

Introductie

Luigi Moretti's 'Le serie di strutture generalizzate di Borromini' (1967)

Moretti presenteerde zijn projectieve analyse van Borromini's structurele strategieën tijdens het tiendaagse programma van publieke evenementen op de Accademia di San Luca, dat in 1967 werd gehouden ter gelegenheid van de 300^e sterfdag van Borromini. Hij sprak op de eerste zaterdag van de conferentie – op de middag van 30 september – en ging in op de lessen die een hedendaagse architect zou kunnen trekken uit het werk van de barokmeester. Gepresenteerd op een moment in de geschiedenis van de architectonische geschiedschrijving waarop de keuze tussen filologische strengheid en hedendaagsheid (in Crociaanse zin) centraal stond, zet Moretti in deze analyse Borromini neer als een moderne architect van het humanistische, structureel-expressionistische slag. In zijn presentatie koppelt hij het thema van zijn bijdrage aan een daarmee nauw verbonden evenement: de herdenking van de 400^e sterfdag van Michelangelo in 1964, waar Moretti in een lezing de *strutture ideale* van Michelangelo bekeek in de context van een historische tijdsboog die hij Barok noemde. Net als in dit vroegere voorbeeld en in de historisch georiënteerde artikelen van zijn tijdschrift *Spazio* (dat regelmatig over de Barok schreef), richt Moretti's verhaal over Borromini zich niet op de functionaliteit van diens werk, zoals in de geschiedschrijvingen van Bruno Zevi en Paolo Portoghesi gebeurde, maar is het eerder een zoektocht naar compositorische en constructieve principes, waarin Borromini's architectuur wordt benaderd als een reeks open werken die deel hebben aan de architectonische cultuur van nu.

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Introduction

Luigi Moretti's 'Le serie di strutture generalizzate di Borromini' (1967)

Moretti presented his projective analysis of Borromini's structural strategies during the ten-day public programme of events scheduled at the Accademia di San Luca to mark the tercentenary, in 1967, of Borromini's death. He spoke on the first Saturday of the conference – on the afternoon of 30 September – to address the lessons a contemporary architect might draw from the work of the Baroque master. Presented at a moment in the history of architectural historiography when the choice lay between philological rigour and contemporaneity (in the Crocean sense), Moretti casts Borromini as a modern architect of the humanist, structural expressionist type. In this he pursues the theme of his contribution to a closely related event: the commemoration in 1964 of Michelangelo's death, four centuries earlier, during which Moretti had considered the *strutture ideali* of Michelangelo within a historical arc he called Baroque. As in this earlier case, and in the historical articles of his journal *Spazio* (which regularly turned to the Baroque), Moretti's account of Borromini is not an operative history in the sense that accrues to the histories of Bruno Zevi and Paolo Portoghesi. It is instead a search for compositional and structural principles that treats Borromini's architecture as a series of open works that participate in the architectural culture of the present.

structures in the architecture of Borromini, where between columns—those protagonists of representation upon which the stage of the world throws the most light—there has come to live among their shadows a minute world animated by vegetation, beasts, and the small issues of man. Between the columns and pilasters used by Borromini in great temple structures, the inserted walls that seem deformed from being pushed and compressed into place carry metal plates, like round votive shields, that were attached to Greek temples as well as palms. An interesting detail is the great portico attached to the existing structure of Santa Maria in Via Lata.

The separation of the temporal and the structural is delineated in an unequivocal manner. The two organisms live independently; they are divided only by a deep furrow, a necessary junction of the construction and the reading of their separation, covered by a small vault. To appreciate the difference in this telling detail, it will suffice to refer to the rather different solution proposed by the Renaissance, for example, in the vestibule of Santo Spirito in Florence. These ideal structures after the Roman Baroque, directly nourished by Michelangelo's blood, became an esoteric language read by neophytes.

Future structures will be built in worlds with strange gravitational currents, already evoked by Borromini, that distort and project structures, surfaces, moldings, and spaces. New gravitational fields are created, as well as new geometries of figurative thoughts, until the point of arriving at those projective, perspectival structures of a world in which space is foreshortened differently according to directions, the latest arguments of metaphysics that are at the extremes or outside of a legible reality.

The ideal structures of Michelangelo provide the secret key to his architectural thought. They elevate his architecture—his Architecture—to a level never before conceived and, after the great Baroque consciousness, almost no longer read in its secret fibers. In these ideal diagrams the impending mortality of time becomes tangible; ambitions and myth are raised and then fall, and are possessed unknowingly by humans, and more minute ambitions are brought forth, and more, and more. Perhaps the

narrative of Michelangelo's complex restlessness—of his noncommunicable solitude, unsatisfied and hungry for the world and the nonworld—was never as wide spread in his figurative works. He senses and summarizes modern thought, the uncertainty about nothing.

His stratigraphies are stories of a spirit that alone searches for an answer, wants to understand according to its phantoms, tries and retries, and gives up and leaves its message unfinished, petrified, seemingly useless, because the thought of time and its black flow is the dominant thought that is inherent, hastens, and stops, and is the destiny of humans.

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The Series of Generalized Structures in Borromini's Work

The overuse of a language becomes manifest when its signs and their combinations are repeated continuously over a long period of time, causing a biological indifference to perception, which is accentuated if these signs are habitually repeated and almost completely separated from their meaning.

Language in architecture, as in every other category of intellectual production, develops according to its own algorithmic process. An internal law drives this process; architecture's necessity to exist, to substitute its signs and their worn-out aggregations with new signs. This is particularly true when, in favor of certain messages and noncontradictory external conditions, the bursting forces of singular personalities accelerate the process.

In this particular algorithmic process, the external contributions of other groups of algorithms are acknowledged only insofar as the particular algorithm allows them to be, in its nondefinitive connections. For this reason, we try to reveal the objective structural facts without deviations, a priori, from the hypothesis of cultural genetics in the evolution of the architectural language. Naturally these facts are not refuted but are instead examined as supporting hypotheses, taken into account only if they do not contradict the objective structures that are understood with certainty. This is like saying that we are removing the dimension of time from the different images of architecture, as if architecture's different languages were equally present as contemporary facts. It is as if we were to examine architecture on a planet whose eras we do not understand. Every message, if truly sustained in the human mechanism that experiences it through a violent need for representation and for communication, always finds its own language, its signs and codes. Perhaps this internal drive constitutes the famous light or idea within the different meanings given to these words from the Renaissance through Mannerism until the early Baroque period. I think that in order to understand the individuality of the structures of the Baroque, and of Borromini in particular, we must impart their nervous energy to the antecedent structures of the Renaissance and of Mannerism. For the

objective structures of the Renaissance, we have chosen examples that seem sufficiently representative in the area of Tuscany: These are the Church of Santo Spirito, the Ospedale degli Innocenti by Brunelleschi, the Palazzo Rucellai by Alberti, the Palazzo Riccardi by Michelozzo, the Portico di Santa Maria delle Grazie by Benedetto Da Majano, and other similar buildings. In these architectures we perceive the following structural facts:

1. The composition is made of repeated elements. In terms of communications theory, the rule for the grouping of elementary signs—that is, the code—is the strict and immediate dependence of one group upon another.
2. Such a condition allows extremely precise information relating to the entire structure to be quickly communicated.
3. Consequently such information produces an intellectual understanding that is quickly acquired. The consumption of one or two groups of signs and an evaluation of the volumetrics with which they are arranged are sufficient to provide a total understanding, as if the entire structure were projected from a radiating hypothetical central point.
4. In this central point, the rapidly processed information is ever more sustained and accentuated by the fabric of strict geometrical coordination among the various aggregations that we erroneously call "proportions." This fabric does not principally mark a harmonic musical relationship between the aggregations, as is often repeated, but rather it fixes invariant relationships, the "invariances" of reading from any point of consumption that can be considered (see, for example, Serlio's famous rectangle and its diagonals, the presumed harmony of which has been so tested).
5. The information, as it is rapidly and completely understood, is of an intellectual kind, a summary intellectual knowledge reached only by the reading of two or three elements. Its signs do not need strong or excessively incised markings. In fact, any use of force whatsoever would destroy the arrangement, which appears to be without a human heartbeat.
6. Consequently there is no need for strong lighting. Rather, an abstract and soft light is required that is, in point of fact, inherent in places where these structures arise. It is the light that is found in plates depicting architecture in

Perugia and in the piazzas of the museums of Berlin, Baltimore, and others.

In reference to this list of objective structures, there are several salient external facts that occurred at the same time that do not contradict but instead help us to understand their genetic origin:

1. The new theological vision that the church assumed during the early fifteenth century was principally based on the mystery of incarnation, with the consequent evaluation that the natural world in which God took form is evidently worthy and should be accepted with joy: This position is analogous but not identical to the theological position defined in the fourth century; recall Pope Leo the Great and his "happiness in existing as a Christian in the world" and his statement that "Christians are forever young."
2. The splendor that reaches humanism through philology, the study of ruins, and the cult of antiquity translated into an exciting and splendid myth and consequently an admiring vision of nature.
3. The consequent coincidence of a single puntum of religious and secular culture.
4. The affirmation of the Neoplatonic world and therefore of a Platonism that implied that these coincidences happen in a world where ideas are once again splendid and pure abstractions, ordered according to uncontaminated mathematical relationships.
5. The appeasement of these spirits, yearning and enchanted, who sought an unambiguous unity of vision, which was not, however, in concord with the restless human spirit.
6. Centrality, that is, the Renaissance habit of constructing and then thoroughly reading the works from a central point within. The centrally planned churches depend on this habit, churches that are like pure crystals arising from a single point due to the equidirectionality of forces that form them.

Certain intensely analyzed changes occur at the end of the fifteenth century, and these tensions that had coincided become contradictory and disquieting. The delicate nature of Renaissance structures no longer has any significance, in a biological sense, for a social world, whose dimensions have changed and therefore requires an ever vaster and above all different mode of

consumption. This is a world on which are incumbent new messages and conditions that have put an end to tranquillity, to the serenity of the Pagan-Christian world that had allowed the reception of the very subtle signs of Renaissance structures. In this way, the architecture of the early sixteenth century began to change rapidly.

The clarity of a work such as the Palazzo Rucellai disappeared in a world that had collapsed. Rapid and intellectual understanding was no longer possible. Structures with strong presences became necessary in order to repeatedly excite and engage those who consumed them. In this way, the typical structures of Mannerism arose:

1. Complex structures that to be grasped require that their entire course be examined and therefore require a longer time for apprehension. At this point, we pass from the dictation of a poem, concise and luminous, to a more full-bodied account.
2. The long course of reading by nature of its constitution must reject strict unitariness. It can result in juxtapositions of aggregations of signs that are seemingly fragmentary and inconsequential.
3. To make this course easier to grasp, it is necessary that the signs and the aggregations be strongly incisive, loaded with light and shadow.
4. They are imagined under hard sunlight and no longer the universal light of Florentine mornings. This hard light is the sunlight of Rome, the city that in this century resumed preeminence as center of the world.

As we have said, this change in the structure of language was forced by the biological lack of understanding *per se* of the Renaissance language and by the diversity of contradictory, breathless, ambiguous, and approximate messages regarding the future that this century will face.

Michelangelo was the one who was aware of every acknowledgeable structure of his century and forced them to their extreme consequences, thereby offering Mannerism a "category" that surpassed the times and the canons to which it was assigned.

At this point, it is interesting to note the change in the musical language of these same centuries. In Italy, as in all of Europe, the prevalent structure of music during the fifteenth century was the counterpoint. A closed melody had other melodies simultaneously super-

imposed on it that were rigorously constructed on the principal ones. Therefore, it is a structure with horizontal bands, each one coherent in itself and with the whole—a unitary structure. The sonorous fantasy is excited and controlled by a subterranean rational fabric that is often of mathematical clarity (think of Dufay, Després, Gaffurio, Arrigo Tedesco, etc.). By association, the architecture of Alberti and Michelozzo comes to mind.

By the end of the fifteenth century, these groups of horizontal bands become so complex and bizarre (involving up to thirty-six voices) that the structure of the counterpoint is transformed into a metaphysical game, a secret language that is no longer commonly consumable. In this way, the new harmonic structure with vertical sound blocks that are strongly sensual and painterly, juxtaposed one to the other without ties of melodic consequentiality, arises in the restlessness of the early sixteenth century. This is a structure that breaks up the melodic coherence of the Renaissance, substituting for it a series of sonorous aggregations, the sequence of which can be evoked with consonant or timbre tonalities alone.

During the late sixteenth century (Palestrina, Orlando, di Lasso, etc.), harmony and counterpoint provoke sound sequences that come to reach hallucinating effects by the beginning of the seventeenth century. One thinks of the work of Gesualdo, Prince of Venosa, the wife-killer and a very strange character indeed.

The seventeenth century inherited the fundamental structures of Mannerism but added others. One of these structures expunges extreme limits reached by earlier ones, such as the stochastic nature of certain groups, as we see in Michelangelo's Porta Pia, his crucifix of St. Peter, or his Rondanini Pietà. This stochastic nature of groups is not possible for someone like Zaccari, nor for Giulio Romano working *extra moenia*.

One of these added structures, decisive for change in the language, is rationality understood not as consequence or direct acceptance of the scientific culture that began in the same century but as rigorous coherence "interior" to each work, respecting the rules of its freely chosen geometry. This rigorous coherence evolved as a refusal of and liberation from Mannerist

language and its worn-out, casual, painterly astructural codes. It is therefore algorithmic evolution inside of and inherent in the architectural language to the formation of which external attitudes (such as scientism, rationality, pre-enlightenment rationality, the spirit of the counterreformation, and the ambiguous religiosity) contribute.

This coherence of Mannerism, understood as a mutation of certain of the most unbalanced structures, is quite different from that of the Renaissance, which was expressed as transcendent rationalism, true rationalism, unisentric and universal, and theoretically outside of man. Baroque coherence is instead a polycentric one in which the freedom of the individual became individualism. It respects the rigorous ethics that this individualism involved and consequently is alienating to the communal rationales belonging to the past.

There is no doubt that the person that clearly grafted new structures onto the structures of Mannerism to form what I would call the Baroque—and in particular, the great Roman Baroque—was Borromini; that exceptional human mechanism of signs. Borromini understood several fundamental structures in Mannerism that have already been noted: the temporality of consumption, the strong *chiaroscuro* that allows for the legibility of signs and their elementary aggregations, and the study of lighting effects indispensable for this legibility. He repudiated others, such as casual groups, contrasting them with structures of coherence and tectonics, even if purely represented in architectural images.

The temporality of consumption is not understood through the complex diagrams of Michelangelo but in the accepted meaning of the term "Mannerism" implying the long and precise time of commitment invested by the consumer. Although he is a self-declared descendant of Michelangelo alone—and truly he is—he did not take from Michelangelo those multiple ideal structures whose temporality of consumption had their own rules of metaphysical conduct, coincident with the law of the pure course of vision. Instead, Borromini extracted the fundamental root; that of the structure of architecture as sculpture rendered in a material that, absorbing articu-

lation and tectonic juncture, in the end becomes homogenous, crystallized. From this particular lesson, he extracted his own general fundamental structure.

Borromini did not naturally concede to the worn-out groups of signs of Mannerism, devoid of any expressive force, or to a permanent stochastic possibility of aggregating them. I use the word "permanent" because in fact, he did use aggregations in his vertical structures. Think of the bell tower of Sant'Andrea delle Fratte, a visual montage of outbursts of autonomous elements that simply coexist.

In any case, Borromini's message was so powerful that it required a perfect and accentuated diction, making necessary a new series of signs and codes for their combination. The human mechanism reacts and connects its sensitive and intellectual structures in a certain way that determines their consequent relative behavior. In its evolution, the human mechanism—due to an economy that seems inherent in natural structures in general—systematizes and fixes these impulses and their reactions in a certain number of groups, until these aggregations become the conformation of their own structure in such a way that a singular mechanism results in a certain characteristic, and a certain group of individuals—depending upon their superior limitations—produces what we call custom or civilization.

Even in that particular human mechanism in which messages arise—not explicit except as a force or pressure and a will to represent them—the impulses and reactions are organized into particular groups that are more adept at projecting themselves onto the concrete world to formulate a language that makes the interior message more precise and one with the signs and codes that are transmitting it to the exterior. One could, perhaps, by means of a certain expository facility, single out these particular structures of communication into three strictly interdependent groups: first, the group of structures that projects itself concretely to construct elementary signs and rules for their aggregation; second, the group of structures that determine, within these aggregations, the global organization; and third, the most impalpable and remote group of structures, which determine, support, and justify these global structures. Naturally it is evident that the activities

of the three groups are not carried out in that order, but simultaneously, in continuous internal circulation.

These structures of the three groups become generalized by their continuous application. It should be clarified, even though it is obvious, that here we are using a single vocabulary word, and speaking both of the internal structures of the mechanism and of the other external structures that the first internal structures form by projecting themselves onto a concrete world. We will try to loosely identify the structures that are active in Borromini's work. It should be immediately noted that in his work Borromini without doubt applied a desire to create new things to the use of elementary semantic signs and to the rules of their primary and general laws of aggregation—a desire that was continuously reaffirmed and became one of his implicit fundamental messages. It is a subversive, pragmatic, and existential message that explicitly refuses traditional tensions, for which all of yesterday's actions are refuted, or better yet, superseded. For this reason, its constructions have the fascination of apparitions, facts that are separate from the fabric of the world and anti-urbanistic in the sense that they resist being part of a communal language. They negate every point of attachment with other languages.

This desire, sustained and driven by the pressure of a new message and by a subconscious Luciferian pride, leads Borromini to a continuous transformation of elementary signs and aggregations of signs. We must also remember that the seventeenth century added the rigorous fantasy of "variations" by Monteverdi, Frescobaldi, and Carissimi to the complex musical language of Mannerism, and thereby changed it.

For each elementary sign that he incorporates in his code and for every other component of this sign, Borromini works according to a precise rational structure. He verifies and then exalts their generative seeds, filling them with excitement. Take, for example, capitals that become luxuriant, tropical explosions in which the resonances of late Roman plasticity are noticeable; or even capitals laminated like pieces of metal turned on a lathe; or bases whose sequences of modulations—now nervous and sharp, now robust, now sensual and abandoned—seem, with clearly Michelangelo-esque process, to be born from the

qualities of one elastic material that is extremely sensitive to the exalted suffering of loads. Notice signs known as tympanums, whose form is always one of covering and above all of enclosing and coordinating a group of elementary signs, but here are deprived of every reference including symbolic references to tectonic functions.

Moldings surround masonry openings, disquieting in the succession of prominent and then deeply excavated material, and become negations of the material. Moldings are projected and negated. Moldings rise up well beyond the limit of the level of the openings to which they are affixed and then fall back down, only to rise up again to resolve themselves as perspectival *tespiettes* of so-called ornamental panels above doors, giving excitement and mystery to the aperture, the mystery of its non-materiality, the mystery of passing beyond to the unknown as if into another destiny. The window apertures in Giotto's paintings come to mind. It seems as though a disturbing, vigilant eye watches us from their darkness.

The aggregations of elementary signs are assembled with equal amounts of vigor and fantasy working on the structure of spaces interposed between the elements; spaces reduced to their minimum, in which the concentration of signs aids their potency, making explicit their exalted force of attraction—attraction that generates an internal void when condensed. The extreme density of aggregation entails organization, dividing into syllables the elementary signs of great precision and power. One must recognize the taste for the pictorial and the violent *chiaroscuro* that Mannerism had already introduced, although in a totally different way. The new signs and rules for aggregation that we have mentioned make up the primary code that Borromini formulated in his desire for representation.

For the large structures of aggregations—for the primary aggregations—the discussion naturally becomes more complex. It is logical that the elementary signs and their aggregations are already structured according to a certain general aggregation that, as such, cannot disavow the same qualities and possibilities of agglomeration or decrease in density (the windows and pilasters of Palazzo Propaganda Fide, windows compressed between capitals

of the first gigantic order on the façade of the Convent of the Filippini, window-loggias in the base of the bell towers of the Church of Sant'Agnese). However, these aggregations will find their stability and their reciprocal topological position within a general structure of support and meaning. The code of this structure forms the concrete nature—now concave, now convex—planar in which all points are in relation to each other. Borromini accepted the general structure of planar support, of two-dimensionality, only where it was strictly necessary.

The general structure of the great spaces of support is in the always curved architecture, three-dimensional and, for different intimate reasons, internal to the structure itself. It may be possible that the convexity or concavity may have been supported by external suggestions such as:

a). The desire for conceptual precision that makes a curve into an intellectual concreteness, whereas it makes a plane, like a straight line, into an ambiguous concreteness, an infinite limitation of a series of oscillations, conceptually impossible to transfix.

b). Memory struck by the direct vision of Roman ruins, especially Hadrianic ruins, and by figural fantasies such as those in the engravings by Montano, a series of "variations" on the theme of antiquity, and collected in subsequent editions (seven during Borromini's lifetime). These were certainly present in the Roman environment, also due to the testimony of Soria, and must have drawn Borromini's tension toward those generalized nonconformist structures—convex, concave, concavo-convex, undulating—toward which he was driven for other reasons.

To understand the conceptual structure of the formation of the spaces and of the consequent laying out of materials in their form and in their singular way of receiving the elementary aggregations of signs in certain particular works by Borromini, one must study the genetic code of these structures. There exists a series of generalized structures of an elevated degree that are at the origin of the fundamental formulations of Borromini's work. I wish to list a few of them here as hypotheses that, even if they are not accepted, may at least evoke alternate suggestions for the reading of Borromini's work. First, the generalized structure that formulates and

imposes the space as legible and understandable in its every point. Borromini had clearly rooted this structure as an intolerance of any ambiguity of concept or legibility, almost as a deep ethic of responsibility toward the social world for which the works were destined—structure that was strangely referable to certain analogous Renaissance positions, even if due to completely different genetics. Space for Borromini had to be enveloping in every direction, every point sensitively and intellectually understandable and conquerable. This is an experiential exigency of the space that involves the decisive negation of corners, those "enemies of architecture"—exigencies that seem to extend to the entire world in which we operate and that are equivalent to the intellectual clarity from which every uncertainty wants to be expunged. In corners, space is lost, broken, escapes, and is not conquerable. In corners, phenomena of ambiguity occur that are disturbing, that leave us in suspense like a conversation suddenly broken off. In the Renaissance, only Laurana felt the disturbance of the corner in the courtyard of the Palazzo Ducale of Urbino and solved it with extreme purity, with the façades of the four buildings—ideally independent and only placed close—together with symbolic breaks through which space flows in vorticeous continuity.

The second generalized structure of Borromini causes the material of his architecture to be formulated as compact plastic material that allows corrugations and condensations but refuses articulation and conjunctures. As we have mentioned, Borromini refuted the lesson regarding an articulated and stratified tectonic material that behaves according to multiple ideal structures, which are superimposed or juxtaposed in the architecture of Michelangelo. Instead Borromini used their immediate counterexpression that went beyond the intellectual perception of any articulation and accentuated the values of monumental sculpture in a block of ideal, unitary, and compact material. In the *Opus Architectonicum* there is an illuminating declaration with regard to it: "Because if the edifice could be made entirely of one baked material all in one piece without any joints, it would certainly be a beautiful thing." Citing a turret outside of Porta del Popolo with

"screens made of cut flat tiles," the idea of that material took root in Borromini. Probably the turret in question was one of the six that lead from the Porta del Popolo to the Tiber River. Many edifices from the periods of the Flavians through the Antonines have walls composed of small, sharpened terra-cotta elements, as thin as two and a half centimeters and very tightly ordered. Even today these walls can be seen on the sepulcher of Anna Regilla and on a few tombs on the Via Latina. It is important to note that on these particular compact wall materials there were framed and sculpted friezes, as if they had been carved from stone. Upon this ideal compact material that "would certainly be a beautiful thing" Borromini was to graft the fantasy of the generalized structures of his creations.

It is on this structural conception of a plastic material of metaphysical homogeneity that we will attempt to interpret the fundamental reasons and the drama of his most successful works. In the church of the Filippini this material is expressed admirably; its molecules are small sharpened pieces of terra-cotta only a finger in length with the most minimal joints. This quality of material makes us aware of the principal architectural façade of the Church of the Filippini as sculpture and only as sculpture of extreme elegance, without any dramatic articulations, more or less contradictory and more or less weight-bearing. Each essential group of signs that compose the central doorway is one tectonically articulated organism. In the drawing of Windsor, which we are lucky to have exhibited at this time in our academy, this compact expanse of wall surface that leads to sculpture is in fact partially denied by the interposing of the colonnade structure of the second order. Strictly in my opinion, the design is antecedent to the realized thought, a design rejected by the priests and by Borromini himself, and it is probable that because of this rejection the concept of a single homogeneous material was brought to a higher level of maturity. It seems unlikely that it occurred after the realization of the church, because of the stupefying graphic and expressive beauty of this design. It is difficult to think of it as a preparatory sketch for an engraving, although this engraving is in fact published in the *Opus Architectonicum*. It might be curious, or at least not irrelevant, to reveal the

relationship between Borromini's position with regard to this ideal material and, for example, that of the Greek architects of the Propylaea or of the Parthenon. Here as well, the material of the columns was conceived as a single piece, as if it had been cast; the joints between large stones are incredibly subtle. The awareness of expression through a material without discontinuity is evident. It becomes even more evident when it is revealed that these joints were covered over with a thin layer of stucco that, in effect, offered the sensitive and immediate consumption of the homogeneity of a single material.

It is always interesting to compare Greek architecture with that of Borromini. Because of their most secret and defining structures, the two worlds seem similar, especially if one considers the façade of the church of San Carlino, which is of a compact and rigorous lyrical logic like the most beautiful pieces of Greek art. In this sense Borromini was a classicist like Brunelleschi in the interior of the church of Santo Spirito, which belongs to the same world of mathematical rigor.

The third generalized structure is the unitary and homogeneous material that is condensed where the most weight will be supported or where the construction will be most in need of security and that becomes spread thinner where lesser loads are required. This condensation of the ideal unitary material in certain areas—and therefore a nondistinct tectonic articulation—is exemplified with stupefying evidence in the Torre dell'Orologio. For this structure two kinds of brick were used: one very thin and sharpened to two and a half centimeters in height, similar to that used in Anna Regilla's sepulcher with very subtle joints that confine the highest density and force to the extremities of the construction; and another for the body of the building included between these two extremes, with bricks that are three and a half centimeters high.

Borromini, together with the concept of a unitary material whose condensations and expansions are controlled *a priori* for predictable tectonic reasons, seems to explicate a thought already present in the interior of San Carlino of a material that condenses and dilates, taking form according to an external and unpredictable destiny.

The fourth generalized structure is defined as space conquered despite the opposition of the world. The works of Borromini that have come closer to reaching their goal and seem to owe their achievement to this fourth generalized structure, which I will now explain even if only as a hypothesis of major influence in the reading of his architecture. Space is a conquest in the sense of the desire for representation by means of a material that is as obedient as it can be despite the opposition of an exterior world. There is therefore a tension in the expansion that opposes this material against the world and the flow back due to the opposition of that same world. For this reason, in Borromini's works space is drama. Drama between the forces that want to open and enter into infinity according to the Faustian will of the architect and the opposition of the world to this rising up to the divine. All of Borromini's spaces seem to conceal this dramatic opposition. The interior of San Carlino is already a first witness, but this opposition reaches its most clear and violent expression in the forms of the interior of the church of Sant'Ivo alla Sapienza. Material here is driven to expand in every sense; in certain areas the opposition is insurmountable, in others it concedes, but then it is taken up again more violently, lacerating the forms. This is the dramatic sense of the interior space of Sant'Ivo, which runs and takes the fabric from the base to the top—it reminds us of the large crenate ribs that follow the opposition of the base zone—where they are interrupted for the brusque imposition of the worn-out traditional symbol of the lantern. Perhaps up high the space should have exploded, breaking and perforating the material in order to rise up toward the sky, such as in the solution used in the Chapel of Santa Sindone by Guarini.

I believe Borromini deeply understood the space that arises from a tension between two opposing gravitational fields that fold and curve the material. The enclosing side walls, pushed and in tension in the Sforza Chapel must have helped him to identify this fundamental structure that he projected in the formation of spaces. Perhaps in consonance with his thoughts, the plasticity of the ruins of the Piazza d'Oro and the buildings that could be read at that time, such as the edifices still legible of the type found at

Bala and drawn by Sangallo and the "variations" of Montano that we mentioned earlier, also played a role.

Above all, this structure of Borromini's work that I propose as an influential hypothesis is the speculum of his character; of his judgment on a hostile world—a world that can only be overcome by breathlessness and terrible desires. The conquest of space structured in this way consequently brings a condensation of density there where the tensions of the external world are most strongly opposed to an expansion where material advances with more ease, ideally becoming thinner. If the material could push itself to infinity at its limits, it would have the impalpable density of the heavens.

It is worthwhile to observe that if Borromini's spaces have geometric references, these in my opinion are secondary genetic seeds and are useful for only two reasons:

1. The coordination of the invariances as we have noted with regard to Renaissance proportions.
2. Since there is doubt about forms that oscillate in a halo of light, to define them one chooses a justifying context, a kind of random resignation in a number or geometric figure that has some inherent value in itself.

It is in the mature façade of San Carlino that the expression of the contestation of the interior space becomes a drama exalted on the exterior. Sedlmayr's clear diagram might have been striking had it been integrated with the evident directional tensions between interior and exterior. The façade of San Carlino exists within a contradictory gravitational space with two opposing, competing forces. Against the force of spiritual—pushing expansion of the interior—it seems as though the world has put up a reinforced dam, almost blasphemous and pagan, with altars and sacrificial bucrania on the base. The tensions are contrasted, but the center where the pressure is very violent surrenders and is lacerated in certain points, such as where the saint appears in his (almost sacrificial) edicola. This seems to clarify even the difference between the ideal temporal structures of Michelangelo that unfold during mythic times and the spatial structures in dynamic equilibrium of Borromini. In Borromini there is no narrative: there are forces in tension and in equilibrium that could be broken from one moment to the next.

The fire of expression is in the form of the walls and the space they define. For this language the codes of aggregation of elementary signs that are unfolded on these walls are traditional, cold as it must be, because it is not interested and hampers the extraordinary spatial code. Spatial forms such as Sant'Ivo seem to have their own meaning of violent desire in opposition to the world and also of consequent aspiration to a religiosity of being happily lost in God.

Borromini was conscious and proud of the suffered richness of his architectural world and must have suffered deeply himself on account of that different and new language that Bernini proposed in his last years—certainly a less suffered language, but also coherent and evidently of immediate realization. The Berninian irrationality in the Fontana dei Fiumi, even if controlled to the millimeter, is immediately emotional. The apocalyptic wind that strikes the rocks folds them according to rigorous and disturbing directions. Borromini responded with rigor, worthy of the Parthenon, in the façade of San Carlino, in which his lyrical logic bends every fantasy according to a transcendental order.

Borromini's definitive shattering because of the tensions of his melancholic nature and a certain ambiguous sense was decisively contributed to by the completion of the portico of St. Peter's, which opened the way to a completely different language from his, one that was appropriate for the scale of the work but above all to the consumption of the masses that rushed to the aid of the Basilica of the Apostle. The elementary signs of this architecture are essential, almost classical. The code that regulated its aggregations is extremely simple. The time necessary for its consumption is abbreviated. Emotion and the perception of the new language of signs are rapid and profound. In terms of theory of communications it is interesting to examine and compare the two kinds of languages, if only in summary relationships that mathematical formulation of the theory can permit today in architecture. It is clear that Borromini's elementary signs are more numerous than those of Bernini, and that therefore the information in each message is more concise than Bernini's messages. We know that the richness of signs gives precision to the message in the sense that every group is more

meaningful than another with fewer signs. This precision, however, does not take into consideration the unity of the information with regard to the unity of time that is a determining factor for the receiving mechanism—in our case, the eye. In fact, Borromini's code, taken in the context of an entire work, gives in the unity of time a lesser amount of information than that of Bernini, because the elementary aggregations of the code are not directly dependent on each other.

In Bernini's work the repetition of signs and elementary aggregations and their strict dependence upon one another lead to a reception of information—that is to say, to a reading that is rapid and fully meaningful. In this sense of the brevity of the reading, Bernini's Baroque is closer to the Renaissance, with its brief readings, and prepares together with other vectors the advent of neoclassical structures belonging to the democracy of the masses that from the end of the eighteenth century were to construct the new social world.

Because each group of elementary signs is more meaningful, Borromini instead prepared the fortune of his codes in the Western world, separated however, from the generalized fundamental structures that we have spoken of, which because of their complex weaving were lacking in possibilities of widespread consumption and only understood by the elite and great spirits such as himself, Borrettini, and Guarini. Even today Borromini's fortune is recognized as the result of his signs and their primary aggregations, which have provided a cultural shock by extreme contradiction to the elementary signs and very worn-out "para-elementary" signs of the architectural language known as rationalism.

It is the damasklike beauty of his constructions that is superficially impressive, and not the reading of their exceptional texture. It is the external sensual charge that is moving, and not its transcendental logic, and this just at the time in which culture became sumptuous and in a certain sense Baroque within a society that aspired—as it should—to being an essential and economic democracy. In closing, one should note a coincidence that should not be underestimated: in July of 1667 the portico of St. Peter's, with exception of the steps, was finished; Borromini died on August 3, 1667. In this regard, I

like to ponder the fact that on the verge of death Borromini remembered, in a Socratic sense, to offer wise to the priests.

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"Where two or three are gathered in my name..." (Matthew 18:20)

1. During the course of the Council, among those passionate about modern art in relation to sacred buildings, the spirits most attentive to and moved by the dictates that became evident during the successive sessions became aware of the great dilemma that—even before the Council ended, and in that unforgettable way in which it ended—numerous architects solicited by conferences and competitions had begun debating and designing with a dangerous (or at least, incautious) vehemence—although with eager religiosity, new sacred spaces and alterations to those already existing, which were often admirable for the use of the new liturgy that found its full sense, splendor, and content in the total dictates of the Council.

2. It is true that the *Constitutio de Sacra Liturgia* was promulgated in December of 1962 and that the *Istruzione*, or instructions for its application, were approved by the *Consilium* provided for that purpose in September of 1964, with orders to start in March of 1965—that is, more than a year ahead of the scheduled end of the Council. It is also true, however, that the indicative instructions in these documents regarding new churches and eventual modifications of sacred spaces in existing churches were of a measured sobriety and anxious restraint.

These instructions presupposed their clarification and maturation in that fundamental spirit, which was made clear in the stupendous speech by Paul VI at the closing of the last session and in the inspiration and dictates of the entire Council. The *Istruzione* were dictated like splendidly designed arches in the sky, the projection of which on earth, however, required a mature soul—or *ánimus*—perhaps martyred, enriched, and made clear by the fundamental spirit of the entire Council.

In the *Constitutio* and the *Istruzione* the last objectives to be reached were inspirational and decisive: "[To the liturgical assembly] the faithful take part with full consciousness, actively and fruitfully." Instead considered reservation is used to leave the widest opening for in-depth, coherent inspired solutions—that is, the gestures for the external instrumentation necessary for