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# Intangible Property: Architecture, Artificial Stone Ornament, and Insurance from 1769 - 1821

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Architecture

by

Kyle Stover

2022

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ABSTRACT OF THE DISSERTATION

Intangible Property: Architecture, Artificial Stone Ornament, and Insurance from 1769 - 1821

by

Kyle Stover

Doctor of Philosophy in Architecture

University of California, Los Angeles, 2022

Professor Michael Osman, Chair

This dissertation reconsiders the history of modern architecture through the use of ornament manufactured by dissenter Elanor Coade at her Artificial Stone Manufactory in Lambeth from 1769 to 1821. Tracing the construct of ownership and identity through the ornament of architecture as it was sold internationally by Coade's mail order catalog, eighteenth-century material experiments in the applied arts and exports from the British Empire reveal a transnational history of modern architecture predicated upon replication, cheapness, and abstraction. Relying upon archival evidence, this dissertation examines experiments in architecture, insurance, and material science which sought to redress defects in nature through the work of intellectual property. Beginning with a study of artificial ontologies and the use of proof in building, artificial stone ornament constructs a history of modern architecture from the intangible substance of experiments that dramatically changes the duration of construction. With the aid of artifice, architecture could be built to exist beyond non-natural durations of time. Following this experimental substance as it was sold through the eighteenth century, this study considers the value of intellectual property as a means to secure both mental and manual labor. In this dissertation, I demonstrate the value of artificial stone ornament to alleviate risk to the built environment from fire, frost, and accident. Lastly, this study examines the curation,

exhibition, and exchange of intangible property through craft epistemologies that disseminate technical knowledge across artisans, manufactories, builders, craftspersons, and architects. What at first appears paradoxical reveals a startling reality. The more we know about the risks posed to the built environment, the less capable we are of managing potential catastrophic failure. In the haste to declare Nature defective and capable of replacement by cheaper things made to last longer in the eighteenth century, artificial substances bore the seed of human prosperity and the possibility of our catastrophic demise. Within a political climate fracturing amidst a discourse on the value of facts, the inability to predict total failure becomes imminent. Or, when natural stone becomes replaced by its artificial counterpart, we consign catastrophe to an outdated model.

This dissertation of Kyle Stover is approved.

Soraya de Chadarevian

Dana Cuff

Kristie M. McClure

Michael Osman, Committee Chair

University of California, Los Angeles

2022

For Rocsana.  My love.

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# Vita

Kyle is a writer, historian, and architect. Prior to enrolling at the University of California, Los Angeles, Kyle Stover earned his Bachelor of Science in Architecture from the University of Cincinnati and a Master of Architecture from Yale University. He previously practiced architecture in New York City at Asymptote Architecture and in collaboration with Acconci Studio where he was augmented by the gig economy before beginning his own research practice. He is the recipient of numerous fellowships including the Graduate Research Mentorship Fellowship, the Clifton Webb Fine Art Scholarship, a nominee for the New York State Council on the Arts Award by the Storefront for Art and Architecture, and the UC Students for Ecological Design prize. Kyle Stover's work has been widely published and exhibited at the Museum of Modern Art in New York, the New York Transit Museum, the Land of Tomorrow Gallery, the Yale Gallery, the YOSA Press, and CreativeSpace Independent Publishers.

***Introduction***

Archival Material




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From Visual Resources Center, Department of Art History, University of Delaware, Newark, Delaware. ARTSTOR - UCLA.

# Introduction

A history of modern architecture is a history of reproducibility. From Charles Darwin deflating genetic uniqueness, Walter Benjamin's transmuting the qualities of quantities, Karl Marx and the contradiction of capitalism, or quarrels by the brothers Perrault; that which is modern is that which can be copied. This is a material history of artificial stone. A substance deriving in the experimental crucible of science with a value deriving in cheapness and abstract languages of commerce. This history of artificial stone is also a history of replicating and replacing a faulty natural counterpart by artisan manufacturers, architects, insurance agents, and other profit-motivated makers in eighteenth-century London. These undertakings locate a change in both time and substance to a modern architecture undertaking whose disciplinary present is anything but a settled matter. At stake in becoming modern is the organization of time and substance into spheric dyads such as natural and artificial, alchemist and chemist, architect and builder, science and religion. Or, stated as a historical ontology, in becoming modern there is an organization of the world into that which is and that which is not. We might understand that which is non-modern as constructing durations of time through recurrent idiosyncrasies and patterns awaiting seasonal rains and the harvest. The time of not being modern fluctuates in season. In becoming modern, there is a durational change attempting to make a present time standard and regular in its recurrent phenomena. The time of being modern is extensive and aligns architecture with the internal contradictions and extractive logics of capitalism attempting to endlessly repeat a now nearly exhausted present. Such contradictions derive from our efforts to condition non-natural environments offering a reprieve from inhospitable weather at the cost of capital to sustain an artificial interior. We seek shelter and are willing to pay. These architectures have thus far managed minutiae of difference and the internal contradiction they contain is increasingly revealed in the degrees of difference separating that which is natural and that which is artificial. As artifice exponentially divides from Nature, the requisite energy to

maintain this modern architecture requires exponentially more power so as to preserve the status quo that today has become unironically historical. To revisit the history of modern architecture requires us to revisit the spectacular supernovae of its post-feudal beginnings alongside the thought which imagines its end from windowless Ivory Tower offices. Or, how long can the modern present really last?

When the earth orb fell from divine centrality amidst the Copernican revelation that our solar system revolves around the sun, the privilege of being human deflates in our understanding that we alone do not occupy the center. In this fall, our ancestors of the terrestrial center who conceive their creation to be *imago dei*, to be uniquely made in the image and likeness of a divine creator whose breath animates matter into life, came to find themselves displaced into a profane world whose laws could no longer be described by religious scripture. Aliens to a new world, modern humans came to embark upon the endeavor of sheltering the multitude of their kin, discovering science, engaging in economic speculations, and devising tools as a means to condition an artificial environment useful in sustaining life. Language and its babbling of tongues gave us naive rubrics deriving from progress, civilization, and advancement stemming from the project of Enlightenment that sought an egalitarian present yet could never reconcile with its own internal systemic inequality. Thus, the more we came to measure our distance from imagined distant antiquities, the further alienated we found ourselves. Cartography, colonialism, and capitalism wrought a tellurian yoke across the globe extracting raw resources in exchange for surplus value to fuel modern thought and its architecture of replication. Centuries after solar revelations began to fade, the anxieties of twenty-century writers atomizing upon endless anticipations, fruitless expectations, and horrific realities sought to wilfully change the modern project in a turn towards a post-condition. Postmodernism may be an afterthought written from the safety of an academy built by modern architecture, and the brilliant minds who constellate this milieu indeed offer a plurality of exit strategies, but more than anything, this reflexive

engagement explicates the desirous envy of Enlightenment ideologies deriving in the utopic promise of machines and manufacturing that perennially advertises, but never quite delivers. Where are our moving sidewalks, our floating towers, our cars which fold into briefcases, space tourism, and universal language translators? Why does the working proletariat remain shackled while we have artificial intelligence and machine labor? Where is our transspecies confederation stretching across a techno-utopia cosmos engaging in diplomacy and taking science to infinity and beyond? Did we wait and work in vain?

If we trust the postmodern architecture historian, the modern subject of their critique is said to have primitive geometric shapes, absent ornament yet covered in signs, built of contemporary cheap materials, makes use of artificial systems, relies upon low-skill low-cost labor, contains technology and lifestyle utensils, and sits upon a tabula rasa participating in state-sponsored socio-cultural progress. Above all else, this modern architecture is said to be homogenous in universalist ambitions towards form and function. However, there is something amiss in these games of literary poignancy that continue to rely upon shape stroking to sell cheap paperback publications. The postmodern architecture historian came of age as the spectacular space race encountered ecological resistance and material scarcity began to invert the utopic promise of being modern. A vision of a place for everyone in a placeless world could not acquire the exit velocity to escape the material realities of *legem terrae*. Although this post-condition critique sought to turn our gaze from the cosmos to the laws of the land, it did not fundamentally change the object of its desire. An ironic constant in the shifting sands of postmodernism is the reliance upon a discourse of shapes useful in accusing the past of crimes against contemporary. Although the postmodern appears to articulate different values, these values are inversions that replicate and preserve existing systems of modern power. However much we may wish, there is nothing new in lessons on ducks and decorated sheds from the deserts of Las Vegas by ivy league architecture students that had not already been learned by generations before. What we

learn from casinos is the reality of representations amidst a desert mirage of illusions that sustain the modern capital impulse. To study under electric stardust signs is simply therapy in accepting the collective reality we inherit from our modern ancestors.

This history of artificial stone appropriates technical knowledge made lost by the post-modern historian. In so doing, I appropriate a craft epistemology to practicing architecture predicated upon the value of cheapness, mass production, and abstraction. In many ways, this value triplet is the target of critique as it pertains to the consumer culture of modern architecture and its alienating effects. And yet, with the immanence of climate change, the emancipated architect requires a cost-effective technical model which is both reproducible and mobile as we face uncertain eschatological risk. There has always been a risk to being modern, a risk of liberating individuals from the yoke of social tradition through experiment and the genuine possibility of a better life. What anxiety persists over this emancipation is the fear that such change is permanent and unchanging. Despite the celebrity of recent anti-gravity speculations by Peter Sloterdijk on the modern subjectivities of this liberation, the inescapable weight of being modern is rooted firmly in the consequence of fixed irreversible change. There is a weight to balancing inequalities in knowing we can never return to the ignorant bliss of a geocentric reality. Once modern, there is no return. Thus, the reality of artificial stone resists the inescapable weight of weather so useful in decaying its natural counterpart thus making the value of this change visible. To read these pages is to accept the risk that the experimental substance of artificial stone might arrest the gaseous world of free-floating signifiers so useful for the mercurial structures of capitalist exploitation. Or, the immutable risk of modern architecture and artificial stone imparts the possibility that we might one day learn to enjoy the consequences of permanence.

Uncertainty, consequence, and risk provide a structure to this history of artificial stone when in 1797, the trustees of the Phoenix Assurance Company established the Pelican Life Insurance Company at 70 Lombard Street mere steps from Exchange Alley, the Royal Exchange, and the Bank Of England in the historic center of London. Sister to the Phoenix Fire Insurance Office, the opening of the Pelican office within an urban confluence found frequent consumers and users in the stock-jobbers, coffee house haunts, and other persons forming the commercial class of Georgian English society. Offering contracts to a policy owner who pays annual premiums, life Insurance pays money to a beneficiary upon death of the policy owner. Life insurance evidences a turn towards the capacity to predict the outcomes of life and livelihood while simultaneously incentivizing a population to live longer. There was no medium more suitable for this advertising than artificial stone and the insurance company commisioned Coade's Artificial Stone Manufacture to install a cornice of figures alongside renovating the facade to perform as an urban storefront. Made by Royal Academy graduate John de Vaere at Coade's from designs provided by Lady Diana Beauclerk, the single prefabrciated storefront statuary is described in a Pelican prospectus as "a youth in the centre [who] holds up in the form of a banner, the symbol of the office, a Pelican sustaining its young ones from its vital springs. On the one side, he is approached by two Damsels who are rushing on with emulation to snatch the Garlands...The subject on the other side of the group is the graver cast, calculated to dispose the mind to the Contemplation of the brevity and uncertainty of Life...fleeting moments by which we are incessantly pressing forward to the end of our toils."[1] Adorning the Pelican Office are allegories on the genealogy of life set beneath the maternal wings of self sacrifice in a single prefabricated cornice that survives today at the Museum of London.

[1] Pelican (Firm). 1801. *[A prospectus of the company, with a list of the trustees and directors, an engraved frontispiece depicting the group of statuary erected on the cornice of the basement story of the office of the Company and a description of the group.]*. 2 pt. John Bryan: [London].

Bearing the manufacturer's trademark *COADE, LAMBETH*, the cornice is a rather curious artifact whose artificial substance is difficult to reconcile with the prevailing discourse on eighteenth-century British architecture. Made from a kiln fired ceramic named *Lithodypira* by proprietor Eleanor Coade, an engraving of the cornice bearing the inscription “children endowed and property secured” serves as frontispiece for both the Pelican prospectus and a guide to Coade’s Gallery opening in 1799 at the base of Westminster Bridge. Undeniably, this mutual interest evidences a broad milieu in preserving the property and wealth deriving in colonialism, class, and capital exploitation. However, as a substance deriving in the experiment of science, artificial stone collapses the risk to architecture and life posed by weather, fire, and accident. According to Coade, “where [artificial stone] has been applied in buildings which have been burnt down, or damaged by fire...memorable testimonies remain that it has not received the smallest injury, on the contrary, fire purifies it.”[2] Described as “having a property, peculiar to itself,” this history of artificial stone examines how ornament functions to alleviate risk to both the built and the biological.[3]

Established in 1769 by Baptist Nonconformists after liquidating their twice bankrupt Exeter family textile business, Coade’s Artificial Stone Manufactory came to insure an income for proprietor Eleanor Coade until her death in 1821. In Georgian society, Coade could not individually own her own bank account or property without a patriarchal signature. Working in partnership with Daniel Pincot, then John Bacon, her cousin John Sealy, and lastly her in-law William Croggon until Coade’s death; the material of artificial stone inscribes a succession of trademark incorporations, branding, and manufactured identity. Unmarried though self stylized as Mrs. Coade typical of Georgian businesswomen, Coade’s trade, gender, religious, and

[2] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson. 1799., p. iv

[3] Ducarel, Andrew Coltee. *The History and Antiquities of the Parish of Lambeth, in the County of Surrey: Compiled from Original Records*. London: printed by and for J. Nichols, 1786. P. 82 - 83.

political affiliations mark the incredible achievement of securing a Royal Warrant Appointment and building what might be the earliest international construction supply company in Georgian England all the more impressive. Contemporaries such as architect Sir. John Soane called this artificial substance "Coade's Marvel."[4] The sterling reputation of this brand stretched from St. Petersberg to Sri Lanka and across the Atlantic as Architect of the capital William Thornton and Thomas Jefferson sought it on the cheap while contemplating intellectual piracy of Coade's substance.[5] Well after the death of Eleanor Coade, Victorian terra cotta manufacturer and former craftsmen Mark Blanchard lay claim to the intangible properties of this artificial substance "to stand the ravages of time unimpared" by right of internship in reusing Coade's tradecard, advertising, and supplying a similar ceramic substance.[6] Blanchard's claim is but one of many that constructs the genealogical claim to the inheritance of craft knowledge through applied learning.

Historiography invented Coade Stone from Mrs. Coade's *Lithodypira* on January 19, 1940. Writing in *The Architect & Building News*, Mrs. K.A. Esdaile wrote this was "probably one of the most successful synthetic building materials ever invented, Coade Stone still adorns nearly every considerable street square in West London."[7] The phrase Coade Stone ontologically organizes the heterogeneous historical property made at the manufactory as well as the body of literature constituted by the subject of this substance. Post-War Southbank excavations for Royal Festival Hall in 1951 unearthed samples analyzed by The Chemical Branch of the Public Health Department concluding, "We are in fact left with the knowledge that Coade Stone

[4] See SM 91/1/3 verso, *[17] Design for wings to house (as 16) and balustrade* and SM (25) 63/7/30 (26) 63/7/29, *"The Soane Tomb,"* at the Sir John Soane Museum.
[5] *"William Thornton to Thomas Jefferson, 27 May 1817," Founders Online, National Archives, https://founders.archives.gov/documents/Jefferson/03-11-02-0324-0001. [Original source: The Papers of Thomas Jefferson, Retirement Series, vol. 11, 19 January to 31 August 1817, ed. J. Jefferson Looney. Princeton: Princeton University Press, 2014, pp. 387–392.*]
[6] *The Builder*, Dec. 29 1855
[7] Esdaile, Katherine Ada, "Coade (artificial) stone, and the Lambeth factory where it was made," *Architect & Builder News*, 1940. p. 94

contained as its main ingredients china clay with a finely ground grog prepared from broken Coade Stone either mixed with, or used alternatively to, sand. There were also small amounts, probably varying from time to time, of other materials found to have a useful effect in reducing the furnace temperature needed to produce vitrification."[8] With the vitrifying aid of fire, these ingredients were converted into the glass-like substance known historically as artificial stone, burnt stone, *Lithodypira*, or Coade's Imperishable Stone. Another sample analyzed in the 1970's by the British Museum Research Laboratory came to the conclusion it was ball clay from Dorst and Devon as opposed to china clay.[9] The results of such sampling point to craftsmen at Coade's heterogeneous adaptation of their craft more so than an exact formula or secret recipe where methods of making changed as needed. Despite the empirical weight of the evidence, there continues to exist "the popular tale relating the reason for the closure of Coade's suggest that the composition of the material was a well-guarded secret handed down through the family and only known to the senior partner, so that when William Croggan died in 1836, it was lost."[10] The invention and reinvention of a Coade Stone secret remains perpetuated in claims exemplified by Ruth Guilding's in *Country Life*, the self described quintessential English Magazine of country luxury lifestyle, that in 2008, "two years of experimenting by Stepehn Pettifer to rediscover [the] lost art of producing Coade Stone."[11] Pettifer continues to apply this 'rediscovered' art through his sculpture workshop under the name *Coade Ltd* today located on the picturesque grounds of Wilton House.

The experiment of Coade Stone is the experiment of commercializing the applied arts in the making of matter into property. At the end of the eighteenth century, Coade described her own

[8] Hamilton, S.B., "Coade stone," *Architectural Review* 116, 1954, p. 295-301
[9] Kelly, Alison. *Mrs Coade's Stone*. Upton-upon-Severn: Self Pub. Association, 1990. P. 58
[10] Wyatt, Robin, "The short, sad story of Coade stone," *House & Garden*, vol. 28, no. 8 (283), 1973 Oct., p. 136-137.
[11] Guilding, Ruth, "How the code for Coade was cracked," *Country Life*, vol. 202, no. 2, 2008 Jan. 10, p. 60-61.

artificial stone experiments as being “In common, with most original undertakings, the great expense incurred for experiments necessary to its perfection, leaves but an inadequate remuneration to the Proprietor.”[12] Just as no secret recipe was ever rediscovered, Coade’s Artificial Stone Manufactory was neither an original undertaking as the speculative venture relied upon knowledge from Coade’s first Baptist business partner, Daniel Pincot and his 1765 manufacture in debt to knowledge by Thomas Ripley and Richard Holt from their 1720’s venture.[13] One of the key aims of my own history is an attempt to provide a context to the remarkable success of Coade’s and other commercial undertakings in the applied arts in the British Empire. The continued insistence of cultural heritage on the cultish preservation of Coade’s non-existent recipe obscures the historical implications in “the property which this *artificial*, has above *natural* stone, of resisting the frost, and consequently retaining that *sharpness* in which it excels every kind of Stone Sculpture, renders it peculiarly fit for statues in parks and gardens, also for tombs and monuments in the church-yards of this, or a severer climate.”[14] Constructed in Coade’s catalogue and published literature from 1769 - 1821, Coade Stone locates the historical ontology of *artificial stone* as it advertised and organized the material world for architects, builders, makers, and users of this substance both within the British Empire and beyond.

Coade Stone is preserved today as an object of *English Heritage*. This status is maintained by a quasi-autonomous non-governmental institution which is both a charity and incorporated company who maintains legal and national responsibility over the historic environment of

[12] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson. 1799. P. v

[13] *Compound Liquid Metal for Making Artificial Stone and Marble. Patent No. 448 - Mixture for Making White Ware.* Richard Holt and Thomas Ripley, London, 1722.

[14] Coade, Eleanor. *A Descriptive Catalogue of Coade's Artificial Stone Manufactory ... with Prices Affixed*. Copy owned by Sir John Soane. From Sir John Soane Museum. 1784.

England for the “benefit of future generations.”[15] Intangible cultural heritage is constructed through tangible Coade Stone objects and the institutions and practices which preserve this substance and the figures who made it through territorially inscribed jurisprudence. The historical ontology of Coade Stone circumscribes a set of objects whose matter has been arranged under specific conditions at King’s Arm’s Stairs, Narrow Wall Lambeth from 1769 - 1834. Coade would have called these “specimens from the manufactory” and a selection were exhibited in Coade’s Gallery at Westminster Bridge Road beginning in 1799. In the possibilities generated in the exchange and exhibition of these objects, this historiography attempts to contextualize these people who both define and have come to be defined by the property of Coade Stone.

The object of Coade’s legacy is perhaps more precisely located in the innovation of catalogue-order construction supplies, manufacturing specifications, and material estimations for architects, builders, or inquiring customers. “A Catalogue, which has long been desired by the Nobility and others, must be peculiarly acceptable to Architects in the country, who, when making Elevations, will thereby be enabled to choose such ornaments as suit their purpose, and may be furnished with drawings of any articles they fix upon.”[16] This 1784 *Descriptive Catalogue* provided gentry, architects, and builders with 746 ornamental works, their price, and scale drawings which could be altered to “varied dimensions.” This variability was managed in material deformation over four days in Coade’s coal fired kilns by a fire-man such as William John Coffee who “never made use of any thermometer, but depended intirely on his own knowledge.”[17] Coade’s three kilns along with late eighteenth century manufactures locate the

[15] “Eleanor Coade.” English Heritage. Accessed October 5, 2021. https://www.english-heritage.org.uk/learn/histories/women-in-history/eleanor-coade/.
[16] Coade, Eleanor. *A Descriptive Catalogue of Coade's Artificial Stone Manufactory ... with Prices Affixed*. Copy owned by Sir John Soane. From Sir John Soane Museum. 1784.
[17] Jewitt, Llewellynn Frederick William. *The Ceramic Art of Great Britain*. New ed., reved. London: J.S. Virtue, 1883. P. 140

increasing management of matter in architecture along with methods of environmental control. In terms of manufacturing construction supplies for eighteenth century architects, Coade's provided a reliable technical performance in the controlled production of works such as balusters by the foot alongside singular "bespoke" works made to order for a specific use. These bespoke works ranged from a caryatid copy for the Erechtheion in Athens, a copy of the Syon Gateway for the exiled Regent of Portugal then in Brazil, curvilinear plaques and signs of the zodiac moulded to the drum of James Wyatt's Radcliffe Observatory, a sixteen foot tall statue on Lord's Hill Column, and the ten by forty foot alto-relievo Nelson Pediment in King William's Courtyard at The Royal Naval College Greenwich, London.[18]

An apocryphal Victorian newspaper article relays the rhetoric of empire in this Coade Stone pediment telling of a final dinner exchange between Admiral Horatio Nelson and British-American artist Benjamin West. Nelson is said to have only felt the power of one painting, namely West's well known historical-genre "The Death of General Wolfe," to which Nelson inquired, why had West not made more paintings like it. While toasting over champagne, West's confessionary fatalism, "Because my lord, there are no more subjects" is matched only by Nelson's, "Then I hope I shall die in the next battle."[19] Nelson's prediction occurred on October 21, 1805 in the Battle of Trafalgar where the admiral was shot and killed aboard the *HMS Victory* thus providing the subject matter for Benjamin West's 1806 painting, "The Death of Nelson." Four years later after changes due in part to the arrival of the Elgin Marbles in London, West would provide a pen and ink elevation titled "The Immortality of Nelson." Working with Joseph Panzetta and manufactured by Coade and Sealy's Artificial Stone Manufacture where it is remembered as their "master work."[20] Nude, dead, and center is

[18] Kelly, Alison. Mrs Coade's Stone. Upton-upon-Severn: Self Pub. Association, 1990.
[19] 30 July 1877 *Huddersfield Daily Chronicle*
[20] West, Benjamin. *Design for a tympanum for Greenwich Hospital; the immortality of Nelson*. 1810. From the National Maritime Museum, Greenwich, London

the body of Nelson being given up to Brittania's embrace by Neptune with dominion over the high seas. In the Nelson Monument, Coade's artificial stone converts a life into a substance with whose gravity weighs upon a cause larger than any single individual. Lord Nelson gave his life not only for the British Empire, but also for the collective enunciation againgst Napoleanic autocracy. The life of Nelson secured in artificial stone becomes the very substance to resist radical individuals.

In chapter one, *The Nature of Artificial Stone*, I locate the ontological fissures in nature yielding a delightful terror in the sublime cognition of existence which is not-natural. Through cross-class conversations extending through rigid British social hierarchies, I explore hauntings, the supernatural, natural philosophy, natural law, materialism, and applications of reason contributing to a secular understanding of the material world. As General Baptists and fledging experimentalists, Eleanor Coade and those engaged in the manufacture of artificial stone are neither secular nor entirely 'religious' in their epistomological world views. As such, I reconstruct the world view of these historical figures set between dyads of religion and science as it pertains to the use of clay and creation in a post-Deluge British Empire. Through exegetical readings of minor literatures including Richard Holt's *Treatise of Artificial Stone* and Daniel Pincot's *Essay on the Origin Of Artificial Stone*, I provide a technical account on the nature of artificial stone and the behavior of matter as it was understood in eighteenth century London. These minor literature which are "neither imaginary nor symbolic" situates the trial of substance in manufacturing architecture ornament in the politics of deterritorializing language through the collective enunciation of artificial materials whose governance no longer abides by natural law.[21] I conclude by looking at the work of the artificer whose labor comes to change the

[21] Deleuze, Gilles, and Félix Guattari. *Kafka : Toward a Minor Literature* Minneapolis: University of Minnesota Press, 1986.

duration of existence as it is sold by the first commodity in Coade's catalogue, *A River God*, who enunciates the emancipation of humanity from the terrors of nature.

In chapter two, *Proofs of Utility*, artificial stone narrates episodes in the use of proof throughout the British Empire including *clach cuid fir* 'manhood stones' in Scotland, Thomas Mallory's myth of pulling the sword from the stone, the mental health of King George III, mutual society prizes for construction materials, experimental cultivation of non-native plants, and the private financing of public improvement projects in the arts, agriculture, manufacture, and commerce. I situate these eighteenth-century uses of proof in profound social change wrought by experiments in architecture, science, industry, and insurance which transform life and materials made to protect and secure the duration of existence. With the vitrifying aid of fire, I critically examine the fire at the Pantheon in London which left the entertainment venue a smoldering ruin while Coade's artificial stone ornament remained unharmed. It was this accident of fire whereby the proof of artificial stone's utility is performed to a consuming public. Providing insight into the speculative overlap of insurance and architecture, this chapter examines how manufacturers and artificial materials respond to the risk of accident, damage, and catastrophic loss. I trace how Eleanor Coade and her manufactory capitalize on this accident to supply their artificial substance to brand The Phoenix Assurance Office and its sister company the Pelican Life Office Assurance. In the use of artificial stone ornament to alleviate the risk to both building and human life, I change the history of modern architecture.

In chapter three, *Architecture, Experiment, Modern Capital*, I trace the historiographic threads on modern architecture to experiments in environmental autonomy, the cost of labor, representational strategies rooted in flatness and abstraction, value inversions of utility and history, and bespoke relationships with clients at Coade's Artificial Stone Manufactory from 1769 - 1821. Spectacle and speculation collide in a dispute between Benjamin Franklin and

Benjamin Wilson on the danger posed to architecture by lightning leading to experiments at the Pantheon in London in parallel with Eleanor Coade's experiments in commerce and craft. Using Daniel Pincot's biblical genesis as a prehistoric origin story for the art of burning earth, I consider the linguistic, social, aesthetic, and technical contingencies of manufacturing architecture. What emerges is a language of commerce that manifests in commodities 164 and 177 selling "modern Ionic" capitals in Eleanor Coade's catalog locating a radical change in disciplinary cultures of construction. The requirements of selling ornament by paper across the world reconfigure the measurements and form of architecture which is increasingly made to be flat. Mapping representation and the relativity of cost, I demonstrate how artificial stone commerce abstracts Neoclassical architecture.

In Chapter Four, *Paper and Property*, I trace the historical overlap in manufacturing intellectual property and artificial stone critically considering identity as it pertains to the ownership of property. In this chapter, I examine ontologies of intellectual property which separate the corporeal from the intangible in the production of ideational objects such as patents, copyrights, and trademarks. Tracing a shared history between architecture and law to Florentine patriarch Filipo Brunelleschi and his patent *Il Badalone*, I argue the substance of architecture is inextricably central to the subject of intellectual property. By comparing Eleanor Coade the manufacturer to Jane Austen the author, I change our historical understanding of authorship and intellectual property by examining how gender, class, and religious identity came to structure Coade's decision to not secure a patent. Deflating the signature of the author and inflating the trademark of the manufacturer, I demonstrate how the right to use patent cement structures the artificial disciplinary divide between anonymous and educated masons. Using legal cases from the eighteenth and early nineteenth century, I trace changes to the specification in patents through the speculative use of technical language and techniques of graphic representation.

In Chapter Five, *Inheriting the Intangible*, I examine specimens from manufacture and their exhibition at Coade's Gallery at the base of Westminster Bridge. At the gallery is the exhibition of a modern architecture whose value derives from its cheapness, durability, and utility. Using curatorial strategies to intersect ornament and war, I trace the conversion of artificial stone's intangible properties into an ideational object of English National Heritage. Intersecting Coade with the Elgin Marbles, Rosetta Stone, obelisks, and Egyptomania at the dawn of the nineteenth century reveals the cultural role artificial stone plays in the anglicization of objects. Following Eleanor Coade's death on 16 November 1821, I follow the claims of inheriting Coade's craft epistemology by nearly thirty artisans and manufacturers into our present. It was only in the post-war period of the twenty century following global conflict and resurgent English nationalism whereby *Lithodypria* became Coade stone. In this transformation, a fictitious myth of the identity of Eleanor Coade has been built and preserved by mutual interest systems of the British state and private financing. Stories of secret recipes, salacious firings, and facts lost to time have long obscured and overshadowed the artisanal brilliance of Eleanor Coade and her business expertise. As an alternative, this history deploys the combinatorics of kaolin clay, sand, silica, quartz, grog, and additives to reconstruct the technical knowledge of artificial stone and the intangible property of Coade's manufactory.

This dissertation is not a biography of Eleanor Coade, but it draws a page from Giorgio Vasari's *Le Vite* using her life as the proprietor of a manufactory in London to organize an archival body of literature. The catalog of Coade's Artificial Stone Manufacture gave consumers the opportunity to shop, buy, ship, and decorate their homes, estates, and property. Hand-drawn folio's circulating in private between 1777 and 1784 led to a final issue in print sent around the world. Statues, busts, and chimneypieces for Catherine the Great in St. Petersburg; capitals, keystones, and chimney's for William Thornton in Washington D.C. a Nelson statue on a column

in Montreal, a bust of Lord Nelson being worshiped as the Vodu Iwa of Mountain Steams in Haiti, Gothic Windows for Cardinal Poniatowski in Poland, Coats of Arms for the Hon. John Rodney in Sri Lanka, plaques for Francis Johnston in Dublin; and caryatids for the Bank of England exemplify any manner of ornament and decoration made in London at Coade's Artificial Stone Manufactory. In using a catalog to send and receive the requisite components to construct architecture, Coade circulates drawing and writing to a consumer whose order arrives precisely to the exact dimension they request. Nine feet of balusters, a one-foot and six-inch pedestal, an eighteen and one half inch modern ionic column, or a nine-foot figure of a river god align measurement with off-site manufacturing and worldly transportation across the high seas. Included with these standards, Coade's offering of bespoke commodities provides a consumer the possibility to change, custom, or supply a design of their own that the manufacturer could execute. Before the English architect became a professional, they ordered building parts from a catalog.

In many ways, a history of artificial stone could not be possible without the incredible work of art historian Alison Kelly who passed away on 15 August 2016. Although the work of many scholars intersects Coade's artificial stone tangentially, no single person devoted more of their life to this study than did Kelly. Born to a Quaker family in Liverpool in 1913, Kelly studied English at Oxford University in 1933 and art at the Liverpool City School of Art for a year. She put her sensibilities to use in the second world war aiding in the camouflaging of factories and critical bombing targets. Lecturing in London after the war, her expertise in Wedgwood ceramics and Coade stone finds her a significant figure in the historical societies in Great Britain and America. Kelly's scholarship made significant use of the company records from 1813 - 1821 held in the National Archives to trace works made at Coade's manufacturing. Perhaps the most extraordinary of her scholarly efforts is organizing the handwritten records into an index enumerating the architects who use Coade stone and the geographic locations it can be found.

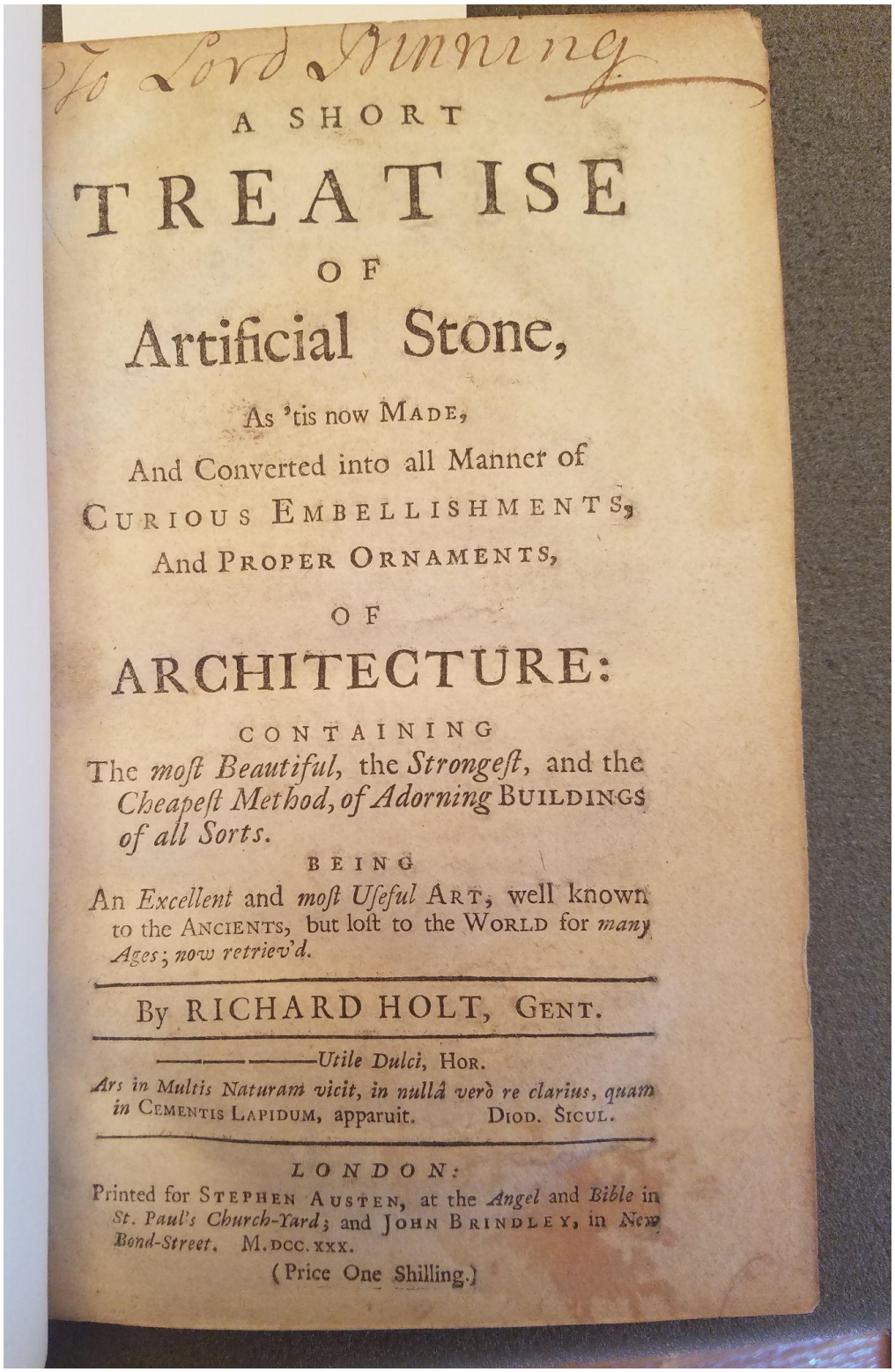
If Kelly is critical in saving Coade from total obscurity, this dissertation builds on her work by situating the history of artificial stone in architecture, insurance, science, and industry. I did not have the pleasure of meeting Kelly, but after reading her life's scholarship, I imagine Kelly and Coade to share that uncommon trait of being brilliantly resourceful and possessing extraordinary self-determination. I am truly in debt.

This dissertation is a history of artificial stone. A ceramic substance through which I locate the exegesis of modern architecture. This architecture is peculiar for its valuation of cheapness, durability, and utility which comes to configure possibilities in construction and building across the transatlantic anglosphere. Coade's Artificial Stone Manufactory critically locates a separation in the sites of building, design, and manufacture which remain interconnected in the exchange of information by drawing and language. In some regards, the history of artificial stone feels postmodern with custom orders and multi-variable calculations measuring and managing the shrinkage of clay when kiln-fired into ceramic. In others, this history feels deeply Neoclassical structured by English class and the polite arts of the long eighteenth century. What runs between is the critical role of technical knowledge and craft in modern art and architecture which has recently been neglected or dismissed by contemporary scholarship. The state of architecture relies upon precedent to configure the state of its discourse. Even in the act of replication, reconfiguring a precedent changes a discourse on architecture. I began this dissertation by collecting recipes for stucco, mortar, and cementitious substances into a database that had never before existed. Mapping the exchange of raw resources into recipes, I sought to begin my dissertation project in material absence. Over time, certain substances came to yield more discursive productivity than others as a result of the persons, places, and things they cement together. One such substance was the scagliola and *Lithodypria* at Coade's Artificial Stone Manufactory. Having only a vague knowledge of Coade stone where it frequently appears as an unexplained adjective in architecture, I became curious after reading a poorly

scanned copy of the advertisement from the 1784 *Descriptive Catalogue*. While I was fortunate to have remarkable institutional resources in Los Angeles, little to no information could be found. With a hunch and generous funding from the University of California, I built an archive of artificial stone which has come to include thousands of archival records from across the globe. Building an archive is one thing, putting it into an order is another. Ultimately, the use of subject matter came to organize disparate material that would typically never be put into dialogue. This organization made bedfellows of chemists and insurance companies, topographic collections of King George III and philosophical inquiries, artisanal craft and church organists, housekeepers receipt books, and published collections of architecture. The residue of ordering my archive remains in this dissertation as a method of critical inquiry for each chapter. What is artificial, what is insurance, what is an experiment, what is intellectual property, and what is intangible cultural heritage deriving from my archive are applied to each chapter respectively. In the end, I submit this dissertation to demonstrate the value of technical knowledge and expertise in architecture history.

***1. The Nature of Artificial Stone***

Archival Material



To Lord Binning

A SHORT

# TREATISE

OF

# Artificial Stone,

As 'tis now MADE,

And Converted into all Manner of

CURIOUS EMBELLISHMENTS,

And PROPER ORNAMENTS,

OF

# ARCHITECTURE:

CONTAINING

The *moſt Beautiful*, the *Strongeſt*, and the *Cheapeſt Method, of Adorning* BUILDINGS *of all Sorts.*

BEING

An *Excellent* and *moſt Uſeful* ART, well known to the ANCIENTS, but loſt to the WORLD for *many Ages; now retriev'd.*

By RICHARD HOLT, GENT.

——————*Utile Dulci*, HOR.

*Ars in Multis Naturam vicit, in nullâ verò re clarius, quam in* CEMENTIS LAPIDUM, apparuit. DIOD. SICUL.

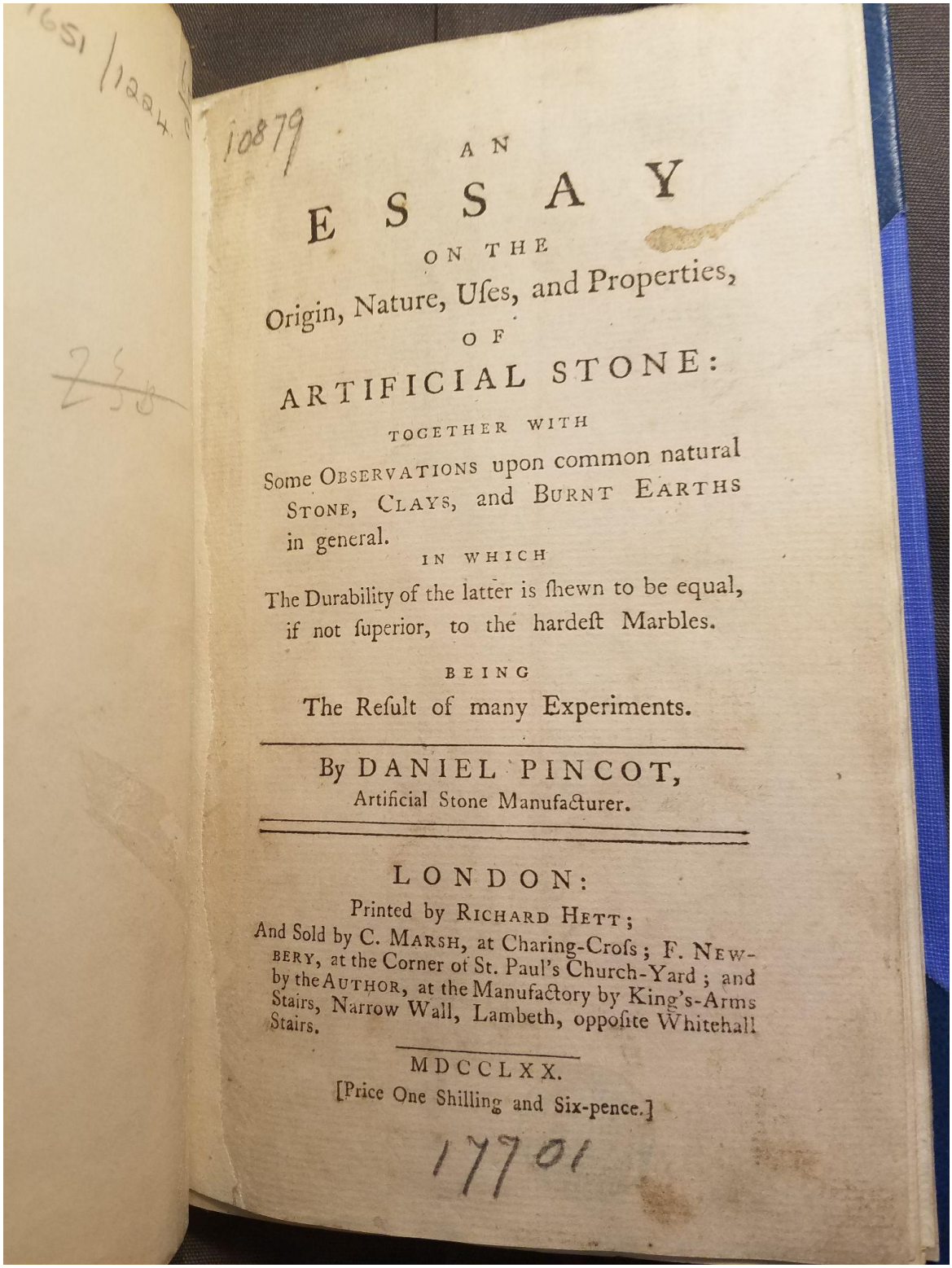
*LONDON:*

Printed for STEPHEN AUSTEN, at the *Angel* and *Bible* in *St. Paul's Church-Yard*; and JOHN BRINDLEY, in *New Bond-Street*. M.DCC.XXX.

(Price One Shilling.)

***1.01 - A Short Treatise of Artificial Stone...***
Richard Holt, 1730.

From the British Library, London, UK



AN

# ESSAY

ON THE

Origin, Nature, Uſes, and Properties,

OF

# ARTIFICIAL STONE:

TOGETHER WITH

Some OBSERVATIONS upon common natural STONE, CLAYS, and BURNT EARTHS in general.

IN WHICH

The Durability of the latter is ſhewn to be equal, if not ſuperior, to the hardeſt Marbles.

BEING

The Reſult of many Experiments.

By DANIEL PINCOT,
Artificial Stone Manufacturer.

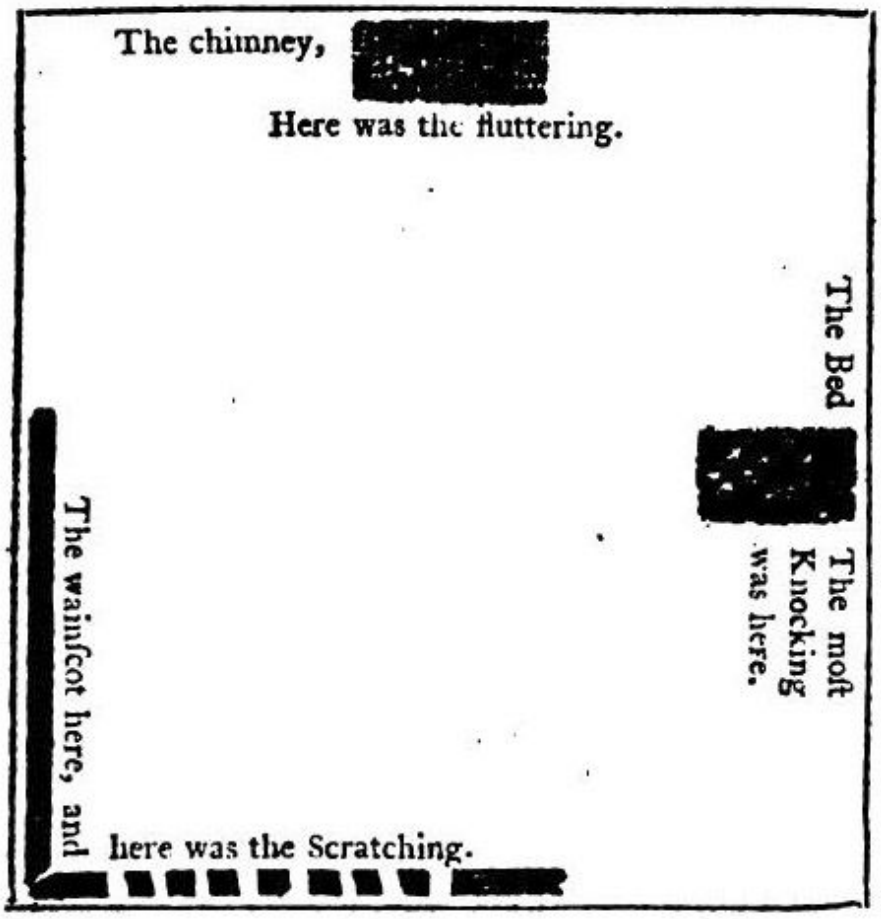
LONDON:
Printed by RICHARD HETT;
And Sold by C. MARSH, at Charing-Croſs; F. NEWBERY, at the Corner of St. Paul's Church-Yard; and by the AUTHOR, at the Manufactory by King's-Arms Stairs, Narrow Wall, Lambeth, oppoſite Whitehall Stairs.

MDCCLXX.
[Price One Shilling and Six-pence.]

***1.02 - An Essay on the Origin, Nature, Uses, and Properties of Artificial Stone...***
Daniel Pincot, 1770.

From the British Library, London, UK

**Plan of the Room, and the GHOST's Repreſentations, with References.**




***1.03 - Plan of the Room with the Cock Lane Spirit***
"The Gentleman's Magazine, v. 32 (London, England)," 1762. P. 43 - 44

From HathiTrust



***1.04 - Noah Sacrificing after the Deluge***
Benjamin West, 1800.

From San Antonio Museum of Art, San Antonio, USA



***1.05 - The Deluge***
Jacob More, 1787.

From The Tate London, UK



***1.06 - The Deluge***
Joseph Mallord William Turner, Exhibited 1805.

On Loan to the Tate, London, UK from the Museum of Art Pudong, Shanghai, China



***1.07 - Shade and Darkness - the Evening of the Deluge***
Joseph Mallord William Turner, Exhibited 1843.

From the Tate, London, UK



***1.08 - The Evening of the Deluge***
Joseph Mallord William Turner, c. 1843.

From the Timken Collection, National Gallery of Art, Washington D.C., USA



***1.09 - The Last Family Who Perished in the Deluge (Genesis 7:4-24)***
John Trumbull, 1838 - 1839.

From The Yale University Art Gallery, CT, USA



***1.10 - The Deluge***
Francis Danby, 1840.

From The Tate, London, UK




***1.11 - The River God***
Etchings of Coade's Artificial Stone Manufacture, 1777 - 1779.

From Yale Center for British Art, New Haven, USA

# 1. The Nature of Artificial Stone

"O Sir! Why will you have artificial stone? Nature must certainly be better than art; it is but an imitation, and a mere makeshift. Is it not more to your credit to have real stone than to stick up lumps of earthenware?"[1] --Anonymous Mason, *An Essay on Artificial Stone*, Daniel Pincot

In a postscript to his 1770 *An Essay on Artificial Stone*, the London manufacturer Daniel Pincot makes use of labor in a comedy of manners to voice a question to those "having a competent knowledge in architecture, and other branches of the polite arts."[2] Why use artificial stone? The postscript of an essay written by a British manufacturer is an unlikely place to locate a significant historical change to matters of material in architecture and the arts, and yet, this literary existence marks a rather significant change to the built environment of the British Empire in the use of artificial materials from 1769 - 1821. Driven by increasing interest in the durability of property, this anonymous mason gives voice to the emerging credibility in artificial materials as a result of their performance in construction, science experiments, and social exhibition. The Postscript exists as an addition to the essay, or drawing on its Latin etymology, it is writing after the writing. After Pincot has finished writing a rather empirical essay on the artificial stone substance he has been engaged in manufacturing since 1767, he makes use of literary invention to politely address his readers and preemptively assuage any critique. Moreover, Pincot's *Essay relies* on normative rhetoric to persuade, advertise, and sell the artificial substance to a consuming public. After seventy six page's on the use and applications of artificial stone, the anonymous mason transgresses the rigid social hierarchies of eighteenth century London in objecting to the prevailing Georgian taste of his employer. Rather than taking offense, this transgression is rather amusing to the gentlemanly British reader who hears the voice of labor speaking back. While the financial motivations of the author mark him as an

[1] Pincot, Daniel. *An Essay on the Origin, Nature, Uses, and Properties, of Artificial Stone: Together with Some Observations Upon Common Natural Stone, Clays, and Burnt Earths in General, Etc*. London: Printed by Richard Hett; Sold by C. Marsh, Etc, 1770. P. 78
[2] ibid.

unreliable narrator, the anonymous mason poses an inquiry with worldly implications for the built environment far exceeding the cross class critique of taste. Why use artificial stone in architecture?

For the historian seeking to contextualize these linguistic utterances, it is necessary to consider the readership of artificial stone in relation to sites of exchange. Sold for one shilling and six-pence, a reader could purchase the *Essay* amidst the urban confluence of the Strand, a short but major thoroughfare running alongside the river Thames from the Palace of Westminster to the historic city center of London. Connecting civil, commercial, political, and religious institutions, the road has a rich history with a use dating to Roman Britain. Deriving from the Old English word for a beach, shore, or river's edge, the Strand was paved in 1532 and all land plots developed by the end of Queen Elizabeth's reign from gentry landing their estates within the growing urban polis.[3] These estates include Arundel House with Thomas Howard's collection of Ancient Greek Sculpture, Durham House hosting Native American's Chief Manteo and Wanchese following the North American colonial venture's of Sir Walter Raleigh, Somerset House on whose medieval foundations stand Sir William Chamber's exquisite Neoclassical building, the Italianate York House, and the Savoy Palace turned prison by Sir Christophe Wren which aggregate a few of the Strands palatial residences from the centuries. This dense packing of propertied persons has long facilitated the performance of spectacle and pageantry including processions along the Strand by Queen Anne to commemorate victory in the War of the Spanish Succession, King George III to celebrate his intermittent recovery from mental illness, and the funerary procession of Lord Nelson. Following the 1666 Great Fire of London causing unprecedented devastation to the street and historic core, British aristocracy increasingly made the move into the West End of London as a new type of tenant came to

[3] Walter Thornbury. "The Strand : Introduction," in *Old and New London: Volume 3*, (London: Cassell, Petter & Galpin, 1878), 59-63. *British History Online*, accessed June 30, 2021, http://www.british-history.ac.uk/old-new-london/vol3/pp59-63.

occupy the Strand. This tenant came to occupy early modern architecture as a result of the efforts by physician and speculative property developer Nicholas Barbon who participates with others in replacing aristocratic mansions with blocks of repetitious town housing for rent or purchase thus significantly altering the Strand streetscape. The Strand's affiliations with social class and taste would continue in large part to institutions of commerce, exchange, and popular gathering such as the coffee house. At The Grecian, The Turk's Head, or George's coffee house, everyone from prince to pauper could enter for the price of a penny. In London from 1652 until the early 1800s, the coffee house performs as an informal social club housing daily conversations on finance, politics, news, or any topic of sufficient interest. Sitting as social equals around common tables on which lay current publications and newspapers, a patron of the day knew the coffee house colloquially as the 'penny universities.' Here they read politics from *The Westminster Journal and London political miscellany*, got the latest on arts and culture from *The Craftsman*, could browse commercial offerings in *The Public Advertiser*, or simply take in latest news from *The London Gazetter*. While reading matters of the world, the coffee house exemplifies the gradual 'Anglicization of oriental coffee' and the historical emergence of consumerism amidst a 'public sphere.'[4] It is precisely amidst this urban confluence of propertied persons to whom the anonymous mason of Pincot's *Essay* speaks across class on artificial stone thus constructing a readership on the material substance of architecture, science, and industry in the British Empire.

Over the boisterous conviviality of coffee, "gentry, tradesman, all are welcome hither, and may without affront sit down together."[5] While serving a predominantly male patronage, this cross class site of exchange frequently finds patrons engaging in the rhetorical performance of wit and virtuosi through vigorous conversation. I argue that in the exchange of conversation, the topic

[4] Cowan, Brian William. *The Social Life of Coffee : The Emergence of the British Coffeehouse*. New Haven Conn.: Yale University Press, 2005.
[5] From *The Rules and Orders of the Coffee-House*, 1674

of architecture in 1760's London locates an ontological overlap between erudite classicism and the building trades, which is to say, between the mental and the manual as it pertains to the material substance of architecture. In this time, the material to make architecture is made into a common topic of conversation through literary publications and social institutions. This mutual interest ontology serves as a counterpart to the figure of the architect engaging in an autonomous intellectual venture who dissociates themselves from the manual labor of construction. The exhaustive scholarship on the eighteenth century architect has produced a peculiar bias in the art of building which omits the contributions of figures who are strictly considered 'not-architects.' Art historian Caroline van Eck argues that "until the revolution of taste introduced by Lord Burlington in the early decades of the eighteenth century, the architect in the Renaissance sense, that is, as the intellectual author of the design who supervises the work of all the craftsmen involved in its execution but is not himself one of them, was not known in Britain."[6] Van Eck's scholarship locates the arrival of this gentlemanly architect to the British Isles who uses political, cultural, social, economic, and institutional affiliations to aid their/his economic venture. Many eighteenth century British architects, builders, and other historical figures simultaneously constitute and resist this representational trope of the architect as a figure of intellectual labor supervising the hand of menial work. In parallel with this arrival is industrialization and shifting modes of production contributing to significant changes in work environments as eighteenth century factory labor enforces the increasing division and specialization of labor. There is a limited accuracy the historical representation of the architect participating in the reflexive separation of a professional 'master builder' from manual labor; even Sir John Soane the son of a bricklayer never built his buildings with his own hands although he did draw them with a team of draftsmen. However, this dissertation seeks an alternative vantage point to survey the epistemological territory of architecture and the figures

[6] Eck, Caroline van. *British Architectural Theory, 1540-1750 : an Anthology of Texts* Aldershot, Hants, England ;: Ashgate, 2003. P. 55

who contribute to architecture's intellectual labor. Outside the scope of Van Eck's anthology and traditional historiographies are figures such as the manufacturer whose work and writings do not readily align with the teleological emergence of the architect as "sole intellectual author."[7] As a means to reconsider the construction of intellectual authorship in architecture, this dissertation examines the figure of the artificial stone manufacturer and the discursive modalities through which they operate. When, and more critically, why did the subject of architecture become a cross class topic of conversation in London? While I do not necessarily exclude the economic venture of the private architect within this scholarship, I argue this traditional historiography is inadequate in explaining changes in the construction of architecture and the built environment.[8] To remediate this deficiency, this history examines the intellectual authorship of modern architecture by British manufacturers through the artificial stone ornament and the discursive literatures they made between 1769 - 1821.

At social institutions such as the coffee house is where gentry and tradesmen converse on matters of substance in construction, but, what else do they speak about? In *The rise of supernatural fiction, 1762-1800*, literary scholar Emma Clery locates such analogous conversation in the visual and literary culture of the supernatural. For Clery, hauntings and the like evidence the 'spectre' of modern commercial culture thriving amidst rapid changes in British cities and society. Beginning with the mass media event of the spirit of Cock Lane near St. Paul's, Clery argues the supernatural simulates collective consumer fantasies of a modern sublime aesthetic. Exemplifying this consumer fantasy is a dialectic between reading ghost tales in the news and buying Horace Walpole's 1764 *The Castle of Otranto* to read about ghosts and evil spirits haunting Gothic architecture. It is often said Walpole himself was a seer of

[7] Eck, Caroline van. *British Architectural Theory, 1540-1750 : an Anthology of Texts* Aldershot, Hants, England ;: Ashgate, 2003. P. 55
[8] Upton, Dell, "Defining the Profession Before 1860," in Ockman, Joan., and Rebecca. Williamson. *Architecture School : Three Centuries of Educating Architects in North America* Cambridge, Mass: MIT Press, 2012.

ghosts and his supernatural fiction to be a result from nightmarish effects while asleep in his neo-Gothic Strawberry Hill House. Included alongside pages of fiction fueling fantastical speculation on the substance of spirits are guides to perform seances, science experiments, and visual engravings such as William Hogarth's *Credulity, Superstition, and Fanaticism*. These events and their commodification convey tropes of social hierarchy from Georgian society including the depiction of the lower class to be irrational, superstitious, and dullards whose absentmindness results from deficient book learning. This representation of a feeble mind is set in stark contrast to the landed and learned gentry who use rational skepticism, positive inquiry, and other methods of the 'new sciences' then sweeping a secular wave across Europe. Undoubtedly, makers of these prints knew their market and the source of income. While undeniable social barriers permeate British society, the anonymous mason from Daniel Pincot's *Essay* and mania for the supernatural both demonstrate the transgression of social divisions increasingly under pressure from commercial culture. What is remarkable and unexamined about the Cock Lane spirit is the popular circulation of architecture as a result of this ghoulish mass media mania. Never before had a cross class discourse on architecture emerged as it did when it came to the question of a building being haunted or not. Adorning the frontispiece of George Alexander Steven's *The Beauties of All the Magazines*, an inquisitive reader looking for the news on the Cock Lane spirit finds a "Plan of the Room, and the Ghost's Representations, with References."[9] Drawn under the pseudonym S.S.P. Sexton, the annotated plan depicts the haunting in question through perceptual effects detected in the chimney, the bed, and the wainscot contained within a plain square room showing no means of entry or egress. The plan makes use of simple geometric line work and linguistic descriptions to reconstruct the reality of the haunting for a dubious public. Reading the plan, one learns that "Next to the chimney was the fluttering, by the bed is where there was the most knocking, and on the wainscot was the

[9] *The Beauties of All the Magazines Selected*. March, 1762 ; June 1763. Vol. March, 1762 ; June 1763. London: Waller, 1762. P. 48

scratching." Intending a readership of the very many as opposed to the few, this 'Plan of the Room' uses architecture to represent an event through mass media in 1762 {Figure 1.03}. The credibility of this event and others which are similar reveal increasing scepticism and speculations on nature be it super or simply mundane matter. More precisely, hauntings reveal the substance of architecture to be increasingly examined through the causes and effects of material. To determine if a spirit can use and interact with the substance of this world, corporeal subjects gather in the performance of séances to communicate using "an affirmative is one knock; a negative, two. Displeasure is expressed by scratching."[10] With non-believers impatiently awaiting the discovery of an imposter or few that might rid the town of such superstitious nonsense, I suggest these events locate a discourse on architecture not rooted in style but in the substance of material and its perceptual effects. Investigating how wainscot acquires scratches is simultaneously an investigation into the existence of ghosts and modern architecture. Disregarding the question of belief, we might adjudicate the reality of these events in the sublime encounter with the performance of material that behaves outside the realm of natural expectations. For all the ink spilled regarding architecture parlance of the eighteenth century, an architecture which speaks is an architecture which is haunted.

I raise this spectre of the supernatural to consider the history of artificial things. It is often the covetous desire to discover the existence of ghosts which overshadows the ingenuity in crafting their hoax, as is the case with the investigation of the 1762 Cock Lane spirit by a committee including Samuel Johnson leading to a trail at Guild Hall. Of interest to the architecture historian in these events is not the existence of ghosts but rather the cognitive sensations of the sublime deriving from the built environment. Unsettling events in unlit rooms, dim figures disappearing into dark corners, and ominous sounds of spirits make present the sublime animation of inanimate matter. Gathering to interrogate material as a means to determine the credibility of a

[10] "The Gentleman's Magazine v.32 (London, England)," 1762. P. 43-44

haunting parallels the observation of matter at similar social gatherings such at science experiments, art galleries, and architecture. The sensation of the sublime is often couched climatically or when posing an existential crisis, and the haunting of 1762 evidences the increasing inclusion of architecture into aesthetic regimes deriving from the delightful terror of nature. For the purposes of this dissertation, it is not the question of ghosts but rather the supernatural performance of material causing sensational social gatherings to observe architecture which is of interest. The trial of architecture in 1762 is but one of many social gatherings organizing around the sensational performance of material in architecture; be it audio, visual, tactile, olfactory, or taste. A social sense of the sublime at this time draws directly from Edward Burke's *Philosophical Enquiry* still widely circulating in the decades after its 1757 publication.[11] Recent scholarly attention on the "historical, literary, scientific, political and philosophical context" of Burke's treatise by Koen Vermeir and Michael Funk Deckard finds a discourse on the sublime which permeates eighteenth century British society.[12] Using a plurality of methodologies, readings, and outlooks, this collection organized by Vermeir and Funk establishes the context of this permeation in relation to "the culture of sensibility, 'Newtonianism', environmental writings and the metaphysics of substance."[13] This dissertation makes a contribution to the scholarship on aesthetics and architecture by examining the substance of the sublime in artificial stone. Reading Burke finds the sublime categorized as "whatever is fitted in any sort to excite the ideas of pain and danger, that is to say, whatever is in any sort terrible, or is conversant about terrible objects, or operates in a manner analogous to terror, is a source of the *sublime*; that is, it is productive of the strongest emotion which the mind is capable of feeling."[14] Moreover, the emotional response to suffering sympathy, experiencing

[11] Burke, Edmund. 1757. *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful*. London: Printed for R. and J. Dodsley.
[12] Vermeir, Koen. *The Science of Sensibility : Reading Burke's Philosophical Enquiry*. Archives Internationales D'histoire Des Idées, 206. Dordrecht: Springer, 2012.
[13] Ibid. P. xv
[14] Burke, Edmund. 1757. *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful*. London: Printed for R. and J. Dodsley. (Section VII, Of the Sublime.)

tragedy, or taking delight in the passions of self-preservation all constitute the sublime. Burke's sensing subject is made mortally aware of themselves as a nervous effect of emotional sensations. Cognition of the outside world constructs an internal one. This Enlightenment era subject is contingent on the ontological mediation between the stimuli of an external world through their bodily organs to an interior emotional subjectivity. According to this category of emotional sensation, the sublime reflexively poses the question of existence when confronted with the delightful terror of self-preservation. The use of reason and empirical rhetoric argues that to perceive danger is to perceive oneself. While this might appear as a rather acute response to the broad terrain of human emotions, the sublime participates in constructing cognitive identity through possible self-annihilation. Which is to say, the sublime exists in the confrontation with our own nonexistence. Sensational encounters with supernatural spirits confronting our human mortality compose spheric dyads between the corporeal and the spiritual, matter and the immaterial, perishable and Burke's 'artificial infinite' which defines the duration of existence after a sensation. After the sensation of an event, the artificial infinite remains within the cognitive subject. Readers of Burke reveal a delightful terror in the sublime cognition of artificial stone deriving from the perception of a non-natural existence.

Across early modern Europe, the study of nature began flourishing across universities and the literary landscape. Gradually supplanting the methods of medieval Aristotelian scholasticism due to the influence of the 'new sciences', this systematic study came to be described as natural philosophy which includes a myriad of methodological approaches. A few of the well known systematic descriptions of nature include the mathematics of Isaac Newton, philosophical and mechanics of John Lock, or in the speculative unity of spirit projects by Johann Wolfgang von Goethe and Georg Wilhelm Friedrich Hegel. Throughout eighteenth century Europe, nature came to be understood as being governed by laws through which reason and systematic inquiry could reveal to humankind. Systems predicated upon secularity are exemplified by the inquiry

of French-German philosopher and encyclopedist Paul-Henri Thiry, Baron d'Holbach's *Système de la Nature ou Des Loix du Monde Physique et du Monde Moral* which began circulating the continent anonymously in 1770.[15] With the explicit intention of removing the divine as both cause and effect from the natural world in exchange for deterministic laws, it is often quipped that d'Holbach's materialism helped convert the young English Romantic poet Percy Bysshe Shelley to atheism. This secular shift reshaped continent wide epistemologies on ethics, politics, law, philosophy, and the polite arts and the frequent appeal to nature as an expository authority on human conduct and its artificial governance by natural laws dictated by God, reason, or both.[16] These intellectual ventures participate in constructing an epistemology of nature which is increasingly knowable, predictable, and deterministic. Materialism, reason, and natural law all contribute to an increasingly secular understanding of the material world and a behavior of worldly matter. However, whiggish histories attempting to arrive at modernity through a secular understanding of material often neglect the religiosity of figures who do not align with our present understanding of science. The artificial stone manufactures central to this dissertation such as Eleanor Coade and Daniel Pincot are orthodox Baptist Nonconformists with a commercial interest in the application of science to the polite art of architecture ornament. Moreover, the material they make is distinctly not-natural. This dissertation will come to demonstrate significant contributions of these figures to architecture, science, and the history of nature as it pertains to the art of making artificial stone ornaments. Requisite to this demonstration is the necessity to reconstruct the material understanding of the world by these historical subjects.

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[15] Mirabaud, Jean Baptiste de, Naigeon Jacques André, and Rey Marc Michel (Amsterdam). 1770. *Systême De La Nature, Ou Des Loix Du Monde Physique Et Du Monde Moral*. Londres Amsterdam: M.M. Rey. http://books.google.com/books?vid=KBNL:UBA000071959.

[16] Daston, Lorraine, and Michael Stolleis, eds. 2008. *Natural Law and Laws of Nature in Early Modern Europe : Jurisprudence, Theology, Moral and Natural Philosophy*. Farnham, England: Ashgate Pub. Company.

In reading the Oxford English Dictionary, the word artificial includes the definition 1a; “opposed to natural.”[17] This dated but enduring dialectic has a history traceable to Samuel Johnson’s *A Dictionary of the English Language* published in 1755. With definition, etymology, and quotation, Johnson’s dictionary epitomizes social ambitions to provide a standard authority on the English Language. Johnson’s herculean task is memorialized in the continuing format of the dictionary which remains current today. Quite distinct from competing organizations, Johnson’s dictionary makes use of quotations from existing literary sources as a method to define words. In a distinctly English way, the use of ‘examples from the best writers’ appeals to a common, popular, and largely literate spoken language that had yet to be systematically organized. Working near The Strand in a timber frame brick townhouse at 17 Gough Square, the task took far longer than initial expectations lasting nearly nine years from 1746 - 1755. Johnson’s definition of artificial relies upon the literary precedent of English statesman Sir William Temple, defining the word as “Artful; contrived with skill.” Ever the source on the English tongue, Johnson draws from the iconic playwright William Shakespere in the definition of artificial to include “fictitious; not genuine.” Lastly, from Anglican clergyman, natural philosopher, and Royal Society founder John Wilkins, artificial is understood to be “Made by art; not natural.”[18] An exegetical reading of artificial excavates a non-natural fiction which is made by art or skill. A person in eighteenth century London knew many things to be artificial including flowers, limbs, wigs, teeth, bladders, ducks, fish, insects, marble, wood, machines to make light, electricity, and Jaquet-Droz automata circulating throughout the European continent. Beyond tangible things, the word artificial locates intangible organizations such as “artificial society,”[19] “artificial

[17] "artificial, adj. and n.". OED Online. June 2021. Oxford University Press. https://www.oed.com/view/Entry/11211?redirectedFrom=artificial (accessed August 10, 2021).
[18] *A Dictionary of the English Language*. London, 1755.
[19] Burke, Edmund. *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful*. London: Printed for R. and J. Dodsley. 1757.

scarcity,"[20] "artificial grammar,"[21] "artificial logik,"[22] and an increasing conception of the globe as an artificial sphere. English Geographer Thomas Banks in his *A New, Royal, and Authentic System of Universal Geography* includes a description of known 'artificial curiosities' from the Danish Royal collections which convey imperial ambitions of power through collection, colonialism, and 'elegant workmanship' including "a small man of war in ivory, with silver guns...a watch made of ivory, with all its wheels and movements..and a skeleton made of ivory, two feet six inches high, in imitation of a human one; and is so nicely formed and put together, that it may be easily taken for a natural one."[23] Through workmanship, matter of the natural world is made artificial. In this ontological conversion to being artificial, it can be said that physical material undergoes a specific change in state. As regards the artificial stone material of this dissertation, this conversion is from clay into ceramic. Implicit to the natural philosophy endeavors of the European Enlightenment is a human centric artificer, however, historical experiments in machines do not necessarily exclude non-human subjects as the one whose work is required of this conversion. Thus, the artificer need not be human.

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[20] My friend a physician, Peter Markham, and John Wilkinson. *Poison Detected, or, Frightful Truths, and Alarming to the British Metropolis : In a Treatise on Bread, and the Abuses Practised in Making That Food As Occasioning the Decrease and Degeneracy of the People, Destroying Infants, and Producing Innumerable Diseases : Shewing Also, the Virtues of Good Bread, and the Manner of Making It : To Which Is Added, a Charge to the Confederacy of Bakers, Corn-Dealers, Farmers, and Millers, Concerning Short Weight, Adulterations, and Artificial Scarcities, with Easy Methods to Prevent All Such Abuses*. Eighteenth Century Collections Online. London: Printed for Mess. Dodsley and 4 others, 1757.

[21] Maidwell, Lewis. *Nova Grammatices Experimenta: Or, Some New Essays of a Natural and Artificial Grammar. Which First Demonstrates the Natural Rudiments of Al [Sic] Languages ;* Eighteenth Century Collections Online.. London: Printed, 1707.

[22] Sergeant, John. *Transnatural Philosophy : Treating of the Essences and Operations of All Beings Whatever. Particularly of the Essence of Man ; of the Immortality of the Soul, and of Its Future State in the Next World, According to the Dispositions It Carries with It Hence. of the Essence, Existence, and Operations of Angels ; and of the Most Adorable Deity, and of His Attributes. As Also of the Most Wife Method (in Common) by Which He Administers the World. Refuting All along the Tenets of Atheists, Deists, and Socinians, Demonstrating Throughout by Clear and Solid Reason. with a Rational Explication of the Mystery of the Most Blessed Trinity. by J.s. the Author of the Method to Science. the Second Edition with Additions, Viz. Some Preliminaries Necessary for Right Speculation, and a Clavis to Understand Metaphysicks, and Also Artificial Logick, &c*. Eighteenth Century Collections Online. London: Printed for the author, and to be sold by S. Keble at the Turks-Head in Fleet street, D. Browne at the Black Swan and Bible without Temple-bar, A. Roper at the Black Bey in Fleetstreet, and G. Strahan over against the Royal Exchange in Cornhill, 1706.

[23] Banks, Thomas. *A new royal authentic and complete system of universal geography antient and modern..p. 629*

If becoming artificial requires work, what then is labor in the British Empire from 1769 - 1821? Understanding British labor during these years reveals increasing industrialization and the dichotomous exploitation of colonial ventures which remains a current scholarly topic upon which this dissertation draws data from economic, demographic, political, and social studies.[24] I draw on this data not to quibble with technicalities in specific fields of study but to reconstruct the subjects of eighteenth century manufacturers and their speculative artificial stone ventures. Buying raw ingredients and converting clay into ceramic commodities through artisanal craft provides a portrait of early modern British labor and their profit motivated methods of making. From the manufacturer moving outwards, this dissertation seeks to reconstruct the material cost of constructing architecture, ornament, and insurance from the lives of these historical subjects. I do not consider this to be an exhaustive survey of the British Empire, or even all of London for that matter, the inclusion of data is done so as to provide a reader with a historical context for historical figures whose existence has remained marginal, minor, or absent from the history of architecture, art, and science. If Giorgio Vasari's *Le Vite de' più eccellenti pittori, scultori, ed architettor* makes use of the many, I rely upon the few who are bound by covenant and craft. To understand the world of these lives and the world they shape, I endeavor to situate these figures into a social context thus making them familiar to a reader today. A snapshot of this world reveals the poor of London surviving on a shilling a day, high skill artisan families living on a pound a week, the bourgeois earning approximately fifty to one hundred pounds a year, and the excess of gentry annually earning three hundred pounds minimum.[25] Aptly stated of this time is Daniel Defoe's description of the English "orders of society" as "the great, who live profusely. The rich, who live very plentifully. The middle sort, who live well. The working trades, who labour hard but feel no want. The country people, farmers, &c., who fare indifferently. The poor,

[24] Most notably the work of E.W. Gilboy's *Wages in Eighteenth-Century England*, E.P. Thompson's *The Making of the Middle Class*, Roderick Floud and Deirdre McCloskey's *The Economic History of Britain since 1700*, and L.D. Schwartz's *London in the Age of Industrialisation*.
[25] Porter, Roy. *English Society in the Eighteenth Century*. Revised Ed. The Penguin Social History of Britain. London, England: Penguin Books, 1990. p.xiv

that fare hard. The miserable, that really pinch and suffer want."[26] Although living costs and standards differ significantly between social class and cities, a regulated food staple such as a loaf of bread typically costs 4 pence, ale 1 pence, and a full tavern meal running around 1 shilling 6 pence.[27] In 1770, the same year Daniel Pincot published his *Essay*, the real daily wage for an anonymous mason, bricklayer, or carpenter was approximately 3 shilling following an 'enormous' fall in rates from 1750 - 1800.[28] While Pincot's anonymous mason quotation is a literary invention, it's quite certain from his text he was acutely aware of the increasing cheapness to constructing architecture. In 1769, the year Pincot and Coade begin operating in Lambeth, the population of London was approximately 750,000, although the first modern census was not taken until 10 March 1801 by each parish recording inhabited and uninhabited houses, families, persons by male or female, type of employment in either agriculture, trade, manufacture, handicraft, or neither; baptisms and burials by male and female, and marriages.[29] The census of 1801 records 1,096,784 lives in Greater London growing to 1,573,210 by 1821. This data describes a social context with persons increasingly accumulating capital as a result of industry and colonial ventures as they came to spend, store, and preserve that capital amidst a growing consumer culture. Be it cheap day labor or skilled artisan labor, the significant urban population growth corresponds to expansive and heterogeneous construction in the city.

The making of artificial stone is old. Pincot wrote of this in his *Essay* saying, "Above all, by seeing or having knowledge of numberless instances of what may be more properly called artificial stone, now actually existing in as full strength as when first made, in many ancient buildings in China, Egypt, Greece, Italy, Great-Britain, and other places. Partly from these

[26] Defoe, Daniel. *History of the Union of Great Britain*, 1709. P. 38
[27] ibid. P. 37
[28] Schwarz, L. D. "The Standard of Living in the Long Run: London, 1700-1860." *The Economic History Review*, New Series, 38, no. 1 (1985): 24-41. Accessed July 15, 2021. doi:10.2307/2596642
[29] Wall, Richard, Matthew Woollard, Beatrice Moring, and University of Essex. Department of History. *Census Schedules and Listings, 1801-1831 : An Introduction and Guide*. Working Paper Series, 5. Colchester: Dept. of History, University of Essex, 2004.

considerations, but more fully from what will be advanced in the course of this work, it will appear, that making artificial stone, either that kind which is hardened in the air only, or that which is the work of fire, is far from being a modern discovery."[30] These two variants of artificial stone are more precisely organized by the chemical matter which constitutes them. That which is hardened by air is a lime mortar and the other being ceramic is made through the work of fire. The artificial stone of Eleanor Coade, Daniel Pincot, and a litany of London-Lambeth based manufacturers which constitute the scholarly focus of this dissertation are ceramic. While making ceramics in the British Isles has a history which extends to the early Neolithic pottery of Windmill Hill, the ontological use of the linguistic phrase artificial stone to describe the procedural combinatorics of a specific recipe is comparatively more recent. Among the earliest uses of the phrase artificial stone on paper is in 1722 by Richard Holt to secure a patent secured with English architect Thomas Ripley. Ripley and Holt's patent Number 447 for the making of a *Compound Liquid Metal for Making Artificial Stone and Marble* petitioned the protection of a manufacturing process "that they have been at much labour and expense for the finding out and inventing a certain compound liquid metall never before known and used by the antients or moderns, by which artificial stone and marble is made by casting or running the metall into moulds of any form or figure, great or small, as statues, columns, capitals, also for house work and garden ornaments, and all other cutt or sculpture work that might be done in naturall stone and marble, and which, being petrified or vitrified and finished by strong fire, becomes more durable and harder than stone and marble, insomuch that neither wet or dry, neither frost or snow, heat or cold in the extremity can do damage to it; which artificial stone and marble will be of very great use and public benefit in all Our dominions, and also great quantities thereof will be exported by reason of its cheapness as well as goodness."[31] The word 'metall'

[30] Pincot, Daniel. *An Essay on the Origin, Nature, Uses, and Properties, of Artificial Stone: Together with Some Observations Upon Common Natural Stone, Clays, and Burnt Earths in General, Etc*. London: Printed by Richard Hett; Sold by C. Marsh, Etc, 1770. P. 9
[31] From *Letters Patent*, Ripley and Holt, No. 447, 1722.

here describes a hard mineral extracted from the ground which is later liquified.[32] The patent does not disclose any specific technical knowledge on the manufacturing process and alternatively relies upon linguistic description to categorically claim artificial stone for the patent holders. Quite literally, the very next patent on the books is another by Richard Holt this time with Samuel London in securing patent 448 *Mixture for Making White Ware* alluding to a 'new composition' without any sort of clay which likely marks this process as producing a lime artificial stone. While holding two different patents with two different partners, in 1730 Richard Holt published *A Short Treatise of Artificial Stone As 'tis now Made, and Converted into all Manner of Curious Embellishments, and Proper Ornaments, of Architecture containing The most Beautiful, the Strongest, and the Cheapest Method of Adorning Buildings of all sorts.*[33] To date, Holt's *Treatise* is the first systematic treatment of artificial stone and the manufacturing process of materials useful in constructing and ornamenting architecture. As late as 1946, British architecture historian John Summerson and even a few others today still continue to speculate a secret genealogy of craft from Holt's business to Daniel Pincot and Eleanor Coade.[34] There is no evidence of such continuity nor has there been any discovery of artificial stone works by Richard Holt, Thomas Ripley, or Samuel London thus the architecture historian is left only with words printed in patents, catalogues, advertisements, letters, and other literary modalities as a means by which to reconstruct the early modern material world of artificial stone.

*The Trial of Substance*

Between natural and artificial stone is the ontological question of existence. Terminology categorizes one specific organization as being one or the other. As a means to examine this

[32] Hamilton, S.B., "Coade stone," *Architectural Review* 116, 1954, p. 295
[33] Holt, Richard. *A Short Treatise of Artificial Stone: As 'Tis Now Made, and Converted into All Manner of Curious Embellishments, and Proper Ornaments, of Architecture: Containing the Most Beautiful, the Strongest, and the Cheapest Method, of Adorning Buildings of All Sorts. Being an Excellent and Most Useful Art, Well Known to the Ancients, but Lost to the World for Many Ages; Now Retriev'd*. London: Printed for Stephen Austen, and John Brindley, 1730.
[34] Summerson, John. *Georgian London*. New York: C. Scribner's Sons, 1946.

separation of material division in this section, I examine the material epistemology in Richard Holt's *Treatise* and Daniel Pincot's *Essay on artificial stone*. How did manufactures in eighteenth century London understand the substance they made and sold and what does this material knowledge tell us of the natural world at the time? These literary works evidence the increasing intersection of manual and mental labor at the manufacture where they both write about and make artificial stone. By material epistemology, I intend knowledge deriving from working with a material substance. Exemplifying the material epistemology of artificial stone is the knowledge to mold clay and fire it within a kiln for a specific duration, the time it takes to rake lime, and the knowledge deriving by trial and experiment. Towards this ambition, an exegetical reading of these two writings on artificial stone from eighteenth century London provides the present reader with what Pincot calls a "general knowledge of burnt clays, or artificial stone...as being all the same nature, differing only in appearances, according to their several degrees of fineness or purity."[35] While Pincot wrote four decades after Holt and was aware of his existence, this historical separation should not be framed through paradigm shifts, epistemic breaks, or the radical replacement of outmoded knowledge. Excavating these two writers reveals gradual shifts in the consumer environment by which architecture is increasingly bought and built from artificial materials. This change in the market from Holt to Pincot reveals a consumer culture allowing manufactures to undertake more substantial risk in their creative undertakings. To understand this relationship between risk and consumerism, one must consider who uses their writings on artificial stone and to what end?

In 1730, St. Paul's church-yard continued to house a thriving locus of commercial activity in the historic city of London. Physicians from Warwick Lane, civil lawyers from Doctor's Commons, and Anglican clergy all contribute to the persons frequenting the markets, taverns, and

[35] Pincot, Daniel. *An Essay on the Origin, Nature, Uses, and Properties, of Artificial Stone: Together with Some Observations Upon Common Natural Stone, Clays, and Burnt Earths in General, Etc*. London: Printed by Richard Hett; Sold by C. Marsh, Etc, 1770. P. 13

coffeehouses hosting dining clubs and other organized affiliations.[36] For industrious booksellers well established in the urban confluence since at least the sixteenth century, the frequency of affluent readers gave ample opportunity to sell the latest books, publications, pamphlets, and paper commodities. In the shade of St. Paul's Cathedral, the nearby Stationers Company continued to exert considerable economic influence in the book trade even after the 1710 *Statute of Anne* had revoked the livery companies monopoly on printing and alternatively secured the licensing of copyright to governmental jurisdiction. Widely regarded as the first government regulation of copyright, the Stationers Company and select universities lost their monopoly but remained central institutions in the regulation of copyright by requiring registration and a copy of any published work to prevent infringement through piracy. Claims of piracy and infringement could then be resolved at Westminster Hall through injunction in the Court of Chancery serving to adjudicate disputes in the first decades following the *Statute of Anne*.[37] In 1730, the question of literary property and its possession were resolved through exegetical interpretations of *lux naturalis* by a Lord Chancellor and his staff in the practice of conscientious law. Resolving disputes between writers and publishers regarding the question of literary property is the office of the Lord Chancellor whose authority derives from natural law foundational to English political, national, and social jurisprudence. Extending from medieval Christian traditions, these immutable laws of nature were understood to be both the laws of universal reason and England in accordance with a metaphysical order imbued by divine creation. In Georgian England, all matter, including Kings and Queens, was subject to these laws and their reasonable discernment in the collective enlightenment of people from a barbarous state of nature. 'Thought experiments' such as the dogmatic authoritarianism of Thomas Hobbes *Leviathan* define this state of nature as *bellum omnium contra omnes*, "the war

[36] Walter Thornbury. "St Paul's: The churchyard," in *Old and New London: Volume 1*, (London: Cassell, Petter & Galpin, 1878), 262-274. *British History Online*, accessed August 10, 2020, http://www.british-history.ac.uk/old-new-london/vol1/pp262-274.
[37] Deazley, Ronan, *On the Origin of the Right To Copy*. P. 62

of all against all;" a state before society and history wherein existence is endangered and violent. "In such condition there is no place for Industry, because the fruit thereof is uncertain: and consequently no Culture of the Earth; no Navigation, nor use of the commodities that may be imported by Sea; no commodious Building; no Instruments of moving and removing such things as require much force; no Knowledge of the face of the Earth; no account of Time; no Arts; no Letters; no Society; and which is worst of all, continual Fear, and danger of violent death."[38] I reanimate Hobbes not for his well rehearsed social contract or any considerations on a larger than life absolute sovereign who embodies absolute state authority, but rather to locate a historical state of nature which shall undergo a profound change in the eighteenth century, due in part to the artificial stone adornment of architecture. This dissertation traces the history of this change from the pages of books into the concrete substance of a modern architecture beginning at St. Paul's church-yard, where in 1730, a treatise on artificial stone was for sale. Namely, Richard Holt's *A Short Treatise of Artificial Stone*.[39]

Gilles Deleuze and Félix Guattari define a minor literature through the literary substance of Franz Kafka which is "neither imaginary nor symbolic."[40] Such a literature is exegetical in its affirmation of limitless conjugations while simultaneously deflating traditional categories of analysis such as subject, style, or genre. A minor literature is not the work of a minority nor is it lesser in quantity; rather, it is the politics of deterritorializing language by a historical subject within a collective enunciation that mediates systems of power through procedures of desire. Holt's treatise is the collective enunciation of a defectual nature in the substance of stone and the possibility of an artificial substitute which can "make up the defects, guard against faults,

[38] Hobbes, Thomas. *Leviathan: Or, The Matter, Forme and Power of Commonwealth, Ecclesiasticall and Civil. United Kingdom: University Press*, 1904. p. 84
[39] Holt, Richard. *A Short Treatise of Artificial Stone ... Converted into All Manner of Curious Embellishments and Proper Ornaments of Architecture ... by Richard Holt,*. London: Stephen Austen, 1730.
[40] Deleuze, Gilles, and Félix Guattari. *Kafka : Toward a Minor Literature* Minneapolis: University of Minnesota Press, 1986.

and answer many of the ends."[41] To these ends, Holt is but one historical subject of many who enunciate the arrival of artificial materials whose governance no longer abides by the interpretative apparatus of natural law. Nature is defunct and artifice is the answer. At St. Paul's church-yard, Holt's treatise sold side by side with major works on natural law such as those by Thomas Hobbes, John Locke, and other eighteenth century authors. Such an adjacency, however intangible, situates Holt's artificial stone undertaking into the politics of changing what is defectual with an artificial substance that will "out-last any Natural Stone whatsoever."[42] For Holt, the substance of stone, be it natural or artificial, is corpuscular and composed of solid spherical particles. Natural stone being the combination of "sand and sandy particles...in a Lump" through a "sort of natural trituration" acquired in the "bowels of the earth or the bottom of the sea."[43] In heat, these particles are put into the motion of "fluxibility," and inversely in cold, these particles are reduced into a solid body. It is "the intervention of the Firy Particles" which "disjoins and separates the Constituent Parts, reduces them into a Fluid (until) the Corpuscules come near enough again to feel the Power of one another's Attractions." The attraction between solid spherical corpuscules is what "fix and wedge down the whole mass into the most firm and solid substance, into the most strong and compact Body."[44] This power of attraction is "proportionable" to the contact between particles, and "consequently from there two Requisites of Sphericity and Solidity, (where are the special inherent Properties of every Atom in my Composition) the Attraction must needs be very great, and, of course, the cohesion of its Parts very strong."[45] This early eighteenth century definition provides that strength of a substance derives in the proportional attraction between spherical atoms as a proportion of their corpuscular surface contact. "For such Particles as lie remote from the place of Contact, can

[41] Holt, Richard. *A Short Treatise of Artificial Stone [...]* P. 18
[42] ibid. P. 24
[43] Holt, Richard. *A Short Treatise of Artificial Stone [...]* P. 6
[44] ibid. P. 17
[45] ibid. P. 19

add nothing to the Cohesion, nor Consequently, to the Strength of any Body."[46] The peripheral edge of a substance having less strength than the interior is where "the Agitation and Pressure of Water, particularly that of Rain, drove by the Violence of the Wind, will insinuate and force itself into the Interstices and Pores of the strongest and hardest Stone."[47] Holt constructs material resistance to weather and decay at the peripheral edge of substance to which his patent artificial stone advertises a solution. This property manifests in the remarkable capacity for artificial stone "to resist powerfully all manner of Change or Alteration of State."[48]

The historical existence of Richard Holt of Holborn and Lambeth was likely the genealogical offspring of Thomas Holt and Charity Shurley. Thomas Holt worked as an agent for Sir Richard Child, and if such a family genealogy is accurate, then an adolescent Holt may have assisted his father in managing the Child estate typical of familial labor roles in early eighteenth century England. The Holt family lived in Rochford Hall owned by Child from 1717 until the mid 1740s, and in the early years of employment, this would intersect the Holt family with the construction of architect Colen Campbell's first major commission by Child in the Wanstead House from 1715 - 1722. I emphasize the plausibility of such a genealogy to contextualize Richard Holt within eighteenth century English architecture, for whatever early biography remains obscured, the existence of Richard Holt the writer of a treatise on artificial stone acquires historical certitude through his 1722 joint ownership of patent No. 447: *Compound Liquid Metal for Making Artificial Stone and Marble* with carpenter-turned-architect Thomas Ripley. Born in Yorkshire in 1682, Ripley's admittance into the Carpenters Company preceded his rapid advancement in the Office of Works through the political patronage of Sir Robert Walpole. In the historiography of architecture, Ripley is often constructed as the "unfortunate" only appointed by Walpole "for other than artistic reasons" who thankfully did "little damage" to what "should have made a

[46] Holt, Richard. *A Short Treatise of Artificial Stone [...]* P. 20
[47] ibid. P. 6
[48] ibid. P. 20

Palladian majority" in William Benson, Colen Cambell, Nicholas Dubois, and later William Kent in the Office of Works.[49] The works of this Palladian majority are often cited in locating the turn towards an architecture that is distinctly classical and distinctly English. The overwhelming emphasis on English Palladianism obfuscates the emergence of a modern architecture in the British Isles contingent to material, ornament, and the risk of speculative undertakings by figures such as Thomas Ripley. Histories of modern architecture built on material tropes of stone, iron, and nineteenth century skeleton construction conveniently forget that such a discourse was already underway in Neoclassical architecture. Moreover, the modern ambitions of artificial stone manufacturers such as Holt intend their substance to "be of very great use and public benefit in all Our dominions, and also great quantities thereof will be exported by reason of its cheapness as well as goodness."[50] Artificial stone ornament is a substance which is cheap, good, and useful for nation building.

Histories of artificial stone often situate Richard Holt's patent and treatise into a well rehearsed trope of early intrigue regarding intellectual piracy by garden designer Batty Langley, but ultimately, a commercial failure which later achieves economic success in the Coade's Artificial Stone Manufacture including the minor contributions of Daniel Pincot in establishing the venture with the Coade family in the late 1760's. This emphasis on early reinforces the teleological assumption of progress in methods of making artificial stone whereby the linearity of chronology is conflated with the advancement of knowledge. In exuberant fictions which perhaps tell more of the scholar than the scholarship, this trope goes so far as to imagine a tangible exchange of material knowledge to Coade by Holt either while he was in Lyme Regis during a "period of convalescence" or through the direct purchase of Holt's Ware-House by Pincot and the Coade

[49] Summerson, John. *Architecture in Britain 1530 - 1830*. p. 336
[50] Holt, Richard and Thomas Ripley. [Patent 447, 448]. 31 May 1722

family.[51] There exists no such evidence to support such a convenient exchange, and alternatively, the acquaintance of “one Mr. Holt” to Daniel Pincot in 1770 appears to be entirely mediated through Holt’s “small treatise setting forth the excellence of his manufacture.”[52] By Pincot’s own words, any potential genealogy of knowledge on the substance of stone was entirely mediated through the paper pages of Holt’s treatise. I argue that in the haste to arrive at the extraordinary story of Coade’s Artificial Stone Manufacture, there has been insufficient examination of Richard Holt’s 1730 treatise for locating a critical change in the literary practices of craft knowledge useful for adorning architecture. What historically was carried and curated by artisans and craftsmen in a private notebook or handbook has now been organized by Holt into a critical narrative that defines artificial stone as a subject for a “publick” readership. The full diffusion of Holt’s treatise are difficult to determine due to the limits of the archive, however, Holt’s own citation of Isaac Newton and the Vitruvian triad indicate an awareness by Holt in the power of the treatise to generate a discursive formation in science and architecture. While no specimens of Holt’s manufacture remain known today, a discursive on his artificial stone undertaking intersects architecture with capital speculations in the transoceanic import and export of ornament to any part of the world. Such worldly speculations are well stated by Holt saying, “And, as I have also good Reason, even some Assurances, to expect Encouragement for and from beyond Seas; where, I doubt not, but my Artificial Stone, and the Goods, (the Ornaments) made of it, will surprise as much, and take as well as at home; it may be convenient to mention it here, and assure all Merchants, or others, having occasion to send them Abroad, that there can be no Difficulty, in this Circumstance of setting them up, by Direction, in any part of the World, as well, and to as much advantage, as upon the Spot. Nor can it be improper to inform the same Gentlemen, that, if these Goods, (these Decoration of all Sorts of Buildings) be but well stow’d in the Hold, and the Stowage (on Ship-Board) be but well contriv’d, they may be

[51] Cupial, Jennie, “The Coades and their Stone - part 2,” *Concrete*, vol. 14, no. 11, 1980 Nov, p. 27-29 and Pitt, Peter H., “Secrets of Success,” Traditional homes, vol. 5, no. 1, 1988 Oct., p. 115-117..
[52] Pincot, Daniel. *An Essay on Artificial Stone [...]* P. 46

carry'd as safe to India, as cross the Thames. I saw, with a little more, than ordinary Care, they may safely transported thro' all the World."[53] Already captivating the imagination of Holt in 1730 is the possibility of setting artificial stone afloat in the world and the spectacular return on investment these commodities might bring.

Holt's participation in the collective enunciation of a defectual nature identifies a fault in the process by which the earth makes stone. According to Holt, natural stone is composed of sand and earthy particles "endu'd with the Natural Quality of Suction."[54] Natural here simultaneously intends the ways by which nature makes stone and the performance of that substance. This quality of suction "to absorb and imbibe the insinuating moisture" is an effect caused by the nature of stone's "dry ingredients." Surveying British stone-cutters on the effects of this suction leads Holt to determine that natural stone often possess different 'tempers' in the same stone, quarry, or kingdom. These differing tempers cause unpredictability and inconsistency to the quality of construction materials. Another common defect in natural stone being "the vast numbers of clusters of small shells, commonly found in the very bottom and center."[55] The systematic study of these shells had not yet begun in earnest and persons in the eighteenth century such as Richard Holt and Daniel Pincot understood these mineral deposits to be evidence of the Biblical Flood. It was not until the end of the century with work by French naturalist George Buffon and George Cuvier that these shells came to be categorized as fossils through paleontology. For the eighteenth century stone-cutter, anonymous mason, architect, builder, or a writer on artificial stone, these shells and the absorption of moisture cause natural stone of the British Isles to have a durability comparable to a "very soft cheese."

[53] Holt, Richard. *A Short Treatise of Artificial Stone [...]* P. 51
[54] ibid. P. 7
[55] ibid. P. 8.

Holt's study of natural stone relies upon methods of empirical observation typical of the reflexive engagement with Enlightenment ideologies attempting to arrive at conclusions through "sound Reason; and to give, in its place, convincing Proof, ocular Demonstration, of what may be said in this."[56] This appeal to Enlightenment sensibilities of reason in the performance of knowledge found a fruitful audience in an eighteenth century readership. In the British Empire, the understanding of artificial materials is through their improvement over their natural counterparts. Proof of improving is what critically defines the ontological threshold between natural and artificial materials. Holt writes that "Artificial Stone is more strong and durable than the best Natural Stone. My composition, in fine, ties down, binds together, and unites the Parts of any given Body, much more closely and strictly, than Nature does those of Common Stone; and consequently renders whatever is made of its Produce, infinitely more compact, firm, and solid, than any thing made of Natural Stone can possibly be or come up to."[57] Deriving these properties as 'experiments of fact,' Holt puts his artificial stone on exhibit at his Lambeth Work-House as a means to alleviate doubt and entice potential customers. In exhibiting these material samples, Holt appeals to the visual self-evidence of Enlightenment empiricism and natural law. With no surviving specimens from these experiments to evaluate, we are today left to consider this early artificial stone undertaking entirely through the paper pages of his treatise. Of the many advertisements and statements, the most critical for artificial stone is the 'fact' of artificial stone's resistance to ruin by nature. This material property derives through the process of vitrification whereby clay is transformed into a non-crystalline amorphous solid; or glass. Holt writes of this process in his patent and says in his treatise "how strongly must every Atom be combin'd and, how Closely must every Particle be join'd and knit together, before this can happen? I call it another Advantage too, in regard, that this disqualifies and divest the Body (whether great or small) of all Suction, and after the manner of Glass enables it to resist and

[56] Holt, Richard. *A Short Treatise of Artificial Stone [...]* P. 18
[57] ibid. P. 21

shoot off all Degrees of Wet, Rain, and Moisture. And, What's more, renders it impenetrable by Air, as well as by Water."[58] From the Latin *vitreum* for glass, vitrification produces a ceramic with specific aesthetic qualities and material properties sold as ornament to replace the mouldering and decay of natural stone due to the English maritime climate. From the 1720's onwards, Holt's undertaking locates increasing efforts to supplant the authority of nature with artificial substances deriving in experiments of facts. Moreover, the potential failure of the Classical architecture tradition is not a question of antiquarian taste but rather a regional question of climate and construction whose solution is in an artificial stone which "can bear and stand out the greatest Heats, the severest Shocks of Fire, that the strongest and fiercest Fuel in England can give them; they must needs too undergo this Firy Tryal for several Days and Night running. Whereas no Natural Stone whatsoever can possible bear this...my Goods are strong enough to bear Fire as is above describ'd, then there can be no doubt, no danger, but that they will hold and stand out all sort of Weather...As no Weather can hurt them."[59] The world phenomena of weather and the transatlantic British climate contribute to the production of an artificial substance impervious to the consuming effects of decay and exposure. In 1730, Holt's *Treatise on Artificial Stone* lays the literary foundation for what becomes a distinctly modern architecture rooted in the material performance of ornament and its resistance to nature.

As a material, clay is made into a plethora of uses and applications including kiln-controlled chemical transformation converting earth into ceramic artificial stone. This mass moldability makes ceramic artificial stone ideal for a wealth of commodities supplying the British building market. A limited sample of these commodities can be gleaned through advertising offering columns, pedestals, entablatures, cornices, pediments, balustrades, statues, rusticks, fascias, coppings of walls and chimneys, chimney-pieces, hearth-stones, architectraves, frontispieces of

[58] Holt, Richard. *A Short Treatise of Artificial Stone [...]* P. 21
[59] ibid. P. 26

doors, windows, alcoves and grotto's, cascades, and obelisques, archives, piazza's, key-stones, steps, pavements, urns, and various landscape adornments. These ornaments rely upon the design of a material substance using a manufacturing process to produce an architecture which is resistant to water, fire, frost, and nature. Carrying the bias of profit motivated methods of making, Holt's treatise argues for a superiority of design in 'solid matter' as compared to what the 'pencil can sketch.' Which is to say, one must see to believe. The delightful terror of that which is artificial derives in a sublime experience that must be sensed and not mediated by paper. For a user and a consumer, there is power deriving in the possession of artificial things which have the non-natural property of always appearing the same. To design artificial stone ornament is to partake in the mastery over nature by possessing a substance which does not decay with age. Design here is something quite different than the *paragone* debate of the Italian Renaissance rooted in the tribal territorialism of painting the *Città ideale*. Florentine lines and Venetian color as it pertains to the construction of drawing representations on a flat canvas finds something quite different in the design of artificial stone. For an eighteenth century patent holder such as Robert Holt, design derives from experiencing a manufacturing process transforming clay into "one absolute and perfect vitreous Substance." To design is to put technical knowledge on exhibit for a spectator to witness. Holt does not appeal to nature for authority, rather, he appeal's to technical knowledge deriving from empiricism and experiment.

This technical knowledge is made "upon the tedious Tryal of many Experiments" requiring "a pretty small fortune, as well as the best part of time" as a means to discover knowledge through trial and error which procedurally differentiates ingredients until a procedural method of manufacture is determined.[60] In the absence of knowledge or in the face of uncertainty, Holt "quickly resolved and went into Asia and African Turkey, to see what I could learn from and pick

[60] Holt, Richard. *A Short Treatise of Artificial Stone [...]* P. 12

up among the Turks, and the Race of the Old Egyptians."[61] Never actually visiting these geographies or peoples, Holt alternatively relies upon travel literature in the works of Hermes Trismegisus, Xenophon, Herodotus, and the tenth century Byzantine encyclopedia of the mediterranean known as the Suda. In these sources, "every Country, every Place, lent me a lift, gave me some useful hint; always afforded my fancy fresh supplies of thoughts, and laid open a new scene of experiments to my view."[62] Literary accounts of monuments and their culture's contribute to building an imagined grand tour in paper as a means to conduct experiments consisting of "altering some of Ingredients, and all of their Proportions." While there is no surviving archival record of these experiments other than their mention in the *Treatise*, it can be surmised that each experiment produced a different artificial substance through a combination of ingredients then fired in a kiln. A new experiment consisting of a different ratio, a different process, or a different combination of ingredients subject to testing in Holt's "Firy Tryal." "The fire is my best Check...And as in Chymistry, so also in this, what passes thro' the variou Processes, and comes to Perfection, must make up for what falls short and lies by the way."[63] Holt's speculative undertaking in manufacturing has largely been written as a failure by historians due to the absence of any surviving examples. Alternatively, I suggest the value in Holt's trial of fire is not only the physical matter of ornamental goods but also the making and publishing of a manufacturing process he then sought to advertise as having 'come to Perfection.' Knowing how to make artificial stone in conjunction with commercial applications finds a myriad of minor attempts in the decades between 1730 - 1770. Throughout the eighteenth century, the animation of modern architecture in the British Empire is not through gesists nor retroactive historical materialism, but in the economic value of substances such as artificial stone which is "the most Beautiful, the Strongest, and the Cheapest Method of Adorning

[61] Holt, Richard. *A Short Treatise of Artificial Stone [...]* P. 13
[62] ibid. *[...]* P. 13
[63] ibid. *[...]* P. 35

Buildings of all Sorts."[64] Holt's anglicization of the Vitruvian triad converts Classicism into a modern architecture through artificial stone ornament as a means to advertise the supersedence of natural law, material performance, and architectural ventures into capitalism. More specifically, this is a modern architecture of mass production, cheapness, and abstraction.

In 1770, four decades after Holt's treatise first sold at St. Paul's Church-Yard, Daniel Pincot's *Essay on Artificial Stone* could be had from another generation of booksellers at St. Paul's, on the Strand, or nearby at Charing-Cross for one shilling and six-pence. Across the river Thames, the author was also offering copies at his artificial stone manufacture in King's-Arms Stairs, Narrow Wall, Lambeth, opposite Whitehall Stairs. In the years between the two texts on artificial stone from 1730 - 1770, the city of London grew slowly with high mortality rates and relatively sparse construction. Significant to these years is the 1736 Parliamentary approval of a proposed bridge across the river between Westminster and Lambeth built between 1739 - 1750 through private investment and fundraising. Swiss Engineer Charles Labelye's Westminster bridge saw further expansion in the 1760's widening traffic lanes as the city underwent significant growth continuing for the rest of the century. While boats, ferries, slips, or wherries continue as the most effective form of transportation even after building the bridge, the construction of urban infrastructure during these years gave rise to significant changes in the landscape of London. Critical to the history of artificial stone is the bulk construction of townhouses in West and Central London and the boom of manufacturers in Lambeth and Southwark across the River Thames in South London. Amidst this growth of industry, infrastructure, and housing is where a reader could acquire a copy of Pincot's *Essay* on artificial stone.

[64] Holt, Richard. *A Short Treatise of Artificial Stone [...]* P. 35

Pincot states the reasons for writing his essay being to "explain the nature and properties of artificial stone" while defining "the essential difference between natural and artificial stone."[65] Relying upon the effects of nature, this essential difference is that artificial stone does not decay or become overgrown by vegetation. According to Pincot, the inability for vegetation to grow on this material is due to a lack of pores on the outward surface; a property which is consistent from surface into cross section interior resulting in the material's remarkable cohesion. Moreover, this consistency in surface allows artificial stone to hold paint and varnish more firmly thus making the material more useful towards the ends of architects, builders, sculptors, and other users of the substance. Pincot further enumerates advantageous qualities saying, "Good artificial stone should, in the first place, retain perfectly the form it receives from the mold; secondly exactness in its dimensions; thirdly, it should be free from cracks, or fire flays; fourthly, it should be equally burnt, or have an even firmness throughout its whole substance; fifthly, it should have but small unconnected pores; and lastly, a bright stone colour should grace the whole."[66] Precisely as did Holt, Pincot categorizes artificial stone into two types, lime and ceramic, with the latter being the material of choice for both's artificial stone works. With the change in chemical state resulting from vitrification, this ceramic artificial stone could be moulded into a myriad of commodities thus advertising a distinctly modern solution to the British climate. Pincot writes that this substance shall be a solution to "the destructive effect of weather…(as)...many of the modern artists are eye-witnesses to the ruin of their own work." Pincot's *Essay* demonstrates the increasing contingency between material performance and modern art and architecture as it pertains to the perdurability from weather, fire, frost, and water. There exists a sublime performance in resisting nature with the means and matter of artificial stone through its "strength, durability, and cheapness." With such properties, "architecture, or

[65] Pincot, Daniel. *An Essay on Artificial Stone [...]* P. 11, 32
[66] ibid. P. 59

the art of raising regular and noble edifices," might now find "modern performances" in the science of enriching buildings with proper ornament.[67]

Pincot's essay is quite distinct as regards eighteenth century writing on construction materials, architecture, art, and other polite arts of the British Isles. Suggesting his work derives in response from the 'miserable taste' of architecture in London, Pincot intends his text to be a 'general theory' on material in the natural world. Using empirical observation, experience from manufacturing, and knowledge deriving in material experiments, Pincot's general theory provides a description of how the natural world came into being. The essay is built upon the fact that certain substances, metals, and clays are subject to vitrification by the heat of a furnace. Moreover, these substances can acquire color through the application of metals and minerals that change from heat. Using these facts, Pincot proposes his first proposition of a general theory of artificial stone; "That clay, by burning would be converted into a hard, stoney, indissoluble substance, was a discovery so early and natural, that the first man who built an altar and sacrificed thereon could not possible miss it."[68] This origin story to the ceramic arts in altar construction altars positions the cognition of chemical change in the agglomeration of lumps or cakes of earth which become hard through burning wood in religious sacrifice. An epistemology of clay and craft derives from the continuous and repeated use of altar architecture. The eighteenth century is rife with the invention of origins stories such as the Marc Antoine Laugier's rustic hut, Jean-Jacques Rousseau origin of inequality, or Edmund Burke's *Enquiry into the Origin of our Ideas of the Sublime and Beautiful*; and in this regards Pincot's *Essay* aligns with a European Enlightenment. What is distinct in Pincot is the use of reason and science to suggest the origin of the ceramic arts from a Biblical religious history. Pincot's second and final proposition of a general theory of artificial stone concerns the formation of

[67] Pincot, Daniel. *An Essay on Artificial Stone [...]* P. 3
[68] Pincot, Daniel. *An Essay on Artificial Stone [...]* P. 16

earths or clays in the natural world; concluding “that they are not a distinct species of creation, having their parts, properties, and proportions of the principles of nature, formed peculiar to themselves, in like manner as stones, metals, and other distinct bodies; but they seem to be merely compositions of the really formed parts of all the other species of substance that constitute this earth, and that in as great a variety of different propositions of those parts as so great a number of ingredients will admit.”[69] To this end, the constitution of clay and earth derives from the primordial combination of all substances in existence. Applying his two propositions of a general theory on artificial stone to the natural world in entirety, Pincot argues the consequences of his theory align with seventeenth century English antiquarian, geologist, and naturalist John Woodward regarding Earth’s creation in the aftermath of the Genesis Flood. Using experiment and methods of empirical observation, Pincot concludes the corpuscules of the Terrestrial Globe to have been “dissolv'd at the Deluge; the Particles of Stone, Marble, and all other solid Fossils” into “one common confus'd Mass.”[70] The liquid abyss and chaos of the deluge upon the Globe’s face then settling over time through gravity’s effects on corpuscular bodies of substance forming strata of marble, stone, and other solid matter. The discovery of burning earth is “far from being a modern discovery.”[71] Clay and creation of the world after its destruction by divine deluge replicates the ceramic conversion of artificial stone’s vitrification in the kilns of manufacturers. While not a ‘modern discovery’ in terms of a novel invention of Pincto’s day, the prehistoric origin story anticipates and configures the creation of a modern British architecture in eighteenth century London.

Daniel Pincot first began manufacturing artificial stone as a tenant leasing property in Coulston Square, Whitechaple in 1767, alongside other firms offering ceramic commodities and ornament

[69] Pincot, Daniel. *An Essay on Artificial Stone [...]* P. 18
[70] Arbuthnot, John, and William Wotton. *An Examination of Dr. Woodward’s Account of the Deluge, &c.; with a Comparison Between Steno’s Philosophy and the Doctor’s, in the Case of Marine Bodies Dug Out of the Earth*. London: C. Bateman, 1697. P. 2-3
[71] Pincot, Daniel. *An Essay on Artificial Stone [...]* P. 9

for architecture.[72] In parallel to his business partner Eleanor Coade and her family, the world view of Daniel Pincot derives both from his dissenting Baptist background and the popular diffusion of the new sciences to a consuming public. Regardless of specific congregation, dissenting Baptists of London adhere to the Five Points of Calvinism defining their particular belief in salvation. This Protestant soteriology teaches the total depravity of humankind caused by the fall into original sin from which no person possesses the ability to save oneself. All of humankind exists in a state of depravity and only the predestination of an unconditional election by God selects those receiving salvation while condemning the rest to eternal sin and damnation. As regards the third point of Calvinism, Baptist congregations schism into two distinct types of congregations. General Baptists originate with the preachings and 1609 Baptism of founders John Smyth and Thomas Helwys who teach unlimited atonement allowing that all are saved from sin through the death of Jesus. Reforms in the 1630's and the 1689 Baptist Confession of Faith produce the Particular Baptists who see themselves to be the elect through *justificatio sola fida*, justification by faith alone, whereby the death of Jesus provides limited atonement only for the elect and no others. For Particular Baptists, only the elect possess irresistible grace answering an inward call to divine salvation which cannot be freely accepted through conversion or exegetical study of the Gospels. At the moment of creation, an existence has already been saved or they have not. Lastly, and shared among both General and Particular Baptists, the preservation of the saints maintains that those born of God who are elect to salvation shall remain so in perpetuity for the duration of all existence. General Baptists trace their origins to English separatists seeking to separate from the perceived corruption of the Church of England in the formation of self-governing congregations of believers. Inversely, Particular Baptists did not support division amongst Christian communion, however they did seek autonomy from corruption of Anglican Parish churches. There is no archival evidence

[72] Stanford, Caroline, "Revisiting the origins of Coade stone," *Georgian Group journal*, vol. 24, 2016, p. 101.

which definitively locates Daniel Pincot and Eleanor Coade into a specific Baptist congregation, although they are both buried at Bunhill Fields cemetery for non-conformists. However, in 1818, nearly five decades after Pincot departs the business and the empire Coade built as the 'real proprietor' of the artificial stone manufacturer in Narrow Wall, Lambeth, London; Coade is a signatory in a letter campaign concerning the appointment of an organist and minster at Camden Church, Peckham Road, Southwark.[73] Built in 1789 by Selina Hastings, Countess of Huntingdon, as one of sixty four chapels to house congregations adhering to the Church of England as taught in the *Book of Common Prayer*, the chapel construction program is distinctly Calvnist Methodist in line with evangelical revival projects throughout the late eighteenth century. Inferring from Coade's financial involvement in Hastings Calvinist constructions and her partnership with Pincot likely deriving from a shared religious connection evidenced by their burial at Bunhill Fields, I suggest the plausibility that Pincot and Coade both adhere to the teachings of General Baptists.

Well known and nearby to the Lambeth Artificial Stone Manufactory, the Southwark ministry of English Baptist John Gill provides insight into the use of clay and creation in a post-Deluge British Empire. Gill's ministry and teachings provide insight into a Baptist Nonconformist's conception of creativity which I draw from as a means to contextualize Pincot and Coade. What is creation to a Baptist adherent, and more precisely, how does creation of the natural world reflect the creation of ceramic artificial stone ornament? Writing in 1769, John Gill's *A Body of Doctrinial Divinity* sets forth an argument as concerns the existence and characteristics of the triune God and the Earthly works of the elect. For Gill and Baptists of London, creation "signifies the natural production of creatures into being, in the ordinary way, by generation and propagation...Sometimes it designs acts of providence, in bringing affairs of moment and

[73] *Correspondence mainly about appointment of organist, and minister and readers (Signature of E. Coade)*. 1818. From London Metropolitan Archives: City of London.

importance in the world as when it is said, I form the light, and create darkness...Sometimes it intends the doing something unusual, extraordinary, and wonderful; such as the earth's opening its mouth, and swallowing up the rebellious Israelites in the wilderness."[74] Gill puts forward two types of creation either mediate or immediate. Mediate creation pertains to the production of beings and things out of existing matter which otherwise are not disposed to such creation. To convert clay into ceramic, to form a being from a rib bone, or other works of artifice converting matter are mediate creations. Immediate creation "is the production of things out of thing, or the bringing of a nonentity into being, as was the work of the first day, the creating the heavens and the earth, the unformed chaos."[75] Mediate creation makes matter into a thing whereas immediate creation derives from the absent void of nonexistence. For humankind, mediate creation converts matter into artificial works and only that which is divine may summon substance from nothing. Creating durable materials, ornament for architecture, insurance to secure property, or Empire's all constitute mediate creation which can be ontologically categorized as the work of artifice. This separation of creation reserves the sublime power to make and unmake the creation of the natural world in the Divine providence of God alone. From the publication of Richard Holt's *Treatise* in 1730 until Daniel Pincot's *Essay* in 1770, there exists a clear ontological division in powers of creation as framed by Gill's ministry. However, from the 1770's onwards, there is a change to this division as a result from the modern performance of artificial substances which no longer abide to existing epistemological and ecclesiastical domains. After 1770, works of artifice began to cross both mediate and immediate creations.

Daniel Pincot's *Essay on Artificial Stone* provides a prehistorical origin story to the art of burning earth. Drawing on a Christian understanding of the world and its creation, Pincot's origin of

[74] Gill, John. *A Body of Doctrinal Divinity, or, A System of Evangelical Truths, Deduced from the Sacred Scriptures* London: Printed for the author, and sold by George Keith [...], 1769.
[75] ibid.

artificial stone makes use of the Genesis Deluge as a means to narrate a modern theory on artificial matter. The flood myth of a watery deluge enveloping the world is shared across many cultures and typically portrays the actions of divine retribution which cleanse the world into abyss only to be recreated again anew. From the Sumerian creation myth and *The Epic of Gilgamesh* written on clay tablets, the Great Flood of Gun-Yu and Yu The Great clever's irrigation system to control the water in Ancient China, the ending of the Bronze Age by Zeus leaving only Deucalion and Pyrrha, and the flood caused by the Welsh monster Afanc survived by Dwyfan and Dwyfach on a mastless boat; the Genesis flood is similarly sent by the Christian God to destroy the world and to create it anew by Noah and his family. This destruction and construction is a supreme act of creation dissolving all matter into primordial waters that eventually subside whereupon the few who survive are selected to renew life. As a believer in scripture and certain that burning earth to make artificial stone is hardly a modern discovery, Daniel Pincot constructs a genealogy of this craft knowledge carried by Noah and his sons from the Old World deriving in the architecture of altars for religious sacrifice. Such a world view was shared across the Anglosphere as depicted by American born English artist Benjamin West's *Noah Sacrificing after the Deluge* painted between 1797 - 1801 imagines this moment as the waters subside {Figure 1.04}. Giving thanks for surviving calamitous horror, the family of Noah gathers to sacrifice a lamb by burning the carcass on an altar. The architecture of the altar stands in sharp contrast to the aqueous background substance awash in diffuse hues of yellow and blue depicting storm clouds just beginning to break. Behind the figures there is no landscape, geography, flora, fauna, or forms of any kind which have all been dissolved and consumed by the violence of the flood. Instead, there is the amorphous aftermath of apocalypse as the Old World has been remade through the awful power of divine retribution. A decade after this painting Benjamin West worked with Coade's Artificial Stone Manufacturer to make their 'master work' in the Nelson Pediment at Greenwich Hospital. It is almost certain that Coade, Pincot, and West knew each other through the Royal Academy where Coade often

found young aspiring artists in need of work and West was president from 1792 - 1805. This context is critical in considering the altar occupying half of West's canvas. The architecture of the altar in the painting is clearly constructed from stones purpose built for religious sacrifice. It is not necessary to consider the facticity or fallacy of religious beliefs, rather, in considering the narrative chronology of the painting a rather curious question emerges; did the altar survive the flood or was it purpose built in the moments after? The implications for this question as it pertains to the history of artificial stone are momentous and would be well known to historical figures such as West, Pincot, Coade, and others versed in scripture. If West's altar survived the flood, then it could not be made from natural materials or any other substance which constitutes the Old World. In the Deluge, all natural substance is said to dissolve. If the altar is built in the moments after with the knowledge carried by Noah and his sons as Pincot suggests, then the altar depicts the first work of architecture to a Biblical believer. Pincot writes, "Should the following observations on the first altars, and the original formation of clays, prove the foregoing proposition to be true, the origin and first use of stone of burnt earths will be immediately and certainly known."[76] In either scenario, I argue the legibility of West's altar being built from artificial stone would be known in turn of the century Georgian London. Only the substance of artificial stone is imbued with the power to withstand the destructive chaos of the Deluge, and in the aftermath of apocalypse, it is the substance of artificial stone which is useful in creative ventures to rebuild the world.

Across the British Empire and Anglosphere of in the late eighteenth century, cultural imaginations increasingly became captivated by the supernatural and the sublime terror of nature. Just as the Cock Lane Ghost of 1762 provides persons a cross class topic of conversation, so too did the Deluge and theories on worldly matter. Appealing to this cultural imagination, British artists increasingly made works depicting the Genesis flood for patrons,

[76] Pincot, Daniel. *An Essay on Artificial Stone [...]* P. 16

viewers, and users to partake in the terrible pleasure of bearing witness to representations of the end of days. Earlier precedent to these works extends to the monochrome frescos of Florentine Paolo Uccello and his *Scenes from the Life of Noah and Creation and the Fall* at Santa Maria Novella dating to 1436 - 1440 and a series of cataclysmic representations made by Leonardo Da Vinci at the end of his life in France from 1517 - 1519. Over a century following Da Vinci's fascinations, Nicholas Poussin's *Les Quatre Saisons* made between 1660 - 1664 locates a shift in Deluge representations. Poussin's Deluge is one of four elegiac landscapes using Old Testament verse and the seasons depicting a natural order of the world. Poussin's work captures the last moments of the Old World as flood waters envelope the Terrestrial Globe amidst desperate search for deteris to aid in floatation. The Biblical iconography of the painting has been extensively discussed, but in terms of representing the Deluge, the painting conflates durations of the infinite and the momentary.[77] The sudden spontaneous outpouring of water serves as a counterpoint to the endless terror of divine retribution. These allegories of duration between the momentary and the infinite continue in the plethora of Deluge paintings by British artists from the 1770's - 1850's. Alongside Benjamin West's *Noah Sacrificing after the Deluge* circa 1800, paintings in this sublime genre include Jacob More's *The Deluge* painted in 1787 {Figure 1.05}; American born English artist Joshua Shaw's *The Deluge towards it Close* circa 1813; John Martin's *The Deluge* painted in 1828; Joseph Mallord William Turner's *The Deluge* exhibited 1805 as well as his *Shade and Darkness* and *The Evening of the Deluge* made circa 1843 {Figure 1.06 - 1.08}; American painter John Trumbull's *The Last Family Who Perished in the Deluge* from 1838 - 1839 {Figure 1.06}; and Francis Danby's *The Deluge* exhibited in 1840 {Figure 1.10}. Conflationary themes of duration in these representations demonstrate a shift in the use of materials to alter the substance of existence. From the middle of the seventeenth

[77] For the iconography of Poussin see Panofsky, Erwin. *Meaning in the Visual Arts : Papers in and on Art History* First edition. Garden City, N.Y: Doubleday Anchor Books, Doubleday & Company, Inc., 1955.; Dowley, Francis H. "The Iconography of Poussin's Painting Representing Diana and Endymion." *Journal of the Warburg and Courtauld Institutes* 36 (1973): 305–318; and Armstrong, Philip Alexander. "Reading in Iconography : an Essay on Poussin and Rilke " University of California, Los Angeles, 1995

century onwards, material and labor combine to create works of artifice that exist outside temporal domains of the Old World. Works of artifice such as an ark, an altar, or artificial stone exist beyond the limits imposed by nature. In 1770, Daniel Pincot's *Essay on Artificial Stone* locates the moment when the danger of the Deluge gave way to the sublime pleasure deriving from the property of artificial matter to supersede the power of nature.

Historiography has been too quick to dismiss Daniel Pincot and his contributions to artificial stone manufacturing due to a lack of archival clarity in the business with Eleanor Coade at Narrow Wall Lane, Lambeth, London. Fanciful speculations include that Coade "either bought out, or went into partnership with, an artificial stone maker named Danial Pincat (sic);"[78] or the he "Either sold his factory to Eleanor Coade within a year or two of its opening;"[79] or as a probable source of moulds for Coade.[80] These short sided histories fail in their attempt to impose Coade's later success on to the unknown early days of the artificial stone manufacturers. Moreover, they discount the critical importance of Pincot's *Essay* in shaping a market of users and consumers upon which Coade's later success is contingent. While there is no doubt that Coade is the 'real proprietor' after 11 September 1771, it is imperative to include Pincot's theory on worldly matter which molds a market for new construction materials in architecture and the built environment. Providing an origin story and a general theory of clay as a primordial substance is necessary for the significant shifts in construction and ornamentation resulting from artificial materials made to resist the sublime power of nature. In this shift towards the use of artificial substance is the construction of a modern architecture predicated upon material performance and an existence which supersedes nature. Surviving the flood is artificial stone and the modern architecture it comes to adorn.

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[78] Collins, F.J., "Eleanor Coade (1733 - 1821)," *Museums Journal*, May, 1957, p. 37
[79] "Coade's Artificial Stone Works," in Survey of London: Volume 23, Lambeth: South Bank and Vauxhall, ed. Howard Roberts and Walter H Godfrey (London: London County Council, 1951), 58-61. British History Online, accessed November 12, 2019, http://www.british-history.ac.uk/survey-london/vol23/pp58-61.
[80] Kelly, Alison, "Coade stone at National Trust houses," *National Trust Studi*es, 1980, p. 94-111.

This chapter reconstructs the nature of artificial stone through the technical knowledge made explicit in the minor literatures of eighteenth century manufacturers. Thus far, I have emphasized the commercial value of these texts to users amidst the booksellers of the Strand in the historic center of London on the north bank of the Thames River. Using readership, the literature of artificial stone educates users into future consumers through didactic modalities relying upon Enlightenment era empiricism, science, and religious epistomologies. While Daniel Pincot did not remain in business with Coade long, his *Essay* made a London public aware of the manufactory across the river in Lambeth through a narrative replete with technicalicaities and a general theory. However, this theory and its application remained silent on the precise ingredients and manufacturing process being used by artisans, laborers, tradespersons, craftsmen, and the proprietor. In part, this muteness evidences the heterogenous knowledge of figures at the manufactory relying upon material literacy deriving in experience from work and applied learning. On any given day, they change, adapt, and apply their knowledge to circumstances contingent upon the ebb and flow of supply and demand. The knowledge of these figures at the manufactory does not come from academies but rather through apprenticeship and the experiment of trial and error. We should be cautious in separating the material literacy between readers and figures at the manufactory who each contribute to a didactic engagement with the artificial substance of invention. In 1800, around sixty percent of men and fourty percent of women were literate.[81] At Coade's Manufactory, there is evidence to suggest that figures including Coade, her artisans, and the day labor were literate and frequent participants in a discourse on artificial stone. An example of such evidence comes in the form of a 1792 letter written to kiln fire-man, W.J. Coffee, convincing him to return to work following a

[81] Lloyd, Amy J.: "Education, Literacy and the Reading Public." British Library Newspapers. Detroit: Gale, 2007.

quarrel between he and another workmen.[82] Coffee's embodied knowledge derives from working Coade's three kilns across a four day firing process without the aid of a mechanical thermometer to manage material shrinkage. This knowledge did not come from books or formal education, but from apprenticeship and could be pried by curious competitors as it was in 1790 "after drinking a bowl of punch."[83] From Coade managing the manufactory, artisans and family operating as superintendent, and laborers such as Coffee; each figure manages material in the conversion of raw nature into works of artificial stone. Each of these Southbank artificers wroughts matter into existence through a discursive undertaking.

The proprietors of the Artificial Stone Manufactory in Lambeth were urban immigrants to Southbank London; the Coade's coming from Lyme Regis, the Sealy's from Devon, and the Croggon's from Cornwall.[84] Arriving in the parishes of Lambeth and Southwark, these proprietors participate in the gradual conversion of a rather useless marshland into a thriving urban confluence of commerce and industry. Since early Roman settlement, the land of the South Bank seasonally sat under water with sparse building put upon lumps of untillable earth. Following the opening of Westminster Bridge in 1750, the draining of this marshland by political, religious, and speculative interests came in parallel with the extension of bridge roadways into the interior of the rural landscape. Urban planning quickly built major thoroughfares in The Cut and Borough Road connecting between these bridge roadways to facilitate rapidly increasing traffic. Between the 1750s and 1824, the rapid transformation of this natural landscape finds a flourishing of markets, manufactories, bawdy entertainment venues, botanical gardens, and the building of an urban infrastructure to expand the city of London across the Thames River.

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[82] Jewitt, Llewellynn Frederick William. *The Ceramic Art of Great Britain*. New ed., reved. London: J.S. Virtue, 1883. P. 141

[83] Jewitt, Llewellynn Frederick William. *The Ceramic Art of Great Britain*. New ed., reved. London: J.S. Virtue, 1883. P. 140

[84] Ruch, John E. "Regency Coade : A Study of the Coade Record Books, 1813-21." *Architectural History / Produced at the School of Architecture, University of Newcastle Upon Tyne* 11.1968, 34-56 (1968).

Eleanor Coade's time in London was spent in the South Bank, living first at Little St Thomas Apostle Street before moving into a larger brick residence on Blackfriars Road then known as Great Surrey Street.[85] Living in the South Bank, Coade's manufactory, gallery, and row house participates in this rapid transformation alongside the construction of new theaters, institutions, butchers, bakers, street stall sellers, tea dealers, factories, markets, and merchants. Coade's South Bank neighbors became workers, as did her first superintendent John Bacon, whose upward mobility from his work at the manufactory eventually found him moving to the West End where he died as a user of artifical stone. Through the wealth of commerce, colonialism, and the British Empire it became possible to convert a natural marsh into an artificial landscape. A landscape to house subjects inventing the technical means by which to preserve and secure property through materials such as artificial stone. Operating from the South Banks of the River Thames in London, Coade came to realize the worldly speculations of Richard Holt in building a transnational constructing supply company shipping catalogue ordered architecture to the British Isles, St. Petersberg, Sri Lanka, Rio de Janeiro, Poland, America, and elsewhere across the terrestrial globe.[86] Moreover, Coade's artificial stone reveals an ontological threshold in matters of material and the built environment. Once nature becomes an artificial landscape, as did the Southbank marshland, it remains a work of artifice even if is restored. When the work of the artificier is applied, raw material becomes artificial and thus begins a history of modern architecture.

[85] "Coade's Artificial Stone Works," in Survey of London: Volume 23, Lambeth: South Bank and Vauxhall, ed. Howard Roberts and Walter H Godfrey (London: London County Council, 1951), 58-61. British History Online, accessed November 12, 2019,

[86] See Coade, Eleanor. *Etchings of Coade's Artificial Stone Manufacture, Narrow Wall, Lambeth, published for private circulation under the superintendance of John Bacon*. 1777 - 1779. And Coade, Eleanor. *A Descriptive Catalogue of Coade's Artificial Stone Manufactory ... with Prices Affixed*. Copy owned by Sir John Soane. From Sir John Soane Museum. 1784.

***2. Proofs of Utility***

Archival Material



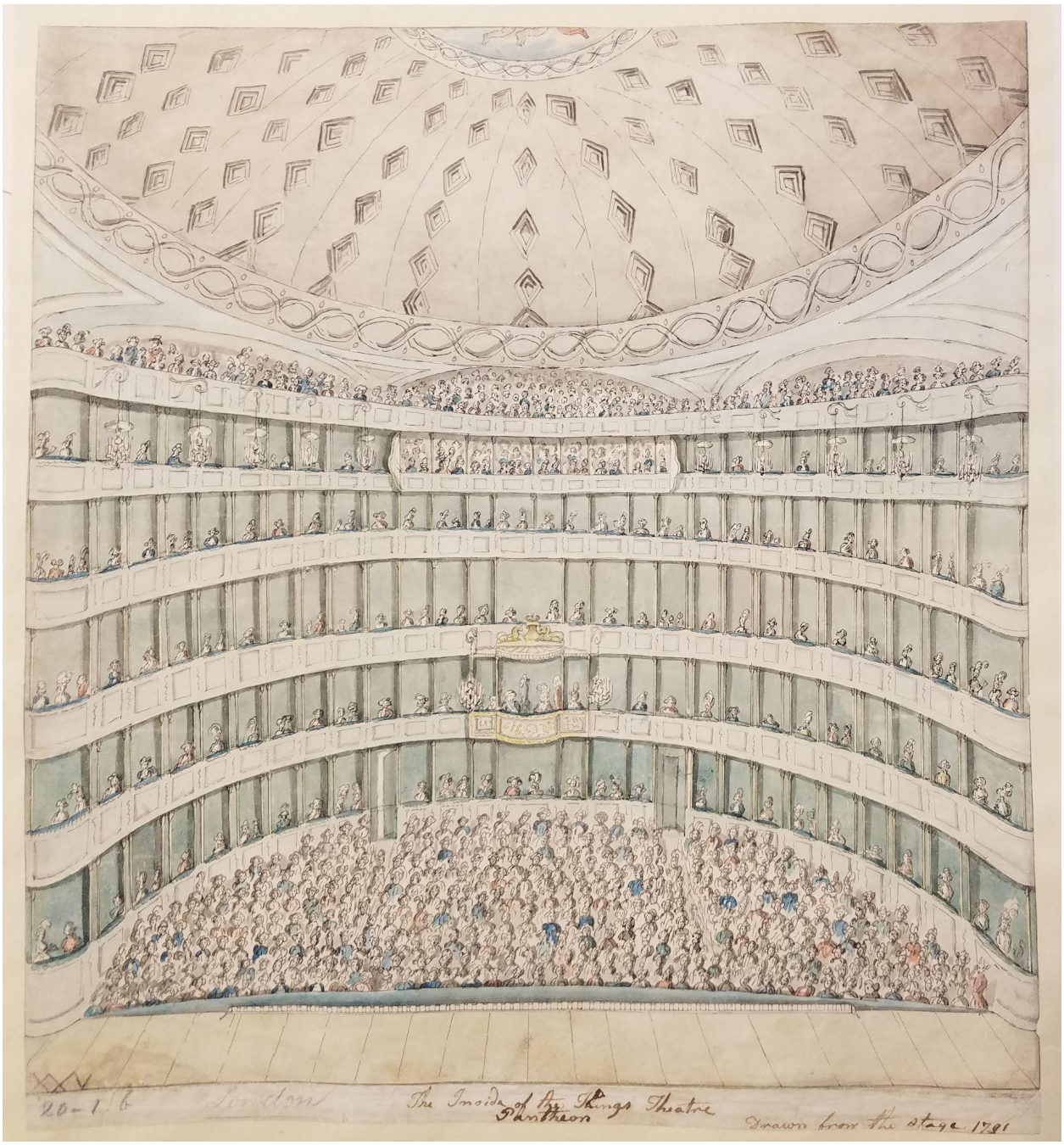

***2.01 - A descriptive catalogue of Coade's artificial stone manufactory.***
Coade's Artificial Stone Manufacture, Tradecard, 1784.

From the Yale Center For British Art, CT, USA.




***2.02 - Pantheon in Oxford Road***
John Cooke, London, 1775.

From the British Library, London, UK




***2.03 - The Inside of the Kings Theatre, Pantheon : Drawn from the stage 1791.***
Part of King George III's Topographical Collection, 1791.

From the British Library, London, UK.



***2.04 - The Pantheon, the Morning after the Fire.***
Joseph Mallord William Turner, 1792.

On loan to the The Tate, London UK from Kimbell Art Museum, TX, USA




***2.05 - Ruins of the Pantheon after the fire which happen'd the 14 Jany 1792***
Henry Wigstead, Etching, 1792.

From the British Museum, London, UK












***2.06 - Various Fire Marks.***
Hand & Hand Fire & Life Insurance Society, Sun Fire Office,  Phoenix Fire Office, The Friendly Society.

From the Museum of London, London, UK., SAS Liverpool, UK., The Fire Mark Circle, Suffolk, UK




***2.07 - Frontispiece Engraving of Pelican Life Insurance Company Entablature***
*Coade's Gallery*, 1799.

From the British Library, London, UK.



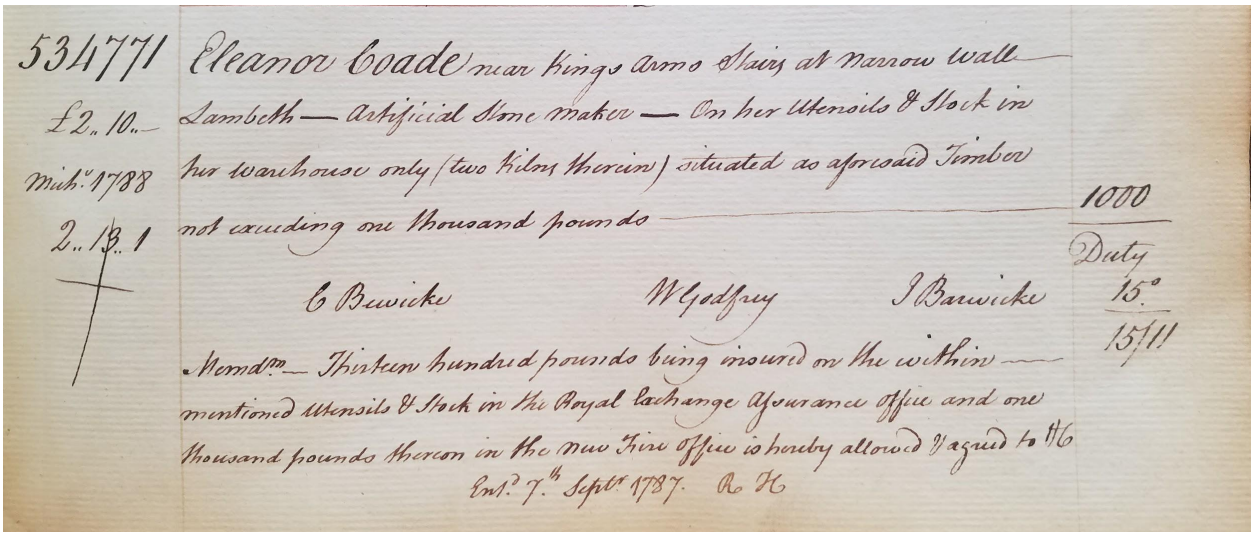

***2.08 - Frontispiece to A prospectus of the company [...]***
Pelican Life Insurance Company, Vol. 1, 1801.

From the British Library, London, UK.



***2.09 - Pelican Life Insurance Office with Coade Stone Entablature. Photograph 1904***
Photograph by Adolphe Augustus Boucher and Henry Bedford Lemere, No. 70 Lombard Street, London.

From Historic England, Digital Archive, UK.



534771
£2.. 10..
Mich.s 1788
2.. 13.. 1

Eleanor Coade near Kings arms Stairs at Narrow Wall Lambeth — artificial Stone Maker — On her Utensils & Stock in her Warehouse only (two Kilns therein) situated as aforesaid Timber not exceding one thousand pounds — 1000

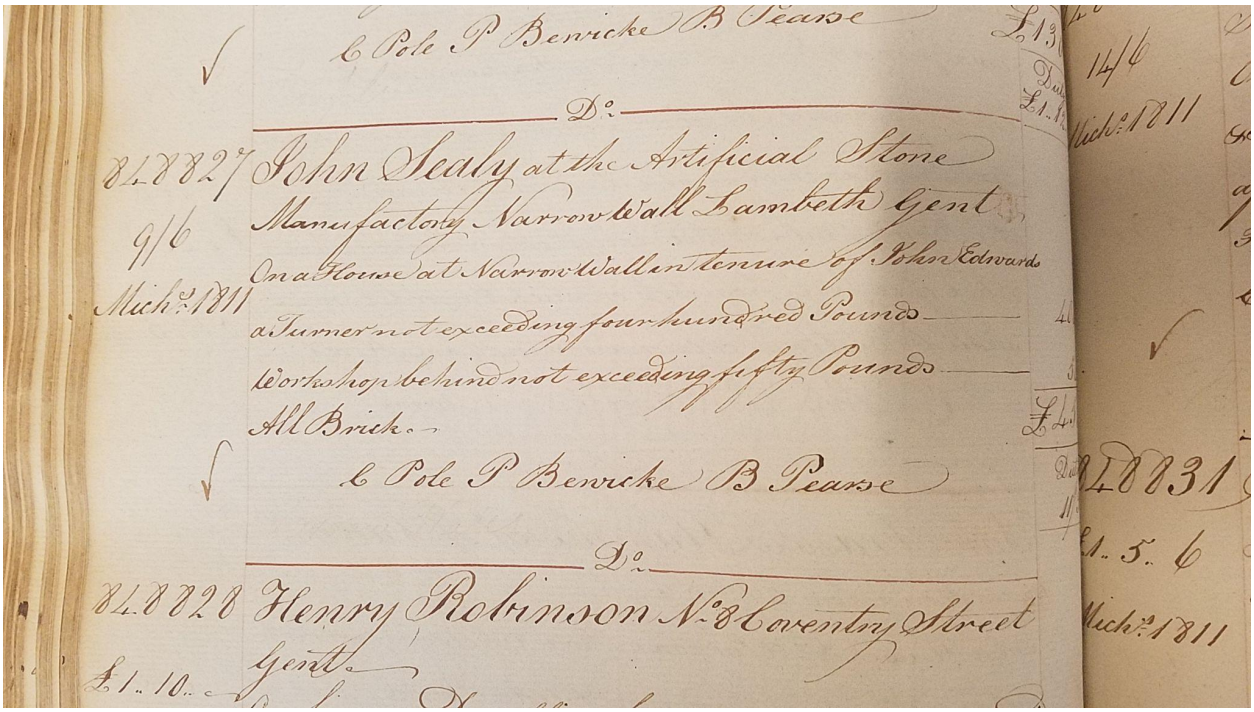
Duty 15.s 15/11

C Barwicke W Godfrey I Barwicke

Memd.m — Thirteen hundred pounds being insured on the within — mentioned Utensils & Stock in the Royal Exchange Assurance Office and one thousand pounds thereon in the new Fire Office is hereby allowed & agreed to 16 Ent.d 7.th Sept.r 1787. R H

***2.10 - INSURED - Eleanor Coade. 1788.***
Insurance Records of Sun Fire Office, 1769 - 1841, London.

From London Metropolitan Archives: City of London.




***2.11 - INSURED - John Sealy. 1811.***
Insurance Records of Sun Fire Office, 1769 - 1841, London.

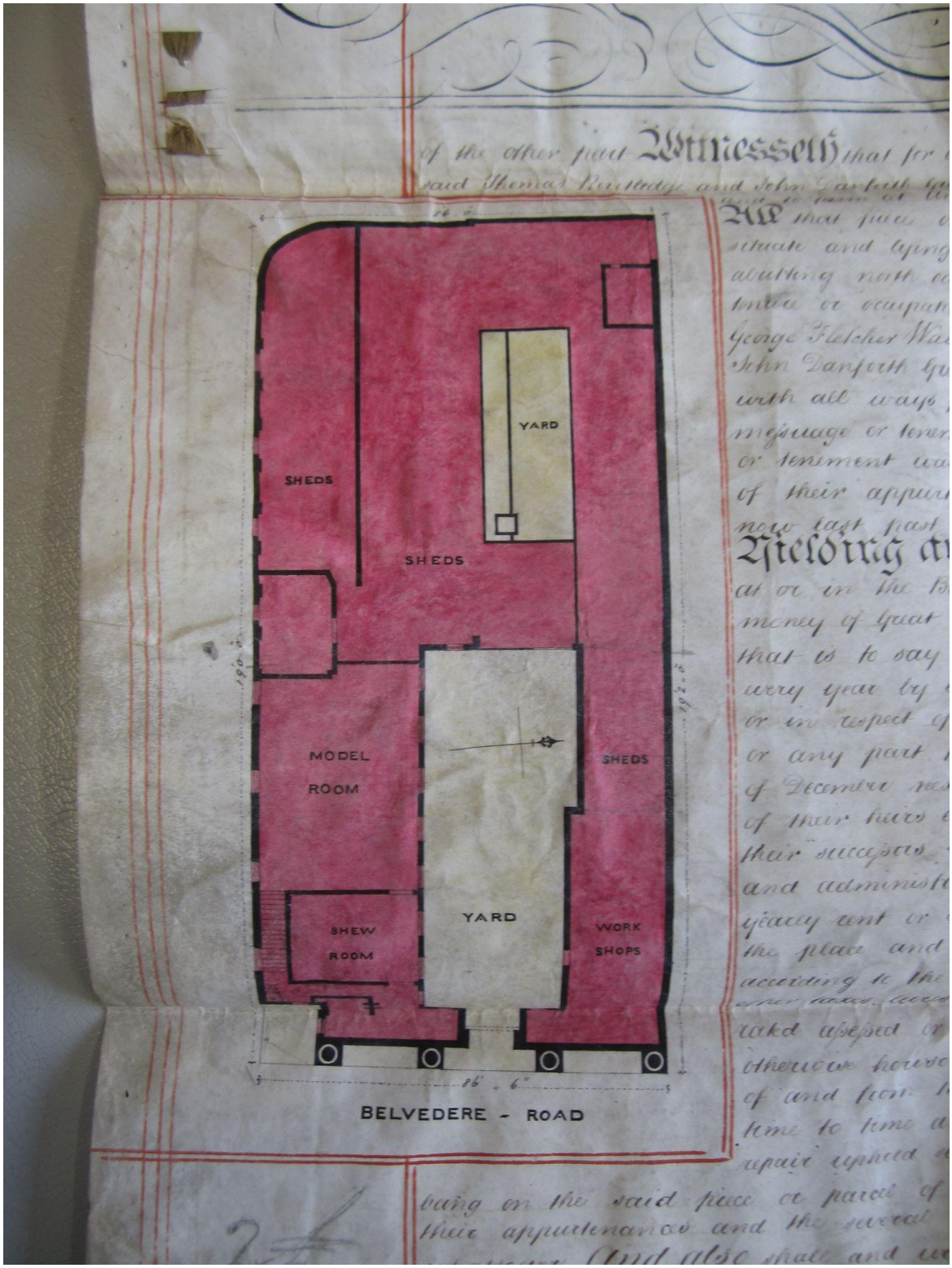
From London Metropolitan Archives: City of London.





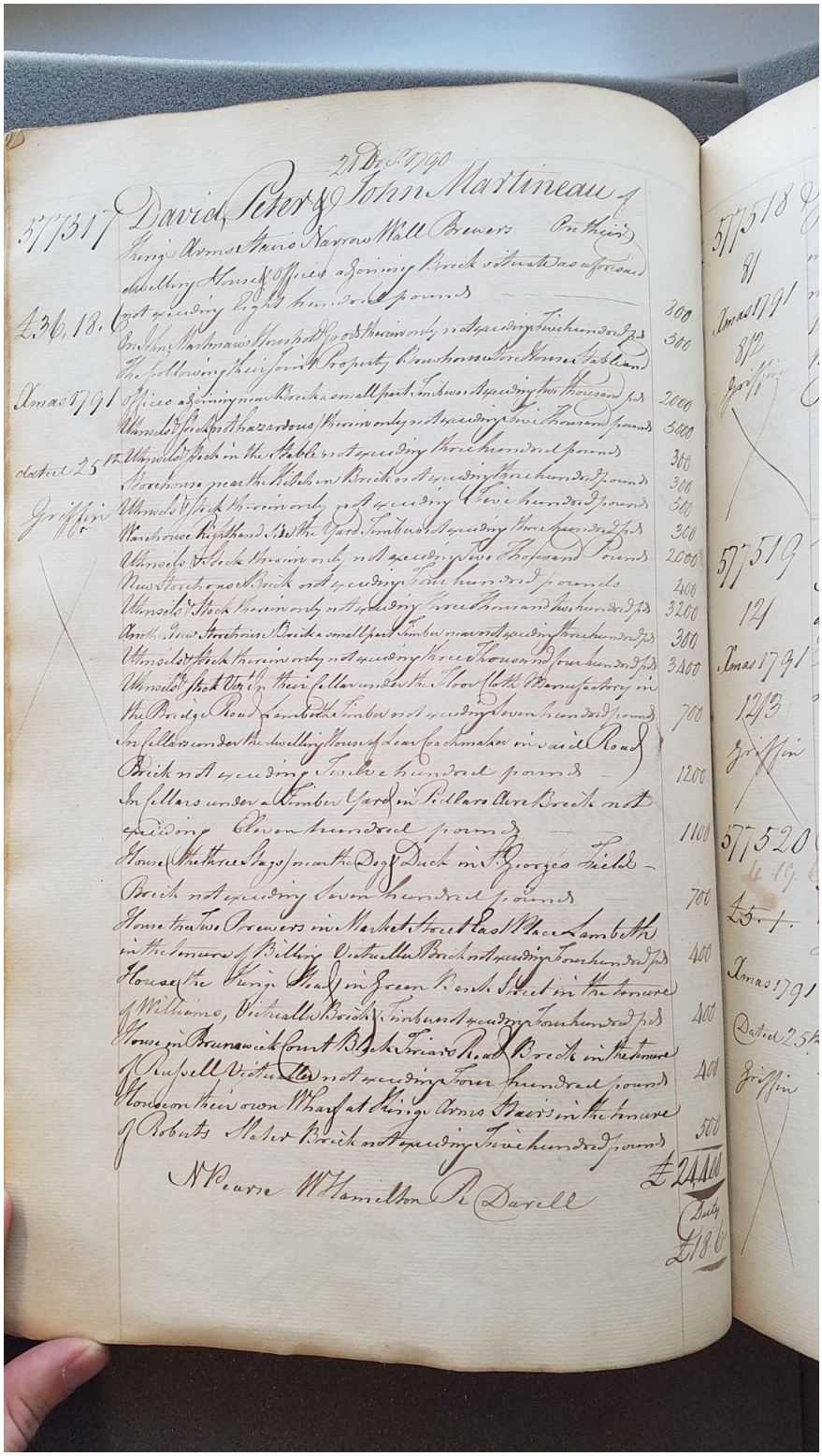

***2.12 - Coade's Manufactory, Pedlars Acre.***
General Series, Lambeth, circa 1600 - 1960.

From National Archives, London Metropolitan Archives: City of London, UK.




***2.13 - Lease for Coade's Artificial Stone Manufacturer***
Leases of the Hopes, Jesus College, Oxford, 1828 - 1880s

From Jesus College, Oxford University, UK



***2.14 - INSURED - Peter David and John Martineau. 1790***
Insurance Records of Sun Fire Office, 1769 - 1841, London.

From London Metropolitan Archives: City of London.




***2.15 - Mess. Ja & Cha: Godings New Lion Ale Brewery, Lambeth, River Front***
Charles Fairland, Information, Data.

From National Archives, London Metropolitan Archives: City of London, UK.




***2.16 - Red Lion Brewery just before demolition, South Bank, London***
1948

From RIBA Archive

# 2. Proofs of Utility

“The most respectable proofs of the utility of this Art, are, the length of time it has been established, and the growing fame it has acquired; the numerous and substantial advantages peculiar to this Manufacture in preference to the natural stone, render an accurate statement of them equally interesting to the Public, and to the Proprietor.”[1]

When Eleanor Coade wrote of the utility of artificial stone in 1799, she simultaneously placed ‘specimens from the Manufacture’ on view to an inquiring public for a shilling at Coade’s Gallery, located on the corner of Narrow-Wall and Westminster-Bridge Road in Lambeth, London. The exhibition of this work appealed to the sensibilities of a British public who themselves reflexively intersect European Enlightenments, Neoclassicism, and a rapidly expanding industry of the applied arts supplying consumer markets with material commodities. At the intersection of the public and proprietor is an artificial stone user whose existence is contingent to Coade’s exhibition of proof in both the gallery and the ornament of architecture. This exhibition of proof is comparable to exhibits such as Thomas Newcomen’s 1712 atmospheric engine, James Watt’s 1769 separate condenser, and Benjamin Wilson’s 1777 model of a lighting strike at the Pantheon in London; they each demonstrate proof. To understand what use is proof, a reader in Coade’s time found themselves opening Samuel Johnson’s A *Dictionary of the English Language* where the definition of proof is “evidence, testimony, or a convincing argument;” and proof is determined in a “test, trial, or experiment;” and it indicates a material substance which has become “firm, impenetrable, able to resist, [and] hardened through a certain trial” until acquiring an expected strength such as in the proof of spirits.[2] Reading the lines of Johnson’s

[1] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson. 1799., p. iii

[2] Johnson, Samuel. A dictionary of the English language: in which the words are deduced from their originals, and illustrated in their different significations by examples from the best writers. ... By Samuel Johnson, LL.D. In two volumes. ... Vol. Volume 2.The eighth edition; corrected and revised. London, 1799. Eighteenth Century Collections Online. Gale. UCLA Library. 17 Nov. 2020 <http://find.gale.com/ecco/infomark.do?&source=gale&prodId=ECCO&userGroupName=uclosangeles&tabID=T001&docId=CW113074647&type=multipage&contentSet=ECCOArticles&version=1.0&docLevel=FASCIMILE>.

proof finds a distinctly English empiricism à la Bacon's *Historia naturalis et experimentalis* which locates the modernity of a secular and scientific understanding of the material world. In proof, matters of understanding are inextricable from understandings of matter making proof useful in the demonstration of knowledge. Eighteenth century demonstrations of proof are contextual to the profound social changes wrought by the modern experiment of architecture, science, industry, and other creative undertakings rendering a transformation of life and material uses seeking to protect and secure the duration of existence. In the eighteenth century, life expectancy increased.[3] Participant in these changes is Coade's artificial stone whose proof of utility is established by experiment, time, and as a signature advertisement circulating in paper guide's, catalogues, papers, periodicals, journals, and trade cards. In architecture as in the expectancy of life, the increasing durability of existence in the eighteenth century intersects the use of insurance and artificial materials such as Coade's for "among its other qualities, [is] resistance both of electric and common Fire."[4] Atypical to historiography of architecture is the work of Coade's Artificial Stone Manufactory whose proof of utility is established in ornament which is useful in a fire. This proof of utility and the duration of existence discursively relies upon British Neoclassicism whose reflexive Vitruvian revival explicated the virtues of architecture; *Firmitas, Utilitas*, *Venustas*. Etymologically derived from Latin, *Utility* here defines something that is useful, beneficial, or capable of deriving profit. This chapter traces the use of Coade's artificial stone as demonstrated by proof to alleviate the risk of injury and loss to architecture by accident or unintended event. In this alleviation of risk is a modern architecture whose definition can be read in the work of Eleanor Coade.

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[3] Wrigley, E. A, and Roger Schofield. 1989. *The Population History of England, 1541-1871 : A Reconstruction*. Studies in Social and Demographic History. Cambridge England: Cambridge University Press.

[4] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson, 1799.

Discourse on the ornament of architecture remains inflected by puritanical legacy of late nineteenth century architects acting as agents of modernization. From Gottfriend Semper's elements of ahistorical primitive huts, calls to 'abandon ornament' by Louis Sullivan, and the declarations of Adolf Loos who conjugated 'Ornament and Crime' vis-à-vis the white modern box; a cadre of ideologically motivated practitioners of architecture have long continued to carry on the economic zealotry of this aesthetic-ethnic campaign.[5] Historians continue to expose a more complex narrative on ornament and its production, both presently and in the past, and this scholarly work on Coade's Artificial Stone Manufactory contributes to this growing field of literature. Sampling scholarship on ornament and modernity includes Alina Payne's case for the tactical transformation of 'ornament to object,' Spyros Papapetros lively 'animation of the inorganic;' and Antoine Picon's 'politics' of the historical meaning of ornament all contribute to a more expansive, inclusive, and critical history than previously told.[6] This scholarship has been useful in salvaging ornament from the ideology of modern architects and this history of artificial stone contributes to this literature by considering the risk of modern architecture in Neoclassical ornament. In this chapter, I define this risk in the probability of architecture's catastrophic loss as calculated by nascent insurance industries in London. The determination of architecture by the calculation of risk organizes building into an ontology of property. A building and its constituent matter becomes knowable and quantifiable. In securing property from uncertain events through the science of prediction, a modern architecture is constructed which is social and contingent upon the applications of spatial jurisprudence. Through heterogeneous, non-linear, and asynchronous avenues, this modernity is established through statistical methods of predictability and the law of averages to mitigate the risk of loss. A private estate, human life,

[5] For the current mass market continuation of this ideology, see the Phaidon Press collection: *Ornament is Crime: Modernist Architecture* by Matt Gibberd and Albert Hill.

[6] Payne, Alina. *From Ornament to Object: Genealogies of Architectural Modernism.* New Haven: Yale University Press, 2012; Papapetros, Spyros. *On the Animation of the Inorganic : Art, Architecture, and the Extension of Life*. Chicago: University of Chicago Press, 2012.; Picon, Antoine. *Ornament : the Politics of Architecture and Subjectivity / Antoine Picon.* Chichester, West Sussex, United Kingdom: Wiley, A John Wiley and Sons Ltd, Publication, 2013.

a brewery, a church, a warehouse, gardens, and utensils are all ontologically organized into property through the financial instrument of insurance. For the price of a monthly premium, matter becomes modern with statistics and the science of prediction as applied to property, life, fire, and meteorological events. Within this speculative risk of uncertainty, I argue that architecture became modern through insurance and that Coade's Artificial Stone Manufactory participated in such modernity through applications of ornament.

## Vitrifying Aid Of Fire

After the hiring of John Bacon on 23 September 1771, Coade's iconic trade card could be found circulating between the public and proprietor {Figure 2.01}. To compose the verbal and visual classical allegory for Coade's Artificial Stone Manufactory, artist superintendent John Bacon drew from his own repertoire in advertising his new employer to British architects, builders, and would-be artificial stone users. Framing the trade card is a representation of an open brick kiln with doorway removed and scaled to occupy the vertical length of the trade card.[7] Inside the kiln is a female triad standing on a Corinthian column awaiting the chemical change from clay to ceramic artificial stone through firing. In front of the kiln is another triad, central among whom is a caryatid personifying architecture with compass and rule in hand. From the kiln to architecture, these figures describe the lifecycle of artificial stone commodities, from site of production to site of construction. Framing the primary trio in front is Chronos, the personification of Time, here drawn as an elderly winged man with scythe at his side. Counterpart to Cronos is Igneavis with one arm extending as she restrains the advance of Time. With her other hand she holds fire and is herself the source of power at Coade's Artificial Stone

[7] [Collection of printed ephemera : trade bills, receipts, advertising cards, etc.] [1808-1849] 23 pieces ; ill. ; 8-25 cm.] From Yale Center for British Art.

Manufactory. Personified as a young woman whose Latinized name derives from the portmanteau *ignea vis* which she wears as an inscription on her waist, she is without precedent and a Neoclassical invention whose name translates to 'the attack of fire,' 'a fiery force,' or 'the power of fire.' Positioned between the advance of time and the power of fire is Architecture, with doric head piece, compass, and corner utensils to identify her craft. These women embody the art of manufacturing and architecture advertising Coade's artificial stone to a British public. Beneath the tripartite is the text reading, "Coade's, *Lithodipyra or Artificial Stone Manufactory*, For all kinds of Statues, Capitals, Vases, Tombs, Coats of Arms, & Architectural Ornaments &c. &c. Particularly expressed in Catalogues, & Books of Prints of 800 Articles & upwards, sold at ye Manufactory near Kings Arms Stairs, Narrow Wall Lambeth, opposite Whitehall Stairs, & at Mr Strahan's Bookseller No. 67 Strand London."[8] Even after Bacon's death on 4 August 1799, the trade card remained in use with verbal variations in the title and inscription until Coade's liquidation in 1834 by Thomas Croggon.

In exchanging this paper and ink trade card, the manufacturer is also exchanging knowledge of artificial stone to a consuming public. Keeping with turn of the century British Neoclassicism, Coade uses a Latin portmanteau to name the experimental substance made in her manufactory as Lithodipyra. Loosely derived from the Greek words for 'stone' and 'twice,' Lithodipyra refers to a critical manufacturing step whereby pieces broken during firing are pulverized and added as an aggregate called 'grog' to raw clay. This clay with aggregate added goes through the firing process a second time as grog allows Coade's craftsmen to manage material plasticity, change, and defects in the kiln controlled chemical change into ceramic artificial stone. In Coade's kilns, this material loss found reuse thus lowering waste and manufacturing cost while simultaneously increasing the durability of their artificial stone commodities. Of all utensils, Coade's three kilns

[8] [Collection of printed ephemera : trade bills, receipts, advertising cards, etc.] [1808-1849] 23 pieces ; ill. ; 8-25 cm.] From Yale Center for British Art.

were paramount to the vitrifying aid of fire in the conversion of raw clay into artificial stone. Also inscribed in Latin on Bacon's trade card kiln is *nec edax abolere vetustas*, "but not the devouring of time," advertising both verbally and visually Coade's signature kiln-made manufacturing process. To own these kilns is to own the material change that occurs in artificial stone commodities within them. In this dissertation, I continually locate Coade's ownership in the ownership of her lease, her gallery, her catalogue, her gallery copyright, and most critically for this chapter, in the ownership of insurance on her kiln and other utensils. I shall come to deal more extensively with Coade's ownership in Chapter Four: Paper and Intangible Property, however for my purposes here, it is necessary to briefly connect insurance and the duration of existence within Coade's kilns. These annual insurance premium payments construct Coade's ownership from the material livelihoods manufactured in her kilns. As a user of insurance, Coade participates in insurance mutual societies seeking to alleviate risk of catastrophic loss by fire or injury to her property along with other British owners of property. Amidst risk, I trace the history of how Coade's artificial stone conflates insurance and architecture in order to secure and protect the durability of existence. Legible to the users of Coade's day is the exchange of knowledge on risk and insurance through artificial stone ornament.

In the early years of the Artificial Stone partnership between the Coade's and Daniel Pincot, the exchange of knowledge through artificial stone was carried through "travellers who meet such objects."[9] Proposed by Coade's first business partner Daniel Pincot in his 1770 *An essay on the origin, nature, uses, and properties, of artificial stone*; this test was proposed following British observations in the Mughal Empire of "very ancient buildings of a whitish stone, suspected to be artificial and supposed to have been built soon after the Flood."[10] To these

[9] Pincot, Daniel. *An Essay on the Origin, Nature, Uses, and Properties, of Artificial Stone : Together with Some Observations Upon Common Natural Stone, Clays, and Burnt Earths in General : In Which the Durability of the Latter Is Shewn to Be Equal, If Not Superior, to the Hardest Marbles : Being the Result of Many Experiments. Ecco*. London: Printed by Richard Hett. 1770, P. 49
[10] Ibid. P. 49

‘travellers’ of the Indian subcontinent who meet historical architecture, Pincot’s test proposes to “break from some part of the building a small piece, (if no bigger than a nutmeg it will do) heat it slowly till at length it may be put in a smart fire, then increase the heat to a degree that would melt glass. Let it cool gently, and the discovery is made.”[11] Pincots only request that, “any intelligence of this sort conveyed to me I shall esteem a favor.”[12] The discovery made in fire is the property of resisting fire, should it be met again. Prior to Pincot, the aid of fire in the change of clay into ceramic artificial stone had been known in Lonon at least since Richard Holt’s 1730 *Treatise*, if not earlier. However, I want to suggest there is something more significant in conveying intelligence on this property through objects and observations between Pincot’s 1770 *Essay* and Coade’s 1799 *Guide*. Contingent to the corporate imperialism that conveys intelligence from the Indian subcontinent to Pincot in London, or inversely, from Coade’s Manufactory to Colombo, Sri Lanka as King’s Coats of Arms are the radical social transformations wrought by industry, commerce, and capitalism. From 1770 to 1799, the capital of the British Empire is estimated to have increased by 310,000 persons as industry and work fueled a rural to urban migration that saw the city swell to over a million inhabitants by the 1811 census.[13] Eleanor Coade is one such person who migrated from Lyme Regis to London participating in the exponential growth of manufacturing and industry during the years by which London established global commercial dominance over its Empire and elsewhere. Where there is capital, there is the interest to secure, protect, and preserve that capital. Then as is now, London and its inhabitants are no stranger to risk as posed through the bifold possibility of loss or gain. I argue that it was the accident of fire in London whereby the proof of artificial stone’s

[11] Pincot, Daniel. *An Essay on the Origin, Nature, Uses, and Properties, of Artificial Stone: Together with Some Observations Upon Common Natural Stone, Clays, and Burnt Earths in General, Etc*. London: Printed by Richard Hett; Sold by C. Marsh, Etc, 1770. P. 49
[12] ibid. p. 49
[13] Schwarz, L. D. *London in the Age of Industrialisation : Entrepreneurs, Labour Force, and Living Conditions, 1700-1850*. Cambridge Studies in Population, Economy, and Society in Past Time, 19. Cambridge: Cambridge University Press, 1992. https://doi.org/10.1017/CBO9780511522802. P. 131

utility is conveyed to a consuming public in the exchange of knowledge from architecture into paper.

About half past one in the early hours of Saturday morning on 14 January 1792, a fire broke out in a building adjoining but not accessible to the Pantheon in London {Figure 2.02 - 2.06}. Due in part to its heated interior, the Pantheon had long been London's "place of public entertainment for the Winter." At the time of the fire, the Pantheon was operating as a purpose built opera theater due to the declining popularity of 'concerts, lectures, exhibitions and masquerades.'[14] A *Times* article the day after the fire relays the original source of ignition to be in a neighboring scene painters room contributing fuel through "the combustible materials of the scenery - the oil and paint," where it then "burst in a flame through a door at the back of the stage" into the Pantheon, and ultimately "the fire had got to such a height before any engines could arrive, that all attempts to save the building were in vain...the whole edifice from Oxford-Street to Marlborough-street Gardens, and from Poland-Street to Blenheim Mews is a heap of ruins."[15] The *Times* article is telling of the times depicting a cultural imagination in the 'happy' news of no lives lost while also reporting of an insurance policy split between the Westminster and the Phoenix Fire Offices only covering fifteen thousand pounds of the Pantheon's estimated sixty thousand pound total value. This Georgian London reader illuminates a readership as constructed through the *Times* that is cognizant of property and instruments such as insurance that are useful in securing its protection. In Georgian London where a fortune could be made or lost in an evening at the card room in the Pantheon, the life of property was news. The fire was a devastating blow to the Pantheon's financial shareholders and first year tenant R.B. O'Reily who had leased the purpose built space for twelve years at three thousand pounds annually to stage Antonio Sacchini's *Armida.*

[14] See Survey of London . And - *Trust v Sampey b.r.,* C 12/408/29 from The National Archives, Kew
[15] "Fire At The Pantheon." *Times*, January 16, 1792, 2. *The Times Digital Archive* (accessed December 5, 2020). https://link.gale.com/apps/doc/CS33951280/TTDA?u=uclosangeles&sid=TTDA&xid=f388382c.

Before the embers of architect James Wyatt's collapsed rotunda had cooled, rumors of arson began to circulate. A carpenter at the Pantheon said two days before the fire, he overheard two men dressed as soldiers, drinking, and the one soldier saying "he'd be damned if he believed there would be any more Operas, for the House be burnt."[16] Motivated by money still owed, the carpenter gave his testimony to the proprietors of the Pantheon and agents from the Westminster and Phoenix Fire Office saying "he should know the two soldiers again, and a strict search is making after them. It is possible that theirs might be a loose conversation of people over their liquor - or it may be otherwise. Suspicious of the building's being set fire to designedly, certainly rests somewhere, for no fire had been in the scenery-room where it broke out since half past five on the Friday evening, water had been thrown on the hearth, and the people all went to bed at half past ten; and although watchmen were stationed to give an alarm, they knew nothing of the fire, til the moment it burst through a door from the adjoining room, from which it is conjectured that some combustible matter had been prepared and laid, so as to take light after a certain time."[17] In gathering the testimony of the carpenter, the insurance agents convey intelligence on fire and architecture between state interests at Parliament and private interests of the Phoenix Fire Office then located on Lombard Street. The legibility of this testimony and the conveyance of intelligence relies upon a knowledge that is shared and social in Georgian London. In the aftermath of fire at the Pantheon in 1792, it is this fire at the Pantheon which brings together architecture, insurance, and Coade's artificial stone ornament. In the history of architecture, the Vitruvian myth on the origins of the art of building constructs a subject in terror fleeing storms, winds, and fire. After the storm abated, these subjects gathered material to sustain a fire they found smoldering, and in that gathering, utterance drew them together socially. This imagined event in architecture is what Vitruvius uses in his treatise to

[16] "Pantheon Fire," *The Times*, 21 Jan 1792
[17] ibid.

explain the origins of words to describe architecture and their use in a rhetorical discourse on architecture which occurred “in this chance way.”[18] Surrounding the Vitruvian fire and the Pantheon in ruins is the probability of sharing language and forms of sociability in the conveyance of intelligence on architecture, insurance, and ornament.

Few architects witness the burning of the buildings they design as did James Wyatt from a post-chaise while returning to London from Salisbury Plains. Travelling across the treeless three hundred acre chalk plateau, Wyatt was a distant spectator to the smoldering heap of ruin that made his architecture practice “an instant success” because after the Pantheon, “everybody wanted to have a room by him.”[19] A more immediate witness to the aftermath was Royal Academy student Joseph Mallord William Turner who arrived at the Pantheon the morning after the fire. Benefiting from winter’s spent painting, the young artist was currently enrolled in a life drawing class at the Academy.[20] A visual record of Turner’s on site observation survives in a graphite and watercolour drawing he composed through freehand and ruled drawing techniques.[21] Washes of vermillion, brown ochre, and yellow pigment render the light of a rising sun through the Oxford Street facade of a roofless Pantheon. Crowds of the curious intermingle with the concerns of fire agents operating a wagon mounted water pump which has left the facade with icicles formed in the cold morning air. There’s always been something of a market for representations of London burning, and Turner would make significant contributions to the genre with *The Burning of the Houses of Parliament* in 1834 - 1835 and *Fire at the Grand*

[18] Vitruvius Pollio., M. H. Morgan, and Herbert Langford Warren. *Vitruvius, the Ten Books on Architecture / Translated by Morris Hicky Morgan; with Illustrations and Original Designs Prepared Under the Direction of Herbert Langford Warren.* Cambridge: Harvard university press, 1914. P. 38
[19] Robinson, John Martin. *James Wyatt (1746-1813) : Architect to George Iii*. New Haven: Yale University Press, 2012. P. xii
[20] Wilton, Andrew., and J. M. W. Turner. *Turner in His Time / Andrew Wilton.* New York: H.N. Abrams, 1987. P. 17
[21] Joseph Mallord William Turner, *The Pantheon, the Morning after the Fire*, 1792. On loan to the The Tate, London UK from Kimbell Art Museum, TX, USA

*Storehouse of Tower of London*.[22] In comparison to the sublime atmospherics in Turner's later work, there is a forensic accuracy to Turner's 1792 representation of the accident which depicts Coade's artificial stone capitals, balusters, pateras and a pediment mounted coat of arms as relatively unharmed. These ornaments by Coade also appear in John Cookes 1775 engraving of the Pantheon and individually in the private unpublished collection of etchings made between 1777 - 1779 by John Bacon for clients. Coade's Manufactory had installed the ornament at the Pantheon in 1771 as specified by architect James and builder Samuel Wyatt in what is one of the earliest and most significant uses of artificial stone.[23] This iconic entertainment venue had a history of clientele catering to the aristocracy, gentry, and other persons with property, and the Oxford Street facade advertised the climatic performance of Coade's artificial stone in resisting the ruinous effects of British weather. To ornament the Pantheon and survive its ruin presented a rare opportunity for Coade's amidst a total loss whose effects were rapidly diffusing through London. In the accident of fire, those who witness the performance of artificial stone contribute to the circulation of testimony regarding the event. Testimony whose evidence relies upon the aggregation of construction materials, the probability of risk, and language. Coade drew from this testimony seven years later in the 1799 exhibition guide to her Gallery writing, "where [artificial stone] has been applied in buildings which have been burnt down, or damaged by fire...memorable testimonies remain that it has not received the smallest injury, on the contrary, fire purifies it."[24]

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[22] Recent scholarship on these two paintings can be found in Eigen, Edward. "On the Record: J.M.W. Turner's Studies for the Burning of the Houses of Parliament and Other Uncertain Bequests to History." *Grey room* 31 (2008): 68–89.
[23] Robinson, John Martin. *James Wyatt (1746-1813) : Architect to George Iii*. New Haven: Yale University Press, 2012. P. 129
[24] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson. 1799., p. iv

Utility, Commodity, and Society

In two millennia of sharing a language on the art of building around fire, the Vitruvian virtues *firmitas, utilitas, venustas* locate novel forms of sociability and in eighteenth century British architecture. Promulgated by the Vitruvian treatise *De architectura* and generations of copies continuing the classical tradition, these virtues excavate the historical figure of Marcus Vitruvius Pollio whose service in the Roman military carried him throughout the Mediterranean. It was later in life working as a civil servant with a salary paid from the *Aerarium* collected through tax, tribute, and the spoils of war that he wrote his iconic treatise on architecture.[25] Dedicated to Emperor Augustus the first Cesar and initiator of Pax Romana, the post-republic treatise of Vitruvius contextualizes the social use of writing on architecture to the Roman Empire. In considering what use is writing and to what users, I argue there remains an unexamined intersection of Vitruvian virtues, architecture, and risk in the speculative cultural practices of eighteenth century British Neoclassicism. In many ways, the Vitruvian treatise and the classical tradition arrived in English through diplomat Henry Wotton's 1624 translation titled *The Elements of Architecture*. Mediated by Wotton's Venetian-Palladian motivations in his countrymen's estates, this early English theory on architecture alternates cognate and order of the Vitruvian triad so as to be written; 'Commoditie, Firmenes, Delight.'[26] Incipient in Wotton's commodity is the implication of architecture's increasing utility in the exchange of commerce. Where historiography has already examined sites of literal exchange such as the Royal Exchange, the Bank of England, or the London Pool, I wish here to explicate this exchange through the applied arts, mutual societies, and the exhibition of matter in eighteenth century London.

[25] Deriving from the Latin word for money, the Aerarium served as a treasury gathering taxation, spoils, and financial reserves to finance the people and statecraft of Ancient Rome.
[26] Wotton, Henry. *The Elements of Architecture, Collected by Henry Wotton Knight, from the Best Authors and Examples.* [1st ed.]. London: Printed by John Bill, 1624. P. 1

On 22 March 1754, drawing pedagogue, inventor, and social reformer WIlliam Shipley founded The Society for the Encouragement of Arts, Manufactures, and Commerce at Rawthmell's Coffee House in Covent Garden with the mutual assistance of Viscount Folkestone, Lord Romney, Isaac Maddox, Stephen Hales, and Thomas Baker. Attending early Society meetings was Nicholas Crisp in whose porcelain manufactory the fourteen year old John Bacon began his apprenticeship the following year.[27] Quickly abbreviated to The Society of the Arts for convenience, membership grew rapidly among those with interests in 'improving' agriculture, industry, and the arts. The mutual interests of the society manifest in the public offering of "Premiums" in six categories with each category awarding cash and medals to submissions measuring productivity while simultaneously encouraging the employment of artisans into the manufacture of British applied arts. Premiums in Agriculture, Husbandry, and Planting promote fecund concerns regarding the productivity of land and the necessity of "a continual supply of useful Timber being absolutely necessary, as well for the Ornament and Convenience as for the Security of these Kingdoms."[28] The centuries of wars and wealth brought decoration and naval ships. Contests to certify the greatest yield of acorns, apiaries, chestnut, Weymouth Pine, turnips maddrs, and experiments on manure and soils are exemplified in proposals such as number eight; "For properly planting the greatest number of small-leaved English Elm, for raising Timber (commonly used for the Keels of Ships and Water-works) before the First Day of May 1760."[29] A second category offering 'Premiums for Discoveries and Improvements in Chemistry, Dying, and Mineralogy' sought to improve yields of bismuth, borax, Sal Ammoniac, green and scarlet dyes. The only category not being awarded on the basis of a maximum yield was the third, 'Premiums For Improving Arts' judged and exhibited at Shipley's St. Martin Academy with prizes for best drawing, sculptural model, engraving, metzotino, etching,

[27] "The Obituary of John Bacon," *The Gentleman's magazine*. v.69 pt.2 1799. P. 808 - 810
[28] Society of Arts (Great Britain). *Premiums by the Society Established at London, for the Encouragement of Arts, Manufactures, and Commerce*. London: Printed by order of the Society. 1759 P. 5
[29] Ibid. p. 11

landscape painting, casting, medal, and County and river survey. 'Premiums to encourage and improve Manufacture and Machines' appealing to those currently engaged in the making of fabrics, mills, silk, shipping, spinning, grinding, and knitting. The Society of the Arts also sought to incorporate territorial holdings of the British Empire through 'Premiums for the Advantage of the British Colonies' incentivizing the quantitative increase of specific raw resources. This category offered rewards on experiments cultivating species outside native climates with premiums on the greatest quantity of cochineal insects from cactus to make dye in South Carolina and Jamaica, premiums on the most olive trees grown south of the Delaware River, the largest quantity of silk made in Georgia, Connecticut, Pennsylvania, and North Carolina, and the most wine grown from anywhere in the Americas. Lastly, gold medals were offered for the best treatise put forward on 'the Arts of Peace' providing a "historical account of the progressive improvements of Agriculture, Manufactures, and Commerce."

Shipley's Society occupied the absence of Hanoverian state sponsorship from King George II in dedicating private financial incentive to measurable improvements in British arts, manufacturing, and commerce. In contrast to the Royal patronage across the channel in France, the emergence of this society and its use in these improvement endeavors was initially a private affair. Operating on donations, The Society of the Arts found itself filling its perceived use through annual publications, meetings, and monetary prizes as the mutual sharing of interests lead to rapid growth of membership of men and women of all ages. While continuing to grow, the necessity for a more permanent housing solution was proposed in a 1758 sketch by architect William Chambers.[30] While working on a building for the society, Chambers was also then constructing the gardens at Kew and serving as an architecture tutor to the Prince of Wales, later King George III. Born in Sweden and a graduate of Jacques-François Blondel's

[30] *William Chambers sketch for a building for the Society* c.1758, RSA/AD/MA/302/19/63; *Ground plan of building designed by William Chambers c.1758*, RSA/SC/IM/701/S600. From the archive of RSA.

private architecture school in Paris, Chambers had undertaken extensive travels to Rome and China. The transnational life of Chambers had a significant effect in contributing to the success of the unique project at Kew calling for Greek, Roman, Gothic, Ottoman, Mooris, and Chinese ornamental architecture to adorn the landscape. Disposing the exotic aesthetic frivolity of these architectural styles at Kew, Gökhan Avcıoğlu reads the 'conciliatory nationalism' of Chambers and Kew as 'sharing the language of power' with the Chinese and Ottoman Empire.[31] Thus, the staging of architecture at Kew whose definition is not British dialectically reinforces a British subjectivity. Avcıoğlu's analysis minimizes the effects of commerce on constructing the landscape, architecture, and British subjectivities at Kew which are parallel in Chambers coterminous project for the Society. In Chamber's 1759 *A Treatise on Civil Architecture*, he writes, "architecture prepares the way for Commerce" as " she conquers every obstacle that nature opposes to her progress facilitating by these means the conveyance of Merchandize, and passage of travellers from one country to another."[32] Echoing Shipley's Society of the Artists, Chambers states that architecture is "necessary for invention and improving Arts" and "she supplies the means of transporting them to foreign markets."[33] At Kew is a miniature world participating in the private exhibition of British Imperial ambitions and foreign markets for those few admitted into the royal garden. More specifically, Chambers exemplifies the eighteenth century conflation of architecture as metonymically passing between Nature and commerce. Facilitating the extraction of raw material in nature and its conversion into an exchangeable commodity, Chambers parallels The Society of the Arts in articulating the utility of architecture to improving commerce. The orientalism of Kew has long dominated the historiography of this time in British architecture and the applied arts, and as an alternative, I argue divisions in

[31] Avcıoğlu Nebahat. 'Turquerie' and the Politics of Representation, 1728-1876. Farnham: Ashgate Pub, 2011. P.139.;
[32] Chambers, William. *A Treatise on Civil Architecture, in Which the Principles of That Art Are Laid down, and Illustrated by a Great Number of Plates Accurately Designed, and Elegantly Engraved by the Best Hands. / By William Chambers.* London: Printed for the author, by J. Haberkorn, [etc., etc.], 1759.
[33] ibid.

exhibition strategies at The Society of the Arts and other mutual societies illuminate an British subjectivity and national identity that is anything but 'conciliatory.'

Amidst dissatisfaction with the format of exhibitions at The Society of the Arts, a gathering of key London artists and architects at the Turk's Head tavern on 12 November 1759 produced the splinter The Society of Artists of Great Britain. The naming of the newfound mutual society itself is a product of debate and consensus to exemplify the work of this society as being inseparable from the reflexive project of improving Great Britain and the British Empire. With increasing emphasis on cultural and national subjectivities, this new found society included artists Francis Hayman, Robert Edge Pine, Joshua Reynolds, Richard Wilson, Francis Milner Newton, sculptor Joseph Wilton, engraver Robert Strange, and architect William Chambers. Relying upon Samuel Johnson to secure financial patronage from The Society of the Arts, Shipley's society is responsible for staging the first exhibition of The Society of Artists of Great Britain on 21 April 1760.[34] After this exhibition, there arose a disagreement within the new found Society of Artists regarding the hanging strategies of paintings and the use of a one shilling admission fee to view the work. Those opposed to charging a fee aptly named themselves the Free Society of Artists including artists Arthur Devis, Stephen Elmer, Angelica Kauffman, and George Romney.[35] The Free Society of Artists continued to monetize exhibitions, however, they did so through the sale of catalogues for "the relief of distressed and decayed artists, their widows, and children."[36] These social reform programs staging free exhibitions are reminiscent of Shipley's society seeking to incentivize commerce, although they place ontologically distinct commodities on exhibit. At a 1767 exhibition of this 'minor' Free Society, Daniel Pincot placed on exhibition "a

[34] Hargraves, Matthew. "Society of Artists of Great Britain (act. 1760–1791)." *Oxford Dictionary of National Biography.* 24 May. 2007; Accessed 22 Dec. 2021. https://www.oxforddnb.com/view/10.1093/ref:odnb/9780198614128.001.0001/odnb-9780198614128-e-96318.
[35] ibid.
[36] Free Society of Artists (London, England), and Society of Artists of Great Britain. Catalogues of the Exhibitions of the Free Society of Artists, 1761-1783. London: The society, 1767, P. 166

landscape, several pieces of artificial stone, and an antique basso-relievo in artificial stone, unburned, on the staircase."[37] No other archival descriptions or records of Pincot's work survive other than this singular entry from a bound collection of exhibition catalogues. We might imagine the landscape being constructed of pigment on paper, but what of the pieces of artificial stone? It is the nondescript description of pieces that provides an indication as to these curious objects on display. In exhibiting shapeless featureless pieces lacking normative descriptions such as 'basso-relievo,' Pincot is relying on the exhibition of artificial stone's novel properties advertising his trade of nearly two years. On the success of this performance, Pincot auctioned his entire stock at Christie's and moved his manufacture to Narrow-Wall, Lambeth, London in 1768.[38] Pincot's recollection of this exhibition is recorded in his treatise on artificial stone where he writes, "I exhibited some performances of this sort at the new auction room, (now the Royal Academy) in Pall MallI observed that the greatest and almost the only encourages of this work were persons who had some understanding in the nature of these burnt bodies and consequently stood in no need of any arguments of mine to prove its strength and or durability."[39] Pincot's pieces exhibit the material properties of artificial stone as a method to attract future customers and differ from the other works on exhibition at the Free Society of Artists. This 1767 exhibition marks the last performance of artificial stone for a free audience following the incorporation of the Coade Family and Daniel Pincot in the Lambeth manufactory.

Alternatively, the Society of Artists of Great Britain served to provide the venue for a contentious dispute on matters of materiality and commerce in the properties of artificial stone. Seven years after this Society was formed, a power struggle occurred upon the insidious election of new

[37] ibid.
[38] Kelly, Alison, "Imitating Mrs. Coade ceramic artificial stone makers," *Country Life*, vol. 162, no. 4193, 1977 Nov. 10, p. 1430-1432.
[39] Pincot, Daniel. *An Essay on the Origin, Nature, Uses, and Properties, of Artificial Stone: Together with Some Observations Upon Common Natural Stone, Clays, and Burnt Earths in General, Etc*. London: Printed by Richard Hett; Sold by C. Marsh, Etc, 1770. P. 10

directors without consulting the eight former ones; Joseph Wilton, Edward Penny, Richard Wilson, Benjamin West, William Chambers, G.M. Moser, Paul Sandby, and F.M. Newton resigned in protest on 10 November 1768.[40] Largely in part to William Chambers personal relationship with his former student King George III, this exodus led directly to the founding of the Royal Academy of Art in 1769 by thirty four artists and architects with painter Joshua Reynolds serving as its first president. Historian Matthew Hunter's recent historiography on Joshua Reynolds and his involvement in the Society of Artists and Royal Academy argues for "tracing an arc of chemical research forward from southwestern England to the 1750s Society of Arts at London's Charing Cross and into the painter's studio on Leicester square in the 1770s."[41] The arc of Reynold's "Nice Chymistry" underpins Reynolds publicly embracing the utility of this science amidst animated debate in 1774 while serving as president of the newly founded Royal Academy. Hunter uses this chemical arc to locate, 'temporally evolving chemical objects' in experimental pigments that Reynolds sought specifically for effects that decay as a result of climatic exposure. Writing to a British mutual society readership, Daniel Pincot muses on the effects of London's harsh maritime climate where "modern artists are eye-witnesses to the ruin of their own works."[42] Due in part to this uncertain loss through climatic exposure, Joshua Reynolds paintings construct commercial value precisely in their performance of ephemerality. I argue the same conditions to Hunter's scholarly arc can be used to inversely identify the chemical durability of artificial stone objects, and as a result, to inflect mutual interests in the material effects of climate. As compared to a Reynolds painting where the decay of pigment animates ephemeral scarcity, construction supplies and the material of eighteenth century architecture constructs value through properties of resistance, permanence, and perdurability.

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[40] *Joseph Wilton, Edward Penny, Richard Wilson, Benjamin West, William Chambers, G. M. Moser*, 10 Nov 1768, SA/18/1, from archive of The Royal Academy

[41] Hunter, Matthew C. *Painting with Fire: Sir Joshua Reynolds, Photography, and the Temporally Evolving Chemical Object*. Chicago: University of Chicago Press, 2020. P. 50

[42] Pincot, Daniel. *An Essay on the Origin, Nature, Uses, and Properties, of Artificial Stone: Together with Some Observations Upon Common Natural Stone, Clays, and Burnt Earths in General, Etc*. London: Printed by Richard Hett; Sold by C. Marsh, Etc, 1770. P. 6

The exhibition history of artificial stone illuminates matters of material resistance exemplified in 1771 when a misspelled Daniel Pincat of a certain Lambeth artificial stone manufactory placed a copy of the Borghese Vase in an exhibition for the Society of the Artists of Great Britain. Whig political figure and writer Horace Walpole would say of this exhibit, “A vase, after the famous antique at the Villa Borghese, near Rome...It is contrary to the laws of the Society to admit a copy of any kind whatsoever; but yet, desirous of giving every encouragement in their power to merit and ingenuity, they have permitted the above to stand in the vestibule leading to their room, in consideration of its being a very fine performance.[43] The Societies policy on copies evidences a shift in consumer culture identified by historian Mark Rose who says of the London art market, that “by 1770’s the doctrine of originality was orthodox.”[44] During these years, the London market for Neoclassical commodities underwent a change regarding the origin of work and its replication. Policy and fashion combine in Pincot’s installation of his artificial stone copy outside the Society's exhibition room where a paying customer could view the work prior to entering the primary exhibition. Standing slightly smaller than the Roman antiquity, a copy of the vase was sold by Pincot to English Banker Henry Hoare for Stourhead and to Samuel Wyatt for Kedleston Hall in 1771.[45] There has been an extraordinary amount of speculation regarding Pincot’s Vase and Eleanor Coade’s advertisement printed in the *Daily Advertiser*. Published on 11 September 1771, Coade writes, “Whereas Mr. Daniel Pincot has been represented as a Partner in the Manufactory which has been conducted by him; Eleanor Coade, the real Proprietor, finds it proper to inform the Publick that the said Mr. Pincot has no Proprietary in this Affair; and that no Contracts or Agreements, Purchases or Receipts, will be

[43] Graves, Algernon. 1907. *The Society of Artists of Great Britain, 1760-1791; the Free Society of Artists, 1761-1783: A Complete Dictionary of Contributors and Their Work from the Foundation of the Societies to 1791*. London: G. Bell and Sons.
[44] Rose, Mark. *Authors and Owners : The Invention of Copyright*. Cambridge, Mass.: Harvard University Press, 1993. P. 6
[45] Kelly, Alison. *Mrs Coade's Stone.* Upton-upon-Severn: Self Pub. Association. 1990, P. 38

allowed by her unless signed or assented to by herself."[46] Probability and speculation on the events of 1771 often read the sequence of these events as sharing a connection through causality. It is often speculated that someone did not get the credit or compensation they so deserved and thus someone got the boot. While there is an absence of archival evidence regarding the events of 1771, the Borghese Vase represents something of a radical departure for the work of Pincot who previously had put artificial stone 'pieces' on exhibit for free. Two years after the departure of Pincot, Coade herself put artificial stone commodities on exhibit from 1773 - 1777 using the title of "Sculpture" and "Artificial Stone Manufacturer." Pincot's early exhibits are distinctly two-dimensional such as the landscapes from 1767 - 69 with pigment on paper and the artificial stone basso-relievo. This production limitation stands in sharp contrast to the sculpture and architectural work exhibited in the round by Eleanor Coade. Representations and molds of the vase could be easily had in London from generations of Grand Tour's although there is no evidence explicating the copy history of the 1771 vase. It is with sound reason that speculations have interpreted these events as a dispute arising from Coade's exclusion from business transactions for Borghese Vases for Stourhead and Kedleston for Samuel Wyatt by Pincot.[47] For whatever causes to this dissolution, with Pincot out of the picture Eleanor Coade became 'the real Proprietor' of the artificial stone manufactory in Narrow Wall Lambeth in 1771. The immediate decision to hire Royal Academy artist and Society of the Arts gold medalist John Bacon as "superintendent" records a rapid change in the direction of work as Coade published her future intentions to the "making of such Things only as are bespoke."[48] Coade put this bespoke work on exhibit for the price of one shilling at the Society of Artists of Great Britain including statues of classical figures such as Urania, Minerva, and Time,

[46] *Daily Advertiser* 11 September 1771.
[47] Stanford, Caroline, "Revisiting the origins of Coade stone," *Georgian Group journal*, vol. 24, 2016, p. 95-116. P. 102
[48] Kelly, Alison. *Mrs Coade's Stone.* Upton-upon-Severn: Self Pub. Association. 1990. P. 44

sundials, chimney pieces, vestal, pedestals, candelabras, and an artificial stone clock case.[49] To an eighteenth century British consumer, these items exhibit language which is social and shared in the exchange of utility between maker and user. Coade sold copies, but they were copies which could not be had anywhere else in London or the world.

The immediate success of Coade's undertaking in 1771 partly owes an initial debt to orders of ornament by architect James Wyatt and the Wyatt family. Wyatt, wife Mary, and brother Samuel are among the earliest to order and ornament the buildings they built with Coade's artificial stone.[50] Among these early orders are the capitals, pateras, and coat of arms for the Oxford Street Facade of the Pantheon that would be purified by fire in the proof of artificial stone's utility. With no existing precedent, these early orders appear as if taken on faith alone. What proof did Wyatt have regarding the durability, resistance, and material performance of Coade's artificial stone? What proof did the architect have regarding the materials for construction? Prior to the Pantheon fire of 1792 and prior to the earliest orders in the 1770s, I argue there already exists a social context for artificial stone's proof of utility as established through mutual societies and private undertakings in the applied arts, manufacturing, and industry. Current scholarship speculates Coade met Wyatt at the Royal Academy with a plausible introduction made through John Bacon however this fails to adequately explain how these figures would undertake such a significant financial risk.[51] Extending across religious divisions, I suggest the business relationship of Wyatt the Anglican and Coade the Nonconformist evidences the historical dissolution of barriers reminiscent of William Chambers line that, "architecture

[49] Graves, Algernon. 1907. *The Society of Artists of Great Britain, 1760-1791; the Free Society of Artists, 1761-1783: A Complete Dictionary of Contributors and Their Work from the Foundation of the Societies to 1791*. London: G. Bell and Sons.
[50] Robinson, John Martin. *James Wyatt (1746-1813) : Architect to George Iii*. New Haven: Yale University Press, 2012. P. 129
[51] ibid.

prepares the way for Commerce" as " she conquers every obstacle."[52] From the 1760s, the exhibition of artificial stone constructs the social context of this material and the ornament it produces. The Wyatt's would remain dedicated users of the commodities made at Coade's Artificial Stone well into the nineteenth century as this undertaking underwent exponential growth across the urban environment. In the accident of fire in 1792, artificial stone's proof of utility is conveyed to a conditioned public who is already receptive to the use of this ornament. The Pantheon burns amidst a social context constructed from the cultural programs of London mutual societies, Royal Academies, and exhibits of matter which socially constructs the use and utility of artificial stone.

"The real Proprietor" Eleanor Coade advertising her experimental artificial stone in a 1799 exhibition catalog said that "among its other qualities, is its resistance both of electric and common Fire," and "when damaged by Fire...Fire purifies it."[53] In the same catalogue, Coade's experiments were intended as "proofs of utility" for the substance of her invention reproduced through the language of art and science.[54] This language was drawn from Coade's involvement in the Royal Society of Artists of Great Britain, an institution which incentivized British art and industry through "Trials" and "Experiments" awarding cash prizes to manufacturers of material things.[55] Coade invented a quality whose intangible property of resistance to fire was advertised to a building market shaped through anxiety and abatement to fire. This market was derived through increasing commercial interest in the durability of property leading to the construction of brown brick buildings by nearly every major architect from James Wyatt to John Soane. The attitude to this architecture is well articulated by Royal Academy co-founder and architect John

[52] Chambers, William. *A Treatise on Civil Architecture, in Which the Principles of That Art Are Laid down, and Illustrated by a Great Number of Plates Accurately Designed, and Elegantly Engraved by the Best Hands. / By William Chambers.* London: Printed for the author, by J. Haberkorn, [etc., etc.], 1759.
[53] Ibid. p. iv
[54] Ibid. p. i
[55] Hunter, Matthew. *Painting with Fire: Sir Joshua Reynolds, Photography, and the Temporarily Evolving Chemical Object*. 2020. p 59

Gwynn that, “A mere brick face in such buildings always makes a mean appearance...it is to be lamented that encouragement is not given to some ingenious person to find out stucco or some composition more durable than the common sort, and in which exterior ornaments might be easily wrought at a very small expense.”[56] Eleanor Coade was this “ingenious person” and her manufacture supplied architects with a peculiar ornament whose perceived function was its usefulness in the abatement of fire and the insurance of life. When Wyatt’s Pantheon burned to the ground in 1792, the object of Coade’s invention in ornamental capitals, paterae, and string course not only remained, they had been purified. This radical change in the Albertian function of ornament from a thing applied into a thing with function is aptly demonstrated in Coade’s 1797 entablature for the Pelican Life Insurance Company. Adorning the facade with a Neoclassical ensemble inscribed with, “Children Endow’d and Property Secured,” the ornamental entablature advertises its proofs of utility for the business of insuring lives and loss by fire. In the eighteenth century, architecture became the experimental medium for integrating the intangible qualities of ornament with the power to possess those qualities as property.

Using Proof In the British Empire

A user of Coade’s artificial stone proof of utility is as distinct and different from one who uses proofs being distilled next door at Martineau Brothers Brewery. The Martineau Brewery was the largest industry in Lambeth and simultaneously posed the highest risk as regards the accident of fire. Differing in most respects, these neighbors share the instruments of risk insuring property which can be used to socialize these historical subjects who otherwise might be differentiated by class, gender, politics, parish, and nation. A proof has a specific social context, and the specific social context of artificial stone’s proof of utility is surviving the accident. The

[56] Gwynn, John. *London and Westminster Improved*...1766

performance of this proof locates an ontological change in the matter of architecture which is proven by accident. The organization of subjectivities who use proof are a historical ontology. By historical ontology, I draw on Ian Hacking's organization of objects where "it is convenient to group them together by talking about "what there is," or ontology."[57] The 'what there is' of artificial stone objects is a matter of materiality which aggregates scholarly inquiries through what Historian of Science Lorrain Daston calls the "obdurate objecthood of a thing."[58] A 'thing' of artificial stone provides an exemplary ontology and the 'things' made at Coade's Manufactory from 1769 - 1821 are a historical ontology which demarcate a period, place, and specific instantiations of existence. There is a prescient physicality in the objecthood of artificial things, perhaps even a reciprocity in these non-natural constitutions of matter; but what can be said of intangible things such as proof of utility, intellectual property, or insurance? A proof makes matter particular and seeks to differentiate what is useful from what is not. Exemplified by The Society of the Arts in offering a premium for a "Varnish, the most perfectly secured and polished, so as to be Proof against a hot Sun, Frost or Wet : to be left with the Society for Six Months at least, in Order to ascertain its Mertin."[59] The jury clearly did not specify what color the varnish should be after six months and unsurprisingly only lists a state of continuous existence as the sole requirement. Color change in a varnish during a trial to determine weather resistance is an unintended property that proving a substance can produce. Varnish or some material to resist the weather finds a different user in architect Sir William Chambers who quips he "can produce many proofs against" the Adams who "boast of having first brought about the true Style of Decoration into England."[60] The aesthetic quibble of architects mobilizes a proof which can be produced and reproduced as it ontologically provides an order to matter in the world. Similar to

[57] Hacking, Ian. *Historical Ontology*. Cambridge, Mass.: Harvard University Press, 2002. P. 1
[58] Daston, Lorraine. *Things That Talk : Object Lessons from Art and Science*. New York: Zone Books, 2004. P. 11
[59] Society of Arts (Great Britain). *Premiums by the Society Established at London, for the Encouragement of Arts, Manufactures, and Commerce*. London: Printed by order of the Society. 1759. P 14
[60] The letter of William Chambers is included in James Lee-Milne's *The Age of Adam*. British Art and Building Series. London: B.T. Batsford, 1947. P. 149

the Society of Arts, Chambers' proof is also predicated upon a claim of existence, however in this case it is the claim of one order of matter existing separate from another order of matter. Artificial Stone essayist Daniel Pincot commented on the aesthetics of British architecture that "such rich and noble productions are very rarely found among modern performances, though, we are not without ingenious and justly esteemed architects, who give proof of an ability in every respect equal to them, if they were professed with the same means."[61] Pincot's proof demonstrates ontological differentiation separating ability and material deficiency in arguing and advertising the latter as cause for the failed performanced of modern British Architecture. Equerry to King George III records His Majesty's attempts to overcome mental illness saying, "he was very strong and active, and in proof of this he danced and hopped with more agility that I could have suspected."[62] In the British Empire, even the sovereign performs proof.

A proof gathers certitude to existence that is sufficiently evidential. When composed together, the substance produced in proof constitutes a society of users who reflexively use proof. Locality differentiates each use from similitude produced and reproduced in language. The location where such an event matters in as much as the portrait of objectivity it paints. While a science proof might sound different from an art proof, each seeks sufficient evidence of epistemological certitude. This certitude is objective, probable, and shared socially between subjectivities who do not necessarily have a shared objectivity among themselves. Probability of outcome is subject to probable revision by a proof. Well before mathematical theories of probability were codified in the seventeenth century by Gerolamo Cardano, Pierre de Fermat, and Blaise Pascal, there are cultural histories of proof in the British Isles exemplified by Sir Thomas Mallory's 1485 *Le Morte d'Arthur*; "Whoso pulleth out this sword of this stone and anvil,

[61] Pincot, Daniel. *An Essay on the Origin, Nature, Uses, and Properties, of Artificial Stone: Together with Some Observations Upon Common Natural Stone, Clays, and Burnt Earths in General, Etc*. London: Printed by Richard Hett; Sold by C. Marsh, Etc, 1770. P. 4

[62] Peters, Timothy J, and D Wilkinson. "King George III and Porphyria: a Clinical Re-Examination of the Historical Evidence." *History of psychiatry* 21, no. 1 (2010): 3–19.

is rightwise king born of all England."[63] The merits of political governance proven by separating sword from stone are debatable, but established in the multitudinous attempts is the eventuality of an event. In time, a rightwise sovereign is born. Centuries older than Mallory's myth are Scottish and Welsh competitions to lift stones as a measure of strength and the determination of subjecthood. Turned into a competition between Highland clans sometime in the eleventh century, the use of *Clach cuid fir*, 'manhood stones,' to determine adulthood by lifting a stone waist high, and *Clachan-ultaich* providing proof of strength for work exemplify an empirical habit in the British Isles. The long history of numeracy and its enumeration of probability suggest that objectivity of mathematics is not necessarily a precondition for using objects of probability in a proof. Competitors in a game of chance throwing stones, or those that wager on such throws, need not have any specific knowledge on mathematics, anthropotechnics, or the geology of the object they intend to chuck; but it might help.

The Utility of Insurance

In 1789, George Griffin Stonestreet, the first director of The Phoenix Assurance Company stated, "insurance against fire is probably a modern invention."[64] Stonestreet's utterance excavates two millennia of history as early as the incorporation of the Rhodian Sea Law throughout the Roman Empire and into Byzantine Corpus Juris Civilis by 533 CE. Cited in 1795 by American Admiralty in the case of Thompson, Jacobson vs the Ship Catherina, "The Rhodian law provides, that, if goods are thrown overboard in order to lighten the ship, what is sacrificed

[63] Malory, Thomas, Edward Strachey, and William Caxton. *Le Morte d'Arthur. Sir Thomas Malory's Book of King Arthyr and of His Noble Knights of the Round Table / the Text of Caxton, Ed., with an Introduction, by Sir Edward Strachey, Bart.* London: Macmillan and co., limited: New York, The Macmillan company, 1901. P. 28

[64] Taken from Stonestreet's unpublished manuscript *Principles of Insurance Principles of the Phoenix Company*, 1789, reproduced in Clive Trebilcock's *Phoenix Assurance and the Development of British Insurance*, 1985. P. 2

for the common benefit should be made good by a common contribution."[65] Insurance confronts the sublime terror of death to distribute loss for the survival of life, as does the Rhodian Sea Law averaging loss and mitigate risk in collectivity. For the subjects who endeavor into uncertainty, insurance covers liability and determines a risk between the user and provider. Twelfth century sailors of the North Sea made use of *'Waterrecht*,' water laws, such as the Rolls of Oléron or its antecedent in Article LXVI of The Gotland Sea Laws whereby "If the merchant obliges the master to insure the ship, the merchant shall be obliged to insure the master's life against the hazards of the sea."[66] The insurance contract legally agrees to a measure of risk which is monetized in the event of misfortune. In the event of total loss, the insurance contract reserves a return on investment and mutually distributes the uncertainty of risk. Early use of the insurance contracts includes Georgius Lecavellum, citizen of Genoa, who signs an insurance on 23 October 1347 an agreement to cover the ship of Bartholomeus Bassus, the Santa Clara, for one hundred and seven pounds of silver should it not return from its voyage to Majorca. This marine insurance arrived in the British Isles through Italian traders and early English contracts including the "Broke Sea Insurance Policy" of 20 September 1547 which contains multilingual articles written in English and Italian. The arrival of the insurance contract finds aftermath of the dissolution of the monasteries and guilds by Henry VII from 1536 to 1541 as capitalism, nationalism, and Royal projects to construct a Protestant British subjectivity began in earnest. These post-dissolution labor shifts locates the coalescence of mutual-aid societies providing funding to bury its members in the event of an untimely death. Irregardless of personal finances, this living guild tradition secures its members. The contract and the mutual-aid society are two methods to secure property from uncertain and total loss using probability to alleviate

[65] Prudential Insurance Company of America. *The Documentary History of Insurance, 1000 B.c. - 1875 A.d*. Panama-Pacific Exposition Memorial Publications of the Prudential Insurance Company of America, No. 5. Newark, N.J, 1915. (P. 45/722)

[66] See Article LXVI, Savary des Brûlons Jacques, and Savary Philémon-Louis. *The Universal Dictionary of Trade and Commerce [...].* (version The third edition.). Edited by Malachy Postlethwayt. The thirded. London: Printed for H. Woodfall, A. Millar, J. and R. Tonson, J. Rivington, J. Hinton, R. Baldwin, L. Hawes and W. Clarke and R. Collins, R. Horsfield, W. Johnston, T. Longman, J. Brotherton, J. Dodsley, T. Payne, J. Robson, T. Owndes, W. Nicoll, and J. Knox, 1766.

risk socially. In London, at Lombard Street, a modern industry to use this probability is invented to secure the British Empire.

Ontologically distinct but homologous in concentricity; fire, insurance, and London often intersect. In the historiography of burning architecture, the undeniable presence of The Great Fire burning London from 2 to 6 September 1666 looms large. Starting at a bakery, the fire's wrought immense devastation on the mostly wooden medieval fabric and only being contained through chance as the west winds reversed the spread of embers giving time to detonate a firebreak into the dense urban fabric. The memory of this inadequacy to manage fire with poorly equipped bands operating independently underwrites the formation of social methods by which to alleviate this risk through the use of probability to underwrite insurance. In probability and the risk of fire is both the prediction of stochastic processes and the likelihood of events. Climatic change in wind is stochastic, random, and thus changes durationally across time whereas to predict fire is to predict the likelihood of events. Insurance and probability constitute a mutual history of managing risk which manifest in the artificial material change of eighteenth century architecture. Managing this risk is the Lombard Street insurance industry taking shape after the Great Fire which put to use the same knowledge as generations of gamblers had done before in using probability for profit. Offerings of individual contracts to cover buildings could be had in the 1670's by economist Nicholas Barbon whose 1681 Insurance Office for Houses at the Back-Side of the Royal Exchange, otherwise known as the Fire Office, critically locates the insurance office. In the same year, the Fire Office published a table "shewing the premium, or rate of insurance for Brick-Houses (the same to be reckoned Double for Timber)."[67] The table makes tangible the cost and annual premiums on contracts to cover brick and timber buildings for seven, eleven, or twenty one years as sold to five thousand houses by the insurers. Barbon and his Fire Office are contingent to late seventeenth century English discourses on economic,

[67] Fire Office, *A Table of the Insurance Office at the Back-side of the Royal Exchange*, 1681.

social, and political theory such as those by John Lock who frequently engaged Barbon in debate. Barbon's earliest venture into building and economics includes his 1678 *A discourse shewing the great advantages that new-buildings, and the enlarging of towns and cities do bring to a nation*. In this book, Barbon calculates the population growth using mortality rates of the English "nation" to "shew, that the people do increase, and that they cannot be preserved together, unless they are employed in Building."[68] Barbon's calculations incorporate a trans-Atlantic Empire with land extending from the British Isles to New England, Virginia, Maryland, Barbados, and Bermudos. Writing in 1684, Barbon's a *Letter to a Gentleman in the Country* serves to solicit rural gentry operating as urban landlords collecting rent from property in London. The success of this undertaking is instrumental in building the London insurance market to secure tangible things such as architecture. It is notable in Barbon's later publications, particularly his 1690 *Discourse on Trade*, that he argues for the intangibility of money, credit, and interest which he perceives only to be a "value of things."[69] In contradistinction to the bullion based material economy of mercantilism, Barbon envisioned a free market of paper in which the value of money is the value of exchange. This value differs from the 'intrinsic value' of tin, copper, gold, silver, plate, lace, and silks which he would articulate further in his 1696 *Discourse Concerning Coining the New Money Lighter*. Barbon's *Fire Office* split the London market with William Hale and Henry Spelman's *The Friendly Society for Securing Houses from Loss by Fire* founded in 1684. Competition between the *Fire Office* and the *Friendly Society* was limited by King James II stipulating the biennial issue of new policies. Alternating the issuance of new contracts sought to mitigate profit motivations between these two societies for the purposes of extending insurance ownership to a larger percentage of society. With the jurisdictional interdiction of the King, the perception is evident, if more subjects own insurance the nation is safer. In 1686, the history of maritime insurance records the

[68] Barbon, Nicholas. *A Discourse Shewing the Great Advantages That New-Buildings and the Enlarging of Towns and Cities Do Bring a Nation*. 1678. London: publisher not identified. P. 17
[69] Barbon, Nicholas. *A Discourse of Trade*, 1690.

establishment of Lloyds of London at Edward Lloyds Coffee House later relocating to Lombard Street in 1691. Lloyds made their wealth monopolizing the insurance of slaves and the slave trade with their financial interest participating in the ownership of human life as property with "many advertisements in the London Gazette about runaway slaves listed Loyd's as the place where they should be returned.[70] The affiliations of Lloyds and this history of violence share an urban thoroughfare in Lombard Street and they patronize the institutions which profit from this traffic. Central to the urban confluence of Lombard Street is a prospering insurance industry whose rapid growth and diversification came to cover fire, maritime, life, property, and business ventures. This ontology of property as defined by the insurance contract sold by the Lombard office exists exclusively in London and is subject to British jurisprudence. Insurance contracts and mutual societies collapse property and subjectivity into the territorial construct of a Nation.

From 1696 - 1720, the consolidation of the London insurance market locates six companies each having a distinct model of organization and variable offerings extending to the coverage of property. The mutual societies of the Hand-in-Hand Fire Office (1696) and the Union (1714), limited partnerships in the Sun Fire Office (1710), the Westminster Fire Office (1717), the London Office (1720), and the charter Royal Exchange Assurance (1720).[71] The market share between these six companies remained largely static until disruption in 1782 by The Phoenix Assurance Company with George Griffin Stonestreet as its first director. The Phoenix made its mark as a group of dissatisfied eighteenth century sugar industrialists began offering insurance on the London market. The sugar collective's previous engagements as London middle men purchasing raw sugar from British colonies and turning it for profit found them frequent users of Lombard Street insurance companies. However, declining profits resulting from the Sugar Act

[70] Williams, Eric Eustace, and Denis William Brogan. *Capitalism [and] Slavery*. London: A. Deutsch, 1964. P. 104
[71] Trebilcock, Clive. *Phoenix Assurance and the Development of British Insurance*. Cambridge Cambridgeshire: Cambridge University Press, 1985. P. 6

of 1739 legalizing the capacity for colonial plantation growers to export sugar to south of Cape Finisterre effectively empowered plantations to short the local British Market thereby exerting more control on costs. The Sugar Acts distributes capital away from London towards growing regional power regimes. Hampering importers interests further, the 1776 War of American Independence effectively cut the import of sugar by 32.8% from 1774 - 1780.[72] Amidst the height of tea's popularity during the years, the sugar collective found themselves locked into inflationary wartime insurance premiums on their buildings, utensils, and stock while watching a dwindling supply. As a consortium of intermediaries in the sugar trade not well poised to benefit from increasing industrial modes of production, Stonestreet's concerns in his 1782 titled *Prize sugars not foreign* seeks to exert pressure on Parliament to intervene in the imminent economic failure the consortium faced.[73] In the essay, Stonestreet lays the colonial venture bear arguing the monopoly of British sugar colonies should be revoked to control cost if those colonies were unable to supply British domestic demand. The capital must come first. The final plea fell on deaf ears as industry in the colonies surpassed his collective in the trans-Atlantic sugar trade. In possession of capital but absent a commodity, Stonestreet's sugar traders changed trades, opening The Phoenix Assurance Company in 1782.

In the absence of government regulation, a market to mark architecture as insured was invented by Lombard Street companies. Put on facades by The Friendly Society as a means to facilitate the identification of a building by fire brigades and insurance company agents, this fire mark makes contractual obligations legible in the language of Neoclassicism and ornament in the urban landscape. The adaptation of fire mark use by neighboring competition producing an icon filled streetscape containing the ornament of insurance {Figure 2.06}. A snake coiling quills

[72] Ibid. p. 19
[73] Stonestreet, George Griffin. *Prize Sugars Not Foreign : An Essay Intended to Vindicate the Rights of the Public to the Use of Prize Sugars ; ... with Observations on the Export Trade of Raw and Refined Sugars ... Addressed to the Right Honourable Lord Viscount Beauchamp*. Eighteenth Century Collections Online. London: Printed for T. Cadell, and J. Sewell. 1782.

above a policy number identifies The Friendly Society; a red, black, and gold painted facade of the Royal Exchange beneath an open crown for Royal Exchange Assurance Corporation; a black and gold plaque for the Sun Fire Office featuring a face set within a radiant sun; and clasping hands painted in black and gold within an open crown for the Hand in Hand Fire Office. Allegories of fire and security on fire marks could not be more present than the Phoenix Fire Office featuring a black plaque with a phoenix rising from flames.[74] From Lombard Street offices, these fire marks identify risk management by differing mutual societies operating independently but in alignment through a mutual economic interest. A fire is bad for everyone. Typical fire mark fabrications came cast in lead or a metal embossing with paint and pigment to make legible the proof of insurance. Ornament and insurance intersect in matters of protecting the material of architecture in the urban legibility of a contractual relationship between fire brigades, insurance companies, and property owners. Liable to removal through delinquency, the fire mark maintains an artificial order through annual payments. To suggest this fire mark is ornament is to excavate the Latin verb *ornare* to adorn, decorate, dress, equip, and the noun *ornamentum* being a jewel, decoration, trappings, and equipment. Ornament is both a verb and a noun, it is both an action and an identification in the fire mark making tangible the proof of insurance. A proof in ornament. This ad hoc system continued in use from 1684 - 1833 whereupon reform and replacement was carried out under the leadership of Scottish firefighter James Braidwood and the London Fire Brigade offering assistance to any building regardless of owning insurance. Until Braidwood's reforms, assistance to fight the accident fire came at the discretion of companies, local parish assistance, and the aid of any nearby willing body person.

Rural to urban migration and increasing prosperity in the late eighteenth century gave insurance companies ample opportunity to make users thus expanding their coverage. Turning to a London adviser guide in 1786 such as Rev. Dr. Trusler's, a new property owner is advised that,

[74] Fire Insurance Plaque Collection, From Museum of English Rural Life, 70/4, 70/7, 70/10, 70/13

"When your house is furnished, the next precaution is, to insure it from fire: this may be done at several public insurance-offices, and at a very small premium."[75] Implicit in Trusler's advice is that if you have property, the next step is to secure that property from loss. One such option on Lombard street being to purchase insurance from the sugar traders turned Phoenix Assurance Company. Clive Trebilcock's history of the *Phoenix Assurance and the Development of British Insurance* illuminates the 'entrepreneurial characteristics' of this collective and their venture into insurance. Namely, that "the Phoenix was founded as a diversification that was for many of the participants merely one in a series; and this particular manoeuver was no rollicking business offensive, rather an enforced protective feint."[76] The founding of the Phoenix is characterized neither by heroic individualism nor by the novelty of industrial innovation, and alternatively, it is a social undertaking set out to secure the bottom line of minor capitalists who saw dwindling profits and business failure. Trebilcock applies eighteenth century French economist Jean-Baptiste Say's term the 'entrepreneur' to describe this 'social minority' of sugar capitalists whose venture into the fire insurance of sugar refining warehouses and stock was initially governed by five Trustees and ten Directors.[77] Trustees James Bell, Abraham Bracebridge Senior, Nathaniel Jarman, Harman Samler, and Barnard Tuner, elected Directors, and unincorporated shareholders "sprang not from the high or from the miniature bourgeoisie, but from the middle of the industrial middle class, from the heart of manufacturing respectability, the dead centre of burgher solidity."[78] In the 1780's, the Phoenix was dead centre amidst an economic shift in the city of London from a mercantile vanguard to speculative commerce; and that shift was distinctly centered around Lombard Street. Eleanor Coade is one such figure of this 'manufacturing respectability' frequenting the Lombard Street stores, institutions, and

[75] *The London adviser and guide: containing every instruction and information useful and necessary to persons living in London, and coming to reside there; ... By the Rev. Dr. Trusler. ...*
Trusler, John, 1735-1820. London: printed for the author, and sold by all booksellers, M,D,LXXXVI [1786]. http://name.umdl.umich.edu/004859210.0001.000
[76] Trebilcock, Clive. *Phoenix Assurance and the Development of British Insurance*. Cambridge Cambridgeshire: Cambridge University Press, 1985. p. 37
[77] ibid. p. 38
[78] ibid. p. 45

insurance offices. An urban history of Lombard Street excavates goldsmiths turning into early British bankers, artisanal craft stores growing to accommodate luxury commodities, and a plethora of financial and commercial institutions. In 1797, Lombard Street finds sixteen independent bankers including Barclay's, Hanbury Taylor & Co, Stone & Martin, and others who metaphorically and literally open in the shadow of the Bank of England. Shops selling buttons, clocks, watches, hats, hosier, lace, looking glasses, tea, shoes, stationeries, books, perfume, silk, and a chemist line a street with offices for a professional class of merchants, lawyers, and insurance companies who frequent the nearby General Post Office. The Lord Mayor's Mansion House marks the intersection at Cornhill Street where one finds the Sun Fire Office and the Royal Exchange forming an urban confluence serving as the heart of British commerce. Opening their office at No. 18 Lombard Street across the street from their sister life insurance venture at No. 70, The Phoenix Assurance Company and the Pelican Life Office come to insure the British Empire. In 1903, the emphasis of this intersection finds reinforcement in the name change to Pelican and British Empire Life Office as insurance and the lives of its subjects go hand in hand. Insuring architecture ensures the life of a building, and in so doing, preserves a particular state of matter.

## Insurance and Existence at the Pelican Life Office

The durational parallels between the proofs of utility in artificial stone and insurance are evident and reflexive with each having use in constructing the other. Coade's "most respectable proofs of the utility" are directly contingent on the perception of artificial "length of time" in the perdurability of material existence. Alongside the capacity of artificial stone to resist nature and the effects of weather, Coade's quip suggests it also offers a plurality of proofs as it pertains to preserving the duration of existence. I argue in continuing with the qualities of resisting nature,

artificial stone comes to find a use in securing the existence of life by the Pelican Life Office. Corporate counterpart to the Phoenix, the Pelican's offering of life insurance provides annual policy holders to name a beneficiary who receives compensation in the event of death. As a means to alleviate the afterlife anxieties of policy holders, it is no surprise that the Pelican actively advertise their financial stability and soundness in their motto of "Children Endowed and Property Secured." Even in death, the Pelican stays to provide {Figure 2.07 - 2.08}. The necessity to advertise a corporate existence which extends beyond genealogical temporalities locates an affiliation between artificial stone and life insurance. "Life insurance is based upon the theory that there is a law of mortality governing life; that is to say, that at all ages from birth to the utmost limits of life a certain proportion of individuals will die during fixed periods."[79] In the early years of the Pelican Life Office, inadequate and insufficient data gave concern to the calculation of mortality rates leading figures such as George Griffin Stonestreet to reduce exposure by separating the Phoenix and Pelican finances thus separating the books on fire and life.[80] Ultimately, Stonestreet's concerns would prove ill founded amidst the increasing diversification and profitability of Lombard Street insurance companies continuing to put probability and statistics to use in securing the afterlife of property for policy holders. Eleanor Coade's frequent use of fire insurance locates her within this urban confluence with the Pelican coming to find the use of artificial stone in advertising life insurance.

The life and livelihood of linen draper Eleanor Coade finds a 1766 visit to Lombard Street to purchase insurance covering 200 pounds of stock; a stock whose value expands to 750 pounds the following year in 1767.[81] Coade's use of insurance to secure her property begins with the remnants of her family's textile business and continues as the proprietor of her Lambeth Artificial

[79] Wehle, Theodore. *Life Insurance: Origin and History.* Editions Le Mono, 2016 p. 1,
[80] Trebilcock, Clive. *Phoenix Assurance and the Development of British Insurance*. Cambridge Cambridgeshire: Cambridge University Press, 1985. p. 523
[81] Stanford, Caroline, "Revisiting the origins of Coade stone," *Georgian Group journal*, vol. 24, 2016, p. 95-116.

Stone Manufactory. This use is comparable to Coade's Narrow Wall neighbors in Lambeth, such as timber merchant Joseph Warring purchasing policy 535995 for a £1 premium from Sun Fire Insurance for his "House on Balam Hill near Clapham Commons in Surry at present employ Brick & Tiled not exceeding eight hundred and fifty pounds. (Including) Stables, Coach-House & offices adjoining each other near Brick & Tile not exceeding one hundred & fifty pounds."[82] Renewable two years on the day, Waring's insurance policy is typical for extending coverage to his tenants including a cook, shoemaker, and a cheesemonger. Practices of insurance companies to differentiate risk according to material and ontology can be seen in another Narrow Wall neighbor and timber merchant, Samuel Sanders, owner of Policy 535027 to cover "his House & Offices adjoining situated on Denmark Hill near Camberwell in Surry in his own Tenure Brick & Tiled not exceeding eight hundred pounds. Fence & Gates adjoining near Timber not exceeding forty pounds. Stables adjoining each other near not quite finished Brick and Tiled not exceeding sixty pounds."[83] Insurance practices can be seen here to organize the matter of architecture under normative terms such as house, fence, and gate so as to facilitate the use of double-entry bookkeeping in calculating the value of property. Coade's Narrow Wall neighbor at the Martineau Brother's Brewery is the largest insurance policy extending to cover the dwelling house, brick offices, stables, storehouse, utensils, warehouse, manufactory, and a stone cellar totaling £14,700 with an annual premium of £22.1 {Figure 2.1}.[84] Due to the risk of fire, both the Brewery and Coade's Artificial Stone Manufactory purchase double-hazard premium thus paying a higher annual rate {Figure 2.15 -2.16}. Referring to Rev. Dr. John Trusler's London guide as regards this extra cost, "The common insurances comprehend all brick and stone buildings not occupied by hazardous trades or goods; hazardous insurances are on timber-buildings and goods, and merchandizes in them called hazardous; as distillers,

[82] Sun Fire Office. Insurance Records of Sun Fire Office from 1769 - 1841 for buildings in Lambeth, London. From London Metropolitan Archives: City of London.
[83] ibid.
[84] ibid.

chemists, apothecaries, colour-men, tallow-chandlers, oil-men, inn-holders, &C. The double-hazardous are thatched, timber or plaster buildings. If there is any part of the building wood or plaster on the outside, hazardous insurance must be paid."[85] Common, hazardous, or double hazardous is tabularized according to property which is either less than £2000, less than £1000, or less than £200.[86] Regardless of the specific office, Lombard insurance offices share a method to calculate premiums as determined by the hazard, property valuation by insurance agents, and a duty tax from parliament. Over time and as a means to encourage the purchasing of insurance and to reduce the risk of fire in all of London, insurance companies lobbied Parliament to secure a reduction in the duty of insurance in 1797.

Just as her neighbors, Eleanor Coade frequently made visits to Lombard Street rubbing shoulders with stock-jobbers, coffee house haunts, and other persons purchasing insurance {Figure 2.10 - 2.12}. Nearly three years after the release of her catalogue, the size of her stock had grown to require the umbrella purchase of a second insurance policy from Sun Fire Office extending existing coverage from the Royal Exchange Office on her warehouse and stock.[87] It is unsurprising Coade should be extending her coverage in 1787, the same year she provides a cost estimate to artist Benjamin West and architect William Newton for work on what would become the Nelson Pediment at the Royal Naval Hospital.[88] Also during this year, the installation of twenty nine vases on the parapets of Somerset House for Sir William Chambers finds Coade's Artificial Stone securing a place on the most prominent and public facades of

[85] *The London adviser and guide: containing every instruction and information useful and necessary to persons living in London, and coming to reside there; ... By the Rev. Dr. Trusler. ...*
Trusler, John, 1735-1820. London: printed for the author, and sold by all booksellers, M,D,LXXXVI [1786]. http://name.umdl.umich.edu/004859210.0001.000

[86] Sharman, H. Riseborough, and Association for the Abolition or Reduction of the Duty on Fire Insurances. *The Duty on Fire Insurances Erroneous in Principle, and Injurious in Practice*. London: Stevenson, 1860. P. 7

[87] Floud, R., Supple, B. E. (1983). *Index to Eighteenth Century Fire Insurance Policy Registers, 1777-1786* . [data collection]. UK Data Service. SN: 1838, http://doi.org/10.5255/UKDA-SN-1838-1

[88] *Estimate by Eleanor Coade, manufacturer of artificial stone, for six figures of angels [to designs by Benjamin West] for the new chapel at the Royal Naval Hospital*. Greenwich, 4 May 1787. Part of William Newton Papers. From RIBA Library.

London.[89] In the 1792 Pantheon fire, Coade's artificial stone again capitalizes on the facade through an unintended material performance witnessed by the public, curious onlookers, and most importantly, for Phoenix Fire Office insurance agents. After the Pantheon's life, what remains is Coade's ornament. After fire, what remains is the inextricable intersection of artificial stone and the existence of life drawing on matters of material and insurance to alleviate risk and secure property. This material performance is present in the minds of the Phoenix and Pelican board of directors who gave a commission to Coade's Artificial Stone Manufactory to install a cornice of figures and minor renovations to the street facade at No. 70 Lombard Street {Figure 2.09}. Through Lady Diana Beauclerk, the fabrication of the cornice is completed by Royal Academy graduate John de Vaere. In a Pelican prospectus, the cornice is described as "a youth in the centre [who] holds up in the form of a banner, the symbol of the office, a Pelican sustaining its young ones from its vital springs. On the one side, he is approached by two Damsels who are rushing on with emulation to snatch the Garlands...The subject on the other side of the group is the graver cast, calculated to dispose the mind to the Contemplation of the brevity and uncertainty of Life...fleeting moments by which we are incessantly pressing forward to the end of our toils."[90] The allegories of genealogy adorning the Pelican Life Office are set beneath the maternal wings of self sacrifice bearing the inscription "children endowed and property secured" along with the manufacturer's trademark, "COADE, LAMBETH." The Pelican Life Office facade makes artificial stone's proof of utility tangible articulating her signature line, "where [artificial stone] has been applied in buildings which have been burnt down, or damaged by fire...memorable testimonies remain that it has not received the smallest injury, on the contrary, fire purifies it."[91] Described by John Nichols in 1786, due to "having a property,

[89] Gunnis, Rupert. "Eleanor Coade," *Dictionary of British Sculptors, 1660-1851.* London: Odhams Press, 1953.
[90] Pelican (Firm). 1801. *[A prospectus of the company, with a list of the trustees and directors, an engraved frontispiece depicting the group of statuary erected on the cornice of the basement story of the office of the Company and a description of the group.]*. 2 pt. John Bryan: [London].
[91] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson. 1799., p. iv

peculiar to itself," the use of artificial stone ornament is to alleviate risk to both the building and lives it contains.[92]

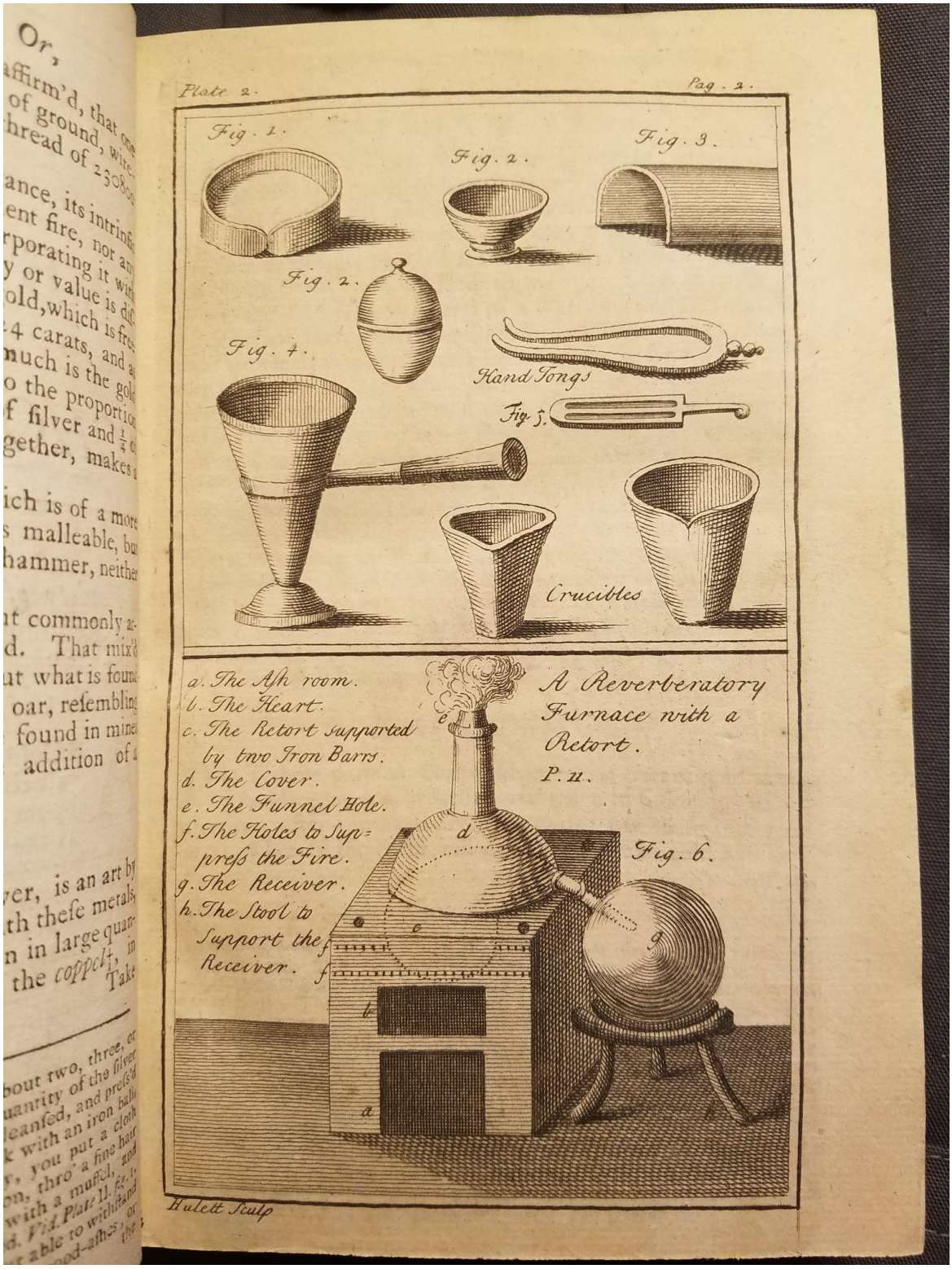
[92] Ducarel, Andrew Coltee. *The History and Antiquities of the Parish of Lambeth, in the County of Surrey: Compiled from Original Records*. London: printed by and for J. Nichols, 1786. P. 82 - 83

***3. Architecture, Experiment, Modern Capital***
Archival Material



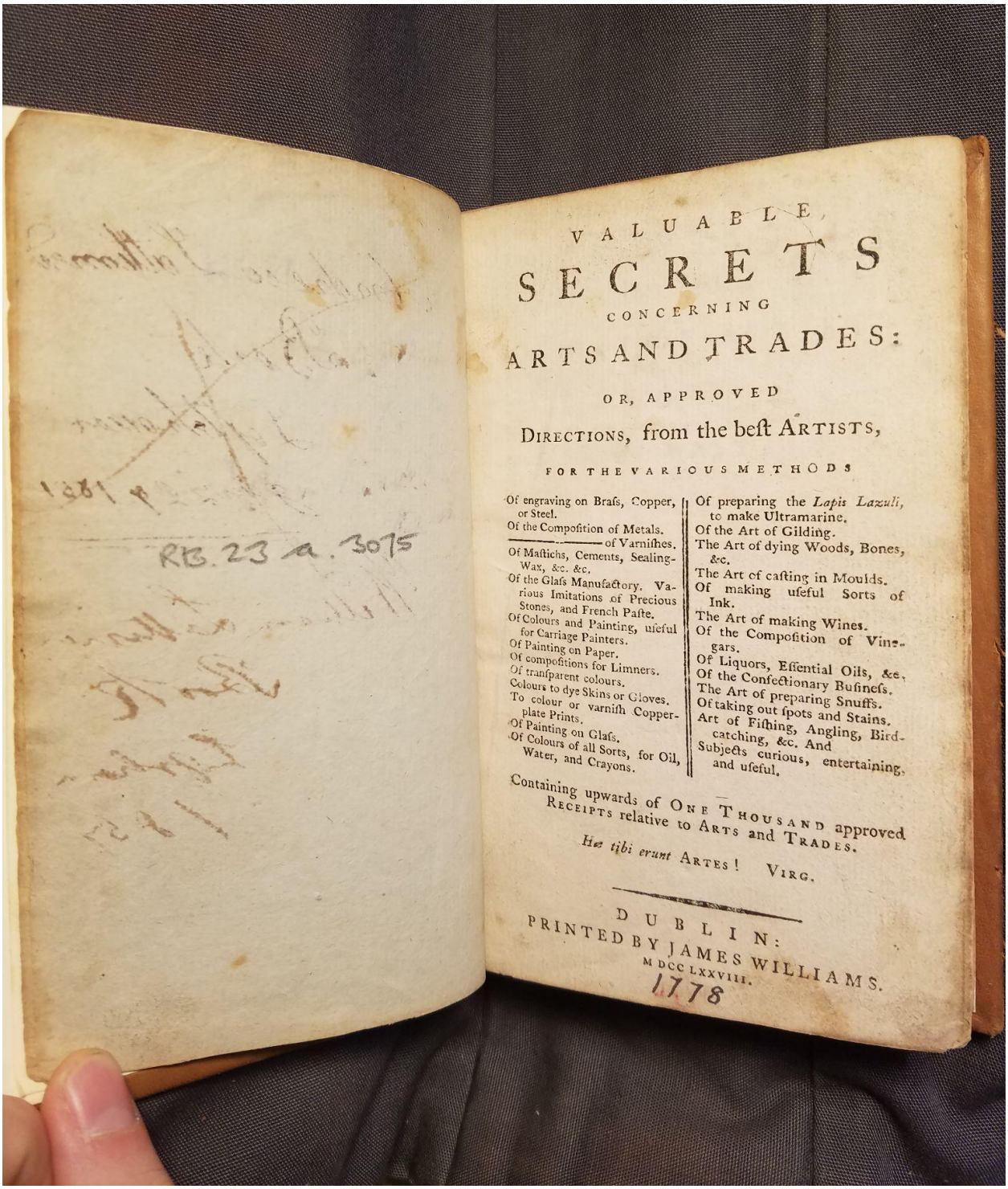

***3.01 - Elevation of a Building proposed to be erected by His Majesty at Richmond for a Register of the Weather, Section across the Building***
James Adam, Richard, 1770.

From the Sir John Soane Museum, London, UK




***3.02 - The Laboratory, or, school of arts***
Godfrey Smith, London, 1756.

From the British Library, London, UK.



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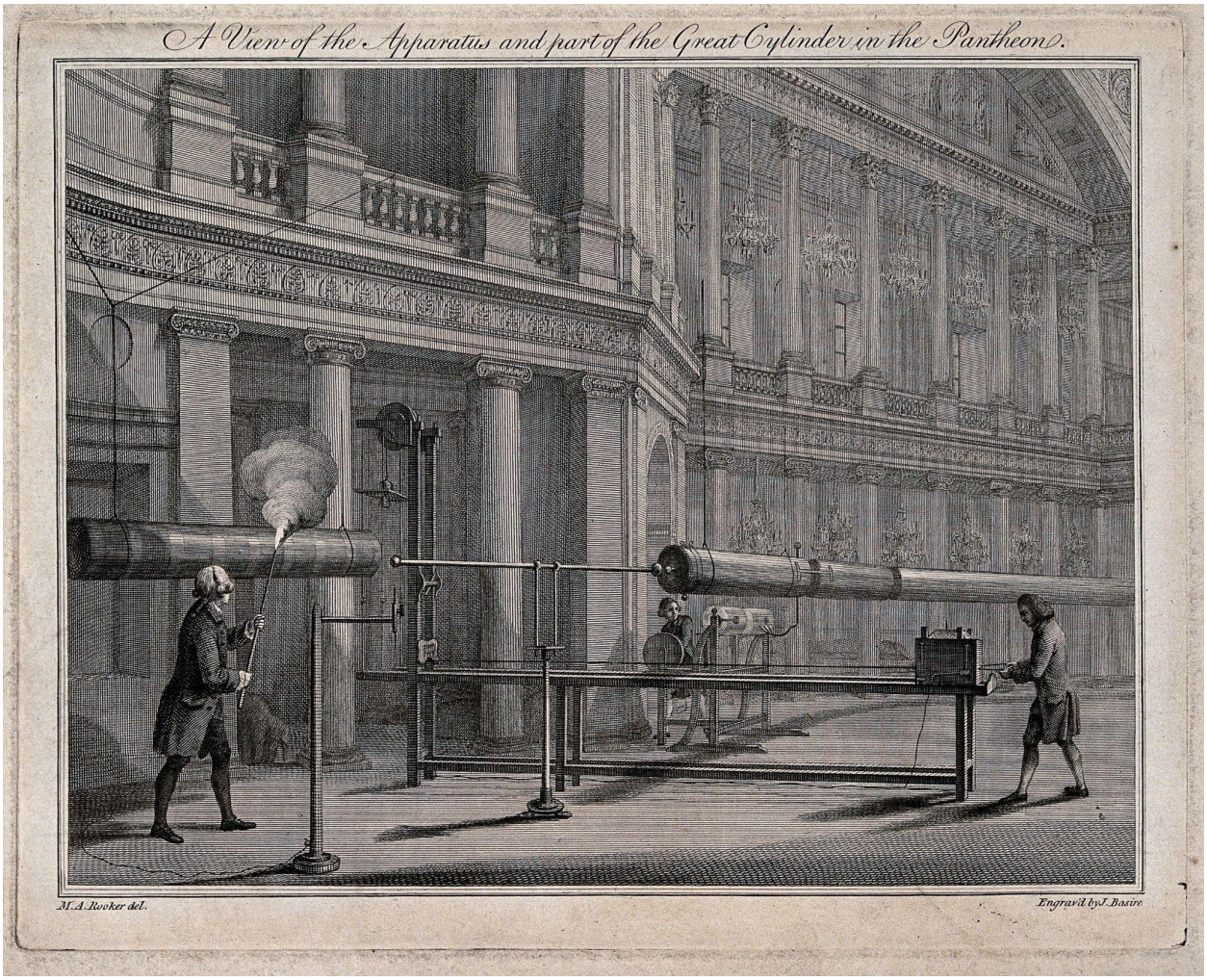
DUBLIN:
PRINTED BY JAMES WILLIAMS.
M DCC LXXVIII.

1778

RB.23.a.3075

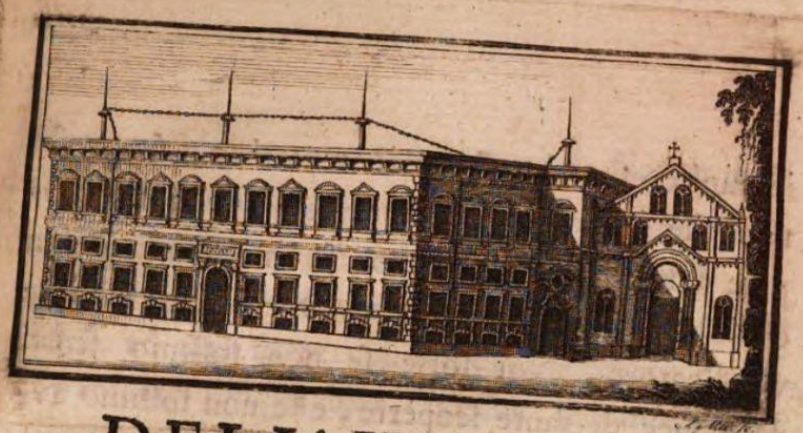
***3.03 - Valuable secrets concerning arts and trades***
James Williams, Dublin, 1778.

From the British Library, London, UK.




***3.04 - A view of the apparatus and part of the Great Cylinder in the Pantheon.***
Print Made by James Basire, after Michael Angelo Rooker, 1777.

From British Museum, London, UK.



# DELL' UTILITÀ
## DEI CONDUTTORI ELETTRICI.

*Quid magis his rebus poterat mirabile dici*
*Aut minus ante quod auderent fore credere gentes.*
Lucr. de Rer. Nat. L. 2. (*)

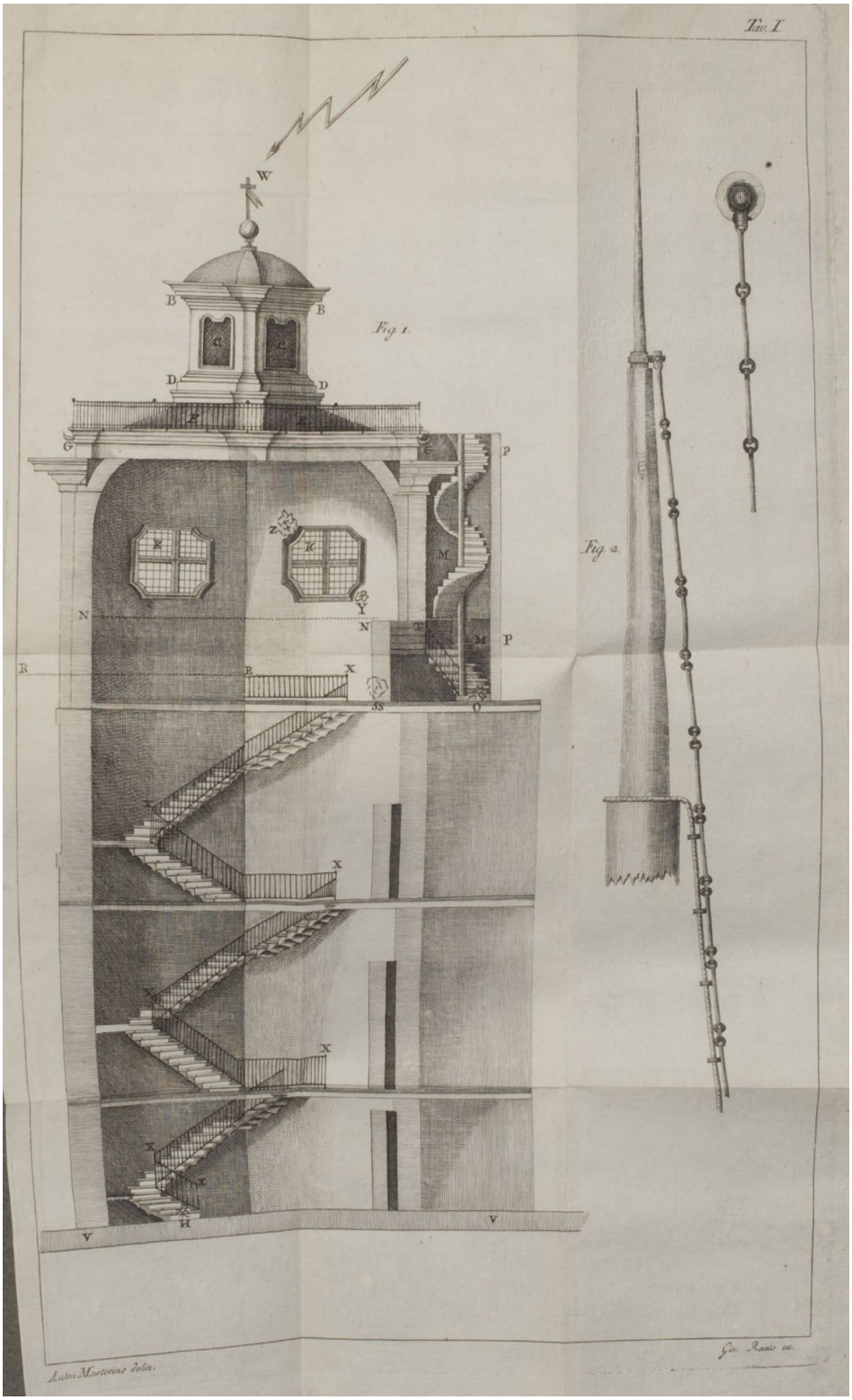
Sarebbe ſtato riputato più ridicolo che temerario progetto, ſe nei tempi tenebroſi de' noſtri Avi taluno aveſſe propoſto di realizzare i ſogni della favola, ed il preteſo furto di Prometeo. Forſe anche non

(*) . . . . . e qual potrebbe
Coſa omai più mirabile chiamarſi
Di queſta, o che mai la gente innanzi
Men di credere oſaſſe?
*Lucrez.* Traduz. del *Marchetti.*



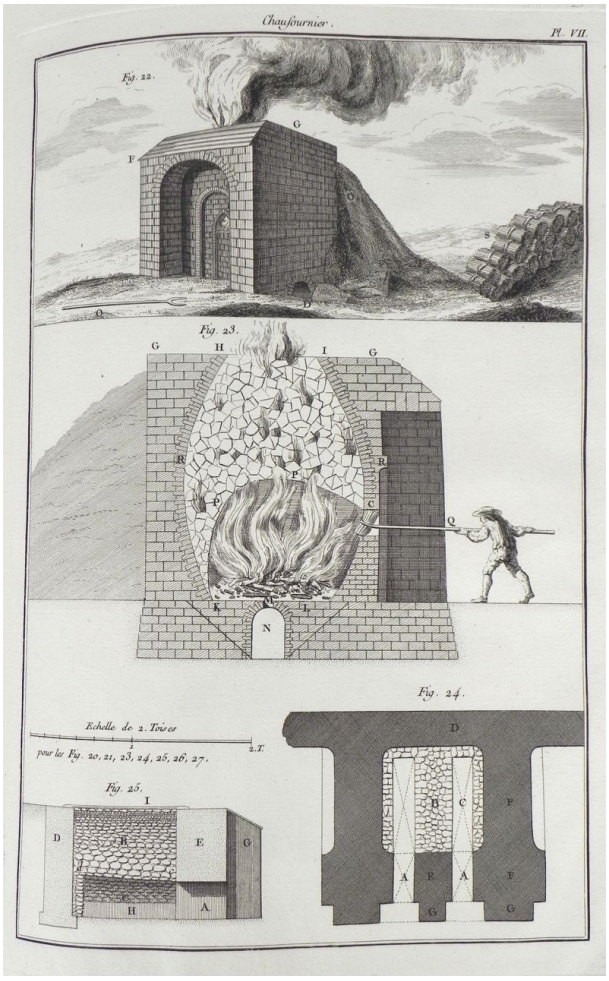
***3.05 - Dell'utilità dei conduttori elettrici***
Marsilio Landriani, Milano, 1784.

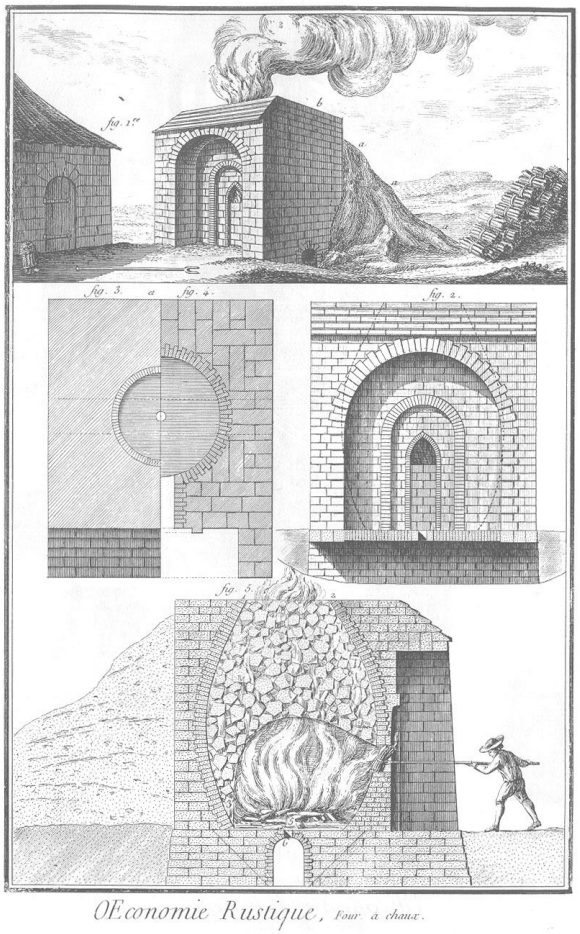
From MIT Libraries, Boston, USA.




***3.06 - Dell'utilità dei conduttori elettrici***
Marsilio Landriani, Milano, 1784.

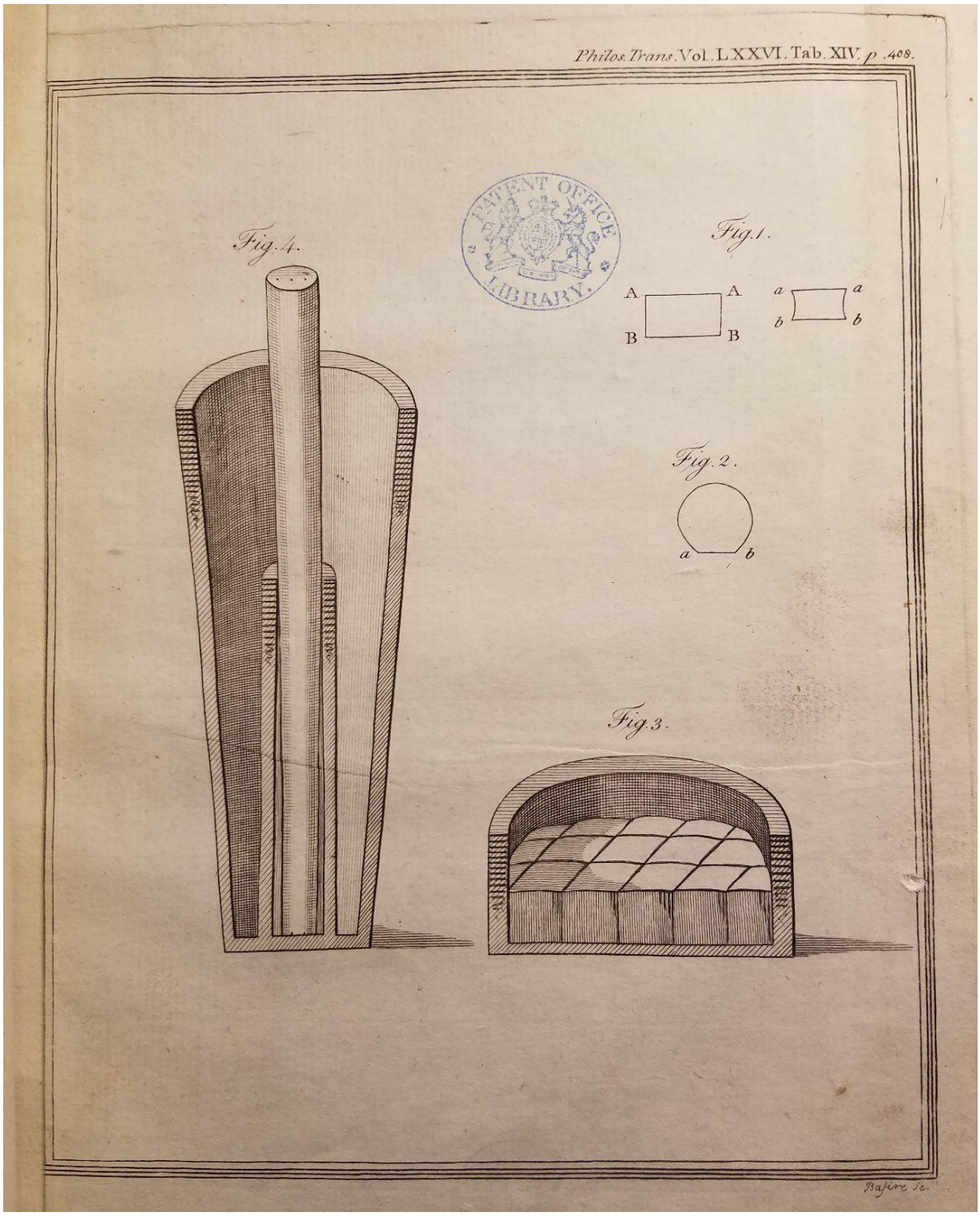
From MIT Libraries, Boston, USA.



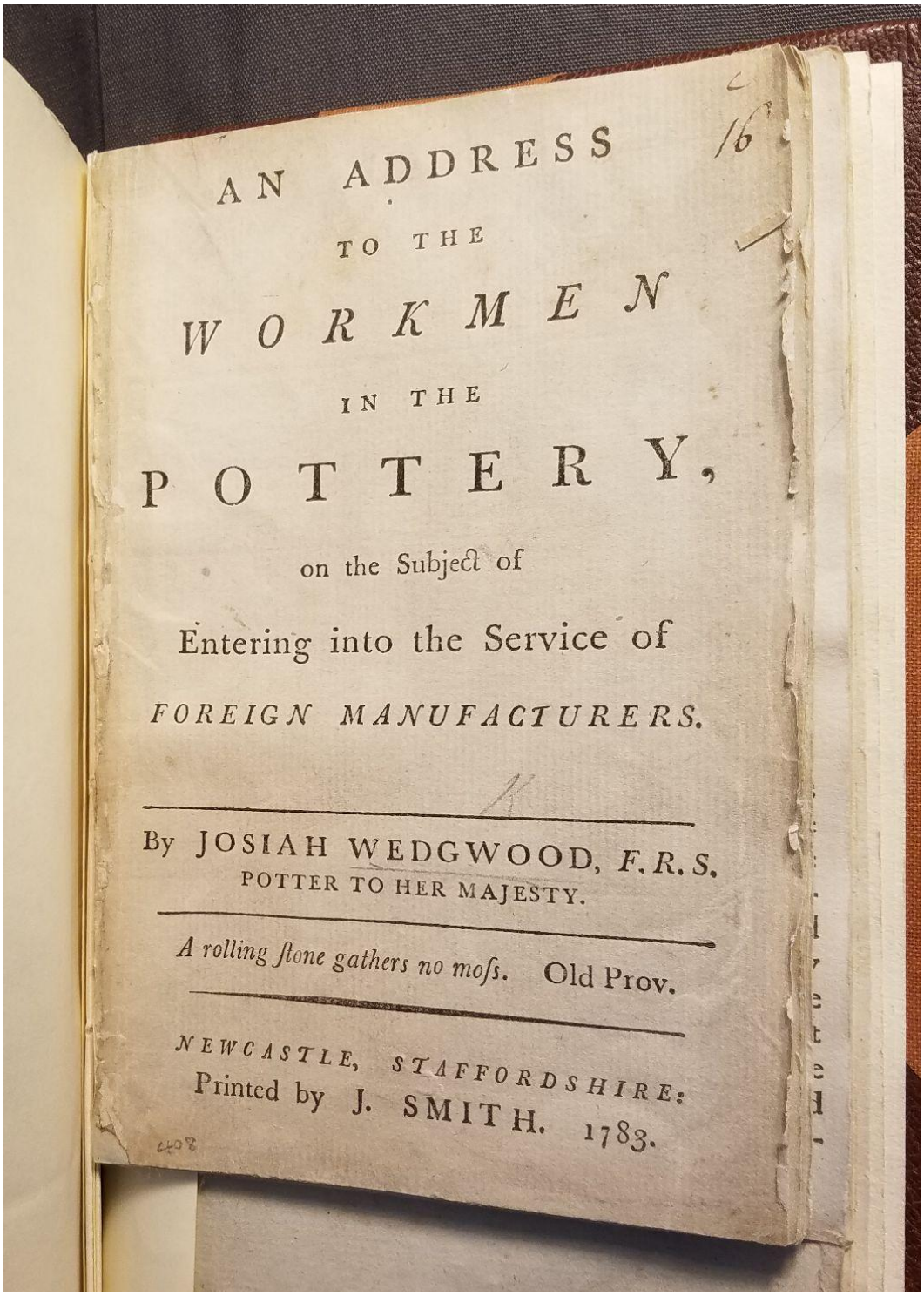

***3.07 - Managing the Kiln***
Left: Plate from L'Art Du Chaufournier, Fourcroy de Ramecourt, 1766
Right: Plate from L'Encyclopedia, Jean le Rond d'Alembert, 1772

From The Getty Research Institute, Los Angeles, USA




***3.08 - Additional observations on making a thermometer for measuring the higher degrees of heat. By Mr. Josiah Wedgwood, F.R.S. and A.S. and potter to Her Majesty.***
Josiah Wedgwood, Information, 1786.

From British Library, London, UK.



AN ADDRESS

TO THE

WORKMEN

IN THE

POTTERY,

on the Subject of

Entering into the Service of

FOREIGN MANUFACTURERS.

By JOSIAH WEDGWOOD, F.R.S.
POTTER TO HER MAJESTY.

*A rolling ſtone gathers no moſs.* Old Prov.

NEWCASTLE, STAFFORDSHIRE:
Printed by J. SMITH. 1783.

***3.09 - An Address to the Workman in the Pottery, on the subject of entering into the service of foreign manufacturers***
Josiah Wedgwood, Newcastle, Staffordshire, 1783.

From the British Library, London, UK.

Geo. Maliphant. 1821. Feb 7.

# EXPERIMENTS

AND

# OBSERVATIONS

MADE

With the VIEW of IMPROVING the ART of COMPOSING and APPLYING

## CALCAREOUS CEMENTS

AND

Of preparing Quick-lime:

## THEORY of theſe ARTS:

AND

Specification of the AUTHOR's cheap and durable CEMENT, for Building, Incruſtation or Stuccoing, and artificial Stone.

By *BRYAN HIGGINS*, M. D.

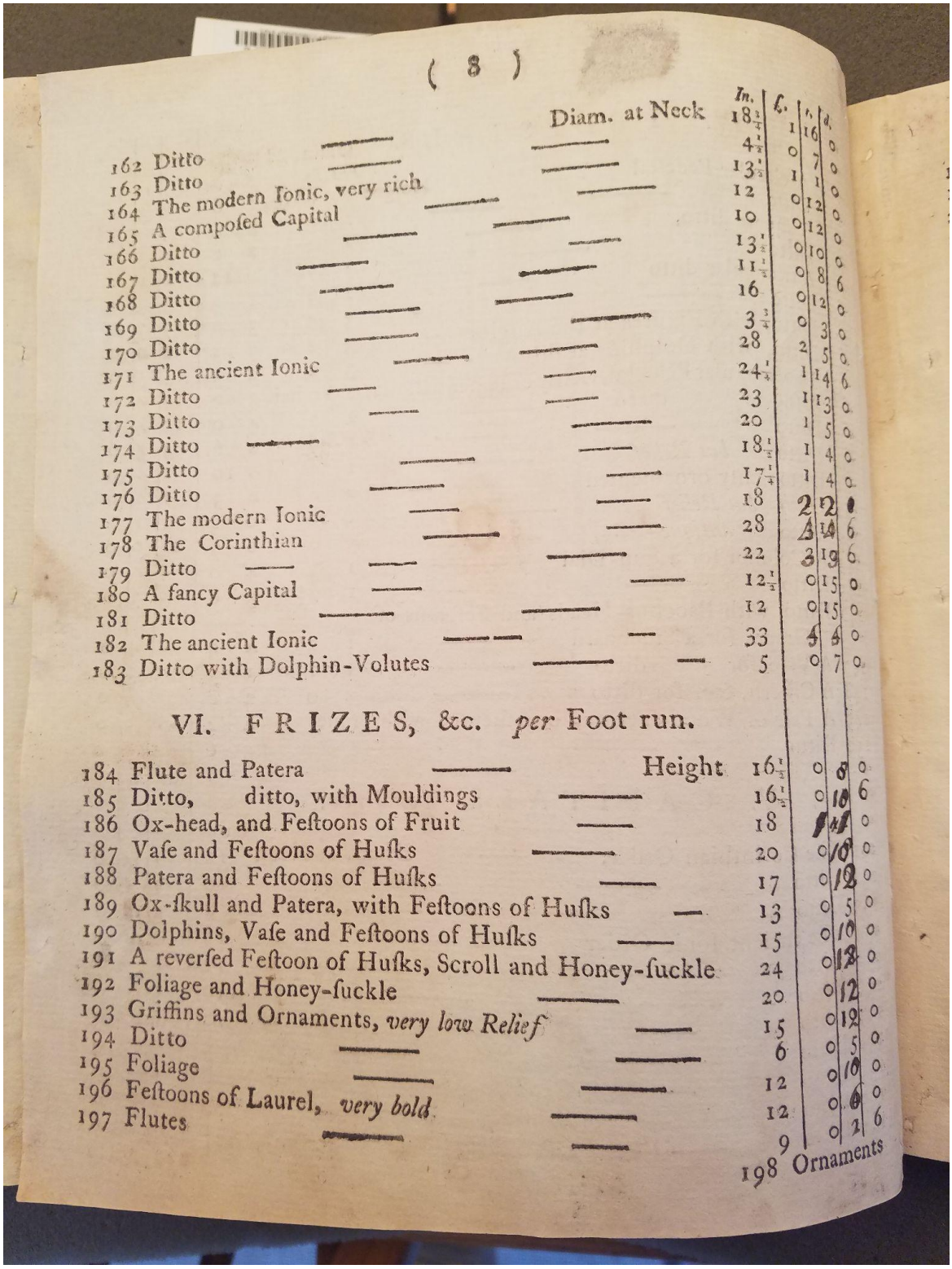
*LONDON:*

Printed for T. CADELL, oppoſite *Catherine-Street*, in the *Strand*.

M, DCC, LXXX.

***3.10 - Experiments and Observations Made with the View of Improving the Art of Composing and Applying Calcareous Cements and of Preparing Quick-Lime.***
Bryan Higgins, London, 1780.

From archive.org



( 8 )

| | | Diam. at Neck | In. | £. | s. | d. |
|---|---|---|---|---|---|---|
| 162 | Ditto | | 18¾ | 1 | 16 | 0 |
| 163 | Ditto | | 4½ | 0 | 7 | 0 |
| 164 | The modern Ionic, very rich | | 13⅓ | 1 | 1 | 0 |
| 165 | A compoſed Capital | | 12 | 0 | 12 | 0 |
| 166 | Ditto | | 10 | 0 | 12 | 0 |
| 167 | Ditto | | 13½ | 0 | 10 | 0 |
| 168 | Ditto | | 11⅓ | 0 | 8 | 6 |
| 169 | Ditto | | 16 | 0 | 12 | 0 |
| 170 | Ditto | | 3¾ | 0 | 3 | 0 |
| 171 | The ancient Ionic | | 28 | 2 | 5 | 0 |
| 172 | Ditto | | 24¼ | 1 | 14 | 6 |
| 173 | Ditto | | 23 | 1 | 13 | 0 |
| 174 | Ditto | | 20 | 1 | 5 | 0 |
| 175 | Ditto | | 18½ | 1 | 4 | 0 |
| 176 | Ditto | | 17¼ | 1 | 4 | 0 |
| 177 | The modern Ionic | | 18 | 2 | 2 | 0 |
| 178 | The Corinthian | | 28 | 3 | 14 | 6 |
| 179 | Ditto | | 22 | 3 | 19 | 6 |
| 180 | A fancy Capital | | 12½ | 0 | 15 | 0 |
| 181 | Ditto | | 12 | 0 | 15 | 0 |
| 182 | The ancient Ionic | | 33 | 4 | 4 | 0 |
| 183 | Ditto with Dolphin-Volutes | | 5 | 0 | 7 | 0 |

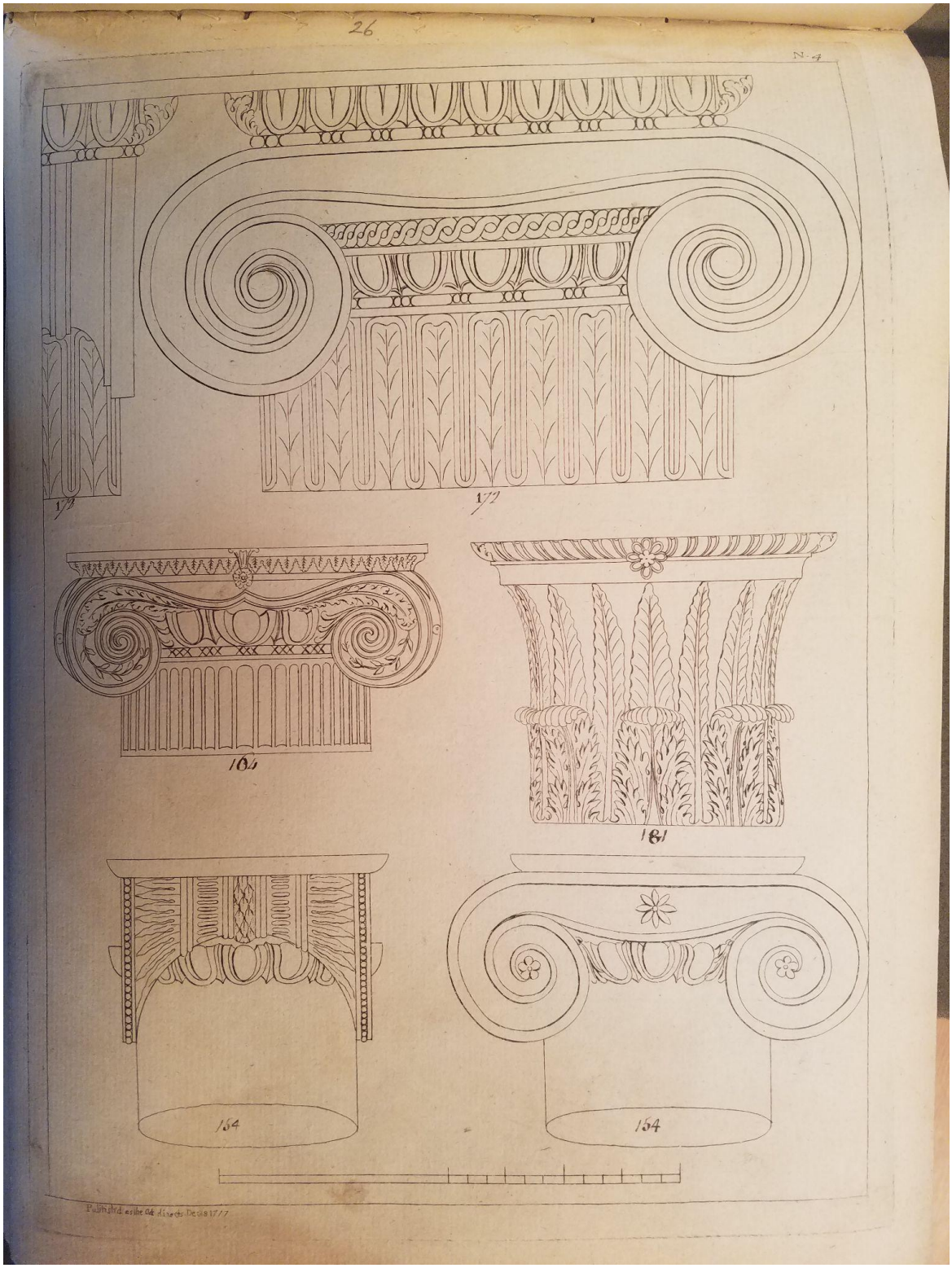
## VI. FRIZES, &c. *per* Foot run.

| | | Height | | | | |
|---|---|---|---|---|---|---|
| 184 | Flute and Patera | | 16½ | 0 | 8 | 0 |
| 185 | Ditto, ditto, with Mouldings | | 16½ | 0 | 10 | 6 |
| 186 | Ox-head, and Feſtoons of Fruit | | 18 | 0 | 12 | 0 |
| 187 | Vaſe and Feſtoons of Huſks | | 20 | 0 | 10 | 0 |
| 188 | Patera and Feſtoons of Huſks | | 17 | 0 | 12 | 0 |
| 189 | Ox-ſkull and Patera, with Feſtoons of Huſks | | 13 | 0 | 5 | 0 |
| 190 | Dolphins, Vaſe and Feſtoons of Huſks | | 15 | 0 | 10 | 0 |
| 191 | A reverſed Feſtoon of Huſks, Scroll and Honey-ſuckle | | 24 | 0 | 12 | 0 |
| 192 | Foliage and Honey-ſuckle | | 20 | 0 | 12 | 0 |
| 193 | Griffins and Ornaments, *very low Relief* | | 15 | 0 | 12 | 0 |
| 194 | Ditto | | 6 | 0 | 5 | 0 |
| 195 | Foliage | | 12 | 0 | 10 | 0 |
| 196 | Feſtoons of Laurel, *very bold* | | 12 | 0 | 0 | 0 |
| 197 | Flutes | | 9 | 0 | 2 | 6 |

198 Ornaments

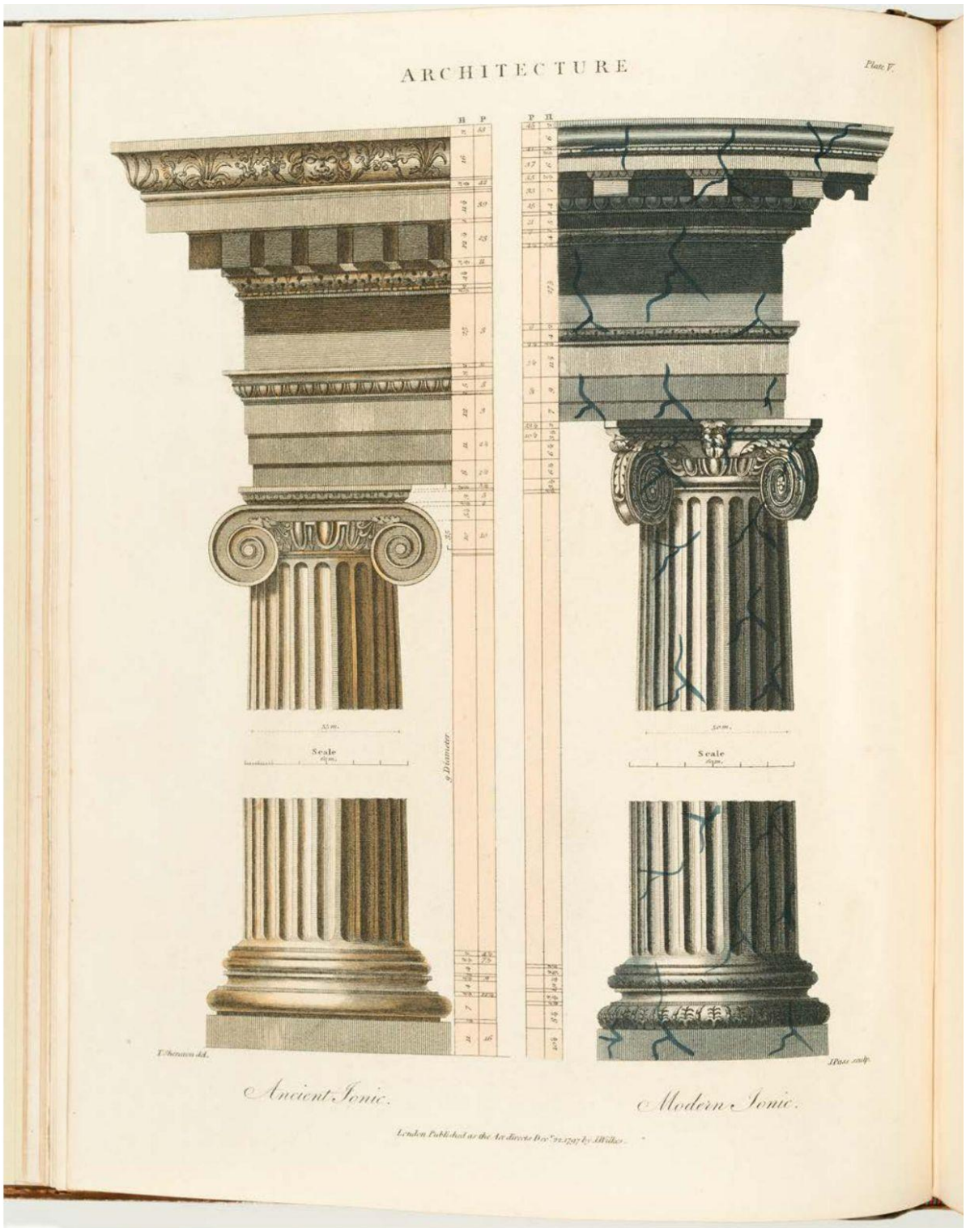
***3.11 - A descriptive catalog of Coade's artificial stone manufactory.***
Eleanor Coade, London, 1784.

From Yale Center for British Art, New Haven, USA



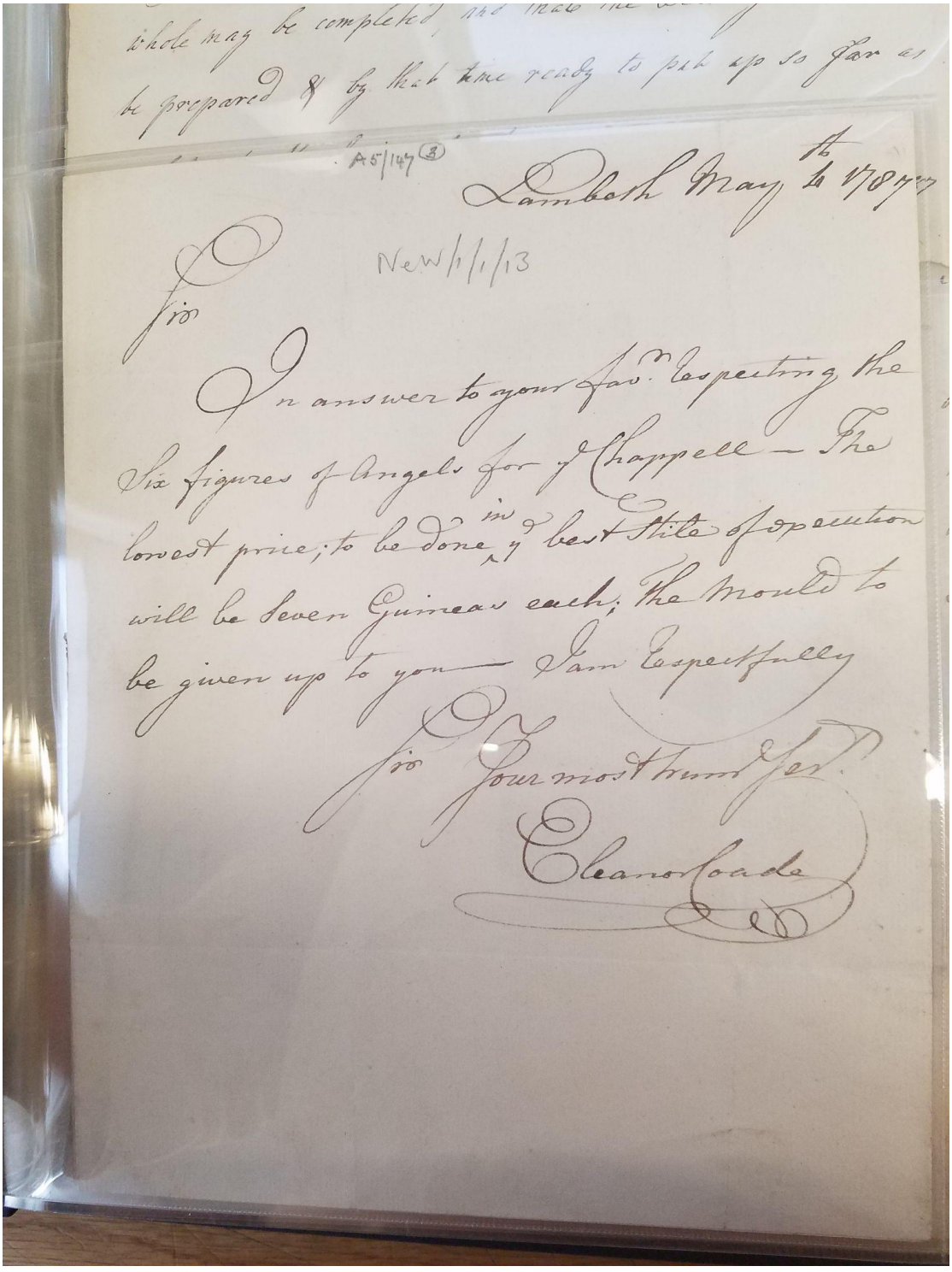

***3.12 - A descriptive catalog of Coade's artificial stone manufactory.***
Eleanor Coade, London, 1784.

From Yale Center for British Art, New Haven, USA




***3.13 - Encyclopaedia londinensis, or, Universal dictionary of arts, sciences, and literature...***
John Wilkes, London, 1810 - 1829

From Library of Virginia Special Collections Rare Books Collection




***3.14 - Estimate by Eleanor Coade, manufacturer of artificial stone, for six figures of angels [to designs by Benjamin West] for the new chapel at the Royal Naval Hospital, Greenwich, 4 May 1787***
Eleanor Coade, London, 1787.

From William Newton Papers, RIBA Archive, V&A, London, UK,

# Architecture, Experiment, Modern Capital

Chapter Three

"In common, with most original undertakings, the great expense incurred for experiments necessary to its perfection, leaves but an inadequate remuneration to the Proprietor."[1] Eleanor Coade, *Coade's Gallery*, 1799

Undertaking the manufacture of artificial stone locates the emergence of a modern architecture. Recent scholarship demonstrates the history of this modern architecture to remain under perennial construction, however, these recent scholarly efforts restrict the scope of their historiography to 'techno-social' post-war Bauhausian turns.[2] Or, in the interest of pluralism, they cast a stream of parallels attempting to deflate the popular narrative that New York City bought modern art from Europe.[3] Well before kinaesthetic experiments and vernacular traditions, this dissertation examines the use of artificial stone ornament to build a modern architecture from 1769 - 1821. There has always been a long view of modernism which takes shape through eighteenth century French science, politics, engineering, and a "code of points, lines, and planes..meeting the requirements of simplicity and economy."[4] Often invoked in this francophile discourse is radical Jesuit Marc-Antoine Laugier and his little rustic hut now serialized in textbook explanations of abstraction and platonic geometries including Barry Bergdoll's *European Architecture*, Harry Francis Mallgrave's *Modern Architectural Theory*, and Nikolaus Pevsner *A History of Building Types*, and Siegfried Giedion's "Our Architectural Inheritance" from *Space, Time, and Architecture*. This revisionist hindsight portrays a political economy of construction just beneath the surface of Neoclassical ornament which explicates

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[1] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson, 1799. p. v

[2] See Dutta, Arindam. A Second Modernism : MIT, Architecture, and the "Techno-Social" Moment / Arindam Dutta, Editor with Stephanie Marie Tuerk, Michael Kubo, Jennifer Yeesue Chuong, Irina Chernyakova. Cambridge, MA: SA+P Press, 2013.

[3] Guilbaut, Serge., and Arthur Goldhammer. *How New York Stole the Idea of Modern Art : Abstract Expressionism, Freedom, and the Cold War / Serge Guilbaut ; Translated by Arthur Goldhammer.* Chicago: University of Chicago Press, 1983.

[4] Vidler, Anthony. "Diagrams of Diagrams: Architectural Abstraction and Modern Representation." *Representations (Berkeley, Calif.)*, no. 72 (2000): 1–20. P. 9

novel techniques of structure, form, and space. The 'crutch' of this modernity can be couched in smooth metallurgic teleologies leading to steel skeleton structures, low skill low cost construction, environmental control for comfort, spectacular representational strategies, accounting utility as value and history to be valueless, and the practice of architecture as a client service profession.[5] Well before these crutches came to coalesce, Coade's Artificial Stone Manufactory reveals a minor history of modern architecture deriving in ornament, material science, and experiments in representation. More specifically, a high skill high cost mode of production which makes a substance to alleviate the risk to architecture came to be mass manufactured in molds and sold through the pioneering use of a catalogue and gallery. At stake in the history of artificial stone is the relative value of architecture derived through modern neoclassical ornament.

However defunct, we remain in debt to the disciplinary traditions of Siegfried Giedion whose interwar writings imagine modern architecture to be universal, plastic, and evolving as an organism. This universalist tradition relies upon the mythos of prehistoric origins inherited into the world from a series of space problems dividing time into three stages. Linguistic metaphors of humans developing in utero to adolescence to adulthood map onto asymmetric stages of world development characterizing the modernity of architecture according to standards established by a Euro-centric clique which thinks itself civil. Giedion's first stage encompasses Egypt, Mesopotamia, and the Aegean Greek as fertile crescent civilizations whose primary architectural development considers how "space was brought into being by the interplay between volumes."[6] The second stage arose from the Romans and the structural necessity to solve their vaulting problem. The source of identifying this problem is not historical Roman subjects but the late nineteenth century Austro-Hungarian art historian Alois Riegl whose

[5] Johnson, Philip. "The Seven Crutches of Modern Architecture." *Perspecta* 3 (1955): 40–45.
[6] Giedion, S. *Space, Time and Architecture : the Growth of a New Tradition / Sigfried Giedion.* 5th ed., rev. and enl. Cambridge, MA: Harvard University Press, 1982. p. lv

universal assumptions on the parallel development of being and architecture mirror Giedions. Lastly, the third stage readily aligns with the start of the twentieth century eerily prophetic of a self conscious periodization beginning and rapidly careening towards a spectacular end of the millenium. In the third stage of Giedion's tradition, "the optical revolution that abolished the single viewpoint of perspective" opens avenues of abstraction predicated upon the expectation of continuous advancement. The peculiarity of modern architecture historiography is exemplified by Giedion's cultural imagination projecting entire space problems such as volume, vault, and perspectival representation across the world as shared ideational objects by all architecture subjectivities. Giedion has been revisited by Spyros Papetros who considers the implications of his historiography as compared to other prehistoric narratives suggesting what sets Giedon's modern architecture apart is imagining the "beginnings of new, unimaginable possibilities that have yet to become present."[7]

Artificial stone anticipates possibilities becoming present. This novelty relies upon the technical work of artifice which explains and changes the natural world. On the one hand, cementitious substances such as Coade's *Lithodypria* and similar Roman cements on the market between 1769 - 1821 aggregate the requisite ingredients and technical knowledge to make concrete. These artificial stone's could just as easily have been made in Imperial Rome as in Georgian London. Accordingly, artificial stone could belong to an ontology of vaults and substances which structure space. However much moderns might covet stories that lead to literal structure, this Giedeonesque logic misses the politics of performance as artificial substances usurp their natural counterparts. Coade always faced space, structure, and representational problems such as in the complex packing of her three kilns with unfired clay works, the incorporation of ceramic broken work from the firing process pulverized as grog, and the necessity to translate

[7] Papapetros, Spyros. "Modern Architecture and Prehistory: Retracing 'The Eternal Present' (Sigfried Giedion and André Leroi-Gourhan)." *Res (Cambridge, Mass.)* 63-64, no. 63/64 (2013): 173–189. P. 189

three dimensional geometries into flat two dimensional catalogues. The structure of Coade's stone is not literal but instead floats between the value of its cheapness, utility, and durability which are not distinctly space problems. At first glance, artificial stone and its resistance to weather and fire do not directly align with issues of perspectival representation. To observe the durability of a substance across time requires comparative samples exemplified by the durational difference of Liardet's cement and Coade's artificial stone at Syon House in London. The long duration of observation until a construction material fails is a technique of observation more directly deriving in eighteenth century scientific methodologies. A daily chronicle of the climate, tides, and weather phenomena which is a procedural representation which disregards the primacy of perspectivalism. While a perspective is required to view the behavior of a material sample across time, this technique of observation aims towards isolation from the whole building. The work of Coade's Artificial Stone Manufactory presents the beginnings of new possibilities in construction deriving from experiments in material science, testing, and artisanal manufacturing.

Linguistic histories rely upon language, words, terms, and phraseologies to specify chronologies such as Georg Wilhelm Friedrich Hegel's *geist*, Alois Reigl's *stilfragen*, and more recently in use by Lorraine Daston asking if *things talk*.[8] Recently, Adrian Forty has described the relationship between language and architecture writing that, "considered as a system, the phenomenon withing language…is the constant flux between words and meanings, of meaning' pursuit of words, and words' escape from meanings."[9] Forty continues to describe the significance of language within his historiography not by what they mean, but rather what they do not mean.

[8] For *Geist*, see Hegel, Georg Wilhelm Friedrich, and Georg Lasson. *Vorlesungen über die Philosophie der Weltgeschichte / Georg Wilhelm Friedrich Hegel.* Vollständig neue Ausg. / von Georg Lasson. Leipzig: F. Meiner, 1917. For *Stilfragen*, see Riegl, Alois. *Stilfragen : Grundlegungen zu einer Geschichte der Ornamentik / von Alois Riegl.* Berlin: G. Siemens, 1893. For talking things, see Daston, Lorraine. *Things That Talk : Object Lessons from Art and Science*. New York: Zone Books, 2004.
[9] Forty, Adrian. *Words and Buildings : A Vocabulary of Modern Architecture*. New York: Thames & Hudson, 2000.

This exclusionary method parallels my own in Chapter One - *The Nature of Artificial Stone*, whereby I define artificial as being not-natural through the use of Samuel Johnson's *Dictionary of the English Language*. However, the limits of negative language predicated upon exclusion only often fail to account for the social life of words and the institutions which rely upon them. A patent 'cement' requires negation to differentiate a specific artificial substance from other varieties, but it also requires the specification of technical knowledge so that the economic monopoly of intellectual property can be secured by judicial power.

Introducing a system which enforces the meaning of language explicates the contingency of history. The emergence of contingency tracks an etymological history in religious discourses of free will, witchcraft, and uncertainty describing a sense of closeness, conditional occurrence, subject to change and accident, and the correlation of mutual relations to the causality of events.[10] Recent use of contingency in architecture historiography follows the reconsideration of modernism and its architecture by figures such as Anthony Vidler, Daniel M. Abramson, and Edward Eigen. In Vidler's *Histories of the Immediate Present: Inventing Architectural Modernism*, 1930 - 1975, Emil Kaufman's historical analysis of Neoclassism in the work of Claude Ledoux locates the 'non-accidental discovery' of architecture's disciplinary autonomy with the Saltworks of Chaux between 1771 - 1774. The modernity of this architecture parallels the work of Immanuel Kant who are both in debt to Jean Jacque Rousseu's *Declaration of the Rights of Man* announcing the arrival of modern individual consciousness.[11] In this way, the project of autonomy in modern architecture is contingent on the fountainhead cult of 'Enlightened' individuals using 'reason' to invent 'progress' through abstract 'form' and 'structure.' What is Enlightenment? For Immanual Kant, it was the courage of self

[10] "contingency, n.". OED Online. December 2021. Oxford University Press. https://www.oed.com/view/Entry/40247?redirectedFrom=contingency (accessed December 04, 2021).
[11] Vidler, Anthony. *Histories of the Immediate Present : Inventing Architectural Modernism*. Writing Architecture Series. Cambridge, MA: MIT Press, 2008. P. 28

understanding in civil society secured by the power of a well disciplined army.[12] Vidler embeds the autonomy project in the change from Neoclassical geometries into a glass box to master nature tracing a disciplinary history from Ledoux, to Schinkel, to Le Corbusier, to Mies Van Der Rohe, to Phillip Johnson. Vidler navigates between a more complicated narrative and the preconception of modern architecture predicated upon the rejection of history for abstraction while professing devotion to function, technology, and utopic progress that ultimately met critical postmodern resistance in the 1960's - 1970's. The messier, more complicated narrative revolves around the irresolvable multiple modernisms formed from the irresolvable study of an "architectural language in itself" that "understands 'modernity' itself as a closed and completed historical field."[13] Artificial Stone unsettles Vidler's history on 'disciplinary autonomy' through the non-accidental discovery of knowledge to master a defectual nature. Where nature is insufficient, individual ingenuity will overcome. Threads of improvement and progress coalesce in the figures at Coade's whose catalogue abstracts mental and manual labor in the mass mold manufacturing of parts to construct architecture at any destination that British merchants ships could travel. The catalogue mobilizes architecture and the architect into a clerical user who must navigate between paper representations bound to a relative graphic scale, double-entry bookkeeping which lists all commodities and their costs, and the in situ reality of building in an original place. The language of Enlightenment era ideologies permeates the literature of Coade celebrating the individual genius of the artisans she employs at the manufacture and her application of trial and error reasoning which yields *Lithodypria*. Coade's artificial stone shifts the Francophile formalist discourse of Vidler dislocating the autonomy of architecture into artisanal manufacturing which occurs away from the construction site and reveals the architect to operate administratively in the selection of catalogue ordered components from which they

[12] Schmidt, James. *What Is Enlightenment? : Eighteenth-Century Answers and Twentieth-Century Questions / James Schmidt.* Berkeley, CA: University of California Press, 1996.
[13] Vidler, Anthony. *Histories of the Immediate Present : Inventing Architectural Modernism*. Writing Architecture Series. Cambridge, MA: MIT Press, 2008. P. 197

build. Clearly Vidler likes shapes, however, the arrangement of platonic geometry at Ledoux's Saltworks in 1777 is only possible with a substance such as Coade's artificial stone which can resist the erosive actions of rivers, industry, and accident thereby mastering nature with a modern language of architecture. With earlier failed experiments in the 1720s by Richard Holt and Thomas Ripley, Coade's Artificial Stone Manufactory opening in 1769 suggests an earlier turn towards disciplinary autonomy than that presented in Vidler's historiographic reading of Emil Kaufman. Further unsettling this discursive trope is the legal change to the statutory limits of intellectual property in London resulting from *Millar v. Taylor (1769)* and the reversal of this precedent in Donaldson v. Becket (1774) thereby establishing a fourteen year duralimit limit on the individual ownership of creativity.[14] I argue that it is only after the legal codification of individuals and their ownership of intelligence could the flowering of disciplinary autonomy become possible.

In a specific sense, this change to disciplinary frameworks of autonomy results from considering the limitations, failures, and end points to the lives of objects. Useful to this historiographic shift is Daniel Abramson's *Obsolescence* who examines the contingency to change in modern architecture demonstrated by mid-century architects, planners, builders, and others planning for the lifecycle of commodities and space planning in the built environment.[15] This history of modern architecture parallels the history of capitalism being neither inevitable nor entirely intentional in its expectation of accidents, uncertainty, and the probability of events thereby shaping the many discourses of postmodernism to follow. The future expectation of urban blight in neighborhoods by city planners, architects accommodating shifting use and users in flexible space planning, and the planned obsolescence of the built environment with sustainable

[14] The context and implications of these intellectual property legal cases are considered in more detail in chapter four, *Paper and Property*.
[15] Abramson, Daniel M. *Obsolescence : an Architectural History / Daniel M. Abramson*. Chicago ;: The University of Chicago Press, 2016.

building reconsiders the flexibility of capitalism within broader historiographies. For Abramson, planning for the end of a building's life or the potential failure of a commodity demonstrates the capacity for architecture to lose value and utility. Modern architecture thus becomes less universal and omnipotent when it is bound to durational considerations of things. Underpinning this argument is a framework for managing the contradictions of capitalism which converts the substance of construction into a commodity to be exchanged for value. With an etymology extending to the middle of the eighteenth century in *obsolescent* to describe "that which is going out of date," Abramson's over reliance on twentieth century examples limits the analytical implications to his scholarship and exemplifies the obsolescent flexibility of historiography.[16] In many ways, Coade's Artificial Stone Manufactory succumbs to obsolescence as the market for Neoclassical ornament is increasingly rendered obsolete from 1810 - 1820. In William Croggon's words, the once desirable caryatids and naked venuses made by Coade's had become "the least saleable."[17] The Neoclassical decoration and ornamentation of brown brick buildings infilling the urban plots of London and other cities gave way to a demand for cheap plaster, patterns of terracotta tiles, and painted lime cement. After Coade, Croggon and his son Thomas liquidate the tangible property at the Lambeth manufactory in 1837 and consolidate as an industrial construction supply company, Croggon & Co, surviving well into the 1960's. While under the proprietorship of Eleanor Coade from 1769 - 1813, the manufacturing process to make artificial stone typifies the accommodation for obsolescence. Coade's kilns manage the contradictions of capitalism generating broken failures during the firing process which are ground into a powdered aggregate added back into the raw kaolin clay to increase material strength and reduce shrinkage. This twice fired ceramic 'grog' manages material loss and dimensional tolerance while simultaneously increasing company profits in the reuse of ceramic

[16] "obsolescent, adj. (and n.)". OED Online. December 2021. Oxford University Press. https://www.oed.com/view/Entry/129927 (accessed December 05, 2021).
[17] Ruch, John E. "Regency Coade : A Study of the Coade Record Books, 1813-21." *Architectural History / Produced at the School of Architecture, University of Newcastle Upon Tyne* 11.1968, 34-56 (1968). P. 37

waste. Reading obsolescence as a one dimensional decay into becoming dated fails to account for the sudden, spontaneous, and even accidental moments in the loss of value to architecture and the flexible consolidation of capital fusing into modernity writ large.

Architecture historians currently engaging in contingency and the accident such as Edward Eigen presents a perspective which helps resist the tendency towards generalizations so typical in the scholarship on modern architecture. Eigen's wondering narratives by speculative travellers seek out "the particular, the contingent, the incidental, and the seemingly singular" to locate phenomena suspended between ontological classification.[18] Examining such examples as *The Floating Island in Derwentwater* reveals the contested territory between categorization and the singularity resisting order. In Eigen's *On Accident*, his chapter on "J.M.W. Turner's Studies for *The Burning of the Houses of Parliament*" brings a consideration of contingency to the matters of record in archival material. Summarily extending from a question that asks what history is on record in the archive, Eigen examines the circumstances of immediacy in Turner's 1834 sketches of the fire as compared to the trace of water blots left after the 1928 flooding of the River Thames. Concluding the intentions and purposes of those who made the archive do not align with future users, Eigen's historiography further unseats modern architecture as a "closed and completed historical field."[19] The only constant in the archive of modernity is the inevitability of change from its users. There are many copies of the 1784 *Descriptive Catalog of Coade's Artificial Stone Manufactory*, and each narrates a history of use and users. An incomplete digital copy freely available online comes with a list of the 778 commodities and their cost, but does not include the graphic representations found in physical copies at The Royal Academy, Yale Center for British Art (YCBA), Metropolitan Museum, or the Sir John Soane

[18] Eigen, Edward. *On Accident: Episodes in Architecture and Landscape*. Cambridge: The MIT Press, 2018. P. xxxi
[19] Vidler, Anthony. *Histories of the Immediate Present : Inventing Architectural Modernism*. Writing Architecture Series. Cambridge, MA: MIT Press, 2008. P. 197

Museum. In each physical copy, differing marginalia and edits to the content reveal each copy of a standard to be unique. The copy in Connecticut bears marks scratching out commodities no longer available and changes to cost which suggest a continuous engagement by the user. Alternatively, the pristine appearance of Sir John Soane's personal copy of the catalogue belies his affinity for artificial stone he came to annotate as "Coade's Marvel" in 1804 drawings to renovate Cedar Court in Roehampton.[20] This affinity and prolific use would live with the British architect long after death in the *The Soane Tomb* built with thirty four artificial stone balusters for a cost of £11.9.0 including cartage.[21] History is not an accident and each catalogue unearths the idiosyncrasies of modern life and its contingency to local circumstance, conditionality, accident, and fortuitous happenstance.

The historiography of modern architecture raises the formalist spectre of style, periodization, and oeuvre. Although reductionist binaries do not always produce fruitful avenues of inquiry, there is reason to revisit these methodologies following the so-called 'global turn.' As Post-war academics began to entertain notions of planetary expertise and histories of globalism, they inadvertently gave license to the spectacular rise of generalization and scholarship best viewed from afar. Attempts to survey everything subsequently makes scholars who lack expertise in anything. Writing in 1860, Gottfried Semper's *Der Stil* presents a methodology on practical aesthetics using empiricist observations to describe how form comes into being.[22] Attempting to classify the technical arts through categories of raw material and their means of production, Semper arrives at the well known division of four classes including textiles, ceramics, tectonics, and stereotomy. Each class contains performative descriptions with textiles being pliable and tough while containing absolute strength, ceramics being plastic and easily shaped into form,

[20] SM 91/1/3 verso, *[17] Design for wings to house (as 16) and balustrade* at the Sir John Soane Museum.
[21] SM (25) 63/7/30 (26) 63/7/29, *"The Soane Tomb,"* at the Sir John Soane Museum.
[22] Semper, Gottfried, Harry Francis Mallgrave, and Michael Robinson. *Style in the Technical and Tectonic Arts, or, Practical Aesthetics / Gottfried Semper ; Introduction by Harry Francis Mallgrave ; Translation by Harry Francis Mallgrave and Michael Robinson*. Los Angeles: Getty Research Institute, 2004. P. 72

tectonics being stick-shaped with relative strength working along the vertical direction, and the masonry of stereotomy being densely aggregated and resistant to compression. These four ontologies combine into the archetypal 'primitive hut' codifying Semper's historiographic project in late nineteenth century European cultural hegemony, colonial anthropologies, and imperialist politics intent at global domination. The bias of inequalities in Semper's world image always remains present in terms of his critique, however, there is value in understanding his efforts to ontologically differentiate by the means and matters of production. However faulty, histories of style attempt at internal categorization predicated upon self-referentiality which are indifferent to the external world they inhabit. Extending from Semper, a historian of artificial stone can put *opus caementicium* of Roman architecture into dialogue with the use of *sascab* in Mayan architecture of the Yucatan.[23] When the global turn sought to flatten architecture into historical surveys separated by infantile organizations such as geography or chronology, the radical complexity of human intelligence was erased in favor of logics which are easily organized into academic textbooks.[24] The laudable efforts of the global turn fail in describing a world image which resists being flat.

The art historical study of formal style at the end of the nineteenth century continues to cast a shadow over architecture nearly a century later. The work of Heinrich Wölfflin presents a humanities model of scholarship predicated upon rigorous applications of disjunctive syllogism. Spheric dyads construct principles polarizing a universal study of form and style that applies linguistics to separating linear from painterly design techniques, dividing emphasis on the picture plane as compared to spatial recession, the self referentiality of closed tectonics in

[23] Both *opus caementicium* and *sascab* describe lime cements, although Roman mixtures frequently make use of *pulvis puteolanus*, or Volcanic *pozzolana*, as described by Vitruvius in his treatise *De architectura*.

[24] For Chronology: Ching, Francis D. K., Mark Jarzombek, and Vikramaditya Prakash. *A Global History of Architecture / Francis D.K. Ching, Mark Jarzombek, Vikramaditya Prakash.* Third edition. Hoboken, New Jersey: Wiley, 2017. For Geography, Fazio, Michael W., Marian Moffett, and Lawrence Wodehouse. *Buildings Across Time : an Introduction to World Architecture / Michael Fazio, Marian Moffett, Lawrence Wodehouse.* Fifth edition, International student edition. New York: McGraw-Hill Education, 2019.

contradistinction to open tectonics which compositionally align with elements outside the form in question, binaries of multiplicity and unity, and the division of clarity into absolute and relative categories seeks to separate style as it changes across time.[25] Although Wölfflin's specific formal categories have fallen to the wayside, the reliance upon disjunctive logic in the historiography of modern form and style continues. Prophetically uttered by Claude Frollow in Victor Hugo's *The Hunchback of Notre Dame de Paris*, Frollow constructs a binary between book and building pointing to the iconic Gothic Cathedral on the Île de la Cité saying "This will kill that."[26] This disjunction is a division in aesthetics and the authority of knowledge as it pertains to feudal stained glass windows compared modern bookish literacy, or put another way, it is reading which kills the Gothic Cathedral. Although scholars have attempted to bridge the artifice of this division through studies of 'kinaesthetic knowing,' which reveal embodied experiments in making aesthetic knowledge that fall outside the cultic primacy of intellection; it would be remiss to ignore the lingering effects of this binary logic and the continuing trope of mental versus manual.[27] Modern historiography of style, periodization, territory, and oeuvre derive their authority from binaries regardless how specious. As Heidi Klum might say, "one day you're in and the next you're out."[28] The 1784 *Descriptive Catalog of Coade's Artificial Stone Manufactory* offers consumers ornament for architecture under normative terminology that aligns with the descriptions of style. Classical finials, Gothic tracery, ancient column capitals, modern column capitals, style rocaille Guilloché, Egyptian sphynxes, and rustic piers classify the form and style of objects with the language of late eighteenth century commerce. When considering the role of craftsperson, hired labour, and manufactures such as Coade's in terms of

[25] Wölfflin, Heinrich, Jonathan Blower, Evonne Anita Levy, and Tristan Weddigen. *Principles of Art History : the Problem of the Development of Style in Early Modern Art / Heinrich Wölfflin ; a New Translation by Jonathan Blower ; Edited and with Essays by Evonne Levy and Tristan Weddigen*. Los Angeles, California: Getty Research Institute, 2015.
[26] Alexander, Zeynep Çelik. *Kinaesthetic Knowing : Aesthetics, Epistemology, Modern Design / Zeynep Çelik Alexander.* Chicago: The University of Chicago Press, 2017.
[27] ibid.
[28] See Project Runway, Created by Eli Holzman, featuring Heidi Klum, Tim Gunn, et. all, Airing 2004 - Present, in broadcast syndication, Bravo Network.

form and style, their catalogue and bespoke offerings demonstrate a flexibility to offer any object under any terms provided the cost could be covered by the customer. On the one hand, the substance of artificial stone could be made into an infinite variety of things, and on the other, those things require a name for the purposes of commercial exchange. Today, we are better served by revisiting the manufacturing process and not the products being offered as a historical method to revive the discourse on form. Or, with Coade's Catalogue, we might rewrite Hugo's epitaph to read, "This will build that."

If histories of form rely upon disjunctive syllogism, then social history provides the framework for conjunction. This social study is hardly a background or a context by which to frame the material object at hand, rather, these historiographic methods explicated the agency of social, political, and cultural factors in constructing the built environment. Drawing from the social sciences, anthropologists, archeology, geography, political science, law, economics, psychology, and cultural studies, these historiographic methods found increasing use in the second half of the twentieth century as modern architecture began to engage history. Bernard Rudofsky's *Architecture Without Architects*, the rituals and settings of Spiro Kostof, T.J. Clark's social politics of art, and Siegfried Kracauer's consideration of *Mass Ornament* typify the increasing necessity to consider social histories in the built objects of modern art and architecture.[29] In many ways, the formation of social architecture histories sought to rectify the white male orthodoxy of modern architecture giving a space for the 'subaltern' to speak as postcolonial paradigms began to confront the violence, racism, sexism, and inequalities of capitalism.[30] The power of these methodologies exists in the narrative which breathes lives into existence and not

[29] See Rudofsky, Bernard. *Architecture Without Architects : an Introduction to Non-Pedigreed Architecture.* New York: Museum of Modern Art, 1964., Kostof, Spiro, and Richard Tobias. *A History of Architecture : Settings and Rituals / Spiro Kostof ; Original Drawings by Richard Tobias*. New York: Oxford University Press, 1985.,Clark, C. J. "Clement Greenberg's Theory of Art." *Critical inquiry* 9, no. 1 (1982): 139–156., Kracauer, Siegfried. *The Mass Ornament : Weimar Essays.* Translated by Thomas Y Levin. Cambridge, Mass.: Harvard University Press, 1995.

[30] Morris, Rosalind C., and Gayatri Chakravorty. Spivak. *Can the Subaltern Speak? : Reflections on the History of an Idea / Edited by Rosalind C. Morris*. New York: Columbia University Press, 2010.

in the trope of data driven statistics portraying a story we already know. This dissertation draws on social history to build an archive of minor literature in the manufacture of architecture from 1769 - 1821. The use of social here extends across a plurality of intentions. First, the social context of General Baptist Nonconformists in British polite society. The Coade's and Daniel Pincot did not belong to the Church of England whose membership did decline during the years of managing the manufacture from approximately 93.6% to 76.9%, however, the Anglican church continued to retain positions of power and authority as the established church of England.[31] As a sect of Nonconformists alongside Presbyterians, Congregationalists, Calvinists, Methodists, Unitarians, Quakers, Assemblies of Brethren, and the Moravian Church, these religious minorities fractionally expanded in membership from 1.3% to 1.5%.[32] Composing only a small percentage of the overall population, Religious Nonconformists held significant capital resulting from trade as merchants, manufactures, and skilled craftspersons which they frequently held within their individual families and specific religious denominations. For Eleanor Coade, these religious social structures combined with matriarchal textile guild affiliation inherited from her mother, a third generation Enchmarch, gave stable lines of credit and opportunity she otherwise could not acquire from the English state. Second, a social history of manufacturing artificial stone in London is a history of labor. This labor contains forms of specialization in the managerial expertise of Coade, Sealy, and Croggon, the technical expertise in managing the kilns by fire-man W.J. Coffee, and the celebrity artists and architects operating as superintendent and suppliers of design including figures such as John Bacon, John Flaxman, Benjamin West, John Charles, John Rossi, Josepha Panzetta, Thomas Dubbin, John de Vaere, Joshua Reynolds, and James Wyatt. Alongside these persons whose history has a record of employment, unskilled group laborers working at Coade's include a group of men approximately

[31] Field, Clive D. "Counting Religion in England and Wales: The Long Eighteenth Century, c. 1680–c. 1840." *The Journal of ecclesiastical history* 63, no. 4 (2012): 693–720.
[32] ibid.

10 - 25 in size.[33] In a broad sense, this labor parallels the rise of a self-conscious working class united by shared interests as articulated by E.P. Thompson.[34] Lastly, the history of Coade's Artificial Stone is useful in considering the construction of an English National Identity. The construction of this social identity includes both the persons at work in manufacture and the users of artificial stone who bought and built with the commodities they sold.

Modernism and the technical articulation of that modernity frequently go hand in hand. When Claude and Charles Perrault led the quarrel of the Moderns against the Ancients of Nicolas Boileau-Despréaux in the seventeenth century Académie française, this debate configures an epistemology predicated upon a faith in progress and technical achievements. The etymology of 'technical' traces this faith with increasing usage in the 1600s. Anglo-Irish natural philosopher and chemist Robert Boyle writing from 'The Author to the Reader' in his 1666 *The origine of formes and qualities* describes "technical terms or forms of speaking, that suppose the truth of such opinions."[35] Swiss engineer writing *A Short Account of the Methods Made Use of in Laying the Foundation of the Piers of Westminster-Bridge* writes that he is "avoiding as much as possible all technical terms" as "this account being drawn up for the perusal of other persons, besides Engineers, Builders, and Mechanicks."[36] Technical describes specific knowledge, expertise, and the language of fact while also indicating specialization in epistemic application.

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[33] Ruch, John E. "Regency Coade : A Study of the Coade Record Books, 1813-21." *Architectural History / Produced at the School of Architecture, University of Newcastle Upon Tyne* 11.1968, 34-56 (1968). P. 36

[34] Thompson, E. P. *The Making of the English Working Class.* London: V. Gollancz, 1963.

[35] Boyle, Robert. *The Origine of Formes and Qualities : (according to the Corpuscular Philosophy) Illustrated by Considerations and Experiments (written Formerly by Way of Notes Upon an Essay About Nitre.) / by the Honourable Robert Boyle ...* The second edition, augmented by a discourse of subordinate formes. Oxford: Printed by H. Hall ... for Ric. Davis, 1667. B. 3

[36] Labelye, Charles. *A short account of the methods made use of in laying the foundation of the piers of Westminster-bridge. With an answer to the chief objections that have been made thereto. Drawn up by order of the right hon. &c. the commissioners appointed by act of Parliament for building a bridge at Westminster. To which are annex'd. The plans, elevations and sections belonging to a design of a stone-bridge, adapted to the stone piers which are to support Westminster Bridge, with an explanation of that design*. London: Printed by A. Parker, for the author, 1739. *The Making of the Modern World* (accessed December 8, 2021). https://link.gale.com/apps/doc/U0103622611/MOME?u=ucop&sid=bookmark-MOME&xid=371fdec8&pg=7. P. iv

Of the plurality of discursive threads which constitute a technical history of modern architecture, many of these rely upon the role of craftspersons, draftspersons, and the applied arts. Seminal works by Geoffrey Beard which use recipes, ornament, decoration, and the utensils of craft to construct a history of architecture from the trades of artisans.[37] Beard's *Decorative Plasterwork in Great Britain* fills a gap in the historiography of English ornament following Margaret Jourdain's *English decorative plasterwork of the Renaissance*. More importantly, Beard's chapter on "Materials and Methods" sets out a field of critical inquiry that has perennially been ignored by contemporary architecture historians due to the subject matter in discussion. Continuing with *Craftsmen and Interior Decoration in England, 1660 - 1820*, Beard's historiography maps a long eighteenth century of England from the restoration of the Stuart monarchy until the end of the British regency with George IV's ascension. These years so well defined by political tension between the monarchy, parliament, and the people lead Beard to consider the role of contracts and negotiations in decorating architecture by carpenters, joiners, corvers, gliders, painters, plasters, founders, and ironmongers. This technical history extends into techniques of craft in Beard's *Stucco and Decorative Plasterwork in Europe* broadly surveying Great Britain from 1500 - 1900. The legacy of Beard continues with the exemplary scholarship of Christine Casey whose recent *Making Magnificence: Architects, Stuccatori and the Eighteenth-Century Interior* examines the mobility of Swiss-Italian Ticino craftsperson who carry a technical knowledge in their notebooks as they travel throughout Europe.[38] Giuseppi Artari, Giovanni Battista Bagutti, and Francesco Vassalli bring and build a "Stucco Industry" on site in England and in the estates of other aristocratic patrons.

[37] Beard, Geoffrey. *Decorative Plasterwork in Great Britain*. London: Phaidon, 1975., Beard, Geoffrey. *Craftsmen and interior decoration in England, 1660-1820*. Edinburgh: J. Bartholomew, 1981, Beard, Geoffrey W. *Stucco and decorative plasterwork in Europe*. London: Thames and Hudson, 1983
[38] Casey, Christine. *Making Magnificence : Architects, Stuccatori and the Eighteenth-Century Interior*. New Haven: Yale University Press, 2017.

It is typical of a certain brand of scholar to separate decoration, ornament, and craft from technical histories of modern architecture. In many ways, this trope extends from Reyner Banham's *Theory and Design in the first machine age* that sought to reconsider the legacy of functionalism, technology, and the machine of modern architecture which did away with the ornamental rubbish of nineteenth century style.[39] Writing from the swinging sixties at the dawn of postmodernism, Banham does not abandon the possibilities of functionalism and alternatively couches his disciplinary projections for architects to become model corporate consumers of technology which he believes will outpace building. The work of Michael Osman reconsiders Banham and offers a more insightful historiography of modern architecture and technology extending from the regulation of risk which organizes a way of life now called "modern."[40] Modernity did not necessarily have to arrive at a clean, machined, smooth surface freed from symbolic trappings of the history. In some ways, it is understandable that architecture historians continue to squabble about machines and technology in the twentieth century when such language dominated the discipline. In other ways, there is a longer history to modern architecture and its technical relationship to managing risk which extends to the 1770s. The emergence of the phrase 'intellectual property' in 1769, the legal change to statutory limits on owning ideational objects in 1774, the use of artificial materials to manage the risk of weather and fire to building, and the possibility catalogue order architecture parts by measurement anywhere in the world in 1784 demonstrate the increasing engagement with regulation and technical applications of knowledge.

This dissertation is a material history of artificial stone. A substance which simultaneously carries a prehistoric Genesis and forward speculations latent with the language of commerce,

[39] Banham, Reyner. *Theory and Design in the First Machine Age / Reyner Banham.* London: Architectural Press, 1960.
[40] Osman, Michael. *Modernism's Visible Hand : Architecture and Regulation in America / Michael Osman.* Minneapolis: University of Minnesota Press, 2018.

improvement, and progress. This history is contingent to an emerging paradigm of solving a fault in nature and natural stone with artificial stone. Increasing risk to property in eighteenth century London gave rise to manufactures, builders, architects, legislators, lawyers, authors, and insurance companies offering means and methods to manage against catastrophic total loss. Traditional considerations on the symbolic formand style of ornament fall short in considering the history of an artificial substance made into a range of commodities sold across differing normative terminology such as Classical, Gothic, Rustic, and Modern. The importance of situating Coade's Artificial Stone Manufacture into a social context demonstrates the unique success of these Nonconformists compared to divergent attempts ending in failure or different markets. As a technical history, a history of artificial stone inflates the critical value of technical expertise in architecture and the applied arts of building. History offers an infinite field of light constellating a mutable universe. Illuminating the space between is the vantage of a historical present that surveys differing speeds, distances, and degrees of effect across time. Occasionally, magnificent novae in the physical world reconfigure the celestial scape of scholarship. More often, it is the intangible and subtle shifts in redrawing the historical objects which constitute a discipline that offer possibilities to the present. It is the role of contemporary architecture history to draw the disciplinary cosmos again.

At the end of Antohny Vidler's introduction to *Histories of the Immediate Present*, he writes, "In this investigation, then, I hope to demonstrate not the pernicious effect of history on design, nor the need radically to separate the two, but rather their inevitable collusion, one that pervades all modern architectural discourse, a collusion that has given rise to some of the more interesting architectural experiments of the postwar period, including Johnson's Glass House, Stirling's Staatsgalerie, Archigram's Living City, Rossi's Città Analogia, and, more recently, Koolhaas's

Kunsthalle and Eisenman's Houses I– X I, to take only a very few examples."[41] Writing in the early 2000's as a dissertation turned book, what architecture experiment does Vidler imagine to inform our disciplinary historiography today? From the vantage of the neoliberal ivory tower safely entrenched in the academy, this argument is peculiar to imaginine post-war architecture experiments in the form of individuals and their projects. Anthropocene experiments of the twentieth century locate a myriad of pursuits irradiating the global atmosphere of a transnational capital world. Ernest Rutherford's 1911 gold foil experiment confirming the emptiness of atoms. The sprawling military-industrial collaboration from 1942 - 1946 in the Manhattan Project whose nuclear research, development, and experiments made the atomic bomb. Ethical abuse of the Tuskegee syphilis experiment between 1932 - 1972 deceptively oppressing young black men through infection labelled as 'treatment.' Confirmation of cosmic microwave background radiation and evidence of the 'Big Bang' in 1965 by Arno Penzias and Robert Wilson. Stanley Milgram's social psychology experiments from 1961 - 1974 demonstrating human obedience to figures of authority. In the end, Vidler concludes that the modernity of architecture rests in a relationship between science and aesthetics tracing to the "initial gesture of the Renaissance, thereby opening up the perceived nature of modernity itself."[42] This gesture is an organization of matter which comes to be called the discipline of architecture.

For Vidler, the 'inevitable collusion' of history and design is conspicuously formal deriving in programs which are different from orthodox modern architecture as answers to disciplinary discourses. This argument suggests the substance of an architect's experiment to answer autonomous epistemological undertakings, an undertaking called architecture. Wannabe facist Phillip Johnson's Glass house operates as an observation machine to autonomously control the environment. The combinatorics of Sterling's modernism and classicism categorizing towards a

[41] Vidler, Anthony. *Histories of the Immediate Present : Inventing Architectural Modernism*. Writing Architecture Series. Cambridge, MA: MIT Press, 2008. p. 15
[42] Ibid. P. 200

'post' condition as described by Charles Jencks.[43] Archigram's kit of parts and the mobility of architecture. The mechanical replication of historical pedagogies by Aldo Rossi representing shocking speeds of urban change through the aid of photocopied collage. And lastly, the work of Koolhaas qua OMA at the museum park Kunsthalle and Eisenman's program procedures typify technical experiments in architecture. The modernity of this architecture exists in technical novelty which shapes new architecture programs *in aeternum*. The limits of this position extend from the imposition of his own postmodern condition actively engaging in formal experiments on modern architecture rendering his history short. Explicating themes to Vilder's historiography locates the experiment of modern architecture in environmental autonomy, the modern classic, mobility, replication, and the technical. If there is an experiment in modern architectural discourse, I argue it already exists in the *Lithodypria* ornaments at Coade's Artificial Stone Manufactory between 1769 - 1821.

Experiments in eighteenth century London intersect the gradual shift from Newtonian 'new science' into the venture of modern science. The historiography of this change has received significant attention following the arguments of a 'scientific revolution' coalesicing in the 1940's by philosophical figures such as Alexandre Koyré. Conflating science and intelligence to suggest a radical new regime of observing the natural world emerging from seventeenth century astronomy, Koyré's 'revolution' went so far as to suggest the utility of Galileo's experiments was simply to confirm what had been deduced intangibly through mental procedures alone.[44] Herbert Butterfield's seminal lectures and 1951 publication *The Origins of Modern Science* further built a paradigm of scientific discovery and experiments centered upon inflating intelligence at the expense of utility for the purposes of presenting a cohesive general history working to articulate the value of science in a post-war world. This old paradigm dispenses with

[43] Jencks, Charles. 2002. *The new paradigm in architecture: the language of post-modernism*. New Haven, Conn: Yale University Press. P. 110
[44] Koyré, Alexandre. *Etudes galileennes / par A. Koyre.* Paris: Hermann & Cie, 1939.

historical evidence in favor of philosophical speculation about the nature of intelligence deriving in universal metaphysics, rationality, and the advancement of humanity by progress and stages of development. Contemporary scholars and specialists have significantly changed this 'big picture' of modern science proposing a period of 1760 - 1848 combined with efforts to decentralize the values of science into an explanatory practice contingent to a social context which includes an expanded field of historical actors beyond the individual scientist.[45] Learning from the historiography of science provides a model by which to unlearn the disciplinary dogma of architecture perpetuated by figures such as Vidler who continue to couch 'radical' architecture in a personality cult of architects and the shapes they make. I do not wish to suggest an epistemic separation between architecture and science that invokes trivial sounds bites stylized as Denise Scott Brown's 'Learning from' model or the entitlement of scholarship asking what history as a whole can learn from architecture. Alternatively, the fluid relationship between architecture and science contains messy overlaps and occasional misalignments demonstrating a shared emergence of a thing called modern. Drawing on the scholarship of Cunningham and Williams, this framework for a post 1760's modern architecture relies upon the practical application of intelligence and models of making knowledge, an explanatory discourse which critically interrogates the world, a social context which is contingent and non-accidental, and an expanded field of actors beyond the individual architect. What I do not share with Cunningham and Williams is a division and revision to couch the origins of modern science in a separation from religion. While this trope may be convienent, it fails to adueqately describe the complex belief systems of people while also limiting the site and substance of science to highly isolated scenarios. Alternatively, I intentionally sought historical figures who practice religion and science as it pertains to material discursive on artificial stone and worldly matters. Using

[45] Cunningham, Andrew, and Perry Williams. "De-Centring the 'big Picture': The Origins of Modern Science and the Modern Origins of Science." *The British journal for the history of science* 26, no. 4 (1993): 407–432.

Vidler's disciplinary themes and the 'big picture' of science, this dissertation more precisely locates the emergence of a modern architecture in the experiment of artificial stone.

At the Pantheon in eighteenth century London, the utility of experiments found an audience who came to witness the making of knowledge in public view. As the center of English society following its opening on 27 January 1772, the extraordinary neoclassical entertainment venue held a litany of exhibitions, lectures, concerts, dances, and all manner of assemblies within the great room rotunda. Modeled on Santa Sophia in Istanbul, the iconic coffered dome of the rotunda came to rest on four massive piers with pendentives to transfer the hemisphere structure to a square base. On the longitudinal section, two apses buttressing the dome and on the transverse side the great room made use of a screened colonnade to separate circulation from the great room. Opening as a joint stock venture with stockholders, admission was initially limited to Peerage only which proved impractical to implement in the first month due to the ease that 'ladies of virtue' could enter.[46] Of the many events, the incredible interior came to house exhibits on experiments in electricity and architecture for a paying consumer who came to the venue to be entertained. Although a comprehensive history of electricity is outside the scope of this dissertation, Willem D. Hackmann surveys the properties of this phenomena and its theories to include electric repulsion in 1629, glow in materials which carry a current in 1705, transmission or conduction in 1720, sparks and the physiological effects of shock in 1730, and the production of heat in 1740 which all describe an electrical phenomena.[47] In London, a debate on electricity and architecture came to critically occupy the Pantheon in 1772 when William Henly built a model to demonstrate Benjamin Franklin's theory on electricity and the role of lightning rods. Franklin had begun his experiments on electricity two decades prior

[46] "The Pantheon," in *Survey of London: Volumes 31 and 32, St James Westminster, Part 2*, ed. F H W Sheppard (London: London County Council, 1963), 268-283. *British History Online*, accessed December 16, 2021, http://www.british-history.ac.uk/survey-london/vols31-2/pt2/pp268-283.
[47] Willem D. Hackmann. "The Lightning Rod: A Case Study of Eighteenth Century Model Experiments." *Transactions of the American Philosophical Society* 99, no. 5 (2009): 209–229.

supposedly flying a kite attached by wet string to a metal key in a storm to demonstrate that lightning is electrical. It remains uncertain if the American actually conducted these experiments, but a pamphlet he published led to a model built by the Frenchman Thomas-François Dalibard using a forty foot tall iron rod on 10 May 1752 for the purposes of conducting an experiment.[48] Supporters of Benjamin's theories also made experiments by model as far as St. John, Antigua in 1753 using a thunder house to strike the representation of a sitting black body with electricity while a white woman sitting much closer to the event remains unharmed.[49] The use of a model in making knowledge operates to exhibit a macro in the micro. With the aid of artisanal craft, the model in science attempts to demonstrate a working order of natural phenomena thereby placing control in the exhibition of knowledge. The use of the model in making knowledge has recently been considered in the superb scholarly collection edited by Soraya de Chadarevian and Nick Hopwood.[50] Simon Schaffer's contribution "Fish and Ships: Models in the Age of Reason" considers the role of the model in exhibiting the natural phenomena of electricity as it occurs in lightning and fish. Schaffer highlights how the model gave a sense of authority to Enlightenment science, reason, and politics while simultaneously standing in for an ideal condition. Of the many models of electricity that Schaffer considers, it is the models of electricity on exhibit at the Pantheon in London which are relevant to the history of artificial stone.

Schaffer's article recounts a dispute on the nature of electricity as it concerns the American polymath Benjamin Franklin and English painter Benjamin Wilson. This dispute extends from

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[48] Franklin, Benjamin. *Experiments and Observations on Electricity: Made at Philadelphia in America*. Vol. r.626, item 001. London: Printed and sold by E. Cave, 1751. For a more comprehensive scholarly account of Franklin and Electricity, see: Cohen, I. Bernard. "A Benjamin Franklin Reader. Nathan G. GoodmanBenjamin Franklin's Autobiographical Writings. Carl Van Doren." *Isis* 37, no. 1/2 (1947): 85–86. And

[49] Simon Schaffer, "Fish and Ships," in *Models : the third dimension of science*, ed. Soraya de Chadarevian and Nick Hopwood (Stanford, Calif. : Stanford University Press, 2004.) P. 71 - 105

[50] *Models : the Third Dimension of Science / Edited by Soraya de Chadarevian and Nick Hopwood*. Stanford, Calif: Stanford University Press, 2004.

Franklin's correct assertion that tall metal lightning rods ending in points provide the best protection for architecture from the sporadic violence of passing clouds and their lightning strikes which are liable to cause fire. On the other hand, Wilson's argument extends from the correct claim that points could not discharge distant clouds and spherical metal knobs would provide a more ideal solution by gradually dissipating atmospheric electricity. As Schaffer points out, the relevance of this debate held significance not only for the history of science and experiments, but also for a solution to the security of the British Royal Navy powder magazine at Purfleet with both Franklin and Wilson submitting diverging opinions.[51] With both making partially correct claims, it would be the performance of model experiments by which a resolution might be found. In Franklin's camp, the textile draper William Henley built seven experiments between 1772 - 1773 put on exhibit at the Pantheon in London concluding that points work better than knobs.[52] In 1775, Franklin and Henry Cavendish built a model of an electric fish as a means to explain a natural phenomena. Benjamin Wilson's disputation of Franklin's theories largely centered on the staging of artifice suggesting that model experiments might not replicate nature as truthfully as they suggest. In 1777, Wilson built his own model experiment with financial backing by King George {Figure 3.04}. Wilson's experiment which is recorded in a drawing made by Michael Rooker depicts a model of extraordinary scale with an electrical charge provided by a 155 foot tinfoil cylinder filling the entire great room of the Pantheon.[53] With parts this large, no other interior room in London could house such an experiment. Requiring three persons to operate and built at a scale so large it was difficult for a paying audience to understand, Wilson's model made in the midst of the American Revolutionary War could only have been realized through the spectacular financing of Royal Patronage. Unable to be easily

[51] Simon Schaffer, "Fish and Ships," in *Models : the third dimension of science*, ed. Soraya de Chadarevian and Nick Hopwood (Stanford, Calif. : Stanford University Press, 2004.) P. 71 - 105
[52] Henley, William, and Richard Nairne. "Experiments Concerning the Different Efficacy of Pointed and Blunted Rods, in Securing Buildings against the Stroke of Lightning. By William Henley, E. R. S." *Philosophical Transactions (1683-1775)* 64 (1774): 133–52. http://www.jstor.org/stable/105997.
[53] Rooker, Michael. *A View of the Apparatus and Part of the Great Cylinder in the Pantheon, Oxford Street, London (engraving)*, n.d.

replicated, Wilson's experiment ultimately caused his scientific downfall following accusations of charlatan deception.[54] Wilson's model erred too close to a work of artifice in staging such a spectacle that it undermined the credibility of his theories on electricity. Had his model experiment sought strategies of replication over spectacle, the history of the lightning rod might be less pointy. These experiments intersect the increasing utility of architecture as it pertains to the safe conduction of electricity from atmosphere to ground. Writing to Benjamin Franklin in 1783, the Italian chemist Marisilo Landriani sought the support of Franklin on the "utility of conductors" as a means to gather information on their use in America and to persuade people by including "the illustrious and celebrated gentleman to whom we owe this great discovery."[55] One year later in 1784, Marsilio published his *Dell'utilità dei conduttori elettrici* with a catalogue of nearly three hundred lightning rods to persuade builders to adopt a solution to a science experiment that came largely as a result from the politics of experimentation.[56] Adorning the first chapter is a drawing of Giuseppe Piermarini's renovation to the Pinacoteca di Brera in Milan {Figure 3.05}. Differing from the drawings of Piermarini, the drawings of the chemist Landriani depict the seat of culture and science at the Brera Academy adorned with four interconnected lightning rods announcing the arrival of a modern architecture.

It is probable that Eleanor Coade attended the electricity experiments on exhibit at the Pantheon between 1772 - 1777. Supplying the ornament for Wyatt's building and her social affiliations with the Royal Academy and Royal Society, she typifies the non-gentry figure with spare capital who might easily secure entry. Moreover, Coade's early business partner Daniel Pincot

[54] Home, R. W. "Points or Knobs: Lightning Rods and the Basis of Decision Making in Late Eighteenth Century British Science." *Transactions of the American Philosophical Society* 99, no. 5 (2009): 97–120. http://www.jstor.org/stable/27757457.
[55] "To Benjamin Franklin from Marsilio Landriani: Résumé, 9 November 1783," *Founders Online,* National Archives, https://founders.archives.gov/documents/Franklin/01-41-02-0132. [Original source: *The Papers of Benjamin Franklin,* vol. 41, *September 16, 1783, through February 29, 1784*, ed. Ellen R. Cohn. New Haven and London: Yale University Press, 2014, pp. 187–189.]
[56] Landriani, Marsilio. *Dell'utilità dei conduttori elettrici; dissertazione di Marsilio Landriani ... Pubblicata per ordine del governo*. Italy: Per il Marelli, MDCCLXXXIV, 1784.

suggests an inquiring public "try for themselves the following experiment" to burn material samples so as to determine that "clays are nothing more than the dust of stones, sands, metals, fossils, &c, each containing its own proper principle of nature."[57] The knowledge to make artificial stone deriving from the principles of nature could be revealed and replicated anywhere in the world by experiment. What differentiates Coade's Artificial Stone Manufacture is a technical expertise in managing the kiln to manipulate these principles of nature. From the eighteenth to the middle of the nineteenth century, the regional proliferation of highly profitable lime-kilns gave rise to an increasing supply of mortars, plasters, and concrete in construction and architecture. Alongside these lime-kilns, the ceramic kiln became a site of intense experimentation seeking to control temperature for the production of porcelain. Josiah Wedgwoods' 1786 *Thermometer for Measuring the Higher Degrees of Heat* measures proportional changes to clay during fire to determine the exact interior temperature of a kiln {Figure 3.08}.[58] The three kilns at Coade's did not incorporate this thermometer and instead relied upon embodied knowledge of the 'fire-man' W.J. Coffee who "has the entire management of building the kilns, setting and firing them for many years."[59] If the experiment at Coade's is not a thermometer to manage the kiln as it was for Wedgwood's jasperware, it can more precisely be located in the refinement of a procedure which can be replicated. The experiment at Coade's is the experiment of mass manufacturing. To imagine Coade attending the exhibition of experiments provides a context for her Gallery advertisement writing, "In common, with most original undertakings, the great expense incurred for experiments necessary to its perfection, leaves but an inadequate remuneration to the Proprietor."[60] Embedded into these undertakings

[57] Pincot, Daniel. *An Essay on the Origin, Nature, Uses, and Properties, of Artificial Stone: Together with Some Observations Upon Common Natural Stone, Clays, and Burnt Earths in General, Etc*. London: Printed by Richard Hett; Sold by C. Marsh, Etc, 1770. P. 19

[58] Wedgwood, Josiah. *Additional Observations on Making a Thermometer for Measuring the Higher Degrees of Heat, by Josiah Wedgwood, F.r.s. Potter to Her Majesty*. London: Printed by J. Nicholas, 1786.

[59] Jewitt, Llewellynn, *The Ceramic Art of Great Britain*, 1878, P. 140

[60] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson, 1799. P. V

is the cost of creativity as a substance made through the trial and error of experiment that returns profit and prestige. Following electricity experiments at the Pantheon in the 1770s, 1780s experiments in managing fire, and the 1792 burning of the Pantheon demonstrating artificial stone's proof of utility could Coade exhibit "specimens from the manufacture" at her gallery possessing the intangible properties of "its resistance both of electric and common Fire."[61]

The resistance to electrical fire in construction supplies such as artificial stone presents an alternative to the lightning rod in managing the risk to architecture. Applying a lightning rod differs from building with artificial stone, although both techniques of ornament manage the environmental autonomy of architecture from weather, accident, and catastrophic loss. Mobility and replication from mass manufacturing and a catalogue circulate consumer goods across the world for architects, builders, and property owners. Coade's Artificial Stone Manufactory offers the means and methods to construct a modern architecture using modern science. The use of experiments relies upon a social context to explain technical knowledge by writing and exhibition for the purposes of persuading the public on the practical merits of artificial stone ornament. But what can be said of the self-conscience shift from classical disciplinary traditions into a modern architecture. How does the ornament at Coade's Manufactory explicate a history of modernism?

Coade's 1784 catalogue offers consumers architecture capitals per face. Measured by the diameter at the neck, each capital comes with a cost allowing a consumer to estimate an overall cost of construction. Pioneering the use of construction estimates nearly twenty eight years before the English architect Sir. John Soane began to consider a fixed professional service charge, Eleanor Coade's use of the estimate reveals a free floating valuation in the exchange of

[61] Coade's Artificial Stone Manufactory. *Coade's Gallery,* 1799, P. IV

estimates between manufacture and consumer {Figure 3.14}.[62] Prices change, commodities could be negotiated, and the possibility of bespoke commodities could be realized through negotiation. As regards in stock commodities from Coade's catalogue, it is capital 164 "The modern Ionic, very rich" and 177 "The modern Ionic" which locate a pivotal shift in the history of architecture {Figure 3.11}. Then as today, many know the ionic capital to be one of three column capitals which carry a classical disciplinary tradition from antiquity alongside the doric and corinthian. The real question is; how did a classical column become modern? The use of a catalogue to order parts priced by measurement demonstrates a modernity couched in political economy with changes in cost coming as a result of labor, raw material supply, and consumer demand. The remarkable capacity to mobilize precision off site at the manufactory and to transport that column to a construction site certainly configures a history of modern architecture to come. Turning to the catalogue drawings, a drawing of a modern ionic column fills the page floating above an ancient ionic column both containing volutes and rich detail {Figure 3.12}. The relative scale of each capital floating in paper space sits alongside a field of siteless column capitals. Some decades later in 1810, John Wilkes would put the modern and ancient ionic side by side in a comparison reminiscent of Claude Perrault's 1683 *Ordonnance* {Figure 3.13}.[63] Column, capital, base, entablature, measurements, and section cuts affix two specimens to the paper page with surgical precision. While the modern and ionic column possess different proportions and measurements, it is the capital itself which explicates a history of modernism as it is sold in Coade's catalogue. Side by side, the modern ionic flattents the column capital thus making the icon more visible on paper. The volutes of the ancient ionic column being cut from a

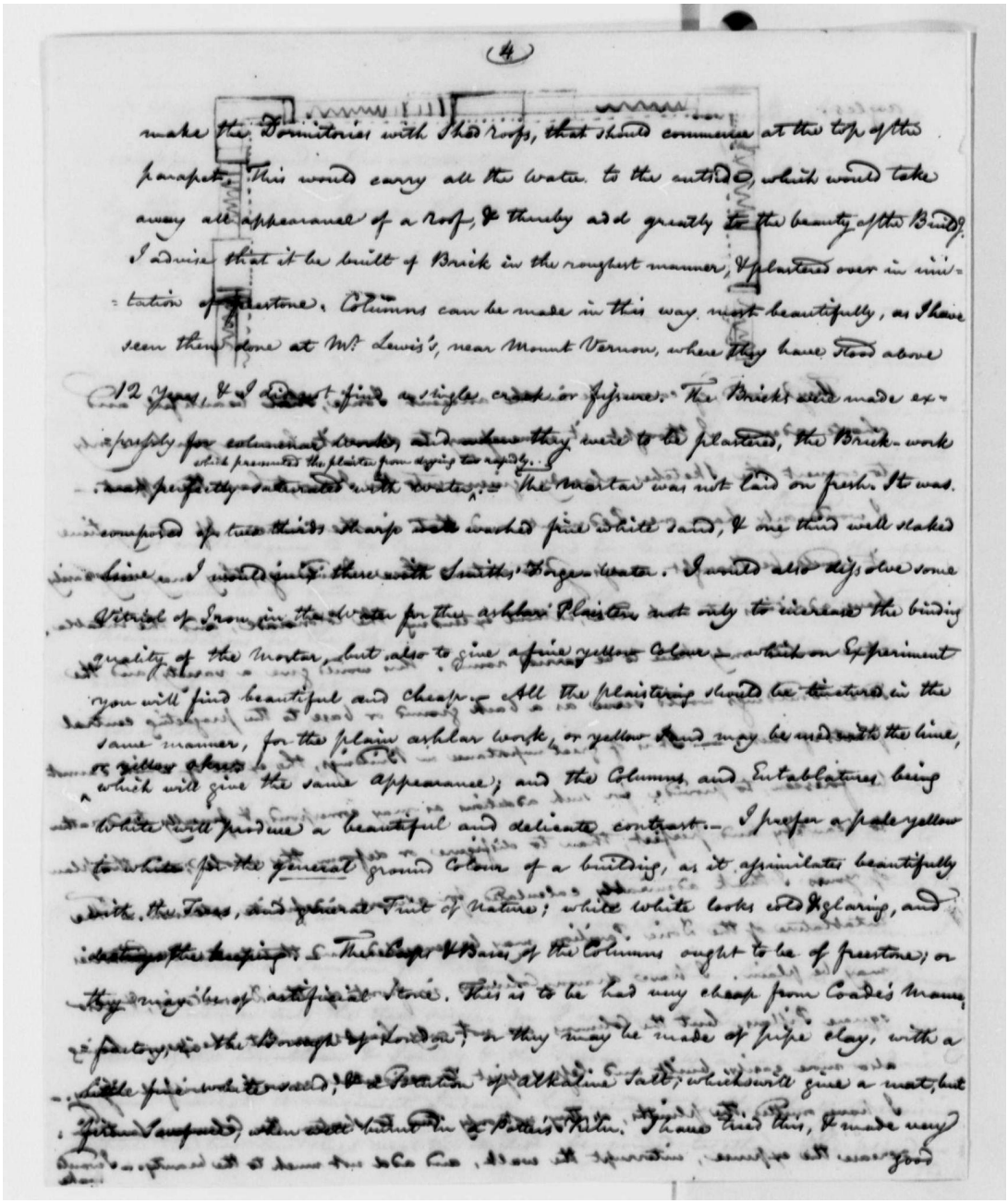
[62] "In answer to your favor Respecting the six figures of angels for your Chappell. The lowest price to be done in & best stile of execution will be Seven Guineas each. The mould to be given up to you." *Estimate by Eleanor Coade, manufacturer of artificial stone, for six figures of angels [to designs by Benjamin West] for the new chapel at the Royal Naval Hospital*. Greenwich, 4 May 1787. Part of William Newton Papers. From RIBA Library.

[63] Wilkes, John. *Encyclopaedia Londinensis, or, Universal dictionary of arts, sciences, and literature, comprehending, under one general alphabetical arrangement, all the words and substance of every kind of dictionary extant in the English language ... embellished by a ... set of copper-plate engravings*. London: Printed for the proprietor by J. Adlard. 1810

square block of marble are oblique to the representational plane. As a means to make the icon of the ionic capital more visible, artificial stone modern capital derives its value from the flatness of paper and the logic of representation.

***4. Paper and Property***

Archival Material

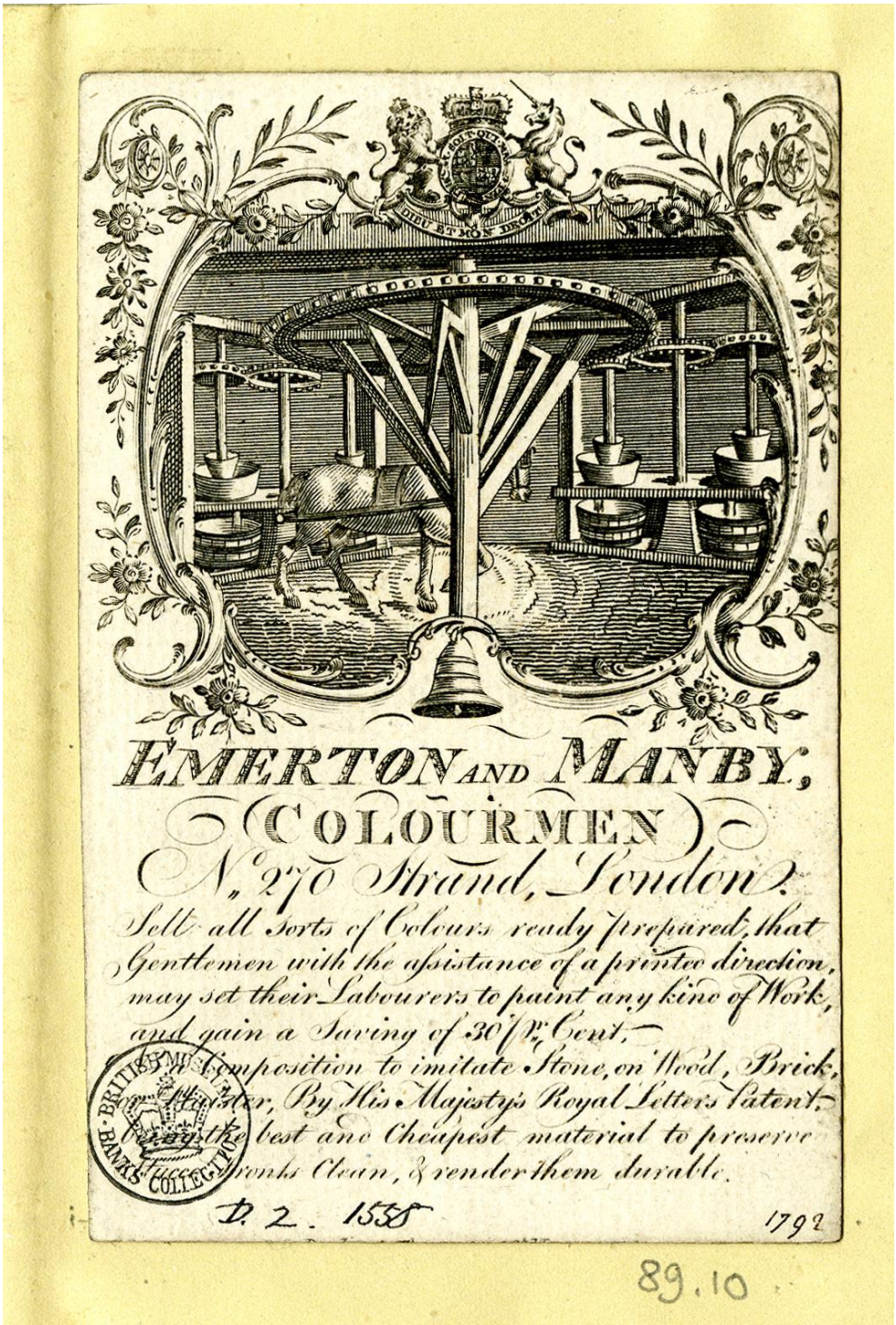


(4)

make the Dormitories with Shed roofs, that should commence at the top of the parapets. This would carry all the water to the outside, which would take away all appearance of a roof, & thereby add greatly to the beauty of the Building. I advise that it be built of Brick in the roughest manner, & plastered over in imitation of freestone. Columns can be made in this way most beautifully, as I have seen them done at Mr Lewis's, near Mount Vernon, where they have stood above 12 Years, & I did not find a single crack or figure. The Brick were made expressly for columns & Arches, & where they were to be plastered, the Brick-work was most perfectly saturated with water, (which prevented the plaister from drying too rapidly.) The Mortar was not laid on fresh. It was compounded of two thirds sharp river washed fine white sand, & one third well slaked lime. I would only have with Smith's Bargen Water. I would also dip, & rub some Vitriol of Iron in the water for the ashlar Plaister not only to increase the binding quality of the Mortar, but also to give a fine yellow Colour, which on Experiment you will find beautiful and cheap. All the plaistering should be textured in the same manner, for the plain ashlar work, or yellow sand may be used with the lime, which will give the same appearance; and the Columns and Entablatures being white will produce a beautiful and delicate contrast. I prefer a pale yellow to white for the general ground Colour of a building, as it assimilates beautifully with the Trees, and other Fruit of Nature; while White looks cold & glaring, and destroys the keeping. The Caps & Bases of the Columns ought to be of freestone, or they may be of artificial Stone. This is to be had very cheap from Coade's Manufactory, in the Borough of London, or they may be made of pipe clay, with a little flint well ground, & a Portion of alkaline Salt, which will give a neat, but yellow Composition, when well burnt in a Potters Kiln. I have tried this, & made very good

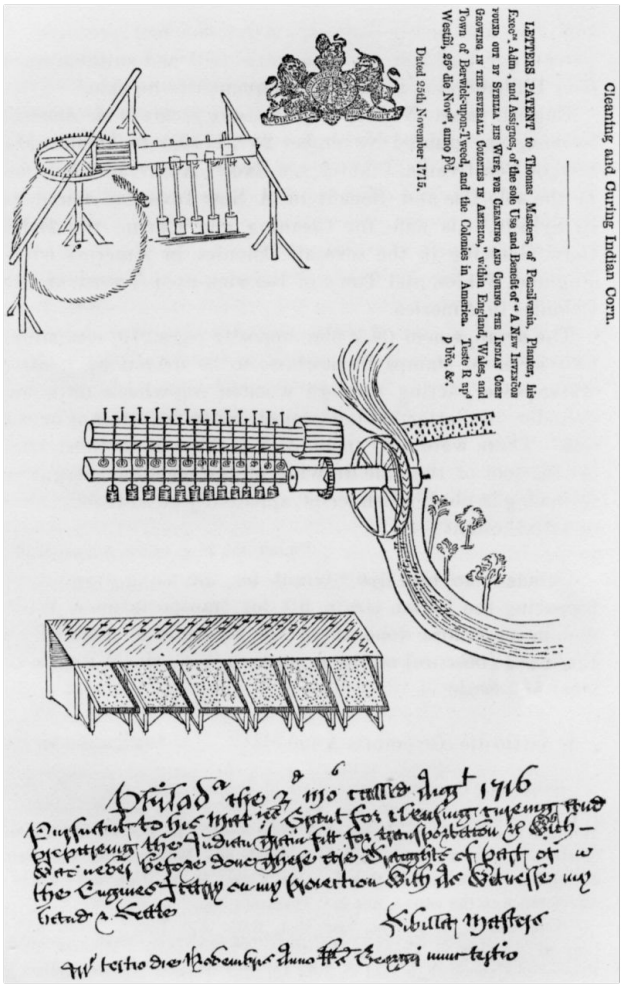
***4.01 - William Thornton to Thomas Jefferson, May 27, 1817***
Washington D.C.

From National Archives, MD, USA and Princeton University Press




***4.02 - Trade card of Emerton & Manby, oil & colourmen.***
Alexander Emerton & Co, 1792

The Trustees of the British Museum, London, UK



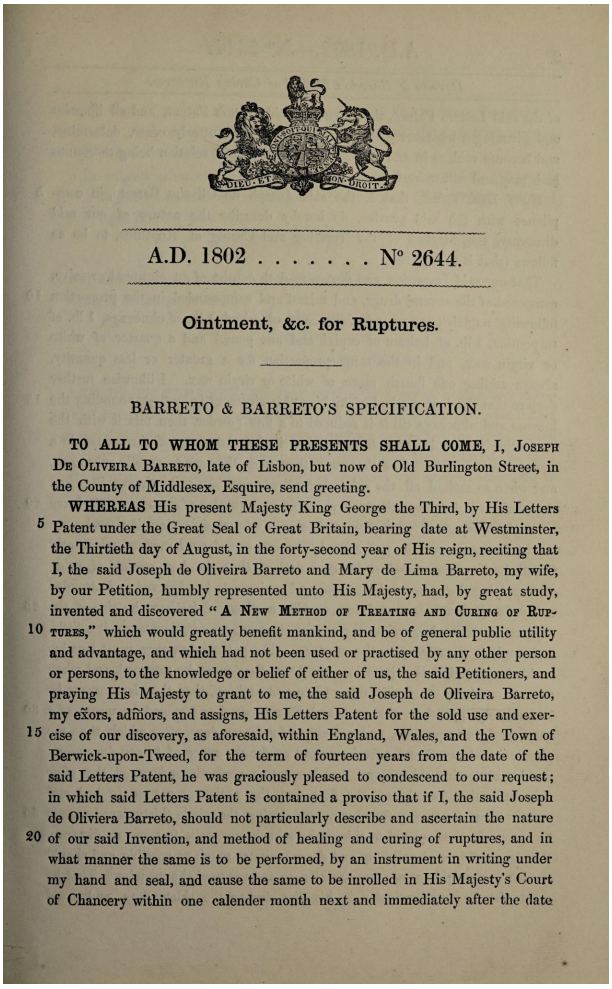
Cleaning and Curing Indian Corn.

LETTERS PATENT to Thomas Masters, of Fensilvania, Planter, his Exec^rs, Adm^rs, and Assignes, of the sole Use and Benefit of "A New Invention found out by Sybilla her Wife, for Cleaning and Curing the Indian Corn growing in the several Colonies in America," within England, Wales, and Town of Berwick-upon-Tweed, and the Colonies in America. Teste R apd p bfo, &c.

Dated 25th November 1715.

Sybilla^a the 2^d mo called Sept^r 1716
Pursuant to his Matt^ies Grant for cleaning curing and
preserving the Indian Corn fit for transportation &c with-
out water before done these the Triplicate of both of w^ch
the Cognes I testify on my Assertion with the Witnesse my
hand & Seale
Sibilla Masters

W^t test the 3^d day of December Anno R^ri Regni nunc tertio



A.D. 1802 . . . . . N° 2644.

**Ointment, &c. for Ruptures.**

BARRETO & BARRETO'S SPECIFICATION.

**TO ALL TO WHOM THESE PRESENTS SHALL COME,** I, Joseph De Oliveira Barreto, late of Lisbon, but now of Old Burlington Street, in the County of Middlesex, Esquire, send greeting.

**WHEREAS** His present Majesty King George the Third, by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Thirtieth day of August, in the forty-second year of His reign, reciting that I, the said Joseph de Oliveira Barreto and Mary de Lima Barreto, my wife, by our Petition, humbly represented unto His Majesty, had, by great study, invented and discovered "**A New Method of Treating and Curing of Ruptures,**" which would greatly benefit mankind, and be of general public utility and advantage, and which had not been used or practised by any other person or persons, to the knowledge or belief of either of us, the said Petitioners, and praying His Majesty to grant to me, the said Joseph de Oliveira Barreto, my exors, admors, and assigns, His Letters Patent for the sold use and exercise of our discovery, as aforesaid, within England, Wales, and the Town of Berwick-upon-Tweed, for the term of fourteen years from the date of the said Letters Patent, he was graciously pleased to condescend to our request; in which said Letters Patent is contained a proviso that if I, the said Joseph de Oliviera Barreto, should not particularly describe and ascertain the nature of our said Invention, and method of healing and curing of ruptures, and in what manner the same is to be performed, by an instrument in writing under my hand and seal, and cause the same to be inrolled in His Majesty's Court of Chancery within one calender month next and immediately after the date

***4.03 - Patents and Property***

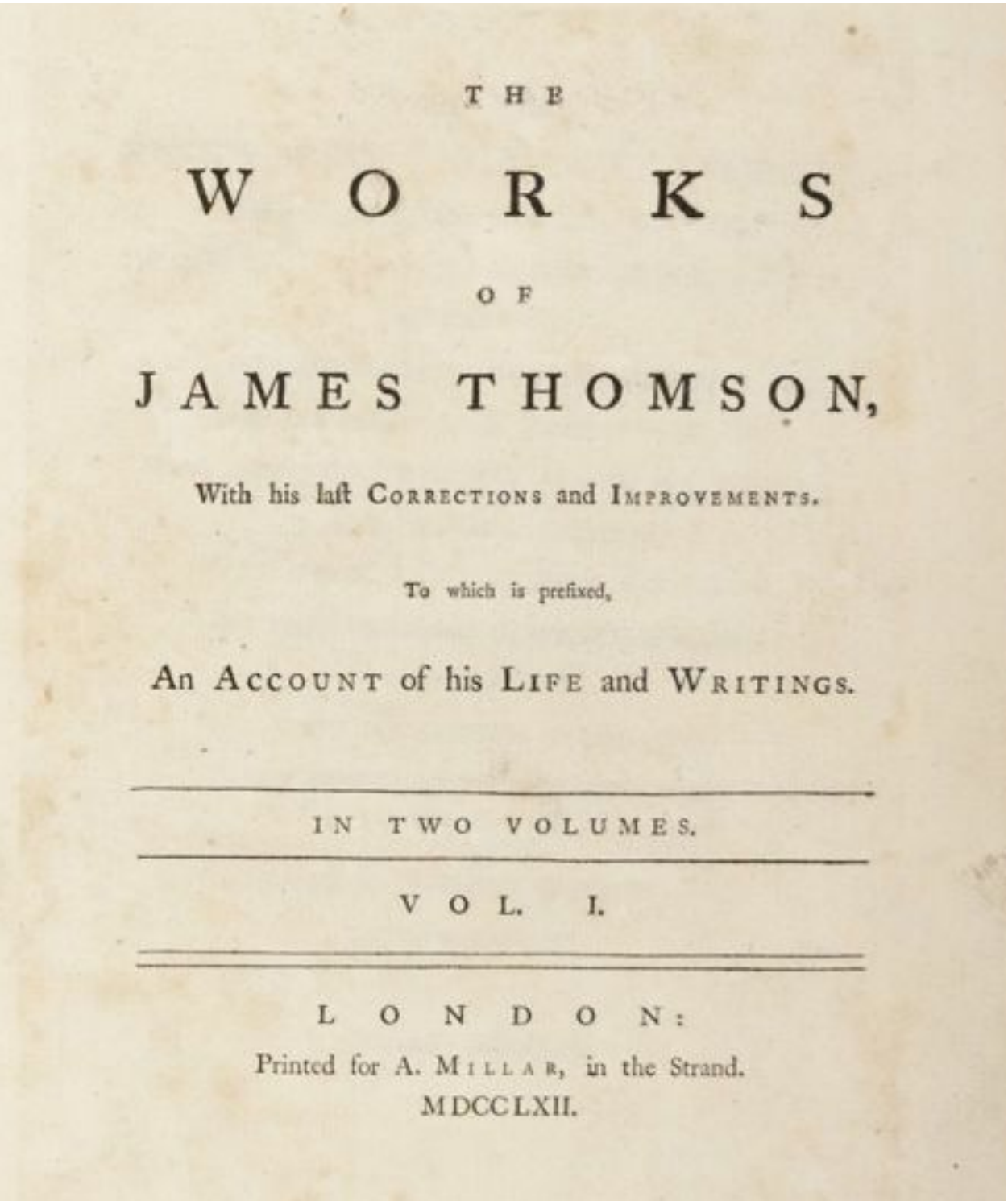
Left: Patent for Cleaning and Curing Indian Corn, Sybilla Righton Masters, 25 November 1715

Right: Specification of Joseph de Oliveira Barreto and Mary de Lima Barreto : ointment, &c. for ruptures. From Wellcome Collection, London, UK



***4.04 - Drawing of Filippo Brunnelleschi's Patent Boat: Il Badalone.***
Drawn by Mariano Taccola, *De ingeneis*, 1433 - 1449.

ADD MS 34113, f.310v - f.311r, Compilation of treatises on natural philosophy and mechanics, and numerous mechanical designs. From the British Library, London, UK



THE

WORKS

OF

JAMES THOMSON,

With his last CORRECTIONS and IMPROVEMENTS.

To which is prefixed,

An ACCOUNT of his LIFE and WRITINGS.

IN TWO VOLUMES.

VOL. I.

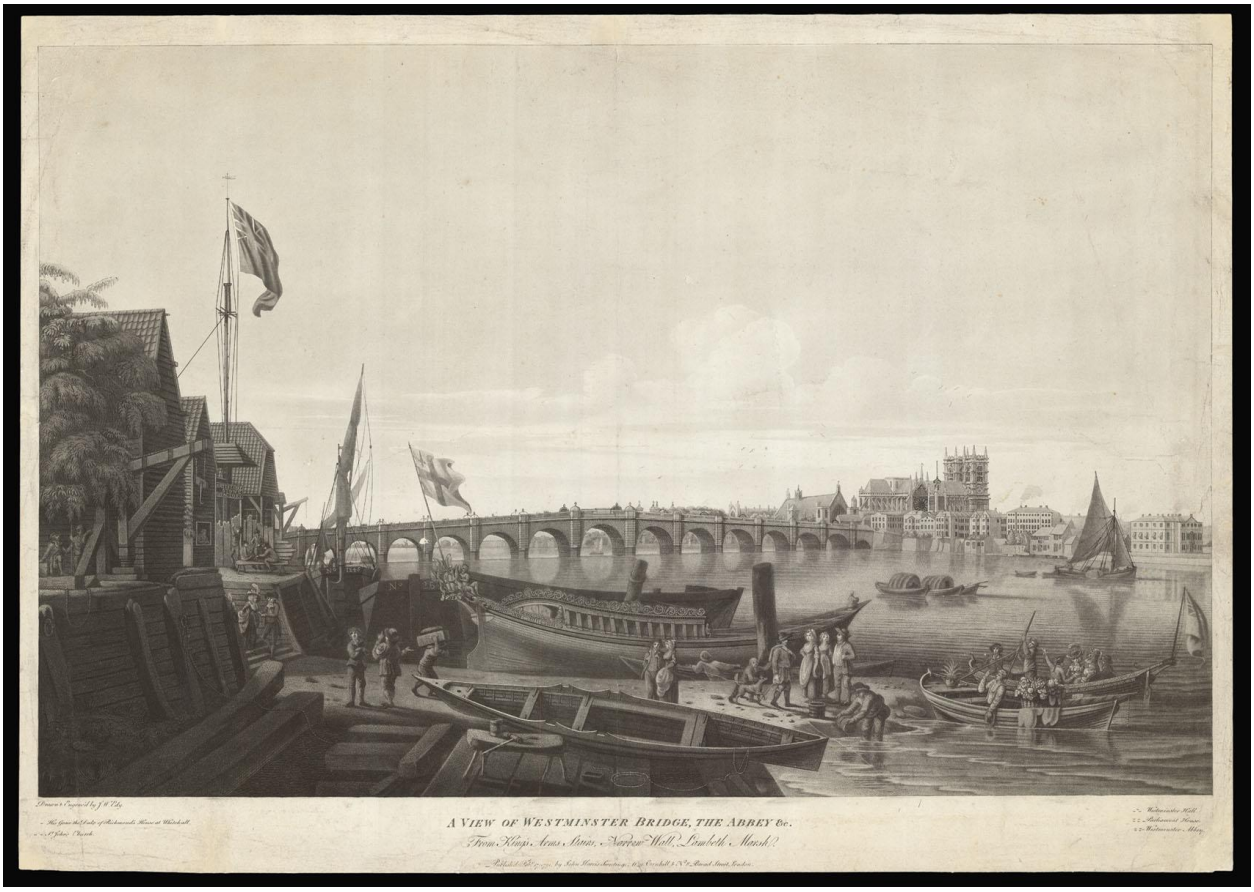
LONDON:

Printed for A. MILLAR, in the Strand.

MDCCLXII.

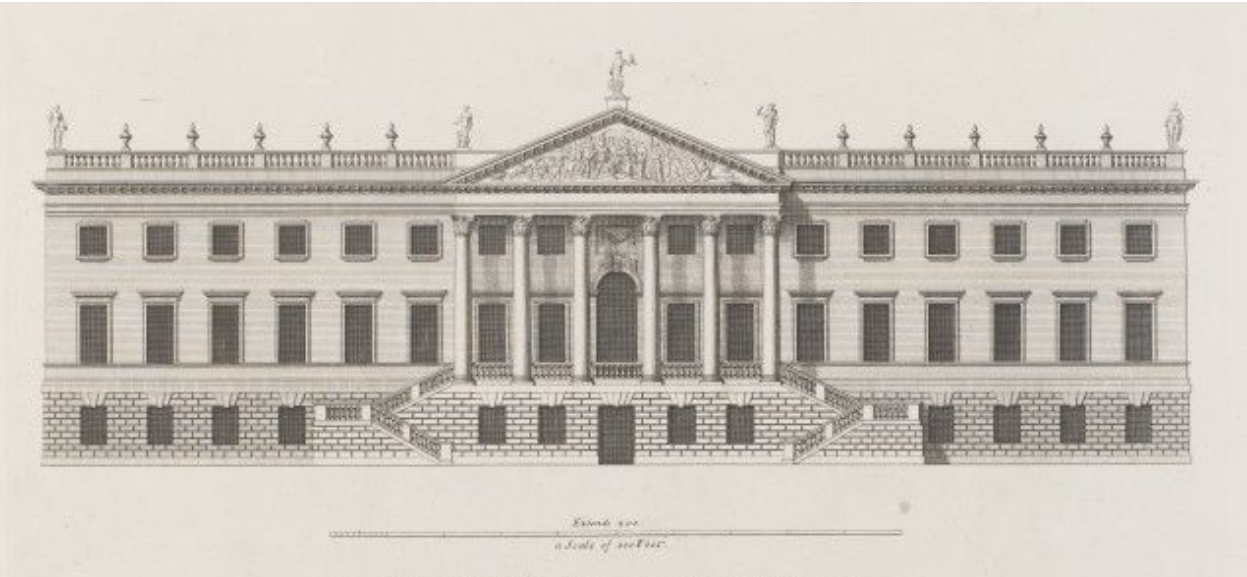
***4.05 - The Works of James Thomson with his last Corrections and Improvement to which is prefixed An Account of his Life and Writings.***
Andrew Miller, London, 1761.

From the British Library, London, UK



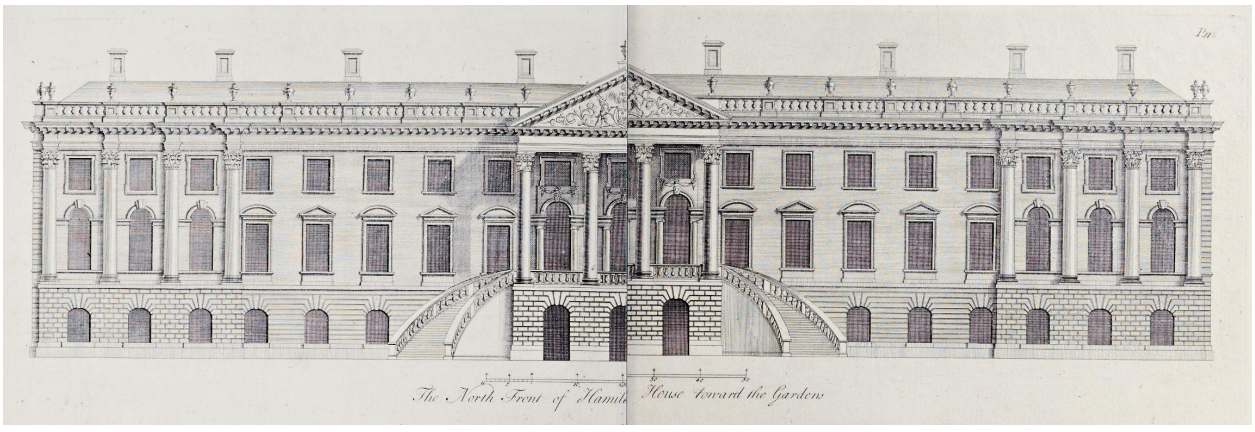

***4.06 - A View of Westminster Bridge, The Abbey &c From King's Arms Stairs, Narrow Wall, Lambeth Marsh.***
John Edy, Engraving, 1791.

From The British Museum, London, UK



***4.07 - Vitruvius Britannicus, or The British Architect, Volume.***
Colin Cambell, London, 1715 - 1725.

From the Royal Academy, London, UK.




***4.08 - Vitruvius Scoticus : being a collection of plans, elevations, and sections of public buildings, noblemen's and gentlemen's houses in Scotland : principally from the designs of the late William Adams, Esq. architect..***
William Adam, Edinburgh, 1810?.

From the Getty Research Institute, Los Angeles, USA

## A.D. 1722 . . . . N° 447.
## RIPLEY AND HOLT.

### Compound Liquid Metal for Making Artificial Stone and Marble.

**GEORGE,** by the Grace of God, &c. To all to whom these presentȩ shall come, greeting: Whereas Our trusty and welbeloved Thomas Ripley, Esquire, and Richard Holt, gent., have by their petiĉon humbly represented unto Vs, That they have been at much labour and expence for the finding out and inventing a certain compound liquid metall never before known and vsed by the antients or moderns, by which artificial stone and marble is made by casting or running the metall into moulds of any form or figure, great or small, as statues, columns, capitalls, also for house work and garden ornaments, and all other cutt or sculpture work that might be done in naturall stone and marble, and which, being petrified or vetrified and finished by strong fire, becomes more durable and harder than stone and marble, insomuch that neither wet or dry, neither frost or snow, heat or cold in the extremity, can do damage to it; which artificial stone and marble will be of very great vse and public benefit in all Our dominions, and also great quantities thereof will be exported by reason of its cheapness as well as goodness.

*From Letters Patent*—**Rolls Chapel.**

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## A.D. 1722 . . . . N° 448.
## HOLT AND LONDON.

### Mixture for Making White Ware.

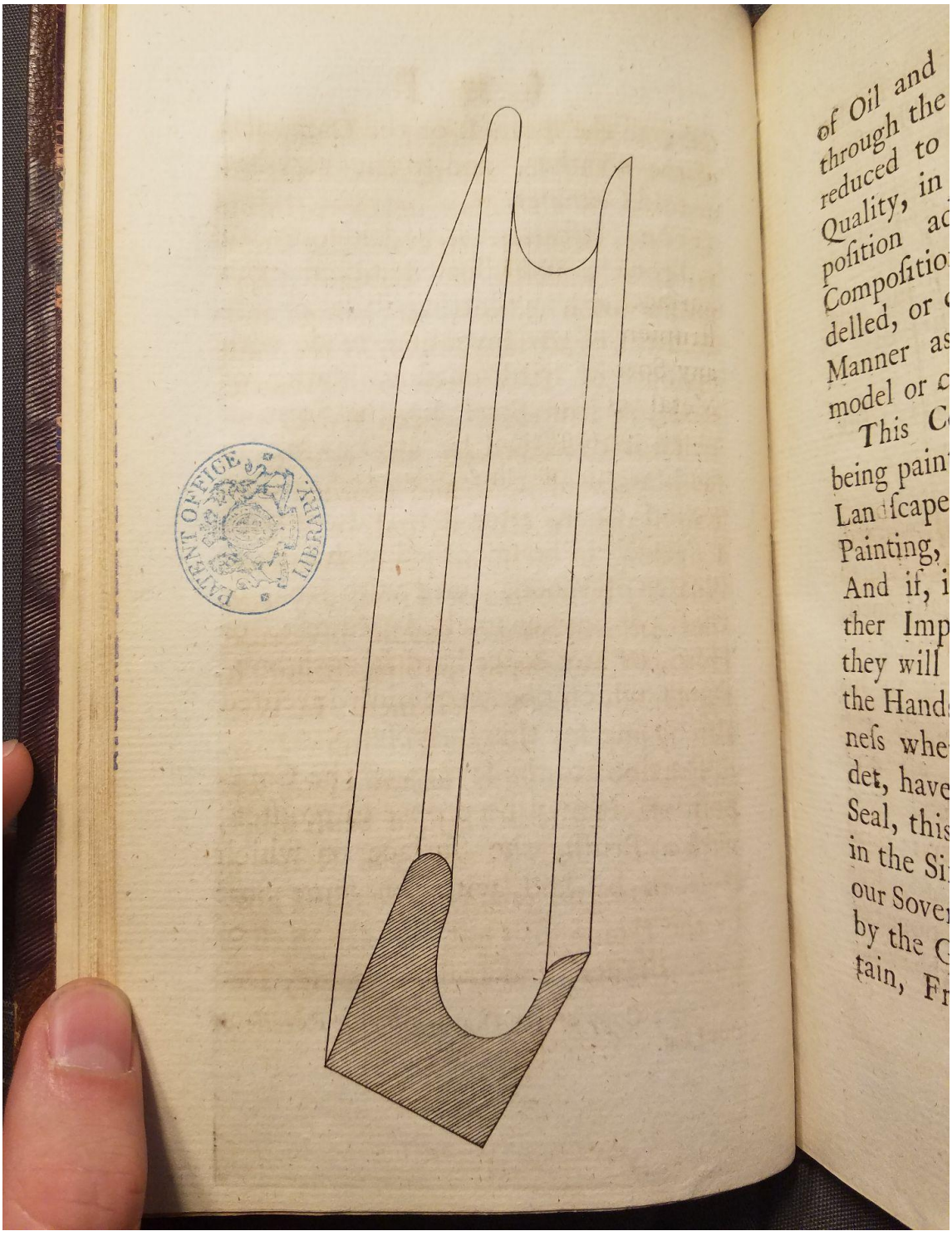
**GEORGE,** by the Grace of God, &c. To all to whom these presentȩ shall come, greeting: Whereas Our trusty and welbeloved Richard Holt and Samuel London, gentlemen, have by their petiĉon humbly represented unto Vs, That they had, by many years labour and experience and at great expence and charges, found out and invented a certain new composiĉon or mixture (without any sort of clay) for making of white ware, which is formed and moulded in a method hitherto not known or practised, and far surpasses the finest of Delf ware, or any other sort made in any other sort made in any part of Europe; and also by their new method of impression make the fabrick of earthen ware of a more equisite shape than the present method of turning could ever perform or arrive to, by which meanes Our subiects will be able to excell all Europe, and not only employ a great many of Our own poor to the great benefit of trade and the manufactures of Our kingdom, but also prevent the clandestine running of Delf ware, &c from foreign parts into Great Britain.

*From Letters Patent*—**Rolls Chapel.**

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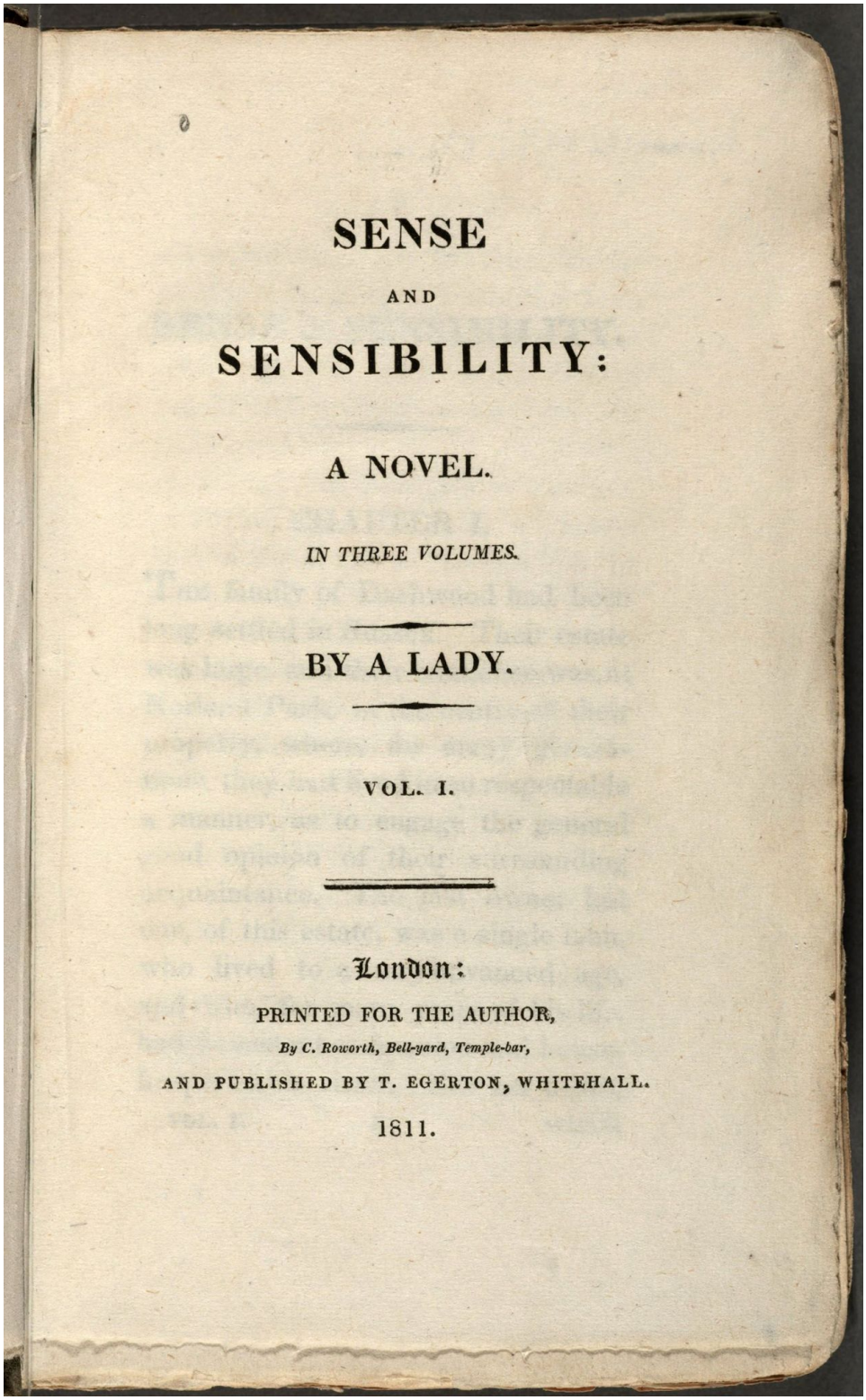
***4.09 - Patent No. 447 - Compound Liquid Metal for Making Artificial Stone and Marble. Patent No. 448 - Mixture for Making White Ware.***
Richard Holt and Thomas Ripley, London, 1722.

From British Library, London, UK.




***4.10 - Float to apply John Liardet's Patent Oil Cement and Adams New-Invented Stucco***
John Liardet, An Appeal to the Public on the right of using Oil-Cement or composition for Stucco, 1778.

From The British Library, London, UK



SENSE

AND

SENSIBILITY:

A NOVEL.

*IN THREE VOLUMES.*

BY A LADY.

VOL. I.

London:

PRINTED FOR THE AUTHOR,

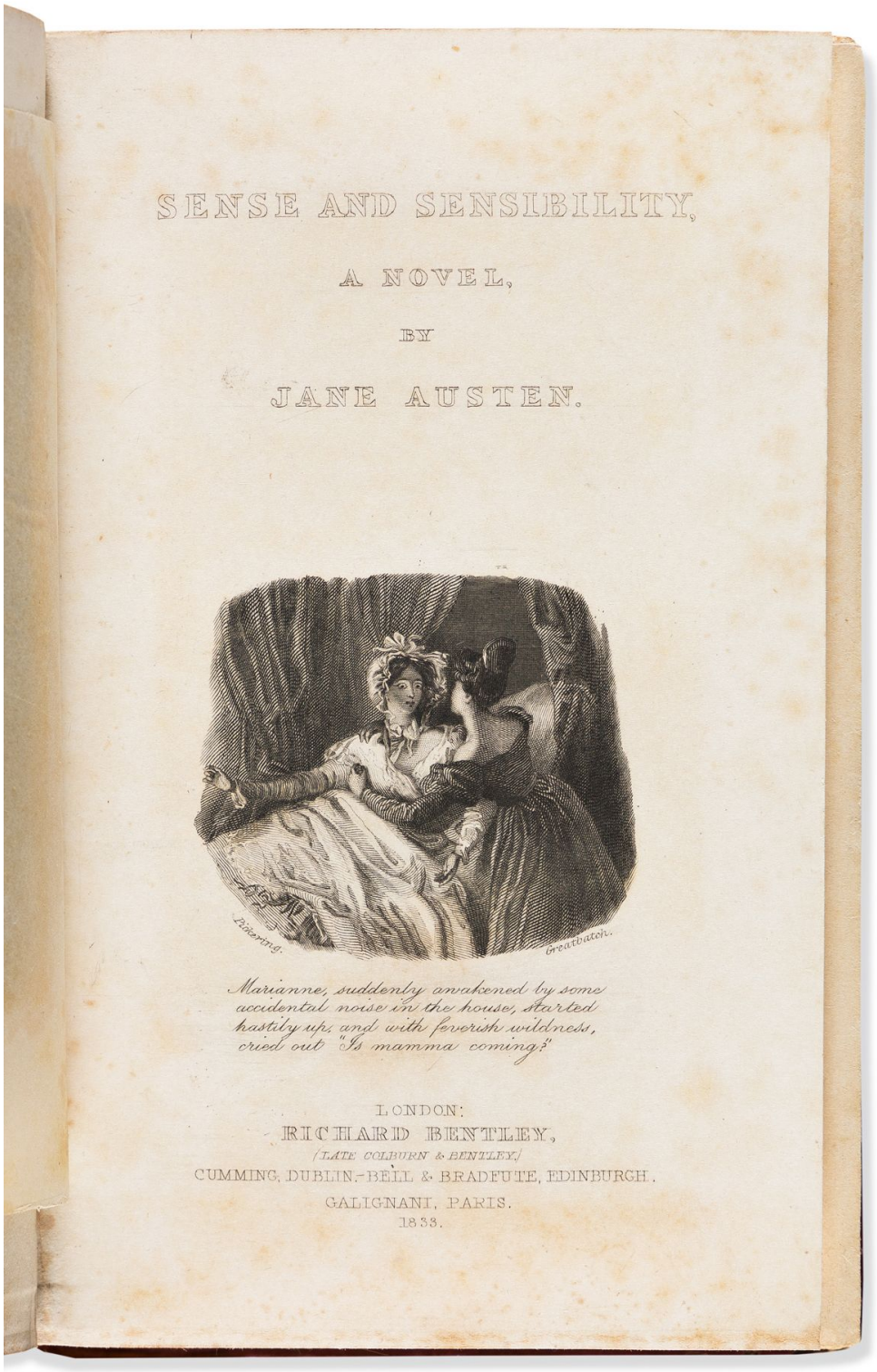
*By C. Roworth, Bell-yard, Temple-bar,*

AND PUBLISHED BY T. EGERTON, WHITEHALL.

1811.

***4.11 - Sense and Sensibility: A Novel in Three Volume by A Lady. Vol. I.***
Jane Austen, London, 1811.

From *EC8 Au747 811s (B), Houghton Library, Harvard University



SENSE AND SENSIBILITY,

A NOVEL,

BY

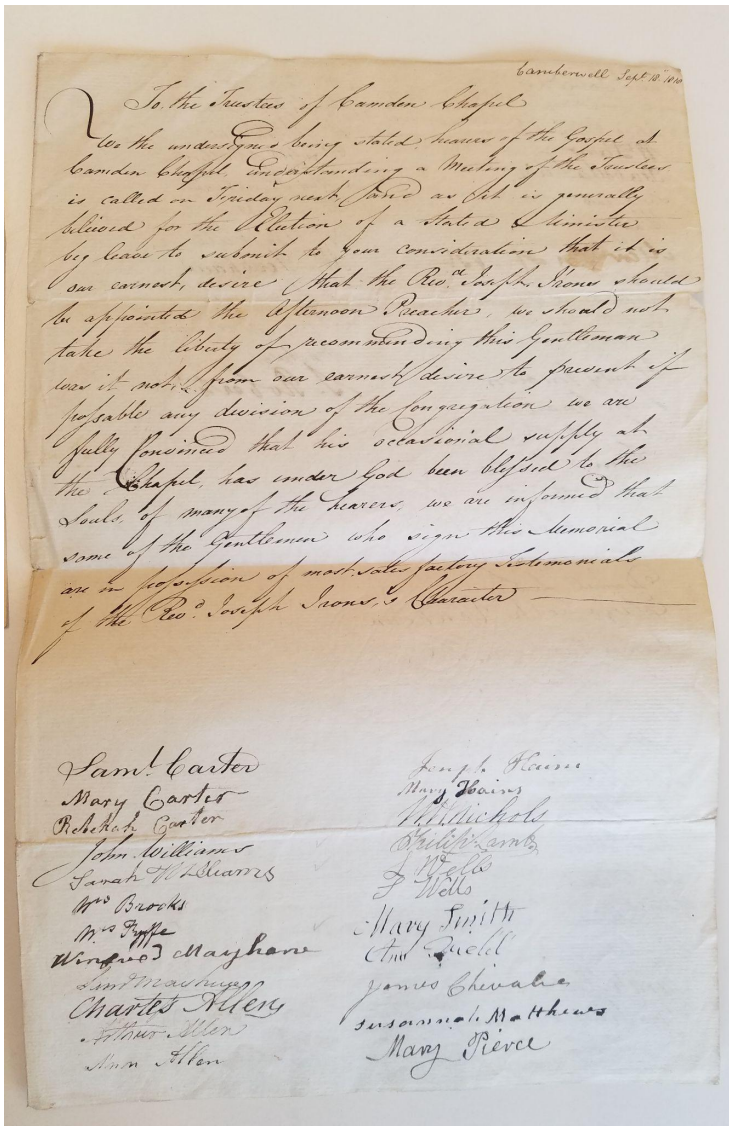
JANE AUSTEN.

*Marianne, suddenly awakened by some accidental noise in the house, started hastily up, and with feverish wildness, cried out "Is mamma coming?"*

LONDON:
RICHARD BENTLEY,
[LATE COLBURN & BENTLEY,]
CUMMING, DUBLIN.-BELL & BRADFUTE, EDINBURGH.
GALIGNANI, PARIS.
1833.

***4.12 - Sense and Sensibility, A Novel by Jane Austen***
Published by Richard Bentley, London, 1833.

From British Library, London, UK



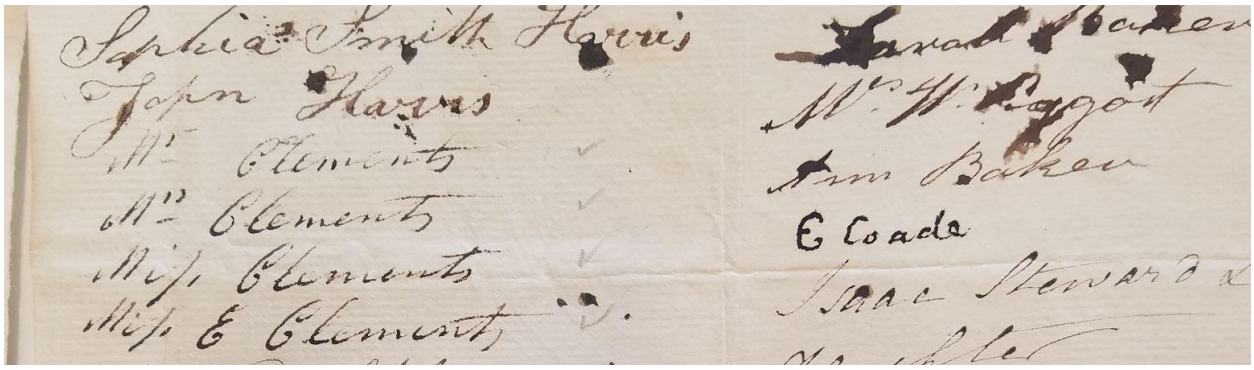
Camberwell Sept. 18. 1818

To the Trustees of Camden Chapel

We the undersigned being stated hearers of the Gospel at Camden Chapel Deptford intending a Meeting of the Trustees is called on Friday next June an Act is generally allowed for the Election of a Stated Minister beg leave to submit to your consideration that it is our earnest desire that the Revd Joseph Soames should be appointed the Afternoon Preacher, we should not take the liberty of recommending this Gentleman were it not from our earnest desire to prevent if possible any division of the Congregation we are fully convinced that his occasional supply at the Chapel, has under God been blessed to the Souls of many of the hearers, we are informed that some of the Gentlemen who sign this Memorial are in possession of most satisfactory Testimonials of the Revd Joseph Soames's Character

Saml Carter
Mary Carter
Richd Carter
John Williams
Sarah Williams
Mrs Brooks
Mrs Pope
Winfred Mayhew
Sam Mashiter
Charles Allen
Arthur Allen
Ann Allen

Joseph Harris
Mary Harris
Wm Nicholls
Sarah Sarah
J Wells
S Wells
Mary Smith
Chas Field
James Chevalier
Susannah Matthews
Mary Pierce



Sophia Smith Harris
John Harris
Mrs Clements
Mrs Clements
Miss Clements
Miss E Clements

Sarah Baker
Mrs W. Wigot
Ann Baker
E Coade
Isaac Steward

***4.13 - Correspondence mainly about appointment of organist, and minister and readers***

Signature of Eleanor Coade, 1818.

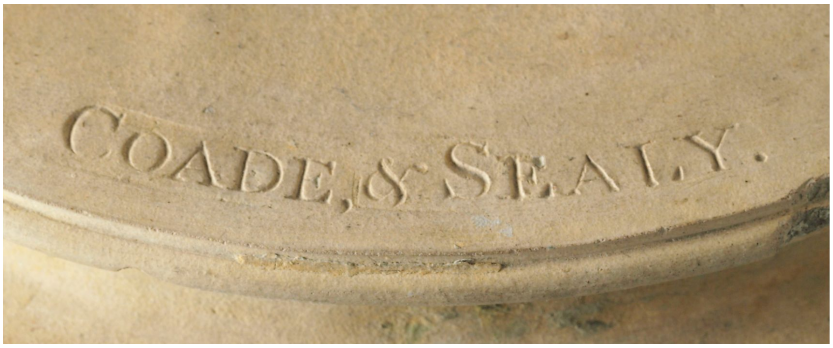
From National Archives, London Metropolitan Archives: City of London.




***4.14 - The Entrance to Coade and Sealy's Gallery of Sculpture***
Frontispiece to *The European magazine*, and London review. vol. 41 (Jan.- Jun. 1802).

From Princeton University, NJ, USA













***4.15 - Trademarks for Coade, Coade & Sealy, and Croggon & Co.***
Various, 1769 - 1832




Front

Back



***4.16 - Allegory of Geometry.***
Coade's Artificial Stone Manufactory, London, 1796.

From Yale Center for British Art, Paul Mellon Fund, B2013.14.2



***4.17 - Father Time.***
Coade's Artificial Stone Manufactory, London, ca. 1790s.

From Yale Center for British Art, Paul Mellon Fund, B2013.14.1

# Paper And Property

Chapter Four

"The Caps & Bases of the Columns ought to be of freestone; or they may be of artificial Stone. This is to be had very cheap from Coade's manufactory, in the Borough of London; or they may be made of pipe clay, with a little fine white sand, & a Solution of Alkaline Salt; which will give a mat, but firm Surface, when well burnt in a Potter's Kiln. I have tried this, & made very good artificial Stone." William Thornton to Thomas Jefferson, May 27, 1817[1]

In 1817, Thomas Jefferson sought to solicit William Thornton regarding the planning and construction for the University of Virginia. While the 'academical village' was not to be the oldest college in America, it was Jefferson's driving ambition to found the first secular and public institution of higher education taking shape a short walk from his plantation in Charlottesville. Jefferson and Thornton both typify European Enlightenment projects flourishing on the shores of the nascent American republican experiment. As white, protestant, patriarchal land owners deriving income from enslaved persons, the exchange between these two gentlemanly architects exemplifies a trans-Atlantic discipline of building largely imported from the Old World and into the new. Born to British Quakers owning and operating a sugar plantation on the Caribbean island of Tortola, Thornton was sent to Lancaster and later Scotland to be educated as a physician. Developing a taste for abolition, republican politics, and the polite and mechanical arts, his return to Tortola and the source of his income in 1786 was met with resistance by the island's plantation owners. Emigrating to Philadelphia in pursuit of intellectual and financial opportunity, Thornton became an American citizen in 1788 all the while making use of his Quaker connections to construct prestigious social affiliations. Winning the 1789 competition for the Library Company of Philadelphia, Thornton the self-taught architect's interests increasingly came to bear upon building. Following the 1790 *Residence Act* acquiring land on the Potomac River to construct a new Federal City and the dismissal of French

[1] "William Thornton to Thomas Jefferson, 27 May 1817," *Founders Online,* National Archives, https://founders.archives.gov/documents/Jefferson/03-11-02-0324-0001. [Original source: *The Papers of Thomas Jefferson*, Retirement Series, vol. 11, *19 January to 31 August 1817*, ed. J. Jefferson Looney. Princeton: Princeton University Press, 2014, pp. 387–392.]

Engineer Pierre Charles L'Enfant from the planning process, a 1792 competition organized by then Secretary of State Thomas Jefferson sought plans to build the new Capitol of the United States of America. Learning of the competition late while in Tortola, Thornton's submission was accepted and awarded by the commissioners bringing Thorton, Jefferson, and other central figures of the American state into business. Due in part to the perception of his political neutrality, lack of local land holdings, and the prestige from winning the Capitol competition; George Washington's appointment of Thorton as a Commissioner of the Federal District and Architect of the Capital permanently attached the physician's architectural ambitions to the speculative American capital in construction. Moving to the small urban town of Georgetown in 1794 with his family, Thornton's social and political affiliations found fruitful commissions building homes for a fledgling Federal cultural elite taking shape amidst unbuilt plots of land, plantations, and informal housing. While dialectic tensions between the wholesale importation of European taste and the invention of an American national identity in architecture would exist well into the early nineteenth century, Thornton's 1799 Octagon House built for Colonel John Tayloe made use of Coade's artificial stone ordering capitals, fireplace mantels, and mouldings from the London manufacturer's catalogue.[2] Importing classicism and capitals from London, Thorton's Octagon House is the first to put Coade's artificial substance on exhibit in the newfound American republic.

The bitter presidential election of 1801 put the Democratic-Republican Thomas Jefferson against the Federalist John Adams as had been the case in 1796. Resulting in a tie, the House of Representatives cast the deciding vote awarding Jefferson and his vice-presidential candidate Aaron Burr winners of the third Presidential election. Ever since his early days in politics drafting the Declaration of Independence, Jefferson's espousal of 'self-evident' truths

[2] "The Octagon's Coade Mantels," *Journal of the American Institute of Architects*, March, 1947, p. 130-134

regarding the rights of Americans mooring his westward expansionist vision of the American republic demonstrates the contingency of paper and property.[3] This evidential truth of rights exclusively applied to certain selfs and not others is inextricably contingent to property as it is constructed, defined, and exchanged across the trans-Atlantic world. Jefferson, Thornton, and the possibility of ordering artificial stone capitals from London explicates a deeply contested history in the anything but self-evident right of inventors to secure their inventions as intellectual property. Of the many programs initiated by the Jefferson Presidency, the 1802 creation of a Patent Office by Secretary of State James Madison sought to secure the nation's intellectual property from piracy both domestic and foreign. Initially in opposition to the patent system and the economic monopoly it created, Jefferson's stance had come to change following the passing of the first US Patent law on 10 April, 1790 commented upon in a letter of the same year saying, "An act of Congress authorising the issuing patents for new discoveries has given a spring to invention beyond my conception."[4] Jefferson's participation in a patent review board from 1790 - 1793 found increasing efforts on his behalf to explicate himself in favor of an almost automatic administrative process. Upon securing the office of the Presidency, the 1802 foundation of the United States Patent Office would come to serve the interests of the Nation and the citizens legally enabled to invent and possess intellectual property. In order to direct this fledgling venture, Thomas Jefferson appointed William Thornton as Superintendent in 1802.

When writing Jefferson regarding the theoretical use of artificial stone to build the University of Virginia in 1817, Thornton already had a history of intellectual property piracy. Failed forays into

[3] The selective application of these rights granted to some and not the innumerable enslaved humans found widespread criticism across the Atlantic world. In Historian David Armitage's *The Declaration of Independence: A Global History*, Armitage discusses the criticism of British abolitionists, American Loyalists, and French philosophes, and answers by political activists. See Armitage, David. *The Declaration of Independence : a Global History* Cambridge, Mass: Harvard University Press, 2007.

[4] "From Thomas Jefferson to Benjamin Vaughan, 27 June 1790," *Founders Online,* National Archives, https://founders.archives.gov/documents/Jefferson/01-16-02-0342. [Original source: *The Papers of Thomas Jefferson*, vol. 16, *30 November 1789–4 July 1790*, ed. Julian P. Boyd. Princeton: Princeton University Press, 1961, pp. 578–580.]

steamboats and quibbles over the design of breechloader firearms are salient examples of the inability to resolve the ownership and origins of inventions plaguing early forms of intellectual property across the trans-Atlantic world. The what, where, when, who, and for how long remain contentious points in the claim of inventing intellectual property. While Jefferson's involvement in the adjudication of patents is tangential at best, both he and Thornton's interests in the cultivation of intelligence manifests in the planning of a "University on a plan so broad & liberal & modern, as to be worth patronizing with the public support."[5] The mutual interest to found a secular educational institute was seen as necessary to generate future pursuits in the sciences, arts, and mechanical inventions to drive the nascent American economy. Illustrating this endeavor is Thorton's response to Jefferson, suggesting admitted students would "be perfected in the great national University; in all that is possible for man to teach; by which we might draw Newtons & Bacons from the Back woods & produce, in one Age, by this sifting of Genius, Ability, & Learning, more great Characters, that the world ever possessed at one time."[6] After securing independence from the British Empire, such an educational endeavor sought to affix the former colony into the annals of worldly works. In addition to providing advice on the proposed system of education, matriculation, and housing, Thornton's letter also provides Jefferson technical knowledge necessary to construct the still theoretical university. Including information to prevent injury to architecture, how to plaster in imitation of freestone, nearby suppliers of bricks, and recipes for mixing mortar; the paper letter serves to exchange knowledge in the absence of a physical repository of knowledge such as a library or university. Thornton's letter draws on literary modalities found in patents to specify technical knowledge such as his mortar recipe

[5] "From Thomas Jefferson to Joseph Priestley, 18 January 1800," *Founders Online,* National Archives, https://founders.archives.gov/documents/Jefferson/01-31-02-0275. [Original source: *The Papers of Thomas Jefferson*, vol. 31, *1 February 1799–31 May 1800*, ed. Barbara B. Oberg. Princeton: Princeton University Press, 2004, pp. 319–323.]

[6] "William Thornton to Thomas Jefferson, 27 May 1817," *Founders Online,* National Archives, https://founders.archives.gov/documents/Jefferson/03-11-02-0324-0001. [Original source: *The Papers of Thomas Jefferson*, Retirement Series, vol. 11, *19 January to 31 August 1817*, ed. J. Jefferson Looney. Princeton: Princeton University Press, 2014, pp. 387–392.]

requiring “two thirds sharp well washed fine white sand, & one third well slaked lime. I would mix these with Smiths’ Forge-water. I would also dissolve some Vitriol of Iron in the water for the ashlar Plaister, not only to increase the binding quality of the mortar, but also to give a fine yellow Colour - which on Experiment you will find beautiful and cheap.”[7]

These two architects discussing the possibility of purchasing artificial stone from Coade’s in London or making the substance in America locates a significant moment in the history of intellectual property and architecture between 1769 - 1821 {Figure 4.01}. When declaring independence from the British Empire, the American republic came to secure the right to determine treaties, trade, and self-evident truths. And yet, in the dialectic crucible forming this fledgling national identity, many things British continued to remain. One such British-American thing being the jurisprudence of intellectual property as it pertains to the duration of economic monopolies, the rights of inventors to use their inventions, and securing the intangible property of intellectual activities. In order to contextualize how the former colony came to inherit such a system and its implications on the risk to undertaking architecture, it is necessary to broadly survey the history of intellectual property. In this history are the means and methods by which intellection is transformed into property thereby securing rights of use for a specified duration of time. These patents, trademarks, copyright, and trade secrets disclose technical knowledge and participate in constructing a public domain via paper and property. Where the university is often assumed as the archetypal site of intellection exemplified by Thornton’s proposed combine sifting genius from the back woods; this dissertation expands the inquiry into the making of intelligence to include the office, workshop, studio, gallery, and most critically, the manufactory.

[7] “William Thornton to Thomas Jefferson, 27 May 1817,” *Founders Online,* National Archives, https://founders.archives.gov/documents/Jefferson/03-11-02-0324-0001. [Original source: *The Papers of Thomas Jefferson*, Retirement Series, vol. 11, *19 January to 31 August 1817*, ed. J. Jefferson Looney. Princeton: Princeton University Press, 2014, pp. 387–392.]

What will be explicated in these pages is the dyadic tension of intellectual property between the mobility of work and those who monopolize that work within the limits of territorial jurisprudence.

*Manufacturing Intellectual Property*

In 1769, the economic undertaking of Coade's Artificial Stone Manufactory came to lease a property at King's Arms Stairs, Narrow Wall, Lambeth, London. Directly across the river Thames, the first printing of the phrase intellectual property found its way into the paper pages of a literary periodical sold amidst the booksellers of Strand coffee houses.[8] While these two events are not directly related, the manufacture of artificial stone and the legal protection of its 'recipe' intersect through the definition of property. From the Latin *proprietas*, property was then defined as a "natural Quality or Virtue," a "Right or due," the "possession of a Thing."[9] Property here etymologically defines a peculiar quality, a special nature, or a particular characteristic in conjunction with the indication of rights, ownership, possession, and pleasurable consumption in usufruct.[10] For an annual rent to Jesus College, Oxford, Coade's was permitted "To Have and to hold the said piece or parcel of ground with the Messuage or tenement warehouse shed" for the pursuit of profit.[11] When property was linguistically attached to intelligence in 1769, the mental was distilled from the manual by judicial courts as it became possible to possess, profit, and own the substance of invention. This dissertation examines ontologies of intellectual property which separate the material substance of invention into tangible and intangibles at the dawn of the chemical and industrial revolution. Ontology here is defined by the objects enforced through the juridico-political instruments of intellectual property where an imagined trade secret recipe to

[8] *Monthly Review*, vol. 41, 1769. p. 290
[9] Bailey, Nathan. *An Universal etymological English dictionary...*1775
[10] Usufruct, from *usus*, to use, *fructus*, fruit. To profit from the fruit of the land. Called The Hopes, this land and its buildings, warfs, and appurtenances was not subdivided into singular properties by the Principal Fellows and Scholars of Jesus College, Oxford until 1828.
[11] See Leases of the Hopes, 1828 - c.1880, and Related Papers from Jesus College, Oxford for a copy of the lease after the land was of the "Former Coade artificial stone factory" extended to William Croggon 1828

make artificial stone is distinctly separate from the tangible thing. Intangible property such as a recipe, an idea, and a plan exists as a legal category of things defined by their absence of material substance. And yet, the dyadic tension set out by these intangibles simultaneously intersects the matter to which they indicate and the tangible substance which carries these forms of intellectual property. An eighteenth century recipe for artificial stone consisting of ball clay, flint, fine sand, soda lime-silica glass, grog indicates and organizes matter in the world through paper which describes this intangible property. Josiah Wedgwood's 1786 idea for a mercury thermometer to measure temperature inside a kiln indicates and organizes the unfired clay works of decoration and ornament while simultaneously being circumscribed by paper describing and drawing this invention.[12] An 1837 plan for the architecture of a manufactory in Lambeth organizing bricks and mortar is contingent on the limits of the paper substance of the lease containing the construction drawing. The limits of matter are those which exist in language.

The history of architecture and intellectual property share a common patriarch in Fillipo Brunelleschi. The early Renaissance Florentine architect, engineer, sculptor and inventor of ingenious things remains well known to the world today for building the brick Duomo atop the Cattedrale di Santa Maria del Fiore. The ultramontane competition to construct the Duomo and the egg smashing performance of Brunelleschi the "madman" which has been so well rehearsed since Giorgio Vasri's *Le Vite* in 1550 perennially inflates this figure into the disciplinary canon of architecture history. Alongside Brunelleschi's adept negotiation of guild politics is the often repeated anecdote that "He gave much attention to perspective, which was then in a very evil plight by reason of many errors...until he found by himself a method whereby it might become true and perfect--namely, that of tracing it with the ground-plan and profile and by means of

[12] *Additional Observations on Making a Thermometer for Measuring the Higher Degrees of Heat. By Mr. Josiah Wedgwood, F.R.S. and A.S. and Potter to Her Majesty. Read at the Royal Society, June 22, 1786*. London, 1786.

intersecting lines, which was something truly most ingenious and useful to the art of design."[13] While today Brunelleschi's role in perspectival representation more precisely reflects the fifteenth century social context in which he lived and worked, the life of Brunelleschi remains in use as a means to organize the disciplinary history of architecture. Exemplifying this disciplinary history is Erwin Panofsky's 1927 defense of the Florentine patriarch details "not cause for stripping Brunelleschi of the invention of this construction, the achievement of a true architect."[14] The popular rereading of Panofsky in the 1990s amidst the digital turn depicts "the moment that Brunelleschi made his gadget depicting the Florence Baptistery with such thrilling verisimilitude that it made people gasp, perspective as drawing began to determine the parameters of what the architectural drawing could be in the future."[15] By the present, disciplinary statements of fact find emphatic declarations that, "Of Course, in art and architectural history Brunelleschi is synonymous with perspective."[16] And yet, this history is perhaps less certain than meets the eye. Absent any archival evidence and relying upon oral histories, debates on the veracity of Brunelleschi's perspectival representation have long overshadowed his role in constructing intellectual property. In 1421, Securing what is arguably the first 'modern' patent in 1421, Fillipo Brunelleschi's *Il Badalone* invents a transportation method to float marble on the river Arno from the quarry to the Duomo construction site {Figure 4.04}. Expiring in three years time, the patent provides exclusive rights to the use of this invention for the purposes of making a profit from intellectual work. A contemporaneous drawing survives in Mariano Taccola's *De ingeneis* from 1422 visually illustrating the nature of Brunelleschi's *Il Badalone*. Taccola's drawing depicts a large cylindrical column freshly cut from the quarry freestanding among masonry tools and utensils such as chisels, picks, and

[13] "Lives of the Most Eminent Painters Sculptors & Architects." The Project Gutenberg eBook of Lives of the most Eminent Painters Sculptors & Architects, Volume II. by Georgio Vasari. Accessed October 26, 2021. https://www.gutenberg.org/files/25759/25759-h/25759-h.htm#Page_193.
[14] Panofsky, Erwin. Perspective as Symbolic Form 1st ed. New York: Zone Books, 1991. P 63
[15] Sylvia Lavin. "What Color Is It Now?" Perspecta 35 (2004): 98–111.
[16] Pier Vittorio Aureli. "Do You Remember Counterrevolution?: The Politics of Filippo Brunelleschi's Syntactic Architecture." AA files, no. 71 (2015): 147–165.

hammers. The cut column stands next to a wheeled wagon attached to a row boat that would pull the natural stone from the quarry to the river's edge. Arriving at the river's edge and removing the wheels, the wagon is then affixed atop wooden beams resting on four row boats with the entire float attached by rope to a Mediterranean cog. Estimating based upon the visual size of the masonry tools and the cog, Brunelleschi's *Il Badalone* could pull single pieces of natural stone five meters or more in size. The Italian word badalone derives from an abbatial furniture object useful in holding books, sermons, hymn manuscripts, and other literature. As badalone furniture secures works on paper to architecture, Brunelleschi's patent *Il Badalone* secures manual work moving marble stones from quarry to building.

Intellectual property defines the transmutation of intangible intelligence into tangible things. More specifically, this category of property "refers to creations of the mind: inventions; literary and artistic works; and symbols, names and images used in commerce."[17] This legal category today administered by the World Intellectual Property Organization is divided between Industrial Property which "includes patents for inventions, trademarks, industrial designs and geographical indications" alongside Copyright which "covers literary works...films, music, artistic works, and architectural designs."[18] Both historically and contemporaneously, the legal framework regarding intellectual property centers upon questions which ask if 'creations of the mind' are actually property? The perennial adjudication of this linguistic phrase functions to ontologically organize property and matters circumscribed by this legal domain. Continually changing and ever mercurial, intellectual property is structured between durational dyads which are simultaneously ephemeral and perdurable. Well stated by legal scholar Alexandra George, the ideational objects of intellectual property include "enumerated sum of its legal doctrines; intellectual property is the enumerated sum of the objects it regulates; intellectual property is a

[17] World Intellectual Property Organization. 2019. "What is Intellectual Property?" https://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf
[18] ibid.

type of ‘property’; intellectual property is whatever the law stipulates it to be; and intellectual property is whatever it is intuitively felt to be.”[19] While architecture was not explicitly incorporated into this legal framework until the 1990s, material inventions such as mortar, plaster, stucco, and artificial stone alongside books, visual material, tools, utensils, technology, and other things useful in the field have been regulated by the rubric of intellectual property at least since Filipo Brunelleschi’s *Il Badalone*. Near contemporaneous to Italian city-state ventures in capitalism is John of Utynam having the distinction of receiving among the earliest English patent in 1449 from King Henry VI. A glass maker from Flanders immigrating to England to make stained glass windows for Eton College, the patent secured a two decade monopoly for Utynam. Driving the flourishing of these early English patents was an increasing necessity to import artisans, tradesmen, and trade specialists from the European continent to the British Isles to promote industry, manufacture, and the polite arts. Throughout the Tudor period from King Henry VII 1485 victory in the Wars of the Roses until the end of Queen Elizabeth I reign in 1603, the granting of ‘Letters Patent’ by the English crown extending the royal prerogative to secure a monopoly on manufacturing promoting the affairs of state.[20] Under Queen Elizabeth and the juridical extent of her domain, patents for office titles, the leasing of land, charters to make markets, trading licences, the rights to explore and colonize, appointments, commissions, titles, utensils, inventions, and improvements to trade all issued from royal privilege.[21] As understood by Tudor subjects, these patents monopolize monetary gain by excluding all but the patentee who must abide by the legally binding agreement.

A distinct change in the English legal framework of intellectual property came with the Parliamentary passing of the 1624 Statute of Monopolies with the intent to limit royal prerogative

[19] George, Alexandra. *Constructing Intellectual Property*. 2012. p. 51
[20] Adam Mossoff, Rethinking the Development of Patents: An Intellectual History, 1550-1800, 52 Hastings L.J. 1255 (2001). Available at: https://repository.uchastings.edu/hastings_law_journal/vol52/iss6/2
[21] See the Patent Rolls - National Archives, United Kingdom, C66, https://www.reading.ac.uk/history/research/CompletingtheCalendarofPatentRollsElizabeth.aspx

while continuing state sponsored transition away from feudal systems. This pivotal statute placed a fourteen year durational limit on "all Monopolies, and all Commissions, Grants, Licenses, Charters, and Letters Patents" so as to protect the "Power, Liberty, or Faculty of the inventor of new manufactures" through a combination of royal prerogative, Parliamentary oversight, and English common law courts. Bearing no capacity to enforce Parliamentary law, this statute and the patent system was often manipulated by the English Crown to raise money without taxation. Alongside the legal regulation of manufactures and profound social change from the European Wars of Religion, the seventeenth century finds increasing attempts to exercise orthodoxy in the printed word thus affecting the right to make literary copies. The 1662 *Licensing of the Press Act* pivotally ruling on the powers of censorship by the Worshipful Company of Stationers seeking to ban "heretical seditious schismatical or offensive Books or Pamphlets" in the realm of England.[22] In effect, by consolidating powers of censorship exclusively to the Stationers Company, the realm of England built a monopoly on the right to make paper copies. Scholars have long explored the history of patents and the right to make copies attempting to understand the emergence of intellectual property within broader social, political, and cultural contexts. While the precise nature of this sporadic emergence is neither homogenous nor possessing teleological linearity, I argue there is a change to the exercise of power through paper and property. From the use of monarchical prillege to stimulate industry, expanding colonial ventures, state sponsored undertakings, censoring religious heterodoxy, and the increasing cultic attachment to the work of singular subjectivities; nascent systems of intellectual property consolidate power by legal decision. In the gradual transition from feudalism and into capitalism, forms of mutual obligation land tenure are replaced by the monopoly of property and the singular possibility of its ownership. In England, Scotland, and Ireland, this transition brought profound changes to the role of absolute authority and the divine

[22] *An Act for preventing the frequent Abuses in printing seditious treasonable and unlicensed Books and Pamphlets and for regulating of Printing and Printing Presses.* 14 Car. II. c. 33.

right of monarchy embodied by the Glorious Revolution from 1688 - 1689 deposing Catholic King James II and VII for Dutch Protestant stadtholder William III of Orange. The effects of this Revolution dislocate power from monarchy into Parliament thereby resulting in the 1689 *An Act Declaring the Rights and Liberties of the Subject and Settling the Succession of the Crown* more frequently known as the *Bill of Rights*. While the power to issue patents found its way into the Parliament, the interests of these elected members frequently came to align with the property owning landed gentry from which members themselves could claim to be regardless of their specific party affiliations. Resulting from this exchange of power came the decentralization of authority following the 1694 decision by Parliament not to renew the printing press monopoly licensed to the Stationers Company. Driving this change to monopolies and the right to copy is the cosmopolitan context of London housing a growing literary and mercantile culture in debt to the rise of reading and colonial trade. People had more and they had more time. However modest, this oversight on the leviathan of power put the question of property and its invention into the hands of a public domain.

Another significant change in the right to make a copy came as a result of the *Copyright Act of 1709*.[23] Following solicitations to Parliament by The Worshipful Company of Stationers since the lapse of their 1694 license, the *Copyright Act of 1710* also known as the *Statute of Anne* sought to secure the encouragement of learning by vesting the right to copy with authors. This statute set out regulations on persons who had "taken the liberty of printing, reprinting, and publishing, or causing to be printed, reprinted, and published, books and other writings, without the consent of the authors or proprietors of such books and writings."[24] In addition to regulating unlicensed publications and literary piracy, the statute established a fourteen year durational limit to authors ownership of their literary property with the possibility of renewing these rights so

[23] See The Avalon Project, Yale Law School for original language of Copyright Act of 1710: http://avalon.law.yale.edu/18th_century/anne_1710.asp
[24] Ibid. Section I

long as the author remained alive. In effect, the act legally defines ‘the author’ as the one who owns the right to copy. Only in death or the decision to forgo renewal could the right to copy be acquired by another person or publisher. Although a figure known as the author exists on paper in this statute, the legal scope primarily sought to regulate the printing and publishing market of London and Great Britain. The statue built a network of nine institutions acting as “warehouse keepers” with each holding a tangible copy of the authors intangible property at “the royal library, the libraries of the universities of Oxford and Cambridge, the libraries of the four universities in Scotland, the library of Sion College in London, and the library commonly called the library belonging to the faculty of advocates at Edinburgh” for publici juris.[25] The library, particularly those at universities, came to be useful as both an archive of intelligence and in the continuation of making new knowledge. Throughout the eighteenth century, bookish cultural practices such as reading, writing, drawing, editing, and publishing literature primarily caused changes as regards the question of intellectual property. More so than any other question, what came to matter results from the vexing task of determining the durational limit on the right to copy by author, publisher, or other interested party. Reconsidered rhetorically, what is the time limit on owning intellectual property? This discourse on ownership between authors, book publishers, and English courts underwent legal adjudication in 1769 as Coade’s Artificial Stone Manufacture began to make ornaments and the first printing of the phrase ‘intellectual property’ in the London periodical *Monthly Review*.[26] Although these two events do not directly intersect as Coade's did not cause the printing of this phrase nor did this phrase cause the establishment of Coade’s, they are both mutually contingent due to English law and exist within a social context where a discourse on property began to flourish. What is critical to the emergence of the linguistic phrase is the 1769 court case between 1769 *Miller v Taylor*. The dispute of the case involves the claim of perpetual common law by book publisher Andrew Miller for the rights to publish

[25] Ibid. Section V
[26] *Monthly Review*, vol. 41, 1769. p. 290

James Thomson poem cycle *The Seasons* written between 1726 - 1730 {Figure 4.05}. Nearly four decades after the poem's first publication, the literary work had passed into common law with Miller laying claim to perpetual copyright. In effect, this meant that literary work never entered the public domain and common law secured permanent ownership to book publishers. A competing copy of Thomson's poem by publisher Robert Taylor and his dispute with Miller found the two men in the Court of the King's Bench under politician and judge Lord Mansfield. Ruling in favor of Miller, the court preserved a monopoly by publishers on intellectual property in publications they acquired under common law thus preventing any book from ever entering the 'public right.'[27] With news of the court case rapidly circulating through the Strand, coffeehouses, book sellers in St. Paul's church-yard, authors, pamphleteers, and publishers; it is unsurprising that the phrase 'intellectual property' came to ontologically organize this discourse. The 1769 ruling establishing perpetual copyright directly led to another legal dispute again regarding publication rights for Thomson's *The Seasons* in 1774 between *Donaldson v. Becket*. This time, the debate on statutory limits of common law copyright found its way to the House of Lords attempting to determine the rights to publication as established in the *Statue of Anne*. Answering a series of legal questions set between dyads of authors rights and perpetual copyright of publishers, the House of Lords ruling sided with author's rights of common law at first publication being circumscribed by the *Statue of Anne*. In effect, the House ruled against book publishers rejecting perpetual copyright by enforcing statutory limits on the right to use intellectual property. This ruling firmly put an end to the publication monopolies as held by booksellers and their shared institution of the Stationers' Company.

The livery companies of London embody a collective identity of labour as it pertains to the making and providing of goods, services, and commodities. Extending from Medieval guilds

[27] "Publici juris, or 'public right' is the legal term which predates the nineteenth century French phrase of 'the public domain.'

and mutual interests trade associations, the authority of livery companies regarding the regulation of their specific trades often finds them at the center of patents, licenses, trademarks, and other nascent forms of intellectual property. These livery companies make use of a seven year apprenticeship before approving a full member freeman or freemaiden. The mark of full membership was deployed through the hallmark which operated as a de facto trademark identifying individual tradesperson alongside company affiliation. With social life centering around company dinners qua institutional meetings, to affiliate oneself with these companies brought significant prestige in the English class system. Bearing the stylization of 'Worshipful Company,' these mutual interest companies derive economic and political authority from regulating their shared trade and exerting market control. Worshipful Companies of specific trade collectively construct and control the good, commodity, or service they provide throughout the city. Between 1769 - 1821, Coade's Artificial Stone Manufacture made company arms for Embroiderer and Leathersellers Hall; an allegorical statuary of charity acquired by the Fanmakers; chimney's and plaques for Fishmonger's Hall; a pediment and a frieze of swag for Skinners Hall; plaques, capitals, and a frieze of swag for Watermen's Hall; patera, plaques, ornament, and four putti standing as allegories of the seasons for Stationers Hall; St. George and the Dragon statuary for Mercers Hall, Carpenters; Medallions for Tanners Hall; balustrades, swans, company arms, and an allegorical statue of charity for Vintners' Hall, company arms and pediment ornament for the Cordwainers Hall; and ornament for Grocers, Armourers, Merchant Taylors, Carpenters, Leathersellers, and Wax Chandlers Hall.[28] When it came to demonstrating intangible property of power in collective identity, only the durability of Artificial stone with its proof of utility to resist fire, frost, and the weather was suitable to secure the prestige and pageantry of London's livery companies. The extraordinary history and prestige of London's livery companies comes into full view every year for the Lord Mayor's Show whereby a parade of regalia, livery fashion, and cultural pageantry fill the River Thames and historic city center.

[28] Kelly, Alison. *Mrs Coade's Stone*. Upton-upon-Severn: Self Pub. Association, 1990. P. 399 - 425

Coade's share in this pageantry is captured by Jon Edy in his 1791 engraving *A View of Westminster Bridge, The Abbey &c From King's Arms Stairs, Narrow Wall, Lambeth Marsh* {Figure 4.06}. Framing an urban scene set on the river Thames in Georgian London, the engraving contains one of the very few visual representations of Coade's Artificial Stone Manufacture. Arriving on the south bank by boat are four customers and a man delivering fresh flowers. Laid ashore in front of the manufacture are vessels of commerce and pageantry with one barge in center bearing the city flag and crest marking it as a parade float for the Lord Mayor's Show alongside the livery companies of London. Under a Red Ensign and the purview of a fashionably dressed pair who survey the South Bank, craftsmen carry goods between Coade's Artificial Stone Manufactory and slip. Edy's engraving compositionally connects both river banks with the latest infrastructure using Charles Labeley's Westminster Bridge as a horizon leading a viewer's gaze into Westminster Abbey whose height sets it apart from surrounding environs. The engraving comes complete with a visual annotation system to identify buildings in London's skyline. Using flocks of nondescript avifauna numbering from one to five fly in proximity of the architecture they designate; Westminster Abbey and House, Parliament House, St. John's Church, and the residence of Edy's patron, His Grave the Duke of Richmond's House at Whitehall. In contrast to Edy's *A View of Albion Mill on Fire* published in the same year, this engraving is useful for sightseeing and to commemorate a South Bank shopping trip to Coade's Artificial Stone Manufacture. Alongside the right to copy books, the rights to Edy's engraving had come to be secured in the eighteenth century by the Engraving Copyright Act of 1734 and 1766 due largely to the efforts of engraver William Hogarth. What is shared between books, pamphlets, engravings, and printings is the material of paper which found itself under increasing regulation as a result of the collective Copyright Acts from 1734 - 1888.[29]

[29] *The Copyright Acts 1734 - 1888* collectively enumerates a series of laws following the 1710 *Statute of Anne* that gave legal regulation to printing, publishing, sculpture, dramatists, lectures, prints, engravings, and fine arts.

Permeating intellectual property in 1769 is a distinct sense of identicality and identity. Etymologically deriving from the Latin *idem* meaning the same, this sense manifests from a distinct set of English cultural practices. Who or what secures the right to make a copy also secures the possibility to capital as it can be exchanged with property. From the Tudor to Georgian England, English identity has always been deeply contingent on possessing property. In the genealogy of a family name, the inheritance of a Palladian country house and the domestic things contained within it, bearing a Royal Warrant as did Eleanor Coade, having a will, or holding a life assurance policy all exemplify the use of property to build an identity in English society. Inversely, the marginalized, minorities, poor, and human lives who are missing from these annals of history do so because of the glaring systems of inequality which cast them aside from holding property. Beyond individual or familial systems of holding property, London in 1769 also had collectivities in livery companies, churches, mutual interests societies, trade associations, and businesses such as insurance companies all exemplifying means by which eighteenth century subjects derive identity from property. Before 1769, the intangibility of intellectual property relies upon tangible property to establish an identity for the types of subjects who come to use these legal monopolies to make capital. This value of sameness extends into British Neoclassical architecture and the polite arts which make use of identicality and mimesis. The apex of this sameness is the English Palladian country house. Practically homologous with an ideal English identity, the Palladian country house also typifies disciplinary questions of intellectual fidelity as it pertains to making copies from classical treatises.[30] Set between dyads of paper and property, these cultural practices underwent radical change

[30] The English Palladian tradition is hardly homogeneous. Arriving in the British Isles from Venice with Henry Wotton, the architecture tradition contains early figures such as Inigo Jones in the sixteenth century. Increasing popularity in the seventeenth century through publications and projects by Colen Cambel, William Kent, and Richard Boyle. By the middle of the eighteenth century, the Palladian tradition became Neoclassical in the work of Robert Adams, William Chambers, and publications by James Stuart and Nicholas Revett began to differ by drawing on precedents from Greece, the Orient, and China.

resulting in the artificial origin of originality. Or as Mark Rose once wrote, ""by 1770's the doctrine of originality was orthodox."[31] These dyads of property came to be tested and reconfigured between 1769 - 1774 as a result of legal cases which briefly establish possession in perpetuity before an entire reversal and overturning of the precedent. After 1774, the legal protection of original works of intelligence came to acquire modern forms of property ownership as the patent, copyright, and trademark underwent revision. More specifically, the value of difference came to usurp sameness.

*On the Right of Using Cement*

What right does an anonymous mason have to use a specific cement? Does the cement belong to the mason who mixes the specific ingredients according to a set of learned practices, the patron who pays for the project, or the educated mason with a license to use a patent substance? At what point in the measured combinatorics of mixing matter to make an artificial material does the question of rights come to be invented and how do these rights reflect on the ownership of intelligence? Or, and perhaps more central to Eleanor Coade and the manufacturer of artificial stone, why would a person choose not to acquire a patent? All of these queries typically fall outside the scholarly domain of orthodox histories of intellectual property due in part to the absence of a legible market for artificial materials in the eighteenth century and the whiggish assumption that having a patent drives change. The general shape of this orthodox historiography argues for an increasing necessity to regulate the seventeenth century publishing market of London and Great Britain leading to the coincidental eighteenth century emergence of a bourgeois romantic author as a holder of property rights who later acquires transnational rights to their economic monopoly at the end of the nineteenth century.[32]

[31] Rose, Mark. *Authors and Owners : the Invention of Copyright / Mark Rose.* Cambridge, Mass: Harvard University Press, 1993. P. 6

[32] Ron Deazley organizes an orthodox history of intellectual property in his 2004 *On the Origin of the Right to Copy* including the work of Zorina Khan with the US National Bureau of Economic Research, and legal scholars Harry Ransom, Lyman Ray Patterson. Alternatively, Deazley separates these orthodox

More nuanced scholarship has demonstrated this legal system and its change to be far more heterogeneous and characterized by the exception as compared to the standard. For example, John Nasmyth's 1711 Patent to ferment sugar molasses widely considered to be the first patent to use a specification did not become adopted until 1733.[33] Richard Holt and Thomas Ripley's 1722 patent for *Compound Liquid Metal for Making Artificial Stone and Marble* exemplifies a patent that uses language to describe a commodity but forgoes using a specification to detail and disclose technical knowledge {Figure 4.10}.[34] There is no clear account for such wide variability other than to suggest that nascent systems of intellectual property made use of different forms to manage unknown knowledge. The proliferation of specifications after 1733 and the augmentation of patents with drawings in the 1740s to explain inventions suggest a mutability to the management of knowledge that language alone could not provide. By the late 1770s amidst the increasing emphasis on originality and authorship, the patent came to acquire limitations imposed by statutory limits. The polar dyads of traditional scholarship on intellectual property often sways between discursive poles emphasizing market regulation or the rise of the individual inventor qua author in a Sisyphean dialectic revolving around correlation, causality, and historical coincidence. Either side misses the point. Patents as a type of intellectual property demonstrates two distinct possibilities for a capitalist attempting to exchange commodities for capital. The first is to secure a patent by paperwork thus disclosing technical knowledge and establishing an economic monopoly which must be defended through the judiciary apparatus. The second possibility is to forego a patent and to rely upon branding and other methods as a means to establish an economic monopoly. In the 1770s, these two

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histories from comparative literature methodologies emphasizing the author such as Kathy Bowrey, Jane Gaines, and Mark Rose. Deazley's own scholarship draws from David Saunders defaulting any notion of linear progress leading directly to our modern forms of intellectual property. See Deazley, Ronan. *On the Origin of the Right to Copy : Charting the Movement of Copyright Law in Eighteenth Century Britain (1695-1775) / Ronan Deazley*. Oxford ;: Hart, 2004.

[33] Bottomley, Sean. *The British Patent System During the Industrial Revolution, 1700-1852 : from Privilege to Property / Sean Bottomley.* Cambridge, United Kingdom: Cambridge University Press, 2014. P. 46 - 47

[34] *Compound Liquid Metal for Making Artificial Stone and Marble. Patent No. 448 - Mixture for Making White Ware.* Richard Holt and Thomas Ripley, London, 1722.

possibilities were demonstrated by historical persons who certainly knew of each other through business, newspapers, and shared social networks in the city of London. In this section, I examine the use of a patent in the court case of *Liardet v Johnson* in contrast to the uselessness of a patent at Coade's Artificial Stone Manufacture.

On 3 April 1772, John Liardet received a patent for the use of a cement composition useful in architecture, building, and construction {Figure 4.11}. A Protestant clergyman from Switzerland, Liardet went into business with the Adams at the height of Scottish families architectural fame in 1774. Through a license, Liardet's monopoly on the right to use the patent substance was given from Liardet to the Adams brothers. This license specified the cost as "6d per square foot on the surface of all plain buildings, and 2d per foot running measures for arrises."[35] In 1777, Liardet and the Adams brothers filed a complaint against English architect and surveyor John Johnson claiming Johnson had read the specification in Liardet's patent and copied it for work in a series of country houses including Castle Ashby, Terling Place, and Woolverstone Hall. In effect, Johnson stood accused of infringing upon the economic monopoly extending from Liardet's 1772 patent then exclusively licensed by the Adams brothers. Johnson's response to the lawsuit states Liardet neither invented nor made any improvements that warrant a patent, moreover, after inspecting Liardet's specification Johnson had found similar recipes already available and Johnson's cement differed from that of Liardet through the addition of blood serum. The lawsuit brought two trials on 21 February 1778 and 18 July 1778 largely centering on the substance of cements and not patents with Liardet winning both cases.[36] Historians of intellectual property situate the case as the most expensive ato date and discuss the

[35] Adams, John N, and Gwen Averley. "The Patent Specification the Role of Liardet v Johnson." *Journal of legal history* 7, no. 2 (1986): P. 162

[36] I am in debt to architecture historian Frank Kelsall's 1984 background of the case which provides financial and contractual exchanges between Liardet and Adams as well as a riveting consideration of the lawsuit on the history of patents and intellectual property in 1986 by legal scholars John Adams and Gwen Averley. See Kelsall, Frank. "Liardet versus Adam." *Architectural History* 27 (1984): 118–26. https://doi.org/10.2307/1568457. AND Adams, John N, and Gwen Averley. "The Patent Specification the Role of Liardet v Johnson." *Journal of legal history* 7, no. 2 (1986): 156–177.

unprecedented publicity appearing in newspapers of the day. This cost and legal celebrity deriving from the involvement of the Adams brothers with their name brand style only just beginning to be eclipsed by James Wyatt. Never before had there been such a financial investment defending intellectual property and never before such a public discussion regarding the cost of its protection.

The scholarly debate regarding *Liardet v. Johnson* stretches to Wyndham Hulme's considerations in 1896 suggesting that this case is 'landmark' for removing the remuneration of personal capital and labor into making a patent. The legal value of the economic monopoly established should reflect this overhead cost. Hulme - "Lord Mansfield, in *Liardet v. Johnson* -- a trial which may be regarded as a landmark in the history of English patent law -- invested the patent specification with a character and function totally distinct from that with which it had been originally introduced."[37] This opinion was reconsidered in the 1980s by scholars such as John Adams and Gwen Averley suggesting the form of the patent did change in *Liardet v*. *Johnson*, however this change was not nearly as pivotal as suggested. The cast of *Liardet v Johnson* largely came from issues facing the market and makes of the day; it is incorrect to assume the case to be a watershed. The case is atypical from others in the day largely as a result of Judge Mansfield allowing the use of expert witness in cases regarding scientific matters as well as the length and cost of the infringement case.[38] While some scholars in the 1980's gave the case consideration, the implications in terms of the history of architecture and a little known publication by Liardet have since received little to no scholarly attention. The value of reconsidering this patent case extends from the more recent ontological inclusion of architecture work as a form of intellectual property by which the plethora of subjects who comprise the field

[37] Hulme, E. Wyndham. "The History of the Patent System Under the Prerogative and at Common Law." *Law quarterly review* 12 (1896): 141–.
[38] Adams, John N, and Gwen Averley. "The Patent Specification the Role of Liardet v Johnson." *Journal of legal history* 7, no. 2 (1986): 156–177.

can now secure an economic monopoly on the intangible property of their mental work. Today, the architect can own their ideas. As a legally recognized object, the patent codifies a right to exclude all others from replicating, reproducing, and using what the patentee has specified and secures a type of property through the paperwork of governmental administration. For the patentee, the patent secures an exclusive right to use the specified object for a durational period of time. As did John Liardet's patent cement.

In 1778, Liardet wrote *An Appeal to the Public on the right of using Oil-Cement or composition for Stucco*.[39] Sold for one shilling sixpence amidst the booksellers of the Strand and St. Paul's church-yard, the publication sought to publish Liardet's patent and specification, statements from authors, evidence from the trials, testimonials on the author's substance, and an account of oil cements in use throughout England. Often a source of scholarly confusion, the 1778 publication marks the definitive moment that Liardet and the Adam's brothers rebrand the artificial substance now being sold as Adam's *New-Invented Patent Stucco*. Filing the pamphlet is the language of politics, power, and privilege granting rights, titles, interest, equity, and authority by an act of Parliament. The grant of this patent came at the provision that Liardet "particularly describe and ascertain the Nature of his said Invention, and in what manner the same is to be performed, by an Instrument in Writing, under his Hand and Seal, and cause the same to be enrolled in our High Court of Chancery, within four Calendar Months (else) whatever hereby granted, shall utterly cease, determine, and become void."[40] With the use of language and drawing, the patent specification came to circumscribe the object of invention, or its representation at the very least. Notably, the language of a specification is predicated upon a description of performance establishing a state of conditionality for the invention. A patent is

[39] *An Appeal to the Public on the Right of Using Oil-Cement or Composition for Stucco, &c: Containing Provisos in Letters Patent Granted for Inventions, and the Provisos in the Act of Parliament for Extending the Term of the Patent Granted to John Liardet*. London: And sold by J. Hand, J. Bew, and J. Pridden, 1778.
[40] Ibid. P. 7

expected to perform as specified. Alongside Liardet's own specification are a series of precedents to establish degrees of difference including those of Alexander Emerton, David Wark, and Charles Rawlinson. In business from 1730 - 1760, Emerton's patent describes a "new invention" for "covering and painting the timbers, planks, and boards of ships, yachts, barges, lighters, boats, or vessels of any sort or kind whatsoever; and likewise the Timber, Boards, and Plaistering in Building, or any thing that may be covered, or painted, according to my New-invented Method; to have, hold, use, and exercise the said Licence, unto me, my Executors, Administrators, and Assigns for the Term of Fourteen Years from the Date of the said Letters Patent."[41] Emereton's patent for nautical use relies upon boiling oils into a glutinous consistency then including powdered glass, stone dust, and sand to cement over wood before receiving a final painting. The substance was said to have "an exact resemblance of stone."[42] David Wark's patent to "use, exercise, and vend, withing England, Wales, and Town of Berwick upon Tweed, and all his Majesty's Colonies and Plantations belonging to his Kingdom and Dominions, my invention of a Composition or Stone Paste, made with Oils and various other Things, for covering of Walls, Roofs, and Domes, lining of Water-Cisters, Aqueducts, or Fish-Ponds, and cementing the Joints of Free-stone together to prevent Rain-Water penetrating through the Walls, and for many other Purpose."[43] Wark's 1765 specification makes use of oils of tar, turpentine, linseed, sand of free-stone, marble, drift sand, potters clay, brick-dust, brown sugar, stone, or chalk lime proportionally combined based upon the intended application. Lastly, Charles Rawlinson's 1772 cement patent intended to be used in maritime weather along the coast to resist the violent penetration of rain. As a means to do so, Rawlinson specifies "To make a hundred Weight, take 66lb. Of the best Whiting, 12lb. Of Sea Coal or Wood Ashes sifted very fine, 10lb. Of hard Brick or Tile sifted fine, 6lb. Of White Lead, and 6lb. Of Red Lead*; put all into an Iron Pot, and heat it over the Fire till the Moisture is entirely evaporated; keep it

[41] *An Appeal to the Public on the Right of Using Oil-Cement…John Liardet*., 1778. P. 11
[42] Ibid. P. 12 - 13
[43] Ibid. P. 15

stirring all the Time, and when well dried, put to it three Quarts of bodied, and fix Quarts of raw, Linseed Oil. All together will weight about 117lbs, it will be reduced in drying 5lbs, remains nett 112lbs. Mix the Above well with the Hand in a Tray, or on a board; then well beat it till becomes tough and soft; mould it thoroughly with the Hand, and examine whether all the Materials are well incorporated: It they are, it is fit for use."[44] Quite innovative by Rawlinson is the practice of measuring material loss and incorporating this into his calculations to derive capital. Moreover, the double-entry literary format of Rawlings mixture listing each ingredient alongside the measured weight makes it the most legible of all included patents. John Liardet's own patent states that he derives his artificial substance after study and experience which more precisely produces two distinct patents. His 1773 patent for use in all the "branches of buildings" describes a grease to preserve steel and iron consisting of a "drying oil, any kind of absorbent matters, white or any colored lead, solid whatsoever (gravel, sand, &C.) as Circumstances will require it."[45] Declaring the nature of this said invention to preserve steel and iron from rust and damage resulting from friction. Three years later in 1776, the artificial substance at the center of the legal dispute between Liardet v. Johnson appears in print in Liardet's pamphlet. It is worth reproducing the patent in entirety to exemplify the stark contrast between cited precedents and the complexity of the substance that required the testimony of expert witness to discern the nature of the invention. To make Liardet's *Oil-Cement* also called Adam's *New-Invented Patent Stucco;*

> "For the first Coat, take twenty-one pounds weight of fine whiting or take Oyster Shells or any other Sea-Shells calcined, or Plaister of Paris, or any calcarious material calcined and pounded, or Matter pulverised, or any absorbent material whatever, proper for the purpose; add White or Red Lead at pleasure, diminishing from the other absorbent Materials in proportion to the White or Red Lead added; to which put four quarts, Beer-Measure, of Oil, and mix them together with a *Grinding-Mill, or any other Machine or Instrument proper for

[44] *An Appeal to the Public on the Right of Using Oil-Cement…John Liardet*., P. 19 - 20
[45] Ibid. p. 26

> levigating such materials, the Invention of levigating or grinding of such Materials together for this particular Purpose being first used and discovered by me; and afterwards mix and beat up the same well with twenty-eight quarts, Beer-Measure, of any sand or gravel, or of both, mixed and sifted, or of Marble or Stone pound, or of Brick-dust, or of any kind of Metallic or Mineral Powders, or of any solid Material whatever, pounded or in Powder, for the purpose. For the second Coat, take sixteen pounds weight and an half of superfine whiting, or take oyster-shells or any other sea-shells calcined, or Plaister of Paris, or any calcarious material calcined and pounded, or matter pulverised, or any absorbent material whatever, proper for the purpose; add sixteen pounds weight and an half of white or red lead, to which put six quarts and an half of oil, wine-measure, of fine sand or gravel sifted, or of stone or marble pounded, or of pyrites, or of any kind of metallic or mineral powder, or of any solid material whatsoever, pounded or in powders, fit for the purpose, and for the purposes of ornaments, or casting in moulds, or such like. This composition requires a greater proportion of sand, gravel, or other solids according to the nature of the work, or the uses to which it is to be applied."[46]

Alongside this lengthy description, Liardet also provides a description how to apply the Oil-Cement Stucco in two coats with the use of a purpose built utensil also invented by Liardet. His trowel is a float made of wood covered with ivory, glass, horn, or comparable surface that does not stain. The pamphlet includes a drawing of Liardet's float to smooth the surface before receiving a final layer of paint. It is unsurprising that the court case between Liardet v Johnson made use of expert witnesses. In contrast to the three precedents Liardet includes, his own patent substance contains at least twice as many words, ingredients, stated variations, two corequisite inventions including his wooden float trowel and a grinding mill, and complex liquid measures. Whereas the precedent cements of Emerton, Wark, and Rawlinson conform to a page and brief description, the exponential increase in quantity of language to describe the manufacturing process and the reliance on technical terminology by Liardet makes his artificial substance difficult to make according to the specification. Moreover, the variegate sources of

[46] *An Appeal to the Public on the Right of Using Oil-Cement…John Liardet*., P. 32 -38

calcium carbonate either in sea shells, oyster shells, or the gypsum of plaster of paris poses a problem for a user of this patent. What appears precise is in actuality the opposite given the differing levels of calcium carbonate in different species of shell. Liardet's patent exemplifies the problems with precedent and invention in all the branches of building. In eighteenth century English, Samuel Johnson's *A Dictionary of the English Language* defines precedent as "former, going before," and "any thing that is a rule or example to future times; any thing done before of the same kind."[47] The peculiarity of precedent in terms of patent law is that the novelty of innovation requires knowing precedent as a means to establish the difference of an innovation. In order to secure a patent, Liardet must differentiate the substance of his intelligence from those that came before. And yet each precedent and Liardet's cement share necessary ingredients of calcium, aggregate, and water well known to architects and builders since the Roman writer Marcus Vitruvius Pollio wrote of *opus caementicium* in the first century before the common era. Systems of common-law as those in use in eighteenth century London rely upon *stare decisis* that legally establishes a decision in time and location by which future actions are decided. The precedent is mutable and malleable according to judicial, social, and cultural procedures which make use of what came before to define the forward outlook of the present. Precedent has always underpinned the practice of architecture. When the Adams Brothers and William Chambers changed the precedent of their architecture making use of measurements and drawings from James Stuart and Nicholas Revett's *The Antiquities of Athens*, they displaced a disciplinary discussion on the merits of Palladianism. Past and present, the precedent contains the fruit of history and seed of future possibilities. The scholarly debate on *Liardet v. Patent* extends from the question asking; did this case change the nature of the patent to securing inventions already in use into securing inventions which until then had only been disclosed by paper documentation. The supposed 'landmark' value of this case results from

[47] "precedent, n.s." *A Dictionary of the English Language*, by Samuel Johnson. 1755. Accessed 2021/11/16. https://johnsonsdictionaryonline.com/1755/precedent_ns

courts removing the cost of personal investment including time, labor, and capital from making intellectual property from the value of the patent.[48] I argue that what is absent in the consideration of legal scholars is the social context of invention carried by disciplinary traditions of architecture, building, construction, and craft. Liardet's invention is not the work of an individual intelligence, it carries with it a millenia old social history of trial and error. I agree on the critical importance of calculating and including a pantee's time, labor, and capital investment on determining the value of a patent; but what is the cost of history? How much individual remuneration can be calculated from a substance that is synonymous with the history of architecture and its ornamentation?

The history of artificial stone offers a salient example to reconsider the value of patents. A value deriving in the right to an economic monopoly whereby one can exchange a commodity for capital. However, the question with Coade's Artificial Stone Manufacture is a question of absence; why not secure a patent between 1769 - 1821? It is undeniable that the Anglosphere during these years is overtly dominated by a white male patriarchy who holds and withholds property from women. In England, the consolidation of land ownership is synonymous with class power operating to prevent social mobility beyond stations assigned at birth. Being a woman and a religious Nonconformist, Mrs. Eleanor Coade faced innumerable obstacles in her steadfast resilience as the proprietor of a manufactory in Lambeth, London. Considering Coade in the context of women inventors and industrialists yields only a few which illuminate the gendering of property disparity. Dissenting Quaker Sybillia Righton Masters and her 1715 patent for "Cleaning and Curing Indian Corn" lists her invention under her husband Thomas Masters in whose name the patent is held due to the legal system denying her ownership.[49]

[48] See Hulme, E. Wyndham. "The History of the Patent System Under the Prerogative and at Common Law." *Law quarterly review* 12 (1896): 141–. And Davies, D. Seaborne. "The Early History of the Patent Specificiation." *Law quarterly review* 50, no. 197 (1934): 86–.
[49] GB Patent 604

The patent for Righton's remarkable invention exquisitely illustrates the water or horse powered wooden mill machine using hammers to pulverize corn meal through inclined trays into a substance she called Tuscarora Rice. The patent contains a specification in print recording Sybillia as the source and a handwritten note by Sybillia herself describing a food manufacturing process later established by Thomas Masters with the invention at the Governor's Mill in Williams, Pennsylvania. In 1793 at nineteen years of age, fellow American inventor and Quaker Hannah Slater secured a patent to improve cotton thread and sewing which was filed in the name of her husband, "Mrs. Samuel Slater."[50] An Englishman, Samuel Slater came to be known as 'Father of American Manufactures" by then future President Andrew Jackson for bringing technology to the fledgling Republic and his mill still stands today in Pawtucket, Rhode Island.[51] On 30 August, 1802, Mary de Lima Barreto and her husband Joseph de Oliveira Barreto from Lisbon secured an English patent for "a method of treating and curing of ruptures."[52] The said invention made a powdered substance from incense, almecago, turpentine, capivi, and white wax applied to the patient and covered by leather. Many British-American patents during these years sought the financial offerings by mutual interest societies seeking to incentivize improvement, innovation, and industry. One such patent response to a premium then offered by the Society for the Encouragement of Arts, Manufactures, and Commerce includes Miss. Elizabeth Bell's 1803 patent brick chimney sweep which sought to abolish the necessity of climbing boys.[53] The moral and material hazards to youth and architecture alike lead Bell to propose a fixed attachment boarding on the prosthetic thereby decreasing the danger of this labour. The cause of this concern was so widespread in

[50] See Slater family. 1793. *Slater Family Business Records, 1793-1926 (inclusive)*. From Baker Business Special Collections, Harvard University, Boston, MA.
[51] Cameron, Edward Hugh. *Samuel Slater, Father of American Manufactures / Edward Hugh Cameron.* Freeport, Me: B. Wheelright Co., 1960.
[52] See *The Repertory of Patent Inventions, and Other Discoveries and Improvements in Arts, Manufactures, and Agriculture ... : Ser.2 V.3 1803*. England: T. and G. Underwood [etc.], 1803. P. 236; and Barreto, Joseph de Oliveira. *Specification of Joseph de Oliveira Barreto and Mary de Lima Barreto : ointment, &c. for ruptures.* 1856. From The Wellcome Collection, London, UK
[53] Phillips, George L. "The Abolition of Climbing Boys." *The American Journal of Economics and Sociology* 9, no. 4 (1950): 445–62. http://www.jstor.org/stable/3483549.

London leading to the formation of a mutual interest society peaking the interests of architect Sir John Soane who stayed apprised of their reports.[54] In America, either Hazel Irwin's 1808 patent for a cheese press or Mary Dixon Kies 1809 patent for weaving technique to make hats in short supply due to Napoleonic Wars and trans-Atlantic embargo mark the first women to hold patents in their own name.[55] The scarcity of women who own patents alongside these remarkable few attests to the gendered asymmetry of owning property in Eleanor Coade's Anglosphere. Due to an absence of archival material, we cannot know with any certainty the exact nature of the decisions when the Coade family and Daniel Pincot entered into a business arrangement at the end of the 1760's, nor can we know the day to day decision behind historical persons such as Eleanor Coade primarily responsible for managing the manufacture. Coade continually faced the effects of gendering property having to make use of her Uncle Samuel Coade in a 1798 lawsuit *Coade v. Fox*, again in 1803 *Williams v. Coade*, and to hold her Belmont estate in Lyme Regis until she took over the lease in 1784.[56] Moreover, Eleanor Coade employed renowned artist John Bacon as superintendent of the manufacture from 1769 until his death in 1799, she added her cousin John Sealy to the trademark from 1783 until his death on a promotional trip to American in 1813, and gradually disinvested herself from the business until her death from 1813 - 1821 as her in-law by Marriage William Croggon acquired and later liquidated the artificial stone manufacture. An unmarried woman, Mrs. Eleanor Coade survived and thrived making significant contributions to architecture, industry, arts, and science. And yet, I suggest that her decision not to acquire a patent for her *Lithodypria* is only partially constrained by religion, class, and patriarchy. More precisely, it was her remarkable business acumen and foresight to find a path where before there was none.

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[54] *Society for Superseding the Necessity of Climbing Boys, by encouraging a new method of sweeping chimneys, and for improving the condition of children and others, employed by chimney sweepers. Instituted on the fourth of February, 1803.* From Sir John Soane Museum, London, UK.
[55] The record is unclear due to a fire in the U.S. Patent Office on 15 December 1836
[56] See [C1798 C13]. *Coade v Fox*.; C1803 *Williams v. Coade*; Kelly, Alison, "Mrs. Coade's Stone," *Connoisseur*, vol. 197, no. 791, 1978 Jan, p. 14-25.

In the 1770 essay on artificial stone by Coade's early business partner, Daniel Pincot lays out a worldview framed through religion, science, polite arts, insurance, and mutual interest societies of London. Briefly summarizing the business relationship between Pincot and Coade from my considerations in chapter two *Proofs of Utility*, these two Baptist Nonconformist figures held different contrasting views in terms of exhibiting and advertising artificial stone though I argue they share a common knowledge contingent to their social context. As an ontology of intellectual property, a patent seeks to secure knowledge to the pantee holder. In doing so, it simultaneously discloses knowledge to the public on paper while also relying upon state power to enforce a private economic monopoly. Paramount to this process is the capacity to specify knowledge as being new, improved, or differing from existing epistemologies. In Pincot's own words, the making of both species of artificial stone including the ceramic variant in use at Coade's and the lime variant of Liardet is common knowledge extending to the post-deluge genesis of humanity after the flood.

> "But this knowledge of the permanency of thorough burnt brick, they could not have had, from their own experience as to time, that being evidently too short; nor did they know enough of the causes of the cohesion or decay either or decay either of natural or artificial bodies, to come at it by reasoning : they must, therefore, have been taught it, which appears to be really the case; for Noah and his sons were all not only then alive among them, but lived many years after, and had lived long enough in the old world to know the arts therein practiced; and undoubtedly taught not only the above but many others also to their several tribes, and that even for many years after the dispersion of mankind; and thus the knowledge of these and many other things was spread all over the world."[57]

While we cannot know with certainty, it is doubtful the fledgling venture of Coade's Artificial Stone Manufactory had significant capital coming from revenue in the early years of operating.

[57] Pincot, Daniel. *An Essay on the Origin, Nature, Uses, and Properties, of Artificial Stone: Together with Some Observations Upon Common Natural Stone, Clays, and Burnt Earths in General, Etc*. London: Printed by Richard Hett; Sold by C. Marsh, Etc, 1770. P. 28

What capital the manufactory held largely extends from the bankruptcy liquidation of Coade family textile holdings and early commissions in the 1770s including work for James Wyat, Robert Adams, John Johnson, and other architects and builders. Well stated by legal scholars John Adams and Gwen Averley, the *Liardet v. Johnson* is perhaps most memorable for the remarkable length of the trial, the incredible cost, and its widespread publication in newspapers and pamphlets.[58] Reading about the trial in the papers, having business relationships with both sides, and having low amounts of liquid capital suggests that Coade's was cost averse to the potential of an exorbitant and technical lawsuit. While historiography has been too quick to cast aside Daniel Pincot and his role in the Lambeth artificial stone manufacturer, his 1770 essay effectively prevents competing manufactures from securing a patent by arguing the requisite technical knowledge to already be common and public. Whatever occurrences between Coade 'the real Proprietor' and Pincot leading to his departure from the business, this overlooked effect of his essay is paramount.[59] Writing the advertisement to her 1784 catalogue, Eleanor Coade records that "in the course of the above period there have been several other Manufactories passing under the same denomination, which having been extinct for some years past, their productions have often been ascribed to this Manufactory----an instance of which misapplication is a Gateway leading to Sion-House, in the Brentford Road."[60] Syon House, its gateway, and 1760s renovations on the Duke of Northumberland's property by Robert Adam are frequently taken as the source of 'Adam's Style,' or more precisely, 'style of the Adam's Brothers.'[61] Neoclassical motifs, grotesque, painted ornament, pilasters, plaster, furniture, fireplaces, and color found in domestic interiors across England and Scotland and widely circulating pattern books all contribute to an increasing consumer culture taking place in architecture. However, at

[58] Adams, John N, and Gwen Averley. "The Patent Specification the Role of Liardet v Johnson." *Journal of legal history* 7, no. 2 (1986). p. 177
[59] *Daily Advertiser* 11 September 1771.
[60] Coade's Artificial Stone Manufactory. *A descriptive catalogue of Coade's artificial stone manufactory at King's Arms Stairs, Narrow-wall Lambeth [...].* From Yale Center for British Art, 1784.
[61] Parissien, Steven. *Adam Style / Steven Parissien*. Washington, D.C: Preservation Press, National Trust for Historic Preservation, 1992.

the Syon-House Gateway, the 1773 work of the Adam's Brothers comes to fail due to the material substance of Liardet's cement. This failure was not immediate and became visible from the effects of the harsh maritime climate sometime between 1773 and Coade's 1784 advertisement. After defending her artificial stone, the irony of the Syon-House Gateway remains in Coade's renovations to fix the work of Adam in 1814 making the difference in durability of the two artificial substances plain for all to see to this day.[62]

Eleanor Coade never needed a patent. While a patent secures an economic monopoly and the right to use specified invention, it does not necessarily equate to making profit from that invention. The potential of failure, litigation, or spurring competing innovation by disclosing technical knowledge all present cautions in considering the use of a patent. Alternatively, Coade exchanges commodities for capital by monopolizing on her brand identity built from word of mouth testimonials, advertising, her Royal Warrant, exhibition, material performance, experiments, social networks, and institutional affiliations. When risk outweighs reward, alternative ontologies of intellectual property besides the patent can offer more substantial avenues towards profit motivated methods of making. Moreover, I argue that Coade's artificial stone undertaking exemplifies a venture in capitalism predicated upon maximizing profit yields with little interest in privatizing technical knowledge for future use. Eleanor Coade made use of her cousin John Sealy, sculptor John Bacon, and her in-law William Croggon to operate her manufacture, there is nothing to suggest she had any concern for the longevity of operations in Lambeth. After Coade's death in 1821, Croggon and his son Thomas continued the venture in capitalism seeking to extract any remaining profit that could be had from the Coade name before liquidating the property and reconsolidating in the manufacture of industrial construction supplies. Eleanor Coade monopolized the market for Neoclassical ornament while alive, and sold it all at the precipice of radical changes to the built environment being driven by industrial

[62] Kelly, Alison. *Mrs Coade's Stone*. Upton-upon-Severn: Self Pub. Association, 1990. P. 421

manufacturing and changing construction practices in the first half of the nineteenth century. The grammar of gender is present in the writing of Coade advertising John Bacon as superintendent until his death in 1799, incorporating cousin John Sealy into business and trademark until his death in 1813, using uncle Samuel Coade in lawsuits and leases, and selling the manufacture to in-law William Croggon. However, as the letter between former President Thomas Jefferson and Architect of the United States Capitol William Thornton demonstrates; artificial stone was always the work of Eleanor Coade.

*Paper and Property*

Art historian Katie Scott recently wrote, "a history of intellectual property is also a history of authorship."[63] Who is this author and what history exists in the overlap between paper and property? Samuel Johnson's 1755 folio for *A Dictionary of the English Language* self-consciously defines an author as "the first beginner or mover of any thing, he to whom any thing owes its original."[64] The anthropomorphic echos of celestial first causes in Johnson's dictionary derives from exegetical readings of Richard Hooker's sixteenth century *Of the Laws of Ecclesiastical Polity*, acts of self creation in Shakespere's 1608 *Coriolanus*, fatherly providence in John Milton's 1667 *Paradise Lost*, and a 'new science' of seeing in Issac Newton's 1704 *Opticks.* Action and reaction further defines the author to be "the efficient, he that effects or produces any thing. The first writer of any thing; distinct from the *translator* or *compiler*. A writer in general."[65] Cultic notions of progeny and literary origins circulate through Johnson's definition circumscribing the emergence of the bourgeoisie romantic author in the second half of the eighteenth century. In Johnson's definition is a subjectivity that invents in writing and comes to own the object of their invention as intellectual property. The authority of

[63] Scott, Katie. *Becoming Property : Art, Theory and Law in Early Modern France*. New Haven, CT: Yale University Press, 2018. p. 15
[64] "author, n.s." *A Dictionary of the English Language*, by Samuel Johnson. 1755. Accessed 2021/11/20. https://johnsonsdictionaryonline.com/1755/author_ns
[65] Ibid.

the author came to be firmly established in the nineteenth century amidst flourishing global literacy rates, competing nation states, and the first transnational agreements to protect this intellectual property at the Berne Convention signed 9 September 1886. By 1967, Roland Barthes had laconically written on the *Death of the Author* exchanging the cult of a singular writer with an infinite number of readers.[66] The literary theory of Barthes deflates the intentions, ambitions, and values of authors while inflating the agency of readship. Barthes did not kill the author, but his critique lays bare the possibility of an emancipated readership that undermines the author as sole authority on their own intellectual property. Whatever meaning words may possess, the validity of this meaning is not only contingent to the one who wrote them. It should not be forgotten the total lack of irony by Barthes in securing a copyright to his own intangible property. Perhaps in response to Barthes, Michel Foucault's 1969 *What is an Author*? identifies the author function as a mechanism of producing order.[67] Whether it is a collection of texts, a gallery guide, a catalog, or a novel; Foucault's function of authorship assigns an order and an ideology to things. Accordingly, it is the name of the author which orders and it is the name of the author through which the ideology of discourse operates. The author is therefore an intangible tangible, a self-referential function recursively coalescing and dissociating through the construct of identity. More recently, Mark Rose's 1993 *Authors and Owners* examines the history of literature and copyright arguing that it is modernity at work in the author.[68] Rose critically identifies such modernity in regimes of regulation which construct the contested terrain of authorship as an irresolvable dialectic played out in the precedents of English common law. Authorship has always been a recursive function of who makes and who owns the invented thing.

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[66] Barthes, Roland. "Death of an Author." *Aspen No. 5+6. Fall-Winter*. New York, N.Y: Aspen Communications Inc., 1967.
[67] Michel Foucault, "Qu'est-ce qu'un auteur?" Société Française de Philosophie (lecture, SFP, February 22, 1969).
[68] Rose, Mark. *Authors and Owners : the Invention of Copyright / Mark Rose*. Cambridge, Mass: Harvard University Press, 1993.

This dissertation argues there is a mode of authorship at work in the manufactory which does not readily align with the romantic author and its critique as articulated by the work of Barthes, Foucault, Rose. This figure also functions to organize the property they make and exchange for capital, however, there remains a considerable scholarly absence when it comes to the literature of manufacturers. Close reading the literature of manufactures yields insight into the manual labor of language and securing the intangible property of intelligence that often remains invisible when only considering bourgeois subjectivities. The name Coade is synonymous with artificial stone ornaments that could be ordered and shipped from London to St. Petersberg, Washington D.C., and Rio De Janeiro. Moreover, the homology of Coade and her artificial stone continues to exist as an object of English intangible cultural heritage. But what of Coade's writing in the form of advertisements, catalogues, insurance receipts, leases, and gallery guides which construct her brand, identity, and means of production in the exchange of commodities for capital? What authorship exists in writing the language of commerce, industry, and manufacturing? In this dissertation, I use the proprietorship of Coade to organize a body of literature from 1769 - 1821 by resurrecting Foucault's organizational function of authorship as a means to explicate trans-Atlantic consumer culture in manufacturing the built environment. Although Eleanor Coade did not write the type of literature frequently affiliated with bourgeois authorship, her prolific writings are instrumental to establishing artificial stone as an ideational object of modern architecture built upon cheapness, durability, and utility. To write as an author is to exist within the labyrinthian critique of meaning and interpretation. To write as a manufacturer is to design trust in a reliability relationship between maker and consumer. Roland Barthes critique of authorship constructs this writer to be an unreliable narrator whose clever use of language should not impose its authority upon the reader. Inversely, the writing of a manufacturer is predicated upon reliability in the language they use to narrate commerce. In ordering a sixteen inch diameter capital from Coade's catalogue, there is a necessary

expectation which must be met for the perpetuation and expansion of commerce. Learning from Coade reveals a language of reliability.

The power of the pen to elevate an English subject beyond the station of their class became increasingly possible in the eighteenth century. Paper practices of writing in combination with an increasingly bookish culture across the Isles increasingly finds widespread readership beyond rigid social structures. More precisely, writing became a speculative practice. Exemplifying the speculative practice of writing is the Protestant republican Catharine Macaulay whose writings on political liberty, human rights, public education, and the moral necessity of progress found widespread celebrity in the sixty years of her life before passing in 1791. It was Macaulay's *The History of England from the Accession of James I to that of the Brunswick Line* published in eight volumes from 1763 - 1783 that secured her reputation for defending the hard fought privilege of voting from the tyranny of absolute monarchy.[69] Entering into the debateon copyright In 1774, Macaulay wrote two significant though obscure texts which illuminate cultural changes to writing practices. In direct response to the 1769 *Millar v Taylor* and its reversal with the 1774 *Donaldson v. Becket* establishing statutory limits on copyright, Macaulay wrote *A Modest Plea for the Property of Copy right*.[70] Macaulay considers writing anything but common, however, she argues for the rights of all author's to secure their intellectual property with copyright. "This is the uncomfortable state of an admired author for it is not every writer, who merits the approbation of the public, is sure of obtaining it, at least during his life-time. Such a disappointed being may possibly have gained a tolerable sum from a bookseller, on mistaken speculative grounds; and may be vulgar enough to be comforted with the prospect of

[69] Macaulay, Catharine. *The History of England from the Accession of James I to That of the Brunswick Line: Volume 1-8*. Cambridge University Press, 2014.
[70] Macaulay, Catharine. *A Modest Plea for the Property of Copy Right*. : By Catharine Macaulay. Eighteenth Century Collections Online. Bath: Printed by R. Cruttwell, in Bath, 1774.

a good dinner."[71] Translating political rights of liberty on to the rights of author's, Macaulay's modest plea is significant for articulating a shift towards financial speculation in eighteenth century writing practices. When writing might return a profit just as the Royal Exchange, land speculation such as the South Sea Bubble or Nicholas Barbon, or a patent invention such as Watt's steam engine, copyright could provide the legal mechanism to secure that speculation. Moreover, Macaulay illuminates that simple dialectics between author's and booksellers fail to grasp the complexity of the London literary market amidst the proliferation of possible funding sources. With hauntings such as the 1767 Cock Lane Ghost generating cross class currents of conversion fueling the emergence of Gothic literature, the possibility of writing as a means to live increasingly became viable. Macaulay writes that in her day "we have in general better paper, better print, and more elegant editions of English authors, than I believe were ever known, since literature flourished in England; and in regard to moderateness of price, books in these times, when every commodity, every material in the way of trade, pay such a high tax to the government; books, I say, are the cheapest articles sold."[72] Due in part to the intellectual property legal arguments in 1769 and 1774, writing practices began to engage literature as a speculative venture. No longer simply the speculation of fictional scenery being conjured by authors as did Daniel Defoe in *Robinson Crusoe*, but the speculation of exchanging writing as a commodity for capital. In response to her own modest plea and possible critics, Macaulay wrote a satirical poem under the guise of anonymity defending the copyrights of writers and authors to make a living;

"With sordid Booksellers" I seldom treat,
No Patriot I, nor puffer for the State;
"They, if in favor with the Goddess sickle,
"With fellow-cits for privilege may stickle,

[71] Macaulay, Catharine. *A Modest Plea for the Property of Copy Right*. : By Catharine Macaulay. Eighteenth Century Collections Online. Bath: Printed by R. Cruttwell, in Bath, 1774. P. 16
[72] Ibid. p. 31

"To eat, to drink, to sleep," -perchance, to dream;
No law was ever made to bar such claim:
And, should their wisdoms be dispos'd to fight,
May calmly go to cuffs, --for Copy-Right."[73]

Writing under Stella Anonymous gave Catharine Macaulay an identity to craft a critical response to her own writing in the form of verse. It was a poem and its publication afterall which had been the object driving change towards establishing statutory limits on legal ownership of copyright between 1769 - 1774. Macaulay writing satire behind a pseudonyms thin guise plays to Georgian era readership which had been shaped by Enlightenment ideologies of individual ingenuity and the exercise of reason towards outward identity. Who wrote such a poem being equally as entertaining to reading the poem. With the ownership of copyright firmly secured in the hands of the author and their mental work, authorial identity in speculative literary practices began to change through emerging social, collective, and cultural affiliations. After 1774, the question of literary property and its authorship could no longer be reduced into writer and publisher dyads of individuation. After 1774, the question of literary property became a social and collective practice. After 1774, authorship increasingly came to be structured by these social and collective practices such that a writer became an English writer, or a republican writer, or a novelist. One such author participating in this shift is Jane Austen whose practice of signing her work "By A Lady" and the irreconcilable complexity of her narratives typifies a broader social and collective affiliation. Producing a first draft at nineteen in 1795 and publishing in 1811, Austen's first novel *Sense and Sensibility* captures English society of the time built upon the patriarchal inheritance of property, gentlemanliness, well matched marriages, love, sex, sisterhood, and the agency of women. Arguably, it is the historical familiarity of navigating these themes in the present which keep the relevance of Austen's literature alive

[73] *Modest exceptions, from the court of Parnassus: to Mrs. Macaulay's Modest plea. By the author of The doctor dissected: a poem*. 1774. London: Printed for J. Bew, in Pater-Noster-Row. P. 7

today.[74] Jane Austen the novelist was born in 1775 to an Anglican rector George and Cassandra Leigh the daughter of landed gentry by way of hereditary title. Having six brothers and one older sister, the Austen's comprised a rather large family living in South East England in Steventon Rectory, Hampshire. Picking up the pen around the age of eleven, the writing of Jane Austen's early years came to fill notebooks, boisterous letters, early drafts of novels, plays, and a sardonic take on historiography with her *The History of England* being illustrated by older sister Cassandra.[75] The Austen family had minor means of mobility deriving from inheritance and landed gentry status affording them the possibility to tour the English countryside. On such country tour in 1803 and 1804 brough the Austen family to Lyme Regis and village home of Eleanor Coade. A guidebook of the day providing tourists possible opportunities for leisure describes, "Lodging and boarding at Lyme are not merely reasonable , they are even cheap; the dissipation of the healthy, and the suitable accommodations of the sick are within the reach of ordinary recourses. It is frequented principally by persons in the middle class of life, who go there, not always in search of their lost health, but as frequently perhaps to heal their wounded fortunes, or to replenish their exhausted revenues."[76] There is no direct evidence that Austen met Coade who spent her summers in her estate before retiring fully to Lyme Regis between 1811-1812. However, Coade's extraordinary pink property at Belmont House is a difficult sight to miss and Lyme Regis would come to figure in Austen's novels. Austen's last novel *Persuasion* incorporates the writer's Lyme Regis tourism making use of The Cobb to articulate improvement in architecture and the built environment. Rebuilt in 1793 with lime mortar, The Cobb is a sea wall relying upon an artificial cementitious substance to protect the village

[74] For scholarship on Austen see: Gilbert, Sandra M., and Susan Gubar. *The Madwoman in the Attic : the Woman Writer and the Nineteenth-Century Literary Imagination / Sandra M. Gilbert and Susan Gubar.* New Haven: Yale University Press, 1979.; Johnson, Claudia L. *Jane Austen : Women, Politics, and the Novel / Claudia L. Johnson*. Chicago: University of Chicago Press, 1988.; Johnson, Claudia L., and Clara Tuite. *A Companion to Jane Austen / Edited by Claudia L. Johnson and Clara Tuite.* 1st pbk. ed. Chichester: Wiley-Blackwell, 2012.

[75] Add MS 59874 : c 1790-1793. From the British Library, London, UK

[76] Feltham, John. *A guide to all the watering and sea-bathing places...*London: Printed for Richard Phillips. 1803. From Yale Center for British Art, CT, USA.

harbour. Published posthumously, the novel describes this marine infrastructure saying, “They were come too late in the year for any amusement or variety which Lume, as a public place, might offer; the rooms were shut up, the lodgers almost all gone, scarcely any family but of the residents left - and, as there is nothing to admire in the buildings themselves, the remarkable situation of the town, the principal street almost hurrying into the water, the walk to the Cobb, skirting round the pleasant little bay, which in the season is animated with bathing machines and company, the Cobb itself, its old wonders and new improvements, with the very beautiful line of cliffs stretching out to the east of the town, are what the stranger’s eye will seek; and a very strange stranger it must be, who does not see charms in the immediate environs of Lyme, to make him wish to know it better.”[77] Jane, her sister, and her mother had a more direct interaction with the intangible property of artificial stone in 1806 while visiting Stoneleigh Abbey in Coventry. The family came to visit the English Country House following its inheritance by Rev. Thomas Leigh, cousin to Jane’s mother Cassandra, who brought her daughters on a visit. Unavoidable to any visitor is an ornamental multi-tiered fountain set on a pedestal of interwoven branches in a picturesque pool of rocks made by Coade’s Artificial Stone Manufacturer.[78] The sanguine speculation of inheriting Stoneleigh Abbey by the Austen family shapes Jane’s novels and her perspective on property.

Sampling property in the pages of Jane Austen’s *Sense and Sensibility* yields a cross section of Austen the writer’s life. Driving the narrative is the inheritance of architecture and hereditary titles amidst marriage interests ranging between love, passion, prudence, and the possibility of acquiring property. The Dashwoods, Willoughby, Middletons, and characters from Austen’s novel acquire a sense of literary realism inhabiting the patriarchal social structures which the novelist herself lived. On paper, the representations of property reconstruct the social and

[77] Austen, Jane. *Persuasion*. United States: Carey & Lea, 1832. P. 135
[78] “Stoneleigh Abbey, Ashow - 1000377: Historic England.” , Ashow - 1000377 | Historic England. Accessed November 26, 2021. https://historicengland.org.uk/listing/the-list/list-entry/1000377.

collective relations of early nineteenth century England. "To him, therefore, the succession to the Norland estate was not so really important as to his sisters; for their fortune, independent of what might arise to them from their father's inheriting that property, could be but small."[79] "It was the offer of a small house, on very easy terms, belonging to a relation of her own, a gentleman of consequence and property in Devonshire."[80] "His property here, his place, his house, everything in such respectable and excellent condition! And his woods! I have not seen such timber anywhere in Dorsetshire as there is now standing in Delaford Hanger!"[81] "I saw her there whenever I could, and after the death of my brother (which happened about five years ago, and which left me the possession of the family property), she frequently visited me at Delaford."[82] "Yes; he has a very good property in Dorsetshire."[83] The pronouns which speak on property speak simultaneously from the paper pages and the historical reality of the writer's life. Post-1774 speculative writing practices conflate the dialogic imagination of characters and creators whereby the words they speak are subject to the statutory limits of intellectual property. Articulated by Mikhail Bakhtin, dialogism emanates from collective dialogue of a novel's speakers which both draw and dispel readings of meaning to the text.[84] Asking *Sense and Sensibility* "What is Property?" reconstructs the history of this commodity in England as it is circumscribed by social, cultural, and collective practices of the day.[85]

The scholarship on Jane Austen is as variagate as the narratives within her novels. Recently, Peter Knox-Shaw has revived the perennial speculations on Austen's political leanings while

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[79] Austen, Jane. *Sense and Sensibility*. United Kingdom: Cassell, 1908. P. 7 -8
[80] Ibid. p. 23
[81] Ibid. p. 303
[82] Ibid. p. 169
[83] Ibid. p. 181
[84] See Bakhtin, M. M. *Problems of Dostoevsky's Poetics / [by] Mikhail Bakhtin. Translated by R.W. Rotsel*. Ann Arbor, Mich: Ardis, 1973.; Bakhtin, M. M. (Mikhail Mikhaĭlovich), and Michael Holquist. *The Dialogic Imagination : Four Essays / by M.M. Bakhtin ; Edited by Michael Holquist ; Translated by Caryl Emerson and Michael Holquist.* Austin: University of Texas Press, 1981.
[85] The question of "What is Property?" has been borrowed from *Qu'est-ce que le propriété? (What is Property?)* published by Pierre-Joseph Proudhon in Paris, 1841.

seeking to dispel any semblance of Jacobite sympathies in the shifting world view of the novelist from adolescence to adulthood.[86] Rosetta Young has considered the alternative currents of Austen as an icon of popular culture while defining three tropes of Austen to be "extreme adherence to social conventions; sexual abstinence; and the naming of those who attempt to craft and wield speech-based omniscient social authority."[87] According to Young, while these tropes might appear 'Anti-Austen,' they are in fact "a subversive skepticism of English social hierarchy...and omniscient narration" in the modern novel."[88] Readings of this social hierarchy vary as demonstrated by Olivia Murphy's recent article suggesting "Austen here is pressed into performing much the same role in queer fiction as in more mainstream romances, as a vindicator of the primacy and potential of married love."[89] As regards the tangible things within Austen's novels, Mary Pearce has contextualized Austen within the emerging consumer culture across the European continent to survey how Austen's writings contribute to establishing the novel as a commodity and the desire for consumer culture. Pearce concludes that objects in Austen novels "function much more starkly therefore as moral symbols" which negotiate "the humanism and modernity of her novels."[90] In terms of the moral symbols of Austen's writings, scholars such as Karen Green have frequently drawn contrasts to Catharine Macaulay in terms of the two English writers' starkly different attitudes to love, property, marriage, politics, and novels.[91] Outwardly as Green suggests, the austerity of Macaulay viewing novels to be frivolous does indeed stand in contrast to the subject matter of Austen and her works. However, what the two English writers share is a distinct sense of the value of mental labour and its

[86] Knox-Shaw, Peter. "Jane Austen and the Myth of the Enduring Jacobite." *The Review of English studies* 69, no. 289 (2018): 298–315.
[87] Young, Rosetta. "'A Fucking Jane Austen Novel': An Alternative Popular Culture Legacy." *Nineteenth-century contexts* 41, no. 4 (2019): p. 354
[88] Ibid. p. 366
[89] Murphy, Olivia. "Queering Jane Austen in the Twenty-First Century." *Journal of popular culture* 53, no. 4 (2020): p. 805
[90] Mary Peace. "Of Things in Austen: Or, Encounters with Trinkets, Harps, and Sofas." *Persuasions : the Jane Austen journal online* 40, no. 2 (2020).
[91] Green, Karen. "Jane Austen and Catharine Macaulay." *Persuasions : the Jane Austen journal (Print version)* 39, no. 39 (2017): 177–183.

commodification as intellectual property. If Austen exemplifies the turn towards writing as a commodity, how does this speculative practice compare in the writings of Coade and other English manufactures?

Jane Austen the novelist is synonymous with her signature 'By a Lady' that identifies the writer with the social class she imagines herself to be {Figure 4.12}. Only six short years after publishing *Sense and Sensibility*, the 1817 death of Jane Austen left her intellectual property and estate to her family. Purchasing the copyright to Austen's novels in 1832, publisher Richard Bentley's editions for his *Standard Novels* series began to mass produce the novelists writing cheaply the following year. After Bentley, the novelist's property would forever be signed 'By Jane Austen.'[92] The change in Austen's signature locates the turn in writing from bespoke into an industrial commodity as consumers make use of brand identification and cost effective standards. Purchasing a Bentley edition of Austen, a consumer can readily identify both writer and edition as property conforms to a standard {Figure 4.13}. Comparing the signature of Austen the novelist and Coade the manufacture exemplifies this industrial commodification of writing while also illuminating the social structures of English class. These women made words which are made to be read. As a manufacturer, Coade's signature came in a variety of literary forms and materials including writing estimates, catalogues, guides, advertising in literary magazines, providing testimony at trial, and even signing onto a collective correspondence about the appointment of organists {Figure 4.14}.[93] Above all other signatures, it was the Coade trademark on each artificial stone commodity made at her manufacture branding the intangible property of artificial stone to resist fire, frost, weather, and electrical fire. Writing in her 1799 exhibition guide useful for readers navigating "specimens from the manufacture" at Coade's Gallery, "the proprietor...who continues to observe that every piece of stone sent out of the

[92] Austen, Jane. *Sense and Sensibility : a Novel / by Jane Austen.* London: R. Bentley, 1833.
[93] Correspondence mainly about appointment of organist, and minister and readers (Sig of E Coade). 1818. From London Metropolitan Archives: City of London, not available at The National Archives.

Manufactory, still continues to have (COADE) indented on it."[94] This indentation brands Coade's trademark and is a legible sign in the exchange between maker and consumer. Managing the manufacture between 1769 and 1821, the indentation of this trademark underwent changes depending upon the family relation Coade was currently employing. Eleanor Coade had many celebrity artisans in her employ, John Bacon, John Rossi, John De Vaer, John Flaxman, James George Bubb, and others, but it was only her cousin John Sealy who was incorporated into the company trademark after Bacon's death in 1799. Presently, the earliest archival record of this familial incorporation is an 1802 advertisement taken out in the *The European Magazine* which puts the Sealy name onto Coade's Gallery {Figure 4.15}.[95] John Sealy's death in 1813 while Eleanor Coade was eighty years of age required her to incorporate another family member by marriage, William Croggon. Croggon and his son Thomas would manage the artificial stone manufacture in Lambeth until 1834 when they chose to liquidate the property and reconolidate as Croggon & Co. manufacturing industrial construction supplies {Figure 4.16}. Managing the artificial stone manufacture for nearly thirty years until incorporating John Sealy, Coade did not require another person to make artificial stone commodities. The history of modernism is nearly synonymous with the standard. However, Fordist modes of production have colored this history uniformly orthodox. A standard can come to mean many things. At Coade's, the standard is her family name in concert with a supporting cast.

In this dissertation, I expand orthodox histories of intellectual property emphasising the necessity to regulate publishing markets with the *Statute of Anne (Copyright Act 1710)* to include the market regulation of architecture, construction, and the built environment. In 1722, Richard Holt and Thomas Ripley's *Patent 447 Compound Liquid Metal for Making Artificial*

[94] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson, 1799. P. vi
[95] The European magazine, and London review. vol. 41 (Jan.- Jun. 1802).

*Stone and Marble* and *Patent 448 Mixture for Making White Ware* demonstrate the use of patents by architects and builders to secure and profit from their intellectual inventions as property.[96] The absence of any technical description in the specification or use of visual methods to detail the invention make these patents difficult to adjudicate in potential legal disputes. The difficulties of enforcing intellectual property laws in the first half of the eighteenth century is further demonstrated in the William Adam's *Vitruvius Scoticus, Plans, Elevations, and Sections of Public Buildings, Noblemen's and Gentlemen's Houses in Scotland* published in the 1720's as a reaction to the 'Englishness' of Colin Cambell's *Vitruvius Britannicus* and liberally sharing a representational format deriving from engravings plates typified by James Gibb's 1728 *Book of Architecture* {Figure 4.07- 4.09}.[97] From 1710 - 1769, the representation of architecture and its reproduction relied upon the paper logic of copper engraving plates with the decision to forgo enforcement of copyright laws due to the limited few publishers and relatively small market of book publishers in Britain. Following the critical legal cases in 1769 and 1774 regarding the works of poet James Thomson, the application of statutory limits coincides and is contingent with the emergence of the romantic author. I expand this notion of authorship to include post-1774 speculative writing practices that sought remuneration for mental labour in literature that falls outside the traditional domain of bourgeois subjectivities. The writing of Eleanor Coade as the proprietor of an artificial stone manufacture exemplifies the speculative turn in writing which relies upon standardization and mass mold phraseology. The intangible properties of Coade's artificial stone replicate across catalogues, gallery guides, advertisements, and essays. Moreover, the dichotomy of these speculative writing practices rely upon a sense of creativity which is shared and collective yet seeks to establish an individual economic monopoly. In 1817, when William Thornton proposed that Thomas Jefferson either purchase artificial stone

[96] *Compound Liquid Metal for Making Artificial Stone and Marble. Patent No. 448 - Mixture for Making White Ware.* Richard Holt and Thomas Ripley, London, 1722.
[97] This liberal borrowing comes in the similarity of building type, plan, facade, and bird's eye perspective representations. Ornament and decoration serve to differentiate what are in effect the same drawing.

from Coade's in London or simply make his own, the limits of intellectual property imposed by nation-states exemplifies the difficulties facing international and industrial business practices of the day. Well after the 1821 death of Eleanor Coade, the transnational rights of intellectual property would come to be secured by contracting signatories to the 1886 *Berne Convention for the Protection of Literary and Artistic Works* relying upon three principles.[98] First, works originating in a contracting state are afforded the same legal protection in other contracting states as if the author is a 'national' of that state. Second, protection is non conditional and 'automatic' deriving from the shared administrative filing system. Third, protection is independent of the country of origin from where the work derives.

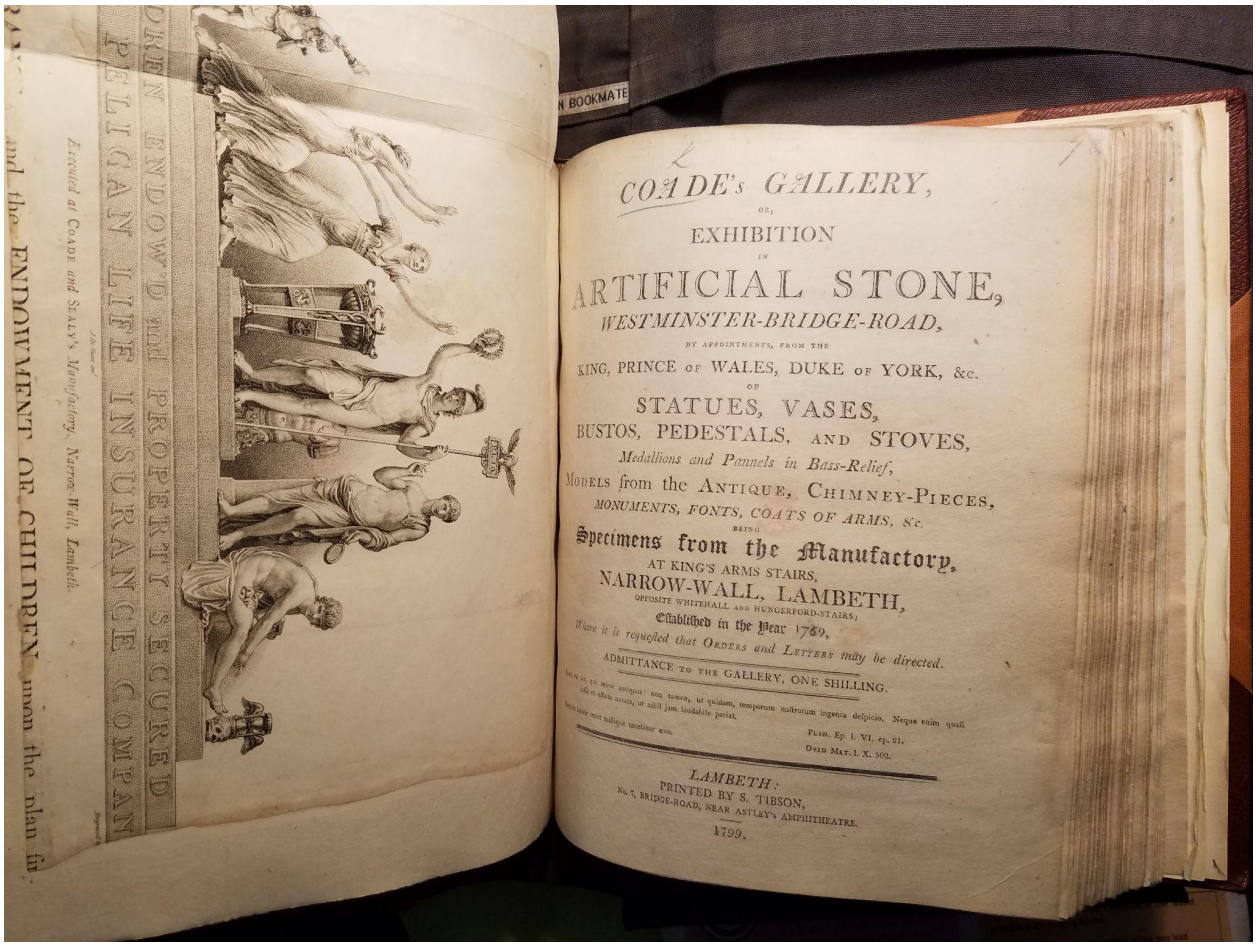
Who do we credit for the intangible property made at Coade's Artificial Stone Manufacture? The recent 2016 acquisition of *Father Time* and *Allegory of Geometry* by the Yale Center for British Art in New Haven (YCBA), CT raises the question of labelling artisanal property made at historical manufactories. Traditional categories of authorship such as a novelist, architect, artist, painter, sculptor fail to accurately label the labour and intellectual property of early modern industry. In the manufacture, the multiple hands making objects and plurality of minds creating artificial substances condenses into the mold of a brand identity. Tangible and intangible property belongs to the manufacturer as much as artisanal works belong to their creator with each abiding to legal jurisprudence of statutory limits. For each artificial stone work, the current YCBA credit page lists "Creator: Unknown artist, eighteenth century produced by Coade's Artificial Stone Manufactory, 1769 - 1840, British."[99] In this catalogue entry, the politics of the museum are on exhibit for a consuming public. Including an 'unknown artists' leaves open the possibility that one of the many celebrity artists Eleanor Coade employed might have directly

[98] See *Summary of the Berne Convention for the Protection of Literary and Artistic Works (1886)*. World Intellectual Property Organization. https://www.wipo.int/treaties/en/ip/berne/summary_berne.html
[99] "Unknown Artist, Eighteenth Century, Father Time, Ca. 1790." Father Time. Accessed December 1, 2021. https://collections.britishart.yale.edu/catalog/tms:67295.

sculpted the work or its mold adding value in terms of admissions and possible patrons. Standing at 59.5 inches tall, the medium of the sculpture is recorded as Stoneware alongside the phrase 'Coade Stone' invented in the twentieth century to describe Coade's *Lithodipyra*. On the gallery label, an inquisitive reader finds "This piece of cast sculpture is made of Coade stone, the trade name for a type of stoneware developed by the British businesswoman Eleanor Coade (1733 - 1821.)"[100] Best efforts aside, Coade stone is not the trade name for the artificial stone substance made at the Lambeth manufactory. More precisely, the trade name was and remains artificial stone. The linguistic phrase 'Coade stone' records a more recent history converting the life of Eleanor Coade the business oman into intangible cultural heritage and an object of English national heritage by curators, auctioneers, historians, and others that began in earnest in 1940 at the start of World War II by Katherine Ada Esdaile.[101] The brilliance of Coade and the artificial stone substance she sold is distorted by reproducing post-war narratives of British nationalism and imagined identities of historical creativity. Under the legal definition of her day, *Lithodypria* did not belong to anyone and the creative output of the manufacture including designs in catalogues, gallery guides, and trademarks fell within post-1774 statutory limits of intellectual property. Moreover, the creator then and today is the proprietor of the manufacturer, Eleanor Coade. Specimens from the manufacture including *Father Time* and *Allegory of Geometry* on exhibit in Louis Kahn's nine-square temple to reinforced concrete exhibit intellectual progenitors to the use of artificial materials and cementitious substances in architecture, landscape, and construction {Figure 4.17 - 4.18}. Eleanor Coade not only developed this substance, she invented a craft of building with artificial materials that defines modern architecture.

[100] "Unknown Artist, Eighteenth Century, Father Time, Ca. 1790." Father Time. Accessed December 1, 2021. https://collections.britishart.yale.edu/catalog/tms:67295.
[101] Esdaile, Katherine Ada, "Coade (artificial) stone, and the Lambeth factory where it was made," *Architect & Builder News*, 1940. p 94 - 96

***5. Inheriting the Intangible***
Archival Material

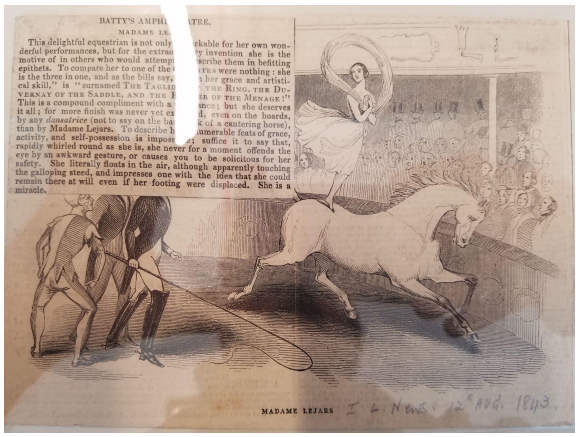


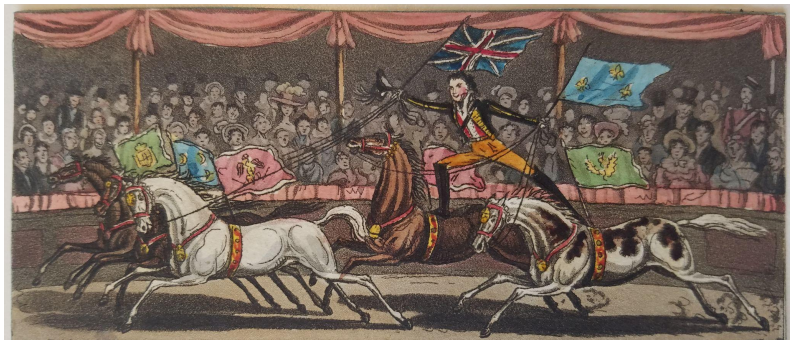

***5.01 - Coade's Gallery with Pelican Life Insurance Frontispiece***
Coade's Artificial Stone Manufacture, Lambeth, London, Printed by S. Tibson, 1799

From the British Library, London, UK



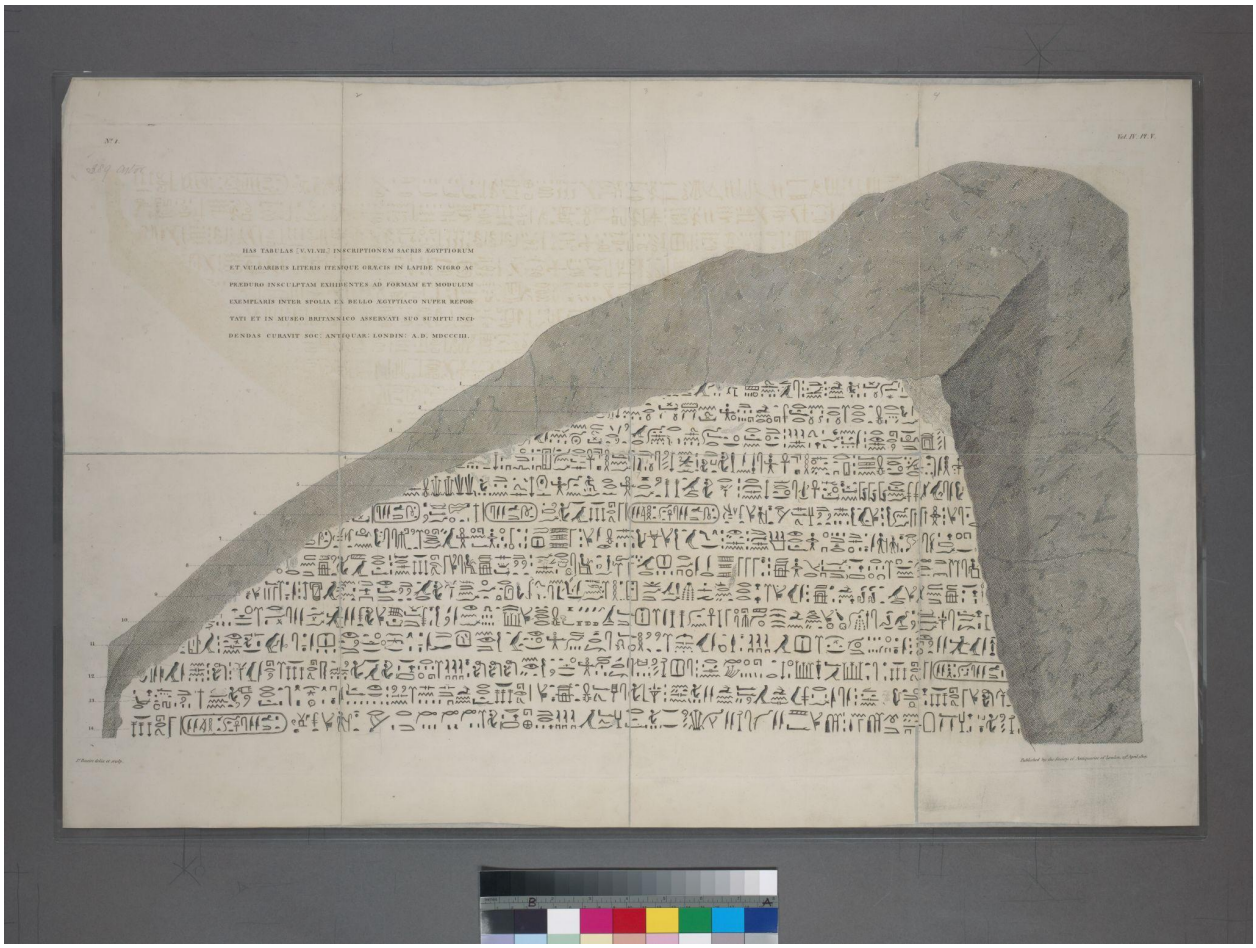


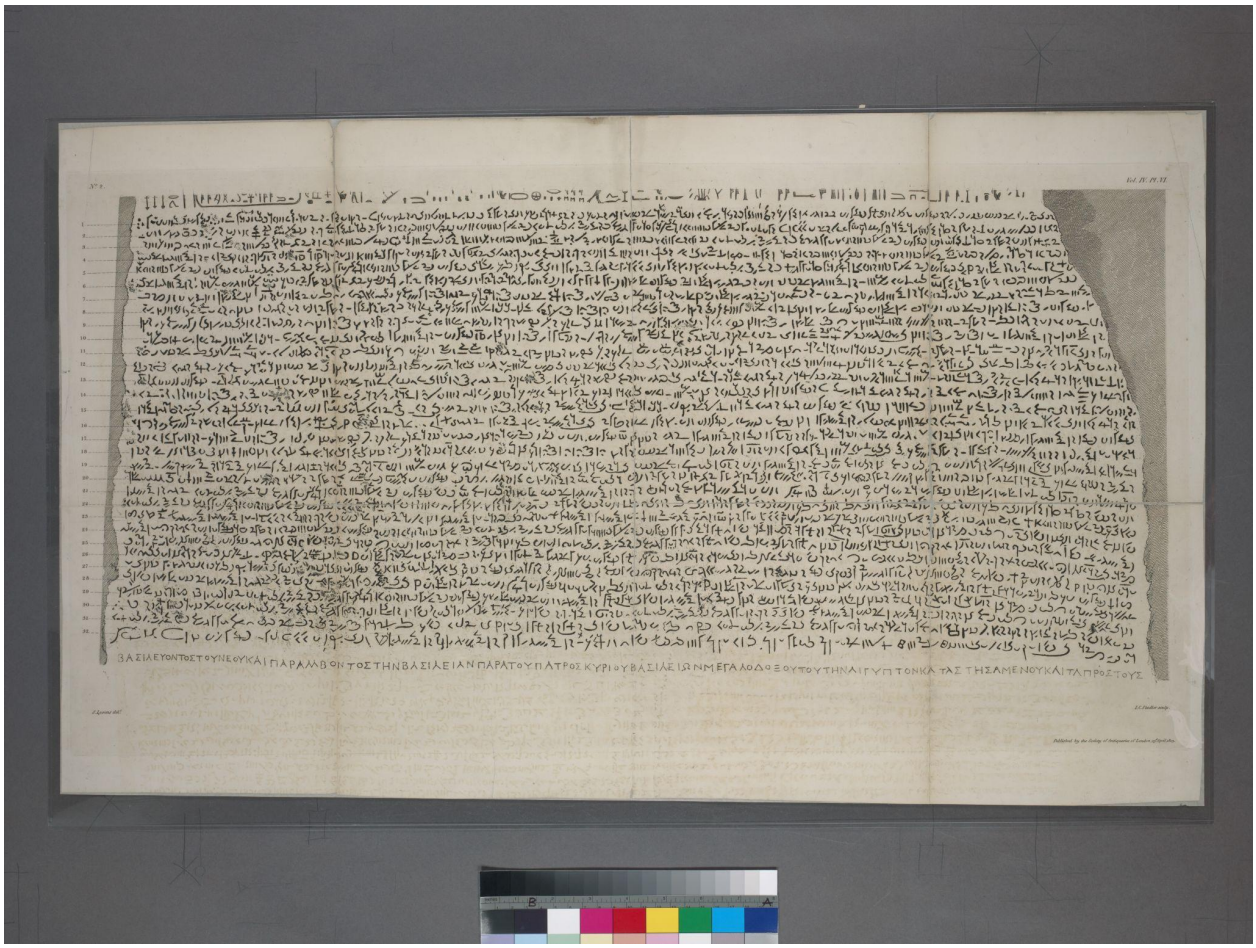
***5.02 - Astley's Amphitheatre, 1826.***
General Series, Lambeth, circa 1600 - 1960.

From National Archives, London Metropolitan Archives: City of London, UK.



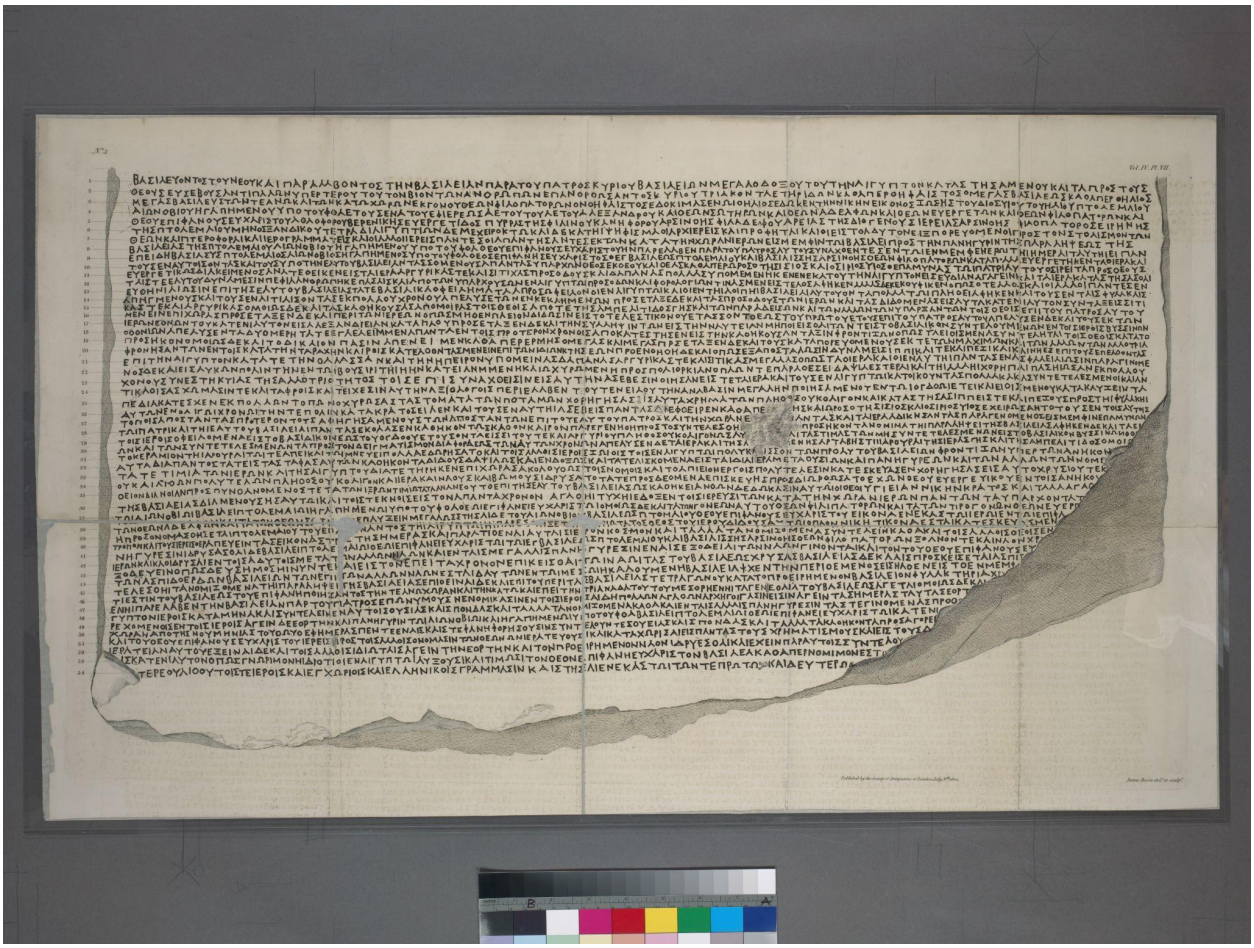

***5.03 - Hieroglyphs on the Rosetta stone***
Society of Antiquaries, London, UK, 1810.

From the New York Public Library, New York, USA



***5.04 - Demotic Script on the Rosetta stone***
Society of Antiquaries, London, UK, 1810.

From the New York Public Library, New York, USA



***5.05 - Greek Script on the Rosetta stone***
Society of Antiquaries, London, UK, 1810.

From the New York Public Library, New York, USA




***5.06 - Minéralogie: Arabie Pétrée, Diverses roches primitives, Madréporites***
Description de l'Égypte, Commission des sciences et arts d'Egypte, Imprimerie impériale, Paris, 1809 -1828.

From the New York Public Library, New York, USA




***5.07 - Thèbes Karnak, Détails des piliers caryatides du temple dépendant du palais***
Description de l'Égypte, Commission des sciences et arts d'Egypte, Imprimerie impériale, Paris, 1809 -1828.

From New York Public Library, New York, USA



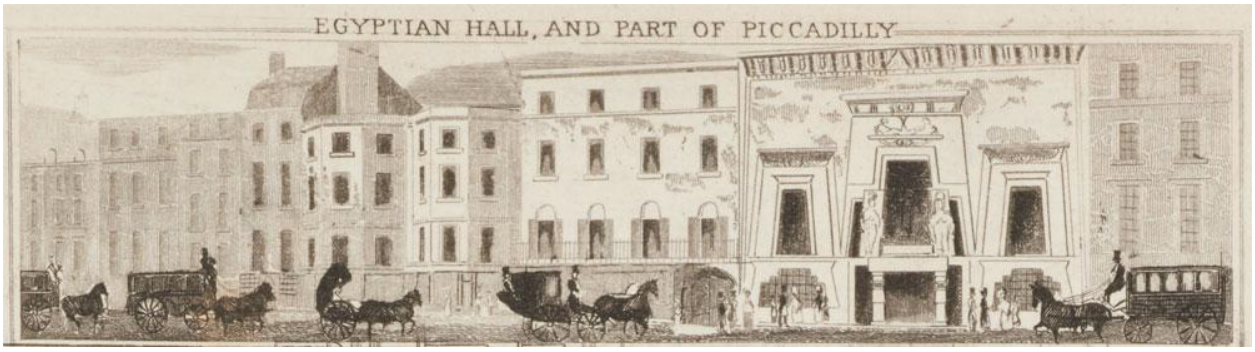

***5.08 - The Entrance to Coade and Sealy's Gallery of Sculpture***
Drawn and Engraved by S. Rawle, Published by J. Sewell Cornhill Feb. 1 1802

From General Series, Lambeth, London Metropolitan Archives: City of London, UK



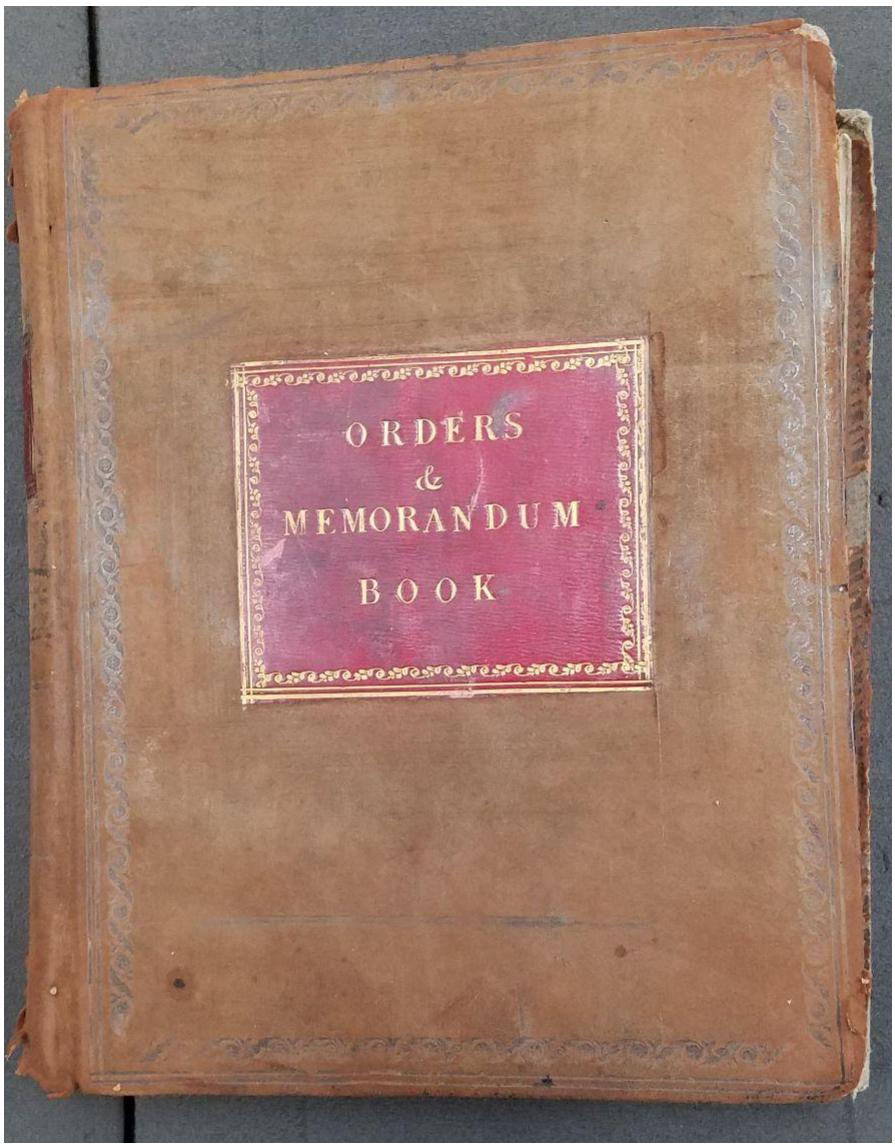

***5.09 - Bullock's Museum, Egyptian Hall, Piccadilly, London, UK, circa 1815***
Coloured aquatint, attributed to T.H. Shepherd.

From University of California, San Diego, California, USA



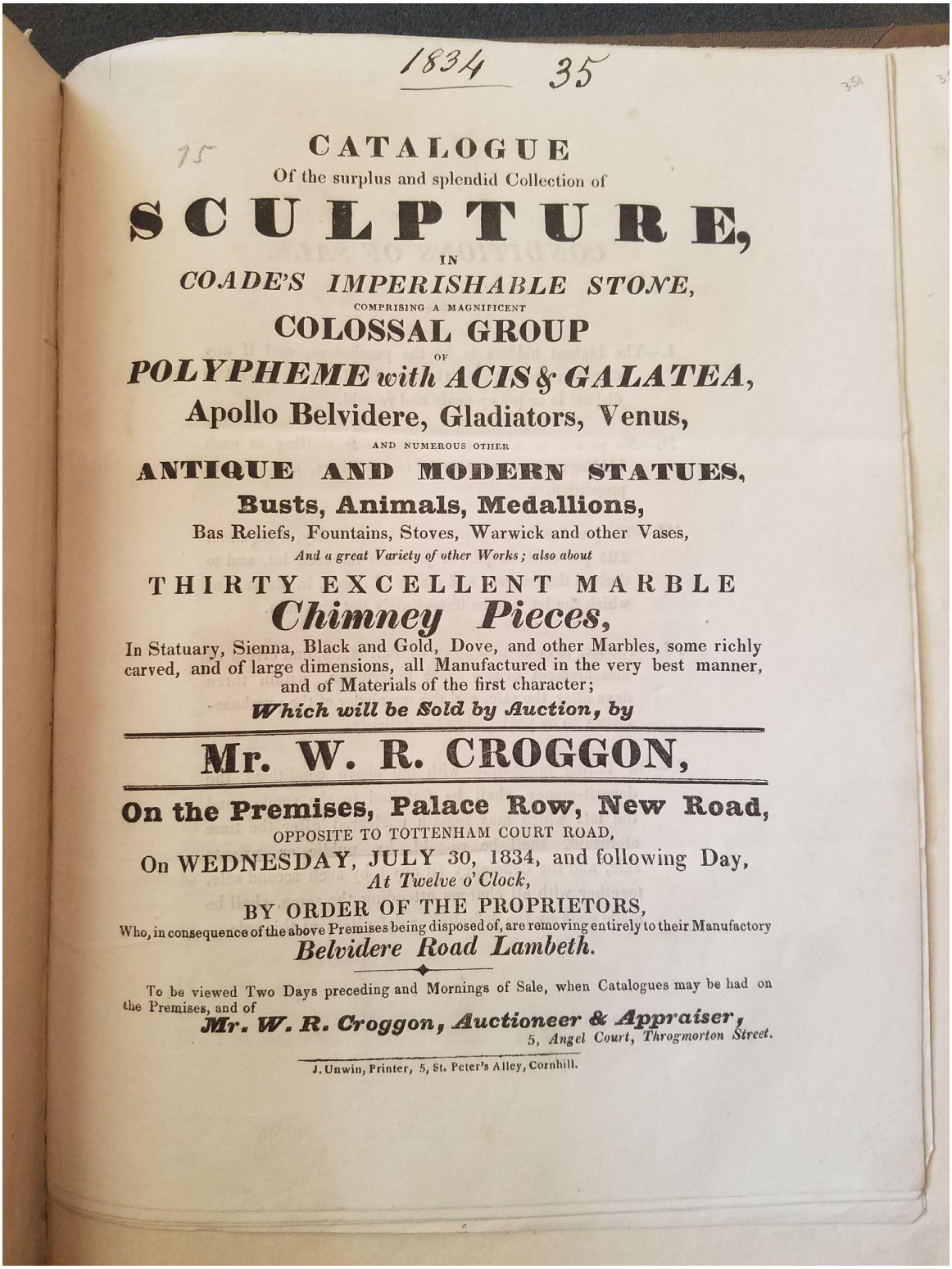

***5.10 - The Egyptian Hall with two Coade Statues***
John Tallis, London Street View, 1838 - 1840

From British Museum, London, UK




***5.11 - Order book, day book, and letter book of E Coade's Ornamental Stone. 1813 - 1821***
Smith v Pontifex, West, Drawing, 1810

From National Archives, Kew, London, UK



1834 35

CATALOGUE

Of the surplus and splendid Collection of

# SCULPTURE,

IN

*COADE'S IMPERISHABLE STONE,*

COMPRISING A MAGNIFICENT

**COLOSSAL GROUP**

OF

***POLYPHEME with ACIS & GALATEA,***

**Apollo Belvidere, Gladiators, Venus,**

AND NUMEROUS OTHER

**ANTIQUE AND MODERN STATUES,**

**Busts, Animals, Medallions,**

Bas Reliefs, Fountains, Stoves, Warwick and other Vases,

*And a great Variety of other Works; also about*

THIRTY EXCELLENT MARBLE

***Chimney Pieces,***

In Statuary, Sienna, Black and Gold, Dove, and other Marbles, some richly carved, and of large dimensions, all Manufactured in the very best manner, and of Materials of the first character;

***Which will be Sold by Auction, by***

## Mr. W. R. CROGGON,

**On the Premises, Palace Row, New Road,**

OPPOSITE TO TOTTENHAM COURT ROAD,

On WEDNESDAY, JULY 30, 1834, and following Day,

*At Twelve o'Clock,*

BY ORDER OF THE PROPRIETORS,

Who, in consequence of the above Premises being disposed of, are removing entirely to their Manufactory

***Belvidere Road Lambeth.***

To be viewed Two Days preceding and Mornings of Sale, when Catalogues may be had on the Premises, and of

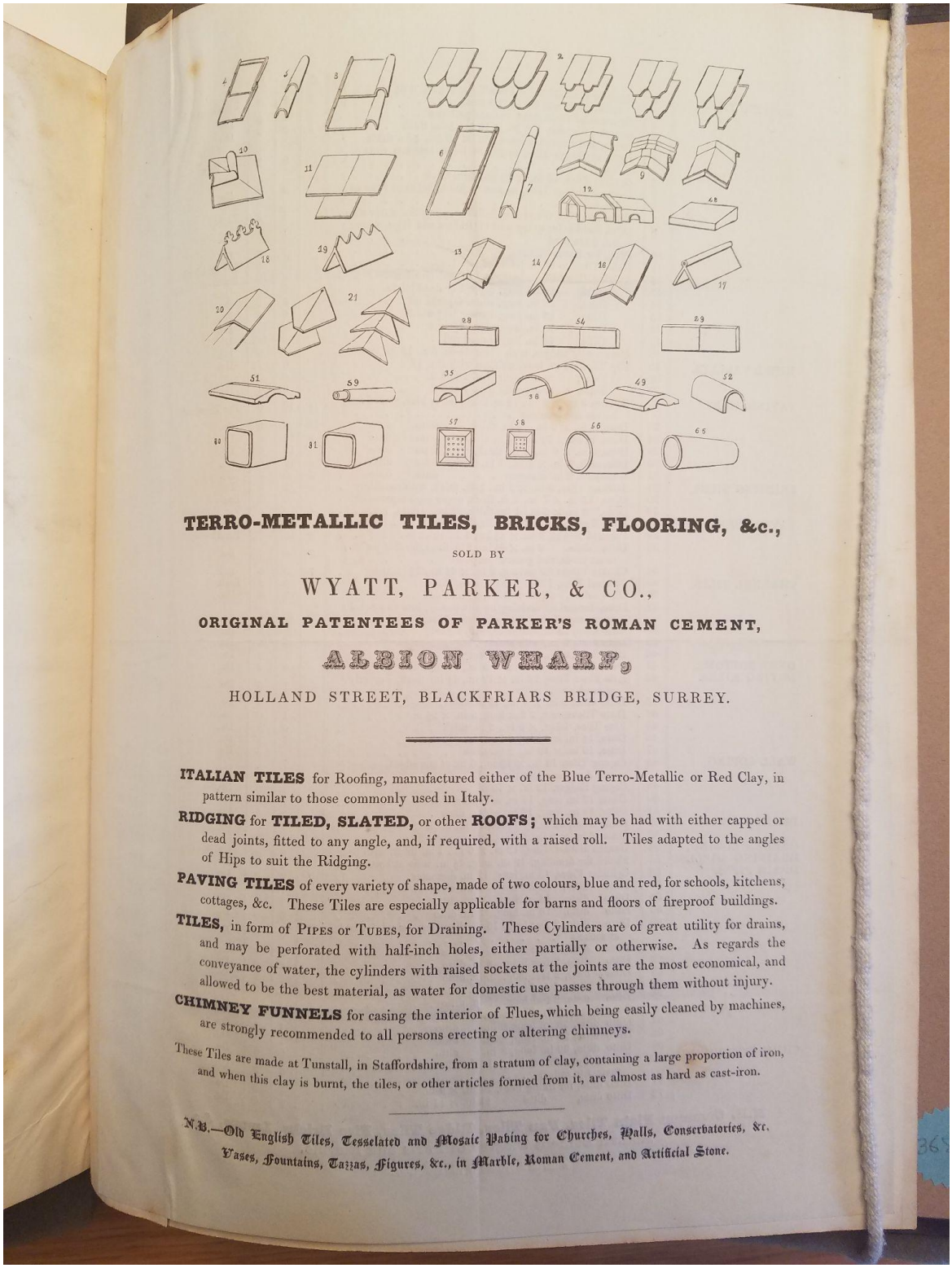
***Mr. W. R. Croggon, Auctioneer & Appraiser,***

*5, Angel Court, Throgmorton Street.*

J. Unwin, Printer, 5, St. Peter's Alley, Cornhill.

***5.12 - Copy of the Auction Catalogue In Soane's Collection***
W.R. Croggon, 1834

From Sir John Soane's Museum, London, UK



**TERRO-METALLIC TILES, BRICKS, FLOORING, &c.,**

SOLD BY

WYATT, PARKER, & CO.,

**ORIGINAL PATENTEES OF PARKER'S ROMAN CEMENT,**

**ALBION WHARF,**

HOLLAND STREET, BLACKFRIARS BRIDGE, SURREY.

---

**ITALIAN TILES** for Roofing, manufactured either of the Blue Terro-Metallic or Red Clay, in pattern similar to those commonly used in Italy.

**RIDGING** for **TILED, SLATED,** or other **ROOFS;** which may be had with either capped or dead joints, fitted to any angle, and, if required, with a raised roll. Tiles adapted to the angles of Hips to suit the Ridging.

**PAVING TILES** of every variety of shape, made of two colours, blue and red, for schools, kitchens, cottages, &c. These Tiles are especially applicable for barns and floors of fireproof buildings.

**TILES,** in form of PIPES or TUBES, for Draining. These Cylinders are of great utility for drains, and may be perforated with half-inch holes, either partially or otherwise. As regards the conveyance of water, the cylinders with raised sockets at the joints are the most economical, and allowed to be the best material, as water for domestic use passes through them without injury.

**CHIMNEY FUNNELS** for casing the interior of Flues, which being easily cleaned by machines, are strongly recommended to all persons erecting or altering chimneys.

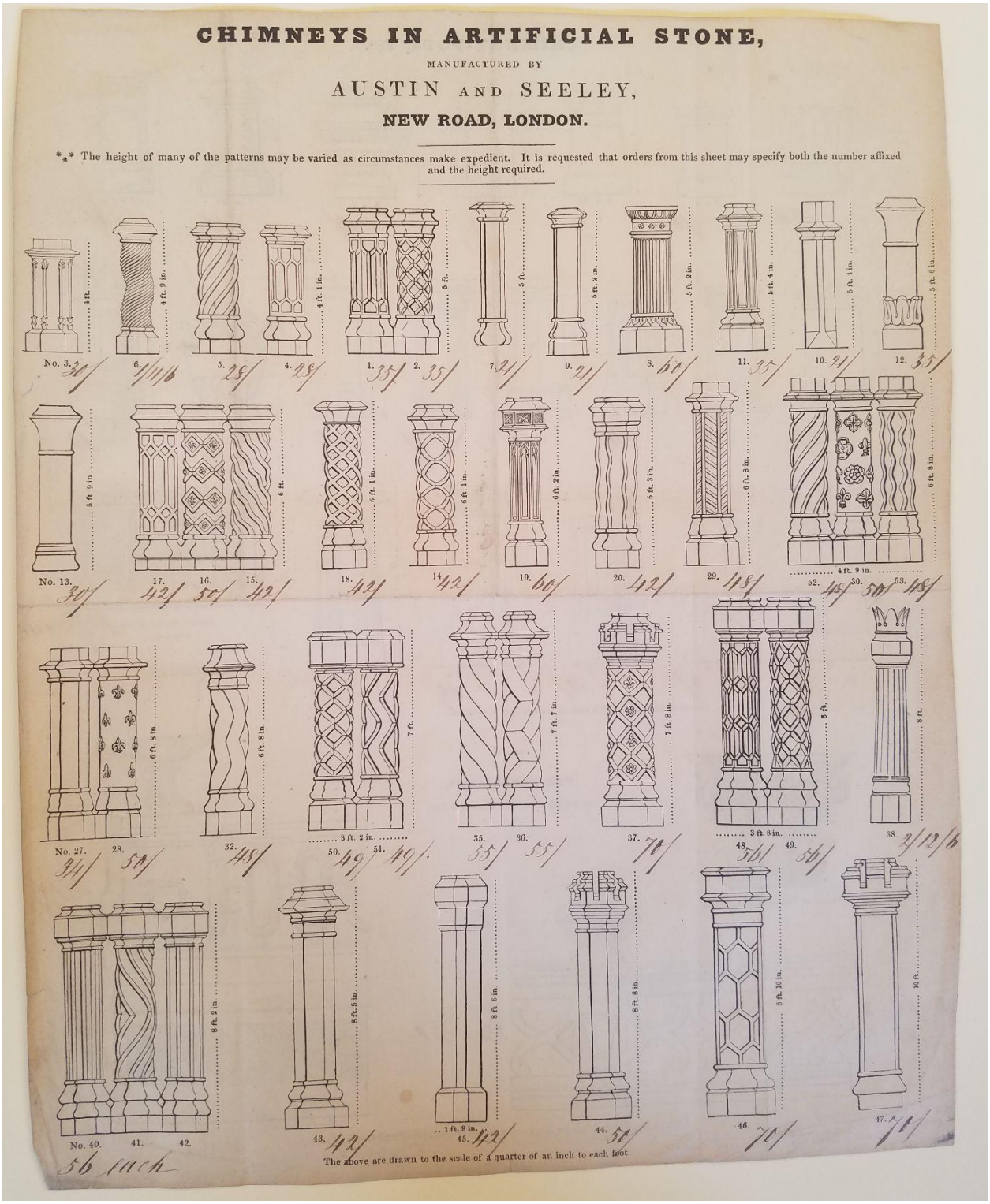
These Tiles are made at Tunstall, in Staffordshire, from a stratum of clay, containing a large proportion of iron, and when this clay is burnt, the tiles, or other articles formed from it, are almost as hard as cast-iron.

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N.B.—Old English Tiles, Tesselated and Mosaic Paving for Churches, Halls, Conservatories, &c. Vases, Fountains, Tazzas, Figures, &c., in Marble, Roman Cement, and Artificial Stone.

***5.13 - Figures, vases, fountains***
Wyatt, Parker, and Co, 1842

From Yale Center for British Art, New Haven, USA




***5.14 - Chimney's in Artificial Stone***
Austin & Seeley, 1840

From Yale Center for British Art, New Haven, USA



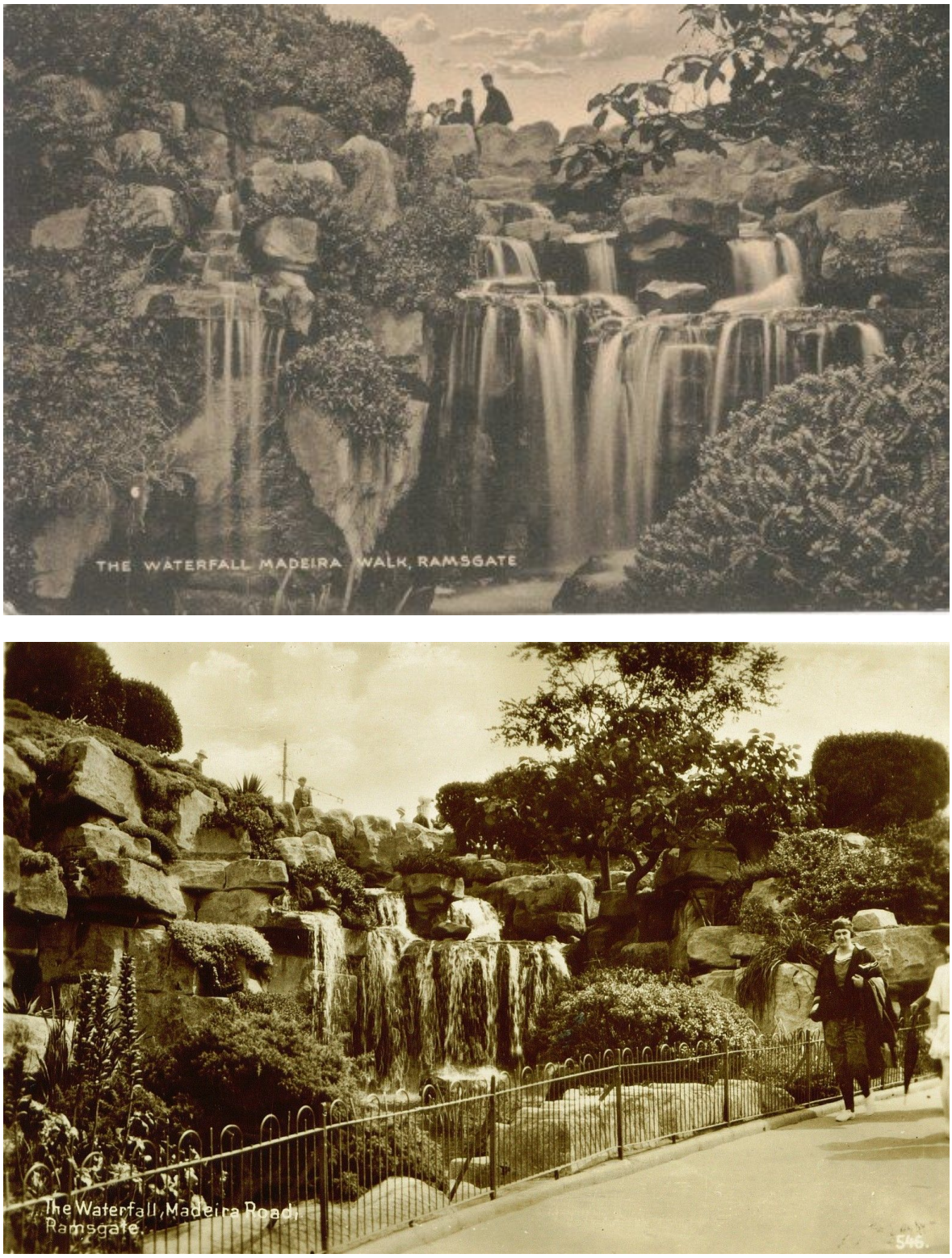

***5.15 - Austin and Seeley's Show Yard, Euston Road***
A list of fountains executed in the artificial stone [...], 1871.

From Caroline Simpson Research Collection.



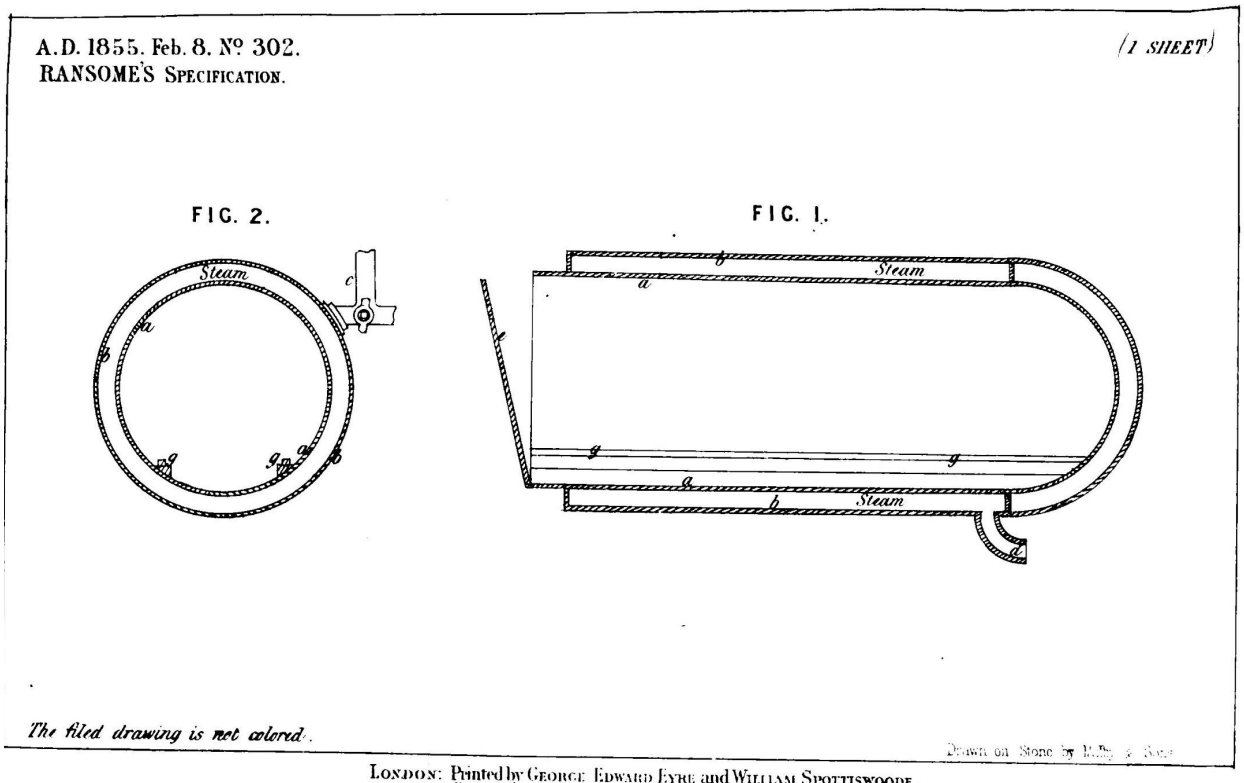

***5.16 - Illustrated catalogue of beautiful works of art in terra cotta***
Trade Card, Blanchard, Sons, and Co., 1869

From Sir John Soane's Museum, London, UK




***5.17 - The waterfall Madeira Walk, Ramsgate***
Photographs circa 1901

Photo Credit: Michael's Bookshop




***5.18 - Specification for rotary cement kiln***
Ransome, F., 1855

From British Library, London, UK



***5.19 - Design for a tympanum for Greenwich Hospital; the Immortality of Nelson***
Benjamin West, Drawing, 1810

From Royal Museums Greenwich, UK








***5.20 - Various Photographs of Caryatids of the Bank of England***
Francis Rowland Yerbury, 1925

From Royal Institute of British Architects, Photo Archive




***5.21 - The Nelson Pediment at the Old Royal Naval College, Greenwich***
Coade's Artificial Stone Manufactory, London, 1812.

From Visual Resources Center, Department of Art History, University of Delaware, Newark, Delaware. ARTSTOR - UCLA.

# 5. Inheriting the Intangible

“To bring it, therefore, more forward to public notice, a gallery is now opened on the Surrey-Side of Westminster Bridge, leading down to the Manufactory, containing specimens of the work, where the public will have opportunities of seeing from time to time, a variety of models in Basso-Relievo, Statues, &c. as they are executed at the Manufactory.”[1]

Arriving in the parish of Lambeth on the Surrey-Side of Charles Labelye’s bridge in 1799, the land surrounding Coade’s property between Westminster and Blackfriars Bridge had changed over three decades of manufacturing artificial stone. A waterfront of brick buildings to reduce the risk of fire from timber, lime, and stone merchants and manufactures fronting the River Thames along Narrow-Wall Lane. At the first major intersection in Lambeth of Narrow-Wall and Bridge Road, a dense clustering of speculative row housing and commercial venues serving a growing population of artisans, factory workers, labourers, proprietors, families, and patron’s. The urban streets and housing enclosing an interior marsh landscape whose use had changed from hunting fowl and into productive growth of timber yards, gardens, and seasonal agriculture.[2] With few thoroughfares crossing the interior of the parish and even fewer streets built of durable materials to maintain heavy carriage traffic, Lambeth at the turn of the century was only just beginning to change from “rural suburb into a part of London itself.”[3] Located eleven properties downriver approximately three hundred meters from the confluence of pedestrians and carriages at Narrow-Wall and Bridge Road, Coade’s Manufacture did not directly benefit from passing traffic. After thirty years of commercial success, Coade’s sought to capitalize on this traffic by opening a gallery on Bridge Road exhibiting specimens from the

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[1] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson. 1799., p. vii

[2] See *Printed maps showing location of Beaufoy, Wine and Vinegar Maker, before and after building of works at Cuper's Gardens, Lambeth*. Map of Lambeth circa 1766. From London Metropolitan Archives: City of London. And Horwood, Richard. *Plan of the Cities of London and Westminster: The Borough of Southwark, and Parts Adjoining, Shewing Every House*. 1799. From Crace Collection of Maps of London: British Library.

[3] "Lambeth: The parish," in *A History of the County of Surrey: Volume 4*, ed. H E Malden (London: Victoria County History, 1912), 50-64. *British History Online*, accessed August 31, 2021, http://www.british-history.ac.uk/vch/surrey/vol4/pp50-64.

manufacturer. Location matters, and Coade's Gallery sought to benefit from patrons and persons frequenting sites in Lambeth such as Astley's Amphitheatre located across the street from Coade's Gallery. First opening in 1773, Astley's gave London its first modern circus ring opened by the English equestrian Phillip Asltey. At the ring, a paying public could see "a comic dance called *The Mistake*, A Grand Entry of Horses, Equestrian Pedestal, and Manoeuvres...Mr. Miller, the original clown, a musical piece called *Cupid Pilgrim. Les Forces D'Hercule, Egyptian Pyramids;* or Men piled upon Men by ten capital performers."[4] Entertainment in the circus ring sought to perform death defying feats of acrobatics engaging the audience's appetite for bodily contortions and triumphs of strength organizing human, animal, and material into consumer fetish. Moreover, the performance of these feats allows patrons to reflexively participate in "patriotic constructions and displays of chivalrous, honourable, refined and polite masculinity."[5] Watching equestrian performing techniques of control provides the British audience a means to project patriotic ambitions into perennial continental conflicts. Coade's gallery also participates in these patriotic performances by exhibiting specimens from the manufacture as evidence of English craftsmanship and making skilled works of artifice. Building the gallery came through the collaborative efforts of Coade and superintendent sculptor John Bacon who had achieved national fame with works such as his 1770 bust of King George III, 1780 bust of Inigo Jones, and his 1799 equestrian statue of William III in St. Jame's Square. Often heralded as the foundational figure of British sculpture, Bacon's sudden death on 7 August 1799 from inflammation left Coade in search of another superintendent. Bacon's legacy lived on in the exhibition at Coade's Gallery for customers to visit for the price of a shilling from ten until four in the afternoon {Figure 5.08}.

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[4] "News." *Public Advertiser*, June 23, 1791. *Seventeenth and Eighteenth Century Burney Newspapers Collection* (accessed August 29, 2021). https://link.gale.com/apps/doc/Z2001217217/BBCN?u=uclosangeles&sid=bookmark-BBCN&xid=449bb620.

[5] Mattfeld, Monica. "'Undaunted All He Views': The Gibraltar Charger, Astley's Amphitheatre and Masculine Performance." *Journal for eighteenth-century studies* 37, no. 1 (2014): 19–36.

In opening her gallery, Coade separates the site of production from sales with all future orders and inquiries directed to Coade & Sealy at the gallery on Bridge Road. Coade's cousin John Sealy had stepped in to replace the renowned English artist John Bacon although his iconic trade card continued to serve as "Frontispiece at the Gallery" and "whose models now form a considerable part of the collection."[6] Deriving from medieval Latin *frontispicium* to describe looking at a forehead, the word is Anglicized from the French *frontispice* at the end of the sixteenth century.[7] Using a frontispiece to denote and decorate the primary entry of the gallery, the ornament on Coade's doubles as visual allegory advertising the artificial stone works inside. Over three decades of use and commercial success now cemented Bacon's trade card as a nine by ten foot facade ornament to Coade's gallery. Replicating the organization of her descriptive catalogue, the Gallery frontispiece relies on paper modalities advertising the inscription "the attempts of time to destroy sculpture and architecture defeated by the vitrifying aid of fire."[8] With learning in London on the rise, Coade collapses architecture and print media at her gallery in order to advertise for an increasingly industrial and literate consumer culture throughout the British Empire.[9] Bacon's trade card turned frontispiece is set into a square podium resting on an entablature being held by four male Cariatides or Terms on pedestals eleven feet high. In the paper guide to Coade's Gallery, she suggests to the public that "the anatomical parts of these statues are worthy of observation."[10] Between the Cariatides are a set

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[6] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson. 1799. P. iv

[7] "frontispiece, n.". OED Online. June 2021. Oxford University Press. https://www.oed.com/view/Entry/74941?rskey=fA9jx3&result=1&isAdvanced=false (accessed September 01, 2021).

[8] Coade's Artificial Stone Manufactory. *Coade's Gallery...*Lambeth: Printed by S. Tibson. 1799. P. 13

[9] The literacy of Britain in 1800 has been estimated to be approximately 60% in men and 40% in women growing to approximately 97% across the entire British population by 1900. See Lloyd, Amy J.: "Education, Literacy and the Reading Public." British Library Newspapers. Detroit: Gale, 2007.

[10] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson. 1799. P. 14

of double doors underneath a *Neptune's Head* keystone arch framing the primary entrance. On the parapet above Bacon's frontispiece is a Royal Coat of Arms set between the Lion and Unicorn. To bear the Royal Arms set Coade's Gallery apart from competitors as a Royal Warrant Holder supplying the royal household with commodities and services. On the side entrance, two Genii figures doubling as engaged pilasters hold drapery and a panel on which is inscribed the history of the manufacture, a chronicle of specific objects they have made, the renowned material properties of artificial stone with its capacity to resist the effects of nature, and the honorific accolades bestowed by the King, the Prince of Wales, Duke of York, nobility, and architects throughout the British Empire.

Admission into the gallery came with a paper publication providing a self guided tour for the specimens on exhibit. Entering Coade's Gallery from either entrance brought one into an anteroom vestibule holding thirty-six works such as three-quarter bespoke statues of the seasons and a life size grouping of a mother and children by Bacon alongside bulk order commodities such as chimney-pieces, ornamental medallions, pateras, panels, and vases. Coade's Gallery put specimens from the manufacture on exhibition for an inquiring customer seeking ornament, sculpture, or objects useful to the polite art of architecture. Standing among the anteroom objects, a copy of the caryatid holding the dome over the Three Per Cent Consols Transfer Office in Sir John Soane's Bank of England.[11] When the Coade's Gallery opened, the British economy was perilously close to collapsing from financing war against Napoleon and the French during the Second Coalition from 1798 - 1802. As a means to finance this war, the Bank Of England sold increasingly popular fixed interest bonds at the Consols Transfer Office as a means to supply Parliament with critical cash liquidity. Under an iron and glass dome held by Coade's artificial stone caryatids, British people bought wartime bonds to sustain the

[11] For a digital reconstruction of Sir John Soane's Bank of England, see the RAMSA Project Soane led by Melissa DelVecchio and Graham S. Wyatt.

economy. For Coade to place one of these caryatids in the anteroom of her gallery is tantamount to exhibiting patriotism. The gallery itself held forty-nine works with walls containing twenty by one foot bas relief such as the *Cave of the Rock* visually depicting the literary scene when Polyphemus kills Acis from Ovid's *Metamorphosis*. These large multi-panel installations exhibit the material limits of manufacturing being composed of smaller panels that Coade's would later replicate in their iconic Nelson Pediment. The open floor plan of the gallery put gothic monuments alongside fountains, allegorical statues of *Charity*, *Faith*, *Hope*, *Temperance*, *Fortitude*, *Justice*, *Prudence*, and *Life*, pedestals, vases, busts, and candelabra all filling the interior and the consumer imagination. The staircase held a full scale *Bust of His Royal Highness* and a wall panel of the reclining figure of *Agriculture* noting that "prices vary according to the size and ornaments."[12] Arriving in the front-room on the second floor, one finds a chimney-piece, a panel depicting Shakespere's birth, statues of Cupid and Flora, busts of the privateer Sir Walter Raleigh, English poet and diplomat Matthew Prior, painter and scholar Peter Paul Reubens, Homer, the Pope, Michelangelo, and other figures all organized to convey a distinct sense of Englishness. The culmination of these specimens on exhibition came when arriving at the final back-room containing *A female figure lying on a couch*. Coade writes of this statute in her gallery guide that "three of these statues have been executed in marble, at 500 guineas each."[13] This enormous cost equates to five times Coade's *River God* and approximately fifty times the annual wage of the artisan labor Coade employed at her manufacture.[14] The strategy of putting a prohibitively costly commodity on exhibition also came with a solution by Coade proposing to execute ten artificial stone copies at thirty guineas if enough subscriptions were received at the gallery. Coming face to face with cost in 1799 finds an emphasis on ownership outweighing the perceived value of the most expensive commodity.

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[12] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson. 1799. P 31

[13] Ibid. P. 35

[14] *A Short History of English Agriculture, by W. H. R. Curtler*. Oxford: Clarendon Press, 1909.

Accompanying this subscription sales pitch on the value of artificial stone's cost, Coade also sought to emphasize material quality by installing Plaster of Paris copies alongside artificial stone. "As Plaster-Casts are so liable to be injured and defaced by the slightest touch, and even by long continuance in damp rooms, they are found in time very expensive, so that, (not withstanding it forms a branch of our business,) we can seldom recommend them, for though it may appear to be saving of expense at first, yet it frequently happens, either through the carelessness of servants, accidents by carriage, or otherwise, they have been rendered unfit for their situation, and artificial stone have at last been substituted in their stead."[15] The architecture of Coade's Gallery narrates nascent consumer culture leading paying patrons through a collection of work as a means to arrive at an advertisement for artificial stone's cost, quality, and durability. Using architecture and ornament, Coade sequentially constructs an economy of desire from matters of material and substance.

Of the many objects at Coade's, the Royal Warrant giving approval to exhibit the Royal Coat of Arms on the gallery, manufacture, and associated literature secured prestige that no amount of money alone could purchase. A Royal Warrant marks artisans and trades persons who provide craft, goods, and services to the British Royal Court for a durational period of time. In marking certain works of craft, Royal prerogative is made known to the public and it parallels continent wide court programs with histories extending to the medieval period. Moreover, the reciprocity between craft and the Royal Family locates Coade's self conscious participation in cultural programs constructing a British National Identity. Amidst the continent wide anxiety regarding the events of the French revolution, the Napoleonic military coup, and near unremitting coalition warfare on the continent and across the globe, investiture of Royal Warrants by the British government sought to promote patriotism through patrimony. Exhibiting artificial stone from

[15] Coade's Artificial Stone Manufactory. *Coade's Gallery, or, Exhibition in Artificial Stone, Westminster-Bridge-Road ... Being Specimens from the Manufactory, at King's Arms Stairs, Narrow Wall, Lambeth*. Lambeth: Printed by S. Tibson. 1799. P. 36

1773 - 1777 at Society of Artists of Great Britain, maintaining annual social affiliations at the Royal Academy, participation in the pageantry of the Lord Mayor's Show; Eleanor Coade and artificial stone embody the exhibition of English national identity.

*Anglicizing Objects*

Coade's artificial stone specimens demonstrate the reciprocity between objects and identity. Considering this statement inversely, the identity of substance which is not an object identifies the absence of language to describe existence. In describing objects and identity, there exists a non-symbolic language which participates in constructing a historical duration. To give an object a name, a word which identifies a particulate organization of matter concomitant to an object; there is power. Across durations of use and existence, this language locates an ontology in the reciprocity between objects and identity. Coade called the artificial stone substance she manufactured *Lithodypria*, 'twice fired stone,' while also using the linguistic phrase artificial stone for advertising and commercial ventures. After Coade's 1813 devolvement from the business and her retirement to Lyme Regis, this substance came to be called imperishable stone in 1834. From the 1940's onwards, this substance bears the name Coade Stone. Eleanor Coade did not invent this substance nor did she invent a secret recipe lost to time.[16] What Eleanor Coade did invent is a brand and a use for a substance to ornament architecture and landscapes which bears her identity today as an object of English National Heritage. Coade Stone carries a non-symbolic language that ontologically organizes a heterogeneous substance which has been manufactured according to a specific process bearing the indentation and identity of Eleanor Coade. While not every work manufactured in Lambeth received a

[16] Stanford, Caroline, "Revisiting the origins of Coade stone," *Georgian Group journal*, vol. 24, 2016, p. 95-116

trademark, each specimen in Coade's Gallery came bearing the indentation of Coade's trademark replicating models of English authorship and intellectual property being constructed simultaneously in romantic and gothic novel, ghost stories, and supernatural liturgies. Coade's Gallery in Lambeth marks a distinctly original and English commercial venture exhibiting the ornament of architecture. Never before had a private venture survived and thrived such as Coade's Artificial Stone Manufacture and Gallery, and the success of this venture had less to do with the specific specimens on exhibit in the gallery and more to do with the homology of Coade's identity and a material performance. a substance bearing a specific identity. An identity contingent to the intangible properties of resistance, durability, cheapness, and superior quality than natural counterparts. Coade's Gallery put a substance on exhibition as an object thus earning Eleanor Coade the distinct privilege of bearing the Royal Coat of Arms. Furnishing the Royal House and its Household, Coade's objects are synonymous with the construction of an English identity. For patrons paying admittance to Coade's Gallery from 1799 - 1821, their ticket provides entry into the sprawling British Empire through the objects useful to the Royal Family. Being English in turn of the century London is to participate in the anglicizing of objects through techniques of exhibition.

The river Thames is a dialectic running through the city of London. On one side is Coade's Gallery and the artificial specimens it contains, and on the other are the objects entombed in the British Museum. Founded through the British *Museum Act of 1753* act by Parliament authorizing the purchase of Sir Hans Sloane's collection of nearly 80,000 "natural and artificial rarities," the museum is a model of Enlightenment ideologies and eighteenth century curatorial practices.[17] Connecting governmentality and individuated undertakings, the Parliamentary act sought to secure the President of the Royal Society's collection "together Whole and Intire" into

[17] "The British Museum Story," The British Museum, accessed September 9, 2021, https://www.britishmuseum.org/about-us/british-museum-story/history.

"certain Trustees therein named."[18] Purchasing a seventeenth century estate by the obscure French architect Pierre Pouget, Montague House in Bloomsbury came to serve as a site for the consolidation and exhibition of British imperial identity. Opening its doors in 1759 until demolition in 1823, entry into the first British Museum required limited tickets resulting in private tours directly with Trustees and affiliated fellows. This not-quite public museum gave entry to persons with the requisite social affiliations to manoeuvre the British class system for aesthetic, scientific, entertainment, and other inquisitive pursuits. The British Museum remains the object of significant and diverse scholarship ranging from cultural theorist Mieke Bal examining the politics of proclamation in visually exhibiting objects, sociologist Tony Bennett's Foucalidian frameworks of social reform and routine performance, museum curator Ian Jenkins discursive tension between methods of organizing objects between art and archeology, English scholar Eric Gidal's literary study on the poetics of Romantic aesthetics and the poetics of national identity within museum plans and guidebooks, and journalist Sharon Waxman's iconic considerations on the museum's loot.[19] Serving as exhibition site and repository of cultural artifacts, this dissertation contributes to this body of scholarship by considering the social context of the curatorial practices of the British Museum between 1769 - 1821. Moreover, this historiography on artificial stone seeks to consider the materiality of specimens on exhibit as it pertains to turn of the century consumer culture. By expanding the site of exhibition from the British Museum to Coade's Gallery, this dissertation excavates dialectics of observation and consumption as a means to consider the anglicizing of objects.

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[18] See 26 Geo 2 c 22

[19] See Bal, Mieke, and Edwin Janssen With Das Gesicht An Der Wand. *Double Exposures: The Subject of Cultural Analysis*. Routledge, 1996.; Bennett, Tony. *The Birth of the Museum : History, Theory, Politics* London ;: Routledge, 1995.; Jenkins, Ian. *Archaeologists & Aesthetes : in the Sculpture Galleries of the British Museum 1800-1939* London: Published for the Trustees of the British Museum by the British Museum Press, 1992.; Gidal, Eric. *Poetic Exhibitions : Romantic Aesthetics and the Pleasures of the British Museum* Lewisburg, Pa: Bucknell University Press, 2001.; Waxman, Sharon. *Loot : the Battle over the Stolen Treasures of the Ancient World* 1st ed. New York: Times Books, 2008.

The geological strata from which the substance of igneous rock begins finds the upward intrusion of viscous magma passing from one liquid world into another. The thermotechnics of subaerial and submarine lava displacement, mantle melting, and pressure differentials displace molten magma from the Asthenosphere into our sphere where it exothermically solidifies into igneous rock. At the onset of the nineteenth century, our present understanding of geology and its ontological classifications had not yet crystallized into the system we know today. Rather, biblical orthodoxies of the Genesis deluge, antiquarian classicism, amateur academicism, and early modern science participate in nascent theories of geology rewriting the chronology of the natural world and its origins. Pivotal to this intellectual interlocution includes three decades of scholarly work beginning in the 1760's by Scottish geologist, naturalist, and chemical manufacturer James Hutton resulting in *Concerning the System of the Earth, its Duration, and Stability* read to the Royal Society of Edinburgh on 4 July 1785. In correlation to his abstract, Hutton's field work at Glen Tilt in the Cairngorm mountains and Arthur's Seat at the Salisbury Crags yielded sufficient evidence to support his theory on the molten formation of igneous rock. In 1788, Hutton published his *Theory of the Earth; or an investigation of the laws observable in the composition, dissolution, and restoration of land upon the Globe* thereby conclusively rewriting the history of time through the formation of modern geology.[20] This shift in understanding of stone was neither an epistemic rupture nor a paradigm shift, rather, it was non-linear, asynchronous, and aided by quotidian techniques of decades digging in the dirt. Contemporaneous Hutton and dialectics of religious and scientific worldviews is the cultural use of stone in constructing identity and ideologies within the British Empire between 1769 - 1821. In this dissertation, I argue the substance of artificial stone culturally mediates metahistorical shifts from biblical genesis to geological chronology. As modern science remakes the origin of the world to be older than religious interpretations, I argue the intangible properties of artificial

[20] Hutton, James. *Theory of the Earth, or an Investigation of the Laws Observable*. Edinburgh : The Society, 1788.

stone provide a cultural medium by which durations of time come to be rewritten. As a means to examine these historical changes to duration and durability, this dissertation examines the ideology of stone objects and their use in constructing turn of the century national identity.

In 1799, a stone was rediscovered by French officer Pierre-François Bouchard while rebuilding Fort Julien on the banks of the river Nile in Rosetta Egypt. Bouchard had come to Egypt as a savant in the Napoleonic military campaign and the discovery of this particular igneous rock caused an international sensation due to the multiple textual inscriptions on the stone face. Bearing a toponym, this specific igneous rock came to be known as the Rosetta Stone. Following the French defeat by a British-Ottoman alliance, the 1801 *Capitulation of Alexandria* required cessations to the British in the form of manuscripts, statues, and some collections including the Rosetta Stone by savants, scholars, and state bureaucrats at the Institut d'Egypte and the Commission des Sciences et des Arts.[21] Including the geological minutiae of stone samples to entire architecture monuments, the *Description de l'Égypte* published from 1809 - 1821 records the capture of this cultural loot.[22] The *London Courier and Evening Gazette* records these events stating, “The conquest of Egypt, independent of its political consequences, has enriched our country with a number of rare and ancient monuments, some entirely perfect, and of the highest and most undoubted antiquity. Colonel Tuner has brought home in His Majesty's ship Egyptienne, a stone of black Granite, found by Menou, at Rosetta, and intended to be sent by that General the first convenient opportunity to France; it is charged with three inscriptions, in three different languages, and characters, commemorating a Gif of Corn from Ptolemy Philadelphus to the inhabitants of that part of the country: the first is in hieroglyphics, the second in the old Coptic, or vulgar character of the ancient Egyptians, and the last Greek.

[21] Wilson, Robert. *History of the British Expedition to Egypt to Which Is Subjoined, a Sketch of the Present State of That Country and Its Means of Defence* Philadelphia: Conrad, 1803. P. 351

[22] *Description de l’Égypte; ou, Recueil des observations et des recherches qui ont été faites en Égypte pendant l’expédition de l’armée française.* 2. éd. Paris: C.L.F. Panckoucke, 1821. From the New York Public Library Rare Book Division.

The whole are perfect, and the two last but translations, it may reasonably be supposed, of the first."[23] Arriving in London, the Rosetta Stone passed to the Society of Antiquaries of London on behalf of King George III who promptly commissioned four plaster casts of the inscriptions before the object was put on exhibit in the British Museum where it remains today. Extensive historiographies on the national competition in the first two decades of the nineteenth century between the British Thomas Young and the French Jean-François Champollion record the stone's translation amidst increasing cultural fetish for all things Egypt.[24] While it is understandable the translation of the then unknown Ancient Egyptian hieroglyphic script, Demotic, and Ancient Greek is the center of scholarly focus, it is also significant to consider the addition of a fourth text by the British military {Figure 5.03 - 5.05}. Following its acquisition, an inscription on the side was added stating, "Captured in Egypt by the British Army in 1801," and on the alternative face, "Presented by King George III." Inscribing this phrase onto this stone demonstrates the action of anglicizing objects. Occasionally such actions are violent, benign, horrifying, humorous, destructive, constructive, or any descriptive range between; but in common, they share the appropriation of substance into the English empire through language.

In acquiring the Rosetta stone and other ancient Egyptian monuments, the British Empire joins the growing fad of Egyptomania sweeping across the European continent. The fashion for all things Egypt had flourished in eighteenth century France where "by the 1780s, Egypt had come to stand as a metaphor for the origins of humanity and architecture as a metaphor for the myriad constructions and artifices of human society."[25] It was only after the extraordinary pursuit and

[23] *London Courier and Evening Gazette* (London, UK), March 24, 1802.
[24] See Parkinson, R. B. *Cracking Codes : the Rosetta Stone and Decipherment* Berkeley: University of California Press, 1999., Meyerson, Daniel. *The Linguist and the Emperor : Napoleon and Champollion's Quest to Decipher the Rosetta Stone* 1st edition. New York: Ballantine Books, 2004., Parkinson, R. B. *The Rosetta Stone* London: British Museum Press, 2005., Buchwald, Jed, and Diane Greco Josefowicz. *The Riddle of the Rosetta : How an English Polymath and a French Polyglot Discovered the Meaning of Egyptian Hieroglyphs* Princeton, New Jersey: Princeton University Press, 2020.
[25] Lavin, Sylvia. "In the Names of History: Quatremère De Quincy and the Literature of Egyptian Architecture." *Journal of architectural education (1984)* 44, no. 3 (1991): 131–137.

defeat of Napoleon's navy by Rear Admiral Sir Horatio Nelson in the 1798 Battle of the Nile and victory in the War of the Second Coalition by which the cultural fetish for Egypt swept through the British Empire. Amidst the sublime cultural relics of an antiquity then thought to be the origins of civilization, Napoleon's resounding defeat secured Nelson immortal fame and global dominance for Britannia. An 1804 post in the London Times records this growing fad with a touch of irony stating, "The rage for Egyptian ornaments of every description, still continues. Our dashing carriages are no longer to be lighted by a plain travelling lamp, but a *Pharos*; our three cornered opera hats are to be dignified with the appellation of *Deltas*; and our houses are to be adorned with *Pompey's Pillars*. Among the Ladies, the *Christian* names of *Rosetta, Alexandria*, &c. Will become fashionable and our dames of *ton* will sit down in their morning apartments to execute their fanciful needle-work, with *Cleopatra's Needles*."[26] Hackneyed postcolonial critiques rooted in the conservatism of identity politics provide only a superficial and formalist reading of the engagement between Europe, North Africa, and West Asia.[27] The discourse of the postcolonial critique lies firmly in the fallacy that culture exists after ontology whereby raw substance has been converted into cultural specimens that can be categorized and formally organized. The flaw to this academic ideology is a flaw in the definition of objects which places a primacy on a sculpture or stella such as the Rosetta Stone while ignoring the raw igneous substance from which these artifacts are made. In this dissertation, I argue that objecthood exists in the durability of language. The violence of the British imperial and colonial ventures is not solely in the appropriation of cultural artifacts but also in the force necessary to anglicize objects. Acquiring the Rosetta Stone as loot is one thing, but to inscribe the stone into a new world order is another as did the London Society of Antiquaries.

[26] "The rage for Egyptian ornaments of every description, still continues. Our dashing carriages." *Times*, December 27, 1804, 2. *The Times Digital Archive* (accessed August 25, 2021). https://link.gale.com/apps/doc/CS34351003/TTDA?u=uclosangeles&sid=bookmark-TTDA&xid=b1e5d49f.
[27] Said, Edward W. *Orientalism* 1st Vintage books ed. New York: Vintage Books, 1979.

Coade's artificial stone specimens present a unique case in the discursive reciprocity between objects and identity. More specifically, Coade's ornament adorning the facade of William Bullock's Egyptian Hall Museum has a use in advertising the origins of civilization enticing passerbys into a temporary event hall to see Bullock's natural history collection {Figure 5.09 - 5.10}. Bullock's permanent collection was largely composed from Captain James Cook's maritime ventures as British colonial and curatorial practices coincide and would later be augmented by captured Napoleanic objects in the exhibition of patriotic identity. Inside Bullock's museum, a visitor finds real specimens of natural history put on exhibit in spectacular reconstructions of their habitats Foregoing scientific and aesthetic methods of classification in favor of emphasizing the spectacle, Bullock's exhibitions "brought real fragments of distant pasts and places into the present through the intrinsic reality possessed by material objects."[28] The architecture of the museum was largely executed to the designs of Peter Frederick Robinson relying upon literary reproductions of Ancient Egyptian circulated by the French Institut d'Égypte. Opening in 1812 across from the Royal Academy of Art in Burlington House on Piccadilly street, the Egyptian Hall proved a lively addition to rather typical early nineteenth century London street. Self-stylized as "England's Home of Mystery," the exhibition hall was the first work of Egyptomania architecture built in the British Empire.[29] The fad for Egypt themed objects existed well before Bullock's museum and Coade's Artificial Stone Manufacturer had been supplying statutes for pleasure gardens, landscapes, and sculptures since at least the 1800s. With a proven history in making Egypt themed objects, Eleanor Coade's frequent social attendance at the Royal Academy of Art, and Coade's renowned artificial stone substance, the manufacturer was well suited to supply the larger than life size pantheon figures adorning the facade of

[28] Pearce, Susan. "From Classification to Recreated 'Reality': William Bullock's Exhibitions of Human and Natural History." *Journal for eighteenth-century studies* 43, no. 4 (2020): 507–524.

[29] Further Egytomania works include John Foulston's work in Plymouth 1810 - 1835, a copy of Bullock's Egyptian Hall in the 1835 - 1836 Egyptian House, in Penzance with artificial stone ornament by Coade, another copy of the Egyptian Hall in 1823 at the Ker Street Social Club in Devon, the 1836 Temple Works in Leeds, the 1839 Highgate Cemetery in London, the 1851 Egyptian Hall in the Crystal Palace in London, the 1860 - 1863 Boston Masonic Hall in Lincolnshire, and Harrods Egyptian Hall in London built at the end of the nineteenth century.

Bullock's Museum. The Osiris and consort sibling Isis statues made by Coade demarcate a monumental entry on the urban facade while simultaneously converting architecture into advertising for the museum. Long before Denise Scott Brown's brilliantly iconic analysis, the architecture at Bullock's Egyptian Hall conveys the information of commerce and cultural hegemony.[30] Coade's artificial stone substance which quite literally comes to define English National Heritage in the twentieth century had a use in her time to anglicize the objects of Ancient Egyptian as ornament for Bullock's Museum. Bearing the trademark Coade & Sealy, the ornament conflates conceptions of eternity and non-natural durability in both substance and statuary. The interior 'reality' of Bullock's natural history specimens to convey vast durations of time and distance are homologous to the reality of artificial specimens unaffected by climatic ravages of weather. While Bullock's natural history collection and patrimony often take central focus in the scholarship on the Egyptian Hall, temporary art exhibitions put on by the Society of Painters in Water Colours such as Joseph Mallord William Turner *Picturesque Views of England and Wales* beginning in 1825. The watercolours and their subsequent engravings published between 1827 and 1838 has been described by Tate curator Andrew Wilson as the "central document in Turner's art" despite the endeavors financial failure.[31] At Bullock's Egyptian Hall, the spectacular reconstructions of reality exist in similitude with artworks whose material captures the picturesque reality of the British landscape.

When professor Susan Pearce writes on reality at Bullock's Egyptian Hall museum, she describes an "intrinsic reality" which is "possessed by material objects." This reality exists in language and its possession of objects is a metaphor akin to the sublime hauntings frequenting late eighteenth century London. Accordingly, in 1816 when visitors flocked to see Napoleon's coach captured in victory at the Battle of Waterloo, the material object is said to possess an

[30] Venturi, Robert, Denise Scott Brown, and Steven Izenour. *Learning from Las Vegas / [by] Robert Venturi, Denise Scott Brown, and Steven Izenour*. Cambridge, Mass: MIT Press, 1972.
[31] Wilton, Andrew. *The life and work of J.M.W. Turner*. Fribourg: Office du Livre, 1979. P. 186

intrinsic reality from the war which impart an exhibitable value. Ostensibly, the public pays to see Napoleon's coach on exhibition and not the one that brought them because of this real difference of measurable value which correlates to profit for the museum. Pearce echoes historian of science Lorraine Daston and other thinkers who consider the meaningful differentiation of material objects by significance as a method to learn from things which "explicate further dimensions."[32] While metaphor's change between the scholars, each relies upon the use of language to describe and organize material which acquires specific meaning while ontological similarity does not. Rhetorically considering this discursive interest in matters of material, what makes a specimen worthy of exhibition? The reality of Coade's Osiris and Isis artificial stone specimens is they are copies but not of Ancient Egyptian antiquities. Instead, they are original copies made to be reproduced in craft manufacture at Coade's across the river Thames in Lambeth. They do not impart a sense of 'realness' or 'reality' imbued from their looting or capture in the Nile River Valley, rather, their reality is derived artificially in a South London manufactory which imparts expertise derived in material science experiments onto architecture ornament which does not decay or become damaged in the harsh British climate. The reality of artificial stone is distinct but contingent to its dyadic counterpart in nature which participates in constructing the real world. This reality is shared, social, and durationallity contingent to matters of material which impose intrinsic conditions. As the most viewed object on exhibition at the British Museum, the Rosetta Stone is never removed from exhibit and the condition of this reality requires its cleaning in public view. As an object of imperial loot, the stone becomes property through the force of inscription which extracts material from distant destinations. As such, what is real in early nineteenth century London is a reality which is social and shared between differing subjectivities. The limits to this reality become visible in the perception of material and its absence. Bearing witness to stone which performs differently in

[32] Daston, Lorraine. *Things That Talk: Object Lessons from Art and Science*. New York: Zone Books, 2008. p. 24

harsh wet maritime weather as compared to the dry desert heat exposes a difference in reality contingent on material. The upward intrusion of molten magma passing through diapirs in thermotechnic felsic crystallization brought Ancient Egyptians the raw granite material to make their cultural artifacts such as the Rosetta Stone, statuary, architecture. The reality of these objects changes durationally as significance shifts across centuries. At the turn of the century with industry and modernity writ large in world building, the reality possessed by these material objects dervies in the power of ownership converting this extracted material into intangible property of the British Empire. Although the wealth, power, and capacity for violent force exists in the British Empire, the limits to these conditions are exposed in matters of material. For example, in 1819 when Ottoman Pasha Muhammad Ali gave an obelisk made during the reign of Pharaoh Thutmose III, he gave a gift which even the might of the British Empire could not mobilize. Weighing upwards of two hundred tons and laying buried in the sand, the sheer monumentality of the obelisk exceeded British shipping capacity thereby resisting its anglicization until 1877. It was only after the French acquisition of the Luxor obelisk and American inquiries into appropriating one of their own that private British philanthropy funded the transportation of the obelisk as a buoyant monolith floating across the seas as the barge *HMS Cleopatra*.

Coade's artificial stone and the anglicization of objects finds another example in the perennially contentious Elgin Marbles. In 1801, British peer Lord Elgin forged a firman at the Sublime Port of Greece from the Ottoman Empire claiming approval to remove sculptures in the pediment and frieze of the Ancient Greek Parthenon in Athens, Propylaea, and Erechtheum.[33] Before labour converts raw marble into a work of artifice to adorn architecture, this metamorphic substance derives from the geological change of carbon sediment containing mineral impurities

[33] "Parthenon Sculptures - The Trustees' Statement." The British Museum. Accessed December 22, 2021. https://www.britishmuseum.org/about-us/british-museum-story/contested-objects-collection/parthenon-sculptures/parthenon.

of clay, sand, and iron oxides. The residue of these mineral deposits give marble its signature veins coursing through the stone and are the cause for differing colors ranging in hues from green, white, pink, blue, black, red, and grey. Deriving from the Ancient Greek μάρμαρον, mármaron, referring to a stone which gleams with light or the shine of a crystalline stone, many of the species of marble across the world bear a toponym from the territory where they are quarried. The Pentelic marble culturally synonymous with classicism is cut from Mount Pentelicus having a white and faint yellow hue appearing radiant gold in sunshine. Elgin and company stole the cultural artifacts with the original intent to decorate for his personal estate at Broomhall Estate. They were later sold to the British government following a rather costly divorce settlement in June 1816 granting "honourable asylum, to these monuments of the school of Phidias, and of the administration of Pericles."[34] For the British state to conceive itself as imparting asylum to artifacts evidences the intangible subjectivity possessed by objects in early nineteenth century London, a status typically reserved for stateless subjects now granted to cultural artifacts extracted from their Aegean homeland. Not all subjects of the crown considered this acquisition favorably, with Lord Byron vociferously declaring Elgin a vandal pandering to racial myths of the marbles being saved from despotic destruction by the Ottoman Empire. For those who did support Elgin's actions, these actions demonstrate the intangible reciprocity between objects and identity well stated by scholar Eric Gidal who characterizes the poetic constructions of British national identity through an "aesthetic desire" for the Elgin marbles and other objects of the past which were to be "reborn in Britain through the material example of Athenian achievement...serving as both a sign and a cause of British National ascendancy."[35] Anticipating Elgin's appropriation, Coade's artificial stone manufacturer set the social context fabricating a mold of an Erectheon caryatid circa 1793 deriving from James Stuart

[34] *Report from the Select Committee of the House of Commons on the Earl of Elgin's Collection of Sculptured Marbles; &c*. England: Printed for J. Murray, by W. Bulmer and Co., 1816.
[35] Gidal, Eric. *Poetic Exhibitions : Romantic Aesthetics and the Pleasures of the British Museum* Lewisburg, [Pa: Bucknell University Press, 2001. P. 118

and Nicholas Revett's *The Antiquities of Athens* in circulation 1788 - 1794 as evidenced by the hair styling and posture.[36] This mold was made and modified by sculptor Joseph Panzetta with an original artificial stone copy thought to have been sent to British politician and colonial governor, Frederick North, the Fifth Earl of Guildford.[37] Arguably the most prolific purchasers of these caryatids being Sir John Soane using them in the staircase in Buckingham House, Pall Mall 1790 - 1795, Lincoln's Inn Field 1808 - 1809 / 1812, and the Bank of England 1788 - 1833. Keeping the mold, Coade's made use of tangible material to supply caryatids to architects, builders, and classicist consumers of intangible property alike {Figure 5.20}.

The Pentellic caryatid which remains entombed at the British Museum alongside its marble cousins remains at the center of a diplomatic row between the United Kingdom and Greece for nearly two centuries. British claims for keeping this metamorphic material include difference in number of museum visitors, smog in Athens, the British Museum Act of 1963 which preserves the collection in perpetuity, racist claims the modern people of Greece did not descend from Ancient Greeks, and the often repeated remarks of Stanford Law Professor John Henry Meeryman reasoning that since these cultural artifacts had been in London for such a long time they had become "a part of the British cultural heritage."[38] Disputations on the ownership of cultural heritage at the British Museum demonstrate the political implications of anglicizing objects. As a durational effect which occurs in the sublimation of language, place, person, and thing, cultural processes of anglicization exemplify appropriation. Arguments given for the return of the Elgin Marbles range from the aesthetic restoration of the Parthenon as a cohesive whole ostensibly providing a better cultural understanding and context, legal disputes regarding

[36] These six caryatids are now located at Anglesey Abbey, Cambridgeshire, UK where they are the property of the National Trust Collections, UK. NT516655
[37] Ruch, John E. "Regency Coade : A Study of the Coade Record Books, 1813-21." *Architectural History / Produced at the School of Architecture, University of Newcastle Upon Tyne* 11.1968, 34-56 (1968). P. 37
[38] Merryman, John Henry. "Thinking About the Elgin Marbles." *Michigan law review* 83, no. 8 (1985): 1881–1923.

Elgin's dubious absence of permits, and moral calls to return what are perceived to be Greek stones to Greece. Although my individual views are trivial in comparison to the massive annual revenue generated by tourists in London, I suggest there is a missed opportunity given the history of Coade's artificial stone and British cultural heritage. I am not the first to argue that molds and copies of the Pentellic marble be made and exhibited in London, I am the first to suggest they be done so of Coade's artificial stone. With a touch of irony, I propose to anglicize Elgin's marbles more totally by making artificial stone copies. The inability for natural stone to withstand the destructive effects of the British climate and chemical baths generates a potential opportunity to usurp the existence of Elgin with that of Coade. Coade's artificial stone bears a distinctly British identity which is contingent to British national identity and it seems only logical amidst resurgent nationalism and Brexit to consider the effects of anglicizing objects through matters of material.

*Inheriting the Intangible*

On 16 November 1821, Eleanor Coade died. In her will, Coade enumerates the persons, societies, and charitable institutions which shall inherit a lifetime of property and capital accrued in the artisanal craft of manufacturing artificial stone. Property and capital deriving from profit motivated methods of making which converts raw substance and artisanal labour into the exchange of consumer goods and services. Coade's silver tea pots and portraits for Mrs Sarah Borett, family portraits for Mrs Bauvis and her sisters, upholstery for Mr. William Peuliton, wearing apparel, window curtains, carpet, and other domestic objects for her servant Oswald, lump sums of one hundred pounds for William Sealy, four hundred pounds for Maria Sealy, as well as the Enchmarch's, and the Croggon's.[39] Written by her lawyer Samuel Robinson of Albion Street, the extensive eight page legal document is witnessed and signed by Eleanor

[39] *Will of Eleanor Coade, Spinster of Christ Church, Surrey*. From The National Archive, Kew.

Coade and her in-law by marriage, William Croggon, who was to continue as the manufacturer's proprietor. Croggon came to manage the undertaking following the untimely death of John Sealy in 1813 on a promotional trip to America, after which Croggon conducted daily management thereby allowing Coade to retire at Belmont, her seaside villa in Lyme Regis, Dorset. From 1813 - 1821, William Croggon made small changes including raising prices approximately ten percent, increasing day-laborers while retaining fewer artists, doubling stock inventory, and expanding into scagliola amidst declining sales of catalogue ordered architecture ornament.[40] Renewing the lease in 1828 for another nine and a half years at a cost of one hundred and forty pounds, Croggon's time managing the manufacture marks a significant change from the years under Eleanor Coade.[41] Although Croggon's tenure has been characterized by historiography in decline, the use of artificial stone, ceramics, and kiln made construction supplies during these years found increasing interior applications and use in picturesque landscapes. The decline in artificial stone during these years more precisely parallels the increasing proliferation of low cost low skill labor corresponding towards the rise of repetitious factory made objects as compared to Coade's bespoke commodities. By 1834, William Croggon and son Thomas John began to liquidate the Lambeth manufacture, utensils, and any remaining stock of Coade's artificial stone holding an auction in the same year. In attendance at this auction was architect Sir John Soane whose collection-mania fortunately saved and catalogued the auction. Soane once described artificial stone as "Coade's Marvel" now being liquidated as ""the surplus and splendid collection of sculpture in Coade's Imperishable Stone" being sold by Auction on the Croggon premises opposite Tottenham Court Road in West London.[42] The catalogue stipulates five conditions of sale awarding the lot to the

[40] Ruch, John E. "Regency Coade : A Study of the Coade Record Books, 1813-21." *Architectural History / Produced at the School of Architecture, University of Newcastle Upon Tyne* 11.1968, 34-56 (1968).
[41] See *Leases of the Hopes, Jesus College, Oxford*. 1828 - [1890]. Legal Documents. From Jesus College Archives.
[42] Croggon, W.R. *(Auction) Catalogue of the surplus and splendid collection of sculpture, in Coade's imperishable stone.* Printed by J. Unwin, London. 1834. From collection of Sir John Soane.

highest bidder, requiring competing bids to advance incrementally between one shilling and two pounds, all purchases required to make an immediate down payment of at least twenty five percent of the lot value, any errors or fault with the lot property would be fixed within three days of purchase prior to delivery, and lastly should one fail to comply all deposit shall be forfeited and the lot re-sold either publicly or private. The auction catalogue is not organized by normative language as was Coade's catalogue in 1784. Alternatively, the auction catalogue enumerates one hundred and seventy five lots for sale across two days with the only exception being thirty natural stone marble chimney pieces in various colors and designs put up at the end largely as a means to draw an audience {Figure 5.12}. With auction acquired capital, William and Thomoas John Croggon reconsolidated as Croggon & Co. whose industrial construction supplies built architecture well into the 1960's. The final artificial stone objects to be made at the Lambeth manufactory bearing the indendentation of Coade's trademark came in May 1837 during the year of Queen Victoria ascension as the last familial in-law's of Coade permanently left the artificial stone business. Standing thirteen by twelve feet, the thirteen ton lion served to advertise and adorn James Goding's Lion Brewery in Lambeth built adjacent to the manufactory. After the 1949 demolition of Godin's Brewery and the former site of Coade's Manufacturer for the Royal Festival Hall, the lion was painted red advertising British Rails until it's 1966 installation on a granite plinth at the landing of Westminster Bridge in Lambeth. Crossing Westminster Bridge in 1799 brings a person to a thriving field of industry, manufacturing, housing, entertainment, gardens, artistry, and Coade's Gallery exhibiting artificial stone specimens from her manufacture. Crossing today brings a person to one such specimen in the South Bank Lion marking the history of South London artistry, industry, and manufacturing.

Coade's South Bank lion remains a frequent tourist site exemplifying the cultural inheritance of our shared humanity through objects of craft and artifice. This urban monument raises the question as regards whose heritage exists in artificial stone objects and what history they tell. It

is one thing to inherit tangible property such as Coade's molds, laborers, capital, and her lease; but how do we inherit and define the intangible? Meeting in Paris for its 32nd session, the General Conference of The United Nations Educational, Scientific and Cultural Organisation (UNESCO) defines 'intangible cultural heritage' as "the practices, representations, knowledge, skills - as well as the instruments, objects, artefacts, and cultural spaces associated therewith - that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity."[43] UNESCO stipulates five domains categorizing the site of production for this cultural heritage including oral traditions and expressions; performing arts; social practices, rituals, and festival events; knowledge and practices concerning nature and the universe; and traditional craftsmanship. As a method to consider the intangible cultural heritage of artificial stone, this dissertation surveys generations of South Bank artisans, industrial undertakers, and creative craft ventures in Lambeth and the greater London metropolis. Although Eleanor Coade was not the first artificial stone maker in the area, she did build the first undertaking to achieve unparalleled commercial success for over half a century. Bearing the insignia of a Royal Warrant, the artificial stone objects of Coade's Artificial Stone Manufacture and similar artisans construct irreconcilable cultural dyads between being British and a transnational global identity. Not burdened by genealogy, nationality, religion, or region; this dissertation relies upon a material substance to organize a cultural heritage which is shared, environmental, identifiable, and performative. Although artificial stone is a heterogeneous substance largely consisting of either lime or clay, not all property made from the requisite raw ingredients is called artificial stone. I therefore rely

[43] "Text of the Convention for the Safeguarding of the Intangible Cultural Heritage." UNESCO. Accessed October 8, 2021. https://ich.unesco.org/en/convention#art2.

upon an ontology of language to circumscribe intangible cultural heritage and organize a history of objects called artificial stone.

Contemporary to Eleanor Coade is James Parker whose 1796 letter *Roman cement, artificial terras, and stucco* gave notice to the public from "an eminent Engineer, containing an account of the properties of the Composition which they manufacture, and of its uses in building."[44] Located near Coade's Manufacture, Parker's craft undertaking had recently moved from parish interior in Pedlar's Acre to a Southwark riverfront property providing better access to transporting materials, services, and commodities. These three species of substance cover all major varieties of artificial stone including those made with lime and clay. Parker's letter replicates the Coade business formula appealing to proof of utility, expertise, and experiment to demonstrate the usefulness of their cementitious substances. The commercial value of these artificial materials derive their value in waterproofing structures such as locks, aqueducts, bridges, aches, pavements, reservoirs, floors, wells, and stucco to finish the vast number of brick buildings built in the eighteenth century. Alongside many other economic ventures in architecture, building, and construction, Parker's early business had significant affiliations and partnerships with the Wyatt family similar to Coade's. Parker and builder Samuel Wyatt's partnership in the commercial applications of these artificial materials found fruitful success, however, when Samuel died in 1807 these shares passed to Charles Wyatt. Parker and Wyatt put these substances to use starting The New River Company in 1815 making Roman cement for joining wooden pipes.[45] Relocating the manufacture and publishing a new catalogue in 1842, later generations reversed the surnames as a means to cash in on the social value of the Wyatt family name. Seven years after Coade's liquidation, the 1842 *Wyatt and Parker making figures, vases, fountains executed in marble and 'artificial stone' by Wyatt, Parker, & Co.* locates

[44] Telford, Thomas. *Roman Cement, Artificial Terras, and Stucco*. London, 1796.
[45] Parker, James and Charles Wyatt. Parker and Wyatt to New River Company Concerning Cement for Joining Wooden Pipes, 1815. Letter. From London Metropolitan Archives

the first printing of the linguistic phrase by the company which until that time had relied upon language to differentiate their competing construction substances on the market.[46] The catalogue contains two hundred and twelve objects of various sizes on individual pages with a graphic scale {Figure 5.13}. If size matters, measuring the largest object finds a nine foot high dolphin fountain containing a water putti. A supplement to the catalogue separates ornament and industrial construction supplies offering sixty-five specimens of 'terro-metallic tiles, bricks, flooring' made of Wyatt, Parker, & Co.'s patent cement. These mid nineteenth century manufactures of artificial stone both expand and separate a user of artificial stone from ornament to urban infrastructure.

From 1814 - 1872, Felix Austin and John Seeley manufacture and sell artificial stone objects from Euston Road opposite Holy Trinity Church in Marylebone. Their 1835 *Collections of ornaments for gardens, parks, & pleasure grounds* finds further competition to fill a market demand with the closing of Coade's. Offering a Medici Vase, a Borghese Vase, a Gothic fountain, and most notably, "a large Fountain figure of a River God reclining, by Bacon; a figure of Time, by the same great Artists."[47] Austin and Seeley's pirate copy is delightful and crass having just a bare minimum of similarity to Coade's signature sculpture for a far cheaper cost. Alongside imitation sculptures, Austin and Seeley rely on the reputation and advertising of Coade writing, "Austin's Artificial Stone is of a light tint, requires no painting or colouring, will not sustain injury from the severest winter, and being impervious to wet, is particularly applicable to all kinds of Water-works."[48] After Coade's artificial stone constructs a social context for the durability of artificial matter, nineteenth century manufacturer's replicate and rely upon this language of commerce as a means to sell their own artificial substance. In 1840, Austin and

[46] Wyatt, Parker & Co., J. Erxleben, and Charles Burton. *Figures, Vases, Fountains &c.* [Surrey, England]: [Surrey, England] : [Wyatt, Parker and Co.], 1841-1842.
[47] Austin, Felix. *Collection of Ornaments for Gardens, Parks, & Pleasure Grounds*. London : Published for the author, by John Williams, Architectural Library, 10, Charles Street, Soho Square, 1835.
[48] ibid.

Seeley expand their collection to offer forty seven chimney designs, a variety of capitals, trusses, copies of the Royal Arms, and Gothic Screen work.[49] In 1841, they had a half size copy of Coade's Father Time.[50] Expanding their collection over the decades, one of their final catalogues in 1871 includes an engraving of their open air show yard.[51] Depicting an urban field of fountains, the commodities collapse the technical knowledge to control water and a ceramic substance for pleasure. Location matters, and the decades of success by Austin and Seeley benefit greatly from Victorian consumers passing their location across from Regent's Park {Figure 5.14 - 5.15}.

Whereas the ventures of Parker, Wyatt, Austin, Seeley and others manifest in material commodities categorizable by normative language, something quite different emerges in the history of Pulhamite. In 1806, the grandson of an East Suffolk bricklayer William Lockwood built a house in Woodbridge he came to call The Castle. The domestic endeavor came with designs provided by builder and surveyor George Thompson who produced a wooden model that could be disassembled into three horizontal sections showing the interior of each floor.[52] With the Lockwood family having recently received permission to use Parker & Wyatt's Roman cement to demonstrate the usefulness of their substance, Thompson specified artificial stone window mouldings, roof decorations, and a crenellated battlement serving as a parapet and namesake for the building.[53] Precisely as Coade's proof of artificial stone's utility relied upon its public performance, so too would Parker & Wyatt's Roman Cement. After eight decades of resisting

[49] Austin & Seeley. *Chimneys in Artificial Stone*. London : Wright and Co., Printers, 1840.
[50] Austin & Seeley. *Collection of Ornaments At Austin & Seeley's Artificial Stone Works*. London, Austin & Seeley, 1841
[51] *A list of fountains executed in the artificial stone originally invented by Felix Austin in 1826, and now manufactured on a system improved by an experience of forty years, by Austin and Seeley*, 1871. From Caroline Simpson Research Collection.
http://collection.hht.net.au/firsthht/fullRecord.jsp?recnoListAttr=recnoList&recno=5857
[52] Lockwood, William. *Woodbridge in the Olden Times*. Bristol, 1889. P. 8
[53] Francis, A. J. *The Cement Industry 1796-1914 : a History* Newton Abbot [England] ;: David & Charles, 1977. P. 93

the British climate, Lockwood wrote that “in fact it became in itself a veritable artificial stone.”[54] In 1822, William Lockwood met James Pulham while he was an apprentice to Lockwood’s uncle John, a builder from East Suffolk. Pulham was a proficient modeller with a talent for making and sculpting plaster molds, and it was through the Lockwoods that he acquired technical knowledge of artificial stone and similar substances. Acquiring the reputation of a polymath, Pulham was described as an “astronomer, philosopher, engineer, chemist, and a general student of science” who left the employment of the Lockwood’s in 1834 on good terms with the family.[55] Starting his own creative enterprise, Pulham also made use of the Coade cultural heritage offering a sculpture of “Old Time” on pedestal in 1840 that is likely the same or a copy of the one modeled by Bacon.[56] These early individual undertakings met mixed results and the 1840’s found Pulham mired by financial issues and bankruptcy that he solved through liquidation and consolidation in a gradual shift away from the Coade model.[57] Writing a letter on 5 April 1845 to *The Builder*, Pulham takes stock of the various species of cements, artificial stones, and plastic compositions available on the market.[58] Most well known are the varieties of Roman cement which had been in use for nearly fifty years due to being water resistant and general purpose applications. The prevalence of Roman cement substance also finds frequent misuse due to its cheapness and it also requires finishing due to its poor color when dry. Being sold alongside Roman Cement by Wyatt and Parker was Atkinson’s or Mulgrave Cement providing superior strength and a lighter color equivalent to dark Bath stone. A builder might also make use of Metallic cement made from sand with blue lias lime and metallic powder producing a color equivalent to dark stone. Pulham suggests that Mastic, also known as Oil Cement, has a good use for interiors where it still needs to be painted but fails in exterior

[54] Lockwood, William. *Woodbridge in the Olden Times*. Bristol, 1889. p. 9
[55] Francis, A. J. *The Cement Industry 1796-1914 : a History* Newton Abbot [England] ;: David & Charles, 1977. P. 104
[56] Ibid. p. 94
[57] Hitching, Claude. The Pulham Legacy, February 26, 2018. https://pulham.org.uk/.
[58] Pulham, James. “On Cements, Artificial Stone, and Plastic Compositions.” *The Builder* (London, England). London, 5 April 1845. P. 160

applications due to the sun drawing oil out of the substance as it becomes soft and peels. Being manufactured by J.B. White and Sons was Keene's Cement well suited for interiors requiring a hard durable material, however the cement was ill suited for exterior use being unable to endure fire, frost, water, and the harsh British climate. A variety called Martin's cement was quite similar to Keene's cement and could be acquired from a competing manufacturer. Red Cement had a value for imitating Tudor style tiles and mouldings should the need arise. Maude's Portland Cement had improved color as compared to Roman cement thus making it ideal for stucco and mouldings, although the substance likely required a finish paint. John's Patent Stucco Paint Cement was a variety of oil cement more durable than traditional mastic and had the remarkable adhesion being able to stick to most materials including glass with a durability suited to winter and weather. Blue Lias Lime Cement was an excellent variety for building provided the artificial substance could dry thus making it ill suited for stucco or exterior plastering where it will crack due to moisture. Lastly, Pulham's own Portland Cement or Artificial Stone having a 'near resemblance' of Portland Stone in 'colour, hardness, and durability.' This namesake substance did not require artificial color or a finish thus making it susceptible to deceiving builders, architects, and other users because the ""the imitation is so complete; it is excellent both for exterior and interior purposes of stucco and moulding, and for fountains, vases, and even floors, &c.; is capable of being trowellled to a very smooth face like marble, and hardens by the influence of the atmosphere. Simple water washing is sufficient to clean it when dirty, and it does not vegetate so much as stone."[59] It was to be his picturesque rockeries, gardens, and follies by which Pulhamite rock would secure the lasting reputation of James Pulham. Beginning in 1845 with work for William Robert Baker near Hertford and then in 1847 for Thomas Gambier Parry at Highnam Court, Gloucester; Pulhamite rock imitates and replaces natural stone in the British landscape. James Pulham's son of the same name put specimens on exhibit in 1851 and 1862 at the Great Exhibitions winning awards in competition

[59] ibid.

with other Victorian gardeners and terracotta manufactures. The second generation Pulham is also responsible for the switch to Portland cement during the 1860s. Securing a Royal Warrant in 1895 for work at Buckingham, Windsor Castle, and Sandringham, Pulhamite is also found at Royal Horticultural Society at Wisley, seaside resorts in Blackpool, St. Anne's-On-Sea, Ramsgate, and Folkstone, and London Zoo, Battersea Park, and St. Stephen's Green, Dublin.[60] The business was eventually taken over by a third generation of James's who cease ornamenting architecture in the 1880s while focusing entirely on gardens and landscapes until closure in 1939.

Pulhamite rock is an artificial stone. Through generations of artistry, craft, and applications of intelligence, Pulhamite came to construct artificial landscapes which appear to be natural. These picturesque constructs raise the question regarding the object of intellectual property; is the object the artificial substance or the arrangement of stones? Late nineteenth century rockeries made of artificial stone realize generations of expertise in the improvement projects of mutual interest societies beginning in the previous century. Replacing nature with a substance more durable and resistant to fire, frost, water, and weather; an improved landscape is an artificial one built through craft and technical knowledge. The plurality of these endeavors across the centuries demonstrate the attempt to control architecture, landscape, and the built environment in matters of materiality. Derived in experiment and secured by legal mechanisms of intellectual property, these techniques of control occur at the site of production in the use of technical knowledge at the manufactory. Artificial substances such as Pulhamite participate in alleviating technical knowledge of materials from the modern architects and artists who increasingly rely upon the manufacturer to deliver performance and reliability. In the nineteenth century, an architect no longer had to know how to make mortar, stucco, or plaster as they could

[60] Francis, A. J. *The Cement Industry 1796-1914 : a History* Newton Abbot [England] ;: David & Charles, 1977. P. 108

simply purchase these materials from a catalogue alongside requisite building components. While decades ahead of its time, Coade's innovative 1784 catalogue never realized the possibility of supplying raw artificial substance to build in situ works of architecture and art. It would be late nineteenth century manufactures exemplified by Pulhamite rock by which factory made construction supplies fully usurped the technical knowledge of architects relegating them to infantile formalisms {Figure 5.17}.

Among the more literal claims to inheriting the intangible property of Coade's Artificial Stone Manufacture is that by Mark Henry Blanchard who ran Blanchard & Co. from the 1840s - 1892. Born in Portsea, Hampshire on 30 August 1817, Blanchard's apprenticeship at Coade's came during the management of Thomas John Croggon lasting approximately 1835 - 1837. Eleanor Coade, John Bacon, John Sealy, and William Croggon had long died, but Blanchard's claim to inheriting their legacy derives in labor models of apprenticeship as a means to generationally exchange technical knowledge. Following the liquidation of Coade's Lambeth manufacture, it is probable that Blanchard acquired molds either from the auction or from Thomas Routledge and John Danforth Greenwood who acquired the property in 1843. After liquidation, Blanchard entered the business by opening his own manufacture nearby on Blackfriars Road, Lambeth. While offering the same substance made from the expertise as Coade, social and consumer changes resulting from the growth of ceramics industry in Victorian Britain lead Blanchard to advertise his commodities as being made from terracotta. Appealing to the eclectic historicisms of the time, Blanchard's works came in a variety of colors and qualities. At the Great Exhibition in 1851, Blanchard won a number of prizes and medals thus earning him major commissions to supply ornaments for the South Kensington Museum.[61] The increasing overlap of industry, intellectual property, and artificial substance is found in Blanchard's terracotta patent No. 488 on

[61] South Kensington Museums: Annual International Exhibitions. WORK 33/2087. From The National Archives, Kew, UK.

11 March 1853, No. 820 on 12 April 1861, No. 2071 on 8 September 1865.[62] Fourty-eight years after Coade's death, Blanchard still made use of her life and work claiming to be "successors to Coade's Original Works, established, 1769."[63] Adorning the cover to Blanchard's illustrated catalogue of 1869 is John Bacon's trade card featuring the allegorical figures of Father Time, architecture, and fire set in front of an open brick kiln {Figure 5.16}. Below the trade card, Coade's signature advertisement now reapplied to terracotta through which "The attempts of time to destroy sculpture & architecture defeated by the vitrifying aid of fire...In vain they thread o Time these arts assail / The power of Fire shall o'ver thy strength prevail / Til Thou and Fire with this Great Globe shall fail."[64] A century after Coade first began manufacturing artificial stone in Lambeth on the Southern Bank of the River Thames, Blanchfield quite literally copies the intangible property for the cover of his catalogue providing construction supplies for another generation of architects, builders, and consumers. Moreover, the opening advertisement and text are copied directly from Coade's catalogue including her signature branding ,"The most respectable proofs of the utility of this art are the length of time it has been established, and the growing fame it has acquired."[65] This act of replicating Coade even carries the claim of Royal Patronage secured by Blanchfield from projects such as the Royal Horticultural Gardens. What differs between the two is Blanchard's use of language by notable figures, architects, and experts offering utterances of support for his artificial substance. One such statement by Charles Fowler, architect of London's Covent Garden Market, couches the success of Blanchard's Terracotta in the "scientific knowledge and energy" of Coade.[66] The use of experiments and science gave consumers the perception of objectivity, reliability, and

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[62] 'Mark Henry Blanchard', *Mapping the Practice and Profession of Sculpture in Britain and Ireland 1851-1951*, University of Glasgow History of Art and HATII, online database 2011 [http://sculpture.gla.ac.uk/view/person.php?id=ann_1345291005, accessed 22 Dec 2021]
[63] Blanchard, Sons, and Co. *Blanchard, Sons, and Co.'s Illustrated Catalogue of Beautiful Works of Art : Terra Cotta*. London: Blanchard, Sons, 1869.
[64] Ibid.
[65] Ibid. P. 1
[66] Blanchard, Sons, and Co. *Blanchard, Sons, and Co.'s Illustrated Catalogue of Beautiful Works of Art : Terra Cotta*. London: Blanchard, Sons, 1869. p. 3

improvement. Lastly, Blanchard replicates Coade's labour model of transportation and installation. Listing the terms of purchase, Blanchard charges for packaging and crates to ship objects while also requiring their return or a surcharge. On site installation by a workman or labourer with a maximum of ten hours per day, six and one half on Saturday, and if the distance of installation exceeds five miles from the Manufacturer, a charge of 6d per night covering lodging and train fare. Blanchard had learned the use of travelling workman to oversee construction from Coade who had sent her employees as far as Rio de Janeiro to install a copy of the Duke of Northumberland's Syon Gateway for the Regent of Portugal then living in exile in 1812.

The history of cementitious and artificial substances share ingredients, techniques of production, and use in architecture. Particulate difference between these heterogeneous materials reflects the language of commerce as competing manufacturers sought to define individual brand identity. Burnt earth, lithodypria, artificial stone, terra cotta, artificial cement, imperishable stone, and cement share techniques of control in the manufacture of matter. Each manufacturer converting raw material into an artificial substance with a use in constructing architecture. What is more properly called cement binds aggregate and other materials into a hardened substance. The long history of Roman opus caementicium well known to British builders underwent significant change as a result of chemistry, trial and error, and empiricist methodologies. Early in these experiments is John's Smeaton's Eddyston Lighthouse failure and reconstruction in 1759 using slaked lime with volcanic ash then known as natural cement.
By the end of the century, the manufacture of James Frost began to expand in competition with Wyatt, Parker, & Co. Former Bricklayer and builder Frost began making Roman cement in 1807 with changes to his substance deriving from experiments in artificial cement in Harwich in 1810. Travelling to France to consult French engineer Louis Vicat who had success in studies and using cement to build a bridge in Souillac, Frost later filed patents describing a substance

almost precisely the same as Wyatt, Parker, & Co.'s Roman cement. Through Parliamentary affiliations and work contracts, Frost kept clear of copyright infringement claims. Alongside cement patents, Frost also secured a patent for a new type of kiln typical of the industrial impulse to privatize and capitalize the modes of production. In 1832 - 1833, John Bazley White and his partner acquire the Frost artificial cement manufacturer for 3,500 pounds.[67] George Frederick White, the son of John, would go on to invent the method to test the strength of artificial substances and cement by loading a brick until failure in 1837.[68] There is no name more synonymous with nineteenth century cement than that of Aspdin. Filing Patent No. BP 5022 in 1824, Joseph Aspdin's *An Improvement in the Modes of Producing an Artificial Stone* locates an early venture later losing market share to his eponymous Portland cement.[69] The phrase Portland Cement derives from Aspdin's 1824 patent intending to advertise a substance analogous to the oolitic limestone of Portland stone quarried on the channel coast of England. Cheaper, stronger, and having a plurality of uses, Aspdin's portland cement is critical to building the 1828 Thames River Tunnel connecting the banks of London underground, however the substance was not fully refined until 1847. Following a string of intermediate success, Aspdin's son Willaim joins the business and expands as the Patent Portland Cement Company from 1844 - 1860s. Later manufactures such as I.D. White and Sons copy Aspdin's Portland cement supplying mortar to build the London Sewage system from 1859 - 1867.[70] These experiments demonstrate the increasing proliferation of artificial materials deriving from the technical control of matter.

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[67] From Francis, A. J., "Documents in possession of Associated Portland Cement Manufacturers Ltd." *The Cement Industry 1796-1914 : a History* Newton Abbot [England] ;: David & Charles, 1977.
[68] "OBITUARY. GEORGE FREDERICK WHITE. 1816-1898." *Minutes of proceedings of the Institution of Civil Engineers* 134, no. 1898 (1898): 419–420.
[69] The patent language is similar to those of James Frost and leads to Aspdin's second patent in 1825, *A Method of Making Lime*, which sought to burn industrial road waste to produce lime for buildings and agriculture.
[70] Chatterjee, Anjan Kumar. "Composition and Properties of Portland Cements." In *Cement Production Technology*, 1:213–250. 1st ed. Routledge, 2018.

The technical intersection of cement and artificial stone finds a critical connection in the Ransome family manufacture. Born in 1818, Frederick Ransom was heir to the Ipswich based Orwell Works providing steel tools, equipment, and machines for agriculture. Something something artificial stone. It has been suggested by Llewellynn Jewitt that Ransome's venture into artificial stone came about after working in this family industrial business while watching ""workman engaged in dressing a millstone."[71] The early manufacture of exceptionally sharp grindstones carried into the company trademark of a winged man grinding a Roman Arrow that counted Charles Darwin as a financial investor. Perhaps part sales performance and part kernel of truth, Ransome's son Earnest later described the process of his father 'inventing' artificial stone. "The first difficulty was in finding a proper cementing substance: plaster of Paris, shellac, glue, isinglass, lime with bullock's blood, mastic, etc. were tried and discarded. Amongst the numberless ingredients trid were also common glass, but it was not until experiments with soluble glass were made that success became probable. It occurred to him that if he took flint stones with a moderate amount of caustic alkali in solution, and subjected them to heat in a Papin's digester under high pressure, he might be able to concoct a soup from flint, as Papin had done from bones. But the result was apparently a disappointment, and in order to increase the heat, he finally tied the safety valve with a piece of wire, and forced the fire until the boiler became overheated. Fearing, however, that the boiler would blow up, he threw it out into a cistern with cold water, and the boiler, as might have been anticipated, was broken to pieces - and there, inside, was the glazy syrupy mass of dissolved glass. The portions next to the walls of the boiler were baked to a flinty hard stone; in one word, the problem was solved."[72] Ransome invents what is later *On the Manufacture of Artificial Stone with a Silica Base* published in 1848 by the Institution of Civil Engineers. Ransome's

[71] Jewitt, Llewellynn Frederick William. *The Ceramic Art of Great Britain*. New ed., revised. London: J.S. Virtue, 1883. P. 163

[72] From Ransome & Saurvrey, *Reinforced Concrete Buildings* 1912, Ch. 1 and *The Builder*, 22 August 1868, p. 617

artificial stone is a sandstone whose "chief peculiarity which distinguishes this from other artificial stones, which have been brought under the notice of the public, consists in the employment of silica, both as the base and as the combining material, whereby the compound approaches in its nature and composition to the best kinds of natural stone."[73] Sold as superior to natural stone, techniques of controlling temperature allow "almost any amount of hardness can be given to it, by increasing the quantity of silicate, and subjecting it to a greater degree of heat."[74] Using Hydraulic press testing and ingredient combinatorics, artificial stone could be tailor made to specific properties. Ransome brings together manufacturing, mid century professional societies, and artificial materials to build British industry and his publication reflects the increasing institutionalization of expertise. Providing critical feedback, commentary from figures such as Dr. Faraday suggests Ransome's specimens receive further atmospheric exposure. Observing the manufacturing process to be similar to terra-cotta, Mr. C. H. Smith suggests "the greatest objection to the material under consideration would arise from its warping and shrinking, in the process of baking. This had been found the case with all the terra-cotta ornaments that had been attempted to be introduced, and it had been impossible to keep architectural ornaments in a straight line, or to get them to contract equally throughout the mass."[75] Also voicing concern over precision and construction tolerance was Mr. R. Stephenson who doubts that artificial stone would supersede carved natural stone. Experiments on Ransome's substance by Dr. Garrod include weighing a sample piece and then immersing the sample in hot water for one hundred and sixty hours including sixty hours at boiling to determine atmospheric effects. The results of the experiment yielding no calcification and no change in weight suggesting the substance to be quite durable when exposed to British weather and water. Filing a patent in 1857 to secure this artificial stone substance, Ransome's *Specification*

[73] Ransome, Frederick, *On the Manufacture of Artificial Stone with a Silica Base*, Proceedings of the Institution of Civil Engineers. London, 1848. P. 4
[74] Ibid. P. 5
[75] Ibid. P. 7

*for artificial stone* declares the "nature of the invention for improvements in the Manufacture of Artificial Stone, and in Rendering it and other Building Materials less liable to decay."[76] Ransome's patent conflates the language of commerce, culture, and chemistry describing the application of heat to "Sand, clay, and other mineral and earthy substances' so they are 'rendered less liable to decay' through the 'saturation of a solution of chloride of calcium."[77] Uses of this artificial stone include the London Docks and paving tiles on Albert Bridge.[78] From 1844 - 1897, Ransome made a substance to cut steel and adorn architecture useful to buildings from France to China. It was the patents 5442/1885, 10530/1887, 15065 / 1887 describing a rotary cement kiln which had profound effects on the legacy of Ransome and the history of modern architecture {Figure 5.18}. This prototype kiln was brought to America by Ransome's son Ernest. The Ransome kiln would come to serve as the model for industrial cement kilns throughout America. This kiln alongside Ernest Ransome's contributions to increasing the effectiveness of reinforced concrete by rotating rebar to increase surface cohesion had a profound and lasting effect on twenty century building practices.

*Coade Stone And Craft Epistemology*

Set against the global deluge of modern architecture and the outbreak of World War Two, British art historian Katherine Esdaile's eponymous 1940 article in *Architect & Builder News* forever changed the history of Coade's artificial stone. Esdaile's article cements the legacy of Eleanor Coade as "discovering the composition" i.e. Coade Stone, and "it was Eleanor, a woman of uncommon sense, with a genius for handling workman, who really ran the business."[79] While Coade was indeed a woman with uncommon sense whose business brilliance stands in contrast to figures in her time, Esdaile mischaracterizes a lifetime of selling artificial stone for the

[76] *Specification of Frederick Ransome*. Artificial Stone. Great Seal Patent Office, London, 1857.
[77] ibid.
[78] ibid.
[79] Esdaile, Katherine Ada, "Coade (artificial) stone, and the Lambeth factory where it was made," *Architect & Builder News*, 1940. p. 95

purpose of assigning cultural value. Inventing Coade to be the inventor of artificial stone more precisely converts Coade's life into an object of intangible cultural heritage. Moreover, Coade Stone sells better when it is given the myth of invention synonymous with notions of the romantic author which our contemporary culture industry so desperately desires. Neither existing in print nor in use during Coade's time, the linguistic phrase Coade Stone ontologically organizes and categorizes works from the Lambeth factory for museums, auctions houses, private sales, and insurance documents. Coade Stone derives a cultural value by imbuing works of artifice with an origin story for commerce and national identity. Eleanor Coade and the origin story of manufacturing her artificial stone was invented and codified as Coade Stone to secure the intangible property of Coade as an object of English National Heritage. The linguistic diffusion of this phrase in the anglophone world finds a user in architecture historian John Summerson's writing in 1946 of "a species of composition known as Coade Stone."[80] In 1951, the post World War Two Survey of London records the "last dated piece of Coade Stone,"[81] and S.B. Hamilton's 1954 article popularizing "Coade Stone" in *Architectural Review*.[82] No greater debt is owed to the scholarship of artificial stone than that of Alison Kelly whose three decades of writing began with her 1973 *Country Life* article, "Decorative stonework in disguise: plaques and medallions in Coade Stone."[83] The scholarship of Kelly and the 1970's brought a search for unattributed works of artificial stone exemplified by Marc Lafrance's 1973 discovery of "Coade Stone in Canada"[84] and Robin Wyatt's "Short, sad story of Coade stone" from the same year.[85] By the 1980's, the search for artificial stone detoured into speculations on secret formulas and

[80] Summerson, John. *Georgian London.* New York: C. Scribner's sons, 1946.
[81] "Coade's Artificial Stone Works," in Survey of London: Volume 23, Lambeth: South Bank and Vauxhall, ed. Howard Roberts and Walter H Godfrey (London: London County Council, 1951), 58-61. British History Online, accessed November 12, 2019, http://www.british-history.ac.uk/survey-london/vol23/pp58-61.
[82] Hamilton, S.B., "Coade stone," *Architectural Review* 116, 1954, p. 295-301
[83] Kelly, Alison, "*Decorative stonework in disguise: plaques and medallions in Coade stone*," Country Life, vol 154, no. 3988, 1973 Nov. 29, p. 1797-1800.
[84] Lafrance, Marc. "Coade Stone in Canada." *Bulletin of the Association for Preservation Technology* 5, no. 3 (1973): 103-08.
[85] Wyatt, Robin, "The short, sad story of Coade stone," *House & Garde*n, vol. 28, no. 8 (283), 1973 Oct., p. 136-137.

speculations in scholarship absent archival evidence. Notably, Jennie Cupial's 1980 historical fiction invents a new spelling for Coadestone while attempting to fill the absence of archival evidence. Further discoveries and stories of secret artificial stone formulas are exemplified in Julia Smith's article of the Umbrello at Great Saxham and Peter Pitt writing on "Mrs. Coade and her Product Coade Stone."[86] In 1990, the *Architect's journal* amplifies the 'secret' of Coade Stone publishing an editorial claiming "one of the great mysteries of architectural history has been solved."[87] A history of scholars exercising creative imaginations continues into the new millennium with Ruth Guilding writing in 2002 "How the code for Coade was cracked."[88] These stories of rediscovery typically overshadow technical documentation and articles on historic preservation such as Chris Daniels reporting on the restoration of a Coadestone statue of King George II in 2009.[89] As the legacy of Coade and her stone spread, cultural institutions such as the Lyme Regis Museum nearby Coade's hometown participate in more rigorous and regional research with Richard Bull's documentation of the Pottery and Brick Industry that provided a context to Eleanor Coade and Coade Stone.[90] At the center of speculations and scholarship on Coade is the *Georgian Group* and their journal continuing to publish frequent articles such as Bill Thacker pondering "A Coade stone monument at Hooton Park, Cheshire."[91] Most recently, the exemplary literature review of Caroline Stanford has organized both fact and fiction with her 2016 "Revisiting the origins of Coade Stone."[92] Regardless of its efficacy, the history of this historiography reveals a profusion and plurality of efforts to secure Coade as an object of

[86] Smith, Julia, "The Umbrello at Great Saxham, Suffolk," *Georgian Group. Report & journal*, 1987, p. 77-87. And Pitt, Peter H., "Secrets of Success," Traditional homes, vol. 5, no. 1, 1988 Oct., p. 115-117.
[87] "The secret's out," *Architects' journal*, vol. 191, no. 24, 1990 June 13, p. 6-7.
[88] Guilding, Ruth, "How the code for Coade was cracked," *Country Life*, vol. 202, no. 2, 2008 Jan. 10, p. 60-61.
[89] Daniels, Chris, "Weymouth's Coadestone [sic] King," *Context*, no. 108, 2009 Mar., p. 31-32.
[90] Bull, Richard and Lyme Regis Museum, Pottery and Brick Industry in Lyme, 2010
[91] Thacker, Bill, "A Coade stone monument at Hooton Park, Cheshire," *Georgian Group journal*, vol. 20, 2012, p. 137-140.
[92] Stanford, Caroline, "Revisiting the origins of Coade stone," *Georgian Group journal*, vol. 24, 2016, p. 95-116.

English National Heritage raising the question; how does one's life and livelihood come to define a cultural identity?

Providing the discursive matter to consider the conversion of a life into intangible property is the 'masterwork' of Coade's Artificial Stone Manufacture in the Nelson Pediment in King William's Courtyard at The Royal Naval College Greenwich, London.[93] The life of Vice-Admiral Horatio Nelson's service in the Royal Navy from 1771 - 1805 are defined by military exploits and unwavering service for King and country. Ventures in the West Indies, command in the Atlantic during the American War of Independence, victories in the Mediterranean during the French Revolutionary Wars, all culminating in the crucible of war at the Battle of Trafalgar. At the onset of the battle against the combined French and Spanish Fleet on 21 October 1805, Nelson sent a signal to the fleet that "England expects that every man will do his duty." The mortal cost of this duty for one's nation came to fruition when a French sharpshooter fatally shot the Admiral. Turning the tides of war, the Battle of Trafalgar brought an end to Napolean's dynastic ambitions for Western Europe and secured the immortality of Nelson in the British national psyche. To commemorate the death of a subject, Nelson's full state funeral accompanied the construction of monuments from London to Edinburgh anglicizing his life as an object of the British Empire. One such monument is the 1809 Nelson Column in Montreal including a statue and plaques supplied by Coade's Artificial Stone Monument. Standing squarely within Quebec and French Canadian territory, the Nelson Column commemorates the contested history of anglicizing objects throughout the Atlandtic world. No work secures the life of Nelson as intangible property more than that of the tympanum at the Royal Naval College from designs supplied by the painter Benjamin West. Within months after the death of Nelson, West began to provide paintings and representations critical to constructing the hero-cult of Nelson such as the 1806 *The Death of Nelson* idealizing historical events. The hero-cult iconography of the Nelson

[93] ibid.

Pediment derives from West's 1807 *Immortality of Nelson* reapplied as a design for a tympanum after visiting the exhibition of the Elgin Marbles in the same year {Figure 5.19}.[94] West provided his designs to Coade's Artificial Stone Manufacture where they were sculpted by Joseph Panzetta from 1810 - 1812. Composed of panels, the final ten foot by fifty foot tympanum is a marvel to technical knowledge and the cultic representations. Nude, dead, and center is the body of Nelson being given from Neptune's dominion of the high seas into Brittania's eternal embrace.

The perdurability of Coade's artificial substance which does not decay and carries the mark of Royal favor makes this material ideally suited to convert Nelson into the intangible property of cultural heritage. As a figure who dies during his military service, the appropriation of Nelson into a cult icon of the nation finds familiarity across the British Empire and the world. How does this compare to converting the life of a sculptor and proprietor of an artificial stone manufacturer into an object of English National Heritage? The preservation of the heritage of England traces its history to the Office of Works responsible for managing the sovereign's property from 1378 - 1832. In the nineteenth century amidst rapid Imperial expansion, the Office of Woods, Forests, Land Revenues as well as the Ministry of Works conjoin the increasing administration of culture by the state. With the Passing of the Ancient Monuments Protection Act in 1882, the British state entered into the legal protection and preservation of culture deemed relevant to national heritage. Following a century of expanding parliamentary measures, the National Heritage Act of 1983 dissolved all previous bodies into the newly formed semi-autonomous quango, The Historic Buildings and Monuments Commission. Partly devolving from state power into private hands, this non-governmental public sector company would be reorganized as the English Heritage Trust on 1 April 2015. Managing hundreds of monuments and buildings, this charitable

[94] *Design for a tympanum for Greenwich Hospital; the Immortality of Nelson,* Benjamin West, Drawing, 1810. From Royal Museums Greenwich, UK

organization is today responsible for preserving the history of Eleanor Coade and her artificial stone. Inscribed on their website, English Heritage lists one key fact of Eleanor Coade describing her as “Invented and manufactured the high quality stone that bears her name, which was so hard-wearing that many sculptures made from it remain in pristine condition today.”[95] The undeniable brilliance of Eleanor Coade should certainly earn her position among the litany of cultural figures that define English National Heritage, but there is unequivocally no doubt that she did not invent artificial stone. Moreover, the historical embellishments continue in claims that Coade “bought the premises of an ailing business run by Daniel Pincot,” and she “sacked Pincot,” and lastly her artificial stone “recipe remained a closely guarded secret.”[96] Of the many extraordinary accomplishments of Coade, she did not buy out and fire Pincot, she did not invent a recipe for an artificial substance which bears her name, and she did not possess a secret recipe. What has been invented by the English National Heritage trust is an object of national identity as a means to ontologically categorize and preserve intangible cultural heritage for generations to come.

Underlying the well intentioned actions of the English Heritage trust to commemorate Coade is the crisis of facts which underpins our present history. Inventing a story of inventing artificial stone sells better to an English audience as compared to the story of Eleanor Coade’s experiments, religion, gender, expertise, insurance, industry, and the complex trail and failure’s which characterize managing a manufacture from 1769 - 1821. The shift towards making Coade more English as an object of national identity is captured in the shift of language across time. The change from Lithodypia, to artificial stone, to imperishable stone, to Coade stone traces the conversion of Coade into an object of English national heritage. Durations of language continuing to construct a shape of time to the art of artificial stone. In 2000, sculptor

[95] “Eleanor Coade.” English Heritage. Accessed October 5, 2021. https://www.english-heritage.org.uk/learn/histories/women-in-history/eleanor-coade/.
[96] ibid.

Stephen Pettifer founded Coade Ltd. in London after training in Sculpting, Stone Carving, Restoration and Conservation at The City & Guilds of London Art School. Receiving financial backing from Lord Pembroke, Pettifer's restoration and commission based studio relocated to the Palladian Wilton Estate with seventeenth century British classicism of architect Inigo Jones, John Webb. An origin story of Coade Ltd.'s website today tells "When Stephen Pettifer first came across Coade stone, he realised it was surprisingly no longer being used as a sculptural medium and found that the method had been lost over time. He set out to develop and perfect the recipe and techniques of producing Coade stone to exactly the same standard as was originally used in the mid 1700's."[97] Others such as Ruth Guilding have gone further writing Pettifer "cracked the code" for making Coade Stone through years of experimentation.[98] What is evident by the specimens on exhibit at the Pettifer studio and instagram, is the continuation of craft and technical knowledge deriving from Eleanor Coade's time as proprietor from 1769 - 1821. Pettifer, his team, and his studio Coade Ltd. are simply the latest generation inheriting the intangible cultural heritage of artificial stone. The comedy of code cracking or rediscovering secret recipes undermines the reality of trial and error, the cost of experimentation, and something something something. Coade Ltd. is the practice of history which demonstrates the possibilities of preservation in contemporary practice.

The substance of Coade's artificial stone is a monument to technical knowledge. Although a specific recipe has never existed, the venture locates a critical experiment in modern art and architecture as it derives from the craft of burning earth and the speculative cost of creativity. The making of Coade's artificial stone exemplifies what I call a craft epistemology. The word craft derives from the Proto-Germanic kraftuz into Old English cræft intending skilfull, possessing intellectual power, a branch of learning or a trade requiring manual skill, art, a trade,

[97] "Coade Stone." Coade Ltd, June 7, 2021. https://coade.co.uk/about-coade/coade-stone/.
[98] Guilding, Ruth, "How the code for Coade was cracked," *Country Life*, vol. 202, no. 2, 2008 Jan. 10, p. 60-61.

or social body of practitioners.[99] Epistemology is rooted in the Greek epistēmē for knowledge on how to do something or a general theory of knowledge. The combinatorics of these terms reveal a craft epistemology to define and describe the practice of technical knowledge. Not simply an applied art, practicing technical knowledge translates from paper to physical instantiations. Exchanged through learning as compared to genealogy, craft epistemologies combine heterogeneous people, places, and things. The trial and error of experiments, disciplinary disputations, and reification of combinatorics yield expertise which is social and shared. Thus, while no single person ever invented a standard recipe to make and manufacture artificial stone, the substance made from discussing this ceramic produces a craft epistemology which continues today. In Lambeth, construction to build Festival Hall in 1951 consolidated and destroyed the property where Coade's manufactory once stood. During construction, excavations cutting a trench revealed clay, sand, a seven foot diameter granite grinding pan, and specimens from Coade's manufacture. Mineralogical analysis of these specimens by the Building Research Station of the Department of Scientific and Industrial Research revealed a general formula for artificial stone later confirmed by the British Museum in 1990. Kaolin Clay, sand, silica, quartz, grog, and small additives for vitrification fired in a kiln at 1100 to 1150 degrees celsius. These ingredients carry the craft epistemology of artificial stone and the intangible property of Mrs. Eleanor Coade.

[99] "craft, n.". OED Online. December 2021. Oxford University Press. https://www.oed.com/view/Entry/43694?rskey=PP3eB3&result=1&isAdvanced=false (accessed December 22, 2021).

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