Erik Terlouw

THE ARCHI-TECTURE OF REASON

The detailing of the mouldings and the other elements that comprise a building are to architecture what words are to an oration.

Germain Boffrand, Livre d'Architecture, 1745

The wealth of materials used, the grandeur of the building, the precision and neatness with which it was built and its symmetry: these were the fundamental beauties that Claude Perrault ascribed to architecture in a 1683 text that can be seen as the beginning of rationalism in architecture, the *Ordonnance des cinq espèces de colonnes selon la méthode des anciens.*¹ This collection seems very much removed from a view of architecture that seeks to find in it something akin to a language, that is to say a structure that in its capacity to visualize, represents something. Even the term 'symmetry', which in the sixteenth and the first half of the seventeenth century meant a harmonious, proportional relationship between the elements and the whole of the building, and which thus linked architecture to the world of (neo-Platonic) ideas, did not signify anything more to Perrault than it does to us.²

ARBITRARY BEAUTY

Yet, as the rest of his text makes clear, these 'positive beauties', precisely because of their unquestionable nature, are actually of little import for architecture as a science. In their

Claude Perrault, Mémoires pour servir à l'histoire naturelle des animaux, frontispiece by S. Le Clerc, 1671. Louis XIV and Colbert visit the Académie des Sciences. In the background the new observatorium, still under construction, can be seen

'In order to judge this correctly we must suppose that there are two kinds of beauties in Architecture, that is those grounded in persuasive reasons and those that depend solely on prejudice. I consider the beauties grounded in persuasive reasons those through which works must be pleasing to all ... such as the wealth of the material, the grandeur and the magnificence of the edifice, the precision and the neatness of the construction and its symmetry,' Ordonnance des cinq espèces de colonnes selon la méthode des anciens (Paris, 1683), iv ff. The wealth and grandeur were not perceived as such by everyone. Simplicity also had a beauty of its own. François Blondel assailed Perrault on this point; see Wolfgang Herrmann, The Theory of Claude Perrault (London, 1973), 133. But of course Perrault did not mean that every building should be as grandiose and as big as possible. In his Abregé des dix livres d'architecture de Vitruve (Paris, 1674), he had already spoken of a 'reasoned use of the posi-



stead, Perrault posits beauties he calls 'arbitrary', 'for they depend on the will to give a certain proportion, a form and a certain shape to things that could be different in all of these things without being misshapen.' Architecture is about knowing this latter form of beauty: 'It is a fact that knowledge of the arbitrary beauties is most essential in forming what is called taste, and that only in this do true Architects stand out from those who are not.'³

The distinction that Perrault draws is in the same vein as that drawn by Malebranche a few years earlier in his De la Recherche de la Vérité between two kinds of judgements (Jugements). The first, which coincides with Perrault's positive beauties, is 'a judgement of the senses . . . which exists within us, without us and even in spite of us'. The second is 'a free judgement of the will, which one can also discard if one wishes to avoid errors'.⁴ Claude Perrault, even though he had designed the Paris Observatory and the new east wing of the Louvre, was not primarily an architect, but a man of science. He had been a member of the Académie des sciences since its founding in 1666, where he concentrated mostly on comparative anatomy and the invention of all manner of machines and measuring instruments.⁵ Colbert, the driving force behind the founding of this academy, likely commissioned Perrault to write a new translation of Vitruvius's Ten Books on Architecture, the Libri Decern, in 1667.⁶ In the annotated translation of this book, which had functioned as a sort of law book for architecture during the Renaissance, and in his own architecture treatise, the Ordonnance des cinq espèces, Perrault endeavours to subject architecture to the same kind of analysis that others, particularly Descartes and Malebranche, had previously applied to the other sciences.

The writings of Descartes, Malebranche and Perrault cover different domains, of course, but they converge in their method of analysis. In general terms we can say that this is an analysis of the imagination, of an explication of the representation present in thought. During the classical period defined by Michel Foucault, this also entailed, and without any clear distinction, an analysis of the language, of the sentences, the sequence of words, regulated by grammar, through which this thought was expressed.⁷ The imagination that earlier, in the sixteenth and the beginning of the seventeenth century, had been the quintessential faculty by which to acquire knowledge, through the transformations that it could engender in representation, was now, in the latter half of the seventeenth century, the domain of prejudices and errors, because it linked things and their characteristics in a vague, never actually extant similarity. Wherever Jean Martin, in his 1547 translation of Vitruvius, uses the word 'imagination', Perrault resorts to the Cartesian 'meditation'. Even the image evoked by architecture now emerges, in Perrault's texts, as a bias (prévention), which places atop one another or groups things that do not do this in reality. A bias that blurs judgement and begs for dissection.

tive beauties' – Antoine Picon, *Claude Perrault ou la Curiosité d'un Classique* (Paris, 1988), 137. 2

Perrault himself went into detail about this difference in meaning. He argues that the term symmetry as it was used by Vitruvius is synonymous with proportion, and uses the latter in his translation. For the use of the term symmetry in French architecture treatises, see Werner Szambien, Symmétrie, Goût, Caractère, Théorie et Terminologie de l'Architecture à l'Age Classique 1550-1880 (Paris, 1986), 61-78. For the link between harmonious proportions and neo-Platonic ideas, see Erwin Panofsky, Idea: A Concept in Art Theory (New York, 1968), 53 ff. For the precise development of these ideas in architecture, see Rudolf Wittkower, Architectural Principles in the Age of Humanism (London, 1952). 3

Perrault, *Ordonnance*, op. cit. (note 1), vii.

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THE ARCHITECTURE

Malebranche, Oeuvres, I (Paris, 1979, 1st ed. 1674), 117. William Chambers, after studying Perrault's treatise, drew a distinction between 'particular qualities in Visible Objects that Act immediately upon the organs of Vision' and qualities that owe their power to 'the Ideas we connect with them', see Herrmann, The Theory of Claude Perrault, op. cit. (note 1), 159-160. This division coincides exactly with that of Malebranche, but has the disadvantage that in architecture, virtually everything has to be relegated to the second category, making it unsuitable for the critique Perrault envisioned. In Perrault's categorization, it is not the 'immediate effect' of a particular beauty that is the decisive factor, but its unquestionable nature.

For Perrault's scientific activities, see Antoine Picon, *Claude Perrault*, op. cit. (note 1), 29-101, and for the relationship between his ideas and those of Descartes, see Alberto Pérez-Gómez, *Architecture and the Crisis of Modern Science* (Cambridge, MA, 1983), 23-27.

Already in his annotations to his translation of Vitruvius, Perrault puts the knife into what had been one of the key concepts of architecture theory up to that point: proportion, that is to say the dimensional relations of the elements of a building and of the orders in relation to one another. This application of proportion, in the Renaissance, was one of the crucial means to bind, in the design, the elements of a building into a whole, into a harmonious affinity. These proportions were conceived in a direct analogy with the differences in length of, for example, the strings of a harp or the pipes of an organ, necessary to enable these instruments to produce musical harmonies. As late as 1677, this doctrine was set out in rigid form by the music master of the Sainte-Chapelle, René Ouvrard, in a pamphlet entitled Architecture Harmonique ou Application de la Doctrine de la Musique à l'Architecture. Yet, Perrault asserts based on his physiological studies, 'the proportions of the elements of Architecture have no beauty with the same positive foundation as the state of natural things, such as the beauty of musical chords, which is pleasing as a result of a correct and immutable of Francois I, was working proportion and is in no way dependent on fantasy.⁸ The eve does not possess anything like an eardrum that immediately registers proportions as an effect, as a vibration, whether pleasing or not. In the domain of the image, therefore, there are, according to Perrault, no proportions that are beautiful in and of themselves, through the pure operation of nature. In representation, the positive and the arbitrary beauties are mixed together. This unreflected, unanalysed mixture and the force of habit are the cause of the incorrect judgement that these proportions contain an inherent truth: 'because these proportions were found in buildings that also possessed other positive and persuasive beauties, such as the materials used and the precision of the construction, they have come to be approved of and cherished, even though they held nothing positive.⁹

In architecture, proportions, unlike in music, neither belong to the positive beauties, nor, in Malebranche's categorization, to the jugements des sens, but to the jugements libres, that is to say the uncertain, slippery domain of knowledge: 'the ear is not capable of communicating the knowledge of this proportion; but the eye, which is capable of making the proportion it loves knowable, can make none of the effect of this proportion palpable to the mind except through the knowledge of the proportion that it communicates'.¹⁰ Architecture, for the most part, must be considered in relation to the world of ideas - to the more or less correct ideas that are expressed in architecture in the representation it communicates. It is in this, within classical epistemology, that a specifically architectural formal canon was comparable to a language. In the Ordonnance des cing espèces, but also in the theoretical treatises that would follow, architecture is seen, in its formal methods of arrangement, as an instrument that, in its categories and distinctions, should produce a clearly legible representation of itself and of the use for which it is intended. Whenever, in the last guar-

Les dix livres d'architecture de Vitruve, corrigés et traduits nouvellement en français avec des Notes et des Figures . . . par M. Perrault (Paris, 1673). A second, extended edition was published in 1684, and would remain the sole authoritative Vitruvius publication until the nineteenth century. That same year, 1667, Colbert established a committee, consisting of Louis Le Veau. Le Brun and Claude Perrault, which was commissioned to produce the definitive design for the new east wing of the Louvre. This situation is comparable to that around 1545, when Jean Goujon collaborated on the first French translation of Vitruvius, and at the same time, by commission on the design of a new wing for the Louvre, a design that can be seen as an architectural manifesto, in which the rediscovered science of architecture is proclaimed.

Michel Foucault, De woorden en de dingen, een archeologie van de menswetenschappen (Baarn, s.a.), 110, published in English as: The Order of Things: An Archeology of Human Sciences (New York, 1973). Perrault's distinction between positive and arbitrary beauties coincides with the distinction drawn by Cordemoy in his Discours physique de la Parole and in La Logique by Port Royal between signes naturels and signes d'institution. Picon, Claude Perrault, op. cit. (note 1), 154, had already pointed out this analogy, but subsequently sets aside the analogy with language. It would take us too far afield to attempt to refute his interpretation of Perrault's ideas here. Picon poses the question as follows: is architecture, in Perrault's view, a language, or isn't it? In this respect, as the rest of this article will show, architecture, ultimately, is not a language. The point, however, is that Perrault considers architecture in a way that is structurally similar to the way in which his contemporaries looked at language, and in so doing sets out the first outlines of rationalism in architecture.

ter of the seventeenth century and the first seven decades of the eighteenth century, a link between these formally defined building forms and the use made of them is discussed, we must see in this link, first and foremost, a form of representation. The point is never that these forms follow from their function through some sort of natural process, but as insightful and appropriate an articulation of that use as possible. This part, that is to say the precise form and the formal structure of a building, is the arbitrary part of architecture. It consists, we might concur with Perrault in saying, of 'opinions'. With this term Perrault designates all forms of knowledge. These forms are not simply arbitrary because, as he says in the preface to his Essais de Physique, it is impossible in science to arrive at a perfect knowledge of things, but also because the 'language' in which they are represented (like any other language) has come about through coincidence and habit and thus is essentially characterized by a certain randomness.

RULES

Perrault himself draws a clear comparison between architecture and language only once, when he wants to emphasize the necessity of regulating the forms of architecture: 'Given that beauty has no foundation except in imagination, which causes things to be pleasing insofar as they correspond to the idea that everyone has of their perfection, there need to be rules that form and rectify this idea, and it is clear that such rules are particularly necessary for all the things from which Nature withholds them, such as language, the characters of writing, clothes and all those things that depend on chance, will and habit; it is necessary that human institutions provide for this, and therefore people submit to a certain authority that replaces positive reason.¹¹

Language, in general conceived as an instrument for acquiring knowledge and in its complete sentences considered a representation of this knowledge, must be defined in its structure and in its elements in order to arrive at an unequivocal order that displays this knowledge, capable of being communicated and discussed. Only this sort of taxonomy can make possible specific experiments that contribute to the structure of science. The principles of publicness and the exchangeability of knowledge, and of the comparison and rational reduction of all 'opinions' to as limited a set of principles as possible, are among the pillars upon which the scientific revolution of the mid-seventeenth century was able to take place. Rules, orders and classifications were necessary in order to achieve more positive results.

The state, with its authority, should contribute to the establishment of such rules, and would, in return, derive its stature from the beautiful and profitable results of these rules. This, at least, was the ideal, as outlined in the early seventeenth century in the utopias of Francis Bacon and Tomasso Campanella.¹² The same century witnessed the birth of sciPerrault, Les dix livres, op. cit. (note 6), 1684 edition, 106, n. 12. Q Ibid., 105, n. 7. 10 Perrault, Ordonnance, op. cit. (note 1), iv.

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12 Francis Bacon, Nova Atlantis (1624); Tomasso Campanella, Citta del Sole (Frankfurt am Main, 1628). In 1634 Campanella travelled to Paris, where he was generously received by les grands at court. In 1637 an edition of the Citta del Sole was also published here. The same year, his De sensu rerum et magia was also printed here, a work in which Campanella, in his dedication to Richelieu, urges the cardinal to build the sun city he has sketched. Campanella prophesized a new golden age for the French monarchy; it would become the new, shining centre of a reformed world. See Frances Yates, Giordano Bruno and the Hermetic Tradition (London, 1964), 360-379.

See Herrmann, The Theory of

Claude Perrault, op. cit. (note 1),

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127.

entific academies directly linked to the regulatory authority of the state. In 1635, Richelieu transformed the Académie des *beaux esprits* – a meeting place for a few patricians, founded in the 1620s – into the Académie francaise. Its primary mission was to establish a standard dictionary and a standard grammar for the French language.¹³ In 1648, Mazarin founded the Académie royale de peinture et de sculpture. The model of enlightened absolutism found its definitive form under Colbert. At his instigation, the latter academy, from 1660 onward, was to apply itself to a deduction of an aesthetic doctrine, by means of study and consultation. In 1666, as previously mentioned, the Académie des sciences was founded. Following the death of the elderly Louis Le Veau, who had hitherto served as the *premier architecte du Roi*, the *Académie royale* d'architecture was founded in 1671, with François Blondel as its director.

Perrault's own architecture treatise, the Ordonnance des cing espèces, was intended as a rational proposal for the regulation of the proportions of the five architectural orders (Tuscan, Doric, Ionic, Corinthian, Composite) and their 'characters', that is to say the identifying signs that differentiate them, like the letters of an alphabet, such as the *mutules* under the Doric cornice, the serrated moulding under the Ionic, and the *modillons* he ascribed to the Corinthian and Composite orders.¹⁴ In intention, the document can be seen as a sort of rational standard dictionary, or a standard signature of architecture.¹⁵ Perrault called his arbitrary proportions 'probables' or vraisemblables: 'yet even if in Architecture, in an essential sense, no proportions exist that are true in themselves, it remains to be inquired whether one can deduce probable or reasonable proportions that are based on positive reasons.¹⁶ In essence, his methodology was simple. He compared the proportions identified in the works of Vitruvius, Palladio, Scamozzi and other architecture treatises and laid them alongside the proportions of the surviving structures of antiquity as pictured and meticulously measured in Antoine Desgodets' Les Édifices antiques de Rome (Paris, 1682). From this he simply determined a median, except when rational considerations told him otherwise. In this he was acting according to the doctrine proposed by Descartes in his Discours de la Méthode: 'Among divergent, equally received opinions, I choose only the most moderate . . . not only because they are the most convenient in practice but because they are probably the best.¹⁷

The conceptual basis of the Ordonnance only becomes truly clear in Chapter IV, which deals with the problem of the ratio between the height of the entablature and the diameter of the column. Up to this passage, the text can easily give the impression that Perrault is relegating the whole idea of a system of proportions to the trash heap of an absolute and pointless randomness.¹⁸ The beginning of this chapter, however, tells us otherwise: 'There is nothing on which architects agree less than on the proportion of the entablature in relation to

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Louis Hautecoeur, Histoire de l'architecture classique en France (Paris, 1943-1957), Part III, 462. The official investiture was delayed by the parliament, and did not take place until 1637. 14

Claude Perrault, Ordonnance, op. cit. (note 1), 66. 15

Joseph Rykwert compares the Ordonnance to the establishment of a standard typeface. the Romain du Roy, accompanied by a voluminous report, by a committee of the Académie des sciences: The First Moderns, The Architects of the Eighteenth Century (Cambridge, MA, 1980), 40-42.

16 Claude Perrault, Ordonnance, op. cit. (note 1), xvii. For Perrault's probabilisme, see Herrmann, The Theory of Claude Perrault, op. cit. (note 1), 127-129. 17

René Descartes, Discours de la Méthode (Paris, 1946), 73. 18

François Blondel, presumably after reading several excerpts from the unpublished manuscript, also seems to have interpreted the text in this way (François Blondel, Cours d'architecture enseigné dans l'Académie royale d'Architecture, 1675-1683, Bk. V, 1683, 761, 762; see Herrmann, The Theory of Claude Perrault, op. cit. (note 1), 131 ff). Yet in fact Perrault's and Blondel's concepts coincide in their broad outlines. Ultimately, Blondel felt architecture, and its ordering in particular, should be an expression of 'a stable, constant and indubitable principle', which, as in the other sciences, should be found 'through induction and as a result of multiple experiments'. Their main difference of opinion lay not in this, but in the question of what status should be accorded to the proportions found in the buildings of antiquity, and the related question of whether optical corrections are desirable (see the following text). Modern interpretations have found an early example of relativism in Perrault's 'arbitrary beauties', in which the conventions of building are entirely tied to history, that is to say

the thickness of the columns . . . This proportion, nevertheless, should be the most regulated of all: none is more important, or shocks more when it is not rational. It is certain that of the rules of Architecture, the most important are those that are intrinsic to solidity, and that nothing destroys the beauty of a building with greater power that when one notices, in the elements that constitute it, proportions that are contrary to that which should create this solidity, such as when it seems as though the elements are not capable of supporting that which they must support, or do not seem capable of being supported by that which supports them.'

One of the most crucial proportions for the composition of the orders is here linked to the question of solidity. Perrault, as the text makes clear, is not concerned with actual solidity, but with the apparent, or to put it more accurately, manifest solidity, that is to say a rational proportion between load and support that can be clearly read from the representation that the building presents, a kind of tableau of the mechanics of architecture. In addition, the text implicitly makes clear that architecture, in essence, might also be capable of representing other kinds of rational connections.

Hitherto the height of the entablature had not been linked to the thickness, but to the height of the supporting columns, and in such a way that the height of the main structure increased as the length of each order increased. In Perrault's view, this went entirely against reason. The solidity of a col-

to a specific place and time. Alexander Tzonis reprises this interpretation in Het architektonisch denken. Ontwerp, rationalisering van de architektuur en maatschappelijke macht (Nijmegen, 1982), 98. Herrmann, The Theory of Claude Perrault, op. cit. (note 1), 61, has previously clearly asserted that there is no question of any such relativism here. But he does not arrive at a complete and clear interpretation either. The text only becomes clear when we place the emphasis on the 'in themselves' (en elles mesmes), when Perrault argues, 'properly speaking, in Architecture, there are no proportions genuine in themselves'. and we keep in mind that Perrault viewed his arbitrary beauties in the same way that his contemporaries viewed a scien-

tific language.

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Claude Perrault, Le Louvre, colonnade, 1670-1680



Emmanuel Héré, l'Hotel de Ville, Nancy, 1752-1755



umn depends primarily on its diameter and, Perrault points out, decreases as its length increases. In this situation, 'in which things are so confused that even the most enlightened judges (*Juges*) cannot know them', Perrault opts for a solution that remains as close as possible to existing 'opinions' yet removes the greatest, unquestionable irrationality. He proposes making the entablatures of all the orders equal to twice the diameter of the column.

He opts here, as elsewhere in his treatise, for a simple, easily memorized proportion. In calculating these proportions he ensures that the other principal proportions of the orders can be set out in the same simple, linearly increasing sequence. Given that there are no 'intrinsically true proportions', and that this ordering, like a language, must be seen as a means to represent certain rational connections with some probability. making this as convenient as possible seems an obvious criterion.¹⁹ Perrault's concepts might be summarized as stating that the elements of architecture and their proportions must be regulated so that these rules, as a covenant, can clearly reproduce a certain idea as an agreed-upon sign. Deviations are defensible only when rationales can be given for them, rationales of which they are the depiction, which can therefore be clearly read from the building as a difference. This is why the main structures of all the orders must have the same proportion to the diameter of the columns that support them. This is also why, for instance, the *astragal*, the moulding profile that forms the culmination of the column and can be clearly defined, in the Ionic order, in its proportion to the volute, must have the same dimensions, in Perrault's opinion, in all the orders: 'Given that this proportion is defined in this Order, I see no reason to deviate from it in the others.²⁰

In the fourth chapter of the *Ordonnance* Perrault provided, for the first time, a clear, demonstrable, positive reason for a given proportion, and his reasoning, moreover, was so rational that the *Académie* could find no way around it. In the last weeks of 1688, the *Académie* had reluctantly and with great reservations set out to study Claude Perrault's treatise. In January 1689 it reached the fourth chapter. Its contents must have struck the members of the *Académie* hard. The reading of the *Ordonnance* was suspended, and in subsequent meetings they attempted to regulate 'those proportions that they feel can best be followed'.²¹ The *Académie royale d'architecture* now applied itself to the mission for which it had essentially been founded: establishing a rational architectural doctrine.²²

CLEAR ARTICULATION

Within Perrault's thinking, other uses that had found their way into architecture could now be denounced as abuses, such as the custom, adopted by Palladio and Scamozzi, of allowing the frieze and the architrave to merge, as it were, by the use of 19

Compare Foucault, *De woorden en de dingen*, op. cit. (note 7), 84: 'If, on the contrary, one designates an agreed-upon sign, one can always (and one should!) select one that is simple, easily recalled, applicable to a large number of elements, capable of being distributed and connect to something else.'

Claude Perrault, *Ordonnance*, op. cit. (note 1), 33.

21 Herrmann, *The Theory of Claude Perrault*, op. cit. (note 1), 142-144.

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On the progress of this regulation, see Wolfgang Herrmann, 'Antoine Desgodets and the Académie royale d'architecture' Art Bulletin (New York), 1958, XL, 35. In 1701, with no mention of Perrault, the Proces Verbaux listed as a decision of the members of the Académie that 'the height of the entablature . . . can be determined by the diameter of the column, by always assigning two diameters to the entablature'; Herrmann, The Theory of Claude Perrault, op. cit. (note 1), 124.



Juste-Aurèle Meissonier, proiect for the facade of the St Sulpice, 1726

a concave profile, or the baroque custom of allowing pilasters and columns to 'mix with and contaminate one another'.²³ Just as in the other sciences, the point was to arrive at a clear definition and classification of the different elements.

It is no wonder that it was neither Bernini nor Le Veau, but Perrault who drew the eventual design for the new colonnade of the Louvre.²⁴ This work, as Emil Kaufmann argued in his Architecture in the Age of Reason, became the example for subsequent generations of architects, because it presented a persuasive image of 'clarity and elegant circumspection'.²⁵ For a historian who prefers to direct his gaze to the great differences and profound controversies that can be deciphered from the changing face of edifices. the 'classical' period that began here, one of the few periods in later history to have found a style, in the sense of a stable form shared by large groups, is of little interest. In Kaufmann's words: 'A period of peace and quiet then dawned. From a historical point of view this period is of lesser interest than the struggles that preceded and followed it . . . It is up to the historian to find out whether life, in this interim period, went on under the surface.'

Perrault's analysis can be seen as a somewhat late application of the new scientific concepts to architecture. Once established, it would, in its broad structural outlines, form the basis of architectural thinking. The Ordonnance, in spite of its lukewarm reception by the Académie royale d'architecture, was recommended in Rome in 1696 by the director of the Académie de France as 'the best book of its kind'.²⁶ In the domain of formal classifications, which in this case is to say the way of classifying the elements of the orders and the use made of them in the design of floor plans and elevations, the break with the past was definitive. The baroque or Mannerist play of reflections that, presented in its contaminations and tricks or in a crowded formality, characterized the architectural designs of the early seventeenth century, was broken up into a clearly articulated classification and transformed into an orderly and elegant representation.

As late as 1683, François Blondel, just before the publication of Perrault's treatise, described the broad outlines of the old theory of proportions as set out by Alberti, as well as the analogy between these proportions and the musical harmonies, in the penultimate part of his Cours d'Architecture. He was the last to do so. Only Charles-Étienne Briseux, in his Traité du Beau Essentiel in 1752, would make a not very successful attempt to provide a basis for the harmonic, musical proportions as a design rule, now using the authority still held by Palladio's designs as well as the harmonic distribution of the colours of the rainbow postulated by Newton.²⁷ Briseux, 92 years old and looking back on 70 years of architecture theory, saw only loss: the loss of generally accepted rules that had lent architecture a positive, non-arbitrary foundation. The professors who had succeeded Blondel at the Académie

23 Claude Perrault, Ordonnance, op. cit. (note 1), chapter VIM, 'De la hauteur des entablements' 24

The design of this colonnade was and continues to be generally attributed to Perrault. This attribution was immediately controversial from the end of the seventeenth century, as a consequence of the commission Colbert had given to the trio of Perrault, Le Brun and Le Veau, which included a stipulation that no one was permitted to claim authorship of a particular design at the expense of the others. In any event, Perrault had a significant influence. The final design was virtually certainly achieved in 1669 and 1670 in a constant consultation between Perrault, the draughtsmen's offices of the Agence des Bâtiments du Roi (which was officially led by Louis Le Veau) and Colbert. See Picon, Claude Perrault, op. cit. (note 1), 157-184. 25

Herrmann, The Theory of Claude Perrault, op. cit. (note 1), 142.

On this rainbow, Briseux wrote, 'everything is made distinct, and yet everything is reduced to a single entity. This marvellous effect, according to the experiment of the famed Newton, comes from the fact that the seven colours we distinguish in it occupy spaces that relate in the same proportions as those of the intervals of the seven Tones in Music: a natural Tableau the Creator presents to our eyes, in order to initiate us into the System of the Arts." Briseux's treatise enjoyed little success; Jean-Francois Blondel dubbed it 'of little esteem' (Herrmann, The Theory of Claude Perrault, op. cit. (note 1), 173). Marc Antoine Laugier likely reflects the opinion of his

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HE ARCHITECTURE



Jules Hardouin-Mansart, Versailles, roval chapel, 1699-1710

'have put an end to the teaching of the fundamental principles contemporaries when he says of architecture', the old architect wrote.²⁸

This is not to say that the proportions set out by Perrault for the different orders were simply accepted. On the contrary, aside from the previously discussed simple rule for the main structure, they virtually seem never to have been applied.²⁹ Other classifications of the principal proportions of the order were laid out, in particular by Amédée Frézier and Charles Dupuis, characterized, however, in imitation of Perrault, by a simple linear progression expressed in simple numbers and set out in a single clear tableau.³⁰ In 1745, the Académie adopted the proposition set out in the report Gamier d'Isle had drawn up at its request, in which the proportions between the diameter and the length of the different columns were stipulated in the series 1:7, 1:8, 1:9, 1:10 for the Tuscan, Doric, Ionic and Corinthian order, respectively.³¹

THE STATUS OF THE PAST

These proportions, however, were no longer termed 'probable', but 'median', a designation that implied that the design could deviate from this rule. In this difference of opinion between Perrault and the Académie, the authority of the examples of antiquity as well as a certain design freedom were at stake. The surviving Roman edifices, as the meticulous measurements of Desgodets, unhindered by preconceptions, clearly showed, displayed great variation, which could not be simplified into a single, unequivocal rule. To Desgodets this did not mean that randomness had played a major role in all of these designs. He assumed that there had been rationales underpinning all of these variations, which for him and his contemporaries, however, had reverted into the darkness of shadowy reflection: 'The proportions of Architecture contain mysteries that only the learned can penetrate.³²

The fact that positive reasons cannot be given for every element of the examples of antiquity does not mean that these reasons do not exist. When François Blondel, in his Cours *d'Architecture*, is compelled to admit that for several elements of classical architecture, in particular the Corinthian capital, 'one might with sufficient probability say that the pleasure it gives the eyes is merely derived from custom and the authority of those who first applied it to the work', he immediately adds, 'at least, if there is not a more hidden reason, no less natural, and that causes the pleasure we experience when we see them.'33

Is the age of Louis XIV deficient in knowledge in relation to the ever-shining example of antiquity, or may we think, no, *must* we think that our science and arts are superior to the 'great age of Augustus'? This was the crux of the polemic between the anciens and the modernes that formed the politically charged backdrop against which the controversy between Perrault and Blondel unfolded. This struggle had been

of Briseux's proportions doctrine: 'He should have told us what they consist of; he merely repeated to us the arbitrary opinions of a few ancients and gave us, more arbitrarily still, as a directing principle, musical chords'; Essai sur l'architecture, xxvi; Antonio Hernandez, Grundzüge einer Ideengeschlchte der Franzosischen Architekturtheorie von 1560 - 1800 (Basel, 1972, dissertation from 1965), 102. 28

Charles-Étienne Briseux, Traité du Beau Essentiel (Paris, 1752), 2; 'The disparity of opinions and the controversy between Blondel and Perrault are like the era of the decadence of Architecture in France. Ever since, truth has been concealed beneath the veil of the false and the arbitrary.' His thesis, Briseux writes in this introduction, is born of discussions he had with a great number of his colleagues at the Académie, of whom 'most march confidently under Perrault's banner and refuse to make the beautiful contingent on proportions'. 29

Szambien, Symmétrie, Goût, Caractère, op. cit. (note 2), 44. These principal proportions are equal to the proportions set out in Vignola's treatise. This treatise, because of the regularity and relative simplicity of the proportions set out in it, had become highly popular in France; see Herrmann, 'Antoine Desgodets', op. cit (note 22), 37, 38. 32

Antoine B. Desgodets, Les Edifices antiques de Rome dessinés et mesurés très exactement (1682), preface; Herrmann, The Theory of Claude Perrault, op. cit. (note 1), 43.

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ignited in earnest with the founding of the *Académie française* and would continue to smoulder into the eighteenth century. It mostly flared in the world of letters and poetry, but the other arts and sciences were also drawn into the rhetorical tumult.³⁴

Claude Perrault, himself a declared *moderne*, summed up the position of the anciens, clearly and succinctly, in the foreword to the Ordonnance: 'There has been a desire to reason on the basis of authority, derived from the assumption that the authors of the admirable works of antiquity did nothing without reasons, even if we do not know them.' He accused the anciens of seeking to elevate the status of their discipline by means of a deliberate mystification: 'Aside from a few honest people who, perhaps because they have not given the matter sufficient thought, sincerely believe that classical antiquity deserves the honour of being infallible, inimitable and incomparable, there are many who know full well what they are doing when they cover up this blind respect for the buildings of antiquity, and who are well aware of the desire they have to represent the elements of their profession as mysteries they alone can interpret.'35

It would not be accurate, however, to portray the *anciens* as a bunch of reactionaries who attempted to block all scientific enlightenment. Isaac Newton, to name the most obvious example, can clearly be considered an *ancien*. He arrived at his concept of gravity after a detailed study of ancient, often occult scientific literature and after performing numerous experiments in alchemy, which gave him the conviction that there were 'active forces' at work in nature.³⁶ More precisely formulated, the controversy that divided the two parties came down to the value that the products of the past hold for thinking, for the forming of hypotheses.

The great variation in proportions displayed by ancient edifices was explained, in general terms, by the assumption that the architects of antiquity had carried out optical corrections in the final design. This explanation had some authority, because Vitruvius himself had pointed out this necessity for correction. Perrault had attempted to refute the legitimacy of optical corrections, but had not entirely succeeded.³⁷ In the wake of his arguments, the simple, purely perspectivist correction method developed by Sebastiano Serlio in the early sixteenth century and illustrated in his 1545 treatise could be jettisoned, but they were not persuasive enough to exclude every modification a priori. Contrary to what Perrault would have wanted, deviation remained part of the arbitrariness of the rule. More than 70 years after the publication of the Ordonnance, Pierre Patte would conclude: 'No one has yet had sufficient authority to establish laws that can be inviolably enforced - the reason for this being either the difficulty of finding rules that contain an intrinsic truth . . . or the impossibility of subjecting the human mind to decisions that are not based on principles derived from nature.'38

33 Blondel, *Cours*, op. cit. (note 18), 767.

34 On this struggle, see Rykwert, *The First Moderns*, op. cit (note 15), 25-27; Picon, *Claude Perrault*, op. cit. (note 1), 104-111.

35 Perrault, *Ordonnance*, op. cit. (note 1), xx.

So See Betty Jo Teeter Dobbs, The Foundation of Newton's Alchemy or 'The haunting of the Greene Lyon' (Cambridge, 1975).

37

See W.D. Brönner, Blondel – Perrault. Zur Architekturtheorie des 17. Jahrhunderts in Frankreich (Bonn, 1972), which is primarily devoted to this difference of opinion about the necessity of optical corrections.

38 Pierre Patte, *Etudes d'Architecture* (Paris, 1755), 2; Herrmann, *The Theory of Claude Perrault*, op. cit. (note 1), 143.

The analysis carried out by Perrault, the analysis of imagination, had produced an awkward arbitrariness. An arbitrariness that continued to haunt architecture, in written theory and built practice, without really creating problems: in its structure, the analysis allowed for arbitrariness in the realm of unverifiable hypothesis. Architects, in particular the members of the Académie, tended towards the position of the anciens. Antiquated, Roman architecture remained the shining, ultimate promise and the simultaneously visible yet unknown rule. It gave architecture a hallmark and above all an instrument for internal consistency: a formal order, something like a language. At the same time it established a relative freedom: in the wealth of its forms it provided considerable room to adapt the rules that the academy was constantly deducing to the judgement of the eye and above all, as well, to the specific conditions presented by the design.³⁹

Translated by Pierre Bouvier

39

François Blondel, for instance, spoke of 'the beauty that the difference in places, of use and of order might have altered', *Cours*, op. cit. (note 18), 703. OASE #75