Collected Writings*, 175, full audio recording available via RSNHP.

¹⁵² Smithson “Oral History”, RSNHP.

¹⁵³ See Smithson, *Collected Writings*, 175.

¹⁵⁴ See Smithson and Holt’s video, *East Coast, West Coast* (1969) which explores this issue further. The video is available at http://www.ubu.com/film/smithson_east.html Accessed January 17, 2017.

Smithson: The site is where the material comes from. The nonsite is the work of art. There is a correspondence. You could also think of the nonsite as a centre point and the site as a peripheral area so that you have this, eh, constant dialectic going between the site and non site, there is a rhythm that goes back and forth. You might also say that instead of taking the sculpture to the site, I bring the site to the sculpture or I prefer to call it the work of art.

Robbin: But at any rate, it is not the site or the nonsite which is, you can't get the work by seeing the site or by seeing the nonsite, you can only get the work by sort of experiencing the conceptual....so that a piece cannot be made up of just the sculpture, it has to also be made up of the map or the photographs or trip to the site.

Smithson: Well that's part of it, you could just look at it for what it is and just experience, let's say, the centre aspect of the piece, but then the periphery interests me too. That way of thinking, that dialectic between two points, in other words, if one just considers something in terms of being scattered, then you are really into a peripheral or a ...unlimited state. The nonsite gives you, establishes a limit but also allows you the experience of the unlimited in terms of the site. The site is unlimited whereas the nonsite is limited by a system...¹⁵⁵

Smithson recalled his approach to the first nonsite, *A Nonsite, Pine Barrens, New Jersey* (map 1967, sculpture 1968), "I decided to use the Pine Barrens site as a piece of paper and draw a crystalline structure over the landmass ... In this way I was applying my conceptual thinking directly to the disruption of the site over an area of several miles."¹⁵⁶ The location of Pine Barrens, New Jersey was chosen for reasons including the fact that it was remote and distinguished from its surrounding area by the pine trees and that there was "a hexagon airfield there which lent itself very well to the application of certain crystalline structures which had preoccupied me in my earlier work."¹⁵⁷ The selection of an airfield recalls the project at Dallas-Fort Worth, while the crystalline structure which Smithson drew on the map [Figure 51] was delineated by intersecting landing strips; this also happened to repeat the shape of *The Cryosphere* (1966). From the hexagonal centre further hexagonal shapes radiated, creating a total

¹⁵⁵ Smithson and Robbin, "Non-Site Sights", transcribed by author from audio recording.

¹⁵⁶ Dennis Oppenheim, Michael Heizer, and Robert Smithson "Discussions with Heizer, Oppenheim, Smithson" in *Avalanche*, (Fall 1970): 48-71.

¹⁵⁷ Ibid.

of six. Six was a very significant number for him, it is the same number of units found in the *The Cryosphere*, in the “six main crystal systems” and the number of sides on a snowflake.¹⁵⁸ Smithson had in his possession an extract from an unnamed book with enlarged photographs of snowflakes. The caption reads, “It is said that no two snowflakes in a thousand are exactly alike; on the other hand, notice from these pictures (which are enlarged photographs, not drawings) how the same fundamental principle is always kept – the of six straight rods radiating from a centre.”¹⁵⁹ The runways, and arms of *The Cryosphere* relate to these rods.

The map of Pine Barrens was displayed together with radiating storage bins, six per row [Figure 52]. The bins rest on a white plinth which has the exact 12 sided shape as *The Cryosphere*, while the bins themselves define the hexagon within this, leaving the ‘rods’ bare. The containers were filled with sand from the site, collected when Smithson visited the area with Dwan and Holt. Masheck noted a similarity between the container of the nonsites and the history of landscape garden design, particularly the formal French garden and the contrived naturalistic English landscape garden. He suggested that Smithson may have been influenced by a number of sources in this genre, including references to octagon shaped formal gardens in neo-gothic Victorian gardens.¹⁶⁰ Given the evidence, it is much more likely that Smithson was influenced by crystalline structures and applying these to the landscape rather than any hand-me-down notion from art history, which he had been actively trying to escape. Masheck’s conclusion was perhaps derived by an illustration of the octagonal *Amiens*

¹⁵⁸ Discussed by Smithson in “Entropy and the New Monuments” in Smithson, *Collected Writings*, 21 and again in an undated, unpublished essay, “Modular Properties in Structural Art” circa 1965, in RSNHP, location 3:23.

¹⁵⁹ Page from an unnamed book, RSNHP, AAA, location 5:60.

¹⁶⁰ Joseph Masheck, “Smithson’s Earth: Notes and Retrievals”, in Ginsburg, *Drawings*, 22-23 particularly.

Labyrinth which Smithson included in his 1966 essay “Quasi-Infinities and the Waning of Space,” and which Masheck reprinted in his essay.¹⁶¹

Interestingly, elements which comprise Smithson’s nonsites, maps, storage containers and photographs do not combine to create a representation of the real place: “They don’t attempt to conform to any kind of national reality. They are not representations of anything.”¹⁶² The choice of sites was important in this respect. These locations are places that are not defined by special features or memorable attributes: “The nonsite exists as a kind of three-dimensional abstract map that points to a specific site on the surface of the earth. And that’s designated by a kind of mapping procedure. And these places are not destinations; they’re kind of backwaters or fringe areas.”¹⁶³ They are places which have been dismissed and are now defined by a process of dedifferentiation. In a conversation between the artists Michael Heizer (b.1944), Dennis Oppenheim (1938-2011) and Smithson, Smithson confirmed that he enjoyed visiting sites from around 1965.¹⁶⁴ He continued, “certain sites would appeal to me more – sites that had been in some way disrupted or pulverized. I was really looking for a denaturalisation rather than built up scenic beauty.”¹⁶⁵ The nonsite projects therefore allowed Smithson to develop his emerging interest in entropy and are the first instances where we see the crystalline and entropy combine. *Nonsite #2* defines its centre as “entropic pole”. The map’s label reads, “the 12 apexes of the 12 sections

¹⁶¹ Robert Smithson, “Quasi-Infinities and the Waning of Space” in Smithson, *Collected Writings*, 34. Masheck, “Smithson’s Earth”, in Ginsburg, *Drawings*, 22-23 particularly.

¹⁶² Smithson and Robbin, “Non-Site Sights”, transcribed by author from audio recording.

¹⁶³ Smithson “Oral History”, RSNHP.

¹⁶⁴ Oppenheim, Heizer, and Smithson “Discussions”.

¹⁶⁵ *Ibid.*

converge on the Entropic Pole..."¹⁶⁶ He explained to Cummings how this developed from his earlier writing:

I guess in a sense these sites had something to do with entropy. This is, I guess, one dominant theme that runs through. You might say that early preoccupation with the early civilisations of the West was a kind of fascination with coming and going of things. And I brought all that together in the first published article that I did for *Artforum* which was the "Entropy and the New Monuments" article. And I became kind of interested in kind of low-profile landscapes, once again the quarry or the mining area which we call an entropic landscape, a kind of backwater fringe area. And so the entropy article was full of suggestions of sites external to the gallery situation. There was all kinds of material in there that broke down the usual confining aspect of academic art.¹⁶⁷

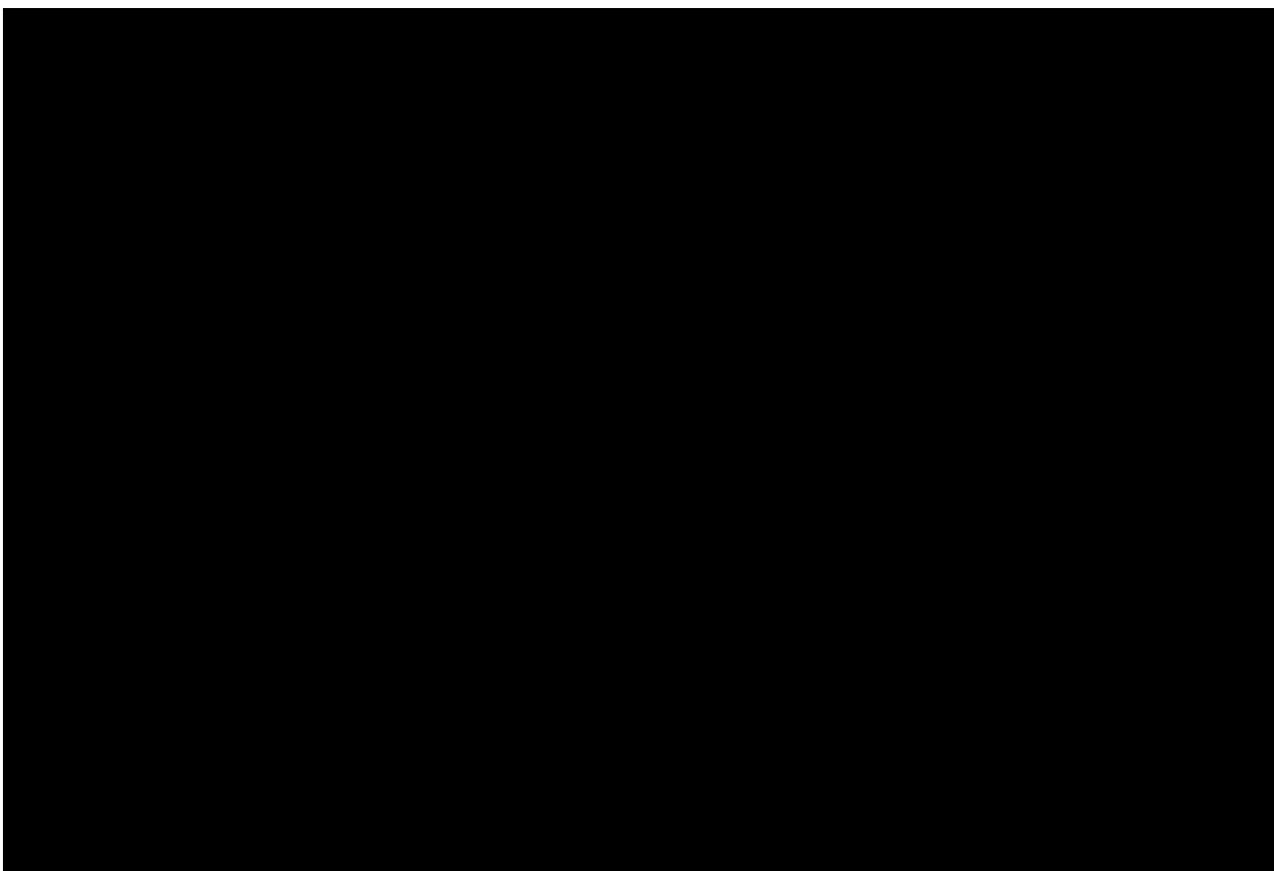


Figure 53, Robert Smithson's annotations in his copy of P.W. Bridgman, *The Nature Of Thermodynamics*.¹⁶⁸

The Entropy article is studded with references to crystals; even the language used evokes their image, for example: iridescent purple, green and silver surfaces;

¹⁶⁶ Quoted from Smithson's typed label below the map.

¹⁶⁷ Smithson "Oral History", RSNHP.

¹⁶⁸ P.W. Bridgman, *The Nature of Thermodynamics*, (New York, Harper & Bros., 1961), 174-5, Smithson's copy, part of RSNHP.

glittering; sparkling symmetries; many faceted; fluorite crystal; crystallographic boxes. It also contains several references to other texts, at least some of which were contained in his personal library. The article was published by *Artforum* in 1966 and Smithson's archive includes several earlier drafts. Judd's *Untitled*, (Pink Plexiglass box, 1965) which features in several other essays, is discussed again. On this occasion, Smithson concentrates on its crystalline aspects, and the paragraph is bracketed by two quotes from the same book: P.W. Bridgman, *The Nature Of Thermodynamics*.¹⁶⁹ This is unusual because Smithson tended to use multiple sources. More interestingly still is Smithson's copy of this text. His library shows that he rarely made marks in his books, yet there is an extraordinary and uncharacteristic flurry of annotations in his copy of this book. This singles it out as being particularly significant for the artist and crucial evidence for this research. Annotations in the text suggest that he read it on at least two separate occasions (there is underlining throughout in both pen and pencil). The greatest concentration occurs on pages 174-5 [Figure 53], where Smithson underlines large sections and puts emphasis in the margins so that the majority of the text is highlighted. One of the underlined sections can be found in the Entropy article; "But I think nevertheless, we do not feel altogether comfortable at being forced to say that the crystal is the seat of greater disorder than the parent liquid."¹⁷⁰

The passage that follows explains the third law of thermodynamics, and is also underlined by Smithson. The text asks, "In a room at absolute zero are the shapes of the modernistic furniture to be described as perfectly orderly, and if not, are we to

¹⁶⁹ Ibid.

¹⁷⁰ Ibid., 175.

anticipate that if we wait long enough these shapes will perhaps presently smooth themselves out spontaneously into something uniform and amorphous?"¹⁷¹ The room represents the condition described by the third law of thermodynamics, and the furniture signifies certain crystals under those conditions. The third law specifies that ionic crystals, at absolute zero (zero degrees kelvin) have zero entropy. Therefore, they are resistant to the process of dedifferentiation; the furniture will not rearrange itself. Smithson's article was published in June 1966, therefore he was aware of the connection between crystals and entropy from this date. Hence, all future uses of a crystalline motif, introduced earlier as a rejection of Humanism in accordance with Worringer, now had the capacity to interrogate the concept of entropy, or indeed, suggest a means of resistance to it. This issue of resistance will be discussed further in connection with the *Spiral Jetty* (1970).

¹⁷¹ Ibid.



Figure 54, Robert Smithson, *A Nonsite (Franklin, New Jersey)*, 1968



Figure 55, Robert Smithson, *Nonsite #2*, 1967¹⁷²

In light of this link, it is worth examining the third nonsite project, from Franklin New Jersey [Figure 54]. This work centred around an abandoned mine quarry used by local rock collecting enthusiasts. Franklin was an area celebrated for its mineral deposits, giving rise to their annual *Mineral Exhibit* show.¹⁷³ Smithson was aware of this and had, in his possession, a brochure for the event in 1967.¹⁷⁴ The abandoned mine provided the entropic (dedifferentiated) aspect Smithson required, while the rocks collected here were noted for their crystalline aspects, therefore illustrating the dialectic between entropy and the crystalline which interested Smithson. He wrote, “The most common minerals found on the dump are calcite (physical properties: crystal – hexagonal, cleavage – perfect rhombohedral, fracture – conchoidal, glows red) and willemite (physical properties: crystal – hexagonal, cleavage – basal, fracture

¹⁷² Taken by author at *Dwan Gallery: Los Angeles and New York* exhibition in Washington DC in the Autumn of 2016.

¹⁷³ Now known as the Annual Franklin-Sterling Gem and Mineral Show. 2016 was its 60th year.

¹⁷⁴ RSNHP, location 4:52.

– uneven to subconchoidal, glows green).”¹⁷⁵ The container bins, and corresponding map, were “contained within two 70° perspective lines without a centre point” a legacy from Smithson’s interest in perspective, as discussed earlier in this chapter.¹⁷⁶ However, this imposed system differed from the approach used in the previous two nonsite projects. At Pine Barrens, the built environment (airport runways) were the catalyst that resonated with the hexagonal form, while for *Nonsite #2* [Figure 55], Smithson used longitudinal degree lines to subdivide the area. All three cases impose an arbitrary system rather than one driven by natural characteristics. After all, he told others, “I’m more interested in denaturalisation or in artifice than I am in in any kind of naturalisation.”¹⁷⁷ These arbitrary systems symbolise the systems that existed within the gallery and the institution of art.



Figure 56, Robert Smithson, Installation view of Smithson’s restaged *Cayuga Salt Mine Project* (1968) for exhibition at Renaissance Society, Chicago, 1976¹⁷⁸

¹⁷⁵ Robert Smithson, “NON-SITE #3 (an indoor earthwork – rock fragments from Franklin N.J.)” in RSNHP, location 4:52.

¹⁷⁶ From Robert Smithson’s description of the work, quoted from Ron Graziani, *Robert Smithson and the American Landscape*, (Cambridge, Cambridge University Press, 2004), 76.

¹⁷⁷ Oppenheim, Heizer, and Smithson “Discussions”.

¹⁷⁸ Image from <https://renaissancesociety.org/exhibitions/288/robert-smithson-mirror-salt-works/> Accessed March 04, 2020.

The art historian Ron Graziani identified Smithson's *Cayuga Salt Mine Project* (1968) as "the most complex of all the nonsites."¹⁷⁹ Smithson used mirrored surfaces in his early wall sculptures, but their inclusion became more frequent in projects after 1968 with *The Cayuga Salt Mine Project* marking the transition from his nonsites to mirror displacement projects. Smithson was invited to contribute to the Earth Art exhibition at Cornell University, Ithaca, New York in February 1969 and visited the area the previous October to select an appropriate site for his work. The project comprised five parts; the site, the non-site, the sub-site, the sub-non-site and, the mirror trail.

The site was located underground in a salt mine as opposed to an open area above ground used for all previous site/nonsite projects. Smithson remarked, "You have an amorphous room situation, an interior completely free of right angles forming the rectilinear situation."¹⁸⁰ Within this natural enclosure Smithson positioned 8 mirrors and photographed them at various angles. The mirrors substituted for the rectilinear aspect absent from the cave-room. These mirrors were reused in the gallery [Figure 56]. They were arranged in several configurations with photographs and grades of rock salt from the mine to form the nonsite. Previous nonsite projects used manufactured storage bins to symbolise artifice whereas here no such containers were used; instead the salt spilt out onto the floor of the gallery. Smithson wrote, "in other non-sites, the container was rigid, the material amorphous. In this case, the container is amorphous, the mirror is the rigid thing."¹⁸¹ The material becomes enclosed instead by its own reflection in the mirrored surface.

¹⁷⁹ Graziani, *American Landscape*, 88.

¹⁸⁰ Robert Smithson, "Cayuga Salt Mine Project" description for John Weber Gallery, RSNHP, AAA, location 3:83.

¹⁸¹ *Ibid.*

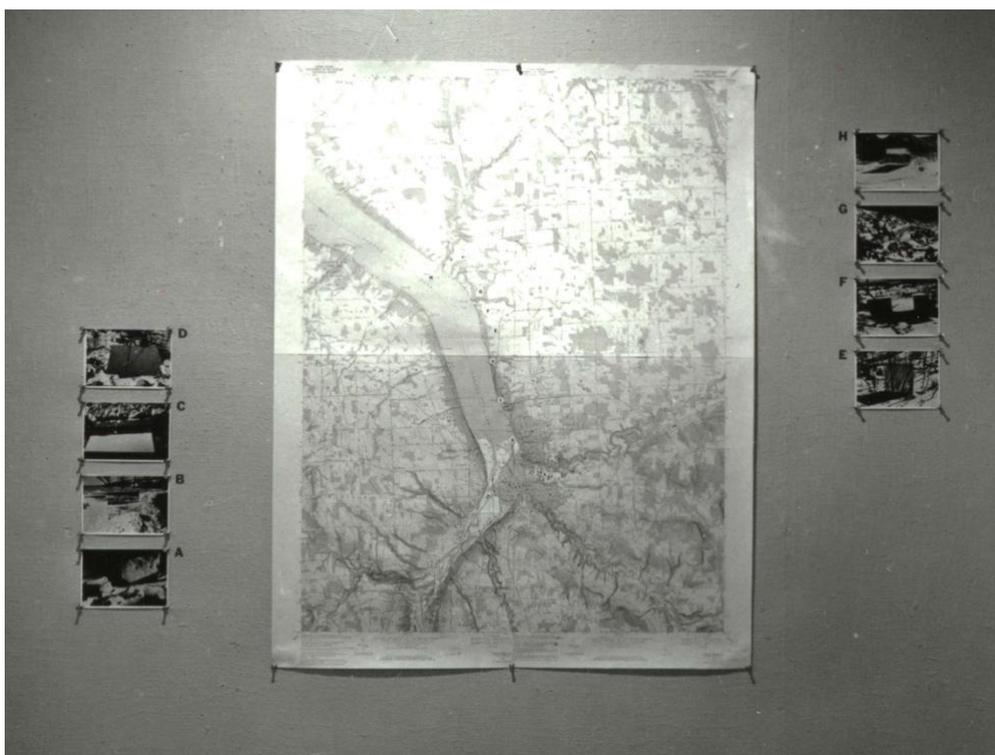


Figure 57, Robert Smithson, Map and photographs documenting the mirror trail as part of the *Cayuga Salt Mine Project* (1968) restaged for the Renaissance Society, Chicago, 1976¹⁸²

Contrary to one's expectations, the sub-site was located above ground level near the salt mine at a quarry known as "fossil quarry".¹⁸³ The same process of photographing mirror displacements was used here. These were displayed in the basement of the museum with fossilised rocks from the site to form the sub-non-site. Finally, the mirror trail portion of the project located eight mirrors at locations which linked the places used for the other four parts [Figure 57]. The metaphor of a journey recalls other episodes in Smithson's life and work. To select positions for the mirrors, Smithson consulted U.S. Geological Survey maps. In doing so, Smithson used an arbitrary structure to specify their locations, reminiscent of earlier nonsite projects.

¹⁸² Image from <https://renaissancesociety.org/exhibitions/288/robert-smithson-mirror-salt-works/> Accessed March 04, 2020.

¹⁸³ Smithson, "Cayuga", RSNHP.

Spiral Jetty

Early in 1970, before the *Spiral Jetty* (1970) was built, Smithson outlined his ideas for the project in a conversation with a student,:

A point is like a whirlpool or a central vortex. The piece in Salt Lake will be built on a meandering zone, that is unstable, and the idea is to stabilize something that is unstable.¹⁸⁴ It can be seen from the ground. A road comes into it through a big valley, to the salt lake that is shimmering with mirages. The water is red, like an entropic landscape. Sometimes it looks like wine. Crystals will grow on the fringes. It is built on a reef under three feet of water, and it dries up in late summer, so there is a constant shift in physical properties. I'm working here, not with paint, but with the colour of the water the crystals, the black rock.¹⁸⁵

The *Cayuga Salt Mine Project* introduced Smithson's specific interest in salt crystals, but Smithson's best known work, *Spiral Jetty*, is where this fascination matured. *Spiral Jetty* is an earthwork measuring 1500 foot long and 15 foot wide which coils out from the shore into the Great Salt Lake in Utah, about one hundred miles from Salt Lake City. It is constructed from black basalt and mud excavated from the banks of the lake. The title, *Spiral Jetty*, shares its name with a film (1970) and an essay (1972) published in *Arts of the Environment*. Smithson documented its construction and incorporated sequences in the video and, two years later, his essay immortalised the making of that film. The three pieces exist in a complex relationship with each other.

The idea of travel was important to Smithson; he used travel logs to structure some of his texts and frame sections of the film *Spiral Jetty*. A privileged few are able to make the journey to remote Utah to experience the work first hand. In the absence of that, the following, drawn from my own experience, is intended as a present day substitute

¹⁸⁴ The area where *Spiral Jetty* is built is called the Meander Zone. See Robert Smithson unpublished transcript "Q&A session at School of the Art Institute of Chicago", circa 1971, RSNHP, location B2:52, 3 where he outlines this.

¹⁸⁵ Interview with Toner in Smithson, *Collected Writings*, 239-40.

allowing the reader to appreciate the context of the work and provide sense of the Smithson's voyage in 1970.

The landscape in the environs of Salt Lake City is spectacular. It is clear how Smithson, coming from the monotony of the New York metropolis, was inspired by the magnificence of the contrasting flat planes surrounded by tall snow covered peaks. Quarries dug into the sides of mountains resonate with *Asphalt Rundown* (1969). The journey to *Spiral Jetty* takes a little over two hours heading northward from Salt Lake City. Highway I-15 is continually flanked by housing, industry and other signs of life. Larger towns in the foothills of the Wasatch Mountain range are distinguished by shining white beacons which are the spires of Church of Latter Day Saints (Mormon) Temples. Turning off the highway, we pass through the entropic town of Corinne. Originating in 1869, Corinne was a counterpoint to surrounding Mormon settlements designed to accommodate the needs of workers from the Union Pacific and Central Pacific railroad companies. Dubbed the 'City of the Ungodly', it once contained nineteen saloons, gambling houses, dance halls, and eighty prostitutes.¹⁸⁶ Now hosting a population of 1000 and visible in a scattering of unloved buildings, a fast food outlet, a hostile looking bar and, a gas station, Corinne is a shadow of its former self.

After Corinne there is little sign of settlement until we pass a large rocket propulsion testing centre which, in conjunction with NASA, is developing systems for the journey to Mars. The injection of present day sci-fi into this remote landscape reminds me of J.G Ballard's novels. Not far from this Ballardian site, is the Golden Spike National

¹⁸⁶ Florin Lambert, "Corinne, Utah" in *Desert Magazine*, (September 1967): 34.

Historic Site with its small visitor center, museum and replica steam engines to mark the point where the intercontinental railroad met in 1869. From there, we travel seventeen miles along a gravel road, through national parkland and across private land to reach *Spiral Jetty*. The road has been improved and no longer requires a four-wheel drive vehicle. The scenery is breathtaking; expansive silent landscapes with scarcely any wildlife, aside from a few ravens, and the occasional hawk soaring overhead. Smithson described this part of journey; “as we travelled, the valley spread into an uncanny immensity unlike the other landscapes we had seen.”¹⁸⁷ We see the shimmer of the lake in the distance but only the last few minutes of the journey border the lake itself. The Great Salt Lake is one of the largest salt water lakes in the world. The area of the lake where the *Spiral Jetty* is located has an average salinity of 25%, which is considerably higher than the ocean which typically has 3.5% salinity.¹⁸⁸ Recently, a team from the Utah Geological Society conducted a study on the thickness of the salt crust in the northern lake. Areas of crust which are currently exposed, due to low water levels, were found it to be up to 1.9 foot thick, while in 1970 the thickness of the salt crust toward the center of the lake measured 4.6 foot.¹⁸⁹ With levels so high, the water is too salty to support fish, however birdlife, who feed on brine shrimp, are abundant along its shores.¹⁹⁰ The dirt road terminates in a small car park that services the *Spiral Jetty*. A plaque explains its significance to the few, if any, who have made

¹⁸⁷ Robert Smithson, “The Spiral Jetty” (1972) in Smithson, *Collected Writings*, 145.

¹⁸⁸ Andrew Rupke and Taylor Boden, “More Than A Grain Of Salt: The Salt Crust On Great Salt Lake’s North Arm” in *Survey Notes*, v. 48 no. 3, (September 2016), available online at <http://geology.utah.gov/map-pub/survey-notes/salt-crust-great-salt-lake/#toggle-id-2> Accessed March 25, 2020.

¹⁸⁹ Ibid. Bupke clarified in correspondence with the author dated January 14, 2016 that although samples were taken in 1970, it is likely that they were carried out during the summer period and that the results were not analysed until 1972 or 73. Therefore, Smithson would not have had access to this information.

¹⁹⁰ Wayne Wurtsbaugh, Impacts of Water Development on Great Salt Lake and the Wasatch Front, White Paper, (February 24, 2016), available at http://www.qcnr.usu.edu/pdfs/publications/Great%20Salt%20Lake%20Water%20Level_Feb%2024%202016.pdf Accessed October 10, 2016. The salinity of the lake varies between the northern and southern areas. The two parts are partially divided by the intercontinental railroad with the northern part having much higher salt content than the southern which has some freshwater inlets. The *Spiral Jetty* is located in the northern portion of the lake.

an unexpected pilgrimage. From the car park, we descend a rocky basalt embankment to the *Spiral Jetty* which curls out from the lake shore.

Smithson's interest in salt lakes began with *Mono Lake Nonsite*, California in 1968. He then discovered a book about Bolivia's Laguna Colorada which, unlike Mono Lake, has red water.¹⁹¹ A torn page with an image of Laguna Colorada in Bolivia is in Smithson's archive. The photograph shows mounds of salt crystals along its shores, and the caption remarks that the water is pink.¹⁹² The Great Salt Lake in Utah also has this reddish colour and was more accessible than South America. The timing of the earthwork project was crucial to its success. It would not have been possible without financial input from the Dwan gallery and the mentorship of Virginia Dwan in particular, who had already supported Michael Heizer's *Double Negative* (1969-70) in the neighbouring state of Nevada. Smithson visited the Utah site with the idea of the spiral from *Gyrostatis* "lurking in the back of my head all the time."¹⁹³ Later, in the summer of 1972, Smithson was invited to provide commentary on *Gyrostatis* for inclusion in a catalogue for the inaugural exhibition of the Hirschhorn Museum and Sculpture Garden in Washington DC. He expanded on the link between the two works,

The title *GYROSTATIS* refers to a branch of physics that deals with rotating bodies, and their tendency to maintain their equilibrium. The work is a standing triangulated spiral. When I made the sculpture I was thinking of mapping procedures that refer to the planet Earth. One could consider it as a crystallized fragment of a gyroscopic rotations, or as an abstract three dimensional map that points to the *SPIRAL JETTY*, 1970 in the Great Salt Lake, Utah.

¹⁹¹ Smithson, "The Spiral Jetty" in Smithson, *Collected Writings*, 143. Clippings in Smithson's archive include an image of Lake Texcoco in Mexico which until the early 1970s was used for harvesting sodium. A spiral form was created in the lake to increase production. Thereafter, it emerged that a valuable algae called spirulina was a by-product of this production; this is now harvested instead. RSNHP, location 5:48.

¹⁹² RSNHP, location 5:48.

¹⁹³ The area where Spiral Jetty is built is called the Meander Zone. See Robert Smithson unpublished transcript of "Q&A session", RSNHP, 3.

GYROSTASIS is relational and should not be considered as an isolated object.¹⁹⁴

In a lost tape from the Cummings interview, yet unpublished by the Archives of American Art, Smithson said he recognised *Spiral Jetty* as bringing together various aspects associated with working outside the confines of the gallery space, particularly the idea of art as “real estate” rather than a moveable commodity.¹⁹⁵ This follows on from his interest in challenging the institution of art explored through the nonsites.

The Film

Although the earthwork and the film *Spiral Jetty* are recognised as independent works, the film has an inextricable relationship with the earthwork. For Smithson, the film provided a valuable “way of perceiving the scale of the sculpture, let’s take in terms of film, long shots, medium shots, and close-up shots and there’s different ranges there. It’s a way of locating scale.”¹⁹⁶ Scale was an important feature of the earthwork also discussed in the accompanying essay. The film has acted as document of the process of making the work, provided reference points for its possible interpretation, and kept it visible during the thirty or so years when the earthwork was submerged. Smithson’s nonsites pointed to actual sites outside the gallery. The film of the *Spiral Jetty* originally created a similar dialectic with the earthwork, however that role has since evolved. Now the film acts as document to its construction and condition in 1970. It provides a narrative divorced from the lived reality of today’s *Spiral Jetty*, a point which will become more apparent in the following pages.

¹⁹⁴ Robert Smithson letter to Abram Lerner dated July 22, 1972, RSNHP, 1905-1987, bulk 1952-1987. Original emphasis.

¹⁹⁵ Unpublished section Smithson “Oral History”, RSNHP, transcribed by author; I sought explicit permission from AAA to reproduce this on 16.12.16.

¹⁹⁶ Smithson, “Q&A session”, RSNHP. Unpublished material.

The film is broken into three parts: the opening section, the construction, and the completed work. It begins with references to the passage of time and a world which no longer exists. This is depicted through the scenes of a moving car, the sound of a ticking clock, ancient maps showing Lake Bonneville and the late Jurassic period, and footage, taken through a red filter, of dinosaurs in the Natural History Museum in New York, (a nod to Smithson's childhood fascination). In his essay "The Spiral Jetty" (1972) Smithson quoted the English author G.K. Chesterton (1874-1936), "Red is the most joyful and dreadful thing in the physical universe; it is the fiercest note, it is the highest light, it is the place where the walls of this world of ours wear the thinnest and something beyond burns through."¹⁹⁷ A further clue and the link to entropy behind Smithson's use of the colour red is found in an unpublished essay entitled "The X Factor in the New Art" which should not be confused with the published essay of a similar name reprinted in Flam.¹⁹⁸ In it, Smithson analyses Jean-Luc Godard's film *Le Mépris* (*Contempt*) in terms of the laws of thermodynamics [Figure 58]. He says,

Godard's *Contempt* may be seen as a study in entropy. The first scene of the film opens with Brigitte Bardot in the nude, photographed through a red filter (The First Law of Thermodynamics). She lists all the major parts of her body in feigned Baroque manner. We see her in "natural" Technicolor. Following this, she is photographed using a blue filter (The Second Law of Thermodynamics).¹⁹⁹

What Smithson meant by this is obscure. In terms of energy levels, blue light has more energy than red light therefore a shift from blue to red would signify an increase in entropy, and conversely from red to blue, as in Godard's film, a decrease in entropy. The second law of thermodynamics, which will be discussed in the next section,

¹⁹⁷ Smithson, "The Spiral Jetty" in Holt, *Essays with Illustrations*, 109. Original source, G.K. Chesterton, "The Red Town" in *Alarms And Discursions*, (London, Methuen & Co Ltd, 1911). Chesterton's text continues to discuss red as a divine colour. Another avenue of possible research which may have interested Smithson is the significance of the colour red in a molecular energy. In this case red designates low energy.

¹⁹⁸ Robert Smithson, "The X factor in the New Art", RSNHP, location 3:60 reprinted in Smithson, *Collected Writings*, 24-5.

¹⁹⁹ Smithson, "The X factor in the New Art", RSNHP, 2.

broadly states that the total entropy of a system is always increasing. Therefore, if the film is interpreted in terms of the laws of thermodynamics the correct order would be from blue to red filter. However, Smithson's scientific accuracy is less important than the connection he made between the colour red and the law of conservation of energy, otherwise known as the first law of thermodynamics. The red colour of the water in the Great Salt Lake was one of the reasons he chose this location, and the specific area on the lake subject to a stronger tint than areas further to the south; the reasons for this will be expanded upon later.

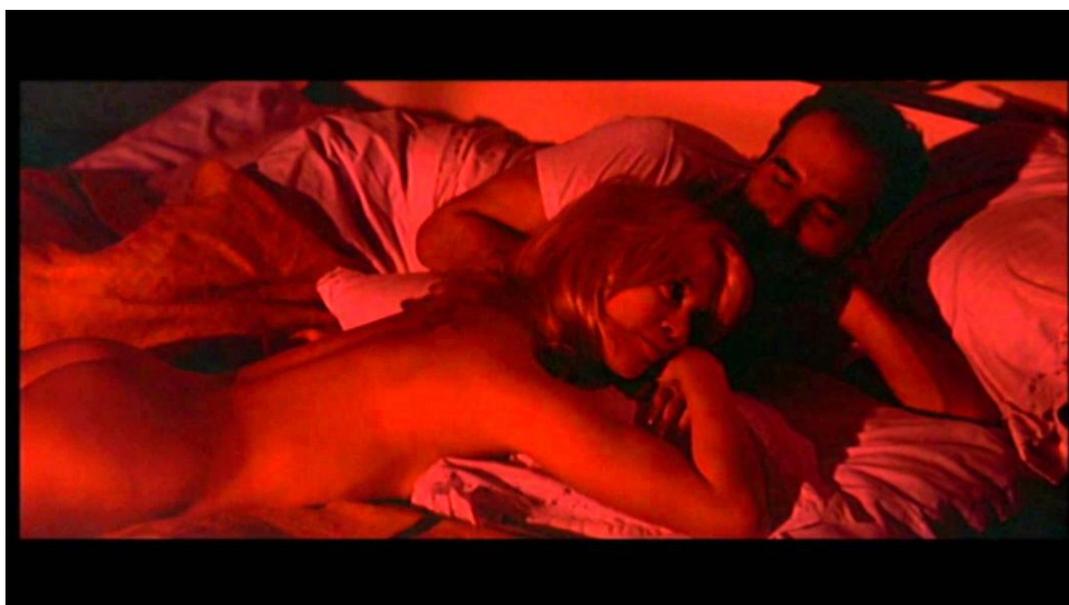


Figure 58, *Le Mépris* (France, Jean Luc Godard 1963, USA 1964), film still from opening sequence.

Returning to Smithson's film, there is a shot and voice over reference to Conan Doyle's *The Lost World*. Smithson shows the pink water and explains that the colour is due to algae in the salt water. He is seen staking out the spiral, like a surveyor or builder might measure a site for construction. The images and soundtrack alternate between construction and gentle lapping of the water. Scenes of dinosaurs are juxtaposed construction vehicles in an Eisensteinian montage, suggesting the digger as a modern day dinosaur. This recalls Smithson's remark in "A Tour of the Monuments of Passaic"

where he describes construction machines as “mechanical dinosaurs stripped of their skin”.²⁰⁰ The frame speed of the dump trucks is slowed to make this link more plausible. The essay emphasised how the medium of film makes this possible, “The movieola becomes a ‘time machine’ that transforms trucks into dinosaurs.”²⁰¹

The last section, shows the completed *Jetty*, this time from above. A helicopter moves in a spiral motion replicating the earthwork below. Both scroll anti-clockwise defying the usual passage of time. Smithson’s interest in aerial art dates from his time at TAMS when his proposals were designed to be seen from above. He told Cummings that *Spiral Jetty* was on the flight path between Salt Lake City and Seattle and that airlines routinely pointed it out to passengers.²⁰² The film shows images of crystals growing on rocks along the shore foretelling their future development on the *Spiral Jetty*. The closing frames, in black and white, depict a large photograph of the *Spiral Jetty* on the wall with the film editing machine in the foreground. These present the viewer with layers of mediated representations of the earthwork. There is the film itself, the still photograph and a reminder of the artifice of both symbolised by the editing machine. The earthwork, like the sites corresponding to Smithson’s nonsites, cannot be adequately represented. The nonsites, took material from the site at a specific point in time, and placed it in the gallery setting. The material represented a fixed moment which was posited against the continuing existence of the site beyond the confines of the gallery. In the case of *Spiral Jetty*, the gap between it and representations of it are greater still. The *Jetty* is described through film, authorised photographs and

²⁰⁰ Robert Smithson, “A Tour of the Monuments of Passaic, New Jersey” (1967) in Smithson, *Collected Writings*, 71.

²⁰¹ Smithson, “The Spiral Jetty” in Smithson, *Collected Writings*, 150. A moviola is a viewing machine used for editing film.

²⁰² Unpublished section Smithson “Oral History”, RSNHP, transcribed by author, requested permission from AAA on December, 16, 2016 to reproduce it.

Smithson's essay. These are, at best, two dimensional similes which cannot approximate the work.

The Spiral Metaphor

Before examining why the specific location in the northern part of the Great Salt Lake was crucial to the piece, it is necessary to consider the spiral's conceptual significance. In the film, Smithson mentions a myth about an ancient whirlpool in the lake which connected it to the Pacific Ocean, presumably to explain the saline water. While submerged, the *Spiral Jetty* plays homage to this whirlpool. He remarked, "...the space in the lake actually is kind of centrifugal. The reason why I put the thing in [the movie], about that misconception about the lake's whirlpool, although there was no whirlpool there, is that sensation of circular space which probably caused people to hallucinate seeing whirlpools."²⁰³ The anticlockwise direction of the coil is important for this analogy because of the Coriolis effect determines the direction of a whirlpool as anticlockwise in the northern hemisphere (and clockwise in the southern).²⁰⁴

As we know, Smithson linked the form of the spiral to *Gyrostatis*, but that is only part of the story. Further evidence shows that his interest in spirals went beyond formal characteristics. In 1970, while planning *Spiral Jetty*, he told Toner that the spiral shape resembled ripples radiating from a central dropped stone. This was important because it drew attention to both the centre and the periphery creating a dialectic between the two areas, in a similar way to the *nonsites*. Smithson said, "My intention is to arrest a

²⁰³ Smithson, "Q&A session", RSNHP, 3.

²⁰⁴ Incidentally, anticlockwise is also the direction in which the child ran at the end of the "Tour of the Monuments of Passaic" hopelessly trying to reverse the condition of entropy.

moment in that peripheral circumference area, and relate it to a central point.”²⁰⁵ Consequently, the spiral form allows the viewer to consider the centre and the extremities simultaneously. In an undated notebook from Smithson’s archive, likely to be around 1970 or 1971, he copied out twenty quotes which reference spirals from books ranging between Louis Effler’s *The Spirals of Mu-land* (1943) and William Butler Yeats’s *A Vision* (first edition 1925) and united them under the title, “A Metamorphosis of the Spiral.”²⁰⁶ Whether before or after the construction of *Spiral Jetty*, this demonstrates Smithson was actively interested in researching the spiral as metaphor.

In his essay exploring influences on Smithson’s work, Masheck suggested that the spiral revives Smithson’s early interest in archetypal imagery derived from Carl G. Jung (1875-1961).²⁰⁷ Smithson had recounted to Cummings, how in the period around 1959-62, he “got into a kind of archetypal imagistic period utilizing images similar, I guess, to Pollock’s She-Wolf period and Dubuffet and certain mythological religious archetypes,” so a link to Jung is obvious.²⁰⁸ In the year following the completion of the *Jetty*, Smithson told students that the spiral is a “very primitive form” used extensively “all throughout the world” suggesting an ongoing interest in archetypal imagery.²⁰⁹ In fact, Jung was the most frequent nonfiction author in Smithson’s library. His collection included a copy of Jung’s *Psychology and Alchemy* from which Masheck quoted a section linking the spiral and the crystal,²¹⁰

²⁰⁵ Smithson interview with Toner in Smithson, *Collected Writings*, 234.

²⁰⁶ RSNHP, location 3:65. He also had in his possession a pamphlet entitled *Spiral*, The Order of the Universe Publication, Boston, n.d. circa 1970. RSNHP, location 5:63. Phil Leider sent a clipping from the *Whole Earth Catalogue Supplement* to Smithson in 1970 which repeated a section of the pamphlet’s text. Leider wrote, “Always thinking of you.” RSNHP, location B1:24.

²⁰⁷ Masheck, “Smithson’s Earth”, 26.

²⁰⁸ Cummings in Smithson, *Collected Writings*, 273.

²⁰⁹ Smithson, “Q&A session”, RSNHP, 3. Peter Halley examines an early work *Mermaid with Unknown Illness* (1962) for its use of spiral motifs. See Halley, “Introductory essay” in *Smithson: The Early Work*, n.p.

²¹⁰ For a full catalogue of Smithson’s library see, Lori Cavagnaro, “Robert Smithson’s Library” in Reynolds, *Learning from New Jersey*, 279-345. An interesting comparison can be made with the Freud’s books, of which Smithson had only three.

The unconscious moves spiral-wise around a centre, gradually getting closer, while the characteristics of the centre grow more and more distinct. Or perhaps we could put it the other way round and say that the centre – itself virtually unknowable – acts like a magnet on the disparate materials and processes of the unconscious and captures them as in a crystal lattice.²¹¹

Masheck claimed that “Jung’s image of crystallisation evokes the *Spiral Jetty*” by making an unconvincing argument about the relationship of the algae to water and salt crystals to rock. Another reading can be found in the film *Spiral Jetty*, particularly towards the end where it is shot from a helicopter flying back and forth overhead. Despite the movement of the apparatus, the focus of the lens remains fixed on the centre of the coil, as if held there by magnetic attraction. The first time the sun is reflected momentarily in the centre, Smithson reads a section from John Taine, *The Time Stream* (1931), “Gazing intently at the gigantic sun, we at last deciphered the riddle of its unfamiliar aspect. It was not a single flaming star, but millions upon millions of them, all clustering thickly together, like bees in a swarm, their packed density made up the deceptive appearance of a solid impenetrable flame. It was in fact, a vast spiral nebula of innumerable suns.”²¹² In the last few seconds of moving images the sun’s glare is held in the centre, while Smithson reads a extract from a medical dictionary on the condition of sunstroke.²¹³ Stills from this section of the film have become iconic images to be replicated frequently, including on the book cover of the publication devoted to the piece [Figure 59].²¹⁴ Seeing the *Spiral Jetty* through a Jungian lens, as Masheck suggested, adds depth to Smithson’s visual and verbal references of the sun. To explain his concept of the collective unconscious, Jung used two relevant examples. The first was the case of the “Solar Phallus Man,” the second was the case

²¹¹ C. G. Jung, *Psychology and Alchemy*, trans. R.F.C. Hull, (New York: Pantheon Books, 1953), 207.

²¹² John Taine, *The Time Stream*, full text available online at <http://www.gutenberg.ca/ebooks/tainej-timestream/tainej-timestream-00-e.html> Accessed October 19, 2016.

²¹³ The last frames of the film depict a fixed black and white image of a studio with projector in foreground with a photograph of the *Spiral Jetty* on the wall behind.

²¹⁴ Lynne Cook, George Baker, and Karen J. Kelly (eds.), *Robert Smithson: Spiral Jetty*, (Berkeley, University of California Press, 2005).

of the physician and physicist Robert Mayer (1814-1878) in which Jung discussed the sun as a primordial image.²¹⁵ Mayer, perhaps coincidentally, is credited with discovering the first law of thermodynamics. Jung wrote, "One of the commonest and at the same time most impressive experiences is the apparent movement of the sun every day."²¹⁶ Considering Smithson's former interest in Jungian symbolism, it is probable that he intentionally used the sun as a universal image.

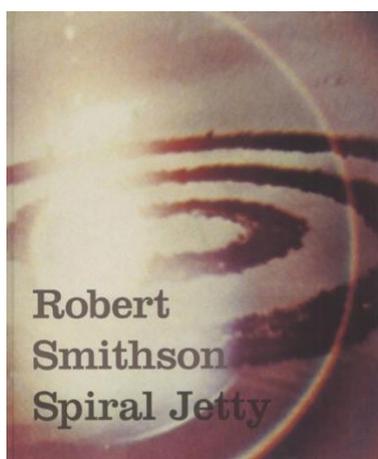


Figure 59, Book Cover, *Robert Smithson: Spiral Jetty*

Roberts also discussed the spiral but not its direction.²¹⁷ She pointed to two issues. On a formal level, Roberts argued, the coil resembles the dislocation of crystal growth which interested Smithson. Smithson's copy of *Polymorphism and Polytypism in Crystals* proves this. He underlined sections of the text which explain how dislocations in the growth of crystals gives rise to spiral forms.²¹⁸ When coupled with Smithson's awareness of scale the whole earthwork can take on the appearance of a single dislocated crystal as he explained,

²¹⁵ For the Solar Phallus Man see, C.G Jung, "The Structure of the Psyche" in *Collected Works* 8, (London, Routledge and Kegan Paul Ltd., 1969), pars. 317-21. For the case of Robert Mayer see C.G Jung, "On the Psychology of the Unconscious" in *CW* 7, (London, Routledge and Kegan Paul Ltd., 1969), pars. 106-9. Reference details correspond to standard referencing techniques used in Analytical Psychology.

²¹⁶ Jung, "Unconscious" in *CW* 7, par. 109.

²¹⁷ Roberts, Jennifer, "The Taste of Time: Salt and Spiral Jetty" in Tsai, *Robert Smithson*, 96-103.

²¹⁸ A.R Verma & P. Krishna, *Polymorphism and Polytypism in Crystals*, (New York, John Wiley & Sons, 1966), from RSNHP, Smithson's library. See pages 206-209 for sections about spiral growth underlined by the artist.

On eye level, the tail leads one into an undifferentiated state of matter. One's downward gaze pitches from side to side, picking out random depositions of salt crystals on the inner and outer edges, while the entire mass echoes the irregular horizons. And each cubic salt crystal echoes the *Spiral Jetty* in terms of the crystals molecular lattice. Growth in a crystal advances around a dislocation point, in the manner of a screw. The *Spiral Jetty* could be considered one layer within the spiralling crystal lattice, magnified trillions of times.²¹⁹

An undifferentiated state is found in inorganic substances, like crystals, which have a stable, uniform structure. On a molecular scale the crystals spiral around their dislocation point, and on a large scale the whole Jetty resembles the crystal.

Secondly, Roberts noted that, "Smithson had long been exploring what he called the 'crystalline structure of time,' and this spiralling growth pattern became an essential part of his understanding of that structure."²²⁰ Drawing on information found in Smithson's library, Roberts made a connection between a conventional understanding of time and perspective. She wrote,

Time is understood as a transparent medium or atmosphere which allows the historian to peer back "through" it (even if darkly) to an event in the receding past. As theorists Edmund Husserl to Elizabeth Deeds Ermarth have argued, this optical model of historical endeavour derives ultimately from Renaissance systems of perspectival organisation and subtends all modern historicism.²²¹

Roberts argued that perspective systems provide the historian with a visual representation of time. In this representation the vanishing point may be understood as a point in time, and future events extend in a linear fashion from this origin. This view of history does not include anomalies which fall outside its singular vision. An example of this was explored in the last chapter which discussed how Expressionism was seen as an anomaly in the linear version of modernism. Smithson, as discussed earlier, was critical of the legacy of the Renaissance and made a point of negating its

²¹⁹ Smithson, "The Spiral Jetty" in Smithson, *Collected Writings*, 147.

²²⁰ Roberts, "The Taste of Time", 98.

²²¹ *Ibid.*, 99.

perspective systems. Crystalline structures based on inorganic principles provided Smithson with an alternative. Smithson amalgamated both Worringer's and Kubler's influences to inform his view. The second chapter outlined how Worringer developed his theory using Riegl's work. Worringer was particularly interested in Riegl's understanding that ancient art aimed to convert three dimensions to two dimensions. Worringer explained the urge to abstraction as, "man's primal need to free the sensuous object from the unclarity imposed upon it by its three-dimensionality".²²² Perspective presents three-dimensionality on two dimensional surfaces. Objects in a perspective drawing are linked within this system to create a relational illusion of space. Elements in the foreground appear larger than objects in the background, as they do in reality. One reads the drawing by making reference to the size of objects in relation to other objects within the picture plane. The objects are relational and, therefore, lose their material individuality.²²³

In contrast, abstract inorganic art avoids representations of depth and therefore objects within the picture plane are not united into a system. These objects maintain their individuality. Thus the scene is cleansed of "life and temporality."²²⁴ According to both Riegl and Worringer, the purest form of abstraction is the crystalline. A crystal's growth structure is determined by the forces between the molecules that comprise it. In Kubler's terms, this is autogenous, or from within; it is not reliant on a relationship with other objects. The objects in an abstract artwork retain their self-conscious

²²² Worringer, *A&E*, 22. See also page 37 for the same points. Evidence of the dominance of the humanist tradition is clearly seen in the standard use of perspective in the visual arts since its codification by Leon Battista Alberti in *De Pictura* in 1435.

²²³ Worringer wrote, "It is precisely space which, filled with atmospheric air, linking things together and destroying their individual closedness, gives things their temporal value and draws them into the cosmic interplay of phenomena; most important of all in this connection is the fact that space as such is not susceptible of individualisation." Worringer, *A&E*, 38.

²²⁴ *Ibid.*, 44.

individuality, while in reality, the crystal's form is always individual. For Smithson then, time was *suggested*, but not represented, by the growth of crystals. As Roberts summarised, "Smithson's crystalline model of time disregards linear, progressive, or triumphalist models by imagining time as an opaque encrustation around a fault or fracture...Time does not 'pass' or 'fly', it builds up as a material sediment that remains on hand indefinitely"²²⁵

Living sculpture

In September 2016, the National Gallery in Washington DC opened its newly renovated East Building which houses its modern collection. Completed in 1978 the I.M. Pei building was closed for extension and upgrading. The reopening was celebrated by a major exhibition, *Dwan Gallery, From LA to New York, 1959-1971*.²²⁶ The show presented works from Virginia Dwan's private collection donated to the National Gallery in 2013. Its aim was to trace the development of the Dwan Gallery from west to east coast, and, particularly, the major role Dwan played in the development of minimal art and earthworks. Smithson was the artist most featured in the exhibition. By the end, the show focused squarely on Smithson's earthwork, *Spiral Jetty* reflecting the important relationship the gallery and this work.

²²⁵ Roberts, "The Taste of Time" 98.

²²⁶ Thereafter the exhibition was shown at the Los Angeles County Museum of Art between March 19, and September 10, 2017



Figure 60, Installation Shot taken by author, *Dwan Gallery: Los Angeles and New York 1959-1971*, National Gallery Washington DC, October 2016. Left hand wall includes several storyboards for the film *Spiral Jetty* while right hand wall shows works with spiral motifs such as *Green Island*, *Spiral Island* 1970 and *Spiral Island with Curved Jetty*, 1970, and the sculpture *Gyrostasis* 1967.

Exhibiting works that are on an architectural scale is particularly challenging; this, of course, is part of their concept. Years earlier, in 1967, Dwan had responded to this challenge with the *Scale Models and Drawings* show. At the National Gallery, they attempted to address the issue by using a variety of media to simultaneously display pieces as works in their own right and to create an impression of the earthwork in the landscape. The visitor passed through a linear space flanked on the left by Smithsonian's extensive storyboard for the film, and on the right, by several works on paper featuring spiral motifs [Figure 60] and the sculpture *Gyrostasis*. One was then confronted by a large photomural of *Spiral Jetty* taken shortly after its completion. While an adjoining space played the film *Spiral Jetty* on a loop, along with a documentary about Dwan, produced by the National Gallery.

At first glance, the exhibition seemed to showcase the earthwork; in fact, what it did was portray it as a static object immune to the passage of time. All representations acted as a time capsule conserving the *Spiral Jetty* in a fixed condition from 1970. The accompanying exhibition catalogue does no better. It includes three photographs captioned only with the title and date of the earthwork itself. They do not acknowledge the passage of time despite the fact, as I discovered, that one image was taken in 1970, while another, aerial photograph, dates from the autumn of 2013. Over this period the sculpture in its context had dramatically changed, yet, there is no attempt to represent, or discuss, the work in all its various states, or even to acknowledge that any variations exist.²²⁷ Because of its remote location, the film or other static images of *Spiral Jetty*, become readily available substitutes for a live experience of the work. The changing conditions in the Great Salt Lake have meant that the earthwork has spent more than two thirds of its existence under water thus increasing reliance on familiar images as suggestive placeholders. Consequently, these images are readily called to mind and the literature treats *Spiral Jetty* as a static object.

In reality however, the work is a living piece, subject to the fluctuating environmental conditions of its site. Smithson knew this, and worked with the site, particularly utilising its crystalline aspects, to create opportunities to explore incarnations of entropy. He explained this to the Swiss artist and writer, Grégoire Müller (b.1947):

When you are dealing with a great mass, you want something that will, in a sense, interact with the climate and its changes. The main objective is to make something massive and physical enough so that it can interact with those things and go through all kinds of modifications. If the work has sufficient physicality, any kind of natural change would tend to enhance the work. Geology has its own kind of entropy, that has to do with sediment mixtures. Sediment plays a

²²⁷ The aerial image forms part of the Dia Art Foundation's aerial documentation of the work twice annually since 2012. See <http://www.diaart.org/collection/spiraljettyaerials> Accessed April, 21, 2017.

part in my work. Unlike Buckminster Fuller, I'm interested in collaborating with entropy. Some day I would like to compile all the different entropies.²²⁸

As discussed earlier in this chapter, Smithson's fascination with entropy dates from around 1965. Entropy is a theory associated with the second law of thermodynamics. Smithson put it in lay terms and explained it as the process where "in the ultimate future the whole universe will burn out and be transformed into an all-encompassing sameness."²²⁹ In "A Tour of the Monuments of Passaic, New Jersey" (1967) he provided a simple illustration,

I should now like to prove the irreversibility of eternity by using a *jejune* experiment for proving entropy. Picture in your mind's eye the sand box divided in half with black sand on one side and white sand on the other. We take a child and have him run hundreds of times clockwise in the box until the sand gets mixed and begins to turn grey; after that we have him run anti-clockwise, but the result will not be a restoration of the original division but a greater degree of greyness and an increase of entropy.²³⁰

Entropy is best understood in conjunction with the other two laws of thermodynamics. The first law, better known as the law of the conservation of energy, states that energy cannot be created or destroyed, but can only change from one form to another. Smithson referred to this in a late interview with Alison Sky dating from 1973. He remarked, "the earth being the closed system, there's only a certain amount of resources and of course there's an attempt to reverse entropy through the recycling of garbage."²³¹

²²⁸ Robert Smithson and Grégoire Müller "...The Earth, Subject to Cataclysms, is a Cruel Master" in Smithson, *Collected Writings*, 256.

²²⁹ Robert Smithson, "Entropy and the New Monuments" in *Artforum*, Vol. 4, No. 10, (June 1966): 26.

²³⁰ Smithson, "A Tour of the Monuments of Passaic, New Jersey" (1967) reprinted in Smithson, *Collected Writings*, 74.

²³¹ Robert Smithson and Alison Sky. "Entropy Made Visible" (1973) in Smithson, *Collected Writings*, 302.

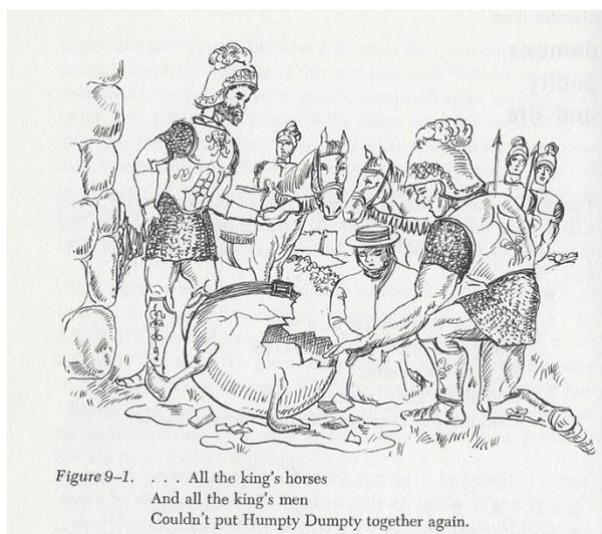


Figure 61, Illustration from “Demons, Poetry and Life” in Stanley W Angrist & Loren G. Hepler, *Order and Chaos: Laws of Energy and Entropy*. Smithsonian owned a copy.²³²

The second law of thermodynamics “states that the total entropy of a system and its surroundings increases during all spontaneous processes...The essential theme...is that disorder is all the time increasing.”²³³ In this context, disorder should be understood as dedifferentiation, which will increase until a situation of “all-encompassing sameness is reached.”²³⁴ Smithsonian’s unpublished hand-written note, from 1967, provides more clarity,

The word ‘entropy’ has gone through a kind of linguistic entropy itself. It conceals what science cannot – namely the metamorphosis of nothingness or primal chaos. Anton Ehrenzweig relates entropy to what he calls ‘dedifferentiation,’ that is the breakup of the pure gestalt. Entropy in this case exists between differentiation and undifferentiation in the art process. The scientist consciously fights entropy, the artist unconsciously collaborates with it. The fall of Humpty Dumpty is a good example of poetic entropy.²³⁵

Smithson’s link to Humpty Dumpty, although typically not referenced, came from an essay “Demons, Poetry and Life: A Thermodynamic View” by Stanley Angrist and

²³² Stanley W Angrist & Loren G. Hepler, *Order and Chaos: Laws of Energy and Entropy*, (New York, Basic Books, 1967), 194.

²³³ Freemantle, Michael, *Chemistry in Action*, 2nd Edition, (London, Macmillan, 1995), 165.

²³⁴ Smithson, “New Monuments,” 26.

²³⁵ This fragment is located in one of two folders entitled, “See the Monuments of Passaic New Jersey” which the AAA date from 1970, RSNHP. Flam dates text from the second folder as 1967, which is much more likely for this extract also, considering the content of the fragment and the date of publication of the English edition of Anton Ehrenzweig’s book, *The Hidden Order of Art: A Study in the Psychology of Artistic Imagination*, (Berkeley: University of California Press, 1967).

Loren Hepler (a chemist and an engineer). The essay, which includes the illustration above [Figure 61], discusses the nursery rhyme as a metaphor for the second law, concluding that, “Experiences of catastrophic irreversibility such as those described in the ancient English rhyme form part of man’s universal heritage of trouble.”²³⁶ This example re-emerges several times in his interview with Sky. Smithson seldom annotated his books, as noted, however he underlined one sentence from this text, “Entropy is a measure of the quality of energy.”²³⁷ The article discusses how entropy is imbedded in key literary works and how systems of order, such as language, can be analysed in terms of their entropic value.²³⁸

Most interesting however, is Angrist’s and Hepler’s discussion about the possibility of life as, “the temporary reversal of a universal trend toward maximum disorder.”²³⁹ The essay centres on the debate about the second law of thermodynamics being incomplete because organic life defies the progress towards disorder during its life span. They quote physicist Erwin Schrödinger (1887-1961) but offer little insight into Schrödinger’s part in this debate. Schrödinger gave a series of lectures at Trinity College Dublin in 1943 which subsequently formed his book, *What is Life?*²⁴⁰ Schrödinger clarified that, contrary to the second law of thermodynamics, the entropy

²³⁶ Angrist, *Order and Chaos*, 193. Smithson had a copy of this in his library and the chapter in question is largely concerned with negentropy. The book chapter, “Demons, Poetry and Life: A Thermodynamic View”, was also published in *Texas Quarterly*, (Spring 1967): 26-35. This journal was part of Smithson’s library holdings. Available via AAA. Also See Smithson and Sky, “Entropy Made Visible”, 301-9.

²³⁷ Angrist, “Demons, Poetry and Life”, 27.

²³⁸ The authors, Angrist and Hepler also wrote *Order and Chaos: Laws of Energy and Entropy* which was published in 1967. Written by a chemist and an engineer, the title was described as an excellent summary of the laws of thermodynamics written in a witty tone. See Mark W. Zemansky, “Book Review” in *The Physics Teacher*, Volume 6, /issue 1, (1968): 46.

²³⁹ Angrist, “Demons, Poetry and Life”, 31.

²⁴⁰ Ewin Schrödinger, *What is Life?* (Cambridge, Cambridge University Press, 1944).

of living organisms is arrested by *life*. He proposed that this was due to something he called negative entropy (or later negentropy):²⁴¹

How would we express in terms of the statistical theory the marvellous faculty of a living organism, by which it delays the decay into thermodynamical equilibrium (death)? We said before: 'It feeds upon negative entropy', attracting, as it were, a stream of negative entropy upon itself, to compensate the entropy increase it produces by living and thus to maintain itself on a stationary and fairly low entropy level.²⁴²

Looking again at Smithson's 1967 note, the only element left unpicked is his reference to Ehrenzweig whose book *The Hidden Order of Art* makes an inexplicit reference to Schrödinger's negative entropy. The closing paragraph is pertinent to this context.²⁴³

It reads,

Dedifferentiation (entropy) is part of life's tendency to return to the inorganic state. According to Schrödinger, organic matter is characterized by a highly differentiated and stable molecular organisation resisting the entropy of inorganic matter, while inorganic molecular structure tends to be uniform and undifferentiated. The ego, in striving towards unconscious undifferentiation, aims at the uniform state of inorganic dead matter. Death is undifferentiation.²⁴⁴

The beginning of this chapter discussed how, in accordance with Kubler's ideas, Smithson avoided biological metaphors, such as birth and death, as a means of evaluating art. Instead Smithson (and Kubler) promoted a scientific framework for analysis.²⁴⁵ The second law of thermodynamics, together with the concept of

²⁴¹ By 1956 'negative entropy' was shortened to negentropy by the French physicist Leon Brillouin in the context of information theory. Leon Brillouin, *Science and Information Theory*, (New York, Dover Publications, 1962).

²⁴² Schrödinger, *What is Life?* 73.

²⁴³ Smithson's 1973 library catalogue printed in *Robert Smithson* does not list this book, however Reynolds's catalogue does. It is unclear where this copy came from, but it is unlikely to have been Smithson's copy, or at least, not his only copy because the Reynolds lists an edition from 1971, after Smithson wrote this fragment. Ehrenzweig's book, *The Hidden order of Art* was first published in English in 1967, therefore all things considered it seems reasonable that this fragment dates from then. Copy used here is Anton Ehrenzweig's book, *The Hidden Order of Art*, (London, Paladin, 1970).

²⁴⁴ Ehrenzweig, *The Hidden Order of Art*, 306. It is worth clarifying the meaning of these terms. Undifferentiation describes uniformity or lack of variation. It can be attributed to primitive states. In contrast, dedifferentiation is a process where there is a loss of structural or other elements that define a condition or object. The process of dedifferentiation or entropy is a gradual reduction of difference until an ultimate condition of Ehrenzweig's last statement recalls the work of Edvard Munch (1863-1944) from chapter two. If undifferentiation is defined by inorganic matter then crystals with their repeating molecular structures are the perfect example. Death is a transition to this crystalline state. Munch, as we have seen, explored this point in his two lithographs *In the Land of Crystal* (1897) and *Crystallization* (1928).

²⁴⁵ See draft response of the 1966 "Response to Questionnaire from Irving Sandler" RSNHP.

negentropy provided a systematic approach which encompasses both organic and inorganic matter.

Smithson's 1971 unpublished essay "Art through the Camera's Eye," appeared in Tsai and was later reprinted verbatim in Flam. Here, Smithson made a direct reference to Worringer but also makes oblique references to his understanding of the laws of thermodynamics: "The primitive dread of nature that Wilhelm Worringer put forth as the root of abstraction has devolved into what David Antin called 'affluent spirituality'".²⁴⁶ The next section of the text reads;

The patterns of [abstraction] order things [in] the world [into] countless frameworks that counter nature's encroachments. We live in frameworks and are surrounded by frames of reference, yet nature dismantles them and returns them to a state where they no longer have integrity.²⁴⁷

However, by referring back to Smithson's original hand-written draft, I uncovered an error in Tsai's transcription. The correction changes Smithson's emphasis and exposes the link between Worringer, the crystalline and various entropic conditions.

Clarifying this is key to understanding his interests in 1971 that are pertinent to *Spiral Jetty*. Smithson wrote,

The patterns of abstract order brings into the world countless frameworks that counter nature's encroachments. We live in frameworks and are surrounded by frames of reference, yet nature dismantles them and returns them to a state where they no longer can be reintegrated.²⁴⁸

The "patterns of abstract order" are Worringer's "crystalline-geometric."²⁴⁹ These particular frameworks, or systems, are not subject to entropy in accordance with the third law of thermodynamics. As a reminder, the third law states, "that the entropy of

²⁴⁶ Smithson, *Collected Writings*, 375.

²⁴⁷ *Ibid.*, 374-5.

²⁴⁸ RSNHP, AAA, location 2:63

²⁴⁹ Worringer, *A&E*, 44.

a perfect ionic crystal at absolute zero, 0 K, is zero".²⁵⁰ In lay terms, this means that certain crystals, under certain conditions have zero entropy (they do not undergo dedifferentiation). Smithson made his understanding of this clear when he stated that they counter entropy or as he termed it, "nature's encroachments." In addition to this, the framework we live in (life) is subject to negentropy; entropy is arrested by the life force. Yet we are surrounded by other "frames of reference" (systems) which are "dismantled by nature" or which are subject to entropy.²⁵¹

Smithson work after 1965 explored the general concept of entropy. His archive exposes clues which point towards his interest in Schrödinger's negentropy dating from 1967. The quote above, together with the Müller interview shows the artist pondering the connection between systems and entropic conditions. The rest of this chapter will read *Spiral Jetty* as an artificial set of systems which work to create a visualisation of "different entropies" namely: negentropy, zero entropy, and increased entropy.²⁵² In order to succeed in this aim, Smithson had to take a particular approach to the project that utilised the environmental conditions of its site.

²⁵⁰ Freemantle, *Chemistry*, 165.

²⁵¹ Smithson's essay continues, "Today's artist is beginning to perceive this process of disintegrating frameworks as a highly developed condition. Claude-Levi-Strauss has suggested we develop a new discipline called 'Entropology'." See RSNHP, AAA, location 2:63 and Smithson, *Collected Writings*, 375. Smithson described his understanding of Levi-Strauss's term as "...as a study that devotes itself to the process of disintegration in highly developed structures." See Smithson and Müller, "...The Earth", 257.

²⁵² *Ibid.*, 256.

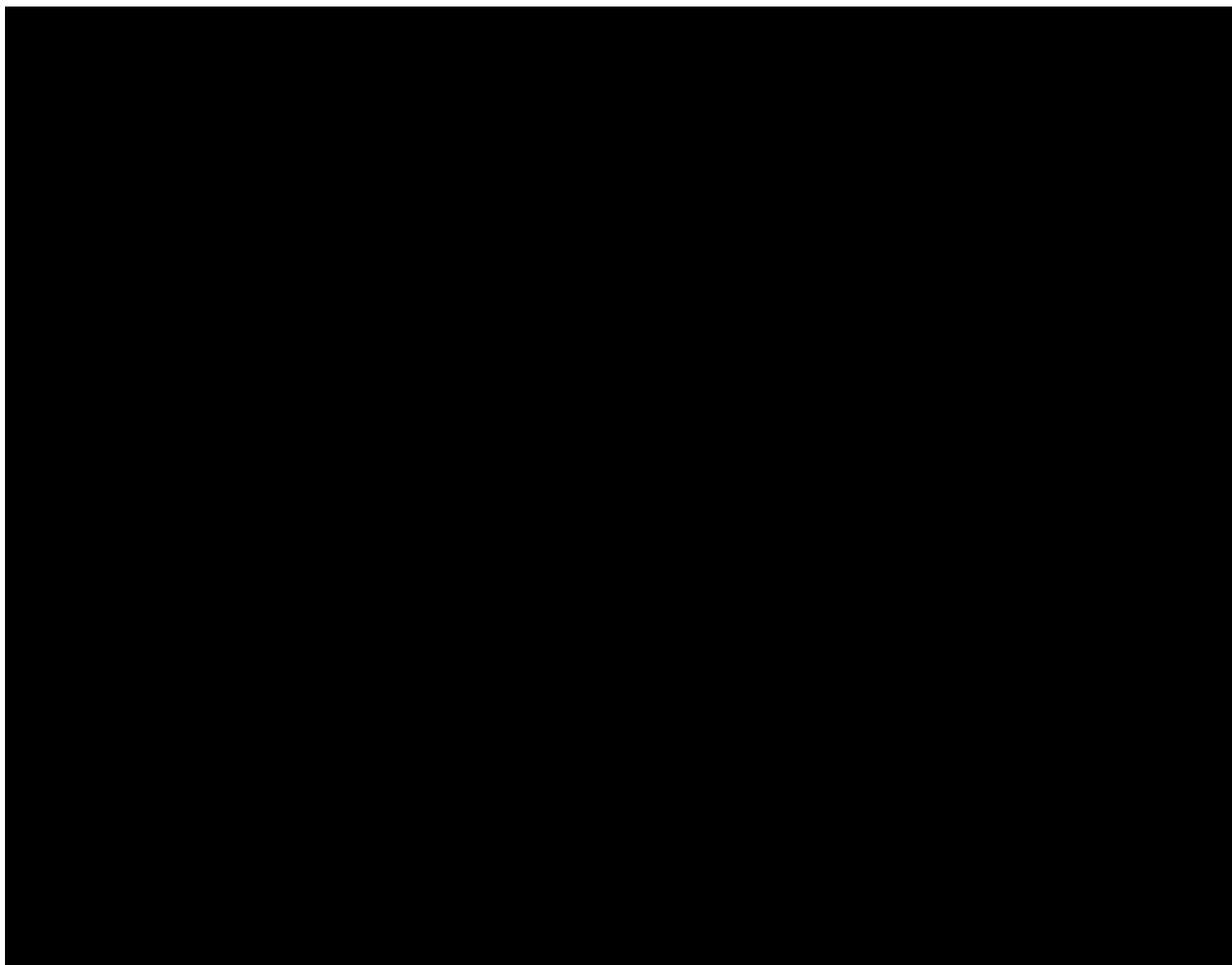


Figure 62, Building of the *Spiral Jetty*, April 1970²⁵³

The construction of *Spiral Jetty* defied traditional artistic boundaries; boundaries which Smithson actively questioned. His experience at TAMS equipped him with the practical means to do this. When building a structure in the landscape, Smithson had to consider aspects not usually the domain of the artist, such as site access for construction vehicles and the physical process of constructing the spiral. His working drawings show how he included temporary access roads for each section of the coil. Bob Philips, the *Spiral Jetty's* main contractor remarked that he was impressed that Smithson skated out the curves of spiral himself without specialized engineering equipment.²⁵⁴

²⁵³ Building of the *Spiral Jetty*, 1970 / Gianfranco Gorgoni, photographer. RSNHP, 1905-1987, bulk 1952-1987. Copyrighted image. Used here with permission of AAA. Additional permission needed for publication.

²⁵⁴ Bob Philips, "Building the Jetty" in Cooke, *Spiral Jetty*, 191.

In addition to this, Smithson also needed to respond to the geological condition of the Great Salt Lake which has particular characteristics. He later described the process to two students, “you have to think about weather conditions, and what the site will be, rather than what it is. So it’s not a matter of ‘finish’, it’s a matter of ongoing-ness, but this ongoing-ness is very substantial.”²⁵⁵ To achieve a required level of understanding he researched the site and its history, including information about water levels in the Great Salt Lake. Video evidence from the film *Spiral Jetty* shows the finished level of the basalt rocks elevated scarcely a few feet above water level. Based on available data between 1847 and 1988 the average water level was 4200 feet. Yet, Smithson choose to construct the *Spiral Jetty* so that it was only visible when water levels fell below 4,197.8 feet above sea level.²⁵⁶ This suggests that he intended *Spiral Jetty* to be under the level of the water. However, Smithson’s research would also have highlighted the possibility of extreme dry conditions in the Great Salt Lake when water levels were very low. One such event happened in 1963. Smithson had the means to “interact with the climate and its changes” to explore different entropies.²⁵⁷ To achieve this he also drew on his knowledge of crystalline structures, thermodynamics, geology and scale.

The notion of the landscape as ongoing is not unique to *Spiral Jetty*. It also occurs as a theme in Smithson’s last published essay, “Frederick Law Olmsted and the

²⁵⁵ Robert Smithson, transcript of interview with two students, 1973, RSNHP, location 2:56, 2.

²⁵⁶ William F. Case, “The Return of Spiral Jetty; Pink Water, White Salt Crystals, Black Boulders” in *Survey Notes*, v. 35 no. 1, (January 2003): 10.

²⁵⁷ See Smithson and Müller, “...The Earth”, 256.

Dialectical Landscape.”²⁵⁸ The text centred around the landscape architect Olmstead who was responsible for the design of Central Park in New York. First published in the February 1973 edition of *Artforum*, the essay revisited interests dating from 1966, and combined them with a critical take on contemporary art criticism, strip mining and, at times, the practice of certain artists.²⁵⁹ Smithson opened with a discussion on Edmund Burke’s (1729-1797) *The Sublime and Beautiful* (1909-14).²⁶⁰ Olmstead, Smithson argued, provided the picturesque as a “synthesis” of these polar opposite conditions.²⁶¹ To do so, Olmstead needed to utilise “chance and change in the material order of nature.”²⁶² “A park,” Smithson continues, “can no longer be seen as a ‘thing-in-itself,’ but rather as a process of ongoing relationships existing in a physical region...”²⁶³ Smithson makes reference to an exhibition which took place at the Whitney Museum of American Art which showcased the changing nature of the park through maps, photographs and other documents. Unlike the prevailing attitude towards *Spiral Jetty* as static object, Smithson notes how the catalogue for the show

²⁵⁸ Reprinted in Smithson, *Collected Writings*, 157-71. Although restricted here to a discussion about eighteenth century aesthetics, Smithson suggested that Burke’s and Olmstead’s views create a dialectic which combats modernist formalism. The essay continues by discussing the influence of Worringer via T. E. Hulme (1883-1917). Going back to the primary source, Smithson summarised Worringer, “Worringer locates his ‘concept’ of abstraction outside the sensuous anthropomorphic pantheism of Renaissance humanism. ‘The primal artistic impulse,’ says Worringer, ‘has nothing to do with the renderings of nature.’” Smithson continued, “Yet, throughout his book he [Worringer] refers to ‘crystalline forms of inanimate matter.’ Geometry strikes me as a ‘rendering’ of inanimate matter. What are the lattices and grids of pure abstraction, if not renderings and representations of a reduced order of nature?” According to this logic, geometric works remain representational in some way and are, by definition, not abstract. Worringer described abstract art as excluding representations of space (no depth of field) and approximating the crystalline to reject time. Worringer’s ‘abstract’ artists were not concerned with representation, realism or any form of imitation. They were driven by an innate desire, dating back to the earliest peoples, for flat, geometric design. Smithson was reading Worringer through the lens of twentieth century art where these elements were some of the defining characteristics of abstraction. Quotes from Robert Smithson, “Frederick Law Olmsted and the Dialectical Landscape” in Smithson, *Collected Writings*, 162.

²⁵⁹ In terms of the essay’s form, there is similarity between the second half of this essay and “A tour of the Monuments of Passaic” where both are described as a journey, a technique that Smithson favoured. In addition, various points of interest in the park are described using proper nouns suggesting them as monuments-in-themselves, therefore juxtaposing Smithson’s treatment of them as relational objects. Overall however, although it is not explicit in the text, the idea of entropy within these monuments and therefore the park as a whole pervades. The essay concludes with a possible idea for a dislocation project that would be documented using film in a similar way to *Spiral Jetty* (1970). Smithson’s interest in strip mines corresponds to proposals he had around this time for reclaiming former mining areas.

²⁶⁰ Smithson, “Frederick Law Olmsted”, 157-71.

²⁶¹ *Ibid.*, 159.

²⁶² *Ibid.*

²⁶³ *Ibid.*, 160.

makes “one aware of the on-going development of Central Park as a dialectical landscape.”²⁶⁴

Negentropy, and the suggestion of zero entropy

Smithson researched the Great Salt Lake area both physically and historically; he met with land officials, sourced contractors and oversaw construction on site. The whole process from initial research, negotiations to completion took approximately two and a half months, with two weeks of actual construction.²⁶⁵ The Great Salt Lake is currently divided into northern and southern parts by the Union Pacific Railroad causeway built across in 1959, to replace an earlier timber construction dating from 1902. Water levels on the southern portion of the lake have been monitored since 1847 and since 1966 northern levels have also been recorded. The southern part of the lake has a fresh water supply from three adjacent rivers, while the northern section does not.²⁶⁶ As a result, there can be a level differential between the two halves of anywhere between six and forty-two inches. Between 1966 and 1970 this difference was typically six inches but always less than 12 inches.²⁶⁷ The water level in the lake reached a record low in 1963 to 4191.35 feet above sea level.²⁶⁸ Although this was based on information from a gauge located in the southern portion of the lake, Smithson was aware that the northern level, where he located the *Jetty*, was possibly lower still, and based on available data, he may have estimated it to be six inches less. In April 1966, a new gauge started recording water level data in the northern part of the lake.

²⁶⁴ Ibid.

²⁶⁵ Smithson, “Q&A session”, RSNHP, 4.

²⁶⁶ <http://ut.water.usgs.gov/greatsaltlake/salinity/> Accessed October, 12, 2016.

²⁶⁷ Facts based on data provided by the US Geological Survey (USGS)

²⁶⁸ See <https://www.usgs.gov/news/usgs-and-utah-department-natural-resources-announce-new-record-low-elevation-great-salt-lakes> Accessed October, 11, 2016. A new record low was recorded in 2016.

In April 1970, when the *Spiral Jetty* was constructed, the water level of the northern portion had risen by approximately 54 inches from the 1963 low.²⁶⁹ Yet Smithson chose to construct the jetty merely 27 inches above this level.²⁷⁰ If the northern lake continued to rise at the 1966-1970 rate, Smithson knew his sculpture would be under water within six years. In fact, water levels rose so quickly that the earthwork was submerged briefly the following year, and then long term from 1972. According to Hobbs, Holt claimed that Smithson believed the water level would not increase much beyond the 1970 level, but this seems unlikely given data available to Smithson. Hobbs also mentions that Smithson once said he would build the jetty fifteen feet higher if the lake covered it.²⁷¹ This statement seems simultaneously specific and arbitrary, however it corresponds exactly to the highest recorded levels from the 1870s, further suggesting that Smithson had done his research.

²⁶⁹ Calculated from the adding six inches to the recorded low of 4191.35 feet above sea level taken in 1963 from the gauge in the southern portion of the lake.

²⁷⁰ On April 01, 1970 the water level recorded on the northern part of the lake was 4195.40 feet, based on data provided by the US Geological Survey (USGS)

²⁷¹ Hobbs, *Sculpture*, 196.

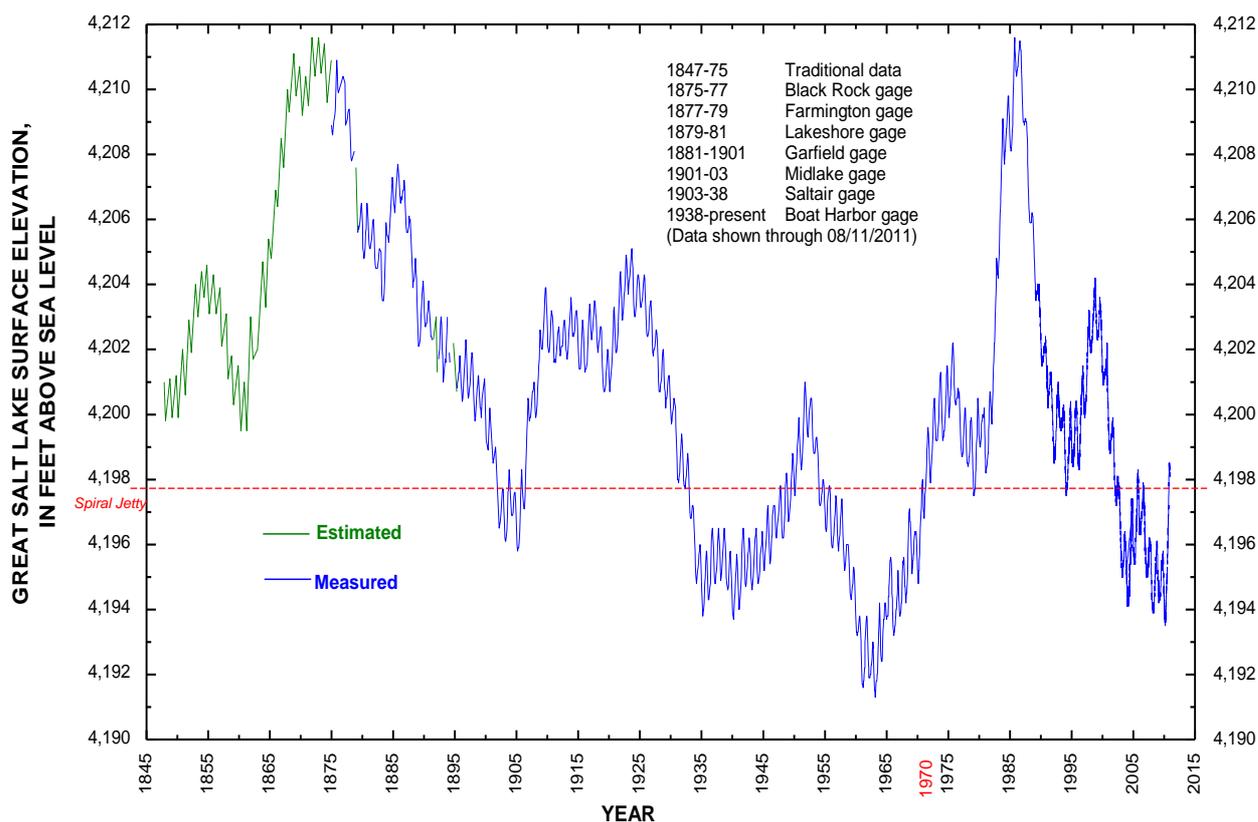


Figure 63, U.S. Geological Survey graph with added information showing the level of *Spiral Jetty*, relative to fluctuating water levels.²⁷²

Smithson referred to his knowledge of changing water levels in a note to *Artforum's* Phil Leider in September 1971. He told Leider, "Just returned from Utah. The jetty was underwater during June and July. In Aug. [August] the water evaporated leaving the jetty totally encrusted with crystals. The lake was the highest level in 17 years, but the jetty showed on [no] signs of erosions since it is almost solid rock."²⁷³ The graph [Figure 63] summarises fluctuations in water levels for the southern part of the lake from 1847 until 2015. Looking at the period up until 1970, and plotting *Spiral Jetty* on this graph, Smithson's comment to Leider is accurate, indicating, again, that he was aware of the data. Consequently, it is clear that Smithson intended the *Jetty* to be covered the majority of the time. This was specifically to facilitate the growth of salt

²⁷² Data provided by US Geological Survey in correspondence with author.

²⁷³ Note from Smithson to Phil Leider, dated September 9, 1971, RSNHP, location B1:24.

crystals on the work. While trying to secure a special use lease for the land in March 1970, Smithson told a Salt Lake official, “the purpose of placing the rock on the mud flat area will be to induce salt crystals on the rock and gravel as incrustations that will develop over a period of time.”²⁷⁴ This intention was seconded by the final sequence of the film where he repeats the chorus, “Mud, Salt Crystals, Rocks, Water” as the camera pans out and the helicopter rotates overhead. At the time of construction there were no salt crystals on the sculpture, but he foresaw their future development.²⁷⁵

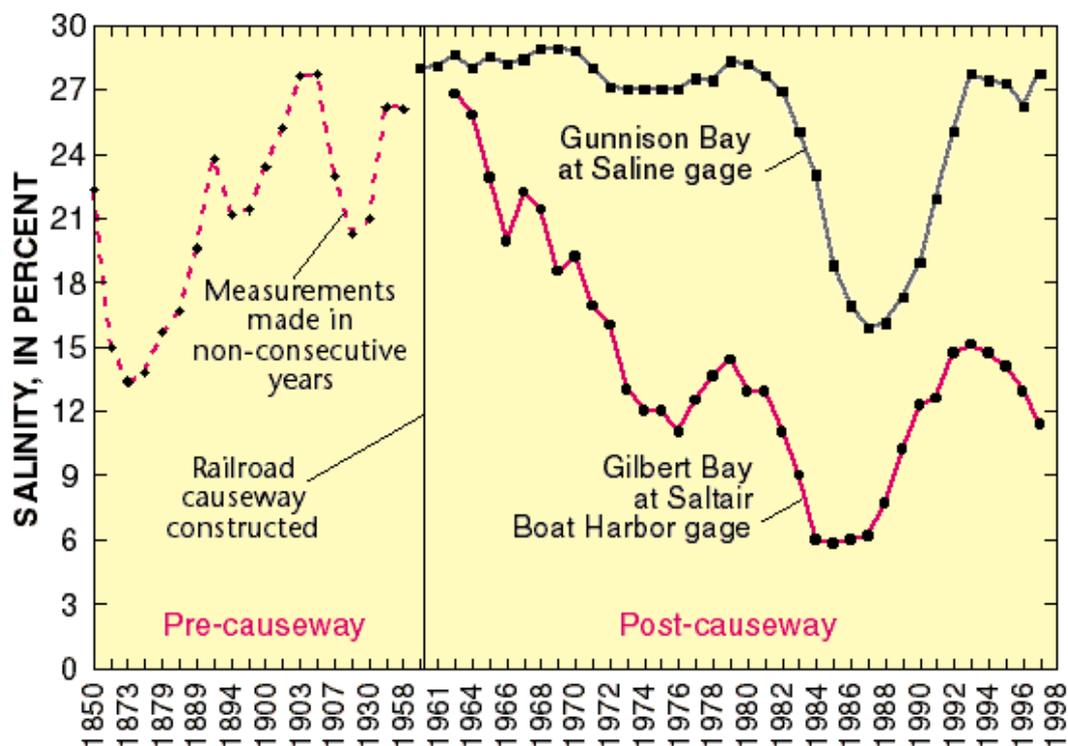


Figure 64, Graph indicating the salinity levels of the northern (Gunnison Bay) and southern portion (Gilbert Bay) of the Great Salt Lake.²⁷⁶

²⁷⁴ Letter from Robert Smithson to Charles Hansen, Director, Division of State Lands, Salt Lake City dated March 10, 1970, RSNHP, location 2:21

²⁷⁵ An unrealised later project, *Salton Sea Project* (1972) was planned for a California lake that was saline due to man's interventions. Smithson's earthwork was intended to reclaim the land through art. His sketch shows a sort of ying-yang form with one curve projecting into the water. Interestingly, it also highlights the edges of the sculpture encrusted with salt crystals. RSNHP, AAA, location 4:15.

²⁷⁶ Data provided by US Geological Survey. Graph from <http://ut.water.usgs.gov/greatsaltlake/salinity/images/saltplot2.gif> Accessed October, 12, 2016.

The dip in salinity around 1984 is a result of a 300 foot breach to the railway bridge which allowed fresh water from the south to mix with northern water. See Robert Baskin, "Earthshots 1972-2016: Satellite Images of Environmental Change" available at https://www.usgs.gov/centers/ut-water/science/earthshots-1972-2016-satellite-images-environmental-change?qt-science_center_objects=0#qt-science_center_objects Accessed October 24, 2019.

Aside from the disparity in water levels, the railway causeway also resulted in a saline value differential between the two areas, clearly shown in the graph above [Figure 64]. Smithson chose to locate the *Spiral Jetty* in the saltier area for good reason. Writing in 2003, the geologist William F. Case said,

White salt crystals encrust almost any solid object in contact with north-arm water. The black basalt boulders Smithson took from the beach to construct *Spiral Jetty* are no exception; they are now covered with salt crystals. The basalt boulders are from local volcanic eruptions during Pliocene time, about 5 to 2 million years ago....Throughout the lake-level fluctuations *Spiral Jetty* survived wave erosion; the hard salt crust probably cemented the boulders together and provided a protective layer on the jetty surface.²⁷⁷

The saline value of the northern lake is at or near saturation point the majority of the time, so “salt crystals precipitate on the surface of the water, in the water itself (eventually settling to the bottom), and on any hard surface,” such as on the *Spiral Jetty*’s basalt rocks.²⁷⁸ Roberts was partially incorrect when she said that “the sheltering arms of the spiral would increase the concentration of brine in the surrounding water” because the northern part of the lake is almost always at saturation point anyway.²⁷⁹ Therefore as long as the *Spiral Jetty* was submerged salt crystals would continue to accumulate on it.²⁸⁰

²⁷⁷ Case, “Return of Spiral Jetty”, 10.

²⁷⁸ Quote from email correspondence dated October 13, 2016 between author and Robert Baskin, Supervisory Hydrologist, US Geological Survey, Utah.

²⁷⁹ Roberts, “Taste of Time”, 97.

²⁸⁰ Details from email correspondence dated October 13, 2016 between author and Robert Baskin.



Figure 65, Robert Smithson, *Spiral Jetty* (1970), photographed circa 2003²⁸¹

To summarise, Smithson located the earthwork in the more saline part of the lake, at an elevation to ensure its submersion, to facilitate the growth of crystals. Left alone, the saline would remain in an undifferentiated state (the salt and water molecules are mixed uniformly), subject to normal entropy, however the *Jetty* altered the system's equilibrium. When the *Jetty* interacted with the saline, it created a sort of life force, to demonstrate negentropy. Crystals precipitated on the *Jetty* are differentiated from the saline, creating order from disorder and opposing entropic forces. Smithson drew on his knowledge of thermodynamics to also suggest zero entropy (which cannot be achieved since it is impossible to reach zero kelvin). The third law describes ionic crystals as having zero entropy at zero kelvin. It is no surprise to learn that common salt (NaCl), such as that found in the Great Salt Lake, is an ionic crystal. On a larger scale, the *Jetty's* crystal crust created a patina protecting its rocks from currents in the

²⁸¹ Image from Collection of Dia Art Foundation, New York. Photo: Martin Hogue. Available online at <https://www.westminstercollege.edu/campus-life/centers-and-institutes/great-salt-lake-institute/spiral-jetty> Accessed October 14, 2016. Requested copyright DIA December 15, 2016; image is not in DIA collection so would need to find alternative for any publication.

lake and therefore the *Jetty* itself from entropy or dedifferentiation [Figure 65]. At that moment, the *Spiral Jetty* has zero entropy.

Increased Entropy



Figure 66, Robert Smithson, *Spiral Jetty* (1970), photographed by author, October 2016²⁸²

So far, this chapter has interpreted *Spiral Jetty* as a living sculpture in its submerged condition. To complete the analysis, its condition must also be considered during low water levels, particularly during 2016. This chapter will close by speculating about the future of the work as a consequence recent changing geological conditions. In 1970, when the *Spiral Jetty* was constructed, the water level in the Great Salt Lake was still recovering from the 1963 record low. Indeed, the level would continue to rise until 1976 when it took a small dip before steadily increasing to record high levels in 1986.²⁸³ Since then there has been a predominately downward trajectory with a new

²⁸² Requested copyright permission from DACS December 21, 2016. Response to confirm no permission required for PhD, but permission needed for publication and I would need to contact them with specific details of journal etc.

²⁸³ Morrisette, Peter M, "The Rising Level of the Great Salt Lake: Impacts and Adjustments" in *American Metrological Society*, Vol. 69, No. 9, (September 1988): 1034.

low in 2016 recorded at more than eight foot below the level of the sculpture.²⁸⁴ Years of little rainfall left the earthwork bereft of water with the shore about a quarter mile away [Figure 66]. The impact of this on the experience and condition of the *Spiral Jetty* was substantial.



Figure 67, Layered formations jutting from the lake bed near the *Spiral Jetty*.

Smithson rooted the *Spiral Jetty* in the Great Salt Lake knowing that the conditions would vary. He had already explored the idea of weathering or ongoing-ness in *Partially Buried Woodshed* from January of the same year. In a statement issued to Kent State University on the conditions for the donation of the work, Smithson specified, “The entire work of art is subject to weathering and should be considered part of the work.”²⁸⁵ *Spiral Jetty* was submerged for 30 years soon after its completion and when it reemerged in 2003, Roberts published “The Taste of Time: Salt and Spiral Jetty” in the catalogue to accompany the seminal 2004 retrospective exhibition on the artist. The essay was accompanied by spectacular imagery of glistening all-white

²⁸⁴ In October 2016, the water level in the northern lake stood at approximately 4189 foot above sea level. The *Spiral Jetty* surface level stands at 4197.8 foot. For real time information about water levels see https://nwis.waterdata.usgs.gov/ut/nwis/uv?cb_all_on&cb_62614_on&format=gif_default&site_no=10010100&period=&begin_date=2016-10-01&end_date=2017-07-04 Accessed July 04, 2017.

²⁸⁵ See, RSNHP, location, 5:21

Spiral Jetty protruding from the pink lake. This description could not be further from the 2016 reality of the *Spiral Jetty* [Figure 71]. It was returned to its naked black basalt, having been stripped of its crystal crown years before. In places the *Jetty* was scarcely above ground, but it remained distinguished from its sandy bed by its black rocks. Although widespread along the edges of the lake, there were few other displaced basalt rocks on the lake bed. The only other growths which jut out of the sand were brittle off-white layered formations, comprised of extruded mud or carbonate deposits [Figure 67].

The Dia Art Foundation, custodians for the earthwork, have committed to taking aerial photographs of the sculpture for a number of years. The images above show how it has weathered since Roberts essay in 2003. The photographs taken in the autumn of 2016 depict the spiral barely distinguished from its surroundings; in places, it seems to merge with the lake bed. It is in the process of dedifferentiation.



Figure 68, *Spiral Jetty*, Fall 2005²⁸⁶



Figure 69, *Spiral Jetty*, Fall 2016²⁸⁷



Figure 70, *Spiral Jetty* (1970), photographed circa 2003²⁸⁸



Figure 71, *Spiral Jetty* (1970), photographed by author, October 2016²⁸⁹



Figure 72, Virginia Dwan on the *Spiral Jetty*, circa 1970²⁹⁰



Figure 73, *Spiral Jetty* (1970) photographed by author, October 2016²⁹¹

²⁸⁶ Image from <http://www.diaart.org/collection/spiraljettyaerials> Accessed October 14, 2016. Additional permission required from DIA to publish this image. © Aero-graphics, Salt Lake City

²⁸⁷ Ibid.

²⁸⁸ Image from Collection of Dia Art Foundation, New York. Photo: Martin Hogue. Accessed October 14, 2016. Dia do not hold copyright for this image; additional permissions required for publication.

²⁸⁹ Requested permission from DACS 21.12.16. Response to confirm no permission required for PhD, but permission needed for publication.

²⁹⁰ Image from http://www.nytimes.com/2016/09/18/arts/design/virginia-dwan-a-jet-age-medici-gets-her-due.html?_r=0 Accessed November, 21, 2016.

²⁹¹ Requested permission from DACS December 21, 2016. Response to confirm no permission required for PhD, but permission needed for publication.

Furthermore, as the images above prove, the rocks of the *Spiral Jetty* were now in-filled with sand; it is being reabsorbed into the lake bed. It is no longer composed of basalt and mud as specified by Smithson in the film and essay. Lake bed levels are not recorded therefore, unlike the water level, Smithson could not have foreseen their rate of increase. He would not have known that the Great Salt Lake would reclaim the area over a long period, although he may have anticipated this to be the case as part of the weathering process. One may recall his comment to Müller; “Geology has its own kind of entropy, that has to do with sediment mixtures. Sediment plays a part in my work.”²⁹² Bob Baskin, a geologist from the U.S Geological Survey, provided me with some insight into why it appeared that the level of sand or sediment in and around *Spiral Jetty* has increased. Some of this action may have occurred during high water and others since the earthwork’s exposure. One reason is that, whilst submerged,

The finer-grained materials mixed in with the basalt blocks (in the as-built Spiral) could have been washed away by wave/storm action causing a loss of support for the surrounding blocks and allowing the individual blocks to settle into a different, less exposed configuration. Those sediments could have been redeposited between and outside of the Jetty. Wave action also could have caused erosion along the edges of the basalt blocks, providing space for the blocks to settle into the recently eroded space.²⁹³

Additionally, currents carrying sand or other particles may have been interrupted by the rocks of the Jetty, causing those particles to be deposited amongst and around the basalt rocks. These deposits would then remain sheltered by *Spiral Jetty* from further wave action.²⁹⁴

²⁹² Smithson and Müller, “...The Earth”, 256.

²⁹³ Details from email correspondence dated October 12, 2016 between author and Baskin, USGS, Utah.

²⁹⁴ Ibid.

Times of drought have created two possible scenarios leading to a disappearing *Spiral Jetty*. Loss of moisture may have resulted in a contraction of the mud below the sculpture, causing it to, in effect, sink into the mud.²⁹⁵ Whilst exposed,

Wind-blown sand and salt could be piling up along the edges of the Jetty due to the disruption of turbulent airflow near the lakebed. The Jetty would interrupt saltating particles sourced from the lakebed and shoreline sand deposits. The sediments could infill between the basalt blocks, within the spiral itself, as well as along the exterior of the Jetty if the wind was strong enough. There may be deeper deposits of sand and salt on one side of the Jetty if this was the cause of the "increased sand levels" and there was a prevailing wind direction involved. In looking at some recent pictures, it appears that here is a more extensive deposit of sand on the east side of the Jetty.²⁹⁶



Figure 74, Decaying American White Pelicans near the *Spiral Jetty*, author, October 2016



Figure 75, Prehistoric looking remains of American White Pelicans near the *Spiral Jetty*, author, October 2016

Consequential effects of low water have altered the context around the Jetty, and now it sits in a site which has assumed a prehistoric air. Smithson's description of the lake in "The Spiral Jetty" suggests this, particularly dedifferentiation affecting manmade objects, but the reality is dedifferentiation of the natural environment too. He said, "An expanse of salt flats bordered the lake, and caught in its sediments were countless bits of old wreckage. Old piers were left high and dry. The mere sight of the trapped fragments of junk and waste transported one into a world of modern prehistory."²⁹⁷

²⁹⁵ Ibid.

²⁹⁶ Ibid.

²⁹⁷ Smithson, "The Spiral Jetty", 145-6.

And in conclusion, “This site gave evidence of a succession of man-made systems mired in abandoned hopes.”²⁹⁸ One cannot visit the site without walking across the dead landscape to the water’s edge. The low water exposes astonishing salt flats, solid underfoot. Unsure of whether they are advancing or receding they turn the landscape into a crystal scene reminding me of Ballard’s *Crystal World*.²⁹⁹ Their edges resemble borders on a map, reminding the Smithsonian pilgrim of his *nonsite* documents. The pink water is fringed by salty pure white foam. At times it breaks away and rolls along the flats like the tumbleweed common in the adjacent landscape. The combination of the salt flats, the foam, the pink water and the backdrop of the mountains makes the landscape seem from another place or time. In fact, this is not too far from the truth, basalt is a rock commonly found on the moon and on Mars. This strange entropic aura is increased by the remains of large birds which lie decomposing, as if sacrificed, across the plane. They are American white pelicans, one of the largest birds in North America, who are dying as a consequence of the shrinking lake. The Smithsonian scholar, familiar with the film on the earthwork, and particularly the scenes of the dinosaurs from the National History Museum, may make the connection between these birds and winged dinosaurs of the previous geological era. The decaying carcasses, skeletal remains and large skulls of these birds create a post-apocalyptic vision. In October 2016, the *Spiral Jetty* was in an advanced stage of entropy and this may increase exponentially.

²⁹⁸ Ibid., 146.

²⁹⁹ J.G Ballard, *The Crystal World*, first published in 1966. Smithsonian read and made several references to Ballard’s work.



Figure 76, *Spiral Jetty*, Spring 2017 © Aero-graphics, Salt Lake City³⁰⁰

* * *

This chapter focused on the work of Robert Smithson to examine his interpretation and development of the crystalline motif. It traced Smithson's wall sculptures and early written work where he made reference to Worringer's ideas. As Smithson's knowledge base, skills and interests expanded, he began to deviate from past influences. This is evidenced in his development beyond traditional artistic categories of drawing, painting and sculpture. Smithson was not the only pioneer of the period, of course, but he did create categories which were exclusive to him, such as the *nonsite*. As shown, these marked the point where he began to exploit the crystalline motif. Smithson drew on his lifelong interest in natural sciences to inform his work, and this, in particular, allowed him to manipulate the inherited motif towards his own

³⁰⁰ Image from <http://www.diaart.org/collection/spiraljettyaerials> Accessed July 04, 2017.

ends. The earthwork *Spiral Jetty* provided Smithson with the opportunity to use crystals both metaphorically and physically to explore entropic conditions. He made his intentions clear to Müller when he said, “Some day I would like to compile all the different entropies.”³⁰¹ The passage of time, coupled with geological conditions, has helped to fulfil this aim.

³⁰¹ Smithson and Müller, “...The Earth”, 256.

Chapter Four - Josiah McElheny & Alternative Histories

*I'm very interested in whether we could take abstraction and imagine a new world that's built out of the fragments of an explosion, or out of a fracturing or as a set of infinite possibilities – as opposed to a summing up, clarifying or simplifying everything.*¹

Josiah McElheny (b.1966) is a contemporary New York based artist born in Boston in 1966. He has had solo exhibitions at major institutions in Europe and America and is included in the permanent collection of several more.² The architectural historian, Spyros Papapetros, defined McElheny's work as generally restaging "seminal modernist projects by using the visual language and vocabulary of important figures from twentieth-century design culture..."³ In doing so, McElheny creates a hypothetical history of modernism; a parallel modern universe that lags roughly a century behind the familiar version. Helen Molesworth eloquently described the experience of this work, noting that, "you walk alongside him on this modernist path not taken."⁴ McElheny's scenarios allow for reinterpretation using an invented, pseudo-historical context. Yet, it would be unfair to say that his work is restricted to borrowing from earlier generations. It is far more complex than that, although there is always an historical aspect. Generally, but not always, his links are to the Twentieth Century. He draws on events that vary from fragments of conversations, little-known texts, science, and works of art. As an expert glass blower, McElheny often features glass in his work, but he uses a range of media, from film, to performed enactments of historical events.⁵ He is an extremely, and

¹ "Josiah McElheny in Conversation with Daniel F. Herrmann and Tamara Trodd" in Daniel Herrmann (ed.) *The Past was a Mirage I'd Left Far Behind*, (London, Whitechapel Gallery, 2012), 82.

² Solo museum exhibitions include MoMA (2007), Moderna Museet in Stockholm (2007), Museo de Arte Reina Sofia, Madrid (2009), the Whitechapel Gallery London (2011), the Institute of Contemporary Art, Boston (2012), and the Wexner Center for the Arts, Columbus (2013).

³ Spyros Papapetros, "The Sculptor as Historian" in Louise Neri and Josiah McElheny (eds.), *Josiah McElheny: A Prism*, (New York, Skira Rizzoli, 2010), 16.

⁴ Helen Molesworth quoted from Doug Ashford, Bill Horrigan and Helen Molesworth "Talking about the Work of Josiah McElheny" in Helen Molesworth (ed.), *Some Pictures of the Infinite*, (Boston, Institute of Contemporary Art, 2012), 131.

⁵ During the period 1984 to 1988 McElheny worked with several master glassmakers including Ronald Wilkinson (London), Jan-Erik Ritzman and Sven-Ake Carlsson (Sweden) and Lino Tagliapietra (Venice). Taken from Josiah McElheny and Lynne Cooke (eds.), *A Space for an Island Universe*, (Madrid, Museo Nacional Centro de Arte Reina Sofia, 2009), 9.

sometimes frustratingly, prolific artist, a frequent contributor to *Artforum*, and an editor of several books.

Aspects of McElheny's practice are particularly relevant to the topic of this dissertation. We saw that examples of glass architecture described in Chapter Two drew on aspects of the crystalline metaphor of transcendence. McElheny's work, also in glass, develops this ideology by referencing the utopian ideas of Paul Scheerbarth and Bruno Taut. McElheny is particularly invested in the Scheerbarth legacy and was responsible for compiling a collection of his, and Taut's texts, into a single volume. He described it as "an attempt to present him [Scheerbarth] as the visionary, passionate, funny, inventive, deadly serious yet ultimately unknowable writer, theorist, and literary figure he was."⁶ McElheny's projects with explicit links to Scheerbarth date from 2007 to 2010, and thereafter branched out to bear on other, more rationalist elements of modernism, including De Stijl and the Dessau Bauhaus. A complete study of these works, would be a dissertation in itself, therefore the first part of this chapter will focus on two particularly relevant works, *The Alpine Cathedral and the City Crown* (2007) and *Bruno Taut's Monument to Socialist Spirituality (After Mies van der Rohe)* (2009). These examples have been chosen because of their relevance to this study on the crystalline motif, but there are other pieces, such as *Crystalline Landscape After Hablik and Luckhardt* (2010), which are also notable. There is a quantity of existing literature on this period of McElheny's oeuvre, written by eminent art historians such as Molly Nesbit, Branden Joseph and, Molesworth, as well as numerous texts by the artist himself. And while all of this has been helpful to an understanding of the work, I have also revisited the original modernist works, on which the selected examples are based, in order to enhance the existing literature.

⁶ Josiah McElheny and Christine Burgin (eds.), *Glass! Love!! Perpetual Motion!!! A Paul Scheerbarth Reader*, (Chicago, University of Chicago Press, 2014), 8.

Giving attention to the originals which inspired McElheny is fundamental to the latter part of this chapter, which explores the influence of Robert Smithson's early wall sculptures on McElheny's recent work. The artist's 2017 exhibition at White Cube gallery, *The Crystal Land*, refers directly to Smithson's 1966 essay of the same title, while his exhibited sculptures built upon Smithson's crystalline motif. This is not the first reference to Smithson in McElheny's work, as noted briefly by some of the art historians listed above. However, there is as yet no written literature on the 2017 pieces. My research into Smithson for the last chapter has proved very helpful here. I will discuss McElheny's work by alluding to themes which were central to Smithson's thinking around 1966, particularly the use of perspective and the crystalline motif. Yet, to restrict the analysis in this way would do McElheny an injustice by not taking account of aspects which are crucial to his work, specifically his use of reflection or reflective surfaces, which will be integrated into my account.

Each of the previous chapters attempted to reframe work by certain artists by focusing primarily on the crystalline motif. McElheny's projects are described by the curator Louise Neri as like a "palimpsest," where the intended outcome is to reinvent a version of history. Crystalline forms appear as a common motif amongst the examples chosen here.⁷ The overarching aim of this chapter is to demonstrate how critical the use of a crystalline motif is for his project. It seeks to determine what the motif means in the context of his work.

Part One: Kristallhäuser

In 2007, McElheny was selected to exhibit work for *Projects 84* at MoMA. Established in 1971, the Projects Series continues the institution's original agenda of showcasing

⁷ Louise Neri and Josiah McElheny, "An End to Modernity" in Neri and McElheny, *A Prism*, 120.

contemporary work. In addition to providing emerging artists with exposure through exhibiting at a major establishment, it is also a valuable opportunity for junior curatorial staff. McElheny's installation consisted of a large, slightly contoured plinth with two glass sculptures resembling buildings. One is called the *Alpine Cathedral* after Taut's book *Alpine Architektur*, while the second, the *City Crown*, derived its name from Taut's utopian city project *Die Städtkrone (City Crown)*. They are brought together by McElheny to form a single work. Taut, as discussed earlier in this thesis, gave form to Scheerbart's ideas. Here, McElheny continues this project by transforming Taut's fantasies on paper into three dimensions.



Figure 77, Installation shot, Projects 84: Josiah McElheny, *The Alpine Cathedral and the City Crown*, MoMA, 2007⁸. The *Alpine Cathedral* is on the left-hand side, and *City Crown* on the right of the image.

Both Scheerbart and Taut advocated the use of coloured glass. Interestingly, McElheny chose clear glass and added colour through artificial lighting. As a result, he was able to achieve a changing light effect which Joshua Siegel, who curated Project 84, described as

⁸ Image taken from https://www.moma.org/calendar/exhibitions/20/installation_images/35481 Accessed August 16, 2018.

“kaleidoscopic.”⁹ Siegel compares this to the lighting in Taut’s *Glashaus* and says it “compel[s] the eye to wander, with no fixed point of sharply defined space on which to rest.”¹⁰ In fact, Taut’s *Glashaus* included a moving kaleidoscope in the main room on the lower level, though it is unclear if McElheny was aware of this when making this work.¹¹ Nonetheless, as we saw in Chapter Two, the *Glashaus* was an immersive, experiential and even theatrical space, where the visitor took an architectural promenade. McElheny experiments with theatrical lighting but does not attempt to create a multisensory experience; he focuses on optics only. This distinction is best explained in an article by the architectural historian Kai Gutschow.¹² Comparing art installations with the work of Taut, particularly the *Glashaus*, Gutschow wrote,

Although [art] installations usually eschew the permanence associated with architecture, both focus on spatiality and the carefully choreographed movement of ‘embodied’ spectators, fully engaged with their senses, who activate and participate in the creation of space by moving through it.¹³

In these terms, McElheny’s work cannot be considered an installation. It is sculpture, yet it does not fit neatly into this category either. The content is based on architectural ideas, the medium is the architectural model, while the materials: glass, artificial light, metal, wood are typically used in buildings. Therefore, McElheny’s project seems suspended between art and architecture. Taut, of course, was against such distinctions. This was clearly stated in his “Architectural Program” (1919) for the *Arbeitsrat für Kunst* (1918-21), a key influence for Gropius’ Bauhaus Manifesto (1919). Both manifestos called for a unity of the arts.

⁹ Joshua Siegel, “The Alpine Cathedral and the City Crown” in Neri and McElheny, *A Prism*, 56. A better version of this essay, complete with additional images which support the text is available via MoMA at <https://www.moma.org/calendar/exhibitions/20> Accessed July 20, 2018.

¹⁰ Siegel, “Alpine Cathedral,” in Neri and McElheny, *A Prism*, 56.

¹¹ Details about the kaleidoscope are included in Scheerbart’s review of the work of which McElheny included a translation in his book, see Paul Scheerbart, “Glashäuser: Bruno Taut’s Glaspalast auf der Werkbund-Ausstellung in Cöln” (Anne Posten trans.) in McElheny and Burgin (eds.), *Glass! Love!!* 97, however, this was not published until several years after the date of the sculpture.

¹² Gutschow’s PhD (Columbia 2005) explored modernism in Germany from 1910-14, the role of Adolf Behne in this context, and his relationship with Taut and Scheerbart.

¹³ Kai K Gutschow, “From Object to Installation in Bruno Taut’s Exhibit Pavilions” in *Journal of Architectural Education*, Vol. 59, No. 4, (May, 2006): 63.

Considering these points, McElheny's work can be read in a number of ways. He could be demonstrating that Taut's dream failed and the disciplines of art and architecture remain segregated. Alternatively, he could be using vocabulary sourced from art and architecture to illustrate the unity of the arts. Each interpretation depends on the frame of reference. In the first scenario, McElheny's work is pessimistic, highlighting the failure of the German avant-garde. The second seems more hopeful, but only fleetingly. Although artists and architects working today may enjoy greater freedom of expression, this has not led to a utopia.

McElheny's use of the architectural model as medium is central to the reading of this work. To understand the implications of this, it is important to note that the architectural model is a broad category of objects with differing uses and audiences. It can be used by designers during the iterative design process to explore a project in three dimensions, or for promotion. As a result, it comes in various guises from rough study models to those intended to communicate an idea. Exhibition or communication models fall into four main categories. There is the site context model (typically small scale, that is 1:500 or less depending on the project's scope) which is usually distinguished by contoured terrain or city blocks. These types of model rarely exist in isolation except for outline masterplan projects. Secondly, large scale detail models show sections of buildings or technical innovations (typically 1:50 or greater). These appeal to specialised audiences who are able to read how the section relates to the whole. Models of complete buildings (or sectional models which show a slice through the building) are the most elaborately detailed variety and have the widest audience. Their purpose is to convince the client, planning authority or member of the public that the space works. They achieve this by seeking, what Worringer would term, an empathic response from the viewer, by showing the building, complete with scaled people, furniture and landscaping so that the viewer can visualise themselves in the space. The final category, is

the conceptual model. These abstracted buildings typically emphasise either material or form. Often, they exist alongside other models and are intended to be thought provoking or demonstrative of a general approach or philosophical idea. Sometimes they are serial to show the evolution of an idea or mutable forms. They are frequently aesthetically pleasing catapulting them into the sculptural realm; on occasion they are treated as works of art in their own right. McElheny's model is of the conceptual serial type; it shows two versions of a crystalline structure, is abstracted and emphasises its materiality.

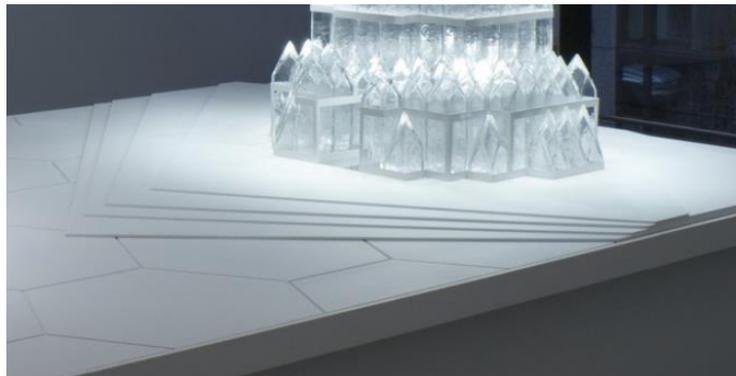


Figure 78, Josiah McElheny, *The Alpine Cathedral and the City Crown*, (detail of Alpine Cathedral showing contours in base)¹⁴

Regardless of type, one constant feature unites all architectural models: they are always to scale. Readers understand the scale by making references to familiar features like doors, people or trees. More abstract conceptual models can be more challenging to read, which is why they either supplement other models, or are shown in a real site or context. In McElheny's case the situation is more complex. Here he presents two buildings, in very different contexts (alpine and urban) combined in one model. The city is suggested by the hexagonal grid delineated in the base of the model while the mountain landscape is

¹⁴ Image taken from https://www.moma.org/calendar/exhibitions/20/installation_images/35481 Accessed August 16, 2018.

demonstrated via slight contours [Figure 78]. It is unclear if each of the two structures is at the same or different scales.

Taut's book *Alpine Architektur* is divided into 5 parts ranging from individual buildings to a cosmic scale.¹⁵ It is likely that the McElheny's *Alpine Cathedral* derives from the first part, *Kristallhaus* (Crystal House). This section describes a journey up the Alps to reach the *Kristallhaus*, as shown in the image below. Taut's drawings always include a scaling device. In Figure 79, people are shown entering the *Kristallhaus*. McElheny provides no such reference points. The model's contours are of no help either; they could represent one metre or ten meters, there is no way of knowing.

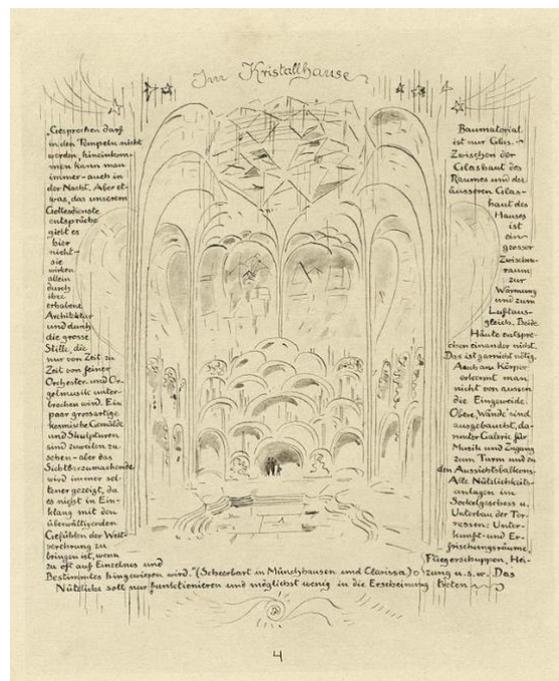


Figure 79, Bruno Taut, “Kristallhaus in den Bergen”, extract from *Alpine Architektur* (1919)¹⁶

About McElheny's work, Siegel wrote, “His model can be understood in both the literal and figurative sense of the word, both as a structure (a model of something), and as a concept (a

¹⁵ The five parts are as follows: “Kristallhaus” (Crystal house), “Architektur der Berge” (Mountain Architecture), “Der Alpenbau” ((Alp Construction), “Erdrindenbau” (Constructing the earth's crust), and “Sternbau” (Star building).

¹⁶ The University of Heidelberg has digitised Taut's original publication. It can be viewed online at <http://doethi.ub.uni-heidelberg.de/diglit/taut1919a/0017/image> Accessed August 16, 2018.

model *for* something).”¹⁷ During a lecture held in March 2007, to coincide with the exhibition of this work, McElheny discussed the model as medium.¹⁸ He explained the different effects of an architect’s model compared with an artist’s model, namely, that an architect uses models to communicate an idea including practical, financial and other considerations. In contrast, McElheny argued, the artist’s model can demonstrate something not intended to be built, but rather an imaginary space or “a labyrinth of ideas”.¹⁹ He then compared the scientific use of a model to illustrate “new systems of understanding” and pondered if art can do the same.²⁰ The artist can take advantage of the freedom from functional, practical, financial and scientific boundaries inherent in both architectural and scientific models.²¹ While Taut (and Mies as we shall see) may have built models as prototypes for future projects (models *of* something), McElheny uses this model, to communicate the concept only, or more specifically “a labyrinth of ideas”.²²

Later in the same lecture, McElheny discussed Taut’s involvement in the *Crystal Chain* group (*Gläserne Kette*, 1919-1920), a correspondence group comprising fourteen individuals each with a level of architectural training, whose practice ranged from painting to criticism (as in the case of Adolf Behne particularly).²³ McElheny said of the *Crystal Chain* that, as “an artistic enterprise, they did not intend for anything that they proposed to be built, nor did they intend to solve material structural problems, or even provide a framework for a future kind of architecture. They simply tried to use their skills as architects, and thinkers, to describe an impossible world, as a philosophic exercise.”²⁴ Looking at the evidence from Taut’s career

¹⁷ Siegel, “Alpine Cathedral”, in Neri and McElheny, *A Prism*, 58.

¹⁸ Josiah McElheny “Artists and Models” (Recorded lecture Museum of Modern Art, New York, March 2007). Accessed August 14, 2018. <https://www.youtube.com/watch?v=w-IFT7CCuT8>

¹⁹ Ibid.

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

²³ Discussed in more detail in Chapter Two.

²⁴ Transcribed by author from Josiah McElheny “Artists and Models”, circa 12:45’

and Scheerbart's writing it is difficult to support this reading. Instead, it seems they were committed to promoting a crystalline glass architecture as a viable typology, and their work was interpreted as such by contemporaries. In 1913, when Scheerbart tried to publish his treatise, *Glasarchitektur*, it was rejected by his usual publisher on the grounds that it was "practical building advice".²⁵ For Taut's part, his *Glashaus* provided unequivocal evidence of his intention (and ability) to realise crystalline prototypes, and this focus would evolve as the decade progressed. Scheerbart's preview of the project outlined its role as catalyst for a glass revolution. His article was based on architectural drawings and photographs of a model for the project, which was, as yet, unfinished. He wrote,

This glass palace is designed above all to prove that glass can be used for much more than just windows; walls, too, can be built of glass. Glass's translucence (not transparency) makes it unparalleled for walls, since no other building materials can achieve such magnificent effects. Taut's Glass House has an agenda. It is meant to herald a new era of architecture in which glass will be on par with iron and ferroconcrete as a building material, both of which are also naturally indispensable for the glass house's framework.²⁶

In 1914, Taut wrote "Eine Notwendigkeit" (A Necessity), published in *Der Strum* in order to theoretically defend his *Glashaus*, or perhaps to prepare expectations for its unveiling five months later.²⁷ Gutshoew noted that here Taut "insisted that the new building was to be without any real function, more of a provocative installation than a pragmatic solution."²⁸ Of course, this, and Taut's earlier pavilions were showcases for new building materials. That

²⁵ This point was made in Kai K Gutschow, "The Culture of Criticism: Adolf Behne and the Development of Modern Architecture in Germany, 1910-1914", (PhD thesis, Columbia University 2005). Available online at http://www.andrew.cmu.edu/user/gutschow/publishing_links/dissertation.pdf. Accessed August 15, 2018. Gutschow points to a book of letters as evidence for this, and the quote here is a translation from these. See letter to Richard Dehmel (Jan. 9, 1914) and letters to Walden published in Mechthild Rausch, *Paul Scheerbart: 70 Trillionen Weltgröße*, (Berlin, Argon Verlag, 1991), 458-459. A selection of Scheerbart's letters were also published by Taut in February 1920 in his journal *Frühlicht*. Translated versions of these are included in McElheny and Burgin, *Glass! Love!!* 130-143. According to this, Scheerbart, also wrote to Taut in December 1913 telling him that the manuscript was rejected by Müller and that in March 1914 he was still searching for an alternative. See *ibid.*, 132-3.

²⁶ Scheerbart, "Glass Houses", 92-97. Scheerbart acknowledges that he is using photographs for the article in a letter to Taut dated 13 February 1914; he had requested the model itself however it was apparently damaged on route from Cologne to Berlin, which greatly annoyed Taut. See McElheny and Burgin, *Glass! Love!!* 137 & 139.

²⁷ Bruno Taut, "Eine Notwendigkeit" *Der Strum*, Vol 4, No. 196-7, (1 February 1914). Princeton University have made digitised versions available for online viewing at <http://bluemountain.princeton.edu/bluemtn/cgi-bin/bluemtn?a=d&d=bmtnabg19140201-01.2.8&>. Accessed August 15, 2018. The article includes many of the points that Gropius would later reiterate in his Bauhaus Manifesto of 1919.

²⁸ Gutschow, "Object to Installation" 66.

was their practical purpose, but Taut was more interested in their symbolic role; that was where their *real* value lay.²⁹ For Taut, architecture was about creating an inspiring spatial experience, which could not be achieved in designs arranged according to perspectival concerns. Accordingly, Taut felt that Classical architecture, merely formed “backdrop creations.”³⁰ Behne’s review of the *Glashaus* promoted these experiential aspects,

The longing for purity and clarity, for glowing lightness and crystalline exactness, for immaterial lightness and infinite liveliness found a means of its fulfilment in glass – the most ineffable, most elementary, most flexible and most changeable of materials, richest in meaning and inspiration, fusing with the world like no other. This least fixed of materials transforms itself with every change of atmosphere. It is infinitely rich in relations, mirroring what is above, below, and what is below, above. It is animated, full of spirit and alive... It is an example of a transcendent passion to build, functionless, free, satisfying no practical demands – and yet a functional building, soulful, awakening spiritual inspirations – an ethical functional building.³¹

The Cologne exhibition closed prematurely with the start of World War I. These were dark days, perhaps making Taut’s social project all the more important. Taut described the war “an epidemic of mental disorder” which, for him, solidified the need for reparation through architecture.³² Gutschow concluded that, in 1914, “Taut and his colleagues hoped to reveal through the building an evanescent spiritual and artistic ideal...they hoped to make manifest for the populace (Volk) a ‘higher passion to build’ that could inspire the way to a brighter, reformed, unified and eventually ‘socialist’ European culture.”³³ Taut’s desire for this only increased as the decade progressed. *Alpine Architecture*, written during the war, is described by the architectural historian Deborah Barnstone (b.1959) “as an antidote to war.”³⁴ The

²⁹ Taut’s pamphlet to accompany the *Glashaus* lists the manufacturers of all of the different glass types used in the pavilion. This ranges from the engineering company responsible for the reinforced concrete frame to the glass mosaic providers. See Bruno Taut, “*Glashaus - Werkbund-Ausstellung Cöln 1914*”, (Anne Posten trans) in McElheny and Burgin, *Glass! Love!!* 101-4.

³⁰ “Die Bauten großer Architekturepochen wurden perspektivenlos erfunden, die Perspektive aber erzeugte die bekannten Kulissenschöpfungen.” Translates as, “The buildings of great architectural epochs were invented without perspective, whereas perspective created well-known backdrop creations” in Taut, “Eine Notwendigkeit”.

³¹ Adolf Behne, “Gedanken über Kunst und Zweck, dem Glashause gewidmet” in *Kunstgewerbeblatt*, 27 (1 October 1915): 4, translated and quoted in Gutschow, “Object to Installation”, 68.

³² Bruno Taut from the unpublished preface to *Alpine Architecture* quoted in Deborah Barnstone, “Bruno Taut and the First World War”, in *Athens Journal of History*, Vol. 1, issue 2, (April 2015): 99.

³³ Gutschow, “Object to Installation”, 69.

³⁴ Barnstone, “Bruno Taut”, 9.

book's unpublished preface suggests the crystalline project as an alternative to fighting; it called people forth to work collectively towards building crystalline structures rather than engaging in conflict.³⁵ Taut dedicated the book to Scheerbart, who had died, most likely from the consequences of alcoholism, in 1915.³⁶ Scheerbart's influence is clear throughout Taut's text. Although Taut's book suggests projects that are increasingly fantastical, it was not pure fantasy, at least in his mind. In the section called "Architektur der Berge," he captioned one of the drawings with the text: "The execution is extremely difficult and sacrificial, but not impossible," and then immediately quotes Goethe, "One thus demands the impossible from humans."³⁷ There is a direct reference here to Scheerbart's *Glasarchitektur*, verse 50 called "Mountain illumination." Scheerbart described converting all hotels in the mountains around Lake Lugano in Switzerland to glass architecture to illuminate the mountains. Taut's mentor wrote,

We constantly forget how many things have changed in the last century. In the 1830s the aged Goethe did not see the coming of the railways. Less than a hundred years have passed since then, and the whole earth is encompassed by steel rails. Mountain illumination, which today still seems a fantasy to many, can develop just as quickly.³⁸

McElheny is a keen Scheerbart scholar. In addition to editing a compendium of his texts, he has also edited a further book inspired by the writer, and used Scheerbart's ideas as catalysts for numerous works.³⁹ Scheerbart's 1912 story, *Der Lichtklub von Batavia: Eine Damen-Novelette* (*The Light Club of Batavia: A Ladies' Novelette*) tells the tale of a project to create a light spa at the bottom of a disused mine. The main character, Mrs. Hortense, envisioned using Tiffany glass chandeliers and columns of light to illuminate the mine's shaft and chamber. The book remained untranslated into English until McElheny organised it for

³⁵ Ibid, 106-7.

³⁶ See Christopher Turner, "The Crystal Vision of Paul Scheerbart" in McElheny and Burgin, *Glass! Love!!* 16.

³⁷ Bruno Taut, *Alpine Architektur*, (Hagen: Folkwang-Verlag, 1919), 10, translated here by author.

³⁸ Paul Scheerbart, *Glasarchitektur* (James Palmes trans.) in McElheny and Burgin, *Glass! Love!!* 59.

³⁹ McElheny and Burgin, *Glass! Love!!* and Josiah McElheny, *The Light Club: On Paul Scheerbart's the Light Club of Batavia*, (Chicago, University of Chicago Press, 2010).

inclusion in his own edited book inspired by Scheerbart's work.⁴⁰ *The Light Club of Batavia: A Ladies' Novelette* also spawned McElheny's film and other associated works collectively known as "Towards a Light Club", exhibited by the Wexner Centre for the Arts in 2013. As indicated, McElheny likes to reinvent the modern story, but his interest in Scheerbart's text is additionally relevant because he sees, "...parallels to our own moment, a time when technology is once again viewed as offering the best hope to satisfy longing and abolish shadows."⁴¹

McElheny declared that, "Glass, for Scheerbart, embodied the metaphoric potentiality of colour and light, and the crystal was the natural form that symbolised these ideals."⁴² McElheny new translation of Scheerbart's *Glasarchitektur* (1914) in his Scheerbart compendium was illustrated with detailed photographs of his own work.⁴³ The suggestion is that they provide the reader with a visualisation of Scheerbart's manifesto. *The Alpine Cathedral and the City Crown*, (2007) is included most frequently for this purpose. However, McElheny illustrated this particular page with a detail from his *Crystalline Landscape After Hablik and Luckhardt III* (2011). Both Hablik and Luckhardt were part of the *Crystal Chain* group, and McElheny's sculpture is a landscape filled with glass structures resembling those in Hablik's painting, *Crystal Castle in the Sea* (1914).

⁴⁰ See, "The Light Club of Batavia" translated by Wilhelm Werthern in McElheny, *Light Club*, 25-34.

⁴¹ McElheny, *Light Club*, 9

⁴² *Ibid.*, 7.

⁴³ McElheny and Burgin, *Glass! Love!!* 20-91.

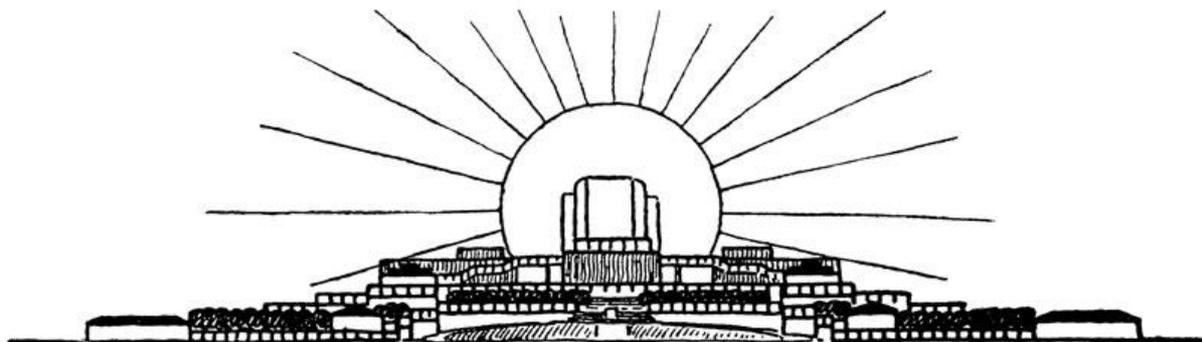


Figure 80, Bruno Taut, Drawing of the *Kristallhaus*, published in “Die Städtkrone”, 1919

Taut’s *Die Städtkrone (City Crown)* project of 1919, which evolved from a masterplan for a real site near Hagen, had similar aspirations to inspire change, but was less fantastical in form.⁴⁴ The centrepiece of Taut’s garden city was a *Kristallhaus* [Figure 80] and it can be reasonably assumed that this feature attracted McElheny. We can conclude, therefore, that both structures in *The Alpine Cathedral and the City Crown* are Kristallhäuser.

Taut’s text “Die Städtkrone” begins with an argument that architecture needs to serve a higher purpose than facilitating practical functions. According to Taut’s logic, buildings without purpose have a greater capacity for this. He wrote,

This shows that the will of the building artist is directed by something entirely different from a specific purpose and that this will lies above and beyond mere functionality. Buildings that exhibit a minimal practical purpose or none at all best demonstrate an architect’s volition.⁴⁵

Taut’s message is clearly influenced by Riegl’s *Kunstwollen*, either by his reading of Riegl or Worringer.⁴⁶ Taut also discussed how cities were traditionally arranged around a temple or other religious structure. After mass urbanisation, however, cities grew rapidly and chaos ensued. This led to counter movements, including zoning and the Garden City Movement.

⁴⁴ For more details see Chapter Two.

⁴⁵ Bruno Taut, “The City Crown” translated by Ulrike Altenmüller and Matthew Mindrup in *Journal of Architectural Education*, 63, no. 1 (2009): 122.

⁴⁶ Please refer to Chapter One for more details of this.

In a large metropolis, religious buildings are scattered amongst various zones. However, Taut argued that religion no longer had a unifying effect. It has been replaced by a new force;

Socialism, in its non-political sense, means freedom from every form of authority as a simple, ordinary connection between people and it bridges any gap between fighting classes and nations to unite humanity. If one philosophy can crown the city of today, it is an expression of these thoughts.⁴⁷

It follows then, that Taut's *Kristallhaus* had no utilitarian function; its primary role was to act as a beacon for unity. He produced schematic drawings to illustrate his text. Aside from the skyline view shown in Figure 80, the remaining drawings are uninspired [for example Figure 81]. It seems that, although he could poetically describe a new architectural order, he struggled to free himself from conventional, or even Classical, form in his drawings. This architectural pragmatism meant that the drawings always indicate a scale, albeit sometimes a monumental one; whereas scale is completely absent in McElheny's reinterpretation.

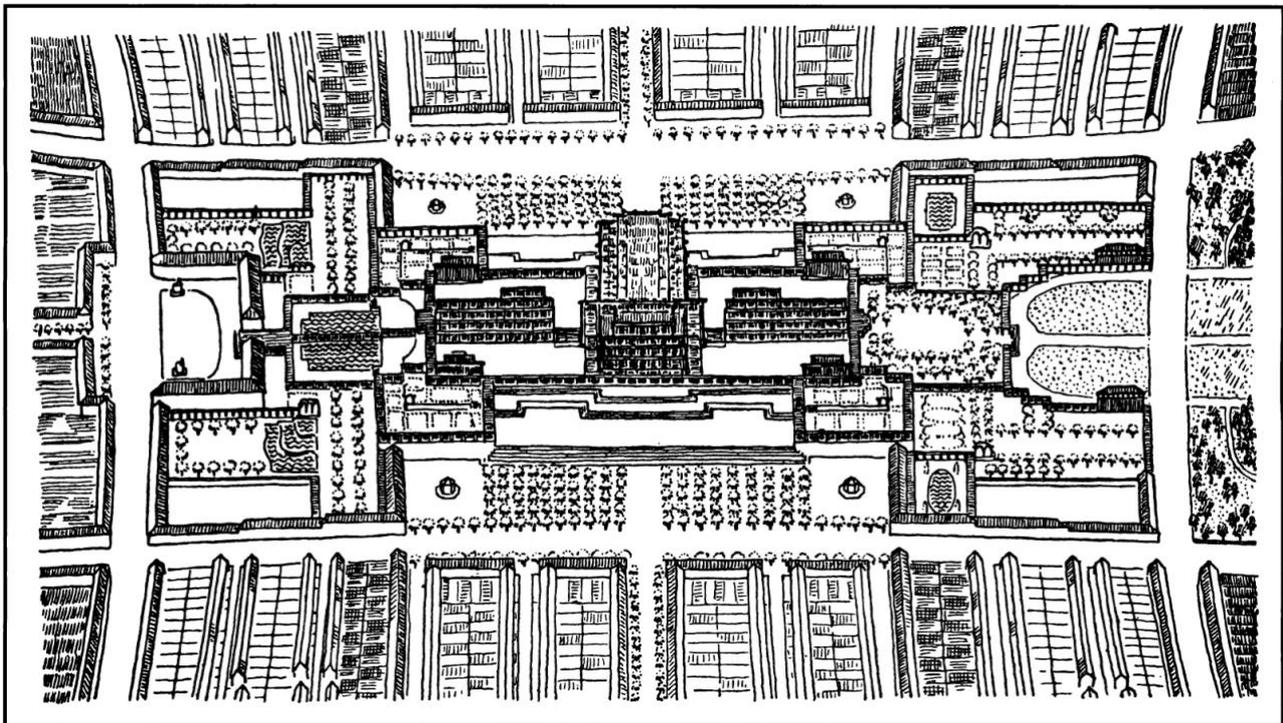


Figure 81, Bruno Taut, *Die Städtkrone*, 1919⁴⁸

⁴⁷ Taut, "The City Crown", 126.

⁴⁸ *Ibid.*, 131.

Despite McElheny's verbal references to the *Crystal Chain's* fantasies, *The Alpine Cathedral and the City Crown* appear to be influenced by projects which are more realist. For example, McElheny's *City Crown* is made up of hexagonal glass modules set on a city grid in the same shape. The choice of a hexagonal shape is not arbitrary. It recalls Peter Behren's 1908 AEG trademark and nods towards Taut's earlier 1913 Monument to Iron pavilion in Leipzig formed of stacked octagons. Hexagonal glass modules reappear in McElheny's later works, *Model for a Film Set (The Light Spa at the Bottom of a Mine)*, 2008, and *Bruno Taut's Monument to Socialist Spirituality (After Mies van Der Rohe)*, 2009 which will be discussed later.

McElheny choose translucent glass for his models, again echoing the type of glass used in Cologne and promoted by Scheerbart. As Bletter noted,

Scheerbart uses imagery of mobility and ever-changing translucent polychrome effects. This is not the clear glass associated with rationalist modernism but glass that incorporates mysterious, dislocating qualities, produced by a multiplicity of reflective surfaces and settings that can be coloured glass, gold, moving water or even precious stones.⁴⁹

Translucent glass is more visible than transparent material because the light rays do not fully pass through the material. The density of the glass causes the light rays within it to disperse; when the coloured light is applied in McElheny's work, the translucent glass will essentially hold the colour making it more visible. If transparent glass was used then the coloured light would pass through it with minimal refraction. McElheny's piece exploits the symbolic meaning of translucent glass and its implicit critique of modernist rationality.

This chapter has argued that Scheerbart and Taut intended their crystalline vision to transform architectural practice and thus society. This was their concept. In making *The Alpine Cathedral and the City Crown*, McElheny has re-contextualised their ideas. In the

⁴⁹ Rosemarie Haag Bletter, "Fragments of Utopia" in McElheny and Burgin, *Glass! Love!!* 124.

1910s, Taut and Scheerbart evoked glass structures through literature, fantastic drawings and with the *Glashaus*. They disseminated their thoughts via publications like *Frühlicht* or *Der Strum*, and through correspondence amongst, for example, the *Crystal Chain*. Taut and Scheerbart's crystalline structures were intended to act as symbols or a typology for utopian living. The reader was intended to visualise a landscape of crystalline buildings. McElheny's work has no such aspirations.

The visual aesthetic of *The Alpine Cathedral and the City Crown* is emphasised by its setting on a traditional white plinth, with a hint of contour below the *Alpine Cathedral*. The artist has not attempted to create a mountainous landscape despite the title and reference to Taut's book of alpine scenes. Additionally, while Taut's *Glashaus* was experiential, here the effects are purely optical. The work is staged below an impressive cluster of spotlights on a suspended ceiling that echoes the plinth and is part of the work. The lighting system sequences through ten colours in about three and a half minutes, giving rise to Siegel's description of the work as "kaleidoscopic."⁵⁰ This feature of McElheny's sculpture makes complex references to Scheerbart and Taut and to the context of the early twentieth century.

Aside from the obvious effects of reflection and light, Scheerbart also considered that glass architecture had an inherent capacity for transformation through shifting forms and varying lighting conditions. Joseph acknowledged this and linked it to Scheerbart's 1910 book, *Das Perpetuum mobile (The Perpetual Motion Machine)*, writing, "the fantastic glass palaces he imagined, their light effects constantly changing in response to their environment, figure as nothing less than machines for perpetual perceptual movement."⁵¹ McElheny's mechanical

⁵⁰ Siegel, "Alpine Cathedral", in Neri and McElheny, *A Prism*, 56. A better version of this essay, complete with additional images which support the text is available via MoMA at <https://www.moma.org/calendar/exhibitions/20> Accessed July 20, 2018.

⁵¹ Branden Joseph, "On Scheerbart" in McElheny, *Light Club*, 85.

kaleidoscope facilitated similar perpetual change. Turning to Taut, a recent article by the literary scholar, Tyrus Miller explored the significance of the kaleidoscopic experience in his *Glashaus*.⁵² Miller posited that both Walter Benjamin (1892-1940) and Charles Baudelaire (1821-1967) considered the kaleidoscope as a metaphor for the urban experience with its continuously changing visual stimulation; “Accordingly, Baudelaire imagined the man of the crowd, with the modern artist as a special instance of the type, experiencing urban life as if he were a ‘kaleidoscope gifted with consciousness.’”⁵³ In these terms, Taut’s *Glashaus* offers an abstract simulacrum of the city experience, while McElheny abstracts this even further by the *application* of a kaleidoscopic effect.

Miller noted that by the early twenties, Taut and his contemporaries, like the members of the *Crystal Chain*, abandoned their visionary projects for two reasons. Firstly, their projects suggested a crystalline future, but as this future neared it became clear that even the catastrophic events of the 1910s were not enough to bring about such change. Following this, and after a dry spell of architectural commissions, the consequences of War and revolution led to an increase in “practical tasks for architects and urban planners, rendering such utopian visions as Taut’s ethereal and obsolete.”⁵⁴ Bletter saw it another way. She argued that in his Berlin housing estates in the Twenties, Taut used coloured stucco panels in place of coloured glass for practical, financial and symbolic reasons; “bright polychrome stucco is used to organise the buildings urbanistically and psychologically.”⁵⁵ She concludes that, “Scheerbart’s and Taut’s coloured glass architecture is a utopian tradition that is possible only in literary and architectural proposals. It functions as a metaphor for social

⁵² Tyrus Miller, “Expressionist Utopia: Bruno Taut, Glass Architecture, and the Dissolution of Cities”, *Filozofski Vestnik*, Vol. 38 Issue 1, (2017): 107-129.

⁵³ *Ibid.*, 114.

⁵⁴ *Ibid.*, 127.

⁵⁵ Bletter, “Fragments of Utopia” in McElheny and Burgin, *Glass! Love!!*, 127.

transformation but could not be applied literally.”⁵⁶ So while Taut (and Scheerbart) may have intended great landscapes of glass, in reality this could never happen. McElheny’s work acknowledges this failure. The architectural model, the applied kaleidoscope, and the restrained contours highlight the shortcomings of the original project. McElheny could have created a full-scale experiential space to embrace visitors, but he does not do this. It is merely a reference to utopia. While visually pleasing in its own right, the work is nostalgic for what could have been. It offers the viewer an interpretation of an alternative past or present that remains entirely abstract, and therefore impossible.

The first section of this chapter considered McElheny’s interpretation of German Expressionist work of the 1910s. By the Twenties, the focus shifted towards rational solutions to design, as discussed towards the end of the second chapter. McElheny’s project *Bruno Taut’s Monument to Socialist Spirituality (After Mies van der Rohe)*, 2009, interrogates this division by merging two seemingly opposing ideas into one work, creating an interplay of different movements in art history [Figure 82]. As Papapetros noted,

If in his earlier project on Taut and Scheerbart, *The Alpine Cathedral and the City-Crown*, the sculptor gave physical form to the Expressionist origin of modern crystalline utopias, then in his recent reinvention of Mies’s tower model after Taut, he recalibrates the prototypical structure of modernist glass building.⁵⁷

⁵⁶ Ibid.

⁵⁷ Papapetros, “The Sculptor as Historian”, in Neri and McElheny, *A Prism*, 30.



Figure 82, Josiah McElheny, *Bruno Taut's Monument to Socialist Spirituality* (After Mies van der Rohe), 2009

The German modernist architect, Mies van der Rohe (1886-1969) entered a competition called the *Friedrichstrasse Skyscraper* in 1921, organised by the Turmhaus-Aktiengesellschaft (Skyscraper corporation). In the period around 1920, skyscrapers were seen as having two distinct advantages: as beautiful insertions in the urban landscape, and as a means to tackle the housing crisis.⁵⁸ Chapter Two demonstrated that skyscraper-type forms are found amongst the submissions for the Arbeitstrat für Kunst, *Exhibition for Unknown Architects*, from April 1919, organised by Taut, Gropius and Behne. The Friedrichstrasse competition brief was to design a skyscraper for a triangular site opposite Friedrichstrasse station. There were over one hundred and forty entries.⁵⁹ The volume of interest was due to the period of few architectural commissions coupled with the exciting nature of the skyscraper project. Mies's entry was omitted from the publication produced to show the results of the competition. The architect and historian, Vittorio Magnago

⁵⁸ Vittorio Magnago Lampugnani, "Berlin Modernism and the Architecture of the Metropolis" in Terence Riley and Barry Bergdoll (eds.), *Mies in Berlin*, (New York, Museum of Modern Art, 2002), 40.

⁵⁹ *Ibid.*, 42.

Lampugnani (b.1951) argued that this was because Mies ignored the requirements of the brief and instead used the competition as a platform to showcase his innovations.⁶⁰ Despite his lofty ambitions, Mies' ideas were, at least partly, realistic. The design of the plan responds to the shape of the site, and he used photographic montages to insert his glass tower into the actual context [Figure 83]. There are several versions of these montages. Successive representations reduce the neoclassical detail on the surrounding buildings, while the final one [Figure 84], which is actually a drawing in charcoal based on the earlier montages, turns these buildings into dramatic silhouettes.⁶¹ Although artistic licence is used, a level of realism is maintained pertaining to the real context.



Figure 83, Mies, *Friedrichstrasse project*,
Perspective view from the north, photomontage,
1921⁶²

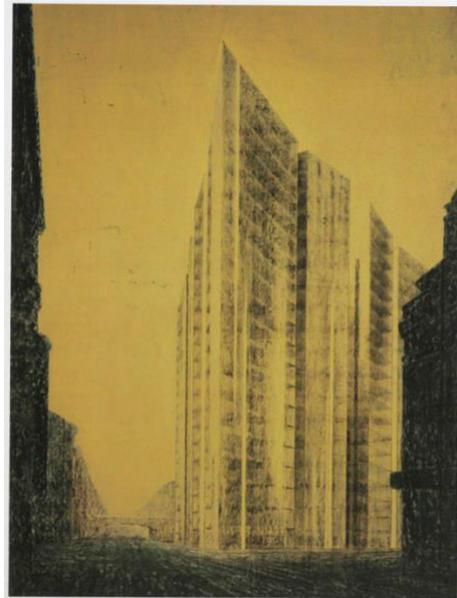


Figure 84, Mies, *Friedrichstrasse project*, *Charcoal drawing*, 1921⁶³

⁶⁰ Ibid., 43.

⁶¹ Andres Lepik, "Mies and Photomontage, 1910-1938," in Riley and Bergdoll, *Mies in Berlin*, 326.

⁶² Image from *ibid.*, 181.

⁶³ *Ibid.*, 182.

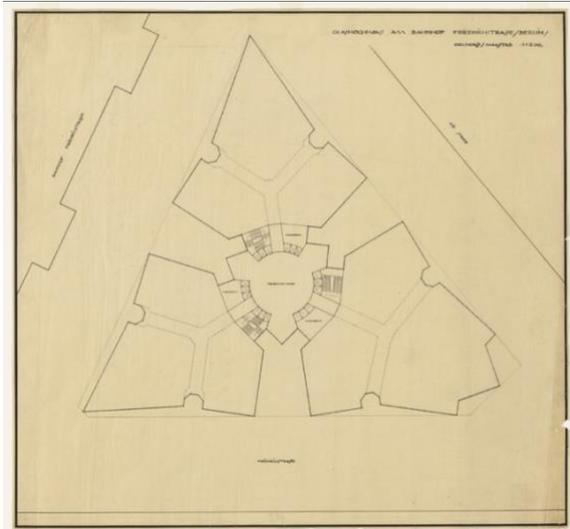


Figure 85, Mies, Friedrichstrasse project, Typical floor plan, 1921⁶⁴

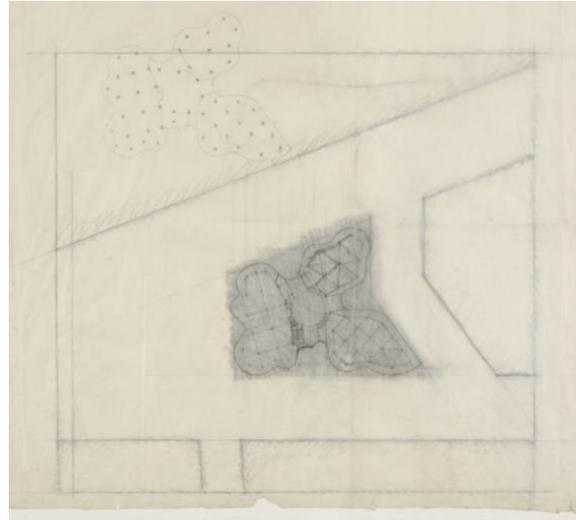


Figure 86, Mies, Glass Skyscraper Project, Sketch Plan & Structural Grid, 1922⁶⁵

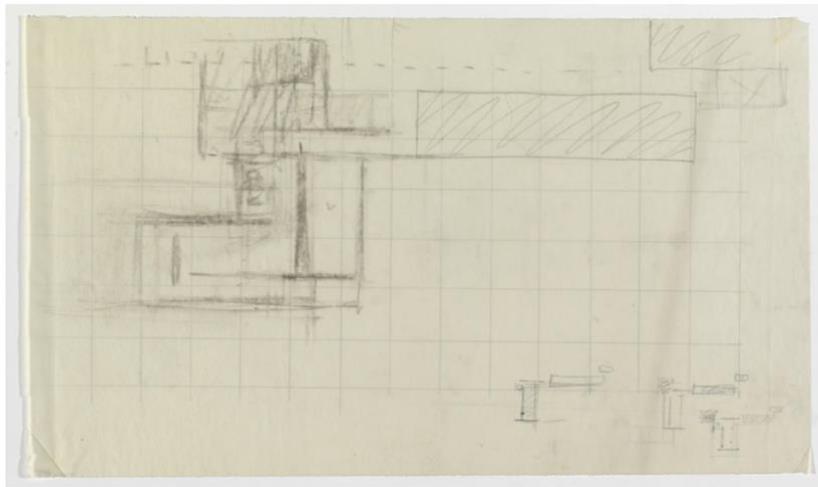


Figure 87, Mies, Golf Club Project, Germany, Sketch Plan, 1930⁶⁶

Mies' design consisted of three glass towers around a central core [Figure 85], labelled Fahrstuhl-Halle (Elevator Hall), containing eighteen elevators to serve the twenty-storey building. In the perspective drawings, each of the identical floor plates appears to be

⁶⁴ Ink on tracing paper, MoMA, Accessed March 21, 2018.

https://www.moma.org/collection/works/107229?artist_id=7166&locale=en&page=1&sov_referrer=artist.

⁶⁵ Pencil on tracing paper, MoMA, Accessed March 21, 2018.

https://www.moma.org/collection/works/145731?artist_id=7166&locale=en&page=1&sov_referrer=artist.

⁶⁶ Pencil on tracing paper, MoMA, Accessed March 21, 2018.

https://www.moma.org/collection/works/181839?artist_id=7166&locale=en&page=2&sov_referrer=artist

cantilevered from the central shaft. Yet, the typical floor plan shows no indication of the any structural members within the central area, or indeed anywhere at all. Standard drawing conventions dictate that lighter members, such as glass, are shown using a lightweight (thin) line, while solid, load bearing members are represented with a bold line. In Mies' drawing each element is given equal weight. Looking at Mies' other work, he always differentiated between structural and non-structural members, even in rough drafts. Examples of this include the *Golf Club Project* (1930) sketch [Figure 87], and plans for the *Glass Skyscraper Project* (1922) [Figure 86]. One must therefore assume that Mies intentionally omitted the practical details of the proposal, focusing instead on the pure expression of an idea, unencumbered by structural reality.

Mies entitled his Friedrichstrasse entry "Wabe", the German word for honeycomb although this design was arguably more angular and less honeycomb. The architectural historian Jean-Louis Cohen (b.1949), who contributed to the *Mies in Berlin* catalogue for the show at the Museum of Modern Art, explained that Mies' title was intended to remind viewers of the wax walls inside a beehive and to make references to an earlier 1892 Beaux-Arts skyscraper project described as a "commercial beehive".⁶⁷ It is equally likely, however, that Mies was thinking about more than opacity and shape. His translucent walls were mutable; he noted that, "subdivisions of the ground plan are to be adapted to the respective needs and executed in glass."⁶⁸

McElheny's 2009 sculpture, *Bruno Taut's Monument to Socialist Spirituality (After Mies van der Rohe)*, evolves this honeycomb idea and merges it with Mies' later work. McElheny built

⁶⁷ Jean-Louis Cohen, "German Desires of American: Mies's Urban Visions" in Riley and Bergdoll, *Mies in Berlin*, 368.

⁶⁸ Extract from Mies' untitled text in Frühlicht, 1, no. 4 (1922), 122- 124 also found in Fritz Neumeyer, *The Artless Word: Mies van der Rohe on the Building Art*, (Cambridge, MIT Press, 1991), 240.

his sculpture out of hexagonal glass modules, like cells in a beehive, complete with transparent internal subdivisions. Yet, the overall footprint of the sculpture is taken not from the Friedrichstrasse plan, but from Mies second *Glass Skyscraper* project dating from 1922. Mies, unperturbed by the outcome of the Friedrichstrasse competition, continued to evolve the concept of glass towers. This second project was explored through a model and drawing studies. In making the model, Mies was forced to consider the structure of the building. A structural grid is shown as an aside on his sketch plan [Figure 86], making this project more feasible than the earlier skyscraper. Like Friedrichstrasse, the tower is roughly made up of three sections around a central elevator hall, but the plan is more amoebic than the previous skyscraper. Mies explained how he used the model as a design tool testing both the penetration of light into internal spaces and its interplay on the glass surfaces. He contrasted it with the more solid, older, buildings;

At first glance the contour of the ground plan appears arbitrary, but in reality it is the result of many experiments on the glass model. The curves were determined by the need to illuminate the interior, the effect of the building mass in the urban context, and finally the play of the desired light reflection.⁶⁹

In 1914 Taut used a proprietary glass, called Luxfer prisms, in his *Glashaus* to ensure light refracted deep into the plan, here Mies shows similar concerns, yet it is the reference to the urban context that is most interesting and that McElheny picks up on.

⁶⁹ Ibid.



Figure 88, Mies, *Glass Skyscraper project*, Photomontage, 1922⁷⁰

In his 2008 essay, “Nowhere, Everywhere, Somewhere”, published in the New York quarterly arts magazine, *Cabinet*, McElheny discusses Mies’ *Glass Skyscraper project* (1922).⁷¹ He is particularly drawn to its physical context. The article is illustrated with a photo of the model surrounded by six or seven storey urban buildings, set against a natural landscape [Figure 88].⁷² McElheny points to a contradiction between the work and the title of the project as listed in the catalogue for the MoMA show (2001), which states, “Glass Skyscraper Project, no intended site known, 1922.”⁷³ McElheny’s essay draws on the idea that Mies chose to construct a general sense of place through the use of familiarly styled buildings. McElheny summarised this as follows: “It seems that he, at least briefly, imagined his new modernist vision existing not in a completely remade world, but in a world in which both the architectural past and nature were acknowledged.”⁷⁴ McElheny recognised Mies project as a snapshot

⁷⁰ Mies van der Rohe, *Glass Skyscraper Project*, 1922, Photomontage published as illustration in Josiah McElheny, “Nowhere, Everywhere, Somewhere”, in *Cabinet*, Issue 30, New York, (Summer 2008), n.p.

⁷¹ *Ibid.*

⁷² Bletter remarks that Mies created this image by photographing the model outdoors rather than by photomontage, like the earlier *Friedrichstrasse* project. Whatever the process used the realist effect is the same. See Rosemarie Haag Bletter, “Mies and Dark Transparency” in Riley and Bergdoll, *Mies in Berlin*, 353.

⁷³ Terence Riley, *Mies in Berlin*, 186.

⁷⁴ McElheny, “Nowhere, Everywhere, Somewhere”.

just before the full flourishing of the modernist project, which he described as, “modernism that was both everywhere and nowhere because it erased any *somewhere* that was already there.”⁷⁵



Figure 89, Le Corbusier, *Plan Voisin*, Paris, model, 1925⁷⁶

To illustrate this, McElheny referenced Le Corbusier’s (1887-1965) *Plan Voisin* (1925) which proposed replacing a section of Paris with high-rise blocks set amongst parkland. However, contrary to McElheny’s reading of the project, Le Corbusier’s proposal does not remove all traces of the past. Instead, examples of Gothic, Renaissance or Neo-Classical architecture are improved by increasing the natural setting.⁷⁷ Le Corbusier wrote,

Charming examples of architecture emerge from the rounded forms of the tree-tops. That decidedly amusing Greek portico dominated by a gilded dome was the supreme masterpiece of M. Nénot, Membre de l'Institut. Whether it is a genuine Renaissance building or a fake (which is after all simply a matter of individual taste) hardly matters, since its design in no wise troubles the general architectural harmony.⁷⁸

⁷⁵ Ibid.

⁷⁶ Image from Foundation Le Corbusier. Accessed April 17, 2018. <http://www.fondationlecorbusier.fr/corbuweb/morpheus.aspx?sysId=13&IrisObjectId=6159&sysLanguage=en-en&itemPos=2&itemCount=2&sysParentName=Home&sysParentId=65>

⁷⁷ Le Corbusier, *Plan Voisin*, Paris France, 1925, text available from Foundation Le Corbusier at <http://www.fondationlecorbusier.fr/corbuweb/morpheus.aspx?sysId=13&IrisObjectId=6159&sysLanguage=en-en&itemPos=2&itemCount=2&sysParentName=Home&sysParentId=65> Accessed April 18, 2018.

⁷⁸ Le Corbusier, *Plan Voisin*, Paris France, 1925, text available from Foundation Le Corbusier at <http://www.fondationlecorbusier.fr/corbuweb/morpheus.aspx?sysId=13&IrisObjectId=6159&sysLanguage=en-en&itemPos=2&itemCount=2&sysParentName=Home&sysParentId=65> Accessed April 16, 2018.

Here, at least, Le Corbusier does not suggest that the old order will undermine the modern project. On the contrary, he suggests that they would produce a 'harmony'. This text, and indeed Le Corbusier's work more generally, acknowledged new ways of living which evolved the typology of the house into a functionalist entity.⁷⁹ One might then expect old houses to be demolished as defunct. However, rather than razing an old mansion in *Plan Voisin*, Le Corbusier suggested converting it for public use. It was not simply a case of eradicating all traces of the past, but rather co-existing with it and redefining it to suit modern life.

Following this logic, Mies ideas were not a snapshot in time before the past was erased, but rather an illustration of the universal application of modernism. It is a modernism of 'Somewhere'.⁸⁰ Mies' photomontage attempts to demonstrate how the project might look in any northern European city. The use of realism is an architectural tactic that allows the lay viewer to visualise proposals in a manner not achievable from two-dimensional projections or perspective drawings. Unlike Taut's fantastical drawings of a crystalline landscape depicted in *Alpine Architecture* (1919), Mies' work is set in the real or simulated contemporary context. The architectural historian, Andres Lepik (b. 1961), noted how Mies used photomontage strategically for select projects to disseminate his ideas as widely as possible.⁸¹ He suggested, even, that Mies did not include the Friedrichstrasse photomontages in his competition entry in 1921, but produced them later "for the purposes of exhibition and publication."⁸² Lepik read the charcoal drawing of the Friedrichstrasse montage [Figure 84] as an evolution of the project from specific site to "an autonomous image."⁸³ Put another way, it could also be read as moving from the particular to the general,

⁷⁹ A key example of the functionalist house is Le Corbusier's houses at Weissenhof-Siedlung, Stuttgart, Germany, 1927.

⁸⁰ To use McElheny's term. McElheny, "Nowhere, Everywhere, Somewhere".

⁸¹ Lepik, "Mies and Photomontage" in Riley and Bergdoll, *Mies in Berlin*, 325.

⁸² Ibid.

⁸³ Ibid., 326.

in the same way that the later Skyscraper project could be applied to any (Northern European) city.

In 1922, Taut published the charcoal drawing of the *Friedrichstrasse Project* [Figure 84], and two images of the *Glass Skyscraper* model [including Figure 88] with a text written by Mies in his Expressionist journal, *Frühlicht*.⁸⁴ The scale change between Mies skyscraper and its surrounding buildings resembles Alfred Stieglitz's (1864-1946) photographs of New York scenes from the early 20th century. This comparison is particularly evident with *Old and New New York* (1910), [Figure 90], which shows a skyscraper under construction. In this unfinished state, it has the same levels of transparency as Mies' glass skyscraper, and Mies may have made an oblique reference to this resemblance, writing, "Only skyscrapers under construction reveal the bold constructive thoughts, and then the impression of the high-reaching steel skeletons is overpowering. With the raising of the walls, this impression is completely destroyed..."⁸⁵

⁸⁴ *Frühlicht*, 1, no. 4 (1922): 122- 124.

⁸⁵ *Ibid*, and also found in Neumeyer, *The Artless Word*, 240.



Figure 90, Alfred Stieglitz, *Old and New New York*, 1910⁸⁶

Like Mies, Le Corbusier also used drawings and a model to illustrate his ideas for Paris. The size of the *Plan Voisin* project led to small scale representations which do not allow for material detail; the skyscrapers look solid in the model [Figure 89], but Corbusier's text made his intentions, and aspirations, clearer,

Look through the charmingly diapered arabesques of branches out into the sky towards those widely-spaced crystal towers which soar higher than any pinnacle on earth. These translucent prisms that seem to float in the air without anchorage to the ground - flashing in summer sunshine, softly gleaming under grey winter skies, magically glittering at nightfall - are huge blocks of offices.⁸⁷

Le Corbusier noted, "the architect has discarded brick and stone" in favour of new materials unrestricted by the compressive strength of masonry construction.⁸⁸ As a result, building heights soared. Le Corbusier described the effects of his crystalline landscape predicting,

⁸⁶ Image from Alfred Stieglitz Collection at the Art Institute, Chicago, available at http://media.artic.edu/stieglitz/portfolio_page/old-and-new-new-york-1910/ Accessed April 16, 2018.

⁸⁷ Le Corbusier, *Plan Voisin*, Paris France, 1925, text available from Foundation Le Corbusier at <http://www.fondationlecorbusier.fr/corbuweb/morpheus.aspx?sysId=13&IrisObjectId=6159&sysLanguage=en-en&itemPos=2&itemCount=2&sysParentName=Home&sysParentId=65> Accessed April 16, 2018.

⁸⁸ Ibid.

“to right and left, over there, and further away still, those gigantic and majestic prisms of purest transparency rear their heads one upon another in a dazzling spectacle of grandeur, serenity and gladness.”⁸⁹ Both Le Corbusier’s ‘crystal towers’ and Mies’ glass skyscrapers became beacons of hope. Detlef Mertins (1954-2011) described Mies’ ideas as relying “on inorganic metaphors rather than organic ones.”⁹⁰ This remark recalls Worringer’s treatise, *Abstraction and Empathy*. Mertins continued,

Mies skyscrapers were more transcendental than ecstatic, more monumental than kaleidoscopic, more frames for the rhythmic union of body and soul with the *Weltall* (universe) than representations of it. Rising like modern-day cathedrals or “city-crowns” for the industrial metropolis, luminous and dissolving into the heavens, they offered to reconcile the antimony between technology and nature.⁹¹

This statement revives ideas of the crystalline as a motif to suggest transcendence discussed in Chapter Two. Particularly pertinent is Mertins’ use of the term “city-crowns” which, although not referenced, recalls Taut’s *Die Städtkrone (City Crown)*. Taut depicted the crystal building (*Kristallhaus*) as, “Emanating from the infinite, it is captured in the highest point of the city. It scatters and shines on the coloured panels, edges, surfaces and concavities of the crystal house. This [house] becomes the carrier of cosmic feelings, a religiousness that reverently remains silent.”⁹²

Mies and Taut were affiliated, at the very least, through their shared membership of two groups, *Novembergruppe* (1919-1933) and the *Deutscher Werkbund* (founded 1907). Mies joined the *Novembergruppe* in 1922 and, in 1925, the *Deutscher Werkbund*.⁹³ Although current literature does not connect Mies to Scheerbart directly, Mies had certainly read Scheerbart’s work.⁹⁴ Both Taut and Scheerbart promoted the use of coloured glass, while

⁸⁹ Ibid.

⁹⁰ Detlef Mertins, “Architecture of Becoming: Mies van der Rohe and the Avant-Garde”, in Riley and Bergdoll, *Mies in Berlin*, 107-133.

⁹¹ Ibid.

⁹² Taut, “The City Crown”, 131-2.

⁹³ Mertins, “Architecture of Becoming”, in Riley and Bergdoll, *Mies in Berlin*, 110.

⁹⁴ See footnote 13 from *ibid.*, 376, where Mertins remarks that Mies was familiar with Scheerbart’s work from 1925 at least.

Mies' skyscrapers do not. Despite this, McElheny applies colour to Mies' skyscraper model. Mertins examined the shifting interpretation of Mies' glass projects. In 1922, the skyscraper was amongst Expressionist work in *Frühlicht*. Gropius' 1923 Bauhaus exhibition is recognised as a turning point between the school's Expressionist or artisanal attitude towards a concern with industry and mass production, partially as a consequence of Theo van Doesburg's (1883-1931) ideas. There, Mies' work was exhibited amongst the rational objects.⁹⁵ As the Twenties progressed, Mies skyscrapers were increasingly grouped with the new avant-garde so that by mid-decade these projects were, according to Mertins, firmly considered as "elementarist and constructivist experiments".⁹⁶ McElheny could have followed this path and applied De Stijl's primary colours to Mies' model. Yet, he chose not to, and instead rewrote history by realigning Mies with Taut's Expressionism.

According to Scheerbart's 1914 book, *Glasarchitektur (Glass Architecture)*, the possibility of producing coloured light effects was the main attraction of glass architecture. For Scheerbart, coloured light had a positive effect on the human psyche.⁹⁷ Inspired by this, Taut used coloured glass in his *Glashaus* of the same year, and again, on paper, for both *Alpine Architektur* and *Die Städtkrone*. Papapetros suggested that McElheny's choice of colours stems from *Alpine Architecture*, and listed them as "a red, a yellow, two shades of blue and two of green, plus the clear," though, in fact, there are many more colours used in Taut's book illustrations.⁹⁸ It is more likely that McElheny was inspired by Taut's involvement in the *Dandanah* glass toy building blocks of solid glass from around 1920 which are cast in red,

⁹⁵ Mertins notes that Mies work was framed with Gropius' very sedate Chicago Tribune Competition entry. *Ibid.*, 120.

⁹⁶ *Ibid.*, 124.

⁹⁷ Dennis Sharp, ed., Scheerbart, Paul, *Glass Architecture & Taut*, Bruno, *Alpine Architecture*, (New York, Praeger Publishers, 1972), 72

⁹⁸ Papapetros, "The Sculptor as Historian" in Neri and McElheny, *A Prism*, 26.

green, blue, yellow and clear.⁹⁹ McElheny used a different method of handblown moulded glass, more suitable for the larger blocks and the size of the model. Additionally, his hollow-centred units provide more transparency than solid blocks, while their thin walls resemble the internal partitions of a honeycomb, as mentioned earlier.

McElheny's *Monument to Socialist Spirituality (After Mies van der Rohe)*, pays homage to the floor plan shown in Mies' 1922 design, but abstracts it by using hexagonal, or crystalline, shaped modules. If Mies' work suggested the 'Somewhere' application of modernism, then McElheny's sculpture tends towards 'Everywhere'.¹⁰⁰ He achieves this by proposing a modular approach. Mies' *Friedrichstrasse Project* was aligned within the confines of the specific site as, he explained in 1922: "In my design for the skyscraper at the Friedrichstrasse railroad station in Berlin, intended for a triangular site, a prismatic form corresponding to the triangle appeared to offer the right solution for this building."¹⁰¹ The plan for the second skyscraper, Mies claimed, was a result of scientific analysis of light rays. McElheny's model goes further. The hexagonal based floor plan can be modified by the addition or removal of hexagonal modules to suit *any* site. Moreover, the detail of the simulated Neoclassical context evident in Mies' model is erased by McElheny. All that remains is the silhouette of buildings, thus advancing the project towards the contextlessness of *everywhere*.

Common to both *Bruno Taut's Monument to Socialist Spirituality (After Mies van der Rohe)* and *The Alpine Cathedral and the City Crown* is the fact that they were both unrealised architectural projects. McElheny's architectural models create a virtual impression of them; Tom Gunning points out that this is a powerful aspect of the work, which gives "the

⁹⁹ See Artemis Yagou, "Modern Complexity on a Small Scale: The Dandanah glass building blocks of 1920 from an object-based research perspective", in *Reprint*, no. 6, (2013), for more details on this toy.

¹⁰⁰ Using McElheny's argument applied to his own work, see McElheny, "Nowhere, Everywhere, Somewhere".

¹⁰¹ Extract from Mies' untitled text in *Frühlicht*, 1, no. 4 (1922): 122- 124 also found in Neumeyer, *The Artless Word*, 240.

appearance of an existence not literally actual.”¹⁰² Using ideas stemming from Gilles Deleuze (1925-95), Gunning continued, “The virtual is not simply a lack of full-bodied reality but is also the power of coming-to-be, before it adopts the limitations of actualisation. The *virtu* of a thing, in medieval and Renaissance thought, denoted its power: its often hidden potency and not simply its logical possibility [...] McElheny acts as a historian of virtuality.”¹⁰³ McElheny harvested ideas from history to suggest what might have been. The work does not present historical fact, consequently it has wider interpretational possibilities. In the next section, I will focus on how the crystalline becomes symbolic of this fracturing of history into multiple alternatives.¹⁰⁴

Part Two: Infinite Reflections

Thus far, this chapter has examined McElheny’s reframing of modernist ideas. This second part concerns McElheny’s interest in Smithson’s work, specifically the older artist’s use of crystalline forms. McElheny’s 2017 the *Crystal Land* exhibition at White Cube was a broad retrospective divided into three categories comprising work dating from 2008 to 2017. The first segment was recent work that drew inspiration from Smithson, signalled in the exhibition title borrowed directly from his 1966 essay published in *Harper’s Bazaar*. McElheny remade some of Smithson’s wall sculptures dating from his early ‘mature’ period between 1964 and 1966, and called the series *Crystal Landscape Paintings* (2017). Art historians, have suggested minor links between the artists, and McElheny has also mentioned Smithson in

¹⁰² Tom Gunning, “The Glass Hive: Josiah McElheny’s Virtual Histories” in *Josiah McElheny: Towards a Light Club*, (Ohio: Wexner Centre for the Arts, 2013), 19.

¹⁰³ Ibid. Gunning references Gilles Deleuze, *Difference and Repetition*, (New York, Columbia University Press, 1994).

¹⁰⁴ Another area of worthwhile research, outside the scope here, is the application of Henri Bergson’s (1859-1941) and Deleuze’s ideas to McElheny’s work. Bergson, a major influence on Deleuze, viewed history as an accumulation of events, each building on top of each other. For Bergson duration (experienced by the conscious mind as time) equates to memory, McElheny manipulates this when he restages past events. See Henri Bergson, *The Creative Mind: An Introduction to Metaphysics* (1934). In *Matter and Memory* (1896), Bergson differentiates between a thing, an image and a representation, arguing that we can only perceive images. These ideas influenced Deleuze’s Crystal-image in *Cinema II: The Time Image*, (London, Bloomsbury Academic, 2013).

interviews. However, McElheny's explicit references to Smithson in the title and in the work signifies more than a passing reference. I propose, that, as far back as 2007, McElheny was influenced by Smithson's ideas. As noted in the introduction to this chapter, at the time of writing, literature on McElheny's recent work is sparse. To counter this, my analysis will build upon an understanding of Smithson's work detailed in the previous chapter and will be underpinned, where possible, by scholarly writing on themes spanning McElheny's recent work and former projects. By juxtaposing the two artists, one becomes aware of their shared interests. Unravelling these threads has been difficult at times and the complexity of McElheny's work does not lend itself easily to a linear narrative. Although this creates problems for the art historian, it contributes to McElheny's labyrinth of ideas. I have compromised, however, and used subheadings to divide the section into thematic subsections, defined by Smithson's and McElheny's common pursuits which proceed in a roughly chronological arrangement.

Scepticism and Repetition



Figure 91, Josiah McElheny at *The Metal Party*, November 2001

The use of reflection, as a device, in McElheny's oeuvre began with *The Metal Party* (2001), where the artist restaged a 1929 Bauhaus party. McElheny's event consisted of a reflective

environment inspired by the original Dessau setting. He lit the venue with spherical glass orbs, some mirrored, some clear, replicas of Bauhaus versions, provided free drinks and designed metallic costumes for party goers. The free events, supported by the Public Art Fund, took place in New York and San Francisco and guests were obliged to don metal costumes, unless already suitably attired. In a lecture delivered at Cornell University in the autumn of 2013, McElheny concluded that the original *Metal Party* (1929) proposed, “that metallic-ness, that shininess was the emblem of modernity.”¹⁰⁵ This attracted him to use the material in his work. While a complete evaluation of McElheny’s use of mirrored surfaces is outside the current scope, we need to remember two things: he linked shininess to modernity and used mirrored surfaces to create repetition.



Figure 92, Josiah McElheny, *Endlessly Repeating Twentieth Century Modernism* (2007), installation view, Museum of Fine Art, Boston



Figure 93, Josiah McElheny, *Ornament and Crime* (2002), Los Angeles County Museum of Art

McElheny’s *Endlessly Repeating Twentieth Century Modernism* (2007) is a large free-standing mirrored display case containing mirrored glass objects. It is roughly, but not

¹⁰⁵ Josiah McElheny, “Modernisms” Recorded lecture Cornell University on October 7, 2013. Quote circa 14’05”, transcribed by author. Accessed October 13, 2018. <https://aap.cornell.edu/news-events/josiah-mcelheny-modernisms>.

exactly, a cube, measuring approximately 2.4 meters on each axis. Its dimensions allude to minimalist cubes by Tony Smith (1912-80) and Robert Morris (1931-2018) but that is where the similarity ends. A shadow gap at its base gives it the appearance of floating gently above the floor rather than being rooted to its place, recalling the apparent placelessness of modernist houses, such as Mies' *Farnsworth House* (1951), which scarcely touches its site. The Museum of Fine Arts, Boston, notes that the glass objects are, mainly, modelled on European glassware dating between 1910-90, but current literature does not provide any further detail about the originals.¹⁰⁶ The objects' individuality is not recorded in art criticism and McElheny further erased it by removing all trace of colour, texture or pattern which might identify the originals. The painter, Martin Beck (b.1962) wrote, "The reconstructions are colourless glass with mirrored surfaces on the inside, stripping them of some individuality; the objects maintain their shape but lose their transparency and specificity."¹⁰⁷ The viewer is presented not with a vase from Scandinavia, or an Italian bottle, but with a collection of vessels with shared traits. The forms are stripped bare of ornament and consequently, theoretically, at least, any connection to a specific time or place. This feature recalls Adolf Loos' advice in "Ornament and Crime" (1908), with which McElheny was familiar. According to Loos, ornament wastes material and labour, and the attraction to ornament is a symptom shared amongst the uncivilised who have yet to understand this. Furthermore, ornamented objects quickly go out of fashion making them more wasteful still. Loos promotes plain, well made, objects to solve these economic and social problems. He wrote, "If all objects would last aesthetically as long as they do physically, the consumer could pay a price for them that would enable the worker to earn more money and work shorter hours."¹⁰⁸ In an earlier work,

¹⁰⁶ For the Museum of Fine Art (MFA) gallery text for the piece, see <https://www.mfa.org/collections/object/endlessly-repeating-twentieth-century-modernism-503178> Accessed February 21, 2019.

¹⁰⁷ Martin Beck, "A Landscape without History" in Neri and McElheny, *A Prism*, 142.

¹⁰⁸ Adolf Loos "Ornament and Crime" (1908) widely available. Quote here taken from version published in Ulrich Conrads (ed), *Programs and Manifestos in 20th century architecture*, (Boston, MIT Press, 1976), 23.

Ornament and Crime (2002), McElheny's illustrated Loos' thoughts [Figure 93] by stripping away applied ornament. What remains are pure white functional objects. In a 2012 interview in *BOMB*, McElheny explained that in this, and other Loos inspired work, he was trying to test the extremity of Loos' logic, "The essay ["Ornament and Crime"] talks about the progressive development of society through the increasingly pure reduction of ornamentation. I thought, Well, what's the end game with that?"¹⁰⁹ To McElheny's disappointment, this message was not received by the majority of viewers who, he summarised, remained fixated on the beauty of the pure white aesthetic instead.¹¹⁰ In *Endlessly Repeating Twentieth Century Modernism* (2007), McElheny made another, more elaborate, critique on the modern aesthetic. He stripped the detail, as he had done previously, but added mirrored surfaces or the shiny "emblem of modernity" to the objects and the display case.¹¹¹ The focus therefore shifts from function (as in Loos' theory), to *repetition*.

¹⁰⁹ Gregg Bordowitz "Josiah McElheny by Gregg Bordowitz" in *BOMB*, Vol. 121, Fall 2012, digitally available at <https://bombmagazine.org/articles/josiah-mcelheny/> Original capitalisation maintained.

¹¹⁰ Ibid.

¹¹¹ Josiah McElheny, "Modernisms", circa 14'05".

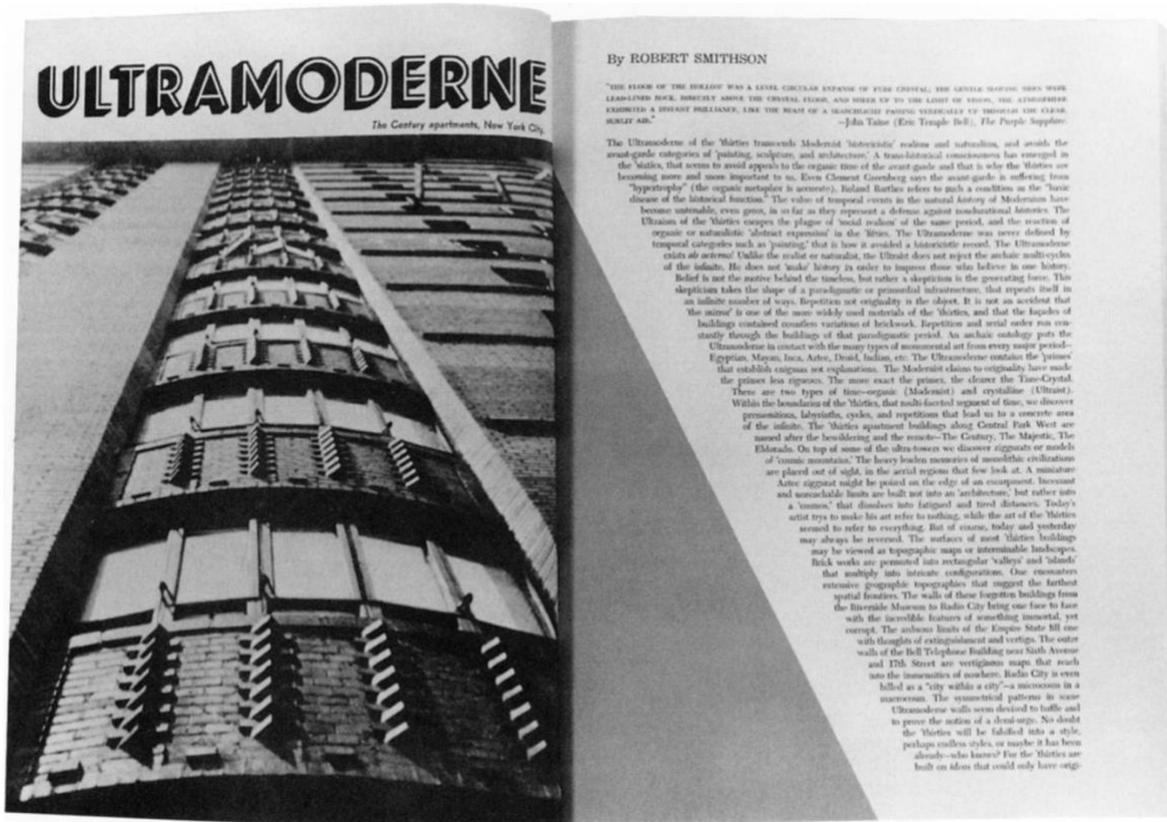


Figure 94, Robert Smithson, "Ultramoderne", *Arts Magazine*, Autumn, 1967 ¹¹²

Although unacknowledged, McElheny's *Endlessly Repeating Twentieth Century Modernism* is heavily influenced by Smithson's essay "Ultramoderne."¹¹³ Both Smithson's essay and McElheny's sculpture are critiques of modernism. This is not unusual, but what distinguishes these pieces is the use of a common method, a method invented by Smithson. Smithson applied literary theory to architecture to define the *Ultramoderne*, its key elements were the mirror and repetition. McElheny adopted this for *Endlessly Repeating Twentieth Century Modernism*. To present my argument, I will discuss Smithson's essay first and then analyse McElheny's piece.

¹¹² Layout photograph taken from Pamela M. Lee, "Ultramoderne": Or, How George Kubler Stole the Time in Sixties Art" in *Grey Room*, No. 2 Winter, (2001), 48.

¹¹³ The logic of my thought was as follows, McElheny removed the ornament from the object, making them *modern*, according to Loos. He then added the shiny surface, an additional symbol of modernity. In a way they are *ultra-modern*, which, of course, reminded me of Smithson's essay "Ultramoderne". Upon reading this text it became apparent that there was more than a coincidence here.

"Ultramoderne" was published in *Arts Magazine* in the autumn of 1967.¹¹⁴ Its frontispiece is a photograph of the *Century Building* in New York city, an apartment block designed by the art deco architect Irwin Chanin (1891-1988) in 1931. Robert Linsley (1952-2017) argued that the 30s were, "the last period of a general belief in the coming utopia of socialism."¹¹⁵ During the 60s, it was heralded as a period when artistic input was considered vital to the cultural and political agenda, mainly through President Roosevelt's New Deal initiatives. The surge of interest led to a dedicated exhibition at the Whitney in 1968, entitled, *The 1930's: Painting and Sculpture in America*.¹¹⁶ This context makes Smithson's subject matter less surprising. Smithson's writing is poetic; However, on closer analysis one sees that this is a very specific and thought-provoking essay. In typical Smithson fashion, he does not identify his citations; instead he integrates them seamlessly into the text and refuses to capitalise key terms. As a result, deeper meanings are simultaneously allusive and elusive. Smithson explores his subject matter with reference to Gnosticism, Scepticism and Empiricism. As shown above, Smithson's text was formatted into a sort of ziggurat suggesting the decorative motifs or silhouettes of art deco skyscrapers. The arrangement of text subtly suggests his non-organic, crystalline, idea of time, which I will return to in a moment. Smithson described how, what is generally understood as art deco, is more radical than previously thought, and that similar tendencies are evident in some Sixties art.¹¹⁷

¹¹⁴ Robert Smithson, "Ultramoderne." 1967, in Robert Smithson, *Robert Smithson: The Collected Writings*. Jack Flam (ed.). (Berkeley, University of California Press, 1996), 62-65

¹¹⁵ Robert Linsley, "Minimalism and the City: Robert Smithson as a Social Critic", in *RES: Anthropology and Aesthetics*, No. 41 (Spring, 2002): 47.

¹¹⁶ For more on the influence of the 30s on 60s art see Robert Slifkin, "Philip Guston's Return to Figuration and the "1930s Renaissance" of the 1960s" in *The Art Bulletin*, Vol. 93, No. 2 (June 2011): 220-242.

¹¹⁷ Although Smithson does not detail contemporary applications of "Ultramoderne" principles, they are suggested both in the text and through film stills from Andy Warhol's *Empire* (1964) used as illustrations. *Empire* is a single shot film of the Empire State building, recorded over approximately six and a half hours. The film has no narrative and, on playback, Warhol slowed the frame speed from 24 to 16 frames per second to create a movie over eight hours long. The image changes so slowly that one hardly notices the gradual shift from day into night until it is punctuated by lights appearing in the buildings. It's likely that Smithson chose the frames as illustrations because Warhol's piece dealt with both time and thirties' architecture. He included a series of stills because repetition was key to his message, and the medium of film had, for Smithson, equivalence with the mirror, he clarified this saying, "as everybody knows, the mirror is a symbol of illusion, as immaterial as a projected film." Quote from Robert Smithson, "Ultramoderne" in Smithson, *Collected Writings*, 64.

The essay, which spans three pages, argues for a new category in the history of art to recognise a Thirties movement that he calls the “Ultramoderne”. In coining this term, Smithson was influenced by the writer, Jorge Luis Borges (1899-1986) whom he introduces towards the end of his essay. Borges, imported the Spanish literary movement *Ultraísmo* (1918-22) to his home country, Argentina, The Ultraists’ aim was somewhat equivalent to modernist architecture insofar as they required prose to be purely functional, and aimed to achieve this by removing all superfluous words or ornament. In Argentina, Borges refined the movement to focus purely on aesthetics, devoid of the political slant inherent in the European version.¹¹⁸ Explaining the difference, Borges said, “Ultraism in Buenos Aires was the ambition to obtain an absolute art which did not depend on the uncertain prestige of words, and which lasted in the eternity of language as a conviction of beauty.”¹¹⁹ Borges’ influence on McElheny has been noted by Molesworth, who stated that; “His [Borges’] poem, ‘Mirrors’ was a source of inspiration for several of Josiah McElheny’ mirror based works. For Borges, the mirror is ‘infinite’ in its capacity to copy and double the world...”¹²⁰ Smithson had also noted these features in Borges writing, and saw them manifest in Thirties brickwork and use of mirrors. For Smithson this repetition and mirroring stemmed from lack of confidence in modernism, he explained in his essay,¹²¹

The Ultramoderne of the 'thirties transcends Modernist 'historicistic' realism and naturalism, and avoids the avant-garde categories of 'painting, sculpture, and architecture....'The Ultramoderne was never defined by temporal categories such as 'painting,' that is how it avoided a historicistic record. The Ultramoderne exists *ab aeterno!* Unlike the realist or naturalist, the Ultraist does not reject the archaic multi-cycles of the infinite. He does not 'make' history in order to impress those who believe in one history. Belief is not the motive behind the timeless, but rather a scepticism is the generating force. This scepticism takes the shape of a paradigmatic or primordial infrastructure, that repeats itself in an infinite number of ways. Repetition not originality

¹¹⁸ Jose Eduardo Gonzalez, *Borges and the Politics of Form*, (London, Routledge, 1998), 15.

¹¹⁹ Translated from Spanish in *ibid.*, 16.

¹²⁰ Helen Molesworth, “A Dictionary of Ideas” in Molesworth, *Pictures of the Infinite*, 22.

¹²¹ A further area of research would be to explore how this lack of confidence in modernism might equate to the anxiety that, Worringer argued, creates the volition to abstraction.

is the object. It is not an accident that 'the mirror' is one of the more widely used materials of the 'thirties, and that the facades of buildings contained countless variations of brickwork. Repetition and serial order run constantly through the buildings of that paradigmatic period.¹²²

Unlike the Modernist, the Ultraist, does not reject Classical influences or, what Smithson terms, "the archaic multi-cycles of the infinite."¹²³ Yet, the Ultraist does not embrace Classical principles to "impress" those who still believe in their superiority either. Unlike the Modernist, the Ultraist does not believe in a single Truth. The ideology of singular Truth is evident in modernist products that are analytically functional, thereby producing a universal, eternally valid, solution to a design problem, which, as we have seen, was promoted by Loos. In art, this is expressed through universally understood abstract shapes and colours. The belief in a universal Truth gives Modernist work the appearance of timelessness. The Ultraist does not share this ideology. Instead, as Smithson declared, "scepticism is the generating force."¹²⁴ The term "scepticism" is a reference to the philosophical idea that there is no certain knowledge. The sceptical Ultraist replaces single Truth with repetition, and, consequently, a unified organic time with a crystalline model which is fragmented rather than linear. Smithson made this clear, saying, "There are two types of time—organic (Modernist) and crystalline (Ultraist)."¹²⁵ The crystalline is the chosen metaphor for the Ultraists' understanding of time because the crystal comprises repeating molecular units which can grow in a spiral formation, thereby representing the lack of certainty.¹²⁶ With an obvious reference to Kubler's book, Smithson wrote, "The 'shape of time,' when it comes to the Ultramoderne, is circular and unending—a circle of circles that is made of 'linear incalculables' and 'interior distances.'" ¹²⁷ So, in place of singular Truth and linear time, we are presented with repetition and mirrors,

¹²² Smithson, "Ultramoderne" in Smithson, *Collected Writings*, 63.

¹²³ Ibid.

¹²⁴ Ibid.

¹²⁵ Ibid.

¹²⁶ The idea of crystals and time is also discussed in Chapter 3.

¹²⁷ Smithson, "Ultramoderne" in Smithson, *Collected Writings*, 65.

so that, according to Smithson, “Repetition not originality is the object.”¹²⁸ Inherent in repetition is the capacity for variation, which Smithson observed in the brickwork patterns of the *Century Building*. Smithson wrote, “Within the boundaries of the 'thirties, that multi-faceted segment of time, we discover premonitions, labyrinths, cycles, and repetitions that lead us to a concrete area of the infinite.”¹²⁹



Figure 95, Josiah McElheny, *Endlessly Repeating Twentieth Century Modernism* (2007), detail.

Returning now to consider McElheny's *Endlessly Repeating Twentieth Century Modernism* in more detail, we will first consider the interior display cabinets and then the overall work. The interior cabinets express McElheny's sceptical attitude to Modernism but he also extends this critique beyond the modernist period. We recall that McElheny based his glassware on designs dating from 1910 to 1990, indiscriminately mixing modernist and contemporary objects. Each of the chosen objects are different, but homogenous because McElheny erased many of their defining features. The basic repetition of glass objects reflects the Ulraist's scepticism. This is then exaggerated to infinity by the mirrored reflections inside the work. For Smithson the mirror was emblematic as artifice, he said, “And as everybody knows,

¹²⁸ *Ibid.*, 63.

¹²⁹ *Ibid.*

the mirror is a symbol of illusion, as immaterial as a projected film.”¹³⁰ Smithson also noted that,

An infinite multiplication of looking-glass interiors, that could only spell doom to the naturalist [modernist]. The 'thirties recover that much hated Gnostic idea that the universe is a mirror reflection of the celestial order—a monstrous system of mirrored mazes. The thirties become a decade fabricated out of crystal and prisms, a world heavy with illusion.¹³¹

I wish to very briefly suggest a link between McElheny's work and Deleuze's *Difference and Repetition*.¹³² In the opening chapter, Deleuze distinguishes between *generality* and *repetition*, which are explained in McElheny's *Endlessly Repeating Twentieth Century Modernism*. Generality occurs when there is a similarity or equivalence between objects, meaning that one object could be easily substituted for another.¹³³ This occurs in McElheny's mirrored glassware. They share the quality of being mirrored glass, and they are generally equivalent because they are all containers. In contrast with this, repetition only occurs where substitution cannot take place. McElheny's reflections create repetition. Deleuze explains that “Generality, as generality of the particular, thus stands in opposition to repetition as universality of the singular.”¹³⁴ What this means is that, because repetition only occurs when substitution cannot take place, the ‘copy’ shares a “secret vibration” with the original; the repetitions are therefore originals to the n^{th} degree.¹³⁵ Alluding to a Freudian analysis of repetition, Deleuze linked repression to repetition, saying, “I do not repeat because I repress.

¹³⁰ Smithson, "Ultramoderne" in Smithson, *Collected Writings*, 64

¹³¹ Ibid.

¹³² Deleuze, *Difference and Repetition*. See earlier footnote 104 regarding Deleuze and McElheny.

¹³³ Ibid., 1.

¹³⁴ Ibid., 2. The repeated object is pure image, it cannot substitute the original because it is only a reflection of it. Interestingly, Aidan Tynan discussed Ballard's use of crystallisation in *The Crystal World* in these terms, he wrote, “Crystallisation, then, is the proliferation of matter as pure image.” Aidan Tynan, "Ballard, Smithson and the Biophilosophy of the Crystal." *Green Letters: Special Issue: J.G. Ballard and the 'Natural' World* 22, no. 4 (2018): 401. Tynan refers to other criticism on Ballard where the crystal is seen as a symbol of individuation, and there may be some traction between this idea and Worringer's “closed material individuality,” see Tynan, 401 and Worringer, *A&E*, 19-20 & 41. Tynan also remarks on how Deleuze uses the crystal as a means of discussing life without value judgements between the organic and inorganic. Tynan 401-2.

¹³⁵ Ibid. Deleuze continues to discuss repetition and theatricality (see page 11), which could be read in conjunction with Dave Hickey's essay “Exit Left to the Mirror” in Neri and McElheny, *A Prism*, 122-8. Hickey discusses Fried and McElheny, which in turn reminds me of Smithson's “Letter to the Editor” (1967), and “The Pathetic Fallacy in Esthetics” (1966-67), both in Smithson, *Collected Writings*. There is not the scope here to interpret how repetition and theatricality form a critique of modernism, though I would suggest that these links exist.

I repress because I repeat, I forget because I repeat. I repress, because I can live certain things or certain experiences only in the mode of repetition.”¹³⁶ Transposed to McElheny’s sculpture, the use of repetition allows viewers to experience a different interpretation of modernism.

McElheny’s cabinet mirrors create the illusion of infinity (infinite space and infinite objects), a theme that will be discussed later. Yet, like in Smithson’s *Enantiomorphic Chambers*, the viewer is strategically excluded from these interior reflections and therefore dislocated from their actual location in the gallery. In “Ultramoderne” Smithson described the process that McElheny executed, “the interior mirrors multiplied and divided 'reality' into perplexing, impenetrable, uninhabitable regions.”¹³⁷

Turning to consider McElheny’s sculpture as a whole, Smithson wrote that, “Ultraism, because it is aware of Time as 'fiction', knows that belief is groundless, and so accepts the groundlessness with a measured skepticism.”¹³⁸ In light of this, it is possible to expand on the earlier conclusion that McElheny floated *Endlessly Repeating Twentieth Century Modernism* above ground to suggest modernist placelessness. The sculpture can also be read as groundless, not fixed to any particular Truth, thus reinforcing the Ultraist’s scepticism.

Finally, to conclude, let us consider the cube’s mirrored walls which question the modernist concept of universality. Modernist architecture, particularly the International Style, is generally understood as being non-contextual. This means that the design prioritises solving a design problem (for example, housing), over responding to a particular site. Le Corbusier’s

¹³⁶ Deleuze, *Difference and Repetition*, 20.

¹³⁷ Smithson, , "Ultramoderne" in Smithson, *Collected Writings*, 64

¹³⁸ *Ibid.*, 65.

lecture “The Plan of the Modern House” emphasises this idea.¹³⁹ In opposition to today’s design process which, through convention and the planning system, must respect the existing built or natural environment, Corbusier described a process of evolving a design with no particular site in mind. This lecture took place while his *Villa Savoye* (1930), outside Paris, was still on site, and he said, “This same house [*Villa Savoye*], I should set down in a corner of the beautiful Argentine countryside; we shall have twenty houses rising from the high grass of an orchard where cows continue to graze.”¹⁴⁰ McElheny references the non-contextual (modernist) versus contextual (contemporary) debate using the cuboid’s mirrored surfaces. The installation view [Figure 92] shows the sculpture almost camouflaged in its classical setting. It *reflects* the architecture of its surroundings. In architectural terminology, this would usually mean that the design pays homage to its context by yielding to established patterns of scale, proportion or datum. *Endlessly Repeating Twentieth Century Modernism* does none of these things. It is a chameleon which, by virtue of its mirrored surfaces, integrates itself into any context without following either modernist or contemporary design principles. Perhaps McElheny is making a comment about the ongoing legacy of the modernist project, in the same way that he included glassware from the nineties in the display cabinets. The work is camouflaged by its surroundings, suggesting that modernist ideas are so integrated into our thinking that we may not even see them.

¹³⁹ Le Corbusier, “The Plan of the Modern House” (1930) in Korydon Smith (ed.), *Introducing Architectural Theory: Debating a Discipline*, (New York, Routledge, 2012), 254-5.

¹⁴⁰ *Ibid.*

Dislocation, Reflection and, Inclusion



Figure 96, Robert Smithson, *Nonsite (Essen Soil and Mirrors)*, 1969

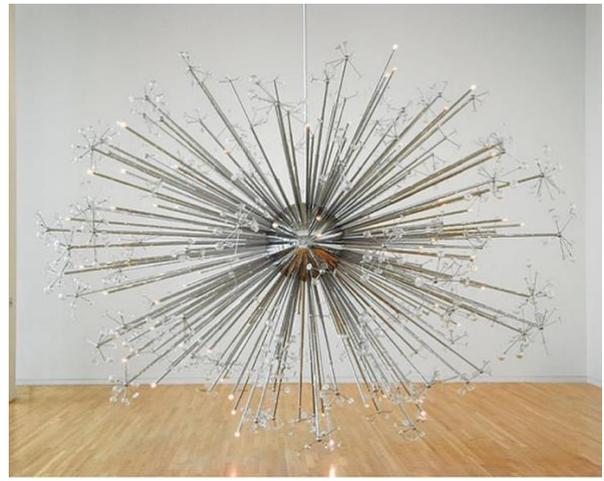


Figure 97, Josiah McElheny, *An End to Modernity*, 2005, installation view at Tate Modern

I previously touched upon McElheny's use of mirrors to dislocate the viewer, and I wish to explore this theme further. In an interview entitled, "An End to Modernity" (named after the piece *An End to Modernity*, 2005), Louise Neri turned the conversation to Smithson's nonsites by mentioning an example from 1969 that included mirrors. Although she does not reference a specific work, the published transcript includes a photo of *Nonsite (Essen Soil and Mirrors)* [Figure 96].¹⁴¹ Speaking about his work, Smithson said, "The nonsite exists as a kind of three-dimensional abstract map that points to a specific site on the surface of the earth. And that's designated by a kind of mapping procedure."¹⁴² The early nonsite projects, such as *Nonsite, Pine Barrens New Jersey*, 1967 used storage bins to contain the site material and were accompanied by mapping documents to precisely locate the source. Neri's example has neither containers nor documents, replacing these with mirrors instead. To recap from the previous chapter, with the exception of his wall sculptures from around 1965, mirrors were infrequent in Smithson's work before *The Cayuga Salt Mine Project* (1968) for the *Earth Art*

¹⁴¹ Louise Neri and Josiah McElheny, "An End to Modernity" in Neri and McElheny, *A Prism*, 120.

¹⁴² Robert Smithson and Paul Cummings, "Oral History Interview with Robert Smithson," in Smithson, *Collected Writings*, 295.

exhibition. This marked a change for Smithson, which he acknowledged: “in other non-sites, the container was rigid, the material amorphous. In this case, the container is amorphous, the mirror is the rigid thing.”¹⁴³ Neri concluded that Smithson used mirrors “to make it an idea about a real place.”¹⁴⁴ That interpretation fits earlier nonsites rather than the mirrored versions which, I argue, are open to another interpretation. Smithson’s use of mirrors creates an expanded reflective field. The reflection is determined by the gallery setting *and* the viewer’s changing position. In essence then, the added mirror (and lack of mapping documents) changes the work from specific to subjective. The mirror now *contains* the reflected material, the gallery and the viewer, thereby integrating the viewer into the work to create a subjective experience. The mirror merges the site (material) and gallery into one place (the reflected field). When the viewer enters this field, they become entangled in this site-gallery dichotomy.

The *Nonsite (Essen Soil and Mirrors)* centres, for Neri, around the mirror as inclusive, but McElheny responded by highlighting the potential for dislocation, also common to his and Smithson’s work, saying;

The ‘infinity series’ relate even more strongly to Smithson’s *Enantiomorphic Chambers* because they explore self-perception and the idea that a physical environment could create a dislocating experience in the most basic expectation of the experience of the self through reflection.¹⁴⁵

Although the artist does not elaborate on this point, he could be referring to Smithson’s use of mirrors and, of perspective as dislocating devices. Chronologically, Smithson first used these in tandem before using mirrors alone in the *Cayuga* nonsite.

¹⁴³ Robert Smithson, “Cayuga Salt Mine Project” description for John Weber Gallery, RSNHP, location 3:83.

¹⁴⁴ Louise Neri and Josiah McElheny, “An End to Modernity” in Neri and McElheny, *A Prism*, 121.

¹⁴⁵ *Ibid.*

There are two dislocated aspects in Smithson's work: the site material, and the viewer. In the mirrored non-sites, the mirrors, together with the absence of the mapping information, dislocates the soil from its original geographical location. Instead it is confined to an impenetrable world that only exists in the mirror. When viewers are also captured in this reflective landscape, they are partially dislocated from their real location in the gallery. This process of dislocation was complete in *Enantiomorphic Chambers* whose shiny surfaces are arranged to prevent the viewer's reflection, thereby removing them entirely from the space. This is a device that McElheny also uses. A notable example is McElheny's *Interactive Abstract Bodies* (2012), a series of mirrored sculptures designed to be worn like sandwich boards by dancers within the gallery. Of the eight pieces in the series, some have split mirrors which play with this notion of displacement. A 2019 exhibition at the Hayward Gallery, *Space Shifters*, included some of the works which were worn periodically by trained dancers who moved along a line drawn on the floor.¹⁴⁶ The purpose of the line is to help the wearer navigate the space because their eyes are covered by the piece, but it seemed to have another purpose too. During periods when the work rested unworn on its timber stand, the visitor could follow the line towards the piece, observing their reflection along the way. However, at a certain point along the line, the reflection abruptly disappears and one no longer appears in the gallery space [Figure 99].

¹⁴⁶ *Space Shifters*, Hayward Gallery, London, 26 September 2018 – 6 January 2019.



Figure 98, Josiah McElheny, *Interactive Abstract Body (Split Cube)*, 2012, side view, Hayward Gallery installation shot, November 2018. Note the line on the floor in front of the piece.¹⁴⁷



Figure 99, Josiah McElheny, *Interactive Abstract Body (Split Cube)*, 2012, note that I am not reflected in the piece but my shadow is partly evident in the left-hand mirror.¹⁴⁸



Figure 100, Josiah McElheny, *Interactive Abstract Body (Split Cube)*, 2012, now I have stepped off the line on the floor and therefore I appear in the mirror.¹⁴⁹

McElheny's and Neri's published conversation includes an extract from Smithson's "A Short Description of Two Mirrored Crystal Structures" written in 1965, when he was making wall sculptures.¹⁵⁰ This text, which is covered in greater detail in the previous chapter, discussed how Smithson's mirrored wall structures capture three-dimensional space and collapse it onto the two-dimensional mirrored surface. As he put it, "the space is both crystalline and collapsible."¹⁵¹ Of course, all mirrors do this, but what attracts McElheny is, "the experience of the self through reflection."¹⁵² One objectifies oneself through consideration of one's external self-image. Borges poem, "Mirrors," exemplifies this point,

I, who have felt the horror of mirrors
Not only in front of the impenetrable crystal
Where there ends and begins, uninhabitable,
An impossible space of reflections.¹⁵³

¹⁴⁷ Photograph by Author, *Space Shifters*, Hayward Gallery, London, November 2018.

¹⁴⁸ Ibid.

¹⁴⁹ Ibid.

¹⁵⁰ Robert Smithson, "A Short Description of Two Mirrored Crystal Structures", in Smithson, *Collected Writings*, 328.

¹⁵¹ Ibid.

¹⁵² Louise Neri and Josiah McElheny, "An End to Modernity" in Neri and McElheny, *A Prism*, 121.

¹⁵³ Jorge Luis Borges, "Mirrors" in Neri and McElheny, *A Prism*, 212.

McElheny has studied the history of the mirror, having written a short piece on the subject for *Cabinet* in 2004. He uses this knowledge of the object to play with the viewer; he presents mirrors which flatten and separate and mirrors which create endless depth and exclusion. He wrote, “Nothing to do with the mirror is ever fixed – reflections of ourselves are always in flux.”¹⁵⁴ This contrasts with some notions of the mirror as central to consolidating a sense of self. What follows here is not intended to be a psychoanalytic reading of McElheny’s work, but rather a footnote to this discussion.

Jacques Lacan's (1901-1981) *Le stade de miroir*, was first introduced in 1936.¹⁵⁵ He later revised his theory for the International Congress of Psychoanalysis in 1949, when he was considering Freud's ideas using structural linguistics.¹⁵⁶ The later *Mirror Stage* hypothesis differed in that it focused on the illusory nature of the mirror image and the tension that it created in the subject.¹⁵⁷ The infant perceives a unified image in the mirror which forms the Ideal Ego. However, the child’s inner experience is neither unified nor coordinated. The contrast between the perceived image and the experience is the basis of the child’s developing connection between inner and outer worlds, or in Lacan’s own words, “I am led, therefore, to regard the function of the mirror-stage as a particular case of the function of the imago, which is to establish a relation between the organism and its reality – or, as they say, between the *Innenwelt* and the *Umwelt*.”¹⁵⁸ The child holds the Ideal Ego in their everyday experience; as such the external world and the internal world/perception become entwined,

¹⁵⁴ Josiah McElheny, “A Short History of the Glass Mirror” in Neri and McElheny, *A Prism*, 210.

¹⁵⁵ Jacques Lacan, *Écrits: A Selection*, (London, Routledge, 2001), xv.

¹⁵⁶ Gerry Sullivan, “The place of the mirror stage in Lacan’s work” in Astrid Gessert (ed.), *Introductory Lectures on Lacan*. (London, Routledge, 2018), 29.

¹⁵⁷ *Ibid.*, 31.

¹⁵⁸ Lacan, “The Mirror Stage as Formative of the Function of the *I* as Revealed in Psychoanalytic Experience” in *Écrits*, 4.

as explained by the psychoanalyst, Gerry Sullivan, “the sphere of reality is, in Lacan’s view, substantially impregnated with imaginary aspects.”¹⁵⁹

Lacan’s writing (like McElheny’s fluctuating mirror image) has a poetic quality that makes it difficult to decipher a clear message. However, he does state that the outcome of the mirror stage is the creation of an “alienating identity, which will mark with its rigid structure the subject’s entire mental development.”¹⁶⁰ Returning once more to McElheny’s *Interactive Abstract Body (Split Cube)*, we can see that the piece exemplifies Lacan’s theory in two ways. Firstly, it reflects the illusion of a unified image of the subject (the Ideal Ego) and secondly, when one is positioned centrally (on the traced line) one is alienated from the (reflected) world and oneself.

Screens for Looking at Abstraction were created as part of the Bloomberg commission at the Whitechapel Gallery, London in 2011.¹⁶¹ McElheny created seven variations on the theme, each comprising between two and eight surfaces for receiving projected images. Some of the surfaces were mirrored. He sought input from four collaborative groups or scholars to select abstract films for projection. In a letter to Kenneth Goldsmith, the founder of *UbuWeb*, McElheny outlined his intention that the selected films would reveal alternative histories of this particular type of film.¹⁶² The screens invite viewers to enter the reflective space and

¹⁵⁹ Sullivan, “The place of the mirror stage in Lacan’s work” in Gessert, *Lectures on Lacan*, 32. It is important to note the meaning of the term imaginary in Lacan’s work, summarised by Alan Sheridan, as follows, “The imaginary was then the world, the register, the dimension of images, conscious or unconscious, perceived or imagined. In this respect, ‘imaginary’ is not simply the opposite of ‘real’: the image certainly belongs to reality and Lacan sought in animal ethology facts that brought out formative effects comparable to that described in ‘the mirror stage’”. Sheridan in Lacan, *Ecrits*, xi.

¹⁶⁰ Lacan, “The Mirror Stage as Formative of the Function of the *I* as Revealed in Psychoanalytic Experience” in *ibid.*, 5.

¹⁶¹ The collective name for the works produced during the commission is *The Past Was A Mirage I’d left Far Behind*.

¹⁶² UbuWeb is an internet based resource founded by Goldsmith in 1996 that archives avant-garde video and sound recordings sometimes difficult to source by alternative means. Letter from Josiah McElheny to Kenneth Goldsmith dated 14 August 2011 reprinted in Herrmann (ed.) *The Past was a Mirage*, 85.

become merged in the multiple reflections and distortions. Daniel Herrmann, then head curator at Whitechapel, described the subtle differences in each configuration in his remarks on McElheny's show, and concluded, "McElheny's crystalline iterations offer a fragmented and multifaceted viewing situation, making for an immersive experience that is dependent on the viewer's own position in space."¹⁶³ Herrmann continued by suggesting yet another parallel with Smithson's *Enantiomorphic Chambers* (1965).¹⁶⁴ The previous chapter contextualised *Enantiomorphic Chambers* within Smithson's oeuvre and explained its method as distorting stereoscopic vision and replacing it instead with a series of reflections. In doing so, the viewer is prevented from seeing the two images that usually merge to create binocular vision. Smithson described how the process could translate impressions of space into crystalline structures,

My first physiological awareness of perspective took place when I built *Enantiomorphic Chambers*. In this work, the vanishing point is split, or the centre of convergence is excluded, and the two chambers face each other at oblique angles, which in turn causes a set of three reflections in each of the two obliquely placed mirrors. A symmetrical division into two equal parts is what makes it enantiomorphic; this division also exists in certain crystal structures.¹⁶⁵

Herrmann illustrated how both Smithson and McElheny used reflections to "affect binocular vision whereby the viewer perceives an optical illusion of three-dimensional depth when standing in a particular position towards the angled mirrors."¹⁶⁶ However, while Smithson's *Enantiomorphic Chambers* work only for a single viewer at a time, McElheny's installation turned the whole gallery space into an interplay of interactions between the seven sculptures and the gallery visitors. In consequence, an ever-changing immersive kaleidoscope was created. One cannot help but note a reference to Taut's *Glashaus*, where the kaleidoscopic

¹⁶³ Ibid., 31.

¹⁶⁴ Ibid.

¹⁶⁵ Robert Smithson, "Pointless Vanishing Points" available in RSNHP, location 3:62 or in Smithson, *Collected Writings*, 359.

¹⁶⁶ Daniel Herrmann, "The Past was a Mirage I'd Left Far Behind" in Daniel Herrmann (ed.) *The Past was a Mirage I'd Left Far Behind*, London, Whitechapel Gallery, 2012, p. 32.

space is similar to that which concluded Taut's architectural promenade.¹⁶⁷ Here, however, in contrast to the applied kaleidoscope lighting effects in McElheny's *Alpine Cathedral and City Crown*, the viewer becomes part of the work. The projecting apparatus does not distinguish between the screen or the person.



Figure 101, Josiah McElheny, *Screen for Observing Abstractions No. 5*, Installation shot, Whitechapel Gallery, 2012¹⁶⁸

In an interview with the art historians Tamara Trodd, and Herrmann, McElheny explained the limitations of modernist abstraction:

The idea of abstraction is associated with aesthetic models that don't take into account difference: neither in terms of multiple viewpoints, nor in terms of awareness of specific cultural situations. I was wondering how we could look at abstraction again, as something that has a sense of possibility. Instead of it being a singular hermetic vision of a singular voice, how could it be fractured in such a way that people could reassemble it as a unique and subjective set of ideas or images that hopefully are more than merely entertaining.¹⁶⁹

For McElheny, abstraction was a universal language that aimed to overcome cultural contingencies, but this model does not consider individuals or collectives.¹⁷⁰ To counter this,

¹⁶⁷ Visitors had to pass through a kaleidoscope room on the way out of the *Glashaus* pavilion.

¹⁶⁸ Image from Herrmann, *The Past was a Mirage*, 59.

¹⁶⁹ "Josiah McElheny in Conversation with Daniel F. Herrmann and Tamara Trodd" in Herrmann, *The Past was a Mirage*, 76-7.

¹⁷⁰ There are obvious connections here to McElheny's critique of Loos' ideas discussed earlier.

his *Screens for Observing Abstractions* (numbers 1-7) invited the viewers into the work. Their physical presence interrupted the projection of the abstract films; their silhouettes added figuration to the abstraction shown on the screens [Figure 101]. The viewer (or group of visitors) saw a version of abstraction mediated by people.

We saw that, Smithson saw a possible confluence of abstraction and the crystalline which led to his use of grids, the non-site projects and ultimately his earthworks.¹⁷¹ In a discussion about *Screens for Observing Abstractions*, McElheny distinguished between the crystalline and grids because he saw restrictions in the latter; “The grid imposes itself upon you, whereas in the crystalline maybe you can see where the surface is, but you’re standing still in your own space because you don’t know where the crystalline leads to next.”¹⁷² Focusing only on the crystalline, McElheny said, “I am interested in the model of the crystalline as an approach, not so much in terms of it as a symbolic form or its metaphorical meanings, but a configuration that allows – as you move around it and change your relationship to it – for change.”¹⁷³ To understand how this crystalline facilitates change in the way he described, we need to explore McElheny’s approach to historical fact, and time in more detail.

¹⁷¹ Smithson told Cummings, “I recognized an area of abstraction that was really rooted in crystal structure. In fact, I guess the first piece that I did was in 1964 [1965]. It was called the *Enantiomorphic Chambers*. And I think that was the piece that really freed me from all these preoccupations with history; and I was just dealing with grids and places and empty surfaces. The crystalline forms suggested mapping.” “Oral History Interview with Robert Smithson” in *Smithson, Collected Writings*, 287.

¹⁷² “Josiah McElheny in Conversation with Daniel F. Herrmann and Tamara Trodd” in Herrmann, *The Past was a Mirage*, 78.

¹⁷³ *Ibid.*

Perspective and Infinity



Figure 102, Josiah McElheny, *Studies in the Search for Infinity*, 1997-1998, blown glass (eight plates), fabric covered wooden shelf, framed text; ten parts.¹⁷⁴

The last chapter argued that, in the mid-Sixties, Smithson used his knowledge of perspective to negate its tenets.¹⁷⁵ McElheny shares Smithson's interest in Renaissance perspective as evidenced by his 1997-98 work, *Studies in the Search for Infinity*. The work comprises eight clear glass plates with spirograph type patterns and an accompanying text panel that states,

Perspective drawing was developed by painters of the Renaissance era. In their search for the spiritual perfection of an image, painters devised various geometric methodologies for creating the illusion of three dimensional space. The point of infinity or vanishing point was the reference used to construct pictures in accordance with the laws of optics....In parallel with painting, Renaissance Venetian glassblowers aimed to depict a perfected, spiritually true reality through the use of point perspective. The appearance of infinite distance was created by elaborate patterning within the glass. These designs were generated by abstracting the geometric templates used to determine the relative proportion of objects within a picture plane.¹⁷⁶

¹⁷⁴ Image courtesy of the RISD Museum, Providence, RI. Permission to use photograph for PhD received via email dated October 18, 2018 this does not include copyright permission.

¹⁷⁵ For example, see Robert Smithson, *Untitled*, (1964-5)

¹⁷⁶ Josiah McElheny, text panel as part of the work *Collection of Glass Concerning the Search for Infinity*, 1998-2011, reprinted in Molesworth, *Pictures of the Infinite*, 62.



Figure 103, Josiah McElheny, *Impurities* (detail), 1994¹⁷⁷

An earlier work, *Impurities*, (1994), included examples of glass tinted by impurities in its raw materials, and hand written/drawn information relating to the display and the history of glass. Rather than using contemporary methods to record and present information, McElheny used his own hand. This gives the impression that the information passes from individual to individual, exactly as the critic Dave Hickey (b.1940) described the oral tradition of glass blowing.¹⁷⁸ In Murano, between the thirteenth and sixteenth century, glassmaking was a closely guarded secret. Any infringements were subject to punishment ranging from imprisonment to fines.¹⁷⁹ Marco Beretta, Professor of history in Bologna, described the context as follows,

Although many Muranese glassmakers kept “recipe books” in which their output was meticulously registered, the circulation of these books remained confined within the families of their authors and the most important techniques were often written in a coded language that was accessible only to an initiated few.¹⁸⁰

¹⁷⁷ Image from James Cohen Gallery, available on <https://www.jamescohan.com/artists/josiah-mcelheny#50> Accessed August 10, 2019.

¹⁷⁸ Dave Hickey, “Hearts of Glass” in Neri and McElheny, *A Prism*, 230.

¹⁷⁹ Guy Turner, “‘Allume Catina’ and the Aesthetics of Venetian ‘Cristallo’” in *Journal of Design History*, Vol. 12, No. 2 (1999): 11.

¹⁸⁰ Marco Beretta, “Glassmaking Goes Public: The Cultural Background to Antonio Neri’s *L’Arte Vetraria* (1612)” in *Technology and Culture*, Vol. 58, no. 4 (October 2017): 1048.

The glass making industry played a substantial part in Venetian economic prosperity explaining this level of control.

In his hand-written history of glass, McElheny discussed how the presence of various metals in the sand or plant ash gives rise to tints in the glass and that, “The search to make perfectly, clear glass began with the Italian Renaissance.”¹⁸¹ In fact, the formula for transparent glass was discovered by the Venetian glassmaker, Angelo Barovier (d.1460), who found a way to purify the raw material, and consequently create glass that was more workable than earlier mixtures. The name given to this new optically pure glass was *cristallo* after rock crystal.¹⁸² In 1612, the Florentine priest, Antonio Neri (1576-1614) published *L'Arte Vetraria* (the English edition *The Art of Glass dates from 1662*), a treatise which recorded techniques and formulae for glass making, including a flawed process for *cristallo*. Contemporary analysis has shown that the Neri's procedure produces an unstable material.¹⁸³ Dedicated to his patron, Antonio de' Medici (1576-1621), Neri's treatise equated glass, and particularly *cristallo*, to precious materials making the production of glass akin to alchemy.¹⁸⁴ Historian of science and technology Marco Beretta recently concluded that *L'Arte Vetraria*, one of the first books on the subject, came out of Florence instead of Venice as a result of Venetian regulation, and, further, that it was part of the Medici's attempt to establish a rival glass industry in the Florentine republic.¹⁸⁵

Art historian, Guy Turner argued that the introduction of *cristallo*, “provoked new decorative ideas, but also brought into focus the complete spectrum of values from opacity through to

¹⁸¹ McElheny, Extract from text panel as part of the work *Impurities*, 1994.

¹⁸² Turner, “‘Allume Catina’ and the Aesthetics of Venetian ‘Cristallo’”, 111-2

¹⁸³ *Ibid.*, 112 and 120. Turner suggests that Neri's recipe was flawed because he did not have access to the full details of the process; these secrets were restricted by the Venetians.

¹⁸⁴ *Ibid.*, 119.

¹⁸⁵ Beretta, “Glassmaking Goes Public”, 1058 and 1064. Beretta elaborates on Neri's interest in alchemy particularly.

transparency, in the coloured glass varieties.”¹⁸⁶ Previously, glassware was a vehicle for coloured enamel embellishments, however, *cristallo* was prized for its transparent qualities, leading to more refined decoration. By the end of the Sixteenth Century, enamel was largely replaced by other decorative means, such as *filigrana* (threads of opaque glass) and the objects themselves evolved from plain vessels to more elaborate forms.¹⁸⁷ The plates in *Studies in the Search for Infinity* are *cristallo*, decorated with *filigrana*. This method of decorating glass with coloured glass threads comes in a variety of forms, each requiring exceptional skill. This work, in particular, demonstrates McElheny’s outstanding glass making ability. For his *filigrana* patterns, McElheny used a certain type of opaque white glass called *lattimo* which dates from 1420.¹⁸⁸ *Lattimo*, was also created in Murano by the addition of an oxide of tin to produce a milky white substance, which derived its name from *latte*, meaning milk, and was seen as an alternative to porcelain.¹⁸⁹ McElheny shows his prowess by using the complex technique of *reticello*, which results in two layers of spiral *filigrana* in opposite directions.¹⁹⁰

¹⁸⁶ Turner, “‘Allume Catina’ and the Aesthetics of Venetian ‘Cristallo’”, 113. See full article for more details on the Venetian attempts to monopolise the production of *cristallo* by restricting access to *allume catina*, a particular type of pot ash imported from Syria.

¹⁸⁷ *Ibid.*, 113-4.

¹⁸⁸ Dana Rohanová and Hedvika Sedláčková “Venetian “Filigrana” Glass and Its Imitations Made in Central Europe: Comparison of a Typology and a Chemical Composition,” in *Journal of Glass Studies*, Vol. 57 (2015), 303 and Turner, “‘Allume Catina’ and the Aesthetics of Venetian ‘Cristallo’” 116. Both articles specify different dates for *lattimo*; Rohanoya locates it earlier in the fourteenth century while Turner suggests it as 1420. I have opted for the Turner date as that study is focused specifically on Venetian glass.

¹⁸⁹ Timothy H. Clarke, “Lattimo—A Group Of Venetian Glass Enamelled On An Opaque-White Ground“ in *Journal of Glass Studies*, Vol. 16 (1974): 22.

¹⁹⁰ A useful source of informative videos, including one on the making of Renaissance Venetian *Reticello* Platter (similar to the technique used by McElheny) are available on the Corning Museum of Glass website, <https://renvenetian.cmog.org/object/reticello-platter> Accessed March 05, 2019.



Figure 104, Titian, *Supper at Emmaus*, c. 1534, Musée du Louvre

Scholarly research on Renaissance glass decoration seems to focus on enamel designs or heraldry rather than on the more abstract *filigrana*. This makes it difficult to trace how common McElheny's patterns were during the Renaissance and verify his statement that they were the glassmakers equivalent to perspective in painting. One possible source is sixteenth century painting, specifically the Venetian school. Paintings of this period which include tableware tend to have drinking glasses and what appears to be silver, as opposed to glass plates. On the rare occasion where a glass plate is shown it is typically of the stemmed or *tazza* variety (shallow stemmed glass dishes). One possible exception is *The Circumcision* (c.1587) by Jacopo Tintoretto (1518-94), which depicts a shallow glass dish without a stem. It is *cristallo* but completely undecorated. Titan's *Supper at Emmaus* (c.1534) includes a glass water jug which appears to be decorated with *filigrana* in a spiral pattern [Figure 104] though it is neither *cristallo* or *reticello*.¹⁹¹ The earliest reference to *reticello* dates from the

¹⁹¹ An earlier study for this work hangs in the Walker Art Gallery, Liverpool. It lacks the variety of Murano glassware seen in the final version where Titan included both plain and moulded *cristallo* stemmed glasses, a *lattimo* dish, a *tazza* and the *filigrana* jug.

first half of the sixteenth century, as recorded in the inventory of a Venetian courtesan but no surviving early examples were found as part of this research.¹⁹² Several later examples belong to the *Murano Glass Museum collection* [Figure 105], dating from the latter part of the sixteenth or early seventeenth centuries, making them Baroque rather than Renaissance.



Figure 105, *Reticello* Plate, Venice, late sixteenth / early seventeenth century, Museo del Vetro di Murano¹⁹³

Art Historian Taylor Walsh wrote that McElheny was initially inspired by the collection of King Frederick IV (1671-1730) who ruled Norway and Denmark from 1699-1730.¹⁹⁴ Frederick IV wintered in Venice in 1709 and returned to Rosenborg Palace in Copenhagen with an extensive glass collection presented by the City of Venice. He subsequently had a “Glass Cabinet” room designed to showcase it in 1714, which McElheny visited. The collection of almost a thousand pieces, still largely intact, was inventoried in 1718 and includes several examples of *reticello* filigree, including several *reticello* plates as seen in Figure 106.¹⁹⁵

¹⁹² Rosa Barovier Mentasti, Luciano Borrelli and Cristina Tonini, “Dating the Venetian Rovere Flask at The Corning Museum of Glass and Other Flasks” in *Journal of Glass Studies*, Vol. 58 (2016): 172

¹⁹³ Image available online at <http://www.archiviodellacomunicazione.it/Sicap/OpereArte/13579/?WEB=MuseiVe> Accessed March 18, 2019.

¹⁹⁴ Taylor Walsh, “Collection of Glass Concerning the Search for Infinity” in Molesworth, *Pictures of the Infinite*, 63.

¹⁹⁵ Jørgen Hein, “Reassembled Venetian Glasses from the Glass Room at Rosenborg Palace” in *Journal of Glass Studies*, Vol. 31 (1989): 121-123. The glass collection contains examples of Venetian and Bohemian glass.

Research suggests that Frederick's plates are newer than those in the Murano Museum collection.¹⁹⁶



Figure 106, Gottfried Fuchs (architect), Reticello plate in "The Glass Cabinet", 1714, Rosenborg Palace, Copenhagen¹⁹⁷

In summary then, while McElheny was inspired by glassmaking recipes and techniques from Renaissance Venice, his assertion that "Renaissance Venetian glassblowers aimed to depict a perfected, spiritually true reality through the use of point perspective" departs from historical fact - as his work often does.¹⁹⁸

Crystalline time

Nonetheless, we should take seriously McElheny's belief in a connection between these patterns and the use of single point perspective. Walsh suggested that McElheny's spirals

¹⁹⁶ Mogens Bencard, "The Glass Cabinet At Rosenborg Palace: Gottfried Fuchs's arrangement of 1714 rediscovered during restoration" in *Journal of the History of Collections*, Volume 3, Issue 1, (1 January 1991): 6.

¹⁹⁷ Image taken from <http://www.kongernessamling.dk/en/rosenborg/room/the-glass-cabinet/> Accessed March 18, 2019.

¹⁹⁸ McElheny, text panel as part of the work *Collection of Glass Concerning the Search for Infinity*, 1998-2011, in Molesworth, *Pictures of the Infinite*, 62.

are equivalent to the lines which project from the vanishing point in perspective drawing.¹⁹⁹ McElheny explained that the mathematical perfection of the glass pattern symbolised “spiritual perfection.”²⁰⁰ The desire for mathematical perfection persists throughout the history of classical and neo-classical architecture, but this is perfection of a different order. The artist provided clues in the title of the work and in the accompanying text that describes a connection to single-point perspective construction.²⁰¹ Firstly, the use of the word “infinity” in the title signifies that it is not a study of perspective, but rather an alternative to it. Jennifer Roberts’ essay, “The Taste of Time: Salt and Spiral Jetty,” examined in the previous chapter in the context of Smithson’s work, posited that in a perspective system, the vanishing point *is* a point in time. Consequently, any system that uses perspective cannot, by definition, be infinite. Roberts concluded, “Smithson had long been exploring what he called the ‘crystalline structure of time,’ and this spiralling growth pattern became an essential part of his understanding of that structure.”²⁰² In Smithson’s work, the spiral derived from his study of crystalline structures, and was intended to represent a different (inorganic) approach to time. One where time accumulates rather than passes in a linear fashion. McElheny’s spiral patterns are equivalent to Smithson’s spiral time. The artist Andrea Geyer described his experience of *Studies in the Search for Infinity* and came to a similar conclusion, saying, “A spiral is a concept of time in which all time is always present within any given moment.”²⁰³

¹⁹⁹ Walsh, in Molesworth, *Pictures of the Infinite*, 62.

²⁰⁰ Lousie Neri and Josiah McElheny, “The Glass Bead Game” in Neri and McElheny, *A Prism*, 244.

²⁰¹ Josiah McElheny, text panel as part of the work *Collection of Glass Concerning the Search for Infinity*, 1998-2011, reprinted in Molesworth, *Pictures of the Infinite*, 62. Quite infuriatingly for the art historian, McElheny typically creates a series of work around the same topic, and it can be difficult to decipher the names of the various pieces, even in texts on the subject. This is true of this work, which in *Prism*, is entitled simply *Studies in the Search for Infinity* and is dated 1997-8 only.

²⁰² Jennifer Roberts, “The Taste of Time: Salt and Spiral Jetty” in *Robert Smithson*. Edited by Eugenie Tsai and Cornelia Butler. (Berkeley: University of California Press, 2004), 98. Quote from Smithson “Towards the Development of an Air Terminal Site” (1967).

²⁰³ Andrea Geyer, “I see and I feel and I don’t comprehend: A Study in the Search for Infinity” in Molesworth, *Pictures of the Infinite*, 118.

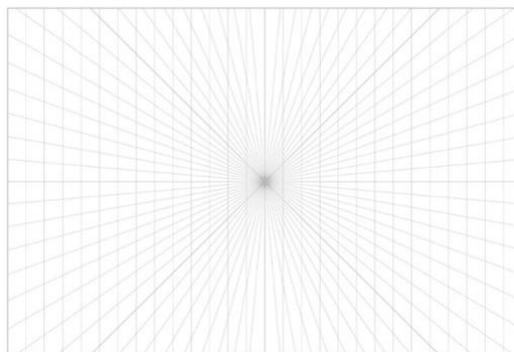


Figure 107, Example of template for single point perspective²⁰⁴

McElheny's text panel tells the viewer that he, following the precedent set by Venetian glassmakers, used the perspective system to generate the spiral patterns. He wrote, "These designs were generated by abstracting the geometric templates used to determine the relative proportion of objects within a picture plane."²⁰⁵ In a perspective drawing, horizontal lines radiate from the vanishing point, while vertical lines remain parallel to the picture plane [Figure 107] McElheny's description suggests that he took the points of intersection between these horizontal and vertical lines, plotted and connected them with *filigrana* and this produced the spiral patterns. The glassmaking technique for producing *reticello* [Figure 105] results in spiral patterns and has nothing to do with perspective drawing methods. However, this does not negate the possibility that McElheny may have templates to determine elements his designs, such as the spacing between points of intersection, or variations of *reticello* within *Studies in the Search for Infinity*, but this is where the similarity ends. The vanishing point in a perspective projection can be plotted in space because the relative distance is formulaic and can be determined by measuring objects shown in the picture plane. However, in the spiral patterns no such relationship exists between points; they do not equate to distances in

²⁰⁴ Sample template from online publishing company, Issuu available at https://issuu.com/rohitbiyanivinod/docs/1_2_3_point_perspective_grid-ts Accessed March 22, 2019.

²⁰⁵ Josiah McElheny, text panel as part of the work *Collection of Glass Concerning the Search for Infinity*, 1998-2011, reprinted in Molesworth, *Pictures of the Infinite*, 62.

space. Therefore, although the spiral appears to have a point of origin in the middle of the plate, one cannot determine where it is in space. There are infinite possibilities.

McElheny's later related series, *Studies in the Search for Infinity*, 2011, contained ten photogravures of the earlier glass plates plus a colophon. If the plates interrogated the notion of representing space within low relief sculpture, then this work pushed the boundaries of that idea even further. Taylor wrote, "converted into works on paper, each flattened plate appears fused with its support, a floating disc of spiral latticework emerging from an inky background."²⁰⁶ Now reduced to a completely flat surface, the impression of depth is retained for two reasons, it is a two-dimensional representation of a three-dimensional object, and one's eye follows the spiral patterns in an endless cycle, thereby giving the effect of "infinity without space", which is how Smithson described *Untitled* (1964).²⁰⁷



Figure 108, Robert Smithson, *Terminal*, 1966²⁰⁸

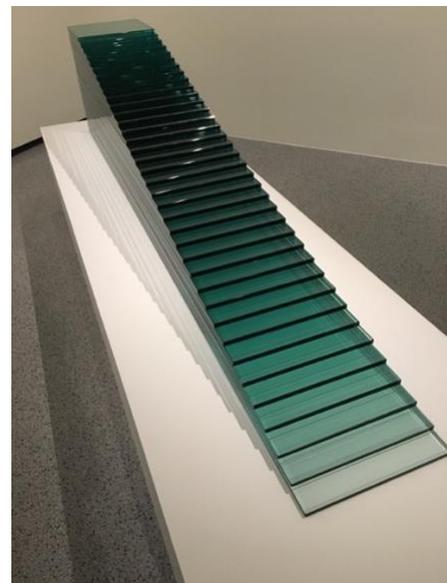


Figure 109, Robert Smithson, *Glass Stratum*, 1967²⁰⁹

²⁰⁶ Walsh in Molesworth, *Pictures of the Infinite*, 101.

²⁰⁷ Robert Hobbs, quoted from "Introduction" in Hobbs, *Robert Smithson: Sculpture*, (Ithaca: Cornell University Press, 1981), 58.

²⁰⁸ Image © 2001 Holt-Smithson Foundation, Licensed by VAGA, New York. Courtesy of James Cohan Gallery, New York/Shanghai available online at https://www.robertsmithson.com/sculpture/terminal_280.htm Accessed October 03, 2018.

²⁰⁹ Taken by author at "Dwan Gallery: Los Angeles and New York" exhibition in Washington DC in the Autumn of 2016.

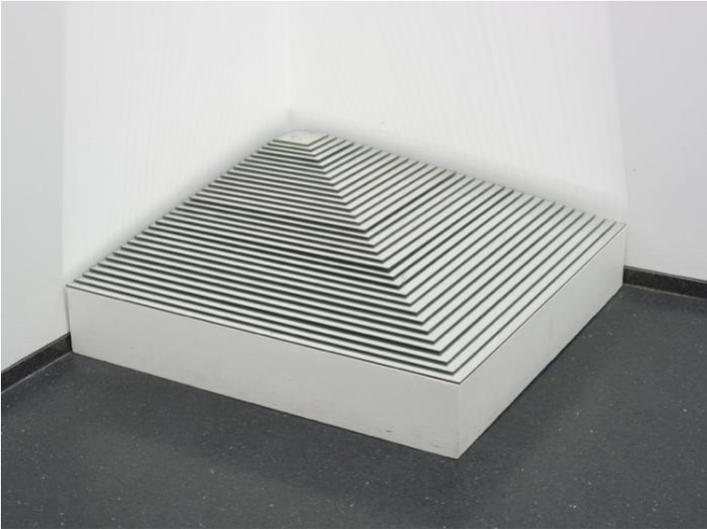


Figure 110, Robert Smithson, *Mirror Stratum*, 1966²¹⁰



Figure 111, Josiah McElheny, *Study for Crystal Strata (Eight-sided)*, 2017²¹¹

This technique of flattening a three-dimensional object is also suggested in McElheny's *Study for a Crystal Strata* (2017). Instead of photogravures, a process of essentially turning a photograph into an engraved plate and then a print, *Study for a Crystal Strata* is a series of silver gelatin photograms. Rather than using a camera to capture the image, photograms are made by placing objects directly onto the light sensitive paper and exposing it. This method of registering a full-scale image has been possible since the invention of photo sensitive paper and was popularised as an art form by Man Ray (1890-1976) and László Moholy-Nagy (1895-1946). McElheny's series comprises six photograms depicting shapes ranging from three to eight sides [Figure 111]. In a response to my enquiry about this work, Leila Alexander, Director of White Cube, provided a short statement. It is not clear who authored the paragraph but it is likely to be McElheny himself. It reads,

In reference to the work of Robert Smithson, in particular *Mirror Stratum* (1966), the photograms follow Smithson's ideas of crystalline structure while **simultaneously blurring the line between flatness and depth**. Each photogram is created by 12 layers on [sic] glass placed on photographic paper. In the context with the Crystal Landscape paintings and Anti-Vortex Drawings, these photograms play with the

²¹⁰ Robert Smithson, *Mirror Strata*, 1966, from the collection of Museum of Contemporary Art Chicago, image from <https://mcacheicago.org/Collection/Items/1966/Robert-Smithson-Mirror-Stratum-1966> Accessed March 25, 2019.

²¹¹ Photograph taken by author at "The Crystal Land", White Cube Gallery, Bermondsey, London, 1 March – 13 April 2017

graphic line drawing of the photogram. While the line sits literally within the paper the works still create the illusion of perspective and fully projected crystal form.²¹²

McElheny drew inspiration from several of Smithson's projects around 1965-1967, not just *Mirror Stratum*. Smithson's *Mirror Strata* and *Glass Strata* used layers of glass or mirrors, vary in size and are either square or rectangular in plan. McElheny claimed to use glass layers but his product is a work on paper rather than a sculpture. The glass plates apparently leave an enduring mark on the paper. Unlike a photograph, the photogram has an unmediated relationship with the object. Uncovered areas darken while covered areas remain white, or vice versa if the image is later inverted. This means that either McElheny used non-transparent (e.g. black) glass, or another material altogether. It is also very unlikely that he used layers of material as suggested, because the layers would not allow the paper's exposure to light. The alternative would be to position one 'layer' expose it and then position the next 'layer', but it would be virtually impossible to achieve a clean result with this level of accuracy. It is more likely that McElheny used a template or stencil on light sensitive paper. Analysis of the series locates shadows along the corners of the concentric shapes, suggesting the use of tape or another means of holding the pieces in position during set up and exposure.

The resulting photogram, with its concentric lines, creates the illusion of layers and depth that resonates with Hobbs' description of Smithson's *Mirror / Glass Strata* as, "an interesting dialectic between shape and illusion..."²¹³ The gallery description, quoted above, cultivates McElheny's myth of using layers, underscored by the image itself. To understand why McElheny would go to such lengths, the significance of the layers, and the connection to the work's title, we need to refer to Smithson once more. Hobbs concluded that, "Smithson's

²¹² Details proved by Leila Alexander via email to author on October 03, 2018. My emphasis.

²¹³ Hobbs, Robert Smithson: Sculpture, 83.

layerings of mirrors and glass are reminiscent of the regular layered planes occurring in such crystals as micas.”²¹⁴ McElheny’s *Study for a Crystal Strata* (2017) refines Smithson’s idea by focusing on the layers. He suggests crystals without the distraction of glass, learning from his experience with *Ornament and Crime* (2002), when viewers were distracted by the beauty of the glass.



Figure 112, Robert Smithson, *Three-Sided Vortex*, 1965²¹⁵



Figure 113, Josiah McElheny, *Study for a Crystal Strata (Three-sided)*, 2017²¹⁶

While McElheny borrows layers from *Glass* and *Mirror Strata*, the shapes in *Study for a Crystal Strata* can be traced to Smithson’s other sculptures, *Terminal* (1966), *Three-Sided Vortex* (1965) and *Four-Sided Vortex* (1965) as can be seen in the examples above. McElheny’s photograms resemble perspective drawings of objects similar to Smithson’s *Terminal* albeit distorted by oblique viewing angles. According to Hobbs, Smithson’s *Terminal* [Figure 108], “is an enantiomorph composed of pentagonal sections radiating from

²¹⁴ Ibid., 87. It is worth noting that the molecular arrangement in a crystal is a regular lattice, but this is not true in glass, which is a supercooled liquid. Glass appears rigid because its molecules have cohesion however they are in a disordered arrangement. The ordered layers in Smithson’s *Strata* are juxtaposed to the disordered molecular structure in glass.

²¹⁵ Collection of Metropolitan Museum of Art, image from <https://www.metmuseum.org/art/collection/search/482383> Accessed March 25, 2019.

²¹⁶ Image provided by White Cube in email correspondence with author, October 01, 2018.

each side of a central core.”²¹⁷ In McElheny’s photograms, it is difficult to tell if the objects represented are projecting out from, or recessing into, the picture plane. Although we only see one side of McElheny’s objects, they act like enantiomorphs because of this continuous movement towards and move away from the viewer.

Hobbs viewed Smithson’s work in the context of his participation in the development of the Dallas Fort Worth airport project, and interprets it in conjunction with the artist’s essay “Towards the Development of an Air Terminal Site” (1967).²¹⁸ He concluded that the word *terminal* relates both to air travel and an end point. Hobbs wrote, “Both [art and air travel] are bogged down by language, by rationalistic details, splitting and defining categories to the point that an entropic condition prevails.”²¹⁹ For Smithson, as we know, the crystal defies entropy. *Terminal*, therefore, signals a physical and a temporal destination. It is not the case that it is an end point in time, but rather that it is the crystallisation of time. McElheny’s photograms apply the same logic. I have argued how his ideas evolved, like Smithson’s, from thinking about how perspective represents linear time, to finding an alternative in spirals, recognising the correlation between spirals and crystals, and concluding with a crystalline representation of inorganic time.

²¹⁷ Hobbs, Robert Smithson: Sculpture, 79.

²¹⁸ See Chapter Three for more details.

²¹⁹ Hobbs, Robert Smithson: Sculpture, 78.

The Shape of Time

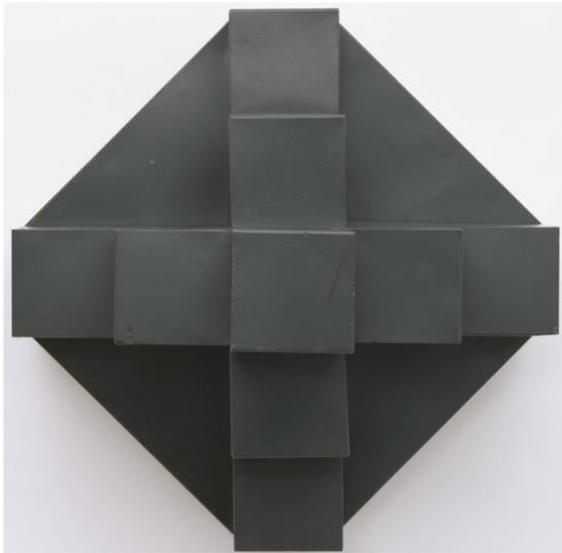


Figure 114, Robert Smithson, *Untitled (Black Version)*, 1966²²⁰



Figure 115, Josiah McElheny, *Crystal Landscape Painting (Rocks)*, 2017²²¹

The pieces explored so far take inspiration from Smithson. In 2017, McElheny went further by reworking a Smithson's *Untitled (Black Version)* for the White Cube show. McElheny retrospectively applied mirrored surfaces to a replica of Smithson's work, as seen in the comparison above [Figure 114 and Figure 115]. Smithson's recessed planes and vertical panels became shiny black surfaces that resemble obsidian while the horizontal elements form mirrored display cabinets containing orb shaped mirrored glass objects. In a text familiar to McElheny, Smithson said, "The frameworks have broken through the surfaces, so to speak, and have become "paintings."²²² Smithson challenged Greenberg's theory that

²²⁰ Collection of MoMA, gifted from Virginia Dwan, image sourced, <https://www.moma.org/artists/5497?locale=en> Accessed October 03, 2018.

²²¹ Photograph taken by author at "The Crystal Land", White Cube Gallery, Bermondsey, London, 1 March – 13 April 2017.

²²² Robert Smithson, "A Short Description of Two Mirrored Crystal Structures", in Smithson, *Collected Writings*, 328. McElheny's interest in interrogating painting as surface was the theme of his 2015 show *Paintings*, at the Andrea Rosen Gallery. It is possible that the title or idea for the show was influenced by the passage from Smithson's "Ultramoderner" essay (1967). The show was a mix of display cabinets, canvases with embedded crystal objects and video projection. Instead of creating a flat picture, McElheny converted the painting into a frame to be looked through. Although relevant to this study, it sits outside the current scope, but it would be worthy of further analysis to explore how the use of crystals in the series of *Crystalline Prism Paintings I-VI*, (2015) relates to the influences of Taut, including the colours of the crystals themselves.

modernist paintings are defined by their flatness.²²³ McElheny's title, *Crystal Landscape Painting (Rocks)* continued the Greenbergian critique; it is neither painting nor flat. Indeed, the mirrored glass provides the illusion of infinite depth. Obsidian, is volcanic rock formed from quickly cooled lava. It was used, McElheny is aware, for mirrors in ancient times.²²⁴ It is also a material common in the United States and one referred to by Smithson in his essay "Incidents Of Mirror-Travel In The Yucatan" (1969).²²⁵ In this essay, Smithson recounts information taken from Cottie A. Burland's 1967 study on Mexican civilization *The Gods of Mexico*. Specifically, Smithson notes that black obsidian was used as a mirror to see the future.²²⁶ In the context of McElheny's work, the obsidian can be understood to mean an enquiry into the future. This piece expounds McElheny view of the role of art. In a conversation about *The Crystal Land* show, McElheny reflected that the exhibition raised three questions including, "How should we discuss making a better future?"²²⁷

McElheny often chooses objects or events as a starting point for his work, unperturbed by temporal or theoretical boundaries. History, rather than matter, becomes his medium.²²⁸ When he represents historical objects or events to the contemporary viewer, one finds within, "a labyrinth of ideas" and a sense of infinite possibilities.²²⁹ Attracted to forgotten moments

²²³ See Clement Greenberg, "Modernist Painting" in *Art and Literature*, no. 4, (Spring 1965): 193-201.

²²⁴ McElheny, "A Short History of the Glass Mirror" in Neri and McElheny, *A Prism*, 208.

²²⁵ Smithson, "Incidents Of Mirror-Travel In The Yucatan (1969)" in Smithson, *Collected Writings*, 119-33.

²²⁶ Smithson, *Collected Writings*, 122.

²²⁷ McElheny in Brooke Kamin Rapaport in "Doubting Clarity: A Conversation with Josiah McElheny" *Sculpture*, Vol. 37, Issue 2, (March 2018): 49. The full quote reads, "The show offered viewers three distinct experiences that I hope raised the questions that inspire me about how Modernism and aesthetics connect to larger social issues: How can art encourage the physical choreography of the body moving in space? How can art serve as an invitation to contemplate doubt about our own clarity? How should we discuss making a better future?"

²²⁸ In response to a question about the importance of glass in his work, McElheny responded, "Glass is not important; no material is. People are important. Love is important. Desire is important. Nature is important. Art is important. Questions are important. Materials support what is important, not the other way around. Art that claims material per se as central to its meaning isn't art that fascinates me personally. That said, all art is material and materialistic. As I see it, there is no such thing as immaterial art. Even a situation or a space is a kind of material that can change how you see, just as glass can sometimes, when it changes how light appears, spreads, or creates shadows and reflections." McElheny in Rapaport "Doubting Clarity", 49.

²²⁹ Josiah McElheny lecture at MoMA, March 2007. Available online at <https://www.youtube.com/watch?v=w-IFT7CCuT8> Accessed August 14, 2018.

in history, McElheny argues that there is more scope for new interpretation when working with lesser known events or side characters, hence his exploration of Scheerbart and his influences. Smithson, we recall from the discussion on his non-sites in the previous chapter, was also attracted to forgotten or dismissed sites. His interest was aroused because these areas had an entropic or dedifferentiated character. Both artists were inspired by Kubler's book *The Shape of Time*, but one passage in particular resonates with McElheny's work;

The moment of actuality slips too fast by the slow, coarse net of our senses. The galaxy whose light I see now may have ceased to exist millennia ago, and by the same token men cannot fully sense any event until after it has happened, until it is history, until it is the dust and ash of that cosmic storm which we call the present, and which perpetually rages throughout creation.²³⁰

McElheny explained his interest in the process of projecting abstract films onto screens that fragmented them into a million pieces. He told Herrmann, "I'm very interested in whether we could take abstraction and imagine a new world that's built out of the fragments of an explosion, or out of a fracturing or as a set of infinite possibilities – as opposed to a summing up, clarifying or simplifying everything."²³¹

* * *

In a discussion about McElheny's work, Molesworth highlighted its dark side which she called "a deep strain of foreboding".²³² For example, the modelling of Taut's *Alpine Cathedral* and *City Crown* drew attention to the fact that, despite all the progress over the last century, utopia remains a fantasy. The artist and historian, Doug Ashford, who was also part of the conversation, reached a more optimistic conclusion by applying Worringer's theory of

²³⁰ George Kubler, *The Shape of Time: Remarks on the History of Things*, (New Haven, Yale University Press, 1962), 18.

²³¹ "Josiah McElheny in Conversation with Daniel F. Herrmann and Tamara Trodd" in Herrmann (ed.) *The Past was a Mirage*, 82.

²³² Helen Molesworth quoted from Doug Ashford, Bill Horrigan and Helen Molesworth "Talking about the Work of Josiah McElheny" in Molesworth, *Pictures of the Infinite*, 130.

abstraction to McElheny's work. These ideas were circulating in Ashford's mind at the time.

In another context he wrote,

Abstraction, not against representation per se, was a form of art Worringer considered newly generous, capable of presenting humanity outside identification, beyond the other we predict in ourselves. This is a place he thinks we need to go at times in order to see the external world as changeable.²³³

Analysis of Worringer's text in Chapter Two concluded that abstract art emerges in times when man is in a state of chaos and struggling to make sense of the world. The abstract work acts as an external vessel to contain these feelings so that one may find respite. Furthermore, the act of externalisation allows reflection, and ultimately reabsorption of difficult concepts. For Ashford, it is a collective process and therefore positive for two reasons. Firstly, it provides a mechanism to process situations, and secondly, it facilitates human interaction, or even love.²³⁴ As a counterpoint to Molesworth's pessimism, Ashford suggested,

And when that fear is made into an object and there are people in the room who collectively experience it outside its programmatic darkness, the possibility of optimism opens up. Worringer said that if the darkness of the world can be externalised onto an object, then it can reflect back into us. We can see these struggles with meaning in terms of unforeseen possibilities in reassessment and revolution. Once Josiah is able to inscribe the idea of infinity onto an object embodied through history and our sense of the work of others, it becomes a metaphoric proposal that, for me, is significantly hopeful.²³⁵

Considering this theory, Molesworth suggested that the concept of optimism in McElheny's work is linked to his skilful use of glass and the innate beauty of many of his objects. This facilitates a feeling of "wonder".²³⁶ This sensation is compounded in the mirrored pieces where viewers seek out their reflection in the glass. Seeing one's reflection creates a

²³³ Doug Ashford, "Empathy and Abstraction (Excerpts)" published to accompany the exhibition "Tradition" at Marres, Centre for Contemporary Culture, Maastricht, 2013, available to view online at http://www.dougashford.info/wordpress/wp-content/uploads/2013/06/Essay_Tradition_def.pdf Accessed October 23, 2018.

²³⁴ For the link between abstraction and love see, Ashford, "Empathy and Abstraction (Excerpts)".

²³⁵ Ashford quoted from Doug Ashford, Bill Horrigan and Helen Molesworth "Talking about the Work of Josiah McElheny" in Molesworth, *Pictures of the Infinite*, 131.

²³⁶ Helen Molesworth quoted from *Ibid.*, 130.

connection with the work, and for the pieces where one's reflection is excluded, the viewer literally *wonders* how that is possible.

Chapter Five - Reflections and Refractions

This project initially germinated in my previous research project on Smithson, one of the most important and thoughtful post-war artists. As I studied Smithson, I began to see the depth of meaning in his work and to understand the interconnectedness of his thinking. Jennifer Roberts seminal *Spiral Jetty* essay showcased lavish illustrations of the crystal encrusted earthwork as it re-emerged following its long submersion, and these images captivated me further¹. Having a broad overview of Smithson's work, I became curious about why crystals featured so frequently. They appeared either explicitly, as in the case of *Spiral Jetty* (1970), or more subtly as metaphors in his writing. Roberts had suggested some reasons for Smithson's use of crystals in the *Jetty*, but I remained unconvinced that this was the full picture. I had more questions than were answered in the literature. In order to understand Smithson's use of the crystalline, I needed to investigate the history of the motif and this developed into the project outline of my dissertation.

In my quest to comprehend the crystalline, I was wary of straying into occultism. While that might have added another dimension to this study, it was not one I wished to pursue. I sought a more robust theoretical framework and used Worringer's *Abstraction and Empathy* as a starting point for my study on the use of the crystalline motif. In English language commentary, Worringer is everywhere and nowhere simultaneously. That is to say, he is frequently cited but seldom discussed in any meaningful way. Worringer's theory on the urges to empathy or abstraction rests on

¹ Roberts, Jennifer, "The Taste of Time: Salt and Spiral Jetty" in *Robert Smithson*, (Berkeley, University of California Press, 2004), 96-103.

vague definitions of historical periods and presumptions about different types of artistic violation in relation to those ill-defined periods. For example, it is not possible to accurately determine if the Goths (Ancient/Primitive/Oriental man or the Egyptians) produced inorganic art to escape the feelings of inner disharmony that Worringer attributed to them.² Indeed, Worringer makes no effort to establish the historical context of any period style. Instead, he interpreted their output as evidence of their response to the assumed context. Even then, he failed to provide the reader with concrete examples to support his points. As a consequence, Worringer's empathy/abstraction argument is irrefutable because he provided so little footing for criticism. Intermingled with this, is his disapproval of the dominance of Classical art, which, in contrast, was a recognised phenomenon in the history of art. In an effort to dismantle the Classical canon, Worringer imported the idea of specific stylistic *Kunstwollen*, thereby helping to legitimise the work of artists who choose not to follow in the Humanist tradition. It was particularly this aspect of Worringer's work that led to its extraordinary popularity.

Despite the book's theoretical shortcomings, it was useful to me in several ways. He established a potential meaning for the crystalline motif in the early Twentieth Century and this provided a basis for further research. Worringer inherited his interest in the crystalline from Haeckel, Riegl and Semper. Although largely overlooked by art historians, Haeckel has been inspiring artists since the 1890s, through the dissemination of his monist philosophy and liberal illustrations of the natural world.

² Ursula Helg recently found fault with Worringer's evolutionary bias but acknowledged his perspective was a consequence of the times. Unfortunately, Helg ultimately falls foul of this issue herself, and fails to realise that Worringer's 'abstract' and modernist abstraction are not equivalent. Ursula Helg, "Thus we forever see the ages as they appear mirrored in our spirits': Wilhelm Worringer's *Abstraction and Empathy* as longseller, or the birth of artistic modernism for the spirit of the imagined other," in *Journal of Art Historiography*, No.12, (June 2015), 1-14.

Haeckel observed crystalline structures in both organic and inorganic matter. The first of Haeckel's influences came to my attention by chance during a visit to the Edvard Munch Museum in Oslo. A lesser known lithograph, *In the Land of Crystals*, from 1897, immediately stood out because crystals were central to the meaning of the work and it predated Worringer. In contrast to the Expressionists, Munch's and Peter Behrens' crystalline motifs drew directly on scientific rather than art theories. Yet, to varying ways, their crystalline work could also be seen as a partial response to either personal or contextual uncertainty.

For Worringer, the crystalline epitomized inorganic forms which he understood as a rejection of Classical art. Yet, Worringer also found that inorganic Gothic expression is a special category that rejects the organic but has a living dimension through the play of mechanical forces. Although Worringer's study dealt with earlier historical epochs, it was quickly adopted by German Expressionists whose work proved to be a fertile source of crystalline examples. This allowed me to compare this version of the crystalline motif with those who followed Scheerbarth or Haeckel. Worringer's interpretation was particularly important to my later analysis of Smithson's work.

Although it was not possible to determine if the Expressionist artists actually experienced the inner dread that Worringer placed at the heart of the urge to abstraction, it was clear that they actively rejected Humanist art in the classical tradition. A brief but focused analysis of key works demonstrated that certain Expressionists did indeed include the crystalline motif to suggest their denunciation of Humanism. Some of the relevant examples even followed Worringer's formulae of flattening and adopting crystalline forms quite prescriptively. In addition, the

widespread use of this motif amongst various geographically dispersed groups of artists suggested the great popularity of Worringer's ideas.

Scheerbart and Bruno Taut embraced the crystalline for different reasons. Both celebrated stained glass as the genesis of glass architecture but replaced any nostalgia for the past with hope for the future. They championed glass or crystalline structures because they believed that these would have a positive psychological effect on society. Their utopian vision was not based on a rejection of Classicism, but on emerging architectural technologies in the modern era.³ Many of these figures, (or, in Taut's case, his influence), found their way into the Bauhaus and so the artistic direction of the school provided insight into the currency of the crystalline motif until the Twenties.

The lack of significant, English language, scholarly literature on Worringer somewhat impeded my research, but Smithson was a different matter. The undoubted centrality of Smithson's work has resulted in a plethora of literature which I needed to navigate. This included useful information, such as an inventory of the contents of his personal library. This provided me with some insight into the evolution of his ideas. I already knew that Smithson was aware of Worringer due to a reference to *Abstraction and Empathy* in his *Arts Magazine* piece, "Quasi-Infinities and the Waning of Space" (1966) and he introduced crystalline forms into his wall sculptures around this period too. This work was a marked departure from his earlier, more traditional, two-dimensional work. Given the breadth of Smithson's reading, it would have been naive to attribute this

³ Nonetheless, by virtue of the crystalline forms, Worringer would still see their work as evidence of the 'urge to abstraction'.

shift to Worringer alone. Smithson's personal archive allowed me to retrace his steps and I took particular note of a trip he took to Rome in 1961. Smithson had illustrated a letter he sent to Nancy Holt from Rome with crumbling classical treasures, clues of his burgeoning reaction to the Humanist legacy that later emerged in his work [Figure 116].

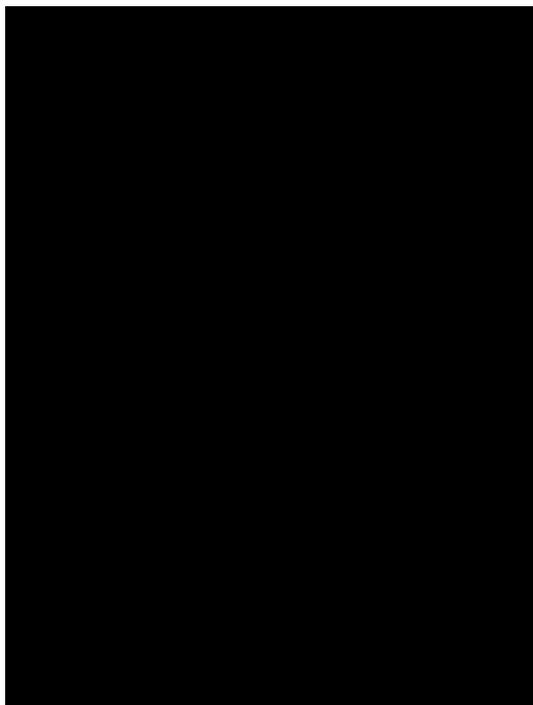


Figure 116, *Letter from Robert Smithson to Nancy Holt, July 29 1961*⁴



Figure 117, Robert Smithson in Rome, 1961⁵

In Smithson's later work, entropy becomes a major theme, as acknowledged by the artist and in the extensive literature on him, but accounts of the reasoning behind this interest seemed to me unsatisfactory. Basing my account on the laws of thermodynamics, I hypothesised that a connection existed between the frequent appearance of crystalline motifs and entropy in Smithson's work and set about to

⁴ Letter from Robert Smithson to Nancy Holt, July 29, 1961. RSNHP. Copyrighted imaged used here with permission from AAA. Needs additional permissions for publication.

⁵ Image from Robert Smithson, *Robert Smithson: The Collected Writings*. Edited by Jack Flam. 253-261. (Berkeley, University of California Press, 1996), 273.

establish the existence of this link. Using the fragments of text, notes, and the many unpublished writings in his archive, I traced the logic of his ideas, many of which were also played out in his art. Although Smithson may have begun with Worringer's crystalline motif, he quickly adapted it towards his own ends.

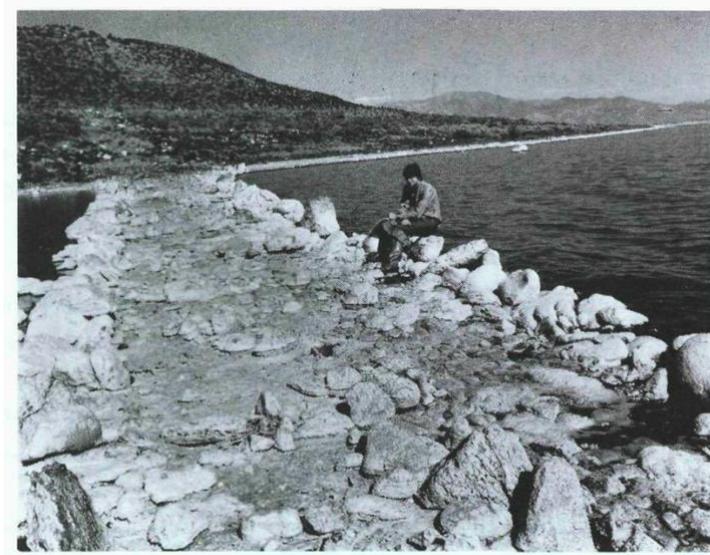


Figure 118, Robert Smithson, sitting on a crystal shrouded *Spiral Jetty* in 1971.⁶

Roberts, like many other commentators, approached the earthwork *Spiral Jetty* as sculpture in the landscape and, indeed, there is much to be said about it from this perspective. It was not until November 2016 that I finally realised why I found this approach so unsatisfactory. I visited *Spiral Jetty* after seeing images of it at the *Dwan Gallery, From LA to New York, 1959-1971*, a major exhibition in Washington DC, but I could not reconcile the two experiences. On reflection, I concluded that this was because it tends to be exhibited and discussed as a static work, similar to the treatment of traditional sculpture.

⁶ Photo taken by Nancy Holt. Image from Smithson, *Collected Writings*, 255.

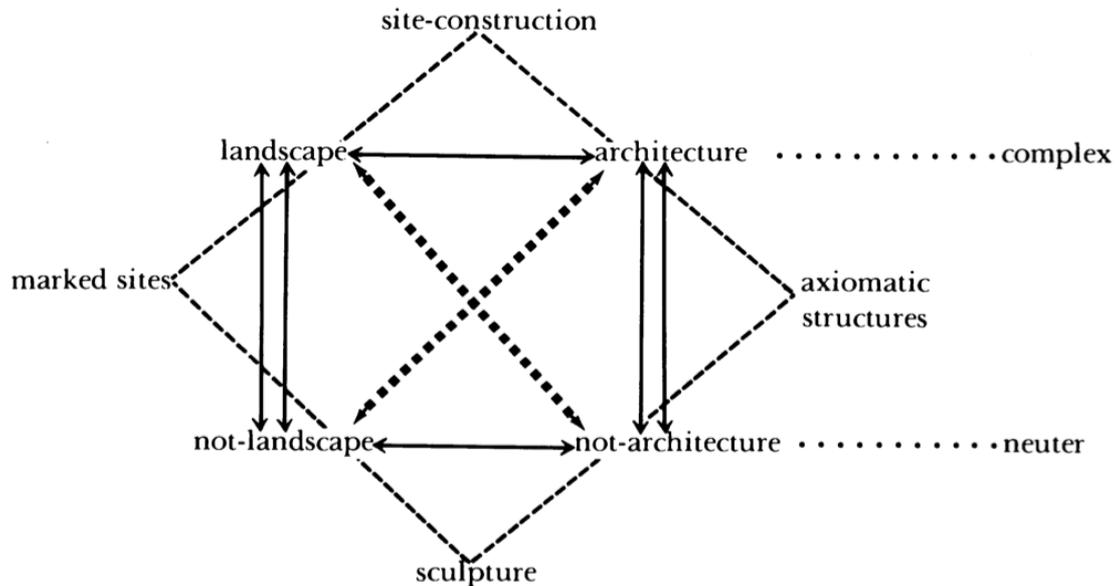


Figure 119, Rosalind Krauss, "Sculpture in the Expanded Field", Diagram⁷

In an influential article from 1979, Rosalind Krauss expanded the categories of sculpture, but her new categorisation did not suggest tools for analysis.⁸ Krauss explained that traditional sculpture, which she defined as pre-Rodin, had a specific logic and, consequently, appropriate methods of criticism were established. The new schema highlighted the fact that, as Worringer had insisted, one cannot evaluate one type of art using standard methods developed for another type. Yet, Krauss' essay did not detail what the art historian should consider for these expanded categories of sculpture. Nonetheless, she assigned *Spiral Jetty* to the category of 'marked site', positioned between 'landscape' and 'not-landscape', with indirect connections to 'architecture' and 'not-architecture.' These connections relocate the work from the category of fine art (sculpture) towards 'design', and this suggested considerations beyond what might normally be studied in an art historical analysis. I found my architectural training to be helpful in this regard. Architects contemplate how their

⁷ Rosalind Krauss, "Sculpture in the Expanded Field" *October*, Vol. 8 (Spring, 1979), 38

⁸ *Ibid.*, 30-44.

design engages physically with its site in its historical, present and future contexts, and from large to small scales. During his 1971 interview with Grégoire Müller, Smithson made his ambitions clear, saying, “When you are dealing with a great mass, you want something that will, in a sense, interact with the climate and its changes. The main objective is to make something massive and physical enough so that it can interact with those things and go through all kinds of modifications.”⁹ This, and several other references, suggested that Smithson was thinking along architectural lines and his choice of the Great Salt Lake maximised his opportunities to engage with the site. These factors provided me with much scope for my architectural approach to the work.

Although Smithson was the catalyst for my topic, my aim was to investigate mutations of the crystalline motif until the present day and so I sought contemporary artists who employed crystalline motifs. With regard to architectural applications, I considered Daniel Libeskind’s (b.1946) faceted forms, but key examples of his work are scattered around the globe and I did not wish to rely on secondary literature. In art, an obvious candidate was Roger Hiorns’ (b.1975) work using vibrant blue copper sulphate crystals, for example, *Leaning Chartres with Cobalt and Copper Crystals* (1996) or *Seizure* (2011). Like Smithson, Hiorns allows inorganic crystals to grow allowing the work to evolve over time, and creating a tension between the organic and inorganic. However, my discovery of Josiah McElheny’s work totally eclipsed both these contenders.

⁹ Robert Smithson “...The Earth, Subject to Cataclysms, is a Cruel Master” interview with Grégoire Müller, 1971, Smithson, *Collected Writings*, 256.

McElheny's work brings together threads from earlier chapters, with his references to Scheerbart, Taut and Smithson. In addition, his work bridges the distinction between art and architecture which, as with Smithson, allowed me to draw upon my knowledge of that discipline. In keeping with the other artists discussed (and Worringer), McElheny began by casting his gaze backwards. For his crystalline work, he initially referred to Scheerbart and Taut's use of the motif. In their early twentieth-century work, the crystalline was symbolic of transformation and heralded the coming of utopia. As it turned out, this was not to be, yet McElheny's work that references their ideas is not apocalyptic. He reinvigorated their views and highlighted the positive nature of a utopian vision, even if it is unrealised. McElheny's crystalline motif transformed missed opportunities into histories of ideas. While Smithson was interested in the molecular structure of crystals, McElheny concentrates on the crystal's ability to refract and reflect, perhaps influenced by his familiarity with glass. Consequently, he evolved the crystalline motif into a lens through which history is splintered into fragments to be potentially re-interpreted in new ways. The failure of past experiments does not predict future outcomes. McElheny demonstrates this and in doing so, he re-establishes the crystalline as a motif offering the possibility of future transformation.

My research draws to a close in a period where the global community is grappling with the COVID-19 pandemic. Not enough is presently known about the virus to draw conclusions about its infection or mortality rate, though its contagion appears to follow the model of Spanish Flu more than other recent pandemics (SARS, MERS). The Spanish flu pandemic of 1918-9, killed up to 50 million people worldwide, including prominent artists such as Egon Schiele (1890-1918) and the critic Guillaume

Apollinaire (1880-1918).¹⁰ Despite relatively little worldwide travel in 1918, it still circulated around the globe in approximately two years.¹¹ In contrast, World Health Organisation statistics show that COVID-19 has circumnavigated the world in three months, leaving only a handful of areas with no confirmed cases.¹² Overshadowed, and in some ways, inseparable from events of the First World War, representations of the Spanish Flu pandemic are not prominent in art and, in turn, it is largely excluded from the narrative in art history.¹³

Today's pandemic is likely to dramatically change our world view. It has forced changes in behaviour and, in doing so, we may reconsider previously normative practices with lasting societal effect. We have witnessed positive environmental impacts, for example, the factory closures in China and Italy that have improved air quality.¹⁴ We have realised that it is not always necessary to physically attend meetings, and as a result we may rely more on digital rather than travel infrastructure to the decimation of urban centres. However, many are also experiencing a negative impact of social distancing measures on mental wellbeing.¹⁵ In addition, impending global recession will add further risk of increased mental ill health, not to mention a

¹⁰ Antoni Trilla, Guillem Trilla and Carolyn Daer, "The 1918 "Spanish Flu" in Spain, *Clinical Infectious Diseases*, Vol. 47, No. 5 (Sep. 1, 2008), 668.

¹¹ Robert A. Clark, "Are the Spanish Flu and Sars Comparable? In *Business Continuity and the Pandemic Threat* (Ely: IT Governance Publishing, 2016), 100.

¹² Information from WHO Coronavirus disease (COVID-2019) "Situation Report 1" (20 January 20, 2020) and "Situation Report 90" (19 April 2020) available on WHO website, <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/> Accessed April 20, 2020.

¹³ There are, of course, exceptions to this. Anton Kaes discussed references to the pandemic in Friedrich Wilhelm Murnau's *Nosferatu* (1922). See Anton Kaes, *Shell shock cinema: Weimar culture and the wounds of war*. (Princeton, N.J.: Princeton University Press, 2011), 94.

¹⁴ See Paul Monks, "Here's how lockdowns have improved air quality around the world" available via *World Economic Forum* website <https://www.weforum.org/agenda/2020/04/coronavirus-lockdowns-air-pollution> Accessed April 21, 2020.

¹⁵ *The Lancet* recently reported that of over 2000 young people with a history of mental illness, 86% reported that their conditions had already worsened as a result of the pandemic. Joyce Lee, "Mental health effects of school closures during COVID-19", *The Lancet*, 14 April 2020, [https://doi.org/10.1016/S2352-4642\(20\)30109-7](https://doi.org/10.1016/S2352-4642(20)30109-7)

reduction in physical health as the consequences of quarantine coping habits or deferred medical care play out.¹⁶

Galleries are already reacting to their closure through creative means to engage the public. In the medium term, a shift from physical to digital spaces will inevitably affect the production of art, as artists consider the best media for on-screen representation. Longer term, the lasting impacts of COVID-19 are likely to feature in artworks, in contrast to the invisibility of Spanish flu. The question is, what vocabulary will artists use to discuss it? Will artists re-enact past metaphors or change the meaning of motifs to suit the current context, and what will this mean for the crystalline? For Worringer, this time of 'chaos' would result in an urge to abstraction and an art of crystalline forms in which people might find much needed respite. Scheerbart and Taut would focus on positive aspects, potentially environmental issues, and employ the motif to signal hope and lift spirits. Smithson may have interpreted the pandemic as increased entropy or, as inconsequential in the geological timescale. McElheny may use the crystalline to fragment the present and imagine alternative versions where different decisions were made in response to the virus, or a narrative that omits the pandemic altogether.

¹⁶ Emily A Holmes, Rory C O'Connor, V Hugh Perry, Irene Tracey, Simon Wessely, Louise Arseneault, Clive Ballard, et al. "Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science". *The Lancet Psychiatry*. Published online April 15, 2020. [https://doi.org/10.1016/S2215-0366\(20\)30168-1](https://doi.org/10.1016/S2215-0366(20)30168-1)

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Chapter Three - Entropy and the Crystalline in the work of Robert Smithson

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Endnotes to Chapter Two

ⁱ *Abstraction and Empathy* was translated into Italian as late as 2008. In 1997 a new English edition emerged with an added introduction by the art critic Hilton Kramer (1928-2012). However, the original translation was retained. All English editions include three forewords from 1948, 1910 and 1908, respectively, and an appendix from 1910. This appendix was published as an article, at the time of its writing, in *Zeitschrift für Ästhetik und allgemeine Kunstwissenschaft* and, in English, in 1953 in *The Journal of Aesthetics and Art Criticism*. German editions of *Abstraction and Empathy* include additional forewords, including those from 1919 and 1959. The short preface from 1919 reads as follows, “It is not easy for me to present this beginner’s work to the public since nobody understands its methodological and objective limitations better than I. From hard won experience, I aim not to improve its living maturity. However, I do not have the right to remove this topic completely from the realms of public discussion after the subject’s fruitful stimulation has been demonstrated so unambiguously. May you find in its virtues and mistakes subject matter both for agreement and contradiction.” Translated from the original German by Cian O’Dunlaing in 2013. The German text reads: “Vorwort zur Siebten bis Neuten Auflage. Diese Anfängerarbeit aufs neue der Öffentlichkeit vorzulegen, fällt mir nicht leicht, da niemand besser um ihre methodischen und suchlichen Unzulänglichkeiten Bescheid weiß als ich. Aber aus gereifter Erkenntnis heraus nachträglich an ihrem lebendigen Gewachsensein heranzuverbessern, bringe ich nicht über Herz. Sie ganz der öffentlichen Diskussion zu entziehen, dazu habe ich wohl auch nicht das Recht, nachdem sie ihren fruchtbaren Anregungswert so unzweideutig bewiesen hat. Möge sie also mit ihren Vorzügen und Fehlern weiter ein Gegenstand der Zustimmung und des Widerspruchs sein. Bonn/Herbst 1919.“ Wilhelm Worringer, *Abstraktion und Einfühlung*, (München: R. Piper, 1919). Worringer acknowledges his work as a catalyst for debate in the twelve years since its publication. Despite being predominately historical in its focus, the book was successfully embraced as a theoretical lens for the examination of modern art and by practitioners to reinforce the philosophy behind their work, as predicted by Ernst in 1908. More significantly perhaps, Worringer himself refers to shortcomings in terms of his method.

ⁱⁱ The same is true of Worringer’s subsequent book *Form in Gothic* from 1912, best described as a development of ideas sketched out in the first book. Wilhelm Worringer, *Form in Gothic*. Translated by Herbert Read. (London: Putnam, 1927). *Form in Gothic* predated the translation of *Abstraction and Empathy* by 26 years. Masheck refers to an earlier American translation of *Form in Gothic* from around 1920, which includes an illustration of Cass Gilbert’s Woolworth building completed in 1913. This is notable because it is an attempt to align Worringer’s ideas to contemporary practice although it is misguided. Gilbert’s structure uses a steel skeleton and is clothed in the Gothic style which is entirely at odds with Worringer’s, and Hegel’s, view that the dematerialisation of stone in the Gothic gives rise to its transcendent qualities. See Joseph Masheck, “Tired Tropes: Cathedral versus Bicycle Shed; “Duck” versus “Decorated Shed” in *Building Art: Modern Architecture under Cultural Construction*, (Cambridge, Cambridge University Press, 1993), 220. Herbert Read would later go on to become very influential in England holding positions of editor for the *Burlington Magazine* as well as

lectureships at such institutions as Edinburgh and Harvard, before cofounding the ICA in 1947. Read's own book *The Meaning of Art*, owes a great debt to Worringer. In the book Read provides descriptions of terms related to art that were originally part of a BBC broadcast, as such the text is devoid of any explicit mention of Worringer but his ideas are clearly echoed. This particularly applies to the entries "Organic and geometrical art" and "Fusion of organic and geometric principles". See Herbert Read, *The Meaning of Art*, (London, Faber and Faber, 1931).

ⁱⁱⁱ T.E Hulme, *Speculations*, ed. Herbert Read, (London, Routledge, Trench, Trubner & Co Ltd, 1924). T.S. Eliot (1888-1965) also played an important role in the spread of Worringer's ideas, by publishing Worringer's essay, "Art Questions of the Day" in his literary journal *The New Criterion* in 1927. Again, it was Herbert Read who was responsible for this. In a letter to Worringer on the 1st of December, 1926, Eliot wrote, "Our friend Mr. Herbert Read has lent me your two pamphlets, *Kunstlerische Zeitfragen* [*Art Questions of the Day*] and *Deutsche Jugend und Ostlicher Geist* [German Youth and Eastern Spirit], both have interested me very much. I should be very glad if we might use either of these (especially the former) for publication in *The New Criterion*, a quarterly review which I edit and which I believe Mr Read has mentioned to you." Eliot proceeded to say that he hoped the content of *Kunstlerische Zeitfragen* would ignite debate in England. Worringer responded on the 7th of December enclosing an edited version of *Kunstlerische Zeitfragen* for publication, but noted that his views had altered since he originally wrote the essay in 1921. Eliot published it in the August 1927 edition. Then, on the 7th of November, Eliot corresponded with the critic James Smith (1904-72), about the possibility of writing a review of Worringer's *Form in Gothic*. Eliot wrote, "I hope you will not be too alarmed by the Worringer Book or by my recommendation of it. As a matter of fact I have not read this book and have only glanced at it and was speaking from my general opinion of Worringer. And he is a man of whom the later T.E. Hulme has a high opinion. So please tackle the book if you possibly can." This was a response to Smith's letter the day before where he said, "Worringer's article greatly interested me. Let me see his book, and I will tell you within a week whether I consider I should review it, or not. I feel a greater responsibility than usual towards a book you so highly recommend. I am much flattered by that, having so recommended a book, you offer it to me." Eliot, *Letters*, V3, 806. ⁱⁱⁱ The review was never published, possibly because in December, Lady Mary Lilian Rothermere (1874-1937), the *Criterion*'s financial backer, withdrew funding making its future uncertain. See Eliot's letter to Thomas McGreevy 13 December 1927, Eliot, *Letters*, V3, 858 and 907 for biography of Lady Rothermere. For details on Eliot's connection to Worringer see also, Jason Harding, "Defence of the West" in *The Criterion: Cultural Politics and Periodicals Networks in Inter-war Britain*, (Oxford, Oxford University Press, 2002), 207. T.S Eliot letter to Wilhelm Worringer, 1 December 1926, published in T.S Eliot, Valerie Eliot, John Haffenden, and Hugh Haughton, *The Letters of T.S. Eliot: Volume 3: 1926-1927*, (New Haven & London, Yale University Press), 327 & 335.

^{iv} In 1935, Read published his only novel, *The Green Child*, a strange tale that extrapolates Worringer's crystalline ideas. Part of the novel is set amongst subterranean caves filled with crystals and native green people, called sages. Read wrote, "The Science which we call crystallography – the study of the forms, properties and structure of crystals – was the most

esteemed of all science in this subterrestrial country; indeed it might be regarded as science itself, for on it were based, not only all notions of the structure of the universe, but equally all notions of beauty, truth and destiny...It is important to realise that the knowledge of crystals was of this formal nature, because upon it was built, like a superstructure, the whole concept of beauty." Herbert Read, *The Green Child*, (New York, The Vail Ballou Press, 1949), 174.

^v In 1995, Waite discussed the coercive effects of Worringer's writing style. Waite quoted a particular passage where Worringer switched between using 'they' (in the past) and 'we / us' (in 1907) therefore projecting a specific interpretation onto the reader to encourage empathy with his argument. Geoffrey C.W. Waite, "Worringer's *Abstraction and Empathy*: Remarks on Its Reception and on the Rhetoric of Its Criticism" in Donahue, *Invisible Cathedrals*, 23 Worringer's text reads, "Where they were successful in this, they experienced that happiness and satisfaction which the beauty of the organic-vital form affords us; indeed, they know no other beauty, and therefore we may term it their beauty." Worringer, *A&E*, 17. Recently the art historian Joshua Dittrich, offered a long scathing critique of Worringer's style suggesting that, "Worringer can only drown out his repressed anxiety about the dead end of his theory in a flood of rhetorical pathos." Joshua Dittrich, "A Life of Matter and Death: Inorganic Life in Worringer, Deleuze, and Guattari" in *Discourse*, 33, 2 (Spring, 2011): 258. On the whole, Worringer's sweeping rhetoric mesmerises the reader; one may wonder if he is trying to emulate the effects of Gothic architecture with his prose. On experiencing Gothic architecture, Worringer wrote, man is "gripped by the frenzy of these mechanical forces, that thrust out at all their terminations and aspire toward heaven in a mighty crescendo of orchestral music, he feels himself convulsively drawn aloft in blissful vertigo, raised high above himself into the infinite." Worringer, *A&E*, 113.

^{vi} The book's English subtitle is, *A Contribution to the Psychology of Style*. The subtitle is not present on all German editions but is included in both English editions. The book's main title indicates the strict binary approach which permeates the project from its structure to its subject, although more sensitive readings break down this opposition. According to Worringer, "the European, classical Renaissance heritage, with its focus on illusionism and rationalism, had prevented man from seeking metaphysical values by keeping him too close to the world of appearances." Long, *German Expressionism*, 9. Worringer summed up the history of art history as a the shift from "aesthetic objectivism to aesthetic subjectivism". Worringer, *A&E*, 4. He observed that the disparity between artistic will and ability is impossible to fathom from a temporal distance, but that this should not affect our judgement of value, "For where there really exists a disparity between ability and volition in the products of past epochs, it is obviously no longer perceptible from the great distance of our standpoint. The disparity that we believe we can discern, however, and that gives such a biased tinge to our judgements of value, is in truth only the disparity between our volition and the volition of the past epochs concerned; thus it is an entirely subjective antithesis, violently introduced into the tranquil, regular progress of events by our own bias." *Ibid*, 125.

^{vii} Classical art is an attempt to represent the ideal, as exemplified in the practice of Classical Greece and Ancient Rome. The pursuit of idealised forms was revived in the Renaissance, facilitated through studies of antiquity. In the mid-eighteenth-century Johann Joachim Winckelmann (1717-68) concluded that Classical art was the pinnacle of civilisation, and this

supported the continued adoption of its principles in art practice. See Johann Joachim Winckelmann, *History of the Art of Antiquity*, (1764), Trans. by Alex Potts, (Los Angeles: Getty Research Institute, 2006). For example, Chapter One, "Origin of Art and Reasons for Its Diversity among Peoples" 111-27 provides Winckelmann's reasons for what he claims is superior Greek physiognomy, which he sees as related to their art. Classical, Renaissance or Neoclassical art utilises attributes including: idealised human forms; the understanding of visual distortion or use of perspective; concealed brushstrokes and chisel marks; or other devices which purposefully conceal the artifice of the work. The classical orders, or classical mouldings mark architectural classicism. Strict proportional systems derived from nature, such as the golden section, or Le Corbusier's (1887-1965) Modulor, are fundamental to the classical paradigm, even if their presence is less visually prominent. The English translation of Le Corbusier, *The Modulor*, was published in 1954.

^{viii} Riegl's influence on Worringer cannot be overstated but the role of Semper's in the formation of his ideas is less well understood. Worringer acknowledged the legacy of Semper's work when he wrote, "a work like Semper's *Stil* remains one of the greatest acts of art history". (A&E, 8). However, Worringer warns that it was misinterpreted by the "Semperians", "The materialistic method, which, as must be expressly emphasised, cannot be altogether identified with Gottfried Semper, but is partly based on a petty misinterpretation of his book, saw in the primitive work of art a product of three factors: utilitarian purpose, raw material, and technics. For it the history of art was, in the last analysis, a history of *ability*." (A&E, 9). Worringer's reaction to Semperian theory was inherited from Riegl who wrote *Stilfragen* in 1893 in response to the themes outlined in Semper's *Der Stil* (Vol. 1 1860, Vol. 2 1863). Semper had explained, "The work of art will be seen as a result of *all* the factors involved in its creation. Technique will therefore be a very important issue to consider, but only insofar as it affects the principle of art's creation. Nor will this approach merely produce a history of art. In passing through the field of art history, it will not apprehend and explain the works of art of different periods and countries as facts but rather it will *expand upon them*, as it were, but identifying in each the necessarily different values of a function composed of many variables. It will do this primarily with the intention of revealing the inner law governing the world of the art-form, just as it governs the world of nature....Nothing is arbitrary; everything is conditioned by circumstances and relations." (Gottfried Semper, *Style: Style in the Technical and Tectonic Arts; or, Practical Aesthetics*, Trans. Harry Francis Mallgrave, (Los Angeles: Getty Research Inst., 2004), 72. Original emphasis.) In *Stilfragen*, Riegl distinguished Semper from the Semperians stating, "They were not acting in the spirit of Gottfried Semper, who would never have agreed to exchanging free and creative artistic impulse [*Kunstwollen*] for an essentially mechanical and materialist drive to imitate." (Riegl, *Style*, 4). By 1901 however, Riegl reversed his opinion, as the architectural historian Harry Francis Mallgrave (b.1947) explained, "...it was indeed Riegl's slowly evolving criticism of Semper's theory, unexpectedly erupting and terminating in 1901, that impressed itself within the art-historical consciousness of the twentieth century and became the coloured lens through which many historians came to view Semper's thought - exclusively." (Mallgrave, *Semper*, 371). In *Late Roman Art Industry* Riegl wrote, "Semper's art theory was originally thought to be a great triumph of natural science, but it finally turned out to be a dogma of materialistic metaphysics." (Riegl, *Late Roman Art Industry*, (Rome, Bretschneider, 1985), 9).

^{ix} Worringer wrote, “this theory [of empathy] has been clearly and comprehensively formulated in the writings of Theodor Lipps” Worringer, *A&E*, 4. Worringer did not acknowledge discrepancies in Lipps’ theory as these details were irrelevant to his ultimate aim to describe the opposing tendency, abstraction. The concept of *Einfühlung* did not originate with Lipps, nor was its meaning consistent in Lipps’ work. Gustav Jahoda (1920-2016), professor of psychology remarked that Lipps interchangeably used both empathy (*Einfühlung*) and sympathy (*Mitfühlung*) indicating that he did not perceive there to be a significant difference between the two. As it happens, the German art historian Robert Vischer (1847-1933) first coined the term *Einfühlung* in relation to the perception of art in 1873 as part of his dissertation *Über das optische Formgefühl (On The Optical Sense Of Form)*. Vischer determined several other modes of reception, such as *Anfühlung* (attentive feeling), *Nachfühlung* (responsive feeling) and *Zufühlung* (immediate feeling). Vischer defined his understanding of the term *Einfühlung* as “an unconscious displacement of one’s own bodily form - and thereby also of the soul - into the form of the object.” Whereas Lipps described *Einfühlung* more clearly as a blurring of the boundary between the ego and the object. See Gustav Jahoda, “Theodor Lipps and the Shift from “sympathy” to “empathy”.” *Journal of the history of the behavioral sciences* 41, no. 2 (2005),151-63. Also Mallgrave, *Empathy*, 17-29 specifically. Robert Vischer wrote his dissertation at the Zurich Polytechnikum. Semper held a position at the same university from 1855 until 1871 at which time his colleagues included Burckhardt and Robert’s father, Friedrich Vischer (1807-87). Friedrich Vischer held a chair in German literature and Aesthetics from 1844. Mallgrave argued that Semper was instrumental in the development of Vischer’s six volume, *Kritische Gänge (Critical Proceedings)* from 1860 to 1873. This work revised the views he expressed in his earlier 6 volume, *Aesthetik oder Wissenschaft des Schönen (Aesthetics or the Science of the Beautiful)* dated between 1846-57. Mallgrave, *Semper*, 231 & 366 particularly.

^x A note on Wölfflin & *Einfühlung*: Wölfflin studied philosophy at Basel under Johannes Volkelt’s (1848-1930) and later, in Berlin, under Wilhelm Dilthey (1833-1911). While at Basel he also attended Burckhardt’s lectures. His 1886 dissertation *Prolegomena zu einer Psychologie der Architektur (Prolegomena to a Psychology of Architecture)* referred to Volkelt and both Friedrich and Robert Vischer. He read Semper’s *Der Stil* as a key text. Wölfflin started with the supposition of self-projection onto the art object, borrowed in the first instance from Volkelt and reinforced by Robert Vischer and the German philosopher, Rudolph Hermann Lotze (1817–1881). He then sought to discern if this empathic response takes place only in the mind or if it is also sensory. Although familiar with Robert Vischer’s work and specifically the codification of the term *Einfühlung*, Wölfflin’s used the sister term, sympathy, instead. This is perhaps due to *Einfühlung*’s infancy, but equally it could be due to Dilthey’s influence. Dilthey was dissatisfied with Lipps’ *Einfühlung*, preferring the term “*hineinversetzen*”. Johoda translates this as, “putting oneself in the place of some-one or something,” and acknowledges that English translations of Dilthey overlook this nuance and opt for ‘empathy’ by default. However, Wölfflin certainly meant empathy and quoted Volkelt saying, “with my vital feeling I obscurely transfer myself into the object”. See Heinrich Wölfflin, *Prolegomena to a Psychology of Architecture*, reprinted in Mallgrave, *Empathy*, 154 and Jahoda, “Theodor Lipps”, 159 - 60.

^{xi} While Worringer agreed that a feeling of beauty results from an empathic response, he does not agree that a feeling of ugliness is created in response to 'abstract' art. Instead Worringer writes, "What appears from our standpoint the greatest distortion must have been at the time, for its creator, the highest beauty and the fulfilment of his artistic volition." Worringer develops the theory speculating that there is something compulsive which occurs *beyond* negative empathy when the inorganic takes on life once more, he explained, "In the Gothic cathedral, on the contrary [to Classical architecture], matter lives solely on its own mechanical laws; but these laws, despite their fundamentally abstract character, have become living, i.e. they have acquired expression." Man becomes united in a response to Gothic architecture because his individual reaction is compulsive. The form of inorganic architecture creates an absolute upon which man finds repose, and in addition, the unifying effect of the Gothic experience counteracts the disharmony found in the state of chaos that gave rise to the urge to abstraction in the first place. In some way, this uniting reaction to Gothic architecture has similarities to Simmel's notion of antipathy. Worringer, *A&E*, 13 & 113.

^{xii} In his *Ten Books on Architecture*, the Roman architect Marcus Vitruvius Pollio (c. 90 - c. 20 BCE), listed six fundamental principles of architecture. The first four relate to the perfection of an architectural composition and are discussed in terms of: Order, Arrangement, Eurythmy and Symmetry. Each of these features creates an organic harmony between parts of the building. For example, "Symmetry is a proper agreement between the members of the work itself, and in relation between the different parts and the whole general scheme, in accordance with a certain part selected as standard. Thus in the human body there is a kind of symmetrical harmony between forearm, foot, palm, finger, and the other small parts; and so it is with perfect buildings." Vitruvius, *The Ten Books on Architecture*, (New York, Dover Publications, 1960), 13-4. In the fifteenth century, the humanist, architect and theorist Leon Battista Alberti (1404-72) reinforced the return of Classical rules in his book *De re aedificatoria*. Beautiful architecture, according to Alberti, "will have such an effect even upon an enraged enemy, that it will disarm his anger." For Alberti, beauty is "a harmony of all the parts, in whatsoever subject it appears, fitted together with such proportion and connection, that nothing could be added, diminished or altered, but for the worse." Albert quotes from Leon Battista Alberti, *The Ten Books of Architecture: 1755 Leoni Edition*, Eds. Cosmo Bartoli and Giacomo Leoni. (New York, Dover Publications, 1986), 113. In 1888, having studied both Vitruvius and Alberti, the art historian, Heinrich Wölfflin (1864-1945) provided a definition of organic art. He wrote, "The proportions of the whole and of the parts must be based on an underlying unity; none must appear accidental and each must flow from the other as a matter of necessity, as the only possible and natural one. This kind of interconnection is rightly called organic, for its secret lies in the very fact that art works like nature, *that the image of the whole is repeated in its parts.*" Heinrich Wölfflin, *Renaissance and Baroque*, Trans. Kathrin Simon, (London, Fontana Library, 1964), 66. In his 1886 dissertation, *Prolegomena to a Psychology of Architecture*, Wölfflin analysed four moments of architecture taken from Friedrich Vischer (1807-87) the German aesthetic philosopher and colleague of Semper, though the correlation with Vitruvius is clear. They are listed as: Regularity, Symmetry, Proportion and Harmony. Wölfflin stated, "The moments of form are none other than the conditions of organic existence and as such have no expressive significance. They present only the schema of the living reality." Heinrich

Wölfflin, *Prolegomena to a Psychology of Architecture*, extract reprinted in Harry Francis Mallgrave, *Empathy, Form and Space: Problems in German Aesthetics 1873-1893*, (Santa Monica, Getty Centre, 1994), 163. Wölfflin's thesis set out to examine why and how architecture can elicit feelings (*Gefühl*) in the viewer under each of these headings. Wölfflin concluded that we respond to each of these moments because they are naturally present in us.

^{xiii} Wölfflin also believed that a harmonious context results in Classical expression and discord gives rise to Gothic architecture, concluding that one is derived from situations of harmony and the other from discord. He wrote, "The rounded arch is generally recognized as more cheerful than the pointed arch. The former goes about its task quietly, content with its roundness; the latter embodies a will and effort in every line; never resting, it seems to want to split the wall higher and higher.... To dissolve a whole building into functioning members is to seek to feel every muscle in one's body. This is the true meaning of the Gothic. I will return to it once again. Wherever this impulse is found in history, it is a symptom of greater agitation. The serenity of the classical age knows nothing of the kind."^{xiii} Mallgrave, *Empathy*, 177. Wölfflin also makes a value judgement saying that the lack of separation between parts in Gothic architecture makes it inferior to classical architecture. *Ibid*, 162.

^{xiv} Worringer is very vague in his use of the term 'primitive' art which attracted criticism from Gluck in particular. Her focus on the notion of primitivism determines her reading of Worringer, and this led her to a narrow interpretation. Gluck, "Interpreting Primitivism", 154. Worringer discusses "all primitive epochs of art," "savage peoples" and "ancient cultural peoples" (*A&E*, 15 & 40) interchangeably thereby creating great swathes of commonality spanning several thousand years. Wolfgang Holdheim's 1979 article refers to Worringer's preface written for the 1959 German edition of the book, which remains unavailable in English, Holdheim writes, Worringer "violently defended his thesis of the abstract origins of art against the discovery of seemingly naturalistic cave drawings from the Ice Age." According to Worringer the urge to abstraction predates the urge to empathy. He clearly states, "Thus the urge to abstraction stands at the beginning of every art" (*A&E*, 15) identified later in the book as art works which either negate the rendering of space or which adopt geometric rather than naturalistic forms. See Wolfgang Holdheim, "Wilhelm Worringer and the Polarity of Understanding" in *boundary 2*, Volume 8, No. 1, (Autumn 1979): 340.

^{xv} Riegl inherited an interest in weaving from Semper stating it was a technical response to a physical need to protect oneself, "humans must have sought refuge from the hostile outer world within the wickerwork fence, or protection against the weather from woven textiles". Riegl, *Problems of Style*, 17. Riegl also argued that the inorganic was more universally understood, "Whereas the primitives, with unselfconscious confidence, create inorganic designs of eternal effectiveness and relevance, cultivated men generate chiefly organic works whose relevance is limited to only certain tastes." Riegl, *Historical Grammar*, 125. Furthermore, according to Riegl, man will naturally opt for a crystalline shape, unless he is consciously attempting to imitate organic forms. Riegl surmised, "The crystalline form is the most normal and self-evident for human beings because it is the most normal and self-evident for nature whenever it works with dead, inanimate matter." *Ibid*, 351. Riegl states the value of

the crystalline in art, “Only in the design of inorganic forms does man stand on equal ground with nature, for here he creates purely out of inner compulsion and uses no external models. The moment man oversteps this boundary and begins to reproduce organic things, he slips into external reliance on nature; then his creative act loses its autonomy and becomes imitative.” Ibid, 124.

^{xvi} In 1896 the Prussian government sent the architect, Hermann Muthesius (1861-1927), as a “cultural spy” to England to investigate art education and practice. At this time, the Arts and Crafts movement was in full swing, set up by the designer William Morris (1834-1896) as a response to the negative effect of the Industrial Revolution on designed goods. Morris was deeply affected by John Ruskin’s writing. Ruskin (1819-1900) was an English writer concerned with exploring the relationship between art and social reform. Ruskin, Morris, and the architect A.W. Pugin (1812-52), all shared the belief that medieval art was morally superior to the neo-classical style which, for them, was symbolic of a decadent society. Pugin converted to Catholicism in his twenties and found pagan Classical architecture problematic. For Pugin, Gothic architecture was the only true Christian style. Simply put, the split between liberal and applied arts that had existed since the Renaissance was called into question. Reverting to a style that predated this separation was seen as a way of reforming society. According to Worringer’s view, both abstract and Gothic art break away from a reliance on organic principles therefore offering man access to something beyond the physical world. In *Abstraction and Empathy*, “Foreword to the First Edition”, xiv, Worringer acknowledges the influence of Professor Arthur Weese at the University of Bern, where he completed his thesis. See fn.10, in Magdalena Bushart, “Changing Times, Changing Styles” in Donahue, *Cathedrals*, 83. Although not translated into English, Weese’s publications examine medieval and Renaissance art and it is hardly coincidental that these two opposing forms of expression also helped set the scene for Worringer’s theory. Also, Helga Grebbing, *Die Worringer: Bildungsbürgerlichkeit Als Lebenssinn : Wilhelm Und Marta Worringer (1881-1965)*, (Berlin, Parthas, 2004).

^{xvii} This vigorous expression is particularly evident in the contrasting approach to materiality seen in Classical and Gothic architecture. Classical architecture highlights the natural qualities of its material, stone, through its trabeated structural system. The column and beam system uses compression to transfer the building’s load to the ground and, because of its density, stone lends itself to be used in this way. Gothic architecture does something else. In the Gothic period, stone attempts to defy its own materiality using a complex system of forces, pointed arches, rib vaults and flying buttresses. The result is that the stone appears weightless. Worringer said, “Spirit is the opposite of matter. To dematerialise stone is to spiritualise it. And by this statement we have made clear that the tendency of Greek architecture towards sensuousness is in direct contrast to the tendency of Gothic architecture towards spiritualisation.” Worringer, *Gothic*, 104. See pages 104-5 for more discussion on how Gothic architecture is seen as a direct expression of artistic volition. The argument here is much clearer than that offered in Worringer’s earlier book. Basically, Worringer states that the while Greek architects approached stone with a desire to allow it to express itself, Gothic architects used it to express their spirit, in this case the urge to abstraction. In doing so they were not concerned with allowing the stone to maintain its weighty properties. A passage

from the philosopher G.W.F Hegel (1770-1831), which Worringer must have known, describes the transcendental potential of Gothic architecture in a strikingly similar way to Worringer (*A&E*, 115), "But because the way the building strives upwards precisely converts load carrying into the appearance of free ascending, columns cannot occur here in the significance they have in classical architecture...in contrast to the column and the beam, the pillar and vault appear as one and the same construction, although the arches rest on and rise from capitals. Yet the capitals are absent altogether... Since the striving upwards is meant to be manifest as the chief characteristic, the height of the pillars exceeds the breadth of their base to an extent which the eye cannot compute. The pillars become thin and slender and rise so high that the eye cannot take in the whole shape at a single glance but is driven to travel over it and to rise until it begins to find rest in the gently inclined vaulting of the arches that meet, just as the worshipping heart, restless and troubled at first, above the territory of finitude to find rest in God alone." Georg W.F. Hegel, *Aesthetics: Lectures on Fine Art, Vol 2*, (Oxford, Clarendon Press, 1975), 689. Without dwelling too much on Hegel, which is outside the scope here, a further line of enquiry might be found in Hegel's discussion on Egyptian architecture where he said, "In this way the pyramids though astonishing in themselves are just simple crystals, shells enclosing a kernel, a departed spirit, and serve to preserve its enduring body and form." He continues to discuss how this type of architecture is symbolic and beyond practical needs and concludes saying, "This essentially implies that architecture does not merely excavate and form caves but is manifest as an inorganic nature built by human hands where necessary for achieving a human aim." *Ibid*, 653.

