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THEORY AND PRACTICE: GIBBS'S *RULES FOR DRAWING* AND THE RADCLIFFE CAMERA

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James Gibbs's *Rules for Drawing*[1] was one of the most popular architectural works of the eighteenth century, yet it remains undervalued and misunderstood. Never considered as a work of architectural theory, it has always been perceived as a technical work with the aim of instructing craftsmen and artificers.[2] It had a double purpose; as a practical guide to architectural drawing, and as a treatise on the orders, arguably the first by a British writer. By investigating Gibbs's proportional systems, as set out in *Rules for Drawing*, and his composition of its architectural members, it is possible to gain insight into how the book could be used as a handbook, and to understand how Gibbs related theory to architectural practice, going beyond a conventional ornamental comparison. Such a mathematical reading allows us to position *Rules for Drawing* within the broader intellectual framework of the long eighteenth century. To understand Gibbs's practical application of *Rules for Drawing*, the orders at the Radcliffe Camera will be observed on a technical and theoretical level.

GIBBS'S THEORY OF THE ORDERS AND THE RULE OF TASTE

Most writers on Gibbs have treated his *Rules for Drawing* as an instructive technical manual,[3] as a textbook,[4] or as a book on the orders,[5] but they have overlooked its theoretical significance. Caroline Van Eck omitted a discussion of *Rules for Drawing* from her *British Architectural Theory*, while underlining, like Terry Friedman, Gibbs's importance in later architectural writing, seen in works such as Batty Langley's *Ancient Masonry*.[6] Perrault's influence on Gibbs was pointed out by Friedman, and also by Nicholas Savage and Eileen Harris,[7] who acknowledged the difference between Gibbs's method and those of Blum, Mauclerc or Perrault.[8] But the first person to look at Gibbs' proportional system *per se* was Robert Chitham, in his discussion of the architectural orders from Vitruvius to William Chambers.[9] He formulated different conclusions to those reached by previous writers, and considered the proportional influence of Vignola alongside the widely acknowledged influences of Palladio and Scamozzi.[10]

When comparing the diameter-to-height proportion of the column, Vignola's system corresponds best with that of Gibbs, as discussed by Chitham[11] and as shown in Table 1.[12] Gibbs did not own Vignola's *Regola*, and he did not mention him in *Rules for Drawing*.[13] But 'Vignolian' proportions were widespread and popular at the time, as shown by the way in which Antoine Desgodets copied them in his *Traité des Ordres d'Architecture*, of which Gibbs had a copy.[14] Other plausible influences could have been Carlo Fontana's *Templum Vaticanum*, which shows Bernini's proportions used in his colonnade

in front of St Peter's basilica in Rome (the 'Portico Circulare Vaticano': see figure 3, p. 82).[15] The 1:10 proportion of base to height found in the Corinthian and the Composite orders at St Peter's could have influenced Gibbs's orders: a plausible assumption since Gibbs was Fontana's trainee. But the only Renaissance authority on the orders mentioned by Gibbs was Palladio, who, 'in dividing and adjusting his Orders, has no doubt excelled the rest, whom I [James Gibbs] have therefore followed.'[16]

For the proportion of the entablature Gibbs made a distinction between the Tuscan and Doric on the one hand and the Ionic, Corinthian and Composite on the other. When compared with the other major treatises, Gibbs's system most resembles Scamozzi's,

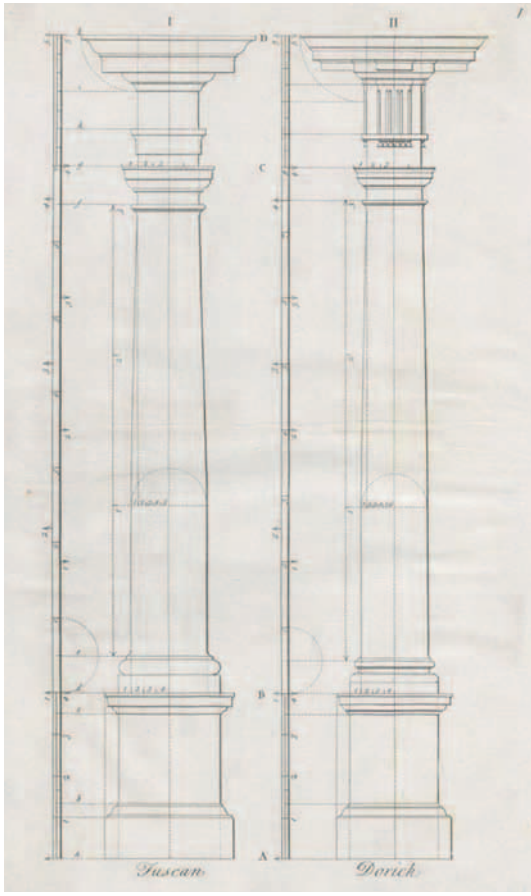

Fig. 1. The Tuscan and Doric Orders from James Gibbs *Rules for Drawing*. (London, 1736), Plate I. (*ETH-Bibliothek Zürich, RAR 1661: ED.2 GF, http://doi.org/10.3931/e-rara-4105 / Public Domain Mark*)

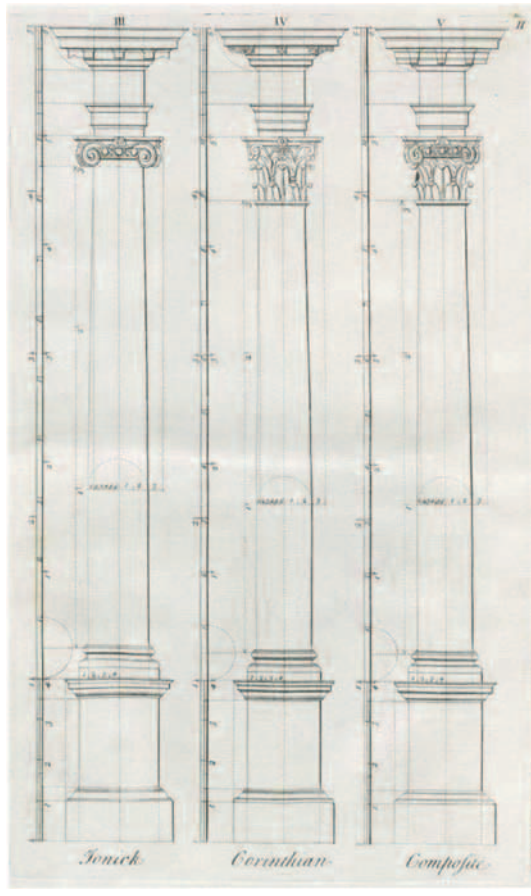

Fig. 2. The Ionic, Corinthian and Composite orders from Gibbs, *Rules for Drawing*.

and to a lesser extent Palladio's, as shown in Table 2.[17] As with the column, *Templum Vaticanum* seems to have been a source of influence; its entablature proportion of 1:5 of the height of the column seems to have been copied by Gibbs for the Ionic, Corinthian and Composite orders.[18] For the Tuscan and Doric orders he recommended the use of a 1:4 proportion. Again, he only mentioned Palladio: 'the entablatures must bear a proportion to them in each Order; for which Palladio has given a Rule which cannot undergo any considerable change, without altering the just Proportions of Columns.'[19]

For the pedestal, Gibbs devised a proportion which is different from, and is clearer than, that set out in any other treatise, as shown in Table 3.[20] Even though the proportions of the pedestal seem to be

Table 1: These treatises present different applications of modules and minutes. The table represents the closest approximates of the diameter-to-height proportions of the column.

COLUMN					
	GIBBS	VIGNOLA	PALLADIO	SCAMOZZI	PERRAULT
Tuscan	1/7	1/7	1/7	1/7½	1/7⅓
Doric	1/8	1/8	1/8½	1/8½	1/8
Ionic	1/9	1/9	1/9	1/8¾	1/8⅔
Corinthian	1/10	1/10	1/9½	1/10	1/9½
Composite	1/10	1/10	1/10	1/10	1/10

Table 2: These treatises present different applications of modules and minutes. The table represents the closest approximates of the diameter-to-height proportions of the entablature.

ENTABLATURE					
	GIBBS	VIGNOLA	PALLADIO	SCAMOZZI	PERRAULT
Tuscan	1/4	1/4	1/4	1/4	1/3⅔
Doric	1/4	1/4	1/4½	1/4	1/4
Ionic	1/5	1/4	1/5	1/5	1/4⅓
Corinthian	1/5	1/4	1/5	1/5	1/4⅔
Composite	1/5	1/4	1/5	1/5	1/5

Table 3: These treatises present different applications of modules and minutes. The table represents the closest approximates of the diameter-to-height proportions of the pedestal.

PEDESTAL					
	GIBBS	VIGNOLA	PALLADIO	SCAMOZZI	PERRAULT
Tuscan	1/4	1/3⅓	1/8⅔	1/5	1/4⅔
Doric	1/4	1/3½	1/4⅔	1/3⅗	1/4⅓
Ionic	1/4	1/3¾	1/4⅓	1/4¼	1/4
Corinthian	1/4	1/4¼	1/4½	1/4	1/3⅞
Composite	1/4	1/4⅛	1/3⅔	1/3⅔	1/3⅔

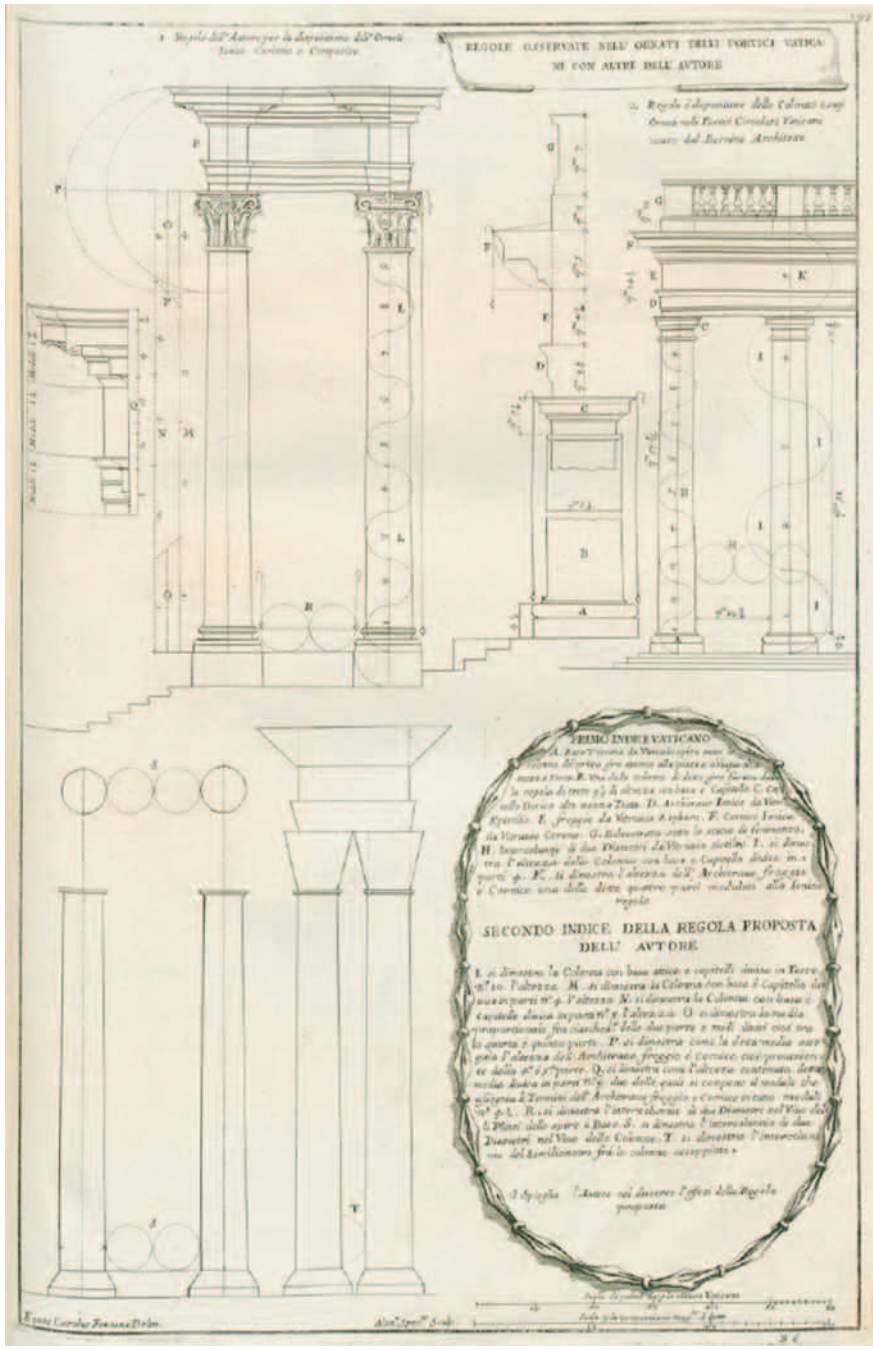

Fig. 3. The Orders of Architecture, including Bernini's Portici Circulari Vaticani, from Carlo Fontana, *Templum Vaticanum* (Rome, 1694), Plate 193. (*ETH-Bibliothek Zürich, Rar 915 GF, http://doi.org/10.3931/e-rara-9295 / Public Domain Mark*)

fixed at first sight, Gibbs noted that 'the pedestal may be made lower when necessity requires, but not otherwise.'[21] The flexible application of the pedestal's proportion allowed flexibility in design, as first described by Sebastiano Serlio, and repeated in most subsequent treatises.[22]

When looking at the tables one must consider that all complex fractions shown are approximations of the exact proportions. This emphasises the practical difficulty of using proportional theory, which was considered too obscure to be used by many craftsmen.[23] It also explains Gibbs' attempt to avoid difficult divisions: 'I [James Gibbs] thought there might be a Method found out so to divide the principal Members and their Parts, both as to their Heights and Projections, as to avoid Fractions.'[24]

In his *Rules for Drawing*, Gibbs argued that 'the Method here proposed will be acknowledged by proper Judges to the most exact, as well as the easiest, that hath yet been published.'[25] He drew its proportional inspiration mostly from Vignola, but he also incorporated elements of the later architectural discourses of Chambray and Perrault, as well as of Fontana and Bernini. A Catholic Scot, he positioned himself strategically in an era strongly influenced by Burlington's Palladianism by referring to Palladio, but Palladio was by no means his sole point of departure.[26] As Gibbs recognised, 'the parts consisting of so many Fractions, may occasion mistakes in those who copy the Orders of Palladio; besides the difficulty of dividing those small parts with Compasses.'[27] His simplified proportions deviated from Palladio's, as they did from those of Vignola and Scamozzi; his reference to 'proper Judges' seems to underline his strategic reference to Palladio, rather than a profound proportional impact of Palladio on the *Rules for Drawing.* Serlio had already in the early sixteenth century discussed the importance of judgement in architecture,[28] and eventually judgement became the embodiment of knowledge which combined architecture with music, rhetoric and ethics;[29] *Rules for Drawing* was partially based on Serlian theory, something that has never been previously discussed.

'Judgement' relates to the 'decorum' or character of a building, in which the proportions and ornaments should only be applied according to its status, use, and function.[30] This definition of 'decorum' was first fully developed by Serlio, through which it became the standard rule for the early modern period.[31] For Serlio, a building with the wrong architectural decorum was distasteful, and should thus be judged negatively. Gibbs's *Rules for Drawing* presented a hierarchy of the orders as well as a correspondence to beauty (or judgement) in which decorum could be applied correctly. Gibbs pointed this out by following rules of superimposition,[32] and by denoting a preference for certain architectural orders: 'Those of eight [diameters in height] and ten are accounted perfect, and the first invented by the Antients; the rest are inferior.'[33] These proportions resonate with his use of the Doric and Corinthian Orders. He stated that the Doric was the 'lowermost Order',[34] and, when determining the intercolumniation, its proportion used should be 'either for Beauty or Use, or both, or for communication from one place to another … but will be most agreeable when they are in proportion to their height.'[35] When looking at the overall carving of the orders, as presented in *Rules for Drawing,* Gibbs alternated ornamented and plain courses of moulding, following Serlio's recommendations that such a style of carving should be considered wonderful (*gratioso*) [gracious; pleasing to the eye] rather than licentious (*licentioso*).[36]

Gibbs's emphasis on the Doric and Corinthian orders is unusual, but it was justifiable in the broader climate of Georgian Britain where extravagant external decoration was usually avoided,[37] and the Composite considered an ostentatious extravagance.[38] In describing the Ionic as inferior Gibbs was atypical, particularly since it is more rudimentary than the Corinthian. He proposed two forms of Ionic, one with dentils on the cornice

and one with modillions.[39] This contrasts with Vignola and Perrault, who preferred a dentil with the Ionic,[40] whilst Palladio and Scamozzi recommended a simple modillion.[41] Gibbs, who proposed two options with a dentil and modillion, does not seem to be in accordance to any of these treatises, but he does resemble Serlio, who proposed cornices with dentils and modillions, both in combined and separated options.[42] Serlio's influence is plausible, since his work was included in Gibbs's library, and he was mentioned by Fontana in *Templum Vaticanum*.[43] Furthermore Gibbs, by omitting Serlio's combination of dentil and modillion, corresponds to the architectural debate of the time regarding these features – usually found in the Corinthian capital – which was criticised by Roland Fréart de Chambray, John Evelyn, and Claude Perrault.[44] The Italians did not mind combining the dentil and the modillion, but Gibbs for his Corinthian also hints at a separate use when he represented the dentil in a dotted line or even omits it from the cornice (see Fig. 4).[45] Since this resonated with then-current architectural theory, it is also safe to assume the Ionic combination of dentil and modillion was avoided to make his architectural members suited to taste in Georgian Britain.

THE RADCLIFFE CAMERA, 1737–1748

The Radcliffe Camera presents an ideal opportunity to relate Gibbs's theory to architectural practice, as it is both extant as a physical building, and was published in book form in 1749 as *Bibliotheca Radcliviana*,[46] fifteen years after the publication of *Rules for Drawing*. The first designs for a circular building were from the hand of Hawksmoor, who was not mentioned in *Bibliotheca Radcliviana*; this layout was taken by Gibbs, probably at the request of the Radcliffe Trustees.[47] The central position

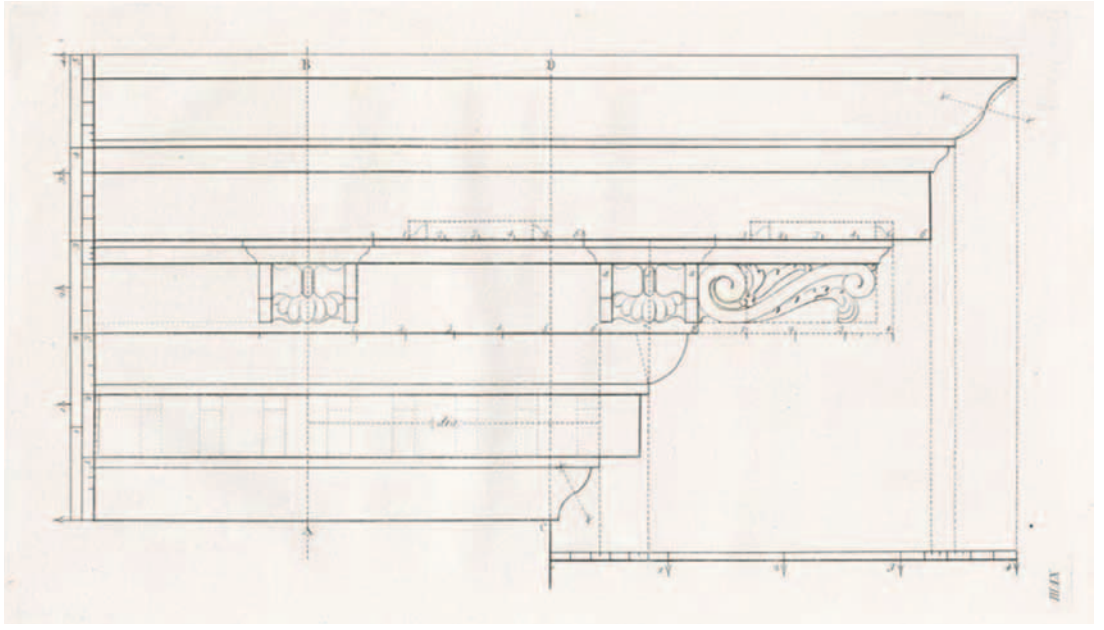

Fig. 4. The Corinthian Order from Gibbs, *Rules for Drawing*, showing the modillion and in dotted line the dentil.

of the building on the square (see Fig. 5) may be Gibbs's own idea, and the construction of circular and domed buildings did not pose a problem for him, since he knew these typologies from Italy and through Fontana.[48] The *piano nobile*, over the rusticated base, has three-quarter paired columns of the Corinthian order, with alternating dressed windows and niches, resulting in a complex visual rhythm.[49] The orders and all the members are 'properly enriched', in Gibbs's words, and 'all the mouldings of the building are carved proper to their order', implying that the decorations and ornaments correspond to Gibbs's own proportional system, and are to be considered '*gratioso*'.[50]

Gibbs stated that his method for designing the orders was 'the most exact and simple manner than had ever been used before in which fractions in general are avoided. This was done in order to divide the principal members and their parts and to their height and projections'.[51] He also noted that the drawing of the diameter (module), followed the method employed by Palladio, who 'excelled the rest [of the Renaissance authorities]'.[52] But for the height of the column he did not follow Palladio, preferring a Corinthian order of ten parts (modules) instead of Palladio's nine and a half,[53] believing this to be the perfect way according to the 'antients'.[54] John Evelyn may also have influenced his thinking as he too referred to the ancients and, like Gibbs, described Palladio as belonging to the highest level of masters.[55] When Gibbs improved on Palladio's rules, it showed his own mastery in the field; the height of the Corinthian order at the Radcliffe Camera indeed shows a module relating to a 1:10 proportion, whilst the entablature follows Gibbs's rule being a fifth of the height of the column (see Fig. 6).[56] So Gibbs not only devised a mathematical method for the orders; he also applied it at the Camera. If one looks at the pedestal it does not follow Gibbs's rule, being a quarter of the height of the column and entablature.

Fig. 5. View of the Radcliffe Camera from the north. All Souls College is to the left and Brasenose College to the right. (*Wikimedia Commons*)

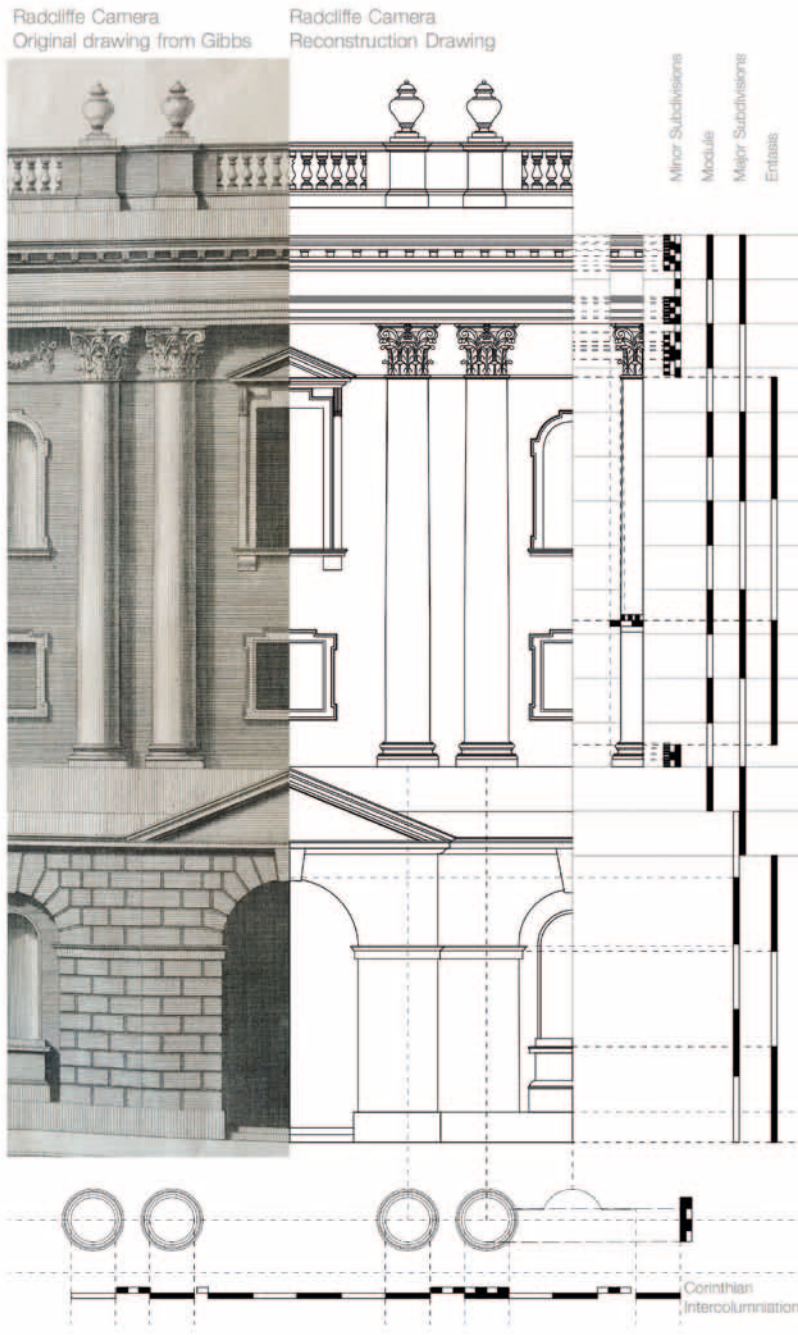

Fig. 6. Reconstruction of the Radcliffe Camera showing all proportions: Reconstruction Drawing by Nick Mols based on J. Gibbs *Bibliotheca Radcliviana* (London, 1747), Plate VI. (*Wellcome Library, b30448979*)

But this did not pose a problem, since he stated in *Rules for Drawing* that the pedestal may be lower when necessity requires.[57] An order, besides having its own height and subdivision of parts, must also adhere to the principles of intercolumniation. There is an intercolumniation of three or four modules between the paired orders, and the proportion of 3:4 is also found in *Rules for Drawing*.[58] The order at the Radcliffe Camera clearly relates to Gibbs's theoretical principles, but the question remains: how and why did Gibbs apply them?

As Fig.7 shows, there are minor differences between the mathematical reconstructions of the Radcliffe Camera and the Corinthian order set out in *Rules for Drawing*. But these are marginally small, and, it is plausible to state that the applied order at the Camera and the theoretical order set out in the *Rules for Drawing* resemble one another. This is to be expected. Gibbs noted that architecture was both a liberal art and a science. As he stated: 'it is not the Bulk of a Fabrick, the Richness and Quantity of the Materials, the Multiplicity of Lines, nor the Gaudiness of the Finishing, that give the Grace or Beauty and Grandeur to a Building; but the Proportion of the Parts to one another and the Whole, whether entirely plain, or enriched with a few Ornaments properly disposed.'[59] For Gibbs, mathematics and the correct application of the orders were the most important elements of architecture, in contrast to embellishments. In this respect he followed the interpretation of many recent theorists, including the work of Evelyn, which can be traced back to Vitruvius.[60] He stated that he followed Palladio, and was influenced by Vignola and Serlio, all of whom had interpreted Vitruvius.[61]

At the Camera the rusticated basement results in a gain of height at the base of the Corinthian order and, if a proportionally correct pedestal had been added, the building would seem too heavy and out of proportion. So by applying a pedestal with a smaller proportion, the basement and body of the building are in harmony. This seems to have been an explicit, well-considered choice. The rich rhythm of the Baroque is also harmonious and in due proportion, for the alternating bays of windows and niches serve the purpose to lighten the galleries and library and to support the buttresses intended to support a stone cupola. A hierarchical disposition was sought by applying an alternating intercolumniation, underlining the hierarchy of parts whilst it still relates to the module.

With regard to decorum, the Camera follows its rules correctly. For instance, applying the Corinthian above a rusticated base is considered correct. An academic library would imply the use of an Ionic order, which is indeed applied in the interior of the building. But for the exterior, the richer and more delicate Corinthian was used, and since the building was in a sense a memorial to Dr Radcliffe, it seems to be an appropriate choice. A Composite order, though equally rich, would have been regarded as tasteless by the mid eighteenth century, and it appears that Gibbs applied a correct principle of decorum according to the respective *Zeitgeist*, as well as in accordance with Serlian theory.

By inquiring into Gibbs's proportions, the previously assumed influence of Palladio, Vignola and Perrault on *Rules for Drawings* is affirmed. Likewise, the influence of Fontana's *Templum Vaticanum* is notable, as is Serlio's impact on Gibbs's Ionic order. Gibbs positioned himself in the architectural scene by creating an original proportional system that hinted at both 'Palladian' and Baroque architecture. The invention of his own orders resolved the obscurity of many former treatises, making it easier to be used by craftsman. This discussion has only addressed the proportions of the orders, and a more thorough study on the proportion of rooms, doors, windows, as well as, ornaments such as vases and fireplaces is still necessary.

On a theoretical level, *Rules for Drawing* resonates with classical principles, such as that of decorum, and, positions itself within the British

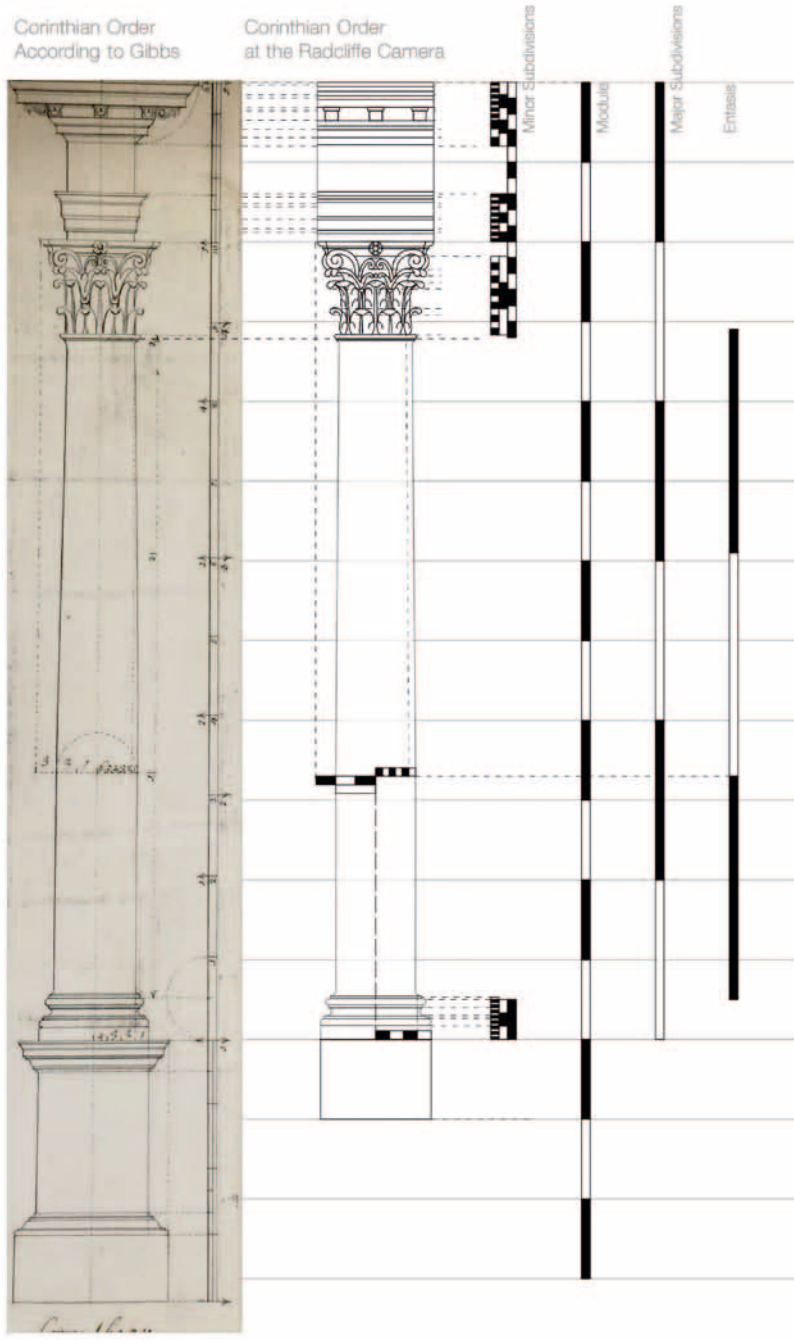

Fig. 7. Comparison of the Corinthian Order showing all proportions: Reconstruction Drawing by Nick Mols based on: J. Gibbs (1732) *Rules for Drawing the Several Parts of Architecture*. London, Plate II.

'Rule of Taste.' This implies that Gibbs's choice to subtly implement Italian Baroque influences in a British context strategically opposes 'Palladianism', whilst ambiguously adhering to its principles. *Rules for Drawing* incorporates both practical and theoretical notions. Gibbs applied his own rules of the orders correctly at the Radcliffe Camera, demonstrating his interest in relating theory to practice. The applied decorum and theory at the Radcliffe Camera underline Gibbs's urge to create tasteful and beautiful buildings that had to be judged properly. The application of this approach to other Gibbs projects, might contribute to a deeper understanding and valuation of his *oeuvre*. *Rules for Drawing* propagated Gibbs's thinking, and by combining several sources he showed his knowledge and his mastery of the field. Both an intellectual and a theoretical work, it was clearly more than a technical manual, and should arguably be regarded as the first published British architectural treatise.

ENDNOTES

1 James Gibbs, *Rules for Drawing the several Parts of Architecture in a More exact and easy manner than has been heretofore practiced, by which all Fractions, in dividing the principal Members and their Parts, are avoided.* (London, 1732).
2 Bryan Little, *The Life and Work of James Gibbs, 1682–1754*. (London, (1955) pp. 111, 207; Terry Friedman, *James Gibbs* (New Haven and London, 1984); John Summerson, *Architecture in Britain, 1530 to 1830* (1969 ed.), p. 210.
3 Little, *Gibbs,* pp. 111, 207; Friedman (1984) *Gibbs*. pp. 16 sqq.
4 Summerson, *Architecture in Britain,* p. 210.
5 Eileen Harris and Nicholas Savage, *British Architectural Books and Writers 1556–1785* (Cambridge, 1990) pp. 210–1.
6 Caroline van Eck and Christy Anderson, *British Architectural Theory 1540–1750: An Anthology of Texts* (Ashgate, 2003) p. 49; Friedman, *Gibbs*, p. 32.
7 Friedman, *Gibbs*, p. 32; Harris and Savage, *British Architectural Books and Writers*, p. 27.
8 Harris and Savage, *British Architectural Books and Writers*, p. 211.
9 Robert Chitham, *The Classical Orders of Architecture* (London, 1985), pp. 21–40.
10 Chitham, *The Classical Orders of Architecture*, pp. 28, 30–31, 34–36, 38, 40.
11 *Ibid*.
12 Sources used for the proportion in table 1: James Gibbs (1732) *Rules for Drawing the several Parts of Architecture*.... ff. 2–4; Iacomo Barozzio Da Vignola *Regola delli cinque ordini d'architettura* (Rome, 1562) , ff. IIII, VIIII, XV, XXI, XXVIII; Andrea Palladio, *I Quattro libri dell'architettura* (Venice, 1570), ff. 17,18, 24, 29, 30, 38, 39, 45, 46; Vincenzo Scamozzi, *L'Idea Della Architettura Universale. Parte Seconda* (Venice, 1615), f. 6; Claude Perrault *Ordonnance des Cinq Especes de Colonnes selon la Methode des Anciens* (Paris, 1683), Planche 1.
13 Bodleian Library, Oxford,MS Eng. Misc. *c.*28 Rad, in Friedman, *Gibbs*, pp. 327–330.
14 Antoine Desgodets, *Traité des odres d'architecture* (Paris, 1719), pp.10–11; Friedman, *Gibbs*, p. 328.
15 Carlo Fontana, *Templum Vaticanum* (Rome, 1694), Plate 193; Friedman, *Gibbs*, p. 328.
16 Gibbs, *Rules for Drawing*, f. V, 1.
17 Sources used for tables 2 and 3: Gibbs, *Rules for* Drawing, ff. 3–4; Vignola, *Regola delli cinque ordini d'architettura*, ff. IIII, VIIII, XV, XXI, XXVIII; Palladio, *Quattro libri dell'architettura*. ff. 16,24–26, 28, 37, 49; Scamozzi, *L'Idea Della Architettura Universale. Parte Seconda,* f. 6; Perrault*, Ordonnance des Cinq Especes de Colonnes*, Planche 1.
18 Fontana, *Templum Vaticanum*, Plate 193.
19 Gibbs, *Rules for Drawing*, f.1.
20 See above, note 17.
21 Gibbs, *Rules for Drawing*, f..2.
22 Sebastiano Serlio, *Regole Generali di Architettura* (1537), translated by Robert Peake, *The Fourth Booke, Rules for masonry or Building* (1611), ff. 5, 17, 37, 46.
23 Harris and Savage, *British Architectural Books and Writers,* pp. 210–211.
24 Gibbs, *Rules for Drawing*, f. V.
25 Gibbs, *Rules for Drawing*, f. V.

26 Summerson, *Architecture in Britain,* p.189; A. Echlin and W. Kelley, 'A 'Shaftesburian Agenda'? Lord Burlington, Lord Shaftesbury and the intellectual origins of English Palladianism.' *Architectural History* 59 (2016), pp. 227 – 8.
27 Gibbs, *Rules for Drawing*, f. VI.
28 Vaughan Hart, Decorum and the Five Orders of Architecture: Sebastiano Serlio's Military City.' *RES: Anthropology and Aesthetics*, no. 34 (1998), p. 83.
29 John Onians, *Bearers of Meaning, The Classical Orders in Antiquity, the Middle Ages, and the Renaissance* (Princeton, 1988), pp. 37–40.
30 *Ibid*. pp. 273–275.
31 *Ibid*.
32 Gibbs, *Rules for Drawing*, ff. 14, 17.
33 *Ibid*. f. 1.
34 *Ibid*. f. 17.
35 *Ibid*. f. 14.
36 A 'licentious' detail is beyond the scope of Vitruvian mimesis. The combination of dentil and modillion were considered licentious. In contrast, 'gratia' is the correct positioning of members of architecture, particularly the alternation between solid and carved members: see Serlio *Regole Generali di Architettura* (1566), ff. 50, 54, 171; Vaughan Hart and Peter Hicks. *Sebastiano Serlio on Architecture, volume 1* (New Haven and London, 1996). pp. 457–8.
37 Hart, *RES: Anthropology and Aesthetics*, no. 34 (1998), p. 75.
38 John Evelyn, *A Parallel of Architecture both ancient and moderne by Rolan Freat Sr de Chambray, second edition with large additions* (London, 1707), p. 4.
39 Gibbs, *Rules for Drawing*, plates XII, XIII.
40 Vignola, *Regola delli cinque ordini d'architettura*, ff. IIII, VIIII, XV–XXVIII; Perrault, *Ordonnance des* Cinq *Especes de Colonnes*, Planche 1.
41 Palladio, *I Quattro libri dell'architettura*, ff. 28–36; Scamozzi, *L'Idea Della Architettura Universale. Parte Seconda.* ff. 6, 7, 34, 89–101.
42 Sebastiano Serlio, *Regole Generali di Architettura,* ff. 127, 161–2.
43 Friedman, *Gibbs*, p. 329; Carlo Fontana, *Templum Vaticanum*, pp. 472, 478.
44 John Evelyn, 'An account of Architects and Architecture', in Evelyn, *A Parallel of Architecture both ancient and moderne by Rolan Freat Sr de Chambray* (2nd ed., 1707), p. 36; Claude Perrault *Les dix livres d'architecture de Vitruve* (Paris, 1673). p. 106; Perrault *Ordonnance des Cinq Especes de Colonnes* (Paris, 1683), pp. 79–80.
45 Gibbs, (1732) *Rules for Drawing*, plates II, XVII, XVIII.
46 Harris and Savage, *British Architectural Books and* Writers, p. 32.
47 H.M. Colvin, *Unbuilt Oxford* (New Haven and London, 1983), pp. 67, 71–72. See also p. 66–7 in this volume.
48 M. Gelernter., *A History of American* Architecture (Lebanon: University Press of New England, 1999), p. 90.
49 Colvin, *Unbuilt Oxford*, p. 74.
50 Gibbs, *Bibliotheca Radcliviana* (London, 1747), p. 8 and Plate XXI.
51 Gibbs, *Rules for Drawing*, p. 1.
52 *Ibid.* p. 2.
53 Gibbs, *Rules for Drawing*, p.3; Palladio, *I Quattro libri Dell'Architettura,* pp. 37–38.
54 Gibbs, *Rules for Drawing*, p. 4.
55 Evelyn, *A Parallel of Architecture both ancient and modern* (1707), pp. 28–30.
56 Gibbs, *Rules for Drawing*, p. 4.
57 *Ibid*, p. 4.
58 *Ibid*, plates XXIX and XXXI.
59 Gibbs, *Book of Architecture* (London, 1728), p. 2.
60 Vitruvius, translated by M.H. Morgan, *The Ten Books On Architecture* (Cambridge, Mass, 1914), p. 109. Gibbs mentioned use, strength and beauty – the 'Vitruvian triad' – as the three essential qualities of building.
61 Palladio, *I Quattro libri Dell'Architettura,* p. 5.