Dorica coronix, Zophorus, & Epiſtylium.
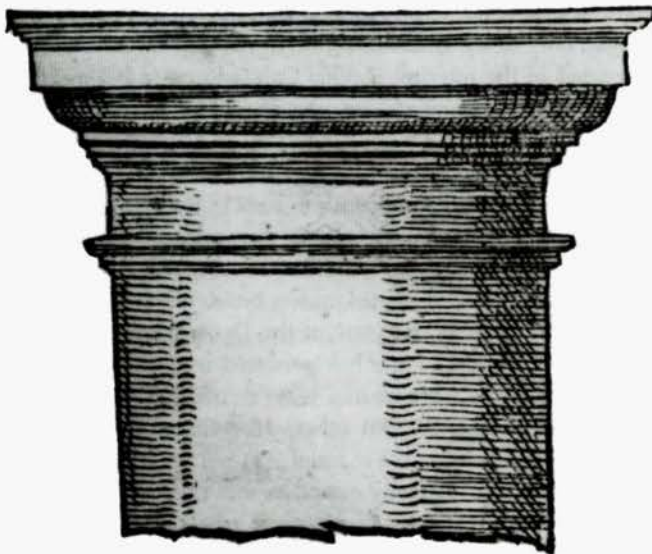
Doricum capitulum.

Fig. 1. Doric Order (Book III).

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Transcriptions, Translations, and Transformations: Illustrative Memory and the Re-writing of Vitruvius' *De Architectura*
(A new English translation of Vitruvius' *De Architectura* is in preparation.)

When Marcus Vitruvius Pollio sat down during the late first century BC to draft his treatise on architecture, he could not have imagined that it would still be relevant after two millennia. The text was written on ten different scrolls that roughly correspond to the "books" we now have. It was composed by an architect in his later years, recording his architectural experiences and geographical observations, and reflecting his look towards Greek precedents. It was a book addressed to a relatively wide audience, from the everyday builder to Augustus. The architect looked to Greece and lamenting the loss of *the old ways* as he wrote his corpus of architecture.[1] Today we look to the *Ten Books on Architecture* for a number of reasons: archaeologists read the treatise in contextualizing and understanding new finds, architects turn to it for inspiration as they struggle with modernism, deconstructivism and their hybrids, and classicists use it in their quest to better comprehend monuments, classical architecture, and the classical imagination itself.

A number of versions have come down to us, each with a claim to reflect the initial author's intents. The main difficulties in interpreting Vitruvius' work, however, lie in the fact that it has been, over time, transformed through transcriptions and translations. Another important difficulty is associated with the illustrations appended to the translations; pictorial depictions originate, for the most part, from the minds of transcribers and translators. The original treatise was in fact accompanied by few illustrations–nine or ten–all lost, yet new translations can contain dozens of drawings.[2] We will return to that issue in a moment, but to begin, let us consider part of the book's epistemological footprint.
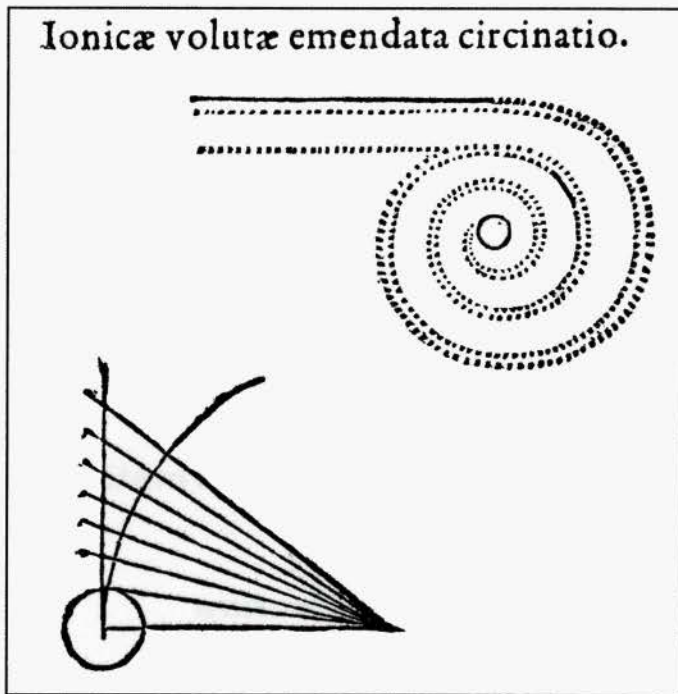
Ionicæ volutæ emendata circinatio.

Fig. 2 . Ionic Volute (Book III).

Transcriptions, Translations, and Transformations

The *De Architectura* appears to have been rarely recalled in its early life, yet its epistemological trace does date to Antiquity. Pliny (23-79 AD), in his *Naturalis Historia*, referenced Vitruvius' text regarding three themes: trees, pigments and colours, and stone.[3] While it may seem odd that the latter did not reference the *De Architectura* for what might be more significant items such as Vitruvius' architectural tenets, the few references still indicate two things:[4] first, as Granger points out, "the manual of architecture was already a standard work" during the first century AD.[5] Second, and perhaps more importantly, it emphasizes that, from just beyond Augustus' reign, Vitruvius was referenced as an authority, in spite of having presented a particular architecture that did not directly correspond to that of Rome *per se*.

Other writers were doing the same, treating Vitruvius' treatise as an architectural authority. Sextus Julius Frontinus (c. 35-103 AD) made reference to Vitruvius in his *De Aquis Urbis Romae*, insinuating that Vitruvius was *the* expert when it came to water-related technology.[6] A little later, Cetius Faventinus (born c. 250 AD) summarized portions of the treatise in his own *De Diversis Fabricis Architectonicae*, presumably to place himself on the same *expertise* level as Vitruvius.[7] The fact that Faventinus chose to provide abbreviated portions of Vitruvius' treatise speaks for itself; Vitruvius' work was perceived as an important work at the time.

Another of Vitruvius' followers, Rutilius Taurus Palladius (4th century AD) authored an agricultural handbook, the *De Re Rustica*, which, to MacDonald at least, was partly based on the previous writer's text.[8] Fleury points out that Palladius may have been using Faventinus as a reference and not necessarily Vitruvius directly.[9] Regardless of the conflicting opinions, it is reasonable to believe that Palladius and Faventinus relied on the older treatise either directly or indirectly. Finally, Sidonius Apollodor-

us[10] (c. 430-483 AD) and Servius[11] (fl. early 5th century AD) also cited Vitruvius as an expert on architecture. Apollodorus went so far as to position Vitruvius vis-à-vis Architecture, just like Orpheus was paralleled to Music and Archimedes was associated to Geometry.[12] From very early on in architectural discourse, Vitruvius was accepted as an authority in order to buttress technical narratives and in turn to render an authoritative feel to writers' texts.[13] Copying portions of the treatise and referring to it in general terms, however, is the extent to which Vitruvius was "studied" during late Antiquity.

Some scholars like Kruft contend that the treatise's "rise to fame began only in the fifteenth century."[14] However, references to it persisted in the interim; Flavius Cassiodorus (c.468 - c.562 AD), for example, referenced Vitruvius in a letter of around 511 AD and the treatise was also referenced during the Middle Ages.[15] We do see fewer references during the Middle Ages; that may be because, reflecting the cultural shifts in Italy and the rest of the western world, "classical" design was seldom considered beyond the fourth century as architects become less *liberal arts* planners and more *trades-oriented* master builders.[16] It is for that reason that the conventional view of the *De Architectura* being "lost" during the Middle Ages has persisted until present day. De Camp still notes that the treatise was "recovered" only at the onset of the Renaissance.[17] But others like Ciapponi perhaps more rightly point out that the manual was referenced throughout the Middle Ages.[18] Krinsky supports that notion, recording some seventy-eight different Vitruvius manuscripts accessible during the Middle Ages; others have since been added to the list.[19] That is a high number, considering the period and its modes of transmitting knowledge.[20]

Later, numerous copies–some with commentary–were produced, including those eventually owned by learned individuals such as Petrarch (1304-1374) and Boccaccio (1319-1375).[21] Why these individuals acquired it in the first place and the extent to which they used it remains unclear. However, the simple fact of its inclusion within their libraries attests to some importance. In addition to the practical "building trade" uses, the text was referenced for the more theoretical aspects of building design. The atriums of Old Saint Peters, Cluny III, St. Laurent at Tournus, and Anzy-le-Duc, for example, were proportioned according to Vitruvius' atrium of the third class (Book VI, 3.3). As architectural focus shifted from one mired in state agenda to one based in Christian ideology, Vitruvius' treatise was (paradoxically) preserved partly through the Church. And while the master builders looked away from many of the building types outlined by Vitruvius, they did look to his *basilica* for church design.[22] Although an ongoing

Fig. 3. Machine for driving piles (Book III).
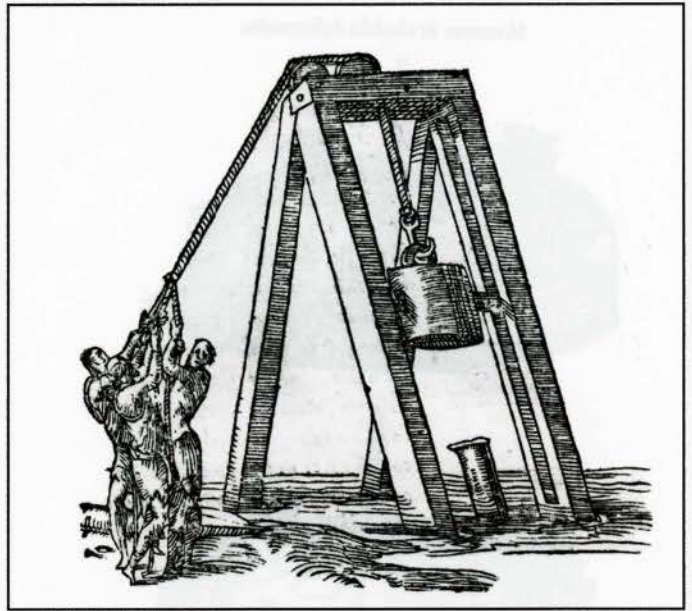
polemic–mostly because we do not know to what extent it has been used–the treatise continued to be copied and utilized in both training and teaching throughout the period.[23]

Towards the end of the Middle Ages, the *De Architectura* gained further popularity among western intelligentsia; "as soon as the essence of architecture […] [was] considered to be philosophy and mathematics (the divine laws of order and proportion) and archaeology (the monuments of Antiquity), the theoretician and dilettante […] [were] bound to assume a new significance [for the Vitruvian text and the architectural profession in general]."[24] That is a key moment: when philosophy, mathematics, and archaeology were connected to the treatise, the reconstruction of classical monuments by means of the text, was enabled. In 1414-1415, Poggio Bracciolini noticed a copied manuscript of the *De Architectura* at the monastery at St. Gall[25] and from that point onwards, the treatise was re-popularized within what would have been a "new" profession of architecture that was directly linked to archaeology. From that moment onwards, architects and intellectuals such as Brunelleschi (1377-1446) analyzed ruins and compared their findings to the descriptions and tenets of Vitruvius' treatise.[26]

Around Brunelleschi's time, the papal authority took on the preservation of Antiquities as a priority; we know that Raphael (1483-1520), for example, was given carte blanche by Pope Léon X to halt any construction or demolition work deemed as damaging to any monument or stone inscription of Antiquity.27 In that way, importance was granted to the study of monuments; comparing the remnants of Antiquity to the De Architectura became key in architectural training. In other words, within the renewed interest in classical architecture, interest in the *De Architectura* shifted from its technical prescriptions to its antiquities depictions.

By the time Alberti finished his treatise, a new way of interpreting Vitruvius was born.[28] Alberti's *De Re Aedificatoria* recalled the *De Architectura* in both form and content, yet it had a different set of motives.[29] Acknowledging, as van Eck has recently pointed out, that Alberti may not have exclusively turned to Vitruvius for his treatise's template, the older book was most surely his key influence.[30] That is a significant moment in the interpretation of the book. While illustrations did not come down with the older manuscript, Alberti imagined his own, providing an array of detailed engravings. Perhaps more significant is that these contained within them a set of corrections and realignments: he interpreted the differences between his field observations and the descriptions outlined in the older treatise as mistakes by Vitruvius and chose to undertake corresponding

"corrections" within his own book. That fit well with humanist thinking where "Renaissance patrons were not content to remain in second place [after ancient Rome]."[31] At the same time, it is not that Alberti and the architects of the time rejected medieval architecture (as Burkardt would have it), it is that they did not necessarily identify it differently from Roman. To Alberti, there were two "styles"–the "old" one and that of the "present-day." And the style of the day depended greatly on the re-interpretation of Antiquities–textual and observed. Those observations of Roman monuments were utilized to realign Vitruvius' text. The idea of correcting the *De Architectura* according to observable monuments would eventually change; it would later be the text that would be used to correct observable monuments.

Beyond Alberti, two types of Vitruvius-related architectural writings emerged: first, there were theoretical treatises such as those of Antonio Averlino (1400-1469), also known as Filarete, Sebastiano Serlio (1475-1554), and Philibert de l'Orme (1510-1570). They focused on strict geometry and conceptual constituents such as the Orders. Filarete wrote his treatise with formal typologies in mind and Serlio strove to present formal typologies *and* "theoretical" tenets that were solidly anchored in the *De Architectura*. At the same time, treatises more "practical" for builders also appeared. They include, among others, the writings of Francesco di Giorgio Martini (1439-1501/2),[32] Vincenzo Scamozzi (1552-1616), Giacomo Barozzi Vignola (1507-1573), and Andrea Palladio (1508-1580).[33] As builders, they highlighted functionality and construction and they correspondingly looked to Vitruvius within their technical mindsets. Each of the two groups interpreted Vitruvius through personal lenses that ultimately resulted in different interpretations of classical architecture and in different sets of illustrative apparatus.

Both types of architectural writing imitated and usurped Vitruvius' treatise. Some, like Alberti, modified and "corrected" it, while others, like Fra Giovanni Giocondo De Verona (c.1435-c.1514),[34] reorganized it into separate chapters to suit their
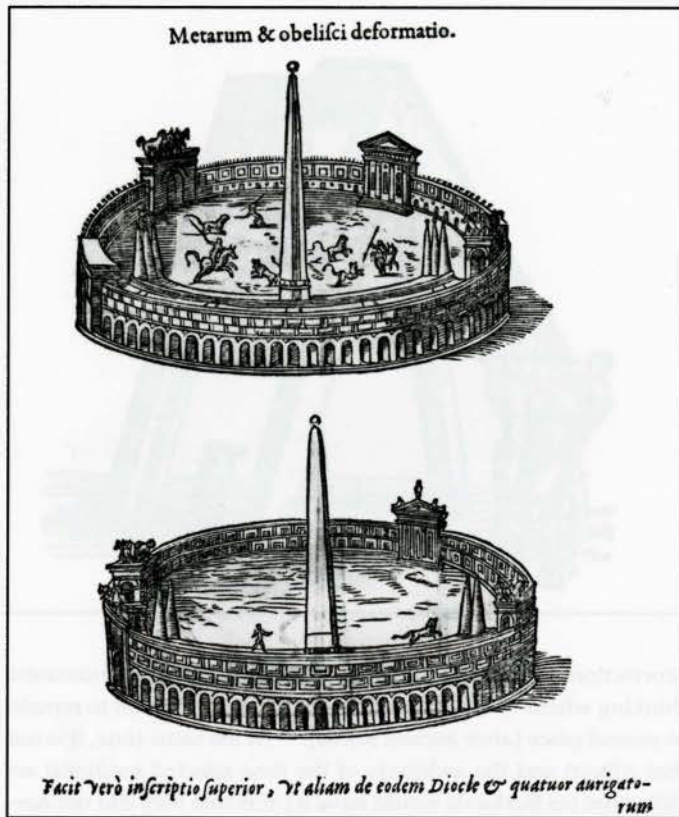
Metarum & obelifci deformatio.

Facit verò inscriptio superior, vt aliam de eodem Dioclе & quatuor aurigato-
rum

particular architectural theoretic.[35] Both groups used it to remind the reader of specific "classical architectures" and they both tended to follow Vitruvius in turning to building assembly as the basis "for advancing architectural styles and forms."[36] Other translations focused on illustrations; the book by Giovanni Cardinal in 1511 included numerous woodcuts.[37] Key here is that for over three hundred years, related "research" was not focused on Vitruvius and the *De Architectura per se*; instead, the writings were appropriated within agendas that sought to fit the architectural thought to the times.[38] Once a facsimile of the treatise was rediscovered at St. Gall, a host of translations were produced in Italy. There have been at least thirty-two major Italian works[39] as well as a number of English, French, German, Italian, Spanish, and other linguistic editions produced since the fifteenth century.[40] Thus, we have copious transcriptions, translations, and transformations.

Illustrative Interpretations

One of the difficulties with translated versions of the *De Architectura*, as alluded to in the Introduction, is that the versions have been accompanied by illustrations. In that light, the work of Ingrid Rowland (and Thomas Howe) is of note and can be used as an example of the problems arising out of the use of diagrams, in spite of first-rate scholarship.[41] Rowland's book and its accompanying drawings are part of the translation tradition and from that particular example, we can see the production of (classical) knowledge at work, particularly as it becomes amplified with the use of illustrations. As twentieth-century translator of Vitruvius' treatise, Rowland renders clearer some of the confusing notions

contained within the *De Architectura*, all the while reconciling the latter within current theoretical frameworks and with archaeological advances in mind. However, while the translation is unambiguous, the illustrations and commentary by Thomas Noble Howe, albeit extensive and having as their objectives "to investigate the possibility of a consistent design approach" and "to illustrate the relation of this approach to the broad principles of liberal knowledge" (xv), are imaginative at best.

We have noted that Alberti, Serlio, Cesariano, and Barbaro, among many others, were part of a translation tradition. In English, Sir Henry Wotton translated the treatise in 1624, as did William Newton in 1771 and Joseph Gwilt in 1826. However, it was for the most part the Latin edition of Valentin Rose published in 1867, complete with its *apparatus criticus*, that informed subsequent twentieth-century English versions; Rose's work–based on Fra Giocondo's manuscript–remains a benchmark for translations, including Morris Hicky Morgan's of 1914, Frank Granger's of 1931, and now Rowland's. The latter also approaches the task of translating with other sources at hand; while using Giocondo's and Rose's as primary texts, the interpretation also draws from other manuscripts. In other words, Rowland's translation is not necessarily that of a single manuscript; it is an approximation of what she feels best represents Vitruvius' words.

The recourse to emendation, the correction of a text due to what are thought to be errors or corruptions in transcription, is prominent in Rowland's rendition. Rowland eloquently retraces interpretive errors contained within previous versions. In Book VI (6.4), for example, she distinguishes between *sublinata* and *sublimata* and tells the reader that while Granger writes about granaries with "concrete floor[s]," probably following the British Library Harleianus 2767 manuscript, another choice is available from the Wolfenbüttel Gudianus 69 manuscript (and adopted by Rowland), where the granaries are said to have "elevated" floors. The difference is subtle, yet not insignificant.

The treatise contains a few *hapax legomenon*–terms or phrases that are not found elsewhere in classical texts. Rowland treats them according to their individual complexity and context, thus preserving textual intent and significance as much as possible. The term *trabes everganeae* in Book V (1.9) is a good example. The translation of the words seems straightforward; Rowland uses "outward-sloping beams" as the equivalent and, while "knee-brace" may have been more to the point–the reader would be better able to identify the building component–, the choice is adequate. Other difficult passages are treated with balance and interpretive logic and where translation is not readily possible, as

Fig. 6. Temple Elevation Schemata (Book IIII [IV]).

Fig. 5. Composite Order (Book III).

Compofitum capitulum

Opus hexaftylon diaftylon.
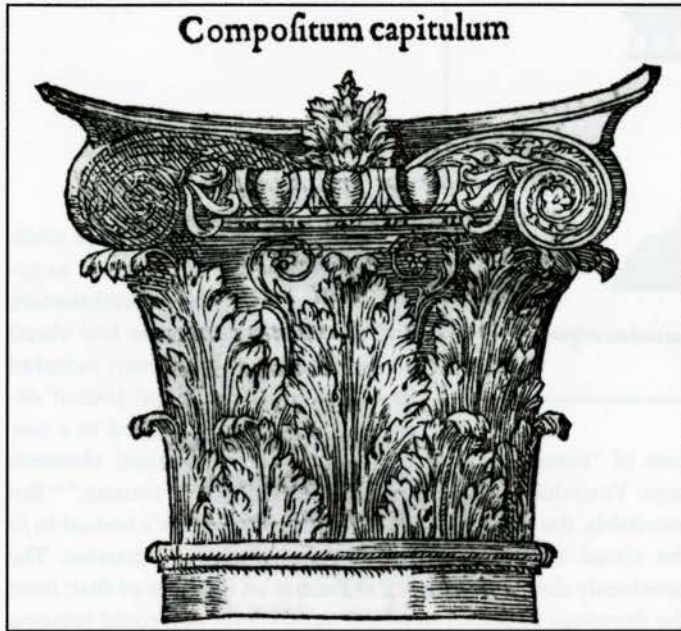
with the case of another *hapax legomenon, scamilli impares*, Rowland leaves the words intact (III, 4.4 and V, 9.4).

From its position within the treatise and especially from examples found in Greek temples, it is certain that the term *scamilli impares* refers to the rise of stylobates as they curve towards the centre along a horizontal plane. While the objective of *scamilli impares* is presumably dual: to counter the illusion of downwards curvature and to allow moisture to drain more effectively, the term remains problematic and no one has yet been able to clearly articulate its technical significance. In other words, while "uneven benches" is one way to translate the words, exactly what those would have been and what they would have done is not known. Giocondo's treatise and Cesariano's 1521 Como edition include drawings that attempt to convey its meaning, but theirs as well as other Renaissance views have been shown as incorrect. Rowland opts to leave the term in Latin, italicized, with a simple reference to "figure 46" in the Commentary. Now there are two generally posited solutions to the term: first, there is the possibility that *scamilli* are little step-like notches cut into the stylobates; those notches would be *impares*, that is to say, uneven, or odd-sized. Second, *scamilli* may be referring to specific devices used to generate a rise at the centre of the horizontal stylobate arrangement; those would perhaps be levelling blocks of graduated sizes. No example of the former is known; the latter is adopted by the commentator/illustrator. The implication in the Commentary, however, is that Vitruvius employed the term with that particular meaning in mind. That is a good example of the difficulties that can arise when allowing drawings to interface directly–without corresponding textual remarks–with the reader's imagination.
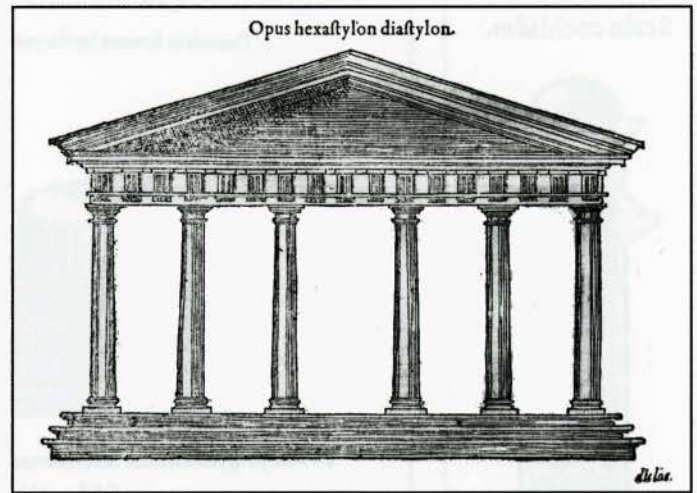
Another example of what could be seen as an overly liberal interpretation of the old treatise relates to the passage describing Vitruvius' basilica at Fano (V, 1.6-10). Evidence for its existence has never been found. Rowland translates the passage quite clearly and, in fact, when paralleled with Morgan and Granger, the depiction is persuasive. In that part of the treatise, Vitruvius outlined a set of proportions and dimensions that went beyond his normal generalizations. When drawings are presented by Howe in Rowland's translation, complete with a detailed axonometric outlining truss and beam arrangements, the illustrator goes way beyond the textual depiction. Vitruvius did not precisely outline that array of timbers, nor did he stipulate the roof structure as posited. Thus, while the textual interpretation seems appropriate, the visual depictions generate what could be construed as exaggerations. The difficulty, of course, is that the reading of the text, regardless of its philological accuracy, can be significantly altered by visual representations. As archaeologists, architectural historians, theorists, and practitioners continue to arbitrate the classical through Vitruvius' treatise, the text's interpretation becomes even more significant and susceptible to transformative effects when new pictorial dimensions are added.

The problem is magnified when the illustrator blends images that represent the *De Architectura* passages with diagrams that are meant to show the state-of-the-architecture of the day. Vitruvius was not describing architecture as it was; he was depicting it as he thought it should be. Further, when the illustrator in Rowland's book writes that "gaps and ambiguities in the drawings are left because that is probably the way he [Vitruvius] intended them to be understood" (xvi), the implication, undoubtedly unintentional, is that there were many drawings accompanying the *De Architectura*. The point is, however, that Vitruvius would not have "intended them to be understood" because there were only ten drawings with his text (as opposed to the over 500 illustrations included within the 139 figures of Rowland's book). That said, many of the drawings do support the translation. The illustrated temple types and column ratios in figures 39 to 42, for example, seem fair visual depictions of the words in Books III and IV. Similarly, the techniques sketches outlining what Vitruvius probably meant as he wrote about
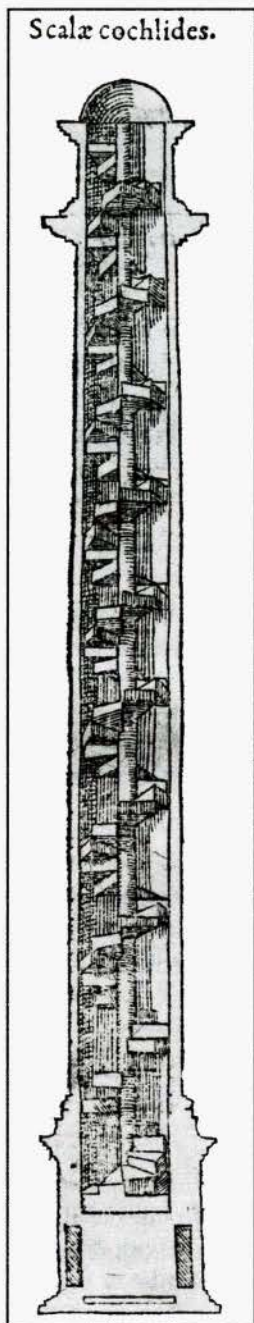
Scalæ cochlides.

Fig. 7. Circular Stairway (Book IX).

Cuneoli in formam lapidis coniecticum anfa.

De diuerfis appellationibus machinarum,& qua ratione erigantur
CAP. III.

Fig. 8. Lifting Device (Book X).

brickwork–*opus testaceum, opus incertum* and *opus reticulatum* in figures 31 and 32–complement the translation. Other drawings, like that depicting men "chopping down trees to build an encampment" in figure 36, are perhaps unnecessary.

• • •

Thus we have copious translations, interpretations, commentaries, and illustrations, faithful to varying degrees, all purporting to be accurate while fitted within a variety of agendas. Many include figures that, while not analyses *per se,* are attempts at understanding the late Republican writer and the *De Architectura.* With the exception of the Italians, the French have produced more translations than anyone else. References to the text are profuse, dating back to shortly after its completion and extending to the present. During the twentieth century especially, commentaries on specific ideas and themes have flooded the related literature, at times focusing on narrow subjects (such as the full name of Vitruvius) and, in other instances, seeking answers to much broader questions (such as those dealing with architectural curricula and training).[42] Of late, new translations and related studies have been instigated, especially–although not uniquely–by the French Academy. The work of Pierre Gros and his colleagues is paramount, with ongoing translation and commentary as well as a profusion of philological studies that transcend Vitruvius *per se,* situating the treatise within its broader historical and theoretical fields. Their commentaries (with illustrations) contained within the *Collection des Universités de France* editions are fundamental to new interpretations of the text.
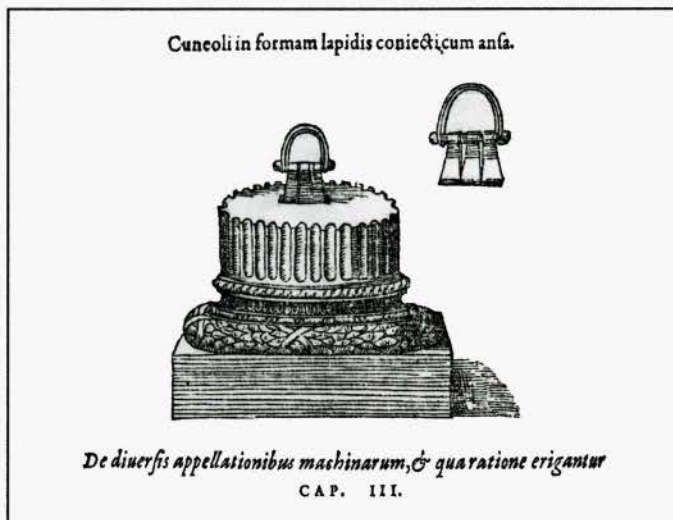
Conclusion

It is somewhat of a paradox that while the *De architectura* was devised to appeal to those interested in architecture and the building crafts, so few visual elements seem to have been included to complement the initial textual depictions. That reality has led to a custom of "extract[ing] representations of architectural elements from Vitruvius without the availability of direct sources."[43] But inevitably, the pictorial ends up forcing the reader's textual to *fit* the visual, thus altering the text–and intent–of Vitruvius. The previously discussed basilica at Fano is an example of that; from the drawings provided in recent translations, one could imagine that Vitruvius outlined it as shown. Further, while the Introduction and Commentary in the Rowland book, for instance, indicate that the diagrams are meant to explore a "consistent design approach" and "to illustrate the relation of that approach to the broad principles of liberal knowledge," there is no final synthesis accompanying the drawings; one's interpretation is again left to the imagination. The risk in the end is that the work of Vitruvius and the translator can be significantly altered by the illustrations. To a great extent, that is what makes a translation without illustrations interesting. The new translation we are preparing will thus not include diagrams. It will be textually driven. The text will be accessible to architectural and archaeological readers without the images that invite interpretations that invariably go beyond the intent of the writer.

Notes

1. On Vitruvius' writing on architecture as a "corpus" reflecting the notion of Augustus' imperial dominion, see Indra Kagis McEwen's compelling *Vitruvius: Writing the Body of Architecture,* Cambridge, Mass., MIT Press, 2003.

2. The drawings accompanying this article represent the type of illustrations provided in sixteenth-century translations. In this case, they are from a translated edition published in Tornaesium in 1586. The principal author wishes to acknowledge Dr. Lee Perry, Librarian at the Woodward Library (Woodward Memorial Room) of the University of British Columbia, for allowing the reproduction of the illustrations.

3. See Pliny, 1991, *Naturalis Historia,* books XVI, XXXV, XXXVI, translated by H. Rachman, Cambridge, Harvard University Press.

4. For a discussion on the links between Vitruvius and Pliny, see Michael Greenhalgh, 1974, "Pliny, Vitruvius, and the Interpretation of Ancient Architecture", *Gazette des Beaux Arts,* vol. 84, serial 6, p. 297-304.

5. Granger, Frank, 1983, *De Architectura,* Cambridge, Harvard University Press, vols. I and II, p. xv.)

6. See Frontinus, *De Aquis Urbis Romae*, I, 25. On Frontinus and his writings, see DeLaine, Janet, 1996, "'De Aquis Suis'?: The 'Commentarius' of Frontinus", Claude Nicolet (ed.), *Les Littératures Techniques dans l'Antiquité Romaine – Statut, Public et Destination, Tradition*, Genève, Vandœvres, p. 117-145.

7. Cetius Faventinus wrote "*De artis architectonicae peritia multa oratione Vitruuius Polio aliique auctores scientissime scripsere*" (p.c.); that quote is from Fleury, Philippe, 1990, translator, *Vitruve – De l'Architecture – Livre I*, Collection des Universités de France, Paris, Les Belles Lettres, p. X). For a translation of *De Diversis Fabricis Architectonicae*, see Plommer, Hugh, 1973, *Vitruvius and Later Roman Building Manuals*, Cambridge, Cambridge University Press. Cetius Faventinus' book is also known as the *Artis Architectonicae Privatis Usibus Abreuiatus Liber*.

8. MacDonald, William, L., 1977, "Roman Architects", Spiro Kostof (ed.), *The Architect – Chapters in the History of the Profession*, Oxford, Oxford University Press, p. 28-58.

9. Fleury : XLVII.

10. Sidonius Apollodorus wrote: "[…] *quacque, si fors exigit, tenere non abnuit cum Orpheo plectrum, cum Aesculapio baculum, cum Archimede radium, cum Perdice circinum, cum Vitruuio perpendiculum* […]"; (quoted from Fleury : X).

11. Servius wrote: "*Vitruuius, qui de architectonica scripsit* […]"; (quoted from Fleury : X).

12. Fleury : XLVII.

13. The notion of buttressing hypothetical archaeological and architectural arguments (for theatre reconstructions) using Vitruvius has been explored elsewhere; see Millette, Daniel, 1998, "Textual Imaginations: Vitruvius in Archaeological [Re]constructions",

Assemblage – Sheffield Journal of Archaeology, Sheffield, University of Sheffield Graduate School of Archaeology, vol. III.

14. Kruft, Hanno-Walter, 1985, *Geschichte der Architekturtheorie: Von der Antike bis zur Gegenwart*, München, C.H. Beck'she Verlagsbuchhandlung. Translated into English by Ronald Taylor, Elsie Callander, and Antony Wood, 1994, *A History of Architectural Theory From Vitruvius to the Present*, New York, Princeton Architectural Press, p. 19.

15. For an assessment of the uses and references to the *De Architectura* between Antiquity and the Renaissance, see Fleury : "Introduction"; and Heitz, C., 1975, "Vitruve et l'Architecture du Haut Moyen-Age", *La cultura antica nell' Occidente Latino dal VII all' XI secola* (*Settimane di studio del centro Italiano di Studi sull'Alto Medioevo*), vol. 22, No. 2, spoleto 2, p. 725-752.

16. See Bieber, M., 1961, *The History of the Greek and Roman Theatre*, Princeton, Princeton University Press, p. 254; Frézouls, E., 1982, "Aspects de l'histoire architecturale du théâtre romain", *Aufstieg Und Niedergang Der Römischen Welt-Geschichte Und Kultur Roms Im Spiegel Der Neurren Forschung*, vol. II, Berlin, Walter De Gruyter, p. 436-437; and Marta, R., 1989, *Tecnica Costruttiva a Roma nel Medioevo*, Roma, Edizioni Kappa, p. 13.

17. De Camp, L. Sprague, 1993, *The Ancient Engineers*, New York, Barnes and Noble, p. 357.

18. Ciapponi, L. A., 1984, "Fra Giacondo de Verona and His Edition of Vitruvius", *Journal of the Warburg and Courtauld Institutes*, vol. 47, p. 72.

19. For example, see Mitchell, Herbert, and Max Marmor, 1996, "An Unrecorded Manuscript Translation of Philander's '*Digressio Utilissimo*' on the Classical

Orders and the Geneva Vitruvius of 1618", *Journal of the Society of Architectural Historians*, vol. 55, No. 2, p. 152-157. For more on unrecorded manuscripts, see Scaglia, Gustina, 1979, "A Translation of Vitruvius and Copies of Late Antique Drawings in Buonaccorso Ghiberti's *Zibaldone*, *Transactions of the American Philosophical Society*, vol. 69, part 1. Manuscripts continue to be analyzed and discussed; see for example the Michael Wills (c. 1770) annotated text in Casey, Christine, 1994, "'*De architectura*': an Irish eighteenth-century gloss", *Architectural History*, vol. 37, p. 80-95; and Torlontano, Rossana, 1993, "Le 'Legi All'Architettore Becessarie Secondo la Mente di Vitruvio' di Giovan Battista Aleotti", *Opus – Quaderno de storia dell'architettura e restauro*, vol. 3, p. 123-160. For a relatively recent listing of manuscripts, see Vagnetti, Luigi (ed.), 1978, "2000 Anni di Vitruvio", *Studi e Documenti di Architettura.*, No. 8, September; Vagnetti's book does not include an analysis of the editions of the *De Architectura*, yet it does contain useful bibliographic annotations.

20. The oldest extant manuscript is the *Harleianus* 2767 that dates back to the nineteenth century; others may have similar dates: The *Gudianus* 132 manuscript and the *Vaticanus Reginensis* 1504 manuscript are estimated to date back to the tenth or eleventh century. The *Bruxellensis* 5253 manuscript is thought to have been prepared during the eleventh century. For a discussion, see Fleury : LIII - LIV.

21. Ciapponi, L. A., 1984, "Fra Giacondo de Verona and His Edition of Vitruvius", *Journal of the Warburg and Courtauld Institutes*, vol. 47, p. 72.

22. Kenneth Connant, in his 1968 "The After-life of Vitruvius in the Middle Ages", *Journal of the Society of Architectural Historians*, vol. 27,

p. 33-38, has shown that with his work at Cluny III. Also, Michael Greenhalgh, in his 1989 *The Survival of Roman Antiquities in the Middle Ages*, London, Duckworth, underscores that Einhard may have been directly inspired by the *De Architectura* in his use of Roman-like masonry for his church design at Steinbach (159). Copies were also kept within the royal houses where the status associated with classical architecture had not completely disappeared; King Theodoric (491-526) undertook rebuilding programs at both Ravenna and Rome. He sponsored, for example, the restoration of the theatre at Pompey according to his own interpretation of the classical ideal.

23. Paul Frankl, in his 1960 *The Gothic – Literary Sources and Interpretations through Eight Centuries*, New Jersey, Princeton University Press, shows that the treatise was accessible to the students and builders associated with monasteries. Also, the apprentices at the various building lodges that emerged during the fourth and fifth centuries, albeit secretive, would have had the opportunity to refer to the ancient text; builders would have found the technical instructions particularly relevant to the medieval builder's needs: Proportion and geometry (III, 3.1; 5.1-15), Siting of buildings (I, 7.1), and Timber and its uses (II, 9-10). Also, the concise procedures for dealing with pigments and colours were directly applicable to fresco and wall painting (VII, 5.1-8). See Kostof, Spiro, 1977, "The Architect in the Middle Ages – East and West", *The Architect - Chapters in the History of the Profession*, Oxford, Oxford University Press, p. 59-95.

24. See Pevsner, N., 1943, "The Term Architect in the Middle Ages", *Speculum*, No. 17, p. 549-562.

25. Philippe Fleury (LI, footnote

124) points out that at least three scholars (Spitzmuller, Krinsky and Gros) argue for a different date (1416); we leave the argument to them. See also Ciappomi. L., 1969, "Il De Architectura di Vitruvio nel primo umanesimo", *Italia Medievale e Umanistica*, vol. 3, p. 59, for a discussion on the diffusion of the manuscript from St. Gall.

26. See Ettlinger, L.D.1977, "The Emergence of the Italian Architect During the Fifteenth Century" Spiro Kostof (ed.), *The Architect – Chapters in the History of the Profession*, Oxford, Oxford University Press, p. 99; and Schevill, F., 1963, *Medieval and Renaissance Florence – Volume II: The Coming of Humanism and the Age of Medici*, New York, Harper and Row Publishing, p. 419.

27. Müntz, E., 1880, "Raphael Archéologue", *Gazette des Beaux-Arts*, vol. 22, No. 2, p. 316.

28. Alberti wrote his treatise around the year 1452, just as he was taking on the role of *conservateur des monuments historiques de la papauté*. His treatise was not written as a direct translation of the ancient text; the older one recalled the past while Alberti's tended to look ahead, using the past to rationalize ideas related to technique and design. In that way, he was able to transform the non-Christian text into one which was palatable for his humanist patrons and Catholic consumption. However, most sections still described design very much like Vitruvius had, with, for example, suggestions for optimal siting and forms based on examples from antiquity (see his Book VIII, 7). For detailed accounts of Alberti's transformation of the *De Architectura*, see Germann, Georg, 1991, *Vitruve et le Vitruvianisme – Introduction à l'Histoire de la Théorie Architecturale*, Lausanne, Presses Polytechniques et Universitaires Romandes; Eden,

A.W., 1943, "The *De Re Aedificatoria* of Leon Battista Alberti", *Town Planning Review*, vol. 19, No. 1, p. 10-28; and Chapters 3, 4, and 6 in Kruft, *op. cit.* See also Payne, A., 1999, *The Architectural Treatise in the Italian Renaissance: Architectural Invention, Ornament and Literary Culture*, Cambridge and New York, Cambridge University Press.

29. Rykwert, Joseph, 1998, "Theory as Rhetoric: Leon Battista Alberti in Theory and Practice", Vaughan Hart, Peter Hicks (eds.), *Paper Palaces The Rise of the Renaissance Architectural Treatise*, New Haven and London; Yale University Press, p. 33-50.

30. van Eck, C., 1998, "The structure of *De Re Aedificatoria* Reconsidered", *Journal of the Society of Architectural Historians*, vol. 57, No. 3, p. 280. See also Wittkower, R., 1949, "Alberti's Approach to Antiquity in Architecture", *Architectural Principles in the Age of Humanism – Columbia University Studies in Art History and Archaeology*, New York: Random House, No. 1, p. 33-56.

31. Pellecchia, L., 1992, "Architects Read Vitruvius: Renaissance Interpretations of the Atrium of the Ancient House", *Journal of the Society of Architectural Historians*, December, vol. 51, No. 4, p. 377-416.

32. Fiore, F. Paolo, in his 1985 "La traduzione da Vitruvio di Francesco di Giorgio", *Architettura – stori e documenti*, vol. 1, identifies Francesco di Giorgio Martini's edition as the earliest of the Renaissance translations.

33. For a discussion on Daniel Barbaro's use of *scaenographia* within the humanist framework, see Cosgrove, Denis, 1997, "Spectacle and Society: Landscape as Theater in Premodern and Postmodern Cities", Paul Groth, and Todd W. Bressi, *Understanding Ordinary Landscapes*, New Haven,

Yale University Press. For a brilliant interpretation and analysis of perspective and *scaenae*, see Damisch, Hubert, 1994, *The Origin of Perspective*, translated by John Goodman, Cambridge, MIT. See also Oechslin, Werner, 1984, "Between Painting and Architecture. The Artificiality and Authority of Scenography", *Daidalos*, December, No. 14, p. 21-35; and Wittkower, Rudolf, 1949, "Principles of Palladio's Architecture", *Architectural Principles in the Age of Humanism – Columbia University Studies in Art History and Archaeology*, New York: Random House, No. 1, p. 57-100.

34. On Fra Giocondo, see Ciapponi, L. A., 1961, "Appunti per una biografia di Giovanni Gicondo da Verona", *Italia Medioevale e Umanistica*, vol. IV, p. 131-158.

35. For a discussion on "correcting" the *De Architectura*, see Jacks, Philip J., 1990, *The Simulachrum of Fabio Calvo: A View of Roman Architecture all'antica in 1527*, Art Bulletin, vol. 72, No. 3, p. 453-481.

36. Lesnikowski, W., 1987, "Vitruvius to Venturi – On the Changing Nature of Theories in Architecture", *Inland Architect*, vol. 31, No. 5, p. 33.

37. See Rowland, Ingrid, 1995-1996, "A Late Twentieth-Century Vitruvius", *The Classicist*, No. 2, p. 8.

38. For a listing of Vitruvius translations published between the fifteenth century and 1918, see Ebhardt, Bodo, [1918], 1962, *Vitruvius. Die zehn Bücher der Architektur des Vitruv und imbre Herausgeber Mit einem Verzeichnis der vohaudenen Ausgaben und Erlaeuterungen*, New York. For a discussion of various translations, Ruffel, P., and J. Soubiran include manuscript stemma, transcription errors, and varying annotations in their 1960 "Recherches sur la tradition manuscrite de Vitruve", *Pallas –*

Annales publiées par la Faculté des lettres de Toulouse, vol. IX, fascicule 2, p. 3-154, Toulouse. Marcucci, Laura, 1978, "Regresso cronologico e critico" in "2000 Anni di Vitruvio", *Studi e Documenti di Architettura*, No. 8, p. 11-184, Florence, lists and critically assesses editions to 1978, as does Morolli, Gabriele, 1988, *L'Architettura di vitruvio – Una guida illustrata*, Firenze. For a more detailed listing, see Callebat, Louis, P. Bouet, Ph. Fleury, and M. Zuinghedau, 1984, *Vitruve – De Architectura – Concordance; Documentation bibliographique, lexicale et grammaticale*, Tomes I et II, New York, Olms-Weidmann.

39. Moressi, M., 1988, "Humanistic Interpretations of Vitruvius in the 15ᵗʰ Century", *The Princeton Journal*, vol. 3, p. 81-100.

40. William Brown Morton III in *A Bibliography of Vitruvius*, Virginia, University of Virginia, 1961, lists English editions up to 1961. His list is not complete. For a discussion on the study of the *De Architectura* in England, see Hart, Frederick, 1968, "Introduction", Sir Henry Wotton, *The Elements of Architecture*, Charlottesville, University Press of Virginia.

41. Rowland, Ingrid, and Thomas Howe, 1999, (translator and commentator/illustrator), *Vitruvius – Ten Books on Architecture*, Cambridge, Cambridge University Press.

42. See for example Brady, Darlene, 1996, "The Education of an Architect: Continuity and Change", *The Journal of Architectural Education*, vol. 50, No. 1, p. 32-49; Heath, Tom, 1989, "Lessons from Vitruvius", *Design Studies*, Surrey: Design Research Society, vol. 10, No. 4, p. 246-253; and Wilson, Forrest, 1992, "Vitruvius Revisited", *Blueprints*, summer, vol. X, No. 3, p. 1 and 6.

43. Moressi : 85.