Carving and *Modelling*: Recalling Twentieth Century Concepts of Materiality

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Abstract

The observations of Adrian Stokes and his contemporaries about the nature of materiality can provide a point for departure when addressing the 21st century condition of inhabitation that is increasingly defined by virtual overlays upon the physical world. With this paradigm shift in mind, the article frames questions about the role of materiality within architecture through Stokes' terms of 'carving' and 'modelling'. Using examples that include Diller+Scofidio's *Blur Building* and Peter Pran's work, the essay discusses how Stokes' terms were applied to art and architecture in the twentieth century and may inform thought about the contemporary context.

KEYWORDS: material, materiality, virtual, carving, modelling, architecture, art, Blur Building, Adrian Stokes, Diller+Scofidio, Edward Pound, Gaston Bachelard, Peter Pran

Introduction

The role of *material* in the fine arts is a complex subject to discuss, in part because of the subjective nature of these disciplines. Art and design, as conceptual processes, require sensory perception and therefore a physical component to allow transmission of ideas. As opposed to music, where this medium is sound, the relevant medium in painting or sculpture and (in some respects) architecture is light. Even abstract information requires a means for transmittal; for example, writing (in any of its various forms) requires a visual transcription or audible speech to be communicated; the unspoken, unwritten word can only play a role through apophasis. The plastic arts, notably sculpture and architecture, use materials to convey some sense–usually visual–of physical qualities (color, reflection, transparency, texture, shadow, etc.) that subsequently implicate an immanent program (a concept about form, weight, equality, contrast, temporality, etc.) to the viewing subject. These concepts often build a narrative structure and/or respond to concepts embodied within other works; how these are assimilated within the

subject's sum total of experiences and knowledge has been explored by Bergson, Hume, Kant, and many others since.

It is necessary to expand the discussion of materiality to address current paradigm shifts, for inhabitation is extending beyond physical space. The consumption of art and architecture in the Information Age has further disembodied the relationship between the subject and the artifact. This schism, which started with the earliest graphic and textual representations, became apparent with 19th century photographic and 20th century cinematic processes. Crucially for the discipline of architecture, the act of inhabitation itself is becoming less physically centered due to the increasing capability of technology to collapse the experience of time and space. Smartphones, tablets, and other 'personal devices' increasingly act as extensions of the body, allowing us to virtually 'visit' distant places and participate in activities in spaces that are physically remote or non-existent in the traditional sense. Even the physicality of these devices becomes ever more ephemeral; consider, for example, the disappearance of dedicated physical buttons from these machines. At a time when everyday relationships to material operations are changing and the subject's body is interfacing with tools that expand its sphere of influence and perception, reviewing ideas of materiality as they were addressed in the early decades of Modernism can be insightful for breaking away from the constraints of artifact-based analysis. The terminologies formed by Adrian Stokes are of particular interest to this study due to their psychoanalytic basis, since experiences of augmented or virtual realities similarly implicate issues beyond the physical.

Framing the Question of Materiality

By the standard definition, materiality refers to the substances of which the artwork is composed, or original physical matter that has been fashioned to express the intention.[1] Because the 'physical' aspect of art is so dependent upon both the senses and our interpretation of experiences internalized through them, *material* in art can only meaningfully exist in the subjective realm; this term should be made distinct from objective *matter*. Following Wittgenstein, we must 'believe' that the objective world exists, even if we cannot be certain of its nature, and thus for convenience we refer to an *object* as being composed of material.[2] For example, a marble statue is said to have the materiality of marble, a substance that is generally recognized and that will generally exhibit stable physical properties, which may be exploited, challenged, or ignored by the artist.

Materiality may be rendered or expressed with a variety of attitudes. The physical properties of materials as they are commonly understood can either be reinforced or refuted through specific articulations. On one hand, a concrete bunker typically suggests extreme weight, which cannot be moved; the same material can appear to lift off the ground like a bird, as with Eero Saarinen's 1962 TWA terminal. This dual palette of confirmation and surprise allows artists to *re-present* the world through *material*, and this is true for extended range that can be applied to the term.

The context of every work of art can be discussed in terms of *material*, even if it is not necessarily physical. Forces, processes, and relationships have their own role in the existence of context. The sun and its shadow have historically and physically played a role in the plastic; a shadow is not an object per se, but integral to visual material properties. The 'framed view' has also worked as a crucial element in art and architecture, with edges mediating between foreground and background.[3] Although much art exists that is not visual in nature, a light

source is mandatory for physically viewing any visual art object. In these cases, light itself must be folded into the same categorical system as the eyes, optic nerves, and brain, in terms of transmitting visual qualities of materiality. In 1960s 'Op Art', light and color were used to create particular perceptual effects upon the retinas. The unusual physiological reactions (depicting apparent movement) highlighted by these works are more interesting than the 'object' per se; in this case, the materiality of the object is designed to subvert *a priori* notions of surface through the transmissive properties of the optic nerves to the visual region of the brain. Is this physiological framework within the subject removed from the properties of the artifact? If not, then how would this example be distinguishable from the material of other plastic art, which also requires optic perception? Possibly, the 'art' in Op Art stems from the extension of material within a given work (from the 'object') when portraying a given idea visually.[4] Characteristics of the optic nerves are material into which the artist taps; the drive to find new conceptual material to explore and express in art is paralleled by its search for new physical material and conditions, including those of the body itself.

Following Walter Benjamin's attribution of 'cult value' to artistic artifacts, it could be that there is a perceived value to intense investment within a quantity of matter, whether it be an expenditure of time, money, energy, or thought.[5] Possibly it is this replacement of anonymity (the object as *tabula rasa*) with empathic projection within time and space that can elicit a positive response from viewers.[6]

Empathy (this time in the interpersonal sense) for the artist when her or his investment is presented may also be relevant, as this is an intersubjective link. There may also be desire present, as fantasy or hope, potentially linking this investment and the imagination. In his writings the philosopher Gaston Bachelard often returned to the theme of *daydreaming*, a topic also of interest to Sigmund Freud. Following this line of thinking, the poetic does not lie within the object itself, but within the mind; daydreams are consciousness removed from the physical world, replacing that world with imaginative desire (Bachelard, 1969). It follows that (paradoxically) the physicality of material in artwork acts to allow escape from the physical world.

Freudian psychoanalyst Melanie Klein and her student Hannah Segal investigated the subject-object relationship in art and eloquently theorized the internal process:

> *"Segal stresses that one of the major tasks of the artist is to* create a world of his own. *Even when he believes that he is faithfully reproducing the external world, the artist is in fact using this world to rebuild his inner realm." (Glover, 2000, chap. 3)*

Klein and Segal extended Freud's pioneering work on the psyche, utilizing concepts such as the *id* and *ego*, and speculating on their role within the creation of art. One of Klein's clients was the art historian, critic, painter and poet Adrian Stokes. He adopted and appropriated within his work psychoanalytic methods introduced to him by Klein, while necessarily developing his own art critical interpretation of these methods.

Materiality as Discussed by Adrian Stokes

At the infancy of twentieth-century Modernity, artists struggled to re-conceptualize these issues of materiality. The profound paradigm shift of those decades, with its myriad changes to culture and technological capabilities, has parallels to today's challenges. The subject of *material* was

illuminated by Adrian Stokes, who was not necessary in lockstep with his modernist contemporaries, but who instead preferred to construct his own system of analysis for art and architectural criticism. He expanded his previous analysis of Agostino di Duccio's relief sculptures in Alberti's renovation of Tempio Malatestiano in Rimini to elucidate a binary mode of material expression in his 1934 book *Stones of Rimini*. Deeming the Fine Arts as "the useless arts, a development of handicraft that is valued, although the products possess no utilitarian function," he categorized their treatment of *material* as either *carving* or *modelling*. These terms are not completely rigid but demark a tendency within an artwork towards one or the other in this treatment:

> *"Whatever its plastic value, a figure carved in stone is fine carving when one feels that not the figure, but the stone through the medium of the figure, has come to life. Plastic conception, on the other hand, is uppermost when the material with which, or from which, a figure has been made appears no more than as so much suitable stuff for this creation." (Stokes, 1934, p.110)*

Works of *carving* respond to the nature of the material itself, and the work emerges from within the material. Thus, properties of the material play an important part in the expressed form of the artistic object. Following Freudian psychoanalytic concepts, Stokes demonstrates the subject-object relationship in terms of maternal, sexual, and religious relations:

> *"This communion with a material, this mode of eliciting the plastic shape, are the essence of carving. And the profundity of such communion, rather than of those plastic values that might be roughly realized by any material, provide the distinctive source of interest and pleasure in carved objects." (Stokes, 1934, p.110)*

This focus on the physical characteristics of a certain material in the creation of a piece of artwork suggests the incorporation of the 'natural' as part of the process and result, and Stokes' metaphors of intimate and natural relationships thus make sense within this context. This suggests that the material not only reveals the carved form but an engraved 'intention' of the material itself.

Underlying Stokes' system is an observation that a wide range of visual and textural qualities may be produced from simple mechanical manipulation of a substance. For instance, work invested in the surface of marble can produce a smooth, reflective quality, which displays specular and reflective qualities virtually unrecognizable from raw stone. Stokes recognized how these qualities are highlighted through the interaction of the material (with its inherent properties), and the artist reveals these qualities through manual or mechanical manipulation: "For polishing gives the stone a major light and life. 'To carve' is but a complication of 'to polish', the elicitation of still larger life." (Stokes, 1934, p.112) For Stokes, carving, polishing, and rubbing are essentially the same task. Subtle manipulations of a flat stone surface produce an immanent depth; "Wherever on flat or flattened surfaces there is a suggestion of the round, there is use of perspective of some sort." (Stokes, 1934, p.128) The classical flattening of form within stone, as exemplified by Agostino and Donatello, are strong examples of this type of *carving* for Stokes. Looking at Agostino's *relieves*, especially the effects of depth achieved through specular reflection, it is easy to understand his fascination.

Stone, as a material, used in many of the most important works of architecture for well over two thousand years, possesses qualities that respond well to this concept of *carving*, and it is not surprising that Stokes spends many pages extolling its virtues. The subtleness of effect that can be achieved by a skilled artist has allowed classical and modern art critics to investigate nuances of a depiction.[7] Stokes argued that "the great virtue of stone is that unlike other hard materials it

seems to have a luminous life, light or soul," which he attempted to qualify as an "equal diffusion of light." (Stokes, 1934, p.111-2) This contemplation of the 'soul' of a material is more psychoanalytical than physical, and the "luminous light" refers to one's own soul, operating above the physical and temporal realm. Stokes' love of stone and its associated soul offer potential for understanding the 'communion' of *carving*: [8]

In contrast to *carving* are works produced by *modelling*, which create plastic forms which are not dependent upon the qualities of the material used, according to Stokes (1934, p.118): "That with which you model in sculpture is as much a material as the stone to be carved. But plastic material has no 'rights' of its own." He equated sculptural *modelling* with both draughtsmanship (draftsmanship) and calligraphy in terms of creating a visual composition that is not dependent upon material.[9] He argued that wood is more conducive to *modelling*, since it "…possesses less light seemingly its own." (Stokes, 1934, p.113) The effects of light on a surface vary with each material and its finish. Shape or form, on the other hand, is often fashioned exclusive of material.

In his texts, Stokes posits that there is always interdependence between *carving* and *modelling*. Works can exhibit characteristics of both. *Material* qualities are always present, but certain processes of craft are offered more 'direction' by the material used; Janet Sayers interprets Stokes' idea "that whereas the carver respects the outer reality of his materials as a means of externalizing his inner ideas, the modeler imposes his ideas on his material." (Sayers, 2007, p. 129)

In the analyses of Klein and Segel, Stokes' later psychoanalytic claim that "*the artist seeks a point at which he can sustain simultaneously an ideal object merged with the self, and an object perceived as independent*" is correlated to the *ego* through his terms of *carving* and *modelling*: [10] *(Glover, 2000, chap. 3)*

> *"'Modelling' and 'carving' were terms which enabled Stokes to cut across historical boundaries and artistic forms, linking artworks from a number of different epochs and media…Indeed, Stokes saw no essential difference in his approach to the relationship between the artist-medium and the spectator-artwork respectively, for according to Kleinian theory, the same intrapsychic processes are at work in all object relationships…"(Glover, 2000, chap. 3)*

Later in life, Stokes somewhat revised his views on *carving* and *modelling*. Stephen Kite's book on the subject describes the views Stokes laid out in his 1955 book, *Michelangelo: A Study in the Nature of Art.*

> *"…he provides new ways of thinking about the relations between carving and modelling; the latter is now associated with Freud's adopted phrase 'oceanic feeling': that sense of oneness with the universe associated with the 'feeding infant's contentment at the breast'. In this new configuration, carving is not privileged over modelling but participates in a 'doubling of roles' -- roles that can oscillate within the work, or from period to period…." (Kite, 2009, p. 198)*

In addition to this proposal of *carving* and *modeling* operating along a spectrum, even within one work, Stokes later expanded his system of categorization beyond sculpture to include painting and architecture, especially drawing inspiration from the textures of stone wall architecture. In his book *Colour and Form* (1937) he outlined his approach to *carving* within painting. The theory is quite complex, involving relationships between colors, and it reflects his obsession with the luminous quality of stone.[11]

Literary Material: the Poetics of Ezra Pound and Gaston Bachelard

The poet Ezra Pound attempted to apply Stokes' categorization of *carving* and *modelling* and their associated concepts of *material* to the written word. This transposition of terminology from physical artwork to abstract language potentially has a parallel within the relationship between physical and virtual spaces. Pound's discussion about the use of words in terms of their *material* qualities can provide a basis or precedent for the exploration of *virtual material*. Furthermore, understanding poetry as a type of virtual experience allows its qualities to be examined within an expanded notion of material.

Exchanges between Pound and Stokes articulated each artist's approach to his respective medium and suggested how the approach could affect other artistic disciplines. Contemporaries at the dawn of the modern age, the two shared a strong respect for the craftsmanship ideals of Ruskin, and they pursued idealistic visions for the role of art in society. (Glover, 2000)

> *"(Stokes) spent time holidaying with them in Italy and it was during one of these visits that Stokes was introduced to Ezra Pound in 1927. The influence of Pound's 'carving' conception of poetry and their mutual interest in Sigismondo Malatesta, certainly shaped Stokes's fascination with art and architecture."* (Glover, 2000)

The poetry of Ezra Pound, evolving from the previous generations of British and American poets, is filled with material imagery that operates on a psychological level. Depictions of the changes in aggregations of matter, using common sensory knowledge about material properties to create a mental image, operate on both literal and metaphorical levels. In addition, the physical form of his writing developed spatial characteristics, "…ranging…across as well as down the printed page of the *Cantos*, no less his choosing at times to take his poetic bearings from the spatial art of sculpture." (Davie, 1964, p. 133)

Pound's work has been interpreted in architectural terms by William Northcutt, who demonstrates how the poet's language expresses his social concerns through the metaphor of architectural construction.[12] Physical spaces were allegorically deployed to build layered meaning and context within his writing.

> *"World War I had taught him the transiency of architecture, since much of it was reduced to rubble in those years. With the post-war Cantos, architecture-as-word enters Pound's criticism in literal ruins. The Cantos begins with the implicit ruins of smoldering Troy, as Odysseus and his doomed-men set 'forth on the godly sea...."(Northcutt, 1996)*

Ezra Pound's ideals lent support for the Vorticist movement, consisting of artists who based their work on early Cubism's fragmentation of objects and multiple viewpoints. The Vorticists, as pioneering Post-Impressionist British artists, characterized the modern world through the imagery of its machines and monumental architecture, interpreting both the vitality and alienation of the time through their work. As one of a successive and overlapping series of artistic movements that characterized the rise and fall of idealism at the turbulent start of the twentieth century, its imaginative forces struggled to express burgeoning modernity (in all its complexity) by reaching across the boundaries of traditionally discrete art forms. Jacob Epstein's *Rock-drill* sculpture as a metaphor for power, terror, and domination was followed by Pound's historical *Cantos* of the same name. In the piece, Pound applies Stokes' imagery of carving in his own portrayal of progress (Davie, 1964, pp. 125-134).

The architect from the painter,
the stone under elm
Taking form now,
the rilievi,
the curled stone at the marge
(Davie, 1964)

Pound conceived of a point of maximum energy and a whirlpool of human imagination, stressing that these ideas were literary as well as artistic. In other words, the work did not necessarily require *material* in a physical sense to act as a real force. Likewise, architectural endeavors existed both physically and through words for Pound.[13]

Like the Surrealists, the movement strived for an appropriate psychoanalytic expression for their epoch; their iconic image of the 'Vortex' finds certain parallels with the "spiraling force" described by Gaston Bachelard in his classic 1958 text *The Poetics of Space*. Both explain force and energy in psychoanalytic terms, focusing on experience and imagination over objective reality.[14] The phenomenological force becomes a source for *inhabitation*, created through a friction that may also be associated with Stokes' idea of *carving*:

> *"We should also need a psychoanalysis of matter which, at the same time that it accepted the human accompaniment of the imagination of matter, would pay closer attention to the profound play of the images of matter. Here, in the limited domain in which we are studying images, we should have to resolve the contradictions of the shell, which at times is so rough outside and so soft, so pearly, in its intimacy. How is it possible to obtain this polish by means of friction with a creature that is so soft and flabby? And doesn't the finger that dreams as it strokes the intimate mother-of-pearl surface surpass our human, all too human, dreams? The simplest things are sometimes psychologically complex." (Bachelard, 1969, p.115)*

Whether the reference to Nietzsche was coincidental or not, the imaginative realization of a natural poetic here serves as a *material* strategy.[15] The shell's rough and smooth surfaces correlate to those of raw and sculpted stone. Bachelard elsewhere in the book relates how Leonardo da Vinci directed young artists to the inspiration of "cracks in an old wall" that were 'drawn' by time as a "map of the universe", with material properties of natural processes revealing 'truth' in monadic expression (Bachelard, 1969, p. 144).[16]

Materiality in Twentieth Century Architectural Practice

The middle chapter of *Stones of Rimini* is intended as both exposition and warning; within it, Stokes fears plastic *modelling* overpowering carving within the contemporary artwork:

> *"But today stone architecture is dying. The creations of Le Corbusier and others show that building will no longer serve as the mother art of stone, no longer as the source at which carving or spatial conception renews its strength…Building becomes a plastic activity pure and simple: whereas, in the past, building with stone or its equivalents has not been (at best) a moulding of shape with stone, so much as an order imposed on blocks from which there results an exaltation of the spatial character of stone." (Stokes, 1934, p.165)*

Many of Stokes' premonitions have been proved correct, as the second half of the twentieth century indeed witnessed the end of stone construction, mostly due to far cheaper alternatives.

The rare use of stone within modern buildings takes the form of a modular non-structural veneer to a steel or block frame, as far from Stokes' ideal of "exaltation of the spatial character of stone" as one could imagine. The bulk of modern architecture has indeed been heavily weighted towards plastic *modelling*, and the traits of now ubiquitous software applications have furthered this trend. However, it may not be as one-sided as Stokes predicted. For example, Le Corbusier had an extensive interest in a type of 'relief' in the Cubist depiction of depth that relies upon a 'phenomenal transparency'.[17] Admittedly, this effect of relief is not one based upon a particular material, and so does not strictly fall within Stokes' definition of *carving*.[18]

A *material* strategy lies within the work of Peter Pran, a Modernist architect who in the late 1980s and early 1990s worked in the conceptual realm lying between (or tying together) architecture and sculpture. After initially working for the architect Ludwig Mies van der Rohe, he developed a series of spatially ambitious projects utilizing the vocabulary of Russian Constructivists and the European *avant garde* of 1920s and 1930s (AD, 1992). Although few of the projects that he designed during his time with the corporate architectural giant Ellerbe Becket were constructed, their fresh ideas proved to be a force that counterbalanced the historically-based and reactionary post-modern architecture prevalent at that time.

The models of his projects signify a particular attitude to materiality, incorporating particular materials in a manner both representational and transcendental of what the models represent. Most architectural models (outside of academia) stand in for physically unbuilt but potentially real construction; the form is therefore intended to be a reduced scale duplicate of the full-scale form of the constructed building. In Pran's models, however, the materials are not rendered as habitable (as their mass does not reveal space within), and their forms are not rendered as miniature scale. Instead, the materials present their qualities at "full scale". As such, they operate at two scales simultaneously (as architecture and as sculpture) and are conceptually measured through units of inches as well as hundreds of feet.

Figure 1: Model for Saudi Bin Laden Group Headquarters (AD, 1992, p. 106)

The architect Fumihiko Maki has described Pran's work as displaying a "fragmentary aesthetic of floating planar elements that seem to deny gravity and blur distinctions between inside and outside space." (AD, 1992 p.7) Although three-dimensional sensibilities about implied intersecting volumes are clear, the models often employ materials as solid volumes or masses; these tangible blocks present clear dialectics of light versus heavy and solid versus air. Fragmentary elements within the accompanying computer wireframe perspectives offer some sense of volume, but nothing approaching materiality or the rendering of light and shadow.[19] However, his most interesting models for this discussion are those that present real materials with a reduced level of fragmentation. In the introduction to Pran's monograph, architectural historian Kenneth Frampton writes that the "aesthetic density" of the proposed buildings stems from the use of different materials, which provide contrast in light and character (AD, 1992, p.10). Since his commentary was generated (for the most part) from models and drawings (due to lack of constructed projects at the time) and the drawings were wireframes, the materiality discussed is projected from the models alone.

Figure 2: Model for Consolidated Terminal at JFK Airport (AD, 1992, p. 32)

Pran's use of *material* in this sense lies beyond plasticity but may not be *carving* in Stokes' original sense. The surface of each substance (metal, marble, glass, or wood) is manipulated to present a consistent finish without further articulation; the lack of added detail simply reinforces the

materiality. Rather than merely highlighting fragmented (plastic) form, Pran presents specific materialities and plays these against each other. This approach is in contrast to the practices of rapid prototyping that have become dominant in the last decade. Although current technology (laser cutters, 3d printers, CNC milling, etc.) allows for ever-increasing levels of detail, discussion of synecdoche–or even expression–of materiality stemming from these has mostly disappeared.

Addressing Contemporary Context: the *Blur Building*

Diller + Scofidio's work at the turn of the millennium included many examples that intelligently acknowledge the changing nature of the human environment. Their projects clearly address the relationship of the body to advanced technology, such as electronics. Within this ongoing investigation, starting in the late 1980s, issues of surveillance, virtual space, and transparency have been problematized through the firm's architectural designs.[20] In doing so, they became one of the few architectural offices in the 20th century to artistically address technological challenges particular to the century ahead.

In particular, the *Blur Building*, a temporary pavilion designed by the firm for the Swiss Expo.02 and built on Lake Neuchâtel in Switzerland, emerged as a relevant architectural work in terms of its potential to challenge existing paradigms and provoke deep reflection about an existence enabled by advanced technologies. The work operates in a manner that expands the notion of *material* as it is habitually considered, and it offers an example of how *material* can be used to foreground questions and problems in the finest tradition of modern art. While this project included a number of elements within the visitor experience that foreshadowed a human future coupled with telematics and electro-optics – such as 'braincoat' wearable tracking devices in the project that foreshadowed similar GPS phone apps – the building was also provocative in its radical interpretation of what architectural 'material' is and could be (Diller & Scofidio, 2002). In fact, the gaseous form of the Blur Building is not recognizable as a conventional 'building'. Ephemerality is its prime characteristic, as evident from its ever-changing cloud-form and its very short life span (for a building) before its disassembly.

The *Blur Building* focuses on the relationship of the body to the environment, using vapor generators arrayed across a tensegrity frame to create the building's 'skin' and its 'volume'. As such, viewing it demands reconsideration of the notion of 'surface' and 'building'. Entropy works at a temporal scale akin to that of *skywriting* - immediately upon its creation, the artwork's form is reshaped by nature. The cloud that is understood to be the 'building' is continuously reordered by the context, with its visual appearance affected by the wind, temperature, and humidity. In this sense, materiality of the work extends beyond the 'object', as the wispy vapors of the 'building' mingle with the morning fog in a non-figural composition. This provokes a number of complex and interesting questions about the architecture. Does the morning fog become part of the 'object'? Both the generated mist of the 'building' and the morning mist rising off the lake are physical matter, used to create a particular sensory effect, and are often indistinguishable. Since the mist sometimes extends to the horizon – the visual boundary or edge condition of earth and sky – is this also part of the 'object,' since it is part of the composition? Edges, as the perceived limits of an object, play an important role in our understanding of the physical. Together, edges and surfaces largely constitute our generalized notion of form, which in this particular case is difficult to generalize.[21] In other words, the

provocation of this work resonates through multiple scales and layers of context, challenging the viewer about preconceived notions of architecture. The use of *material* in this project transcends ideals of craft and artifact in the traditional sense. It exhibits a subtle and nuanced expression of the particular that relates to Stokes' ideal of *carving* in that this occurs through specific *material* properties rather than through the figure or form itself. It incorporates natural transformation, placing it within the class of artistic projects that utilizes processes of physical entropy or decay – the results, of course, being particular to the material.

Figure 3: The Blur Building as (temporarily) constructed (Dimendberg, 2013, p. 154)

Conclusion

Stokes' question "What future is there for carving…?" invites further inquiry into the conception of material as it is deployed in sculpture, architecture, and multimedia art that has emerged within the last decades. Outlining or prescribing a definitive direction for this discourse lies beyond the scope of this paper, but a few ideas and questions to consider follow:

The realm of art utilizing 'found objects,' including Dada pieces, installation pieces, and others incorporating the *bricoleur* sensibility, offers philosophical possibilities for presenting particular qualities of substances used; this practice could potentially be extended to the virtual realm, filled with billions of virtual 'objects', many of which are replacing their physical counterparts in everyday use.[22] The 'found objects' of the virtual world can speak as much about contemporary existence as the physical objects.

A psychoanalytic approach may be ideal for consideration of virtual art and spaces, since key components (such as experience and empathy) are only indirectly tied to physical reality. Sensory experience of cyberspace implies some kind of associated *material*, but this requires an expanded definition of the term; Stokes' *carving* terminology, as well as Pound's transposition of the term to language, may be useful in this discourse. Is it possible to 'carve' algorithms, with

the artist sensing qualities of the output as a manipulation of the data structure?[23] Software (such as Maya) makes the simulation of entropic processes possible, recalling how the Blur Building operates within a larger context. Do scripted environments embody their own entropic processes, and what is the nature of this *material*? How can simulated *material* be addressed within art? How can an expanded notion of *material* help in designing virtual space and its relationship with physical space?

The emerging context presents many new questions about the nature of the virtual realm and its inclusion within art and architecture. With new technologies, *materiality* will need to be conceptually redefined, possibly through an ambitious range of exploratory practices and movements that recall the progress and alienation of the Modern era. Stokes' delineation of *carving* versus *modelling* might have a useful 21st century counterpart that could help in conceptualizing the emerging paradigm. The spectrum of his categorization system allows any particular work to be examined and compared to others, regardless of the material used. For example, consideration of how a particular work of art or architecture oscillates between physical and virtual modes of existence – these conditions already categorized by the field of computer science as *hard* versus *soft* terminology – might be useful in examining the significant portion of everyday life that now exists within the virtual/*soft* zone. Even though these difficult questions have not yet received the full attention they deserve within architectural discourse, discussion about this subject is likely to become increasingly important and will likely benefit from notions of materiality developed and explored in the twentieth century.

Notes

1 Throughout this article I am including architectural work under the umbrella term of 'art', unless otherwise noted.

2 In Wittgenstein's book *On Certainty*, first published after his death in 1969, he argues that although a proposition has no meaning unless given context, it is not necessarily reasonable to doubt the existence of a world external to our senses.

3 For example, at Louis Kahn's *Salk Institute*, the sky is an integral element of the architecture. Stonehenge, if understood as an observatory, necessarily includes the planets and stars within its composition.

4 The gallery context was also crucial to the interpretation of pieces within this genre, but I am here focusing on the body's optical response to the work.

5 Walter Benjamin's 1936 essay *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit* is particularly relevant to the discussion of artwork in the context of contemporary media.

6 A Jungian psychoanalyst may disagree, claiming that the subject identifies both good and bad symbols within any object.

7 For example, the debate started by Vasari as to whether Christ in Michelangelo's *Pieta* is alive or dead uses the blood vessels rendered in marble as evidence; a carver might examine the isomorphic yet potentially poetic relationship between veins within marble and veins within the human body. It is intriguing that details of flesh and hair can be

accurately conveyed through rock, a relatively unyielding material that is generally understood as a raw and static mass.

8 This interpretation follows Glover's claim that, *"The 'stone-struck' artist relates to the stone as if it were alive (unlike Michelangelo, who forced his material into life); thus he is sensitive both to its potential as a medium as well its capacity to realise his own fantasies - i.e. its content." (Glover, 2000, chap. 3)*

9 Contrary to Stokes' point, it can be argued that drawings are indeed dependent upon material. A person skilled in manual technical drafting understands how each type of lead and paper type produces a different aesthetic result. Furthermore, the materials used in representation tend to privilege certain formal results. Specifically, the tools of drafting, both manual and digital, lend themselves to particular formal qualities that could be analogous to Stokes' notion of *carving*; for example, drawing boards with parallel bars and triangles tend to privilege exact 30/45/90 degree relationships between drawn lines.

10 From the same passage of text: *"From a Kleinian perspective, we could characterise the modeller by his largely omnipotent unconscious phantasies, as contrasted with the specific phantasy of recreation or reparation, which is closer to the carving mode." (Glover, 2000, chap. 3)*

11 Stokes appeared more interested in the painter's portrayal of light than the physical surface of the canvas: *"He suggests that the painter-carver will pay careful attention to the flat surface of his medium and will 'emulate the tonal values which the actual carver reveals on his surfaces, more or less equally lit, of his block…" (Glover, 2000)*

12 Pound's desires in these regards closely matched Stokes': "*What Pound valued as paradisal was craftsmanship, and his utopia coincides more with the Ruskin's dreamy Stones of Venice, than with Benjamin's concept of a final awakening."* (Northcutt, 1996)

13 These claims are potentially useful to consider when conceptualizing *material* in a virtual (as opposed to physical) context.

14 Fantasy was a core concept in the work of Stokes, Pound, Bachelard, and Klein. Lyndsey Stonebridge states that for both Stokes and Klein, *"it is through fantasy that a precarious sense of self emerges, and it is through fantasy that we relate to those objects which come to define that self…"* (Stonebridge, 2007, p. 105.)

15 Friedrich Nietzsche's 1878 book title translates to English as *Human, All Too Human: A Book for Free Spirits*.

16 Through a psychoanalytic approach, the conceptual center is released from the object itself, as artists participate in the 'communion' described by Stokes. Important to the question of the 'virtual' presented in this paper is Bachelard's potential for 'inhabitation' of spaces that are not necessarily inhabitable or even physical in the traditional sense.

17 For an example of this, see the compositional comparison of the proportions in Le Corbusier's *Villa at Garches* with those in Palladio's work, elucidated by Colin Rowe in 1947.

18 Stokes recognized that the "strength of modern painting…(is) founded upon a reaction from modelling values in favour of carving values," although he was more tentative about extending this praises to modern architecture (Stokes, 1934, p.166). Alex Potts posits that Stokes' alternative vision of modernism was similar to Le Corbusier's late

work, such as his church at Ronchamp, where he "started to emphasize mass and material density" for the "pictorial evocation of volume and space" (Potts, 2007, p. 29).

19 Alex Potts states that *"Stokes saw collage as a modern equivalent to traditional carving by virtue of its retrieving the given actuality and integrity of materials and things as they occurred in the modern world." (Potts, 2007, p. 24)*

20 The firm of Diller + Scofidio was renamed Diller Scofidio + Renfro with the addition of Charles Renfro as a partner in 2004.

21 Per Diller +Scofidio's intentions, this architectural work, through offering no clear edge condition and ultimately extending to the horizon, as well as through having a dynamic form, necessarily challenges the conception of architectural work as "autonomous object" particularly celebrated in 1970s architectural discourse and practice.

22 Consider, for example, the number of publications that no longer exist in physical form. Unless printed, this paper does not exist physically in the traditional sense, but rather it has been 'virtually' submitted, becoming globally accessible within a fraction of a second. Terms such as 'original' and 'copy' are not easily applicable to these non-physical entities and this further complicates the discussion stemming from Benjamin's critique.

23 The Grasshopper plug-in to the Rhinoceros modeling application is an example of such an algorithmic-based medium, through which form is an indirect and automatic outcome of the user's modifications to the parametric system of logic. In this case, *carving* may have less to do with the material end product than with the application of scripts that may privilege a particular formal result – for example, a certain type of bifurcation.

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