**St. Thomas Aquinas’ Principles of Architectonics**

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‘So natural science has something to offer divine science, yet it has it starting-points illuminated by divine science’.

— St. Thomas Aquinas, *Expositio super Librum Boethii de Trinitate*

In response to an architectonic of the theoretical sciences in the work of Boethius, St. Thomas Aquinas develops principles for characterising, locating and relating the disciplines. This is based upon the Aristotelian notion that disciplines are distinguished by their subject- matters. It also affirms the relation of thought to matter and offers a critique of Platonic conceptions of transcendence which had a rival influence over Medieval thought via Neo-Platonism and the works of St. Augustine. For Aquinas the construction of an architectonic reflects the ability of thought to abstract and grasp universals without sacrificing matter in its richness and diversity. We will consider the principles that allow disciplines to emerge in relation to their subject-matters and to one another. We will consider how the role of God as a necessarily immaterial and unchanging being affects the legacy of Aristotle in Aquinas’ architectonic conception. As the ultimate foundation of Being or *arche*, does the divine being re-introduce the transcendence Aquinas rejects in Plato and disrupt the material richness which we find in Aristotle’s work?

The architectonics of Boethius is analysed by Aquinas in *Expositio super Librum Boethii de Trinitate* (1257-9). In the structure used by Aquinas we begin with a quotation from Boethius offering a three-fold division of the theoretical sciences (Aquinas 1993: 2). Natural science has as its subject-matter the changing matter that embodies forms. There is no abstraction and separation in this subject-matter. Mathematics, in contrast, is characterised by its changeless subject-matter, forms considered apart from their material and changing existence. Yet these forms still exist in matter, they are not actually separated from the material world but considered apart from this context of change, concretion and embodiment. Finally we have theology, also known as metaphysics, divine science or first philosophy. The subject-matter at stake for this discipline is changeless, abstract and inseparable according to Boethius’ architectonic. Theology is said to use the intellect but makes no use of the imagination since it forms no image of its immaterial subject-matter. For Aquinas Boethius’ text draws Aristotelian inspiration, drawing on Aristotle’s *Ethics* where subject-matters determine the approach or method of disciplines (3). The question is how much certainty the matter in question allows. Aquinas’ method of analysis is to raise questions about the claims of Boethius’ text and put arguments *pro* and *contra* his account. He then offers a response which decides the dispute and finally answers the question raised concerning Boethius’ text with which each analysis begins. In this way he constructs a set of principles for architectonics and puts them into practice, locating disciplines in response to problems and questions arising through an analysis of Boethius’ text.

One problem which arises in analysing Boethius’ architectonic conception is the definition of the theoretical and the practical. Although medicine appears highly practical it also has a theoretical part and indeed all practical sciences involve theory (6). Practitioners are required to pause in their practical endeavours to contemplate the concepts at the basis of their activity, as when anatomy and physiology inform medical students and experienced practitioners of established and developing thought with regard to the structure and functions of organisms through textbooks and scientific papers. There is therefore a problem with classifying natural science as simply theoretical when it includes, and is thus mixed with, medicine and the mechanical arts of agriculture and metallurgy. At this point we must consider what inclusion means when it comes to architectonics and its attempt to locate the disciplines. If we are going to consider problems like this one – raised as an objection to Boethius’ three-fold architectonic within Aquinas’ analytic structure – we must consider the principles of the architectonics that emerge in Aquinas’ *Expositio*. Having established the principles on the basis of which this architectonic construction proceeds we will be in a position to understand the meaning of terms like ‘theoretical’ and ‘practical’ for Aquinas.

A further objection raised to Boethius within the structure of analysis presented by Aquinas in his *Expositio* is that hierarchy is essential to an Aristotelian architectonics. This takes its inspiration and authority from Aristotle because he names the third discipline in Boethius’ list (theology) ‘first philosophy’ (see Aristotle’s *Metaphysics*, passim). Its priority for Aristotle is assured because its subject-matter is Being, including the changing substances studied by natural science and the quantities that form the subject-matter of mathematics (Aquinas 1993: 6). From this it follows that theology or first philosophy is a *whole* of which natural science and mathematics are *parts* because its subject-matter includes their subject-matters. The objection is made that we can’t classify this whole alongside its parts, since hierarchy only operates and makes sense when wholes are placed at a higher level than their parts. This makes Boethius’ architectonic conception appear arbitrary, a mere list which lacks any rigorous architectonic order and foundation. This echoes criticisms levelled at Kant’s Metaphysical Deduction in the *Critique of Pure Reason* by a number of commentators for whom his tables of twelve judgements and twelve categories are arbitrary, without any necessary unity and even simply a hobby that Kant enjoyed or an aspect of his mentality.[[1]](#footnote-1)

Aquinas proceeds to analyse the logic of the part-whole distinction in order to draw out the implications for a well-founded organisation of the disciplines. Since theology or first philosophy is also known as ‘*meta*physics’, we can define it as ‘*after*-physics’ while still being true to Aristotle’s hierarchical conception. We learn this discipline after physics because studying objects that can be sensed is a condition for reaching objects that cannot (8, 38). This should not suggest that for Aquinas a certain constructivism in learning (an epistemological constructivism) implies that Being is ultimately constructed from the sensations which are the concrete beginning of the learning process (an ontological constructivism). We cannot reduce the abstract to the concrete as David Hume’s sceptical empiricism proposed in its analysis of the most lofty, abstract conceptions in terms of the most concrete of things (Hume 1993: §3). Rather, the Aristotelian hierarchy is preserved insofar as other disciplines derive their first principles from first philosophy. The ontological priority of theology as first philosophy is affirmed so that while the sensible and concrete is an epistemic condition of learning, the abstract and immaterial is an ontological condition of beings, providing the essences or substantial forms that allow us to encounter material things in the first place.

In a diagram we can represent this at the top by two directions of priority: priority in order of learning (left to right) and priority in providing the foundational, ontological first principles which are presupposed by the other disciplines (right to left). Aquinas outlines a conception of higher and lower sciences in order to locate parts and wholes. How can one science include another? As the diagram shows, one discipline can include another if its subject-matter is part of its own. For example, botany is part of natural science because plants are natural objects subject to change and open to qualitative analysis, something characteristic of natural science rather than mathematics and metaphysics (Aquinas 1993: 11). As well as this relation of *inclusion*, one discipline can be *subordinate* to another. The lower level science here knows what is the case, the facts it studies, but needs a higher level science to provide the ‘why’ or reason for the cases it describes. For example, harmony is subordinate to arithmetic because the harmonic relations it describes find their reasons in arithmetic relations. We can then locate disciplines using the architectonic principles of *subordination* and *inclusion*. A higher science includes or subordinates lower sciences as parts and thus supplies their subject-matter or justification.

We noted earlier that it is difficult to locate the discipline of medicine within an architectonic that begins with a notion of ‘theoretical’ science. Aquinas addresses this problem by locating medicine in relation to natural science. Medicine is not part of natural science according to the *principle of inclusion* elaborated above. It studies the body, a natural object caught up in qualitative change like all objects of natural science, but it studies it in a different way to natural science. Medicine studies bodies insofar as they can be healed by artifice, i.e. artificially rather than by nature (11). The *principle of subordination* must be applied to this problem. Artifice, the business of medical science, assists the power of healing belonging to nature. From this it follows that we can understand why artificial healing works through natural properties. The reasons for successful or unsuccessful cures are therefore only located by the discipline that studies matter and change in its fullest sense, i.e. natural science. Aquinas therefore subordinates medicine to natural science along with metallurgy and agriculture, as the diagram shows. Natural objects are artificially cured, forged, propagated and harvested insofar as they are the concern of these disciplines and yet we can only understand a return to health, the production of a corrosion resistant alloy and effective soil cultivation with the reasons supplied by a wider science of changing matter as such. Thus it is the principles of architectonics that help us to locate the theoretical and the practical. A practical science finds its reasons in a theoretical one, drawing upon the deeper understanding of nature that a higher science provides. Here practice is grounded in theory and this is reflected by the principles of inclusion and subordination that root practice in theory.

Thus far we have discovered principles for organising an architectonic of the disciplines: *hierarchy, inclusion* and *subordination*. Yet we need a foundational principle which reflects the *arche* of architectonics and gives each discipline its integrity and unity quite apart from its relations to other disciplines. In the *ExpositIo* Aquinas articulates a founding principle for architectonics in the course of resolving disputes generated by questions arising from Boethius’ text. This follows from the Aristotelian inspiration we noted earlier which defines disciplines in relation to their subject-matters. We might call this *the principle of distance from matter and change*:

‘Any objects of speculation or theoretical science, then, must, as such, position themselves in relation to matter and change, and according to their degrees of distance from matter and change such objects will determine different theoretical sciences’ (8).

This gives rise to a classificatory scheme (ibid):

1. Objects which depend upon matter for their existence and our understanding of them, such as flesh and bone which exist as part of a living organism and are understood only in relation to this organized body. These are the subject-matter of natural science.
2. Objects dependent on matter for their existence but not for our understanding of them, such as lines and numbers. Mathematics studies such objects.
3. Objects which don’t depend on matter for their existence or understanding. This is because they either never exist in material form (such as God and the angels) or sometimes exist in matter but sometimes don’t (concepts such as substance, qualities, potentiality and actuality, the one and the many). These are the subject-matter of theology or metaphysics.

We have an affirmatively Aristotelian stance in this scheme which takes matter as its starting point as well as making form essential to changing material beings and to Being as such. It is a question of what matter embodies and finally of what is not embodied by matter at all. The principle of hierarchy which we encountered earlier draws us towards the transcendence of matter and yet the principle of distance from matter and change preserves the necessary role of matter. As Aquinas’ conception of learning shows, we begin with what we can sense and this reflects our status as embodied beings. This raises problems in the context of Aquinas’ commitment to human immortality as a correlate of the transcendence of the immaterial and unchanging divine being. This apparent tension in his thought is brought into focus by the different orders in our diagram which we discussed earlier. Embodiment appears at once central to Aquinas’ architectonic and as a limitation of beings in the face of Being. The focus upon what transcends matter as essential to beings risks undermining the material richness of an Aristotelian conception of disciplines defined by their subject-matters. We will now consider further how disciplines are located and seek to throw more light on this problem.

The place of logic is defined by its role in, and use by, other sciences. In the diagram this places it amongst the seven liberal arts or productive sciences (10). Aquinas affirms Aristotle’s view that theoretical sciences seek knowledge for its own sake (9). The activity of logic, on the other hand, supports other disciplines. We do not formulate syllogisms and logical definitions for their own sake but as instruments in the rigorous analysis of matter and change, mathematical entities and immaterial beings. The seven liberal arts are distinguished because they give us products as well as knowledge. Thus we can say that theoretical sciences are not arts since they give us knowledge alone and make use of liberal arts as instruments of their progress, such as grammatical constructions or speeches which formulate and express qualitative, quantitative and substantial knowledge. This analysis based on the output of disciplines is extended to characterise disciplines that give us only ‘bodily products’, such as medicine and metallurgy, which are not ‘liberal’ because they are bodily (10). Aquinas understands the body as the ‘servant part’ of the human being rather than an expression of human freedom in the skilful production of worthwhile artefacts. Ethics is again to be distinguished because its end is to act and not to know. In the diagram productive and practical sciences are distinguished from theoretical sciences although their dynamic relationships complicate the picture. We’ve seen the dependence of practical sciences on theoretical ones and will consider this further. For now we have here a *principle of production*, *or non-production*, which allows us to locate disciplines within an architectonic.

Thus far we have considered the principles for constructing an architectonics which Aquinas sets out through his analysis of the words of Boethius. We began this paper by setting out questions to be considered in assessing this architectonic. We return to now to the hierarchy we saw established as a principle for constructing and understanding an architectonic. This draws upon authorities such as Pseudo-Dionysus for whom objects of sensation are inadequate to knowledge of the divine.[[2]](#footnote-2) While we can use reason to synthesise and construct knowledge, the divine realm involves the simplicity of already complete concepts (36-7). The intellect, in contrast to reason, starts with a ‘single simple truth’ and in thinking this through comes to know many other things (37). This is the method of theology and is a higher method according to the already discussed principle of hierarchy. Indeed, all the efforts of the other sciences find their conclusion in concepts grasped by the intellect (37). The end of learning is ‘… the simplest supreme causes which are immaterial substances’ (ibid). Thus we return to the contrast between a concrete, embodied starting point for learning and an abstract, immaterial end which is the ultimate foundation of all we encounter and master on the journey towards knowledge of Being.

We can relate this opposition to Aquinas’ rejection of transcendental Ideas as these emerge in Plato’s dialogues. As we’ve seen, this reflects Aquinas’ allegiance to Aristotle and his conception of forms embodied in matter, a hylomorphism as opposed to a transcendence of matter by form. Yet we’ve noted a tension as the immaterial and transcendent is given ontological priority in Aquinas’ thought. Aquinas defends his account of the relation of thought to matter against Plato and the Neo-Platonic influence on medieval thought. He argues that Plato fails to appreciate the role of matter in the process of abstraction. Plato also misses the way in which matter enriches our conception of the nature and scope of the disciplines of knowledge. He neglects a key distinction between matter as it undergoes change, existing in ‘a here and a now’ and being ‘this and that individual’, and ‘the general notion of matter’ or ‘matter in general’ (15). Rather than any particular matter, natural science is able to rise to the level of matter in general. This suggests a richer conception of matter than a realm of appearances that have no role in abstraction as an essential power of thought.

How else does Aquinas differ from Plato in constructing an architectonic? The dynamic relations between the disciplines in this architectonic are illustrated by the following conception: ‘Natural science doesn’t concern itself with the ultimate cause of movement as if that were part of its subject-matter, but as a *limit* towards which natural science is led’ (16). Rather than subsuming natural science in theology, by directing learning towards transcendent Ideas, this preserves their unique roles within a productive relationship. Particular material things exemplify rules or forms and this allows natural science to proceed through the rigorous analysis of nature. We also find an anti-Platonic move in the character and role assigned to mathematics. Mathematics does command respect in Aquinas’ architectonic, indeed it is marked by a certainty greater than any other discipline (35). This is because of its level of abstraction which insulates it from change and the unreliable and irregular phenomena that arise with matter in change. The more involved a science is in particular cases – medicine, metallurgy and ethics being particularly so – the less certain they are. In the concrete we have more complexities and irregularities to contend with. Theology is also less certain than mathematics because it is further from sensation, the starting point of our knowledge. We are not only beings who begin to learn with sensation but we find greater certainty in images – like mathematical figures, lines and numbers – than in the immaterial concepts studied by theology (36). Rather than transcending the material, mathematics continues to broadened and deepen our understanding of matter by drawing on an Aristotelian inspiration. Quantity is not defined by the ‘material-as-perceptible’ but rather the ‘material-as-thinkable’ (21). Contra Plato, abstraction does not simply draw us away from the material but grasps what is essential in matter, the form or substance abstracted from its supervening properties. Aquinas uses his architectonic to locate abstraction as a power of thought in relation to matter and the forms it embodies.[[3]](#footnote-3) This applies the *principle of distance from matter* that we considered earlier because this is the basis for marking out and securing an architectonic of all the disciplines. With his Aristotelian conception of matter Aquinas seeks to abstract from particulars without transcending matter except in the discipline of theology which does include utterly immaterial and transcendent objects. How does this maintain the distinctness and integrity of different disciplines?

In order to secure a richer architectonic, maintaining relations with matter and differences between disciplines, Aquinas draws inspiration from Aristotle’s conception of the sciences. Unlike Plato, for whom philosophy subsumes other disciplines according to the analogy of the divided line in the *Republic*[[4]](#footnote-4), the difference between subject-matters is maintained and this provides the foundation of distinct disciplines, each with their own integrity and role. The vital role of natural science in its qualitative analysis of matter in change is preserved against its subsumption by other disciplines. As we have seen, there is a rich dynamic between the disciplines by which sensation provides the starting point without which the human journey to the divine would never begin while immaterial forms and the divine being provide the ultimate reasons towards which the study of nature tends as its limit. Thus, we see in the diagram that ‘intermediate sciences’ emerge between natural science and mathematics. These apply maths to natural things and proceed by treating nature as ‘a sort of material underlying a mathematical form’ (25). This places them closer to mathematics because it is mathematical ideas that are the starting points for understanding natural objects. In music sounds are seen not as qualities but as numerical ratios. These sciences study perceptible matter like natural science but become abstract thanks to mathematics. The subject-matters in question lead them to emerge at the intersection of two theoretical sciences and draw upon both in order to be adequate to the rigorous analysis of what they study, such as musical sounds which are at once so very intangible and yet open to precise mathematical analysis. This can lead to sciences proving the same conclusions using different arguments: ‘Thus natural science proves the earth round by the way heavy objects move [towards a centre] whilst astronomy proves it by considering [the round shape of] lunar eclipses’ (ibid). What we have is a dynamic architectonic method for picking out the character of disciplines and accounting for their roles in relation to one another. Thus, if we can point to tensions within Aquinas’ architectonic – such as between the material and the divine; and between embodied learning in a material world and immortality which transcends matter – we can also acknowledge the outward looking and broad nature of the principles we have identified.

We have drawn from Aquinas the following principles of architectonics:

1. Principle of Hierarchy
2. Principle of Inclusion
3. Principle of Subordination
4. Principle of Distance from Matter and Change
5. Principle of Production

We have explored the ways in which these principles distinguish disciplines and develop their relations. How do they respond to the questions with which we began this exploration?

Classical influences on the medieval period – Platonic as developed by Augustine; Aristotelian as advanced by Aquinas – provide different trajectories for architectonics. We have elaborated the Aristotelian trajectory as it was developed by Aquinas in response to the work of Boethius. We find in Augustine’s *Confessions* an internal struggle against the human condition, consequent upon the Fall, which secures its intellectual development in a notion of Neo-Platonic ascent. This represents an overcoming of embodiment, the senses and language. However, with Aquinas we have found an Aristotelian inspiration that locates architectonics in a material context, one that is differentiated so as to distinguish disciplines, rather than seeking to overcome or ascend from a material condition understood negatively. We have noted tensions between the material and immaterial bases for existence in Aquinas, a tension inherent in his architectonic that reveals what is at stake in this undertaking. In seeking to secure the role of rich subject-matters and distinct disciplines it is this ontological difference that provide the genesis, the energy and impetus of architectonics. We have in Aquinas’ principles for architectonics an attempt to respond to the differences between subject-matters that make disciplines distinct and alive, ensuring that this results in them relating dynamically and productively.

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1. Kemp Smith 2003: 341; Körner 1955: 77. For a discussion of such readings of the Metaphysical Deduction and a more positive reading of its place within a well thought out and convincing architectonic see Willatt 2010, especially chapter 3. [↑](#footnote-ref-1)
2. For Pseudo-Dionysius, God is unknowable and unreachable by reason and the human mind: ‘… God is beyond every act of mind and every way of knowing’ (Pseudo-Dionysius 1987: 265). This invokes a mystical conception of theology: ‘We should be taken wholly out of ourselves and become wholly of God, since it is better to belong to God rather than to ourselves’ (ibid: 106). [↑](#footnote-ref-2)
3. For Aquinas there are two forms of abstraction: 1/. Abstracting forms that are embodied in matter or properties that belong to subjects. This allows us to abstract mathematical forms, such as numbers and shapes, from matter we perceive. 2/. Abstracting wholes that are joined to parts as when universals are abstracted from particulars. All non-constitutive, supervening parts are removed because they are not part of the essence and definition of this whole (22). [↑](#footnote-ref-3)
4. Water Watson offers such a reading when he suggests that ‘the unifying power of the dialectic’ overcomes disciplinary boundaries as an ascent is made to the Form of the Good (Watson 1993: 87). We also find this in the privilege given to geometry as a science which is innate in us (see Plato’s *Meno* and *Timaeus*). Aquinas refuses to make any particular disciplines innate and, as we have seen, established an order of learning which begins with sense experience. [↑](#footnote-ref-4)