What Vitruvius Said

Richard Patterson

Vitruvius’s De architectura has long been subject to critical commentary on the grounds that its language is irregular and even untranslatable, that its technical treatment of the Orders is incomplete and inconsistent, and that its organization does not present its technical material in the most coherent way. Yet, it has also been referred to as the origin of the theoretical basis of architecture through its citation of Greek metaphysical concepts as the grounding principles for an architectural science. This paper argues that Vitruvius’s substantial contribution lay not in theoretical speculation but, through the invention of technical discourse, in the introduction of critical values to ‘technical’ matters and, through the submission of technical matters to the dynamic of language, in the constitution of technology as a developmental process.

... the analysis of codes perhaps offers an easier and surer historical definition of a society than the analysis of its signifieds, for the latter can often appear as trans-historical, belonging more to an anthropological base than to a proper history.

Roland Barthes Image Music Text

We cease to think when we refuse to do so under the constraint of language, we barely reach the doubt that sees this limitation as a limitation.

Friedrich Nietzsche The Will to Power

Vitruvius’s De architectura (ca. 30 BC) is the oldest surviving treatise on architecture. Amongst ancient works concerned with technical topics, it was singular in its project to ground that a complex set of technical practices categorized as ‘architectural’ in abstract, predominantly Greek metaphysical principles. It is for this reason, it has been suggested, that it alone, amongst the treatises on architecture mentioned in classical writings, managed to survive into the modern era. In the practice of architecture, however, its influence has been relatively modest. During the Renaissance, it was the later and derivative commentator Palladius Rutilius Taurus Aemilianus (ca. AD 400) who was more frequently referred to. Then, as in all periods, architects sought inspiration from authors whose language and style addressed their own preoccupations, interests, and orientation. There was obviously something attractive to the Renaissance mind about the way in which Palladius limited his discourse to the reduced scope of what we might now refer to as the technical. Perhaps for this reason, aside from a certain influence on the language and concepts of John Dee’s ‘Preface’, Vitruvius did not appear in English until the early nineteenth century. De Architectura’s influence was, however, more substantial as a model of a certain textual strategy.
Discursive yet intermittently systematic, relatively open, and formally critical, Vitruvius codified a discourse which led to what we now call ‘science’ and ‘technology’. Indeed, he may be said to have constituted ‘technology’, if by ‘technology’ we mean a mode of thinking about making things which is motivated by, and subject to criteria originating in discourse ‘external’ to the issues which such manufacture conventionally presents. Technology, far from being a natural outcome of the character of things, is the result of a certain codification. It is the result of a system of protocols, governing presentation and justification. This is not to say that technology operates without knowledge, but that this ‘knowledge’, both as know-how and propositional knowledge, is used but intermittently and, indeed, vicariably. Technology is not grounded in the autonomous objects pursued by science and has no isomorphic version as ‘theory’. It is an eclectic device of human creation; its laws are conventional and convenient; its being, furtive. The world it creates may be nonetheless substantial for all of that. But the greater knowledge that technology provides of the world is not so much an openness, an intimacy of understanding or knowledge of essences as their opposite: a withdrawal from the world into a particular mode of discourse. Technology is, in its way, but a trope. The elements of technological subjects do not arise so much from theoretical grounds as from the code, the unconscious discursive structures that constitute them.

Architecture was the first subject concerned with making things with one’s hands in which these unconscious discursive structures were laid bare as text. Conventional wisdom has it that subsequent to Vitruvius, the valve and historical force of architecture lay in the example it set as a form of practice grounded in metaphysical theory, to the truth which it was deemed thereby to embody literally and figuratively. As model and example, its value so it has been said also lay in the principle it established for other technologies: for the successful development of ‘means’, understood and argued according to sound metaphysical truths, that is to say, according to the criterion of transcendent objectivity.

‘Architecture’ illustrated the value and power of the critique and evolution of technique over mere artisanal convention in a manner for all to see. Similarly, it came to be the site for the expression of metaphysical theories and the enhancement of objectivity, not merely ‘didactically’, but as material function and rigorous moral imperative. Theory, objectivity, metaphysics and architecture came to be accepted as relatively unproblematic representations of each other. They constitute the historical basis of a major theme in Western culture involving the articulation of ultimate criteria in objective, ‘metaphysical’, or ‘scientific’ terms, and vice versa, technological development came to be seen as but a closer reading of the book of nature, progress a spin off of the inevitability of being, and technical creativity itself an event of measured systematic surrender.

While De architectura is on ‘architecture’, the material that it covers is much broader, including all forms of mechanics, hydraulics, sundials and music. Amongst ancient works similarly concerned with technical topics (cf. Hero of Alexandria), De architectura is universally acknowledged to have
been singular, for its time, in the use of theoretical grounds for the arguments that it put forward. Vitruvius has frequently been cited as the original classical authority on rule-based architectural systems and, through his clear formulations, as having anticipated the framework within which architecture and, by way of precedent, all subsequent technologies came to be seen as objective ‘in themselves’: ‘things’ to be understood and manipulated more effectively on the basis of theoretical models.

But Vitruvius’s use of abstract principle is more complex and more interesting than such a simple, naturalist reading, and his use of metaphysical material is not so straightforward, nor so modern, as most commentary on Vitruvius has attempted to make it. While it has become rather more common to note his use of the art of rhetoric as the borrowed origin of the order that he imposed on his technical subjects, the force of most critical writing on Vitruvius lies in the claim that his achievement resides, as noted above, in pointing to a clear theoretical link between architecture and metaphysical principle. The argument of this paper lies in the opposite direction: that the power in Vitruvius’s work lay in the artificiality of his linkage between technical skills and rhetoric. Here it is argued that the origin of ‘technology’ does not lie in systematic, metaphysically grounded theory and theoretical understanding but in the opening up of technical skills as topics to the discursive mind. That it is the discipline of discourse that ‘invented’ the technical imagination.

Critics of Vitruvius, who would argue against his personal achievement, have most frequently pointed to problems in his use of language, particularly in the curious way he used and manipulated terms. As early as the mid-fifteenth century, Alberti commented that Vitruvius’s language was ‘Latin to Greeks and Greek to the Latins’. For the greater part, Vitruvian historiography has been of the opinion that the language of De architectura is barely Latin at all. But while the tenor of his text may be artless, it is nonetheless and ironically the very art that his written language lacked that he intended to transmit to building. In keeping with apologists for his rhetorical inspiration, we might note the possibility, following Cicero’s principles of propriety, that Vitruvius’s use of language, ritual apologies notwithstanding, might best be understood as an example of the ‘ethical’ selection of a style, the selection of a rhetorical level of delivery or executio as would have been appropriate to the subject of building and making.

Granger, one of Vitruvius’s twentieth-century translators, has suggested that his language was close to the everyday spoken Latin of his time, as it has a dear affinity with the graffiti of Pompeii (AD 79). Vitruvius himself, while apologetic for the gracelessness of his writing style, was nonetheless erudite, as we can see from the sheer control he had over his material. But despite the apparent clumsiness of his style to our eyes, there is much of his thought and his declared intentions that was derived from rhetorical treatises, and in particular from those of Cicero. From the De officiis, for example, he transcribed not only formal structure, but also such Stoic moral precepts as the concept of decor, or ‘appropriateness’, a concept that he introduced as a central criterion in architectural judgement. That Vitruvius’s ambition was clearly
greater than the compilation of yet another aide-mémoire on building technique is demonstrated by the inclusion of such critical values.

Previous architectural treatises, as that by the Greek Hermogenes, had in all probability been technical manuals of a type mostly associated with the Museum of Alexandria. As such, they were intended largely as reference works in the form of lists, tables and diagrams. They were intended primarily for practitioners, and were to some degree esoteric documents: they were dependent upon prior education or some form of initiation into the significance of their contents. Much of Vitruvius does fit clearly into this tradition. As textual critics have noted, parts of his work seem to have been lifted from various of these prior Greek manuals and, further, much of what he wrote appears in many instances to be little more than transcribed lecture notes. In his nomenclature, he maintained the strictly technical, Greek terms of his prototypes, fostering the view amongst modern critics and historians that he was essentially conservative and Hellenistic in his taste. But what one should note from the outset is that what this treatise does most consistently and strictly is precisely to set up this nomenclature: that is, the beginnings of a Latin nomenclature, along with a general framework for practice. What (on the contrary) he does not do with such precision and consistency is set out the rules for the geometrical and numerical basis of architecture, at least not with consistency and rigour, as the history of all those many frustrated attempts to reconstruct his examples visually has so amply demonstrated. But perhaps historians have simply been trying to understand Vitruvius in the wrong places by imputing greater significance than is justifiable to the ‘technical’ and ‘theoretical’ principles with which he was purportedly concerned. Certainly, Vitruvius marshalled technical and metaphysical principle in his arguments, but primarily as illustrative metaphor. At the time of its writing, the text’s prescriptive and rule-based mentality concerning composition would have been entirely contrary to the ‘free-wheeling licence’ of his contemporary architects and builders. But it was a radical conservatism, much more than prejudice, having to do with the strategic motives that brought him to write. His concern was twofold. Initially, as I note, he saw it as his pre-eminent task to bring architecture into standard Latin discourse. Prior to Vitruvius, ‘architecture’ stood outside standard discourse. Elements and topics of architecture did not have the proper names, and as such could not be properly emulated. There could be no basis for establishing the criteria of decor. There could be no meaning, narrative, or content – no historia, as he called it. These were the primary issues with which he was concerned in the construction of a treatise on architecture. It is only subsequently that he took up the issue of such secondary matters as number and measure: that is, when he began to consider those particulars concerned with elocution, execution, or ‘diction’.

Vitruvius does not seem to have recorded or systematized best existing or previous aesthetic practice. He did not write from an empirical basis except with reference to construction and materials. His comments about ‘design’ are fragmentary and general. Similarly, the architecture that came after him seems to have remained relatively
unaffected by what he wrote. He neither took from, nor provided for, what we might call practical design. In the face of such comprehensive failure, then, the question that remains worth contemplating is why this treatise, written in a vernacular style, not only simply survived into the modern era, but, more substantially, became the prototype of all later technical writing.

To reiterate the point, it was not in its rule-based, metaphysical, or technical content that *De architectura* was in any sense innovative. Vitruvius’s identification of the principles of universal harmony in the appearance of a harmonious building would have surprised none of his readers. Metaphysics was a commonplace of explanation. What was not commonplace and what was innovative was the use of a discursive style of writing in the construction of a technical text. What was not commonplace was the application of linguistic and rhetorical values in the evaluation and formulation of criteria in technical matters. Vitruvius’s innovation did not lie in the content of his writing; it did not lie in theory or in any attempt to situate architectural decisions in metaphysics; it lay in the very discourse out of which he wrote. What Vitruvius achieved that was of lasting value was not architectural metaphysics, but architectural discourse. What he ultimately achieved of historical importance was not the systematic setting-down of architectural theory or architectural meanings, but the very invention of technical discourse itself in not only the submission of technical practice to the disciplines but, much more importantly, the creative possibilities of language. By submitting material production to the taxonomies, disciplines and potential disruptions, perversions, and distortions of language, Vitruvius opened material production to the possibility of intentional material innovation in the creation of new expression: that is, in the creation of new ‘sentences’. Again, technology was born not through a ‘discovery’ of metaphysics within the technicalities of production, but through the submission of technical activities to the discipline of speech, style, criteria of judgement, ethics, and politics. Technology does not have an objective existence; it is only technical practice that comes to life as language. To ‘think’ technologically is to do so under the constraint of language; we cease to think technologically when we refuse to acknowledge the origins and creative force of technological discourse. We even barely reach the doubt that sees this limitation as a limitation.

In the introductory section of *De architectura*, Vitruvius made it clear that his purpose in writing had been to contribute to the growing programme of public works initiated by Augustus, to whom his text was dedicated. Vitruvius stated that when he wrote the treatise he was already an old man, that he had been known to Julius Caesar, and that he had enjoyed the preference of Augustus’s sister, Octavia. He noted that his career had been in civil architecture and that he was adequately provided for in his retirement. *De architectura* was intended not to obtain pecuniary gain for its author, but to advance Vitruvius’s reputation and, as a polemical and didactic tract, to lobby for improved standards in Roman building. To improve civic standards, indeed, to invent a new, disciplined and meaningful civic environment, one did not need to write a technical manual. One needed a polemical...
document, a document capable of interjecting into formal debate, a document in such a form as to be meaningful to an intended audience. What made De architectura a lasting contribution to Western civilization quite simply was that this polemic took the form of a treatise that, according to Cicero, meant ‘to divide the entirety of a practice into its general classes’. But to place the entirety of a practice in a written document would also have the effect of annihilating its esoteric character. Vitruvius’s innovation lay not in architecture as metaphysics, but in presenting architecture in a new, explicitly public, rhetorical format. Esoteric ritual was subverted by the rhetorical format which, in its turn, came to constitute the framework of practice. Practice in this way became ‘reflective’. For the first time, the construction of cities, buildings and technical apparatus was removed from the control of esoteric practices and brought into an (albeit elitist) public domain.

Much of the criticism that has been made of De architectura has concerned the structure of the division and apparent admixture of topics. But this misinterprets the moment of the text: the fact that De architectura was intended as a codification not of the ‘art’ of building as it was practised, but of the modes of discourse that might be employed to capture its discontinuous technical rigours and present them in a form susceptible to standard, critical, rational judgement. What the narrative does not include are the topic headings; what is included are all the discursive examples and annotated detail. One has to step back to find the structure. In the absence of a regular discipline or codification of ‘architecture’ Vitruvius has invented a set of chapters that echo the structure of a rhetorical treatise in a similarly ascending scale of complexity. This can be demonstrated by summarizing the implicit topics of Book I:

- Chapter I deals with the scope and nature of the architectural field.
- Chapters II and III deal with taxonomies, or the art of architecture.
- Chapters IV–VII deal with strategies, genres and methods.

Vitruvius justifies the sequence in which he presented his material in a curious way. He notes that he began with a discussion of the ‘work’ of the architect (a description of what an architect deals with or holds as a model of his expertise), a nomenclature, a listing of building types, an anecdote on the history of building practices and, only after this, a section on the fundamental properties of matter and the characteristics of building materials. Again, this is not a ‘theory’ relating material practice to metaphysics. Vitruvius’s strategy for devising the general classes of architecture would have been normal in the classical period as an articulation of a subject according to its general
classes: classes, that is, not of its processes, but of how it is best submitted to description, critique, and control. It relies on a method that is typical of classical scholarship: general descriptions concern typical categories, topics or commonplace – here either building types or constructional practices – in which the fundamental form or nature of the topic is given for ‘emulation’ that is to be adapted, reconfigured or transformed according to rules worthy of its exemplar. It is uncertain exactly how ‘rules’ would have been implemented before Vitruvius. Most probably they would have operated through rituals and forms of practice, established, traditional, and esoteric. Vitruvius’s innovation was to transform those practices and their associated terminologies not into metaphysics but into ethical rules and learned discourse. Through configuring architecture as an ‘art’ it was his explicit intention to render it accessible not only to builders but to omnibus sapientibus (all those acquainted with the true value of things, the wise and the sagacious).

But it is in his statement regarding the scope of his project that he reveals his unique vision: ‘In these books,’ he states, ‘are all rational disciplines disclosed.’

While Vitruvius’s debt to Cicero is now generally acknowledged, what has perhaps not been fully explored is the extent to which Cicero’s influence so deeply structured Vitruvius’s thought and, as such, formulated the inner tension of what came to be recognized as technological discourse. Technical terms, nomenclature and tradition in Vitruvius, as noted above, were taken from the Greek and largely from Hellenistic Greek practice. But technical terms, nomenclature and tradition were merely the ‘things’ that Vitruvius properly sought to emulate. The framework into which he placed them: the systematic means by which he transformed and manipulated them are repeatedly, obsessively, Ciceronian. The key lies in 1,1,3, at the very beginning of the treatise, where Vitruvius discusses the issue of signification:

‘Both in general and especially in architecture are these two things found: that which signifies and that which is signified. That which is signified is the thing (res) proposed about which we speak; that which signifies is an indication (demonstratio) of the same thing explicated by reasoned (rationibus) erudition.’

The use of terms based on the root ratio has led many translators to elide the use of ratios and proportions with the central function Vitruvius seems to give to this term. But ratio was rarely used as a reference to number. Ratio signified something closer to ‘rational’ or the German term Rat, or ‘council’. It could signify ‘a reckoning, account, calculation, computation’, or it could refer to a transaction or, in a way that was a particular favourite of Cicero’s, to a ‘matter’, as in a ‘business matter, an affair’. The use of rationibus calls to mind a reference to a particular kind of mental activity involving calculation and a principle of agreement and equivalence. ‘Reasoned’ signification requires reflection and a robustness something like the terms of a commercial agreement. If Vitruvius were ever to speak of the principle of rationality in architecture as a property of number, it would only be in an exemplary, metaphoric way.
When he speaks of numeracy, he does so only by way of reference to one of the skills or sciences that the architect must be competent in. ‘Ratio’, in this sense, refers to a principle of soundness, but not (literally) to a regulating model for the process of ‘design’. When he discusses the role of the architect, his range of reference is even broader. When he uses the term again at 1,2,2 (pictarationibus), he clearly means something along the lines of ‘realistically’.18 Again one turns to Cicero, in this instance to his description of the five parts of rhetoric from De inventione, to clarify something of the way in which Vitruvius is thinking:

‘Invention (inventio) is the excogitation of true things (res), or things similar to truth to render one’s cause plausible; disposition (dispositio) is the arrangement in order of the things thus discovered; elocution (elocutio) is the accommodation of suitable words to the invented (things); memory (memoria) is the firm perception in the soul of things and words; pronunciation is the moderating of the voice and body to suit the dignity of the things and words.’19

From this perspective, one can begin to see more clearly why Vitruvius has introduced the issue of signification to a discussion of architecture. Cicero’s res are the signifieds. What he opposed as words and things, signifiers and signifieds, Vitruvius opposes as things and the way they are represented, explicated and justified, spoken of. For Cicero, ‘things’ are selected (emulated) (Part I) and manipulated (Parts 2–5). For Vitruvius, these things are (‘that which is signified’), and are manipulated for presentation to the mind (‘that which signifies’). In Vitruvius, the ‘things’ are the elements and motifs, the proposals of architecture, of which he discusses many aspects of the possible and correct range of relationships. He does not discuss appearance, nor does he prescribe overall solutions for buildings. What, on the contrary, the whole of his text is concerned with is the relatively systematic presentation of the allowable transformations and manipulations that may be made of the emulated bits of architecture. Then he is concerned under the principle of dispositio in the ways in which these elements can be brought together. At 1,2,1, he notes, for example, that ‘Architectura autem constat ex ordinatione. . . . et ex dispositione’, followed by citation of terms related to composition (eurythmia and symmetria – the Greek words for two different types of proportion) and decor, by which he refers to propriety: to suit the dignity of the building.20 In other words, Vitruvius’s ‘invention’ of terms, his selection of terms, is in accordance with the classical sense of ‘invention’. His organization of the discipline of architecture is in accordance with the classical sense of classification and disposition: that is, by way of the borrowed taxonomies, tropes and metaphors drawn from rhetoric.

The key, however, lies more centrally in the direct way in which Vitruvius drew on rhetorical devices to systematize and present the heterogeneous aspects of building practice, to bring Cicero’s model of argument into the armoury of the architect.21 Additionally, Vitruvius seems to have wanted to expropriate, so to speak, the perspective of the orator in order to provide the architect with a
means for authoritatively structuring the relationship between technical matters and his audience in a way which had never before been attempted. The model, again, would appear to have been Cicero:

‘... your natural science itself, your mathematics, and other studies which you just now reckoned as belonging peculiarly to the rest of the arts, do indeed pertain to the knowledge of their professors, yet if anyone should wish by speaking to put these same arts in their full light, it is to oratorical skill that he must run for help.’

What was new in this framing of technology above and beyond the technical manuals of the past was a rendering, again, of technical discipline in the form of discourse.

It is in the opening chapter of the first book, where he delineates the ‘work’ of the architect, that Vitruvius produced his most interesting or problematic terms, ratiocinatio and fabrica, which he claims to delineate in what architecture consists:

‘The forms of expertise of the architect are embellished by many disciplines and varied learning – by which all things are examined and judged – which are individually brought to perfection within their particular arts. The work consists in fabrica and ratiocinatio. Fabrica is sequential and also established, deliberative practice, brought to perfection by the hands, out of a material of whatever nature is appropriate to the work, according to the intention (propositum) of a representation (deformationis). Ratiocinatio, on the other hand, is (understanding) how things are made with knowledge and skill: both (in knowing) how rational proportion can be demonstrated and also in having the power of explication.’

A variety of words crash together in this paragraph in a way which has perplexed and frustrated all attempts to interpret and safely render it as modern, vernacular text. The translator will have had a degree of trouble with the word propositum, as ‘an argument’ or the first premise of a syllogism’ as it would have carried too much of a sense of oratory to have been suitable in the context of instructions concerning bricks and mortar. Its rhetorical origins would have been suppressed for the sake of contemporary sensibility. It became ‘intention’ or ‘plan.

Deformationis, too, has been variously translated as ‘design’ of ‘representation’. It refers to a ‘deforming, disfiguring, defacing’, of as a verb, to ‘bring into form’: to distort, in other words, to kick into shape. The use by Vitruvius of deformo nonetheless implies a mental construct assuming the preexistence of the form. Vitruvius appears to have seen the activity of representation or design as the ‘deformation’ of a thing, a selection and then a swerve, in short, as a trope. In all likelihood, this usage of deformo would have been conventional. But ‘deformation’ carries much more rhetorical and metaphysical baggage than our modern ‘design’ or ‘representation’, and the sense in which these, to our modern ears, latent significations of deformation draw the Architectus in the direction of the Rhetor and of language would have been entirely in harmony with the thrust of the Vitruvian text.
Modern critical tropology typically attempts to elucidate the identity of repressed tropes latent in that logical demonstration and literal description we associate with truth. ‘Tropic is the shadow from which all realistic discourse tries to flee. This flight, however, is futile; for tropics is the process by which all discourse constitutes the objects which it pretends only to describe realistically and to analyze objectively’. Yet in this analysis, the moment at which techne became subject to troping remains historically opaque. Against the ‘accidental and inevitable’ that is to say the ‘realistic’ model of technological development, there is only an argument for a culturally mediated shaping of imaginative forms, and one which is somehow unconsciously directed or structured. In Vitruvius, we can see that rhetorical theory is not merely useful interpretatively in tracing the unconscious or frivolous motives underwriting scientific or technical investigation, but that it was in fact the conscious imposition of rhetorical structures on technical practice which initiated and indeed constituted that investigation. Ratiocinatio, strictly speaking, is a rhetorical ‘trope’ or ‘figure’. ‘Trope’ and ‘figure’ are general terms referring to any striking or arresting use of language beyond the range of normal usage. Tropes are generally words that rely on a distinctive change in meaning to obtain their rhetorical force. Cicero preferred the use of ‘trope’ in referring to transformations limited to single words. When discussing the use of artificial patterns (more than one word) for the sake of emphasis, he preferred to use the word ‘figure’. Quintilian differentiated between figures of speech and figures of thought. ‘A figure’, he notes, ‘is the term employed when we give our language a conformation other than the obvious and ordinary’, but . . . ‘does not necessarily involve any alteration either of the order or the strict sense of words’. The generation of ‘figures’ involves both the recognition of the typical in the specific and the description of the particular distortion which characterizes the particular:

‘For the term [figure] is used in two senses. In the first it is applied to any form in which thought is expressed, just as it is to bodies which, whatever their composition, must have some shape. In the second and special sense, in which it is called a schema, it means a rational change in meaning or language from the ordinary and simple form, that is to say, a change analogous to that involved by sitting, lying down on something or looking back.’

‘Figures’ concern the construction of something new out of what exists and has been selected. Cicero lists ratiocinatio amongst his ‘figures’, indicating its meaning as ‘reasoning by questioning’ (cf. interrogatio or simple questioning). A review of the term in Lewis and Short is illuminating, for they give ratiocinatio a total of 26 lines, 22 of which cite several occurrences in Cicero and Quintilian, while four (semantically incommensurate with the rest) are from Vitruvius.

The ‘work’ (opera) may be made up of fabrica and ratiocinatio, but there is no suggestion in Vitruvius that the work of the architect should be similarly so constituted. The architect is required, he states, to have a knowledge of the arts concerned with fabrica, but he explicitly states that the architect is not the most competent in them. It is hardly
likely, writing about building in a slave society, that Vitruvius would suggest that architects should get their hands dirty. Indeed, Vitruvius does not even require architects to be competent at ‘drawing’. When Vitruvius writes about ‘drawing’, he uses (again) a curiously metaphorical term, *deformationibus grammicis*, meaning perhaps a ‘line drawing’ or, as in the section on the forms of skill or knowledge required of an architect, he uses the term *graphidus* (pen or pencil, trans. ‘drawing’), which, he notes, enables one to easily paint an image representing the shape of the work. While suggesting therefore that drawing might be helpful and possibly useful, what is clearly required are verbal and organizational skills. What the architect must do is instruct through ‘representing’ what is required in the mind of the artisan, for the instruction is nothing other than the specification of the necessary outcome of a known form of deliberative action. The method of representation depends on the skill of the artisan and on conventions in the division of labour.

The proper realm of the ‘architect’ as a generic term is not therefore *fabrica* but *ratiocinatio*. *Ratiocinatio* is the key principle in the organization of the various arts engaged in *fabrica*. The architect, in other words, is concerned precisely with the generalities or universals of interrogative reasoning, explication and demonstration, organization and direction deployed by the orator in obtaining agreement through ‘reasoned questioning’.

Vitruvius’s proposals are substantially about the correct social positioning of the architect (as noted, that of the orator) and the correct taxonomy of concepts and terms to be used in the organization of production in all technical activities. This is made abundantly clear in Vitruvius’s critique of Pythius. Opening with a commentary on the dual nature of all arts, rather than employing the term *fabrica*, he notes ‘the work itself (*opera*) and its *ratiocinatione*’, stating that ‘One of these is appropriate to those who exercise the individual arts, namely, the execution of the work (*operis effectus*), the other, which is common to all educated men (*omnibus doctis*), is its rationality (*rationem*).’ The architect is the bridge, rendering *opera* according to certain explicit precepts of a ‘commonality of reason’, which he makes clear:

‘Likewise there is a question common to astronomers and musicians about the sympathy of the stars and of the concords, fourths and fifths, in quadrants and triangles, the geometry of vision, which in Greek is called *logos opticos*, as for which the many things of all doctrines are all brought together, *at least insofar as it is a matter of argument*.’

Many scholars have been led by the simple binary opposition of this form to seek out other similar yet more familiar oppositions by which to render their translations. Standard has been the response that these terms are somehow just a version of Aristotle’s *techne* and *episteme*, which themselves might be somewhat problematically stated in modern form as ‘theory and practice’. The issue is of some significance, for on the outcome hangs the degree to which the practice of architecture and indeed the origin of technology can be most usefully studied through either hermeneutic or epistemological models.
An initial line of enquiry might simply be to ask why, if Vitruvius had actually intended to construct an epistemologically grounded technology, he did not simply refer to the Greek terms *techne* and *episteme*. He was not shy when it came to citing the pre-Socratics, and Greek terms occur throughout his text.

In its textual coding of the practice of building (and the various technical practices associated with civil architecture, including the construction of machines), *De architectura* constitutes architecture as the technical, material equivalent of discourse. From this arose the framework within which followed the explicit, conscious, rational correspondences between material practice and discursive signification. Through textual coding – not through a theoretically grounded knowledge – in other words, emerged a global claim to the control of technical practice. General classes of practice came to be set out as typologies: typologies of nomenclature, typologies of the proper objects of the forms of practice, or typologies of fundamental substances (one recalls in passing, Vitruvius’s obsessive classifications of building materials). With the rendering of architects’ ‘work’ as discourse, there emerged the model for the future of technical treatises in the marriage not of *techne* and *episteme*, but of *techne* and *logos*. In this conjunction, *fabrication* and *discourse* are not grounded in abstractions, but actually constitute that distinct ontological moment that we now refer to as *technology*. It is for this reason, for the singularity and irreproducibility of that moment, that Vitruvius survived into the modern world. Yet the mode of that survival has involved an amnesia.

Memory of the submission of technical tradition to public discourse has been suppressed, initially by the hegemony of esoteric guilds in the Middle Ages, to be followed by the mystification of intellectual objectivity in the creation of the office of architect during the Renaissance, and subsequently in the adoption of ‘technocratic’ symbolic languages.

In the *De Diversis Fabricis Architectonicae* of M. Cetius Faventinus (AD 300), for example, rhetorical references are more explicit and categorical. Faventinus’s intention, stated in his opening remarks, was to abbreviate the work of Vitruvius, making it more clear, and aimed at an audience of slighter intellectual ambition. Faventinus does not wish to discuss the organization of all technical knowledge; he wants to write about sound building practice. His statements are more direct. In his second paragraph, he limits the scope of architecture by referring to it as an art, unlike Vitruvius, and by stating eight principles that are pertinent to it: ‘For architecture is composed of eight parts, which are *ordinatio*, *dispositio*, *venustas*, *mensura*, *distributio*, *aedificatio*, *conlocatio*, *machinatio* . . .’ Of these, the last three refer to practical skills of building, siting, and contriving. The first five reflect the canonically five parts of rhetoric, adapted to the cause of architecture. Faventinus claims them to be the equivalent of Greek terms. While these are the terms chosen by Vitruvius, their distinction is nonetheless unclear:

‘order (*ordinatio*) is the disposition (*dispositio*) of the members of the building and consists of quantity, which the Greeks call *posotes*; quantity is the
manner in which the single members of a building respond to the effect of the whole work. Disposition is the apt arrangement of rooms ...

Venustas is alone in the parts in that it cannot be rendered as a verb. Perhaps it is due to the great system builders of the Middle Ages that such later, more formally distinct, artificial, and derivative works came to be preferred. They were so much easier to understand, and in their use of more consistent explanatory schema, even if to the detriment of a more inclusive content, more in keeping with the criteria of the time. In the modern, post-classical practice of architecture, however, De architectura's influence was to prove to be relatively modest. During the Renaissance, it was an even later commentator, Palladius Rutilius Taurus Aemilianus (ca. AD 400), again, a follower of Vitruvius, who was more frequently cited. During the Renaissance, the selection of a style of writing for architectural discourse did not necessarily require Latin.

If the lines of conceptual order had been redrawn by scholasticism, so too in another way had those of division of labour, as can be seen in the Ten Books on Architecture by L. B. Alberti, who articulates the architect's function in a startlingly different way from Vitruvius. In Alberti, the architect is firmly in ultimate control of technical processes, which he purports to understand, through calculation and measurement, more deeply than the artisans:

‘... For it is not a Carpenter or a Joiner that I thus rank with the greatest Masters in other Sciences; the manual Operator being no more than an Instrument to the Architect. Him I call an Architect, who, by sure and wonderful Art and Method, is able, both with thought and Invention, to devise, and, with Execution, to compleat all those Works, which, by means of the Movement of great Weights, and the conjunction and Amassment of Bodies, can, with the greatest Beauty, be adapted to the Uses of Mankind. ...

With Alberti, the architect is responsible for the construction of ‘Works’, meaning buildings and civil engineering, but is not concerned with the explication, control and organization of technical processes in general. In Vitruvius's fabrica, the artisan was not a mere instrument, but a practitioner with both a closer and a broader understanding and expertise in his art than that possessed by the architect. ‘Fabrica’, after all, referred initially to the place in which an artisan worked and, metonymically, to what he did or produced. Fabrica referred to ‘working with hard materials’ with an established, and deliberative manual sensibility. While being a matter of substantial knowledge, fabrica nonetheless had absolutely nothing to do with reflective or critical activity, and was certainly not subject to progressive development by the artisans.

In this very different world, it is not surprising that translators had some difficulties with the signifying nexus of fabrica and ratiocinatione. The oldest published vernacular translations of Vitruvius do not as a rule translate these Latin terms at all, preferring to retain their original, and for modern etymologists, enigmatic term. The first attempt to render them in translation was made by Ian Martin, in the
French in 1546/7, using the terms ‘discours’ and ‘fabrique’.\textsuperscript{47} (Daniel Barbaro, similarly, used discorso for his 1556 Italian edition of De Architectura.\textsuperscript{48}) Fabrica, while close enough to fabrique, meant explicitly to ‘work with one’s hands’.\textsuperscript{49} But the use of the term ‘discourse’ did not command so obvious a meaning, as it required marginal commentary in the form of an explication of proportions and certain architectural terms.

Similar concerns reverberate through John Dee’s search for the grounds and claims of architecture, in which he drew material from Vitruvius’s language, methodology and conceptual order, for his ‘Preface’ to Billingsley’s Euclid (1570). And we can already see at this early date how Vitruvius has been channelled in ways to suit the translator’s other agendas. Dee was explicitly concerned to argue for the inclusion of architecture amongst the ‘Mathematicall arts’. Indeed, as he would have it, all the aspects of an architect’s practice would devolve on mathematics: ‘By Arithmetike, the charges of buildings are summed together: the measures are expressed, and the hard questions of Symmetries, are by Geometricall Means and Methods discoursed on &c.’\textsuperscript{50} For Vitruvius, ratiocinatio had the same function in a broader, less absolute, rhetorical context.

Even so, in Dee, Martin, Barbaro and Vitruvius, the architect’s job is nonetheless discursive and twofold: initially, the architect must articulate technical processes and the meaning of building verbally to educated persons, and, secondly, the architect must translate the verbally expressed desires of clients into instructions to manufacture or construct. Amongst the moderns, this latter point is predominant, argued entirely through the gate of mathematics as a medium both of communication and of thinking and meaning. In Vitruvius, the claims for architectural discourse are made in the context of the former. They are broader and more evocative. The point of Vitruvius’s ratiocinatio is that it refers to a modality of discourse close to that of his interlocutors; with the moderns, that discourse became narrow and once again esoteric.

Dee’s reluctance simply to give up the use of ‘discourse’ in the context of mathematical calculation is particularly revealing. Discourse had been linked to reflective, coherent thought, and to conversation and narration. Its quite special meaning was already evident in Chaucer, who used it in contrast with ‘formal’ intuition: ‘It (intelligence) byholdeth alle thinges so as I shal seye by a strok of thought formely with oute discours or collacioun.’ By the middle of the sixteenth century, its cognitive, verbal sense was established as meaning ‘to pass from premises to conclusions’; it referred to ‘movement upon an onward course’ or a ‘process or succession in time’. As a noun, it referred to ‘conversation’, ‘discussion’, ‘conferring’ and ‘narrative’. Discourse concerned a rational or structured ‘passing’ from one thought to another, discursively, indeed, ‘by way of speaking’.\textsuperscript{51} As late as 1675, the identification of rationality with the power of language could still be made, as by John Wilkins:

‘... the discerning of that connexion or dependence which there is betwixt several prepositions ... which is called ratiocination, or discourse.’\textsuperscript{52}
On this basis we may interpret Dee’s project to be the reconciliation of discourse, number and power:

‘And though the Architect procureth, enformeth, & directeth, the Mechanicien, to handworke, & the building actual, of house, Castell, or Pallace, and is chief Judge of same: yet, with him selfe ( as chief Master and Architect,) remaineth the Demonstratiuereason and cause, of the Mechaniciens worke. . . .’

Here we still note the standpoint of the rhetorician who, through his speaking, represents interests which are both more general and more specific than his own.

‘Wherupon, he is neither Smith, nor builder: nor, separately, any Artificer: but the Hed, the Prouost, the Direceter, and Judge of all Artificiall workes, and all Artificiers. For, the true Architect. is hable to teach, Demonstrate, distribute, describe, and judge all workes wrought. And he, onely, searcheth out the causes and reasons of all Artificiall thynges. . . .’

Here, finally, it is bountifully clear that the active component of the work of the architect – to teach, to demonstrate, to distribute etc. – has again been transposed directly from that of the orator.

The tropes by which various discourses and the terms within which discourses are explicated may be used as markers of the frames of reference by which judgements regarding relative significance are determined. That is to say, the criteria by which ‘rational understanding’ is assembled can be mapped through etymological transformations associated with new divisions of labour.

The latter part of the sixteenth century marks the point at which the classical tradition, in which the concept of ‘discourse’ with its implications of indeterminability, was no longer deemed adequate in the explanation or justification of technical activity. It was in the ensuing period, in what has become known as the ‘Scientific Revolution’, when the effect of the reform of rhetoric initiated by Agricola and Ramus became apparent in what Ong has called the ‘decay of dialogue’, that material practice came to be seen as the imperfect, temporal expression of timeless, universal and objective abstractions. It is only in this period that metaphysical representation in architecture supplants Ciceronian ethics.

**Notes and References**

6. A. Tomlinson, ‘Vitruvius and Hermogenes’, in

7. Ibid. p. 72.
8. Vitruvius *ibid* 1, Proem.
12. Vitruvius, *De architectura*, II.ii.3.
13. Ibid. I.i.18.
14. Ibid. I.P.3: ‘Namque his voluminibus aperui omnes disciplinae rationes.’ Granger’s translation is somewhat free: ‘In the following books I have expounded a complete system of architecture.’ Similarly, in I.P.1 ‘... tanti occupatio nibus, de architectura scripta e magnis cogitationibus explicata edere, metuens, ne non apto tempore interpellans ...’ was rendered as ‘Amid such affairs I shrank from publishing my writings on architecture in which I displayed designs made to a large scale.’ More probably, there is no mention of large-scale ‘designs’, but of great or large-scale thoughts explicated (with poetic intensity? – i.e. ‘crowned with ivy’).
15. Ibid. I.1.3: Cum in omnibus enim rebus, tum maxime etiam in architectura haec duo insunt, quod significatur et quod significat. Significatur proposita res, de qua dictur; hanc autem significat demonstratio rationibus doctrinarum explicata.
17. Ibid.
18. Orthographis autem est erecta frontis imago modiceque picta rationibus operis futuri figura.
20. Vitruvius, *De architectura*, 1.2.5: Decor autem est emendatus operis aspectus probatis rebus compositi cum auctoritate ...
23. Vitruvius, *De architectura*, I.i.1: ‘Architecti est scientia pluribus disciplinis et variis eruditionibus ornata, [cuius iudicio probantur omnia] quae ab ceteris artibus per/bullet5ciuntur.’
24. Lewis and Short, *A Latin Dictionary*, p. 1471.: ‘propositum ... A. A plan, intention, design, resolution, purpose ... B. The first premise of a syllogism, Cic. de Or. 2,3,215 ... 2. An argument ... 3. The main point ...
25. Ibid. p. 532.: ‘1. deformationis ... a representation, delineation, Vitr. 1.1 ...). 2. deformationis ... a deforming, disfiguring, defacing ... 1. deformo ... to bring into form ... delineate,
describe. Granger’s rendering this term as ‘drawing’ appears to be somewhat restrictive in the context of Vitruvius’s use of it elsewhere. At 5.6.9: ‘... quod tragicae deformantur columnis et fastigis et signes reliquisque regalibus rebus ... ’ is better translated by ‘wherefore the tragic is represented by columns and pediments and figures and other regal things’ than ‘The tragic are designed ... ’ Similarly, ‘on the other hand, the comic by private and meandering buildings ... ’ and, more emphatically, ‘the satyric will be equipped with trees, caves, mountains and other rustic things represented in the shapes of garden topiary.’ ‘Agrestibus rebus in topeodi speciem deformati.’ See note 28 infra.


29. Quintilian, Institutionis Oratoriae, IX.i.4, 7.

30. Ibid. IX.i.10f.


32. Lewis and Short, A Latin Dictionary, p.1527: ‘ratiocinatio ... I. In rhet. 1. An exercise of the reasoning powers, calm reasoning, ratiocination (opp. impulso, a passionate feeling, impulse; cf. argumentatio): ratiocinatio est diligens et considerata faciendi aliquid aut non faciendi excogitatio, Cic. Inv. 2.5.18 ... 2. A certain form of reasoning, a syllogism: ratiocinatio est oratio ex ipsa re probabile aliquid eliciens quod expositum et per se cognitum sua se vi et ratione confirmet, Cic. Inv. 1.34.57 ... 3. A rhet. figure, reasoning in an interrogative form ... II. theory (opp. fabrica practice).’ Morgan has used this sense, whereas Granger has struggled to produce a translation in which the original, rhetorical thrust of Vitruvius’s text has been subsumed in modern, descriptive commonplace: ‘The science of the architect depends upon many disciplines and various apprenticeships which are carried out in other arts. His personal service consists in craftsmanship and technology. Craftsmanship is continued and familiar practice, which is carried out by the hands in such material as is necessary for the purpose of a design. Technology sets forth and explains things wrought in accordance with technical skill and method.’

33. Vitruvius, ibid, 3.Poem.4. The term grammaticus seems to be a form of ‘gramma ... a line of writing’, Lewis and Short, A Latin Dictionary, p. 822.

34. Vitruvius, ibid, 1.1.4.

35. In discussing the architect’s need for writing skills, on the other hand, Vitruvius notes the skill and care required in the framing of contracts and the necessity of guaranteeing a proper
balance between two sides. In this legal focus, he implies that the architect must seek the
ground common to all men, a ground, again, that is the moment of exchange. It is Vitruvius's
Stoic sense of 'duty' here, leading him to the
task of ensuring that each participant abides by
the criteria of an explicit, legal rôle, without
confusion and without improper advantage.
This criterion of legal judgement is based, again,
in *ratiocinatio*, by way of interrogative argu-
ment according, that is, to the criteria of a more
general form of discourse.

36. *Ibid.* 1.1.16; final italics are mine.
37. E. Frézouls, 'Fondements scientifique, armature
conceptuelle, et Praxis dans le *De Architectura*
'in Herman Geertman and Jan J. de Jong (eds.)
*Munus* non Ingratum, Proceedings of the
International Symposium on Vitruvius's *De
Architectura* and the Hellenistic and Republican
Architecture, Babesch Bulletin Antieke Beschaving,
Annual Papers on Classical
Archaeology Supplement 2, Leiden 1989, p. 41.
'A quoi correspond le binôme principal fab-
rica/ratiocinatio? Sans repandre une discussion
engagée ici même, observons la prudence
qu'elle nous conseillait il vaut mieux éviter
d'assimiler ce couple à l'opposition greque clas-
sique entre technè et epistémè.' Cf M. Heidegger
'The Question Concerning Tech-
nology' in *The Question Concerning Technology
and other essays*, London: Harper and Row,
1977.
38. Vitruvius, *ibid*, II.33
39. The identification of 'rationality' with the
linguistic faculty was a commonplace of classical
discourse. Cicero identified the essence of
humanity in this way, without reference either to
metaphysical speculation or to mathematics,
proportion, etc. To him, '... the one point in
which we have our greatest advantage over
brute creation [is] ... that we hold converse with
one another, and can reproduce our thought in
word.' *De oratore*, I.viii.32; cf. note 52, *infra*.
40. Hugh Plommer, *ibid*, p. 33: Plommer gives this
date for Faventinus, whom he tentatively
believes to have written approximately a cen-
tury before Palladius [*infra*].
42. 'For they called order *taxis*, disposition *diat-
thesis*, beauty and elegance *eurhythmia*, the
measurement of units *symmetria* and distribution
43. 'ordinatio est ergo membrorum dispositio, et
constat ex quantitate ... quantitas est modus
singulorum membrorum universo respondens
operi. Dispositio est apta rebus conclavium insti-
44. Plommer *ibid.* p. 33 for arguments regarding
dating of Palladius and Faventinus.
45. L.B. Alberti, 'Preface', *Ten Books on Architec-
46. Durantino, 1524; Caporali, 1536.
47. 'Architecture est une science qui doit estre
ornée de plusier disciplines, & diverses erudi-
tions: car par le iugemèt de ceste la sont exam-
inez les ouurages que fefont par tous Artisans,
aussi elle prouiet de fabrique, & discours, ou
munificatio & les ouuriers out aucunes fois
semble. Fabrique, n’est autre chose que com-
mune & continuelle meditation de l’usage: &
cette la se facie manuellement de toutes especes de matiere qu’il est besoing de mettre en oeuvre: pour venir au point de la formation. Discours est le moyen par laquelle ou peut montrer & donner aq entendre comment les choses se doinent faire par industrie, en gardant bonnes proportion.’

48. Oskar Bätschmann, ‘Diskurs der Architektur im Bild’, in Carl Peter Braegger (ed.), *Architektur und Sprache* (Munich: Prestel-Verlag, 1982), p. 11f. Bätschmann’s argument is interesting in that he situates the origin of the theory of Western narrative painting in Barbaro’s translation of *ratiocinatio* as *discorso*: ‘Vitruvus Umschreibung von ‘ratiocinatio’ übersetzt Barbaro mit: ‘Discorso è quello che le cose fabricate prontamente & con ragione di proportione puo dimostrando manifestare’. Wie aus Barbaros Kommentar hervorgeht, ist ‘discorso’ zu verstheen als Einübung und Äußerung des Urteilsvermögens, als Gerichtetsein des Bewußseins auf die Schönheit der Werke und als Suche nach der Gründen der Schönheit. Das Verlangen nach dem Urteilsvermögen heißt ein ‘diuno desiderio’, mühevoll ist die Erwerbung des ‘potere giudicarie, & approuare le opere dé ‘mortali’, Mit dem Urteilsvermögen wird aber nur eines von beiden Prinzipien der Architektur erworben und für die Erwerbung des anden Prinzip, der ‘fabrica’, eine Voraussetzung gescchaffen. Das Werk entsthet aus der Vereinigung beider Prinzipien, daher der Satze: Il discorso come padre, la Fabrica è come madre dell’ Architettura! Alberti’s *De re aedificatoria* was published in 1486, the same year as the first printed edition of Vitruvius, after having been circulated for 30 years in manuscript: that is, some 71 years after Poggio’s ‘rediscovery’ of the manuscript of Vitruvius in the library of St Gall.

49. Vitruvius, *ibid*, 1.1.1: ‘Fabrica est continuata ac trita usus meditatio, quae manibus perfectur e materia cuiuscumque generis opus est ad propositum deformationis.’ Granger notes: ‘The word hand (manibus) scarcely occurs in the index to Plato, and is glorified by Aristotle who defines it as *organon organon*, ‘the tool which makes tools’. Granger *ibid* p.7; Lewis and Short, *ibid*, p. 712: ‘fabrica . . . the workshop of an artisan who works in hard materials . . . II. Transf., the art, trade, or profession of such an artisan . . . In apposition with ars . . .’ For notes regarding *ratiocinatio*, refer *infra*.


