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Instrumentalities of an Eternal Baroque: Project, (Ex)tend, Morph, (Sc)roll and Oscillate

Instrumentalities of an Eternal Baroque: proyectar, (ex)tender, transformar, (en) rollar y oscilar

investigación
pp. 078-095

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Abstract

This paper is an exploration of the exhibition *Instrumentalities of an Eternal Baroque*. The focus is on exhibition as a medium of art historical research in our digital era—through curating, making, drawing. Not only are several exhibited artifacts digitally produced, but numerous artifacts (both analog and digital) also locate prehistories of digital design. Through five instrumentalities—Project, (Ex)tend, Morph, (Sc)roll and Oscillate—we curate two categories of artifacts: original drawings (mostly those of Francesco Borromini's San Carlo alle Quattro Fontane) and analytic artifacts such as animations, models, drawings and photographs of architectural artifacts throughout history. Suspicious of an ever-superseding digital techno-rationalism, these instrumentalities are reinterpretations and reframings of 'the digital' itself through an archaeology of architectural history.

Keywords: instrumentality, exhibition, drawing, the digital, Baroque, parametric geometry, algorithmic, San Carlo alle Quattro Fontane, Francesco Borromini, projection, extension, morph, scroll, oscillate

Resumen

Este artículo explora la exposición *Instrumentalities of an Eternal Baroque*. El enfoque es la exposición como medio para investigar la historia del arte en nuestra era digital, a través de la curaduría, la creación y el dibujo. No sólo varios de los artefactos exhibidos se produjeron digitalmente, sino que muchos (tanto analógicos como digitales) también sirvieron para ubicar la prehistoria del diseño digital. A través de cinco instrumentalidades: proyectar, (ex)tender, transformar, (en)rollar y oscilar, seleccionamos dos categorías de artefactos, los dibujos originales –principalmente los de San Carlo alle Quattro Fontane de Francesco Borromini– e instrumentos analíticos como animaciones, modelos, dibujos y fotografías de artefactos arquitectónicos a lo largo de la historia. Con la sospecha de un tecnorracionalismo digital en constante superación, estos instrumentos son reinterpretaciones y reformulaciones de "lo digital" en sí mismo a través de una arqueología de la historia de la arquitectura.

Palabras clave: instrumentalidad, exposición, dibujo, lo digital, barroco, geometría paramétrica, algorítmico, San Carlo alle Quattro Fontane, Francesco Borromini, proyección, extensión, transformación, enrollamiento, oscilación

There are two ways of reading history, forwards and backwards
Alfred North Whitehead[1]

In September 2018, our exhibition *Instrumentality of an Eternal Baroque: San Carlo alle Quattro Fontane* premiered at Ryerson University in Toronto, Canada. It continues to evolve, and this paper is a channel of its rethinking and growth. We address the many discourses about digital design witnessed around the turn of the millennium that often find themselves drawn to the geometry of the Baroque. Architects' tools, instruments, gadgets have, on the face of it, drastically evolved in the four centuries following the early Baroque: So what resonances about the geometries of the Baroque echo in digital design and the algorithms that produce architecture today? Can geometry itself, in an expanded, algorithmic sense, be a medium for theoretical and historiographical research? How can we explore the history of architecture through 'making' in addition to writing?

Our primary site of exploration of such questions in the exhibit is a small building, Francesco Borromini's San Carlo alle Quattro Fontane in Rome or, as it commonly called, San Carlino: a curious artifact whose complex geometry, despite being analyzed on numerous occasions and with widely different analytical methods, has not been conclusively determined. Our curiosities are along the lines of: Why so many differing viewpoints about San Carlo? Why this continued contemporary interest in a Baroque building? What is the historical and technical specificity of the geometry at work in San Carlino? Such questions were first raised in our book *Finding San Carlino: Collected Perspectives on the Geometry of the Baroque* and addressed by numerous authors, bringing forth a diverse range of perspectives—through the medium of text.[2] With the exhibit, we ask how such questions can be differently addressed with the medium of exhibition. The instrumentalities—Project, (Ex)tend, Morph, (Sc)roll and Oscillate—are 'untimely,' in the precise sense Nietzsche gives the term: as that which is contemporary by virtue of "acting counter to our time and thereby acting on our time and, let us hope, for the benefit of a time to come."[3] Through the curation of two types of artifacts, Borromini's original drawings of the church and analytic artifacts (animations, models, drawings and photographs), the exhibit seeks to find untimely geometrical practices in Borromini's drawings as well as to introduce 'other' or 'untimely' historical dimensions to contemporary computational and design practices. This exploration occurs through the five 'instrumentalities' or geometrical arguments that either appear across the interior surfaces of San Carlino or belong to different geometrical epistemes at work in the *longue durée* of architectural history. This paper aims to order and assemble such instrumentalities into an intelligent platform, a process through which one might grasp new historical valences of any artifact deemed, in the Nietzschean sense, 'eternal.'

While numerous analytical artifacts and archival drawings predated the first showing of the exhibit, numerous others emerged from, during and alongside the discovery of the instrumentalities themselves. The agency of such time and space, as we shall see in the paper, proved significant. The team, led by Adil Mansure, included Phillip Daniels, Skender Luarasi, Weixin Zhao and Kirby Tobin as both curators and contributors, as well as Simon Rabyniuk, Omar AlSaleh, Kenzie McNamara, Ryan Grace and Jiaqi Yu as contributors.

Adil Mansure, photograph of the exhibit *Instrumentality of an Eternal Baroque* at Ryerson University, Toronto, 2018. Courtesy of Adil Mansure

Finding San Carlino in an Exhibit

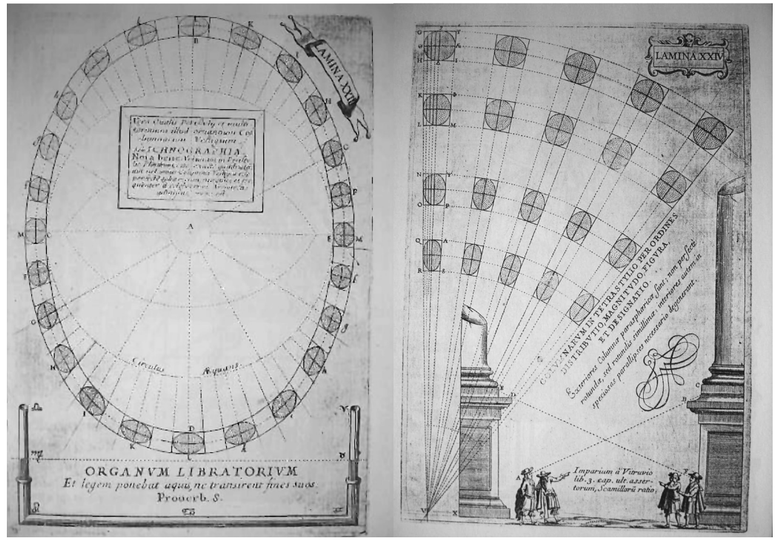
The book *Finding San Carlino* is a description, critique and extension of a long exegetical tradition that sought—and continues to seek—a geometric rationale for San Carlino and trace its design evolution through Borromini's drawings. Occupying the threshold between ancient tradition and dawning modernity, Borromini himself was the first to provide a geometrical rationale behind San Carlino by reworking several of his drawings well after the construction of the church had commenced. Since then, many an architect and historian have furnished different geometrical exegeses, their aim being nothing less than to outline the geometrical steps through which Borromini constructed San Carlino. However, this search remains, in Mark Jarzombek's words, "satisfyingly inconclusive."[4] As described in our book:

> Not only is the actual built geometry of the building different from the geometry of the drawings, but the geometries of the drawings themselves differ from one another: a difference that in the subsequent reinterpretations of San Carlino in history never disappeared. Not only did most of these analyses seek in geometry an 'ideality' of the form of the church through its design evolution, but also sought out geometry itself as 'ideal.' Yet the very effort to capture such geometrical ideality would yield a multiplicity of geometrical interpretations, in history. This brings into question the very role of geometry in architecture: is this 'geometrical lack' particular to its geometrical interpretations, or is this lack itself universal insofar as these interpretations are geometrical?[5]

In this book, the architectural predisposition of San Carlino toward openness and indeterminacy is shown through historiographic, theoretical and critical arguments. It is demonstrated 'scientifically,' to use Umberto Eco's expanded definition of 'scientific research': a specific mode of reasoning that goes beyond the exact sciences and through which we define an object of inquiry, posit new claims about such an object and provide a mode of legitimation and verification of and about such claims.[6]

Instrumentalities of an Eternal Baroque, on the other hand, argues through 'curation' and 'drawing'—both, if understood in their most expanded sense, include the spatial design of an exhibit, sketching, computation, collage, descriptive geometry, digital modeling and animation.[7] If historiography (as in writing) can reveal different instrumentalities at play in an architectural artifact, an exhibition can reverse this methodological order by seeking to discover and interpret not only the artifact's own but also other histories in and through those very instrumentalities.

Instrumentalities of an Eternal Baroque is in line with several recent exhibitions on digital design, for example, the 2013 exhibit *The Archeology of the Digital*.[8] These exhibits aim to unearth modern genealogies of digital design vis-à-vis a methodological (and often teleological) axis running from the traditional or analog toward more advanced digital affordances. What is different in *Instrumentalities of an Eternal Baroque*, however, is that it is not so much about how 'the digital' surpasses 'traditional' affordances than about how the latter can reread, capture and reinterpret 'the digital.' In such terms, this exhibit has an affinity with the geometrical research of architects such as Bernard Cache, who reconceptualize 'the digital' by retracing the lineages of geometrical know-hows from the very depths of our tradition (Euclid, Vitruvius, Albrecht Dürer, Leonardo Da Vinci and Philibert de l'Orme, among others). While *Instrumentalities of an Eternal Baroque* seeks to explore and retrace techniques associated with Borromini's Baroque, it opts to do so by engaging in creative acts of drawing, modeling, scripting and exhibiting. The intention is not to establish what San Carlino is, but rather what San Carlino could become were we to redraw its surfaces. Where does this little building take us if we trace its inflections, valleys, ridges and crests? The medium of exhibition is significant here as it is a different kind of argument that complicates, cuts and cuts-across the organicist circuit of object, hypothesis, argument and conclusion. It registers, marks or, rather, *is* the very passage through different moments of thought. Through the five arguments or instrumentalities, the exhibit seeks to actualize the eternal geometries of San Carlino's restless surfaces—its undulating walls, its apparently pivoting columns, its alternately shallowing and deepening relief work, its swollen dome and the numerous *trompe-l'œil* it presents—finding them all in various architectural histories.



Juan Caramuel de Lobkowitz, *Arquitectura civil recta y obliqua*, Vigevano, 1678. Lamine XXIII e XXXIV Source: Wiki Commons

Project, (Ex)tend, Morph, (Sc)roll and Oscillate

The five instrumentalities unveil and display selected common tools and techniques used in conceiving architecture from antiquity until today: both those actually used, as well as thinking apparatuses, or instruments that can only exist as 'soft thought.' Although San Carlino is the site of our discovery of these instrumentalities, they are not exclusive to San Carlino. Each instrumentality is first a hypothesis that may either emerge out of an experiential encounter with the church or erupt as an aesthetic 'question' triggered by a new epistemic situation, such as digital computation. These hypotheses (or instrumentalities) are not so much about what one could potentially and eventually find in the church 'behind' its surfaces but, rather, about what these surfaces can potentially become, or how else they could be transformed or transfigured. This is precisely the 'affordance' of the 'medium of exhibition.'

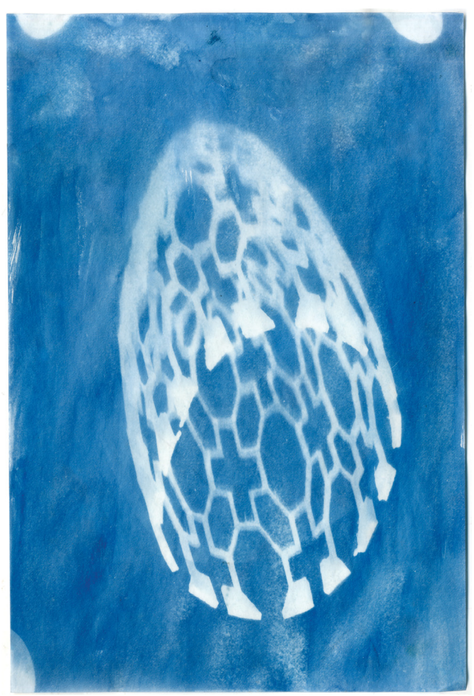
Project

Project addresses the history of design methods that involve architectural conception (and analysis) entailing 'translating' multi-dimensional form onto a flat surface. In the exhibited wall text, it was described as follows:

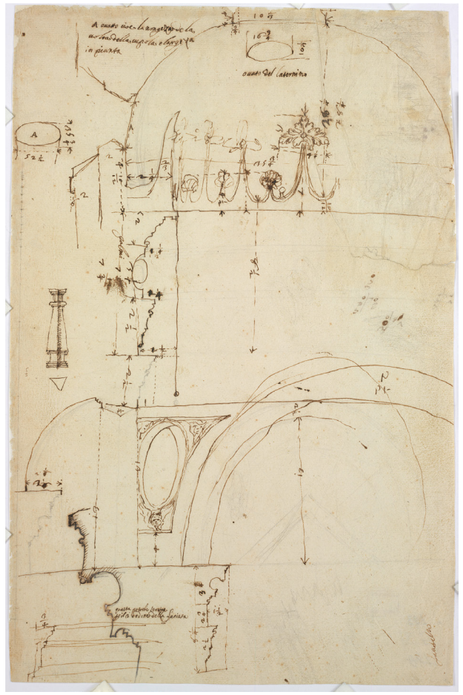
> From media as dense as stone to those as rarefied as light, projection ensues situating an object in a virtual, homogenous and global space – a medium, which offers a seamless transfer of spatial coordinates between objects, or between different states or forms of the same object. Art forms and artefacts materializing through projection include the likes of stereotomy, stereometry, orthographic drawing, perspectival drawing, the camera obscura, photograms, cyanotypes, and many more.

Following Filippo Brunelleschi and Leon Battista Alberti's (re)discovery of perspective in the mid-fifteenth century, perspective became an 'ideal' medium of architectural production. Through the analytical artifacts of San Carlino, this ideality of the medium is itself challenged: what was lost in 'translation through media' is countered by showing that much more was or could be gained. The vast difference between an orthographic drawing (which suffers no perspectival distortion) and a drawing of a space as witnessed by the human eye is explored by staging the comparison of (a reproduction of) a drawing for a scheme for St. Peter's Basilica in Vatican City by Juan Caramuel y Lobkowitz, a cyanotype produced using a 3D-printed model of San Carlino's dome by Simon Rabyniuk and a drawing by Borromini that reveals numerous parts of the church struggling to add up to a unified whole.

A critique of the desire to project 'without loss' through 'any media whatever' becomes evident through this instrumentality by revealing the 'gains' of 'losing in translation' through media. For example, Lobkowitz's drawing explores the dimensional distortion that each column of his scheme of the colonnade of St. Peter's would have to be subjected to in



Simon Rabyniuk, "cyanotypes" of a dome model, 21.6 x 28 cm. Toronto, 2017. Courtesy of Simon Rabyniuk



Francesco Borromini, *Architectural details of the interior*, San Carlo alle Quattro Fontane, Rome. Az Rom 203. 40.2 x 26.3 cm. Courtesy of Albertina Museum, Vienna, Graphische Sammlung

order to be perceived as a pure cylinder when viewed from the center of the elliptical piazza. Likewise in Simon Rabyniuk's cyanotypes, which are 'time-based' artifacts that capture and map the slow movement and flickering nature of light through a model of San Carlino's dome onto cyan-chemical-covered flat paper. As described in the conclusion of *Finding San Carlino*:

> (…) sunlight replaces the 'perspectival ray of light' or the orthographic 'stereometric slice' (…) and reveals various contortions of the pattern caused by a moving eye. The 'visual noise' generated from the uneven spread of cyan chemicals, wavering and flickering light, and never-flat paper characterizes the equally 'noisy' perception of the church dome.[9]

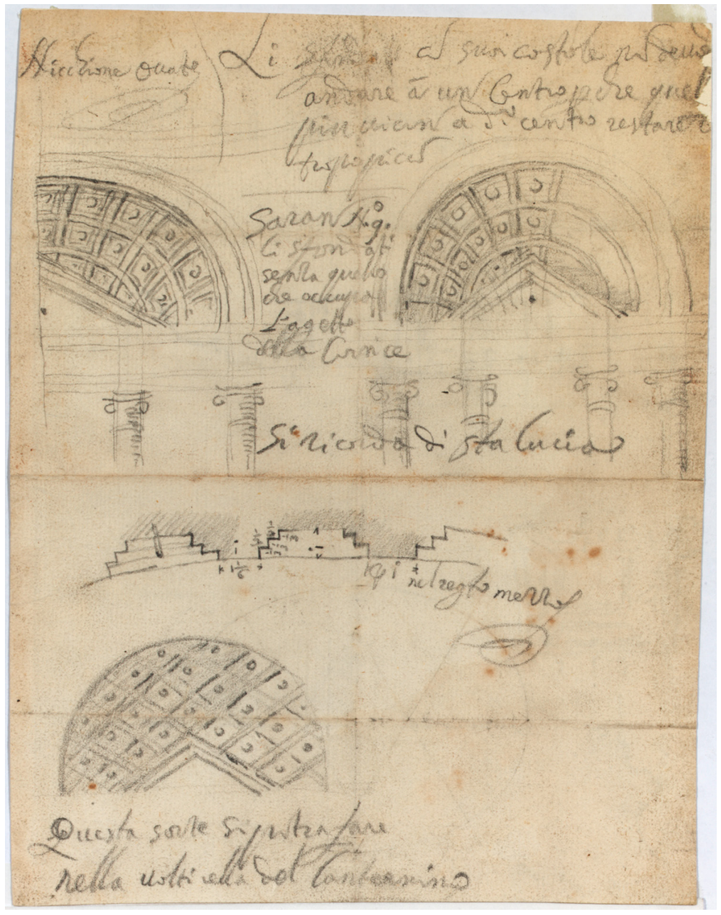
Rabyniuk's cyanotypes and Kenzie McNamara's dome models also confirm the historian Robin Evans's opinion on the dome of San Carlino: that it could not have been conceived of and designed using perspective.[10] Distortions and anamorphoses of perspective are also vital aspects and methods used in numerous contemporary design practices: for example, in Preston Scott Cohen's Torus House, numerous visual distortions of perspective are arrested as interior surfaces of the house, thus situating a viewer 'within' the anamorphic mechanisms of a perspectival system.

(Ex)tend

(Ex)tend further exemplifies the anamorphosis of perspectival space caused as a result of Borromini's attempts to make spaces appear much deeper and taller than they actually were. Leo Steinberg interprets the (ex)tended perspectives in Borromini's drawing (Az Rom 208r) as Borromini's attempts to simulate vistas looking down the nave of St. Peter's Basilica.[11] Through photographs captured with wide-angle lenses, the distortions of depth are magnified or exaggerated. Here, the deliberate distortions draw attention to the rampant use of wide-angle photography in architecture while also arguing that such distortions of depth—elongations or foreshortenings—have been 'naturally' deployed by visual artists through the centuries—thus also situating photography in a long historiographic tradition of 'extension' (and projection).

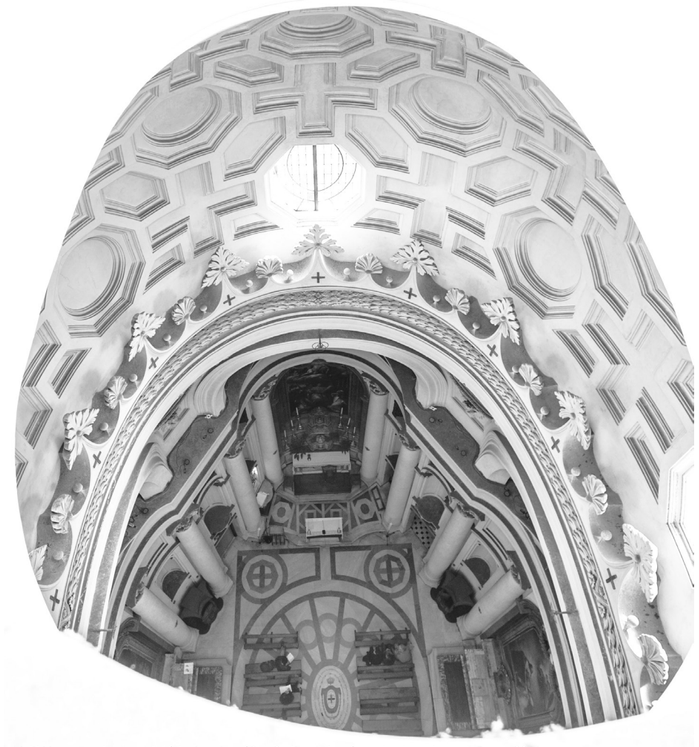
Adil Mansure, photograph of the façade of San Carlino, Rome, 2016

Adil Mansure, photograph of the interior of San Carlino, Rome, 2016

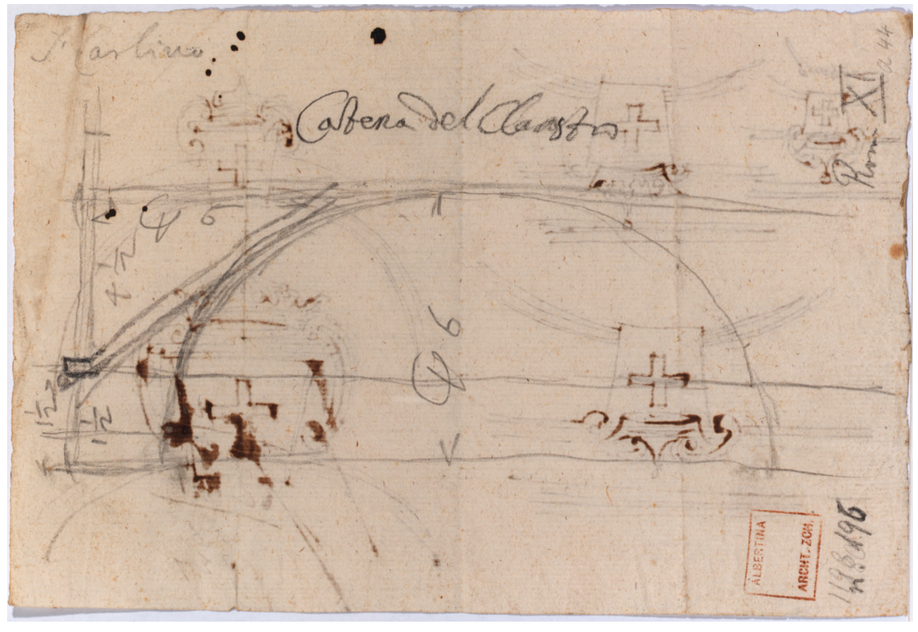


Francesco Borromini, *Studies on wall and conching in the interior*, San Carlo alle Quattro Fontane, Rome, 1640-41. Az Rom 208r. 26.6 x 20.3 cm. Courtesy of Albertina Museum, Vienna, Graphische Sammlung

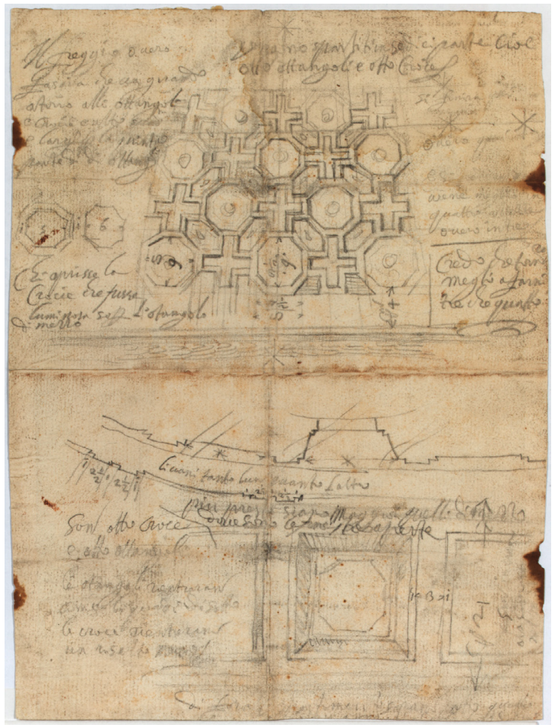
A second instance in which similar means are employed is the dome of San Carlino. Borromini's drawing shows a sketched section of the dome to be a vaguely ovoid shape, contracted far below its center—rather than exactly along it—an operation that significantly amplifies the effect of (what Heinrich Wölfflinn calls) the 'swelling' of the dome. What is extended through this instrumentality is not so much the geometrical size and shape of an object or architectural space, but rather the spectrum of the parametric deployments of perspective—and its distortions. Such instrumentalization also reveals that perspective was a 'parametric machine' long before the age of mechanization and digitization, that is, it was an ideal geometrical method of capturing variation from the norm long before the norm itself became 'ideal' (or lowly variable).



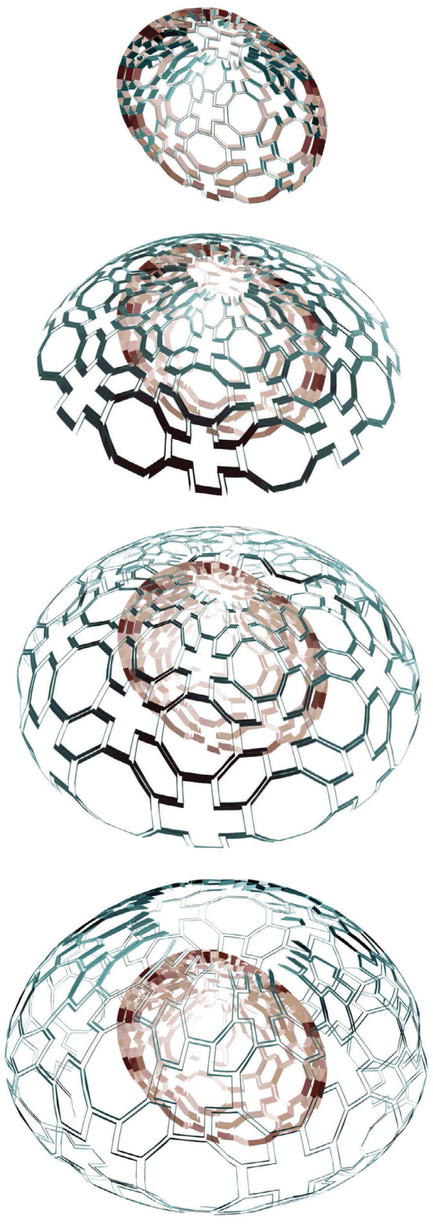
Adil Mansure, photograph of the interior of San Carlino, taken from the dome lantern, Rome, 2016



Francesco Borromini, *Sketch, section of the dome*, San Carlo alle Quattro Fontane, Rome. Az Rom 196v. 13.2 x 19.7 cm. Courtesy of Albertina Museum, Vienna, Graphische Sammlung



Francesco Borromini, *Studies of dome interior*, San Carlo alle Quattro Fontane, Rome, 1640-41. Az Rom 224. 26.6 x 20.3 cm. Courtesy of Albertina Museum, Vienna, Graphische Sammlung



Omar AlSaleh, *Of Hemispheres and Ovoids*. Animation stills. Toronto, 2017. Courtesy of Omar AlSaleh

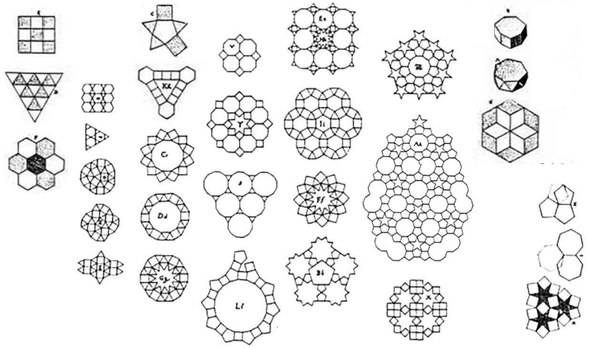
Adil Mansure, photograph of an interior apse of the Pantheon, Rome, 2016

Adil Mansure, photograph of the dome interior of San Carlino, Rome, 2016

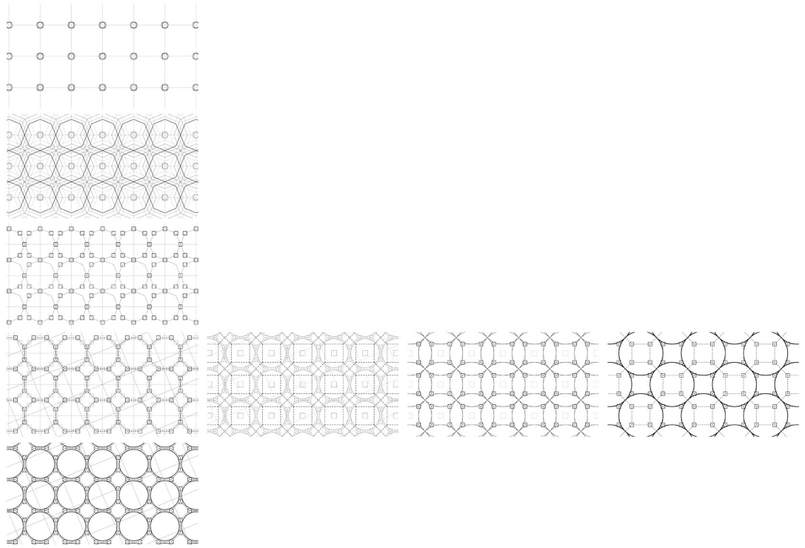
Morph

The artifacts characterized under Morph attempt to represent 'forming' processes in varied works of architecture, beginning with the seemingly dynamic surface of San Carlino's dome. The irregular ovoid dome eludes canonical geometries such as circles, ellipses or four-part ovals; it appears to be alternately deep and shallow with a highly segmented perimeter profile and exhibits complex surface geometry. Yet the regular, ancient geometric pattern consisting of nested octagons, cruciforms and hexagons is not only uniformly splayed across this irregular dome surface, but each geometric form is recessed or coffered, further enhancing the depth of the surface. A distortion of the pattern is visible in Borromini's drawing, presumably 'morphed' in order to splay along the irregular dome surface. In the exhibit, an animation by Omar AlSaleh traces the pattern being 'morphed' from a regular hemispherical dome to San Carlino's elongated ovoid dome. The transformation of the pattern from a spherical to ovoid 'ground' or base surface captures not only the procedural logic of distortion or morphing, but also reveals the numerous other domes that 'could have been' San Carlino.[12]

The pattern has numerous 'before' and 'after-lives,' which, in the exhibit, were evident in a photograph showing it on an apse in the Pantheon in Rome (splayed along a regular quarter-sphere); in Archimedes's tessellations found in Greek antiquity reproduced in the exhibit by Weixin Zhao;[13] and



Weixin Zhao, *Archimedean Tessellations*. 30.5 x 45.7 cm. Toronto, 2018. Courtesy of Weixin Zaho. The drawings are based on Keith Critchlow's drawings in Keith Critchlow, *Order in Space: A Design Source Book* (London: Thames & Hudson, 1969)

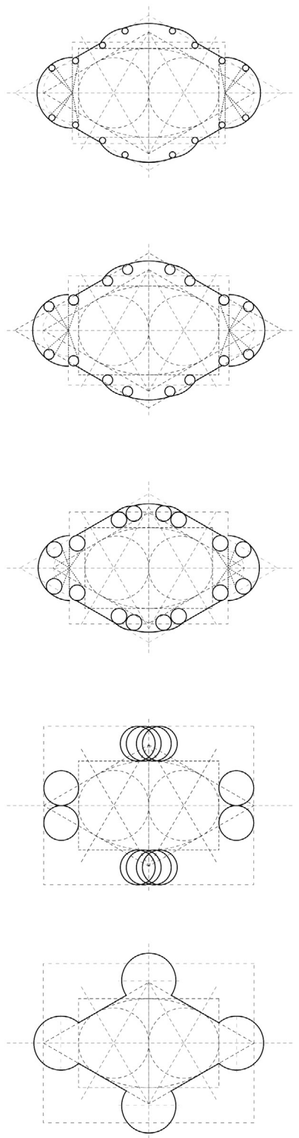


Ryan Grace, *Silo City, Tessellated*. Animation stills (drawing by Adil Mansure). Buffalo, 2017. Courtesy of Ryan Grace

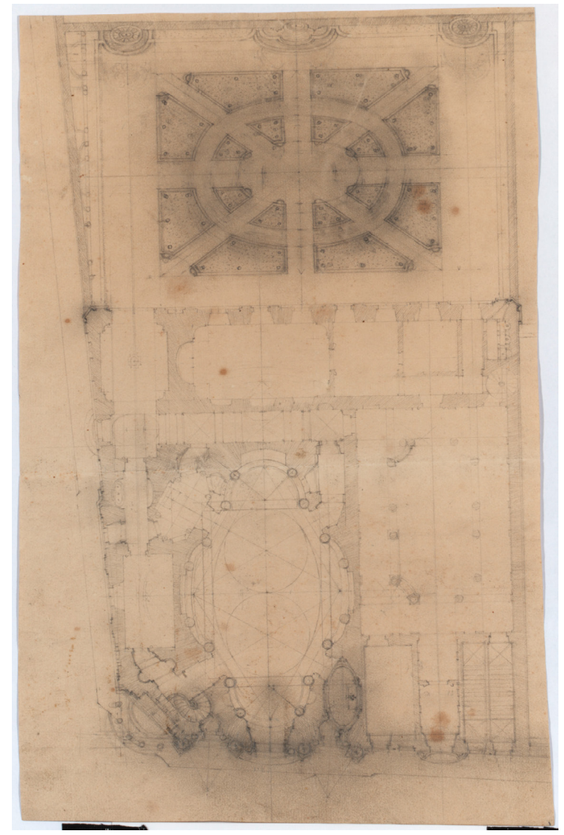
occurring in nineteenth-century American industrial architecture such as grain silo cluster plans, which, in the exhibit, were analyzed through a parametric geometric animation by Ryan Grace. Grace's animation explores the geometry of the structural system of two grain silos in Buffalo. While the cylindrical forms of the silos have been celebrated as pure, ideal, universal and eternal forms of the industrial age in texts ranging from Le Corbusier's *Vers une architecture* to Reyner Banham's *A Concrete Atlantis*, the substructures the cylinders are built on are often ignored. Grace's animation reveals these substructural systems as emerging from common root polygonal tessellations, which are as dynamic, adaptable and variable as those of Archimedes. In the variety of parameters tested through Grace's algorithms, the system shifts, moves, transforms and 'morphs' through numerous building typologies and structural logics that underlie the (falsely) apparent unity of the cylindrical volumes of the silos.

(Sc)roll

(Sc)roll is an exploration of dynamic geometries 'rolling' along discrete paths or tracks. An animation by Adil Mansure explores Borromini's plan of San Carlino, in which a key discovery is a peculiar 'geometric interdependency' between the size of the columns and the perimeter profile of the church interior. This interdependency enables the digital geometric ensemble to output plans of varied typologies and



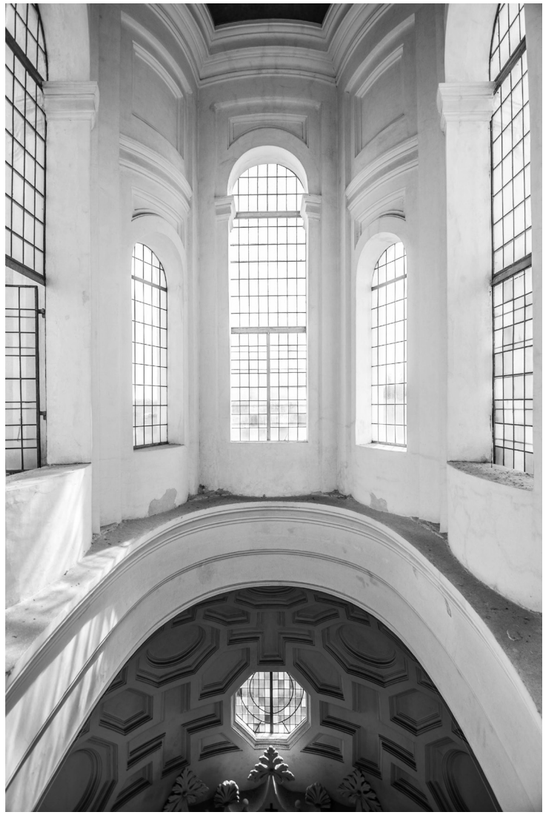
Adil Mansure, Diagrammatic Analysis: Plan of Francesco Borromini's Drawing Az Rom 173. Animation still. New Haven, 2016



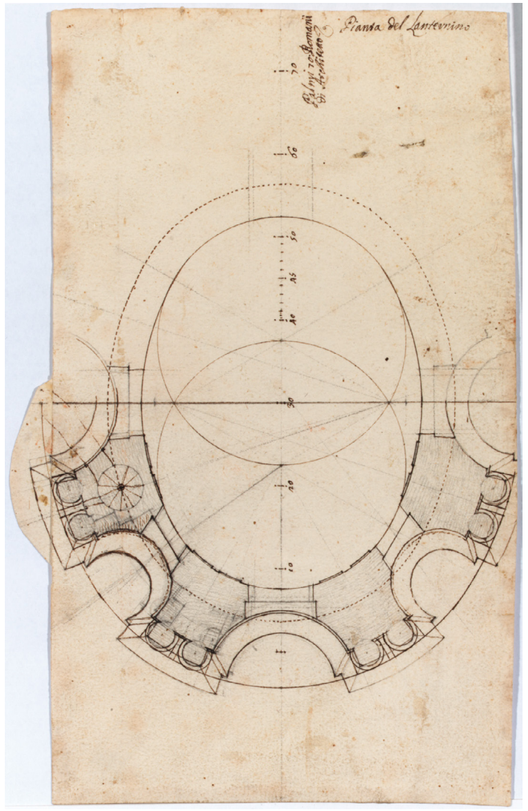
Francesco Borromini, plan of San Carlo alle Quattro Fontane, Rome, 1660. Az Rom 173. 47 x 31 cm
Courtesy of Albertina Museum, Vienna, Graphische Sammlung

symbolic and structural orders, which could not be anticipated while drawing the plan. Being modes of 'soft thought,' much Baroque geometry is replete with such proto-algorithms, as described in the exhibition text:

> Algorithms, though attributed to twentieth century mathematics; and parametric architecture, though attributed to being born in the 1990s, inundate Borromini's geometrical armatures. Shedding notions of avant-garde and technological determinisms associated with these, we see them produced through geometry – not a rule based, arithmetically ordered, and synthetic geometry – but geometry as a prosthetic extension of our corpus. Technological means, in this case animation software, do however, enable the visualization of the kinetic and intuitive instrumentalities replete across an eternal Baroque.



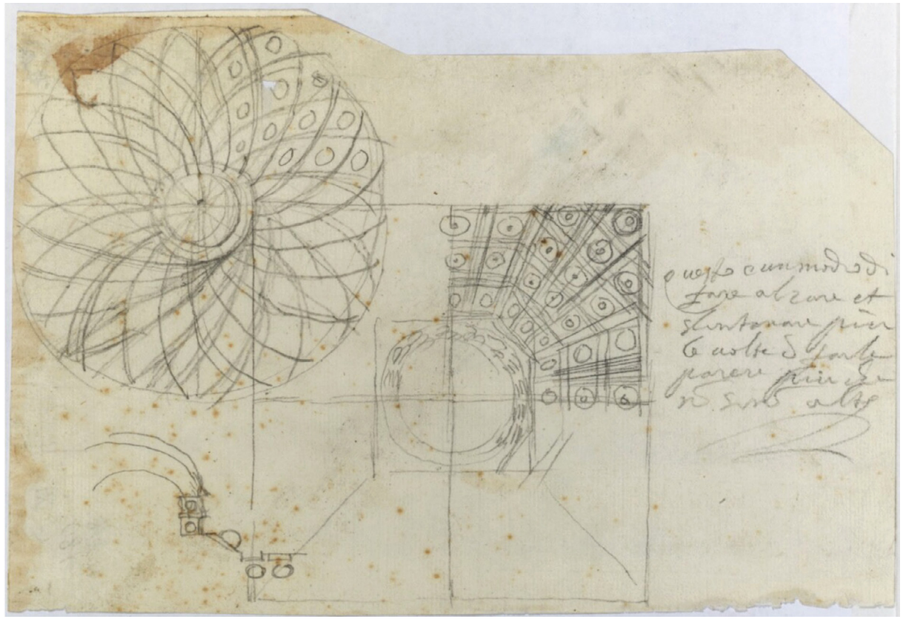
Adil Mansure, photograph of the lantern interior of San Carlino, Rome, 2016



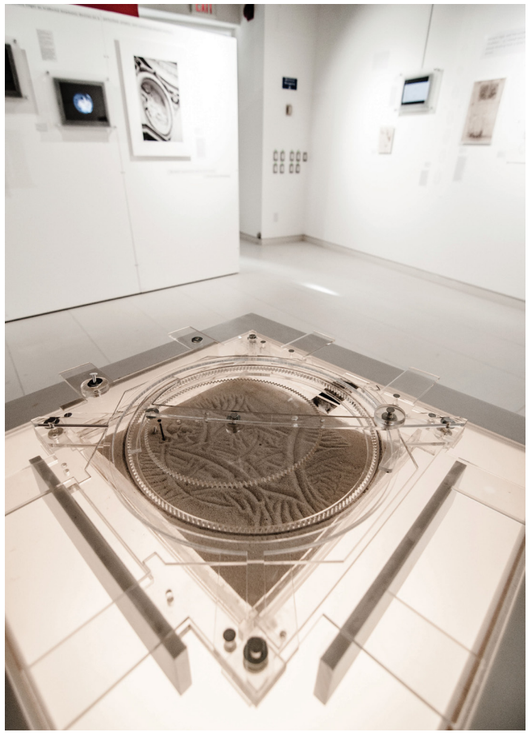
Francesco Borromini, *Plan of lantern*, San Carlo alle Quattro Fontane, Rome,
Az Rom 192. 16 x 27.3 cm. Courtesy of Albertina Museum, Vienna, Graphische Sammlung

In the exhibit, such dynamic ensembles evident in Borromini's as well as in numerous other Baroque drawings are also shown as indebted to cosmic geometries discovered in the late-sixteenth and early-seventeenth centuries by Galileo Galilei, Johannes Kepler, Tycho Brahe and others. Many curve profiles in these drawings resemble geometries such as cycloids, epicycles and epitrochoids, many of which are shown in the exhibit in the form of animations that illustrate their circumscription process. The dimension of time in these geometries is significant to their drawing process, which becomes especially evident through the necessary use of metrics such as frequency, wavelength, period and so on. These involve curves inscribed by instruments with numerous interdependent moving parts: a geometry of kinesis rather than stasis. These profiles are visible in Borromini's drawings. For the exhibit, Phillip Daniels also built a physical instrument, a 'spirotype,' using which one could inscribe several of the above-mentioned curves in sand by merely placing a needle in the desired groove.

In another project by Daniels, he examines the four vaguely oval-shaped medallions of the pendentive zone of San Carlo's interior surface. Using a close-up photograph of a medallion as a starting point, he draws keen attention to the geometry evident in the relief work of the surfaces of the medallion. This is manifest in his animation *Rosette (Sc)roll*, which follows the eye as it circumambulates along the medallion perimeter, described in the exhibit wall text and in *Finding San Carlino* as follows:



Francesco Borromini, *Studies of vault coffering*, San Carlo alle Quattro Fontane, Rome, 1634. Az Rom 218. 17.3 x 25.7 cm. Courtesy of Albertina Museum, Vienna, Graphische Sammlung

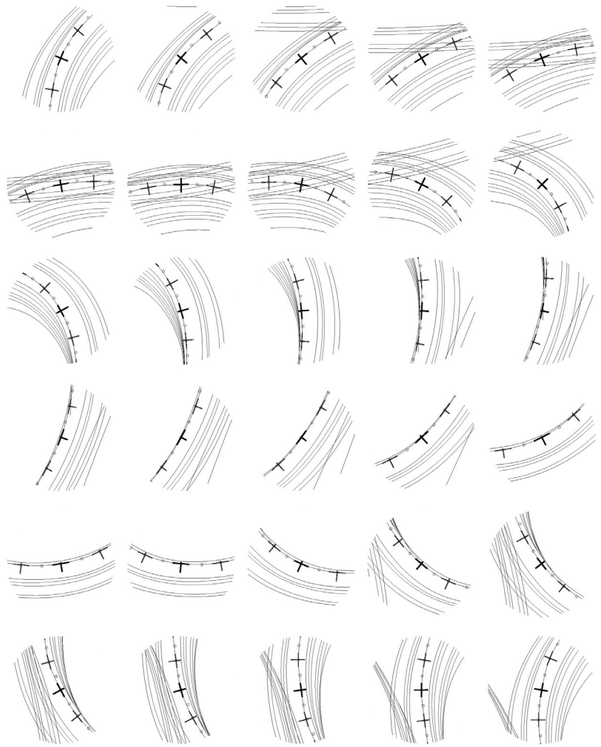


Adil Mansure, photograph of Spirotype, designed and built by Phillip Daniels, Toronto, 2018.
Courtesy of Adil Mansure and Phillip Daniels

> Clasped, squeezed, and contorted by two irregularly shaped arches, a typically circular medallion of a canonical pendentive morphs into an irregular ovoid form; highly segmented, with constantly changing curvature. These pendentives now evoke the memory of archetypal circular pendentives; even though their geometrical and tectonic underpinnings have far relinquished those origins. Using a Euclidean system of spatial co-ordinates with a global origin does little to help map the profile and surface curvature of the ovoid cornice. Could it be that the ovoid was conceived thinking not 'part to whole' but 'part to part' – rosette to rosette? Such modes of thought are analogous to differential space and differential calculus where space is computed not by measuring the x, y, and z coordinates to a global origin, but as 'the rate of change of curvature along a hypothetical trajectory or surface.' The devised instrument (an animation) traces 3 adjacent rosettes at a time, each adjacent frame excluding the first and including a fourth along a cyclical loop along the ovoid cornice.[14]

In Daniels's focus on the rosettes that punctuate the medallion perimeter, what is noteworthy is how the (sc)rolling mechanism, the animation, is centered not on the observing eye as the locus, but rather on the rosette at the center of each new frame. As a result, the shallows and depths, valleys and crests of the richly dynamic surfaces of the church fold out from and can be structured by the meter and rhythm of the rosettes. Daniels furthers this operation through a second animation and a drawing, both titled *Medallion Manifold*, described in the exhibit as:

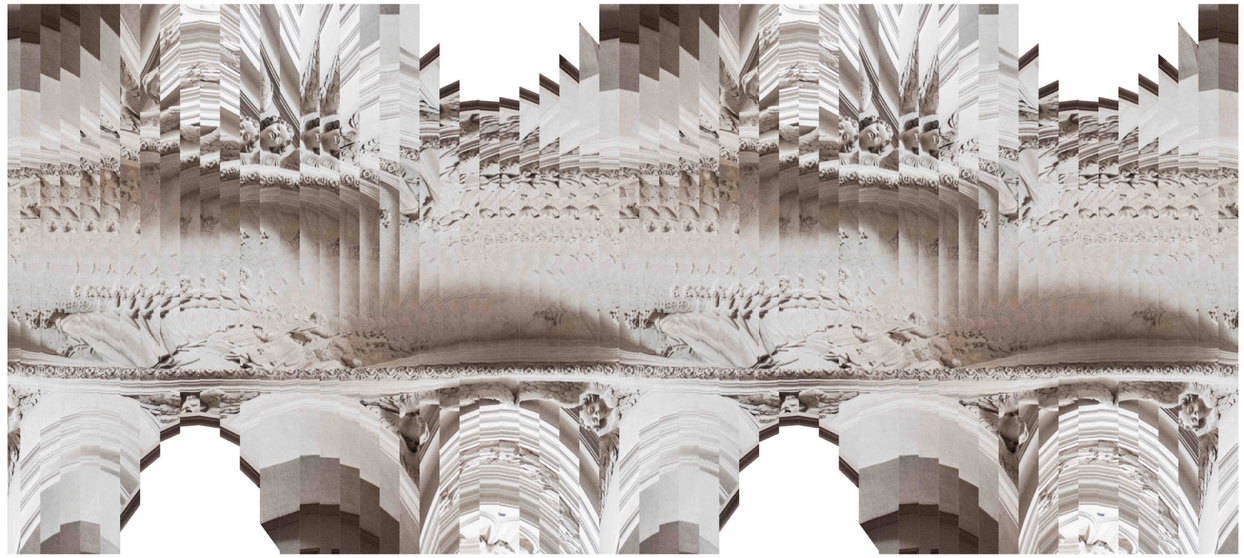
Adil Mansure, photograph of the pendentive medallion, Rome, 2016



Phillip Daniels, *Rossette Sc(roll)*. Animation still. Toronto 2017. Courtesy of Phillip Daniels

> (…) a mapping instrument (an animation) that assumes the top surface of the cornice as its 'ground,' the shallow and deep relief work is unrolled onto a flat surface in temporal frames tracing the perimeter of the medallion. A spatio-temporal reality and form of intuitive artistic intelligence, belonging to the realm of Topology and Geometry of Surface, are here unrolled into intervaled Euclidean metrics of representation – an animation (in metric time) and a drawing (in metric space).

As we have discussed elsewhere, what is important is "not only whether Borromini might have used, say, a geometrical scrolling mechanism—a question that can be answered or verified to a certain extent by both observation and historiographic research—but also, given the fact that Borromini did indeed use a geometrical scrolling mechanism, what would happen if we used such scrolling mechanisms today by re-encoding in and through different digital drawing technologies?"[15] Such an instrumentality furnishes 'the digital' with not only different temporal parameters from inherited geometrical practices, but also epistemological paradigms that augment the defaults of the software.



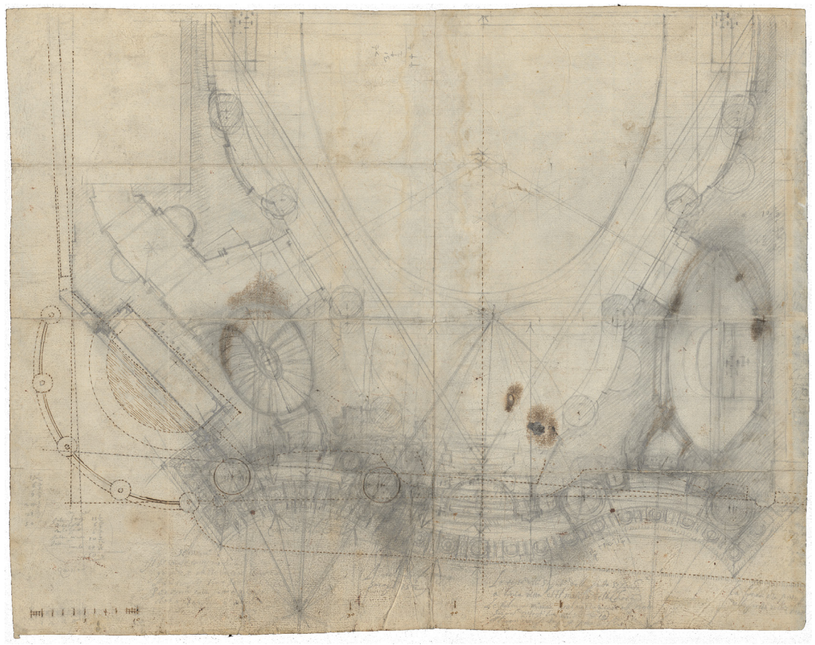
Phillip Daniels, *Medallion Manifold*. Digital drawing. Toronto, 2018. Courtesy of Phillip Daniels

Oscillate

As described in the exhibition wall text:

> From David Hilbert's topological spaces of acoustic frequencies, to waves of oceanic currents, to light and sound waves propagating through various media, to jumping electrons within atoms, to orbiting celestial bodies, to San Carlino's undulating, 'oscillating' concave/convex wall segments – such cosmic motions find an avatar in geometry, in architecture, and in material space.

This instrumentality drew attention to wave motifs (as understood in the history of science, mainly physics) that proliferated in architectural design since the Baroque. Borromini's drawing of the church façade illustrates interdependent, connected convex and concave segments that form numerous continuous wave profiles. The motif recurs in numerous other parts of the church as well, for example, in the eight contiguous arches of an octagonal crypt chapel. Niklas Maak, in an essay titled "The Xenophora Principle" (included in *Finding San Carlino*), discusses the church with a purview of a maritime sensibility, of which the wave is a key motif. The wave as an aural or sonic metaphor has indeed been widely explored in Baroque art history. Our interest in the use of the wave, in addition to these symbolic or visual references, is also about the dynamic vectors, geometrical parameters and instruments that working with waves compel in architectural design. As in the case of (Sc)roll, which offers different temporal parameters, Oscillate enables and activates different epistemes of curvature-making and customary know-hows of inflecting geometries. Unlike in the case of NURBS geometries, in which oscillation is often the result of default, 'black-box' or 'behind the scenes' parametric ensembles, geometry here plays a direct role in the shapes, dynamic metrics and reproduction of oscillating motifs. Such 'oscillating' motifs bring forth the dynamic cosmic ecology of thought and design in the Baroque, which both anticipate and abound in the geometry of 'the digital.'



Francesco Borromini, *Plan of the façade*, San Carlo alle Quattro Fontane, Rome, 1666-67. Az Rom 176. 40.7 x 52 cm. Courtesy of Albertina Museum, Vienna, Graphische Sammlung

Adil Mansure, photograph of the crypt of San Carlino, Rome, 2016

Conclusion

These five instrumentalities—Project, (Ex)tend, Morph, (Sc)roll and Oscillate—serve as forms and media of argumentation whose performativity, efficacy or veracity would only be established in and through the very act(s) of their deployment, that is, in and through the act(s) of curating, drawing, sketching, computing, collaging, (digital) modeling and animating. These instrumentalities, as arguments, do not so much answer or prove any hypothesis about the church as they do render or frame the church and its realities 'retroactively' as hypotheses or questions in the first place. Such delayed reframing is also the 'proof' of the 'inconclusiveness' of San Carlino that we find we had been waiting for all along, from the very moment our eyes glanced upon the dizzy, undulating surfaces of the church and the breathless drawings of Borromini. These instrumentalities reveal the complexities and indeterminacies of the geometries of the eternal Baroque while pushing us to find and engage with similar 'untimely' (in the Nietzschean sense) realities of our own time. Thus, they are not immutable geometrical procedures that recur invariably across architectural history; on the contrary, they are eternal geometries 'infused with time'; that is, they are historically dynamic instrumentalities. The exhibition, then, is a snapshot of history in the making.

Notes

1. Alfred North Whitehead, *Science and the Modern World: Lowell Lectures, 1925* (London: Cambridge University Press, 1929), 4.
2. Adil Mansure and Skender Luarasi, eds., *Finding San Carlino: Collected Perspectives on the Geometry of the Baroque* (London and New York: Routledge, 2020).
3. Friedrich Nietzsche, *Untimely Meditations*, trans. R. J. Hollingdale (Cambridge: Cambridge University Press, 1997), 60. We thank Ingrid Mayrhofer-Hufnagl for bringing this reading of Nietzsche's *Untimely Mediations* to our attention.
4. Mark Jarzombek, "Foreword," in Adil Mansure and Skender Luarasi, eds., *Finding San Carlino: Collected Perspectives on the Geometry of the Baroque*, XX.
5. Adil Mansure and Skender Luarasi, eds., *Finding San Carlino: Collected Perspectives on the Geometry of the Baroque*, 2.
6. Umberto Eco, *How to Write a Thesis*, trans. Caterina Mongiat Farina and Geoff Farina (Cambridge: MIT Press, 2015), 26-31.
7. In "Drawing as an Expanded Field," we make the case for how 'drawing,' in its most expanded sense, can migrate from and transcend its original medium, presenting geometrical analyses where we find drawings in scripting and digital animation, among other media. See Adil Mansure and Skender Luarasi, "Drawing as an Expanded Field: Francesco Borromini's San Carlo Alle Quattro Fontane," *Disegnare Idee Immagini* 61 (2020).
8. See the book based on the exhibition. Greg Lynn, ed., *Archaeology of the Digital* (Montreal and Berlin: Canadian Centre for Architecture and Sternberg Press, 2013).
9. Adil Mansure and Skender Luarasi, *Finding San Carlino: Collected Perspectives on the Geometry of the Baroque*, 144.
10. Robin Evans, *The Projective Cast: Architecture and Its Three Geometries* (Cambridge: MIT Press, 1995), 121.
11. Leo Steinberg, *Borromini's San Carlo Alle Quattro Fontane: A Study in Multiple Form and Architectural Symbolism* (New York: Garland, 1977), 313.
12. For a detailed description of this animation, see Adil Mansure and Skender Luarasi, "Drawing as an Expanded Field: Francesco Borromini's San Carlo Alle Quattro Fontane."
13. See Keith Critchlow, *Order in Space: A Design Source Book* (London: Thames & Hudson, 1987): 32-38.
14. Adil Mansure and Skender Luarasi, *Finding San Carlino: Collected Perspectives on the Geometry of the Baroque*, 122, 143-144.
15. Phillip Daniels's project is also discussed in detail in Adil Mansure and Skender Luarasi, "Drawing as an Expanded Field: Francesco Borromini's San Carlo Alle Quattro Fontane."

References

Critchlow, Keith. *Order in Space: A Design Source Book*. London: Thames & Hudson, 1987.

Eco, Umberto. *How to Write a Thesis*. Trans. Caterina Mongiat Farina and Geoff Farina. Cambridge: MIT Press, 2015.

Evans, Robin. *The Projective Cast: Architecture and Its Three Geometries*. Cambridge: MIT Press, 1995.

Lynn, Greg, editor. *Archaeology of the Digital*. Montreal and Berlin: Canadian Centre for Architecture and Sternberg Press, 2013.

Mansure, Adil and Skender Luarasi, editors. *Finding San Carlino: Collected Perspectives on the Geometry of the Baroque*. London and New York: Routledge, 2020.

Mansure, Adil and Skender Luarasi. "Drawing as an Expanded Field: Francesco Borromini's San Carlo Alle Quattro Fontane." *Disegnare Idee Immagini* 61 (2020).

Nietzsche, Friedrich. *Untimely Meditations*. Trans. R. J. Hollingdale. Cambridge: Cambridge University Press, 1997.

Steinberg, Leo. *Borromini's San Carlo Alle Quattro Fontane: A Study in Multiple Form and Architectural Symbolism*. New York: Garland, 1977.

Whitehead, Alfred North. *Science and the Modern World: Lowell Lectures, 1925*. London: Cambridge University Press, 1929.

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