

Old Models of Interdisciplinarity:

The *Dialectica Monacensis*, Peter of Spain and John Buridan

ABSTRACT

This paper examines three medieval logical textbooks with an eye towards developing the model of interdisciplinary work that the textbooks presuppose. This model for interdisciplinary work is based on the study of dialectic and is a 'ground-up' approach to interdisciplinary work rather than 'top-down.' I explain how and why the medieval authors believed that logic or dialectic was a necessary precondition of meaningful interdisciplinary work. I close with some suggestions regarding how their thoughts impact contemporary attempts at forging a new interdisciplinarity.

One problem that has haunted the idea of 'interdisciplinarity' is that of communication. That is to say, if interdisciplinary work is to be real and valuable, then it would require individuals who are able to communicate across the disciplines. However, because of the specialization and professionalization of the disciplines themselves, this sort of communication is difficult to achieve. It seems that there is simply too much to know, too much expertise required of those who would hope to do meaningful work outside of or across traditional disciplinary boundaries. How could a chemist understand a philosopher, or a botanist talk to an engineer? The disparity between the amount of shared information required for meaningful communication between disciplines and the actual shared information seems too vast. More profoundly, the horizons, the set of background assumptions, prejudices and approaches, of the disciplines seem to divergent; they may not even agree on the questions, much less the answers. But perhaps, beneath the various competing horizons of the various disciplines, there is an underlying horizon that unifies them? Perhaps there can be an interdisciplinarity

from below, i.e. one that is founded not on a confluence of goals or convergence of method but one which quietly sits beneath all the disciplines as there common, if distant foundation. This indisciplinarity from below would be based on purely formal principles common to all the disciplines. But what sort of thing could provide this? One possible contender, whose candidacy I will explore in this paper, is logic. Logic, after all, is a purely formal science that concerns itself with the proper structure of arguments as such, rather than particular arguments. But all disciplines, insofar as they wish to 'make sense' must make use of it. Logic may be a less baggage-heavy way to find an interdisciplinarity from below. This idea, however, is not a new one, but at least eight hundred years old.

This may be surprising because medieval philosophy is rarely thought of – by those outside the field – as offering a plausible model for interdisciplinary research. This is regrettable insofar as one merely needs to pick a representative medieval thinker – Albert Magnus or Thomas Aquinas for example – and look at the topics covered in their writings (metaphysics, philosophy, natural science, logic, politics, ethics and so on) and the way each area informs others to see that they are fairly interdisciplinary. This interdisciplinary approach was not the idiosyncrasy of few men, but fostered and developed within a system of education that provided, I shall argue, a model for interdisciplinary work. However, when the interdisciplinary nature of medieval thought is acknowledged, it is often claimed that the interdisciplinarity could be accounted for largely in-terms of the hierarchical arrangements of the sciences, with theology as queen, wherein a common view of the good guided the development of the sciences and enabled interdisciplinary collaboration. Medieval interdisciplinary work would be a top-down interdisciplinarity. This claim is often

supplemented with the further claim that the post-modern era, which precisely lacks the sort of common view of the good that makes such a top-down approach possible, is incapable of interdisciplinary work, even as it strives after it. The multiplication of centers, area studies and the like found in the contemporary university stands as quixotic attempts to hold back the professionalization and specialization of the faculty and learning in general that is the fate of post-modern man. Although the organizing influence of theology on the medieval university, and medieval intellectual life in general is undeniable, it should be noted that theology only provided a teleological unity rather than a methodological one. It was the high-point of the pyramid that everything converged upon, but it was not the mortar or brick that held the pyramid together. That role was played by logic or dialectic, and this provided an element of ground-up interdisciplinarity to medieval thought. In this paper I propose to discuss the philosophical underpinnings of that interdisciplinary work by examining the introductory pages of three text book that, each in their own era, played important parts in the educational system that made medieval interdisciplinary work possible, the *Dialectica Monacensis*, an anonymous 12th century textbook, Peter of Spain's enormously influential *Summulae Logicales* and finally John Buridan's *Summulae de Dialectica*

Before going further, I should pause to offer a brief account of what I, and the medieval authors I will be discussing, mean by dialectic. As the paper continues, we will have occasion to expand on what I say here, it will probably be helpful to give at least a working definition. So, 'dialectic' is roughly equivalent to what we, in the 20th and 21st centuries would call 'logic.' To be sure, medieval dialectic is not the sort of symbolic logic we associated with post-Fregean philosophical logic, but it does share many of its concerns: the analysis of arguments and

argument-forms, the analysis of reference and modality, and so on. More generally put, medieval dialectic is concerned with understanding the nature and structure of valid arguments and inferences and so that this understanding can be put to use in other areas of scholarly inquiry – dialectic was not an end in itself, but simply a means, as the schoolmen used to say “one should not grow old in the arts” (dialectic was taught in the arts faculties of the universities).

In the *Dialectica Monacensis*, an anonymous twelfth century introductory work in logic, we find a discussion of what the medieval called the ‘division of the sciences.’ Despite what this title may be taken to imply, the sciences are divided only in order to unite them. The unity of the sciences is accounted for, according to the *Dialectica* by the human being, or more precisely, the needs of the human being. The text says:

We should know, therefore, that human nature is plagued by three scourges. The first is ignorance, on the part of the soul, the second is indigence, on the part of the body, and the third is vice, on the part of the substance composed of these two. Against these plagues three remedies were given to man: against ignorance the capability to acquire the liberal sciences, against indigence the mechanical arts, and against vices the capability to acquire virtues¹

The origin of the separate sciences lies in the different needs of the human being; but because it is the same human being that has these three sorts of needs, it is the human being himself that enables the mutual intersection and influence that is characteristic of interdisciplinary

¹ Anonymous, *Dialectica Monacensis* (Trans. G. Klima in G. Klima (ed) *Medieval Philosophy: Essential Readings with Commentary* (London: Blackwell, 2007), 43.

research. The differing content area is materially by the human being; the formal relationship between the sciences is found in dialectic, described in the *Dialectica* as ‘pathway to all other arts.’ The *Dialectica*’s mapping of the relationship between the different arts and sciences is less important for our purposes than the fact that it sees the unity of the sciences in two different ways: first, the material unity of the sciences and arts insofar as they all derive from human nature, and second the formal unity of the sciences found in dialectic. Despite the very different subject matter addressed by the various sciences and arts, they are traceable back to human needs and understandable by dialectic.

The Dialectica goes further to describe the various parts and species of dialectic: “Dialectic deals with syllogism absolutely speaking, as in [Aristotle’s] *Prior Analytics*, and its subjective parts, as in the *Posterior Analytics*, in the *Topics* and *Sophistic Refutations*; while its integral parts are dealt with in the *Categories* and the *Perihermeneias (On Interpretation)*”² The Aristotelian works references both the indicate the topics addressed and the principle texts studies: the *Prior Analytics* is mainly concerned with valid syllogistic forms, the *Posterior Analytics* with the premises of those syllogisms and our knowledge of them, the *Topics* and *Sophistic Refutations* with common arguments and fallacies while the *Categories* and *On Interpretation* concern themselves with the relationship between words and things, i.e. semantics. Based on this, we can say that dialectic is primarily concerned with the analysis of arguments and their constituent parts. It is not, however, tied to the analysis of any particular kind of argument: arguments about physics can be analyzed in these terms as easily as arguments about philosophy or theology.

² Anonymous, *Dialectica Monacensis* 43.

I already mentioned that dialectic is understood as the pathway to all the other arts. This can be taken in two ways. First, as claiming that the study of dialectic prepares the mind for the successful study of the other sciences; second, as claiming that dialectic makes the other sciences possible, that is does not merely prepare the student for further studies, but that it plays a constitutive role in those other sciences. Both these sense are correct. In the first case, medieval schools heavily emphasizes the need to study dialectic at the beginning of one's education as a necessary sharpening of the mind that prepares one for future studies. Beyond that, however, dialectic makes those other sciences possible insofar as (a) those sciences make arguments and (b) dialectic is the science of arguments.

The importance of dialectic is expanded in Peter of Spain influential thirteenth century text the *Summulae Dialecticales* wherein dialectic is described in glowing terms as “the art of all arts and the science of all sciences.”³ Peter explains his high praise of dialectic when he says that dialectic is able to dispute about the principles of all the sciences. In say this, Peter has two points in mind: first, repeating the claim of the *Dialectica*, that dialectic insofar as it is concerned with the analysis of arguments can analyze arguments put forth in any science, and second that the first principles of dialectic are principles of every other science as well. Later he notes that dialectic ought to precede our studies of all other sciences insofar as dialectic teaches us both the proper method of reasoning, skills useful in any sciences, but also because the principles of dialectic are shared by all other sciences and arts.⁴ To understand what he means by the second point, we will have to depart from the text for a bit to address the

³ Petrus Hispanus, *Summulae Logicales cum Versorii Parisiensis clarissima expositione* (Venice: F. Sansovinum, 1572), tractatus primus, ¶G.

⁴ Petrus Hispanus, *Summulae Logicales*, tractatus primus, ¶H.

meaning of the term ‘first principles.’ In medieval usage, influenced decisively by Aristotle in this regard, the first principles of a science are those principles a science *assumes* but does not, and within its proper bounds, cannot directly prove. This is not to say that such a science could not show the problems that would arise were the principle to be denied (as a form of indirect proof). In the case of dialectic its first principles include (a) the principle of non-contradiction (b) the principle of identity (c) the principle of excluded middle. Since these principles are assumed by other sciences, dialectic is the ‘sciences of all sciences’ insofar as it studies these principles and their application. In his *Proemium* to the *Summulae de Dialectica* – a fourteenth century commentary on Peter’s *Summulae* that went far beyond merely commenting – John Buridan puts compares dialectic to generalship. Just as the general both repulses the enemy and advances his troops, the logician must repulse bad arguments and advance good ones, in this way, just as the leader is the savior of the army, logic is the leader of life.⁵

Buridan’s remark offers a complementary way understanding Peter’s claim. An army consists of many different activities and groupings, many of which seem to have little or nothing in common – e.g. commandos and cooks – but nonetheless they are formed into a unity in two ways: first, by a common goal (victory) and second, a common organizational principles wherein all units are under the authority of the leader (*dux*) and must obey his orders. Likewise, all the sciences have a common goal – truth or knowledge – and, because they must offer good arguments are under the authority of dialectic. However, Buridan points out a few pages later that this analogy, and others like it, should not be taken to imply that

⁵ Iohannes Buridanus, *Summulae de Dialectica* (ed. H. Hubien, Buridanica.org, accessed 1/25/11), Proemium a ‘de Propositionibus.’

dialectic is the highest science or some kind of super-science that out-ranks all the others.⁶ For Buridan, the highest science is metaphysics since it deals with the highest and best things. Dialectic is not the 'science of sciences' in that sense, but instead because it is able to participate in all the sciences by virtue of its relationship to the principles of those sciences. We might say that dialectic is the science of all sciences not because it outranks them all, but because it serves them all, clarifying their arguments and principles. It is worth noting here that Buridan offers a way to side-step the common complaint about modern education that I mentioned earlier: that the modern university, because it has no over-arching notion of the good that all disciplines and studies are oriented towards are necessarily fragmented. The specialization we associate with the modern university is not merely the result of increasing professionalization or quantities of things to know, but the result of a metaphysical or moral lacuna. On this view, interdisciplinarity would be no more than a quixotic attempt to overcome fragmentation without addressing its underlying causes. Against this, Buridan, and what we might call the dialectical tradition running from the *Dialectica Monacensis* through Peter of Spain to him, offers an alternative source, a unity found at the bottom or the beginning of the sciences rather than at the end. That is to say, dialectic can offer a foundational unity or indisciplinarity without assuming a teleological unity. This would mean, in practical terms, that universities would need to emphasize the study of dialectic in under-graduate education, requiring much more than merely one semester of 'logic and critical thinking' but a multi-semester sequence. Likewise, professors would have to discipline themselves to teach the

⁶ Buridanus, *Summulae de Dialectica*, de propositionibus, 1.1.1

repetitive rigmarole of logic in undergraduate education. It is no surprise that the three texts I have discussed today were textbooks, but they were text books that made

Let us pause to summarize what has been said so far in this paper: I began by claiming that medieval philosophy offered a useful model of interdisciplinary work and that I would examine the philosophical underpinnings of medieval interdisciplinary work. I did this by discussing three texts, the anonymous *Dialectica Monacensis*, Peter of Spain's *Summulae Logicales* and finally Jean Buridan's *Summulae de Dialectica*. In my brief discussion of these texts, I focused on the origin and scope of dialectic. In each of these texts, produced of a period running from the twelfth through fourteenth centuries, dialectic is presented as a unifying trans-disciplinary study insofar as it addresses what we might call the pre-disciplinary principles common to all arts and sciences. This is an interdisciplinarity that builds from the ground up, insofar as it starts *before* the disciplines. In medieval practice, training in dialectic preceded more specialized studies. A dialectically informed interdisciplinarity in the 21st century may require one thing of us which we don't want to give – a required sequence of courses in logic for all undergraduates, courses in which faculty will have to teach the unglamorous 'basics' of logic to conscripts rather than advanced courses in our chosen areas of study.