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### The Dictates of Reason: Bacon, Ramus, and the Naturalization of Invention

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# THE DICTATES OF REASON: BACON, RAMUS, AND THE NATURALIZATION OF INVENTION

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## *Abstract:*

This paper will discuss the history of argumentation, specifically the location of the canon of invention in the sixteenth and seventeenth centuries. At that time, scientists, logicians, and philosophers began to seek new means of constructing and presenting arguments. New logical schemes, such as set forth by Ramus in his *Logike* or Bacon in the *Novum Organon*, attempted to place the invention and structure of arguments on a more rational, epistemologically secure basis. This paper will explore the shifts in rhetoric and logic in Bacon's and Ramus's work, with some reference to Wilson's *Rule of Reason* and *Art of Rhetoric*.

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In this paper I will discuss the location of the canon of invention in Peter Ramus and Francis Bacon's work, for both these influential authors sought to remove explicit discussions of rhetoric from the invention of arguments: Ramus sought to place invention in the realm of logic and thus of the rational intellect, while Bacon went even farther and suggested that invention of arguments was more a process of remembrance of past events than a creative, controllable process, as invention had been understood to be in classical rhetoric. Both authors sought to remove rhetoric from its place among the arts of argument, making a new, expanded art of logic the single art of argument, communication, and persuasion. This logic also, however, carried the same epistemological burdens as previous systems of logic, which is to say uncovering the truth and establishing unquestionably sound relationships among entities. In this way, both authors paved the way for a conception of human inquiry that played down its less-than-strictly logical and rational elements—and Bacon indeed implied that it was possible to produce discourse that did not so much involve an argumentative component as it simply entailed detailing facts, which would then speak for themselves.

This paper consists of three sections. The first is a discussion of the history of logic and rhetoric. While this will be necessarily short and thus oversimplified, it will establish the backdrop against which Ramus and Bacon must be seen, for both authors, Ramus especially, sought authority for their works from the classical authors; and yet when looking at the history of logic and rhetoric, it becomes clear exactly how dramatic the changes wrought by these two men are. I will then move on to discuss Ramus' reforms of the arts of logic and rhetoric, and finally Bacon's proposed system of logical arts, which wholly subsumed rhetoric.

## *Historical roots*[1](#)

While writers in the late Renaissance and early modern periods often authorized their writings on logic and rhetoric by suggesting those writings were drawn more or less directly from the works of the classical authors, particularly Aristotle and Cicero, this was not precisely true. The common Renaissance and early modern understanding of logic, dialectic, and rhetoric was really quite different than Cicero's writings on those topics, and

very different indeed from Aristotle's works on those subjects. I will discuss first the broad changes seen in those arts over the nearly two millennia between Aristotle and Ramus, and then illustrate the popular sixteenth-century understanding of those arts with reference to Thomas Wilson, an English mid-sixteenth-century popular writer of logic and rhetoric texts.

To begin, in Aristotle's works the arts of logic, dialectic, and rhetoric fell into a rough continuum of arts. Logic was the most formally correct of all these, being based on self-evidently and uncontested true axioms and employing formally correct syllogisms to reason from the general to the specific (as in the classic example, "All men are mortal; Socrates is a man; Socrates is mortal"). Dialectic was based on generally true statements, and while it used similar logical relations to logic, usually did so in a question-and-answer format. Finally, rhetoric was the least rigid of all these arts; like dialectic, it was based on only probably true statements, but also allowed a range of appeals, not only on logical grounds, but also to ethical and emotional grounds as well, and was tailored to the task of persuading large juries of one's case. In any event, rhetoric was never so much rigidly separated from logic as simply placed at the other end of the spectrum from it, though its more unscrupulous practitioners did misuse logical relations when making their arguments.

By about 90 B.C., Roman rhetoricians had divided the conceptual labor of rhetoric into five subheadings or canons: invention, or the production of arguments; arrangement, the means of constructing coherent lines of argument; style, the art of attractive and clear rendering of arguments in speech; memory, the art of reliably memorizing lengthy speeches; and delivery, the methods best suited to actual speech. This systematization of the parts of rhetoric would persist for a millennium and a half and more.

Now, while the material in the first three of these canons (invention, arrangement, and style) were discussed by Greek rhetoricians, Greek rhetoricians had not explicitly described rhetoric in this way. Aristotle in particular had discussed the techniques used for invention of arguments at length, however, and much of his work on the various kinds of claims (logical, ethical, and pathetic) ended up in Roman rhetorics under the canon of invention, though Aristotle had not separated the art of invention as cleanly from the rest of rhetoric as Roman rhetoricians were to do—the formal division of rhetoric into five sub-arts was a Roman innovation.

By contrast, however, works of logic did not have any similar division into canons until the medieval period, though medieval and Renaissance logicians often appealed to Aristotle or other classical authorities for a justification of their systems of logic. Walter Ong discusses the confusing history of dialectic and logic in his *Ramus, Method, and the Decay of Dialogue*. The first important work I note here in the medieval tradition of logic is Peter of Spain's *Summulae logicales*, which purported to provide a ready introduction to Aristotle's logical works for young students and was used as the standard interpretation of Aristotle by scholastics. The *Summulae logicales* collapsed Aristotle's works of dialectic with his works of scientific reasoning and indeed neglected demonstration altogether (Ong, 56-57). This meant that Peter of Spain's work treated dialectic as if it dealt with certainties, not mere probabilities, as was the case in Aristotle's works (60).

Ong next discusses Rudolph Agricola's work on dialectic, the *Dialectical Invention*, which effectively replaced Peter of Spain's work in most schools, and which Ong found to have effectively become synonymous with the term "logic" in humanist writings (93). Like Peter of Spain's work, Agricola's ignores the Aristotelian distinction between scientifically precise logic and dialectic. Agricola's dialectic also treats of such traditionally rhetorical topics as emotional appeals, copia of speech, and parts of orations (99). It also divides dialectic into two parts, invention and judgment, which division Ong traces to Cicero's *Topica*, a rhetorical rather than logical tract. But many Renaissance authors preferred to call Agricola's judgment by the name "arrangement"—which

means that the two canons of Agricolan dialectic, invention and arrangement, apparently mimicked the first two of the five canons of rhetoric. Further, this dialectic occupied a position that would have seemed peculiar indeed to classical authors: though beginning from merely probable grounds, it claimed to come to sure conclusions; further, though it was identified as logical, it also concerned itself with persuading audiences, classically the domain of rhetoric.

### *Thomas Wilson*

I would like to briefly exemplify the popular interpretation of the arts of rhetoric and logic in the mid-sixteenth century using Thomas Wilson's popular *The Rule of Reason* (1551) and *The Art of Rhetoric* (1560). Wilbur Samuel Howell takes Wilson's works as a starting point in his study of 16th- and 17th-century logic and rhetoric because Wilson writes the first logic in English and the "greatest Ciceronian rhetoric in English" (Howell, 98). Wilson sees the two arts as being much alike, and takes Zeno's famous metaphor for the two arts' relationship for his own:

Bothe these Artes are much like sauing that Logique is occupied aboute all matters, and doeth playnly and nakedly setfurthe with apt wordes the summe of thinges by the way of Argumentacion. Againe of the other side Rethorique useth gay painted Sentences, and setteth furth those matters with fresh colours and goodly ornaments, and that at large. Insomuche, that *Zeno* beyng asked the difference betwene Logique and Rethorique, made answere by Demonstration of his Hande, declaring that when his hande was closed, it resembled Logique, when it was open and stretched out, it was like Rethorique. (Wilson 1551, sig. B3r-B3v)

As might be expected from the above description, both his works rely on more or less the same methodological framework, with the provision that logical arguments are plainer stylistically and rhetorical arguments are more attractive and beguiling to one's audience. Wilson also states in *The Art of Rhetoric* that

Things generally spoken, without all circumstances, are more proper to the logician, who talketh of things universally, without respect of person, time, or place. And yet notwithstanding, Tully doth say that whosoever will talk of a particular matter must remember that within the same also is comprehended a general. (Wilson 1560, 46)

In other words, arguments made through rhetorical means are not as generalizable as those made through logical means, but they are nonetheless made on similar grounds. So a proper question for logic would be, "Is it lawful for any man to usurp power?" and a question correspondingly suitable to rhetoric would be "Is it lawful for William the Conqueror to invade England?" Indeed, throughout *The Art of Rhetoric* are scattered references to logic, for Wilson wishes to remind his readers that many of the rules governing rhetoric are derived from logic, especially those having to do with causes of events, noting for example that "every man should desire and seek to have his logic perfect before he look to profit in rhetoric, considering the ground and confirmation of causes is for the most part gathered out of logic" (145). Yet the two arts are wholly not the same.

Wilson's logic, which he confounds with dialectic, is made up of two parts: the first is judgment, or the "framing of thinges aptlye together, in knitting woordes, for the purpose accordingly"; the second part is invention, or "finding out matter, and searching stuff agreeable to the cause" (Wilson 1551, sig. B1r). Invention is, in Wilson's words, "the store house of places wherein argumentes rest, unto the whiche if wee conferre the matter whiche we intende to proue, there will appere diuerse arguments to confirme the cause" (sig I4v-sig. I5r). A "place" is "the restyng corner of an argument, or else a marke which giveth warnyng to our memory what we maie speake

probable, either in the one parte, or the other, upon all causes that fall in question" (sig. I5v), which is to say that these places are Wilson's version of Greek *topoi* or Roman *loci*, which were employed in dialectic and rhetoric, though not in pure scientific reasoning (though, again, that distinction is lost in Wilson, as in Agricola and Peter of Spain before him). These are not found in contemporary logical theory, and would strike modern readers more as an organizational method than inventional *per se*, and is described by Howell as "a process in which an author found subject matter by connecting his mind with the traditional wisdom of his race and by allowing that contact to induce a flow of ideas from the general store into himself" (Howell, 24). In slightly less dramatic terms, the places are no more than questions to be asked of a subject that refer to common knowledge about a subject; for instance, if one takes the place of definition and uses it to produce an argument about priests, one "finds" that a priest is a man of God.

Judgment, on the other hand, is the process of arranging one's material in an orderly fashion, and includes such organizational practices as propositions, syllogisms, and method, the last being a means of attacking a question that takes eight steps in Wilson's work (sig. E4v-sig. E6v). Method would not here be especially notable as a part of judgment, indeed, except that it later became much more important and came to assume greater and greater functions than it has here; Walter Ong even argues that method did not come into logical works until about Wilson's time (see below). To produce a complete argument, a reader using Wilson's logic would take the various terms of the question under consideration and apply various places to those terms and arrange the resultant statements according to the precepts of judgment. An example given by Wilson involves the question, "Should a priest marry?" To produce an argument on this subject, Wilson examines the words "priest," "wife," and "marriage" to see how well the statements produced by the places of invention agree with one another when arranged in syllogistic fashion. Interestingly, Wilson candidly admits that such a procedure does not produce irrefutable arguments:

Even as I have doen in the place, comparynhe one to an other, so ye may doe in the residew, and where ye se any thyng serueth for your purpose, that they agre together on bothes parties, ye maye use the same: if they do not agree in some places, ye may refute them, or els so mollifye the thyng that suche repugnauncies maybe not harme your cause at all. (sig. O8v)

This is certainly not a classically acceptable view of logic, though Wilson calls upon classic works as part of his intellectual genealogy. It is not even terribly dialectical, in the classical sense. It does, however, sound suspiciously like a work of rhetoric.

Wilson's *The Art of Rhetoric* is based on some of the same methodology as *The Rule of Reason*, as noted above. However, being as it is a Ciceronian rhetoric, it covers five canons of rhetoric: invention, arrangement or disposition, style, memory, and delivery. Wilson's rhetorical invention is based largely on his logical theory of invention, as he notes here:

The finding out of apt matter, called otherwise invention, is a searching out of things true or things likely, the which may reasonably set forth a matter and make it appear probable. The places of logic give occasion to find out plentiful matter. (Wilson 1560, 49)

However, Wilson particularizes his logical theory of places, so that instead of using the logical set of places, one may instead ask highly specific questions. For instance, in a deliberative oration, one could provide the answers to nine questions: whether a thing was honest, profitable, pleasant, safe, easy, hard, lawful, praiseworthy, and necessary (71).

Wilson gives three inventive schemes corresponding to the classical tripartite division of rhetoric, namely deliberative, demonstrative, and judicial, giving the various places that must be covered in each one. Wilson also includes amplification and humor in his theory of invention, thus incorporating *pathos* and *ethos* into his rhetoric.

Wilson spends the most time on invention, and rather less on the other four canons of rhetoric. He spends only a few pages on disposition. While his theory of rhetorical invention was highly similar to his theory of logical invention, his theory of rhetorical disposition is nowhere near as precise. Instead, he first discusses "natural" disposition, which is to give an introduction, then one's intent in speaking, then the proof and refutations of counterarguments, and lastly to give a conclusion (184). However, as Howell notes, this is also covered in his discussion of invention, as his inventive schemes include the outline of any given type of oration (Howell, 101). He then discusses disposition which is "wholly fashioned by the discretion of him that makes the oration" (Wilson, 184). This apparently meant only to take one's audience into account, and is filled with vague advice—one ought put one's weakest arguments in the middle, for instance, so that the argument is bounded by strong arguments on either end. Wilson quickly moves on to style, spending much more time on that topic.

Wilson discusses elocution in four terms, namely plainness, aptness, composition (which corresponds roughly to proper diction and meter), and exornation or appropriate use of figures (188). Wilson then subdivides figures into three categories, namely tropes, schemes, and amplification through example, similitude, and fable (213). Wilson then moves on to memory, taking as his model the same kind of art of memory as was described in the *Ad Herennium*, specifically a method of visualization. Finally, he covers delivery very briefly, focusing on pronunciation and gesture, and covering neither in depth.

Wilson's logical and rhetorical theories thus overlap mainly in the area of invention, though he occasionally mentions his logical work elsewhere in *The Art of Rhetoric* (for instance, noting that he had discussed similitudes, part of style, in *The Rule of Reason* (Wilson 1560, 215)). Both are well-defined arts, with some common purposes but largely with different ends. Wilson presents his rhetoric in a much more practical way than he does his logic, and it is in some ways a practical application of logic's inventional principles and in others as a wholly separate art. Rhetoric here retains its traditional role as a well-rounded means of persuasion, and Wilson, as noted above, sees that persuasive function as necessary to the adequate use of knowledge. Logic and rhetoric may indeed be based on the same underlying structure, to revive Zeno's metaphor, but are complementary rather than competing arts.

#### *Peter Ramus: The controversies*

It was not universally agreed, however, that these arts ought to maintain the relationship that they did. Peter Ramus, a Frenchman raised in the scholastic tradition, disagreed with the above division. Ramus claimed to find that the scholastic arts of rhetoric and logic were repetitious, since invention and disposition were covered in both rhetoric and logic.

It is certainly the case that the commonly-understood schemes of logic and rhetoric were highly repetitious in many parts, and that they were ornate and complex and difficult to learn. Walter Ong points out some possible motivations of such a system and of Ramus' subsequent reforms. Scholastic logic today has a reputation for being obscure and complex and obsessed with petty detail, but nonetheless it was a logic driven by pedagogical needs. Scholastic logic was meant to be taught to 12-year-old boys who, if they completed their courses, would eventually end in a decade or so by teaching it to a new generation of boys. But the problems of transmission of knowledge in a tumultuous, pre-print era had taken their toll on manuscripts of Aristotle's work, as did the scholastics' need to simplify an enormously complex system into something suitable for schoolboys. Peter of

Spain, for instance, took the *Topics* as the basis of logical invention; however, the topics, in Aristotle's scheme, were meant only to provide probably true arguments, not necessarily true arguments, as was not clear in Peter of Spain's interpretation of Aristotle. The theory of logical invention that Peter of Spain made popular would thus have been dialectical or rhetorical in Aristotle's work, not logical (Ong, 60-61). Rudolph Agricola, who was to become the next great influence on the teaching of logic, was to adopt this scheme, once again blurring the probable and the definite; Agricola even stated that the topics were not suitable for rhetoric at all (101), an ironic statement given that originally they would have been considered inappropriate to logic. Ong suggests that Agricola's place-logic was the beginning of the period in which words and sentences came to be seen less as saying something than as containing something, where the always-delicate lines between logic, dialectic, and rhetoric came to be so heavily blurred that scientific statements about the world gained the status of looking for a content within and yet separate from the words "containing" it (121).

Ramus' modifications of scholastic logic and rhetoric must be seen within this framework. On the one hand, he was trying to simplify a complex system so that it might be more easily taught. On the other, he was working within a tradition that authorized itself through references to the classical authors and yet had changed those classical authors' works in such a way that they almost demanded reform.

Ramus' reforms were mostly simplifications. While Ramus is counted an anti-scholastic and anti-Aristotelian, the terminology he used is mostly scholastic, and is only a reduction of the scope of those terms. The first thing he is noted for is the division (and simplification) of rhetoric and logic along strict disciplinary lines: logic would cover invention, judgment, and memory, and rhetoric would inherit only style and delivery. The other feature of Ramus' logical and rhetorical scheme that would linger was his emphasis on what was known as method, which is to say a means of dividing up subject matter so that the logician could easily wend his way through it; while certainly method had been a part of some scholastic logic, Ramus' emphasis on it was far greater than any writer's before him. Indeed, as Howell notes, post-Ramistic writers would frequently adopt Ramus' simplified scheme of method even when they adopted little else from his reforms.

### *The roles of logic and rhetoric in Ramus' work*

Ramus chose to strictly divide logic and rhetoric, as noted above. In the *Questions of Brutus*, Ramus proposes that each art should only deal with those subjects proper to themselves:

Reason and speech are the two universal gifts of the gods granted to men, and the source of almost all the others. Dialectic is the theory of reason. Therefore whatever is the property of reason and mental ability and can be handled and practised without speech, attribute this by right to the art of dialectic.

Dialectic has three parts-invention of strategems and arguments, arrangement of these parts through the syllogism and method, and then memory. All of these exist in men who are dumb and lack all power of speech. For they think matters over, judge them, organize them, and remember them; at times everyone generally does these things better when silent than talking. To repeat, let there be these three parts of the art of dialectic: invention, arrangement, and memory. (Ramus 1992, 16-17)

Rhetoric is then the domain of speech alone, since men can reason without speaking. Further, Ramus manages to confound rhetoric not only with the act of speaking but also with the trivial when he claims that

I am of the opinion that the orator must be defined according to the material that is proper to his art

and is distinct from the other arts; you are of the opinion that the orator must be defined according to what is left as his property when all universal matters have been set aside. Thus, our opinion is one and the same. (18)

In other words, logic covers the universal, and rhetoric the non-universal; logic covers reason and rhetoric speech. Rhetoric is the purely trivial in such a scheme, for rhetoric need not deal with invention, judgment, or memory, both of which are the property of the reasoning individual but not necessarily of the speaking individual. Further, logic is universal, and covers all possible subjects which a rhetor might argue; the commonplaces of rhetoric are not needed, since their material might be found in logic:

What are conjectures? Where are they drawn from? From causes, results, circumstances witnesses, questions, examples, and comparisons; finally ... from the probable and proper distinguishing signs of the subjects. You define them as those which are general, and those which are specific. With these two types of classifications you cover all types of arguments, for all arguments, if they attempt to prove anything truly, are either general or specific. Next ... it is absolutely true that from all these ten types of argument ... there is not one from which a conjecture could not be handled.

Is definition the only answer? Definition, however, as you recommend in the same *Partitions*, is interpreted from every argument. ... nevertheless, it is absolutely true that the perfect definition is formed from the causes that compose the subject, and the perfect description from the remaining arguments. ...

There is then one invention held in common for all questions; moreover particular topics are not proper to particular questions but are common to all. (47)

While in some ways this attitude is similar to Wilson's, who argued that rhetorical invention stemmed from logical invention, nonetheless this is a very different undertaking in spirit, for Ramus wishes to dispose altogether with the inventional aspects as such of rhetoric. Further, disposition and memory have also entirely been removed from rhetoric.

Ramus' scheme of judgment or disposition covered, like the scholastics' before him, such subjects as definition and division, propositions and syllogisms, and method. While such terms as syllogism were subdivided (there are simple and compound syllogisms, the sometimes true and the definitely true syllogisms (46-54)), method got its own brief section:

The methode is a disposition by the which amonge many propositions one sorte, and by their disposition knowen, that thing which is absolutely most cleare is first placed, and secondly that which is next: and therefore it contynually procedethe from the most generall to the speciall and singuler. By this methode we proceade from the antecedent more absolutely knowen to proue the consequent, which is not so manifestly known: & this is the only methode which Aristotle did obserue. (54-55)

The latter statement is not entirely true, since Aristotle had a more specific set of four questions: what sort of thing is it, why it is, if it is, and what it is (Ong, 239). In fact, according to Aristotle, method did not belong to logic at all. While Aristotle did discuss method, it more properly belonged in rhetoric. To the Greeks, it had meant merely a generalized method of inquiry, not really precise enough to be counted as logical (225-226).

However, the line between scientific method and pedagogical method became so blurred that eventually it made its way into logic (228), and Ong claims to find no evidence of it in pre-Agricolan scholastic logics (230). So, once again, the practice of scholastics did not follow the spirit of Aristotle, and Ramus merely followed in the footsteps of the scholastics. And is here that Ramus' work differs the most from his predecessors, giving as he did such broad rein to the logician's instinct. Ramus' method is thus at once both more vague than Aristotle's (and Wilson's, for that matter, who had eight subdivisions to his method) and more all-encompassing. This "natural method" appears to leave the proper placements of matter to the logician, who apparently simply knows what is more and less general. Ramus did advocate a second kind of method meant to help teach the unlearned; known as prudential method, it allowed the teacher to slightly change the natural order of presentation for pedagogical purposes. However, one of the best popularizers of Ramus' work, Roland MacIlmaine, covered prudential method only far enough to make it sound like sophistry (Ramus 1574, 58; Howell, 183).

Finally, Ramus really deals very little with memory in his logic, though he placed it in that category in *Questions of Brutus*. It seems he found memory to be a natural result of clear reasoning—the clear thinker would simply remember things, since they were placed in logical order (Ong, 280).

Ramus' rhetoric, as might be expected, is fairly reductive. It consists of elocution and pronunciation (or delivery). Elocution is simply the tropes and figures, categorized in a Ramistically methodical way, and pronunciation is given even shorter shrift (in Fenner's translation, for example, it is not translated at all). Ramus refers the reader back to his logical works at a few points, especially when dealing with sophisms. Otherwise, however, the art of rhetoric is much impoverished, and has nothing in it of substance (Pepper, 168-180).

The post-Ramists adopted Ramus' reforms to varying degrees. Ong suggests that Ramus gave a convenient framework for later writers to claim a scientific basis for their search for first principles: after all, they could simply arrange them in a methodical framework and point to the "naturalness" of that arrangement (Ong, 301). Howell traces the varying influence of Ramus on later logicians and rhetoricians, noting that some authors absolutely repudiated Ramus, but that most adopted some portion of his reforms, usually method, but also occasionally some of his divisions of logic and rhetoric.

### *Bacon: the victory of logic over rhetoric*

One of the more influential figures in the history of science was Francis Bacon. Bacon advocated a new method of inquiry, an empirical method. However, the break between Bacon and his predecessors was not so clean as all that; while it is convenient to view the difference between Bacon and his predecessors as being similar to that Descartes posits between himself and his predecessors, in neither case is it true that there existed such a break. In the first place, Bacon borrowed heavily from the logical and rhetorical theories of his time, as will be seen; in the second, though Bacon advocated empirical methods, he did precious little experimentation of his own, and is really more of a rationalist than an empiricist, and is thus not the best representative of the movement he is credited with starting.

Bacon's work on the topic of rhetoric and logic in *On the Dignity and Advancement of Learning* is interesting, largely because he identified a kind of art that incorporated aspects of both logic and rhetoric. To give some context to his placement of logic and rhetoric, Bacon's theory of the intellect was facultative, meaning that he thought of the mind as being ruled by three functions: memory, imagination, and reason. These three faculties were the source of the three aspects of human learning as Bacon saw them: history of imagination, poesy (or

"feigned history or fables" (Bacon 8: 407)) of imagination, and philosophy of reason. Philosophy looked for patterns and "abstract notions" derived from sense experience, and thus was the realm of the sciences. (8: 408) Bacon later deals with "the knowledge which respects the use and objects of the faculties of the human soul" (9: 60), which has two parts, logic and "ethic"; the difference between these two is that "Logic discourses of the Understanding and Reason; Ethic of the Will, Appetite, and Affections: the one produces determination, the other actions" (9: 61). Logic and ethic were linked through a complex relationship, both being necessary for the implementation of an action:

It is true indeed that the imagination performs the office of an agent or messenger or proctor in both provinces, both the judicial and the ministerial. For sense sends all kinds of images over to imagination for reason to judge of; and reason again when it has made its judgment and selection, sends them over to imagination before the decree be put into execution. For voluntary motion is ever preceded and incited by imagination; so that imagination is as a common instrument to both,—both reason and will; saving that this Janus of imagination has two different faces; for the face towards reason has the print of truth, and the face towards action has the print of goodness[.] (9: 61)

Imagination is thus very important, but is not the instrument of reason. Imagination allows for divine illumination, but "hardly produces sciences" (9: 62). Its work is connected to that of rhetoric or eloquence, but strangely enough, rhetoric is subsumed into the logical arts:

The logical arts are four in number; divided according to the ends at which they aim. For men's labour in rational knowledge is either to invent that which is sought, or to judge that which is invented, or to retain that which is judged, or to deliver over that which is retained. So therefore the Rational Arts must be four; Art of Inquiry or Invention; Art of Examination or Judgment; Art of Custody or Memory; and Art of Elocution or Tradition. (9: 63)

The art of invention is new in many ways, but is related in function to logical invention. The art of judgment is very much that kind of classical and scholastic judgment that takes propositions and forms syllogisms from them accordingly; however, unlike Wilson's and Ramus' logics, method is not placed in judgment, and differs from previous discussions of that art. Bacon's discussion of memory is but a brief section, somewhat like the classical art of memory, but emphasizing the role of order in keeping the places and images of memory in good order. The art of elocution "includes all the arts which relate to words or discourse" and is composed of three sub-arts: the organ of discourse, the method of discourse, and the illustration or adornment of discourse (9: 108). The organ of discourse corresponds to grammar, the method of discourse is that same method of which Ramus and the scholastics wrote, and the illustration or adornment of discourse is none other than rhetoric itself.

Two things might be noted here. First, though the logical arts are supposedly the instrument of reason, rhetoric is placed among them, even though Bacon notes that "Rhetoric is subservient to the imagination, as Logic is to the understanding" (9: 131). However, Bacon quickly explains that "the duty and office of Rhetoric, if it be deeply be looked into, is no other than to apply and recommend the dictates of reason to imagination, in order to excite the appetite and will" (9: 131). The similarities between this role of rhetoric to Wilson's and Ramus' is interesting, for while Wilson bases rhetoric and logic on similar grounds, he does not consider rhetoric to be merely the handmaiden of logic; and while Ramus thinks of rhetoric as secondary to logic, as the dress for the logical argument, he does not count rhetoric as part of the logical arts. Similarly, while Bacon places rhetoric as the third sub-branch of the fourth branch of the logical arts, his position on rhetoric is somewhat reductive: he notes

several times that the proper place of rhetoric is to shape the imagination to the ends of reason (9: 131). Bacon seems to view rhetoric as window-dressing in many ways, as the means of reflecting thought, justifying this view by reference to Aristotle's suggestion that "words are the images of thoughts and letters are the images of words" (9: 130). Wallace notes that Bacon views language as an ineffective medium in which to discuss nature; Bacon for instance calls human understanding of nature a "false mirror" of the nature of things, and also suggests that words, being abused by and misshapen by the common man, are not appropriate to the uses of science. The only way to avoid this, according to Bacon, is to adopt a rigid, mechanical method that will prevent one from falling into error, an example being the kind of methodological inquiry he himself offers (Briggs, 155-156).

The second and more important point of note here is that the logical arts consist of the canons of rhetoric, though of course invention and judgment were also considered part of logic by the scholastics. Nevertheless, Bacon has subjugated memory and elocution to logic here, and has given logic, in many ways, the role rhetoric once played: it includes not only invention and judgment, but also memory and elocution (or style and delivery, as they seem to be vaguely put in Bacon's work—he is not entirely clear on what rhetoric is, and much of his discussion covers sophisms; it appears to simply take on the tradition meaning of rhetoric, which Bacon elaborates little on). Certainly Bacon is departing from the scholastics here by making these canons of rhetoric also the canons of logic; but he is not departing entirely from the Aristotelian tradition either, since he is simply turning old terms and concepts to new purposes. But it is important to note that rhetoric has become merely the expression of the concepts of logic, and not a separate art in itself—and that it serves as window-dressing, much as it did to Ramus. Logic, meanwhile, has subsumed the body of communicative arts.

Third, grammar and rhetoric are in this scheme parallel to method and comprise the specifically communicative aspect of this logic. Method, which according to Ong had no place in logic at all before Agricola, is here then as great a topic as rhetoric!

As noted above, method, like invention, has changed somewhat in Bacon's scheme; a short description of the changes in each will therefore follow.

Bacon distinguishes between the discovery of arts and axioms, and suggests as well that some invention is natural, like the invention by bees of a means to find their way to flowers and back to their hive. However, Bacon finds traditional artistic methods of discovering material ineffective, and suggests in their place an inductive method that will be governed by indication and direction (Bacon 9: 71). Indication may take a few forms—one may grope blindly through random experimentation, or one may receive some slight guidance from the order given by experience in experimentation, or, finally, one may metaphorically see the light as Bacon sets it down in the *Novum Organon*, his aphoristic philosophical tract on the nature of the sciences. Bacon gives several guidelines for methodical experimentation, outlining a program of "the Variation, or the Production, or the Translation, or the Inversion, or the Compulsion, or the Application, or the Conjunction, or finally the Chances, of experiment" (9: 72). The more illuminating variety of invention that permits one to really understand nature he leaves to the *Novum Organon* and does not discuss here, though as noted above that work is really more a philosophy of scientific investigation than a methodical art.

Invention of arguments Bacon derides as not being invention at all, since one must already know the material beforehand before one can invent arguments, and it is thus more of a process of remembrance than of invention (9: 83-84). He gives here a fairly standard reading of a place—logic, noting that there are general and specific topics, where the former are the kind of place Wilson would have written about in his logical work and the latter more like the kind Wilson discussed in his rhetoric, the difference mainly being that Bacon saw these places as

suited to the sciences as well, provided one had the correct questions to ask in any given science (9: 86-87).

Turning to method, Bacon notes that it "has been commonly handled as a part of Logic; and it also finds a place in Rhetoric, under the name of *Disposition*" (9: 121). Bacon considers its former placements as leading to the "passing over of many things relating to it which it is useful to know," however, and so he "therefore thought fit to make the doctrine concerning Method a substantive and principal doctrine, under the general name of *Wisdom of Transmission*" (9: 121). Bacon derides Ramus' method (circumspectly referred to as "the 'one and only method'") as being too simple and as encouraging falsely dichotomous reasoning (9: 122), though he later praises Ramus explicitly for his handling of propositions and for his good intentions (9: 128). Bacon's method is more complex than those listed above, for it has several divisions. The first is magistral versus initiative method, the first of which explicitly teaches a subject matter and the second of which "intimates" the means of continuation of knowledge to the "sons of science" (9: 122). Another subdivision in Bacon's method is exoteric versus acroamatic method, which apparently was the difference between plainly putting something and making it "more secret," a distinction which is not well-explained by Bacon (9: 124). A third division of method was the use of aphorism versus method: method is the standard means of presenting material through axioms and observations and examples, but the former is actually praised by Bacon as getting at the "pith and heart of sciences" (9: 124-125). A fourth division of method was that of the delivery of knowledge by "*assertions with proofs*, or by *questions with determinations*," the latter of which Bacon finds more conducive to true science (9: 126). The next kind of division of method is that based on subject matter, and is not explained thoroughly; Bacon instead refers back to his advice that the scientist should employ those particular places appropriate to their inquiry (9: 126). Finally, the last kind of methodological distinction, which "is regulated according the informations and anticipations already infused and impressed on the minds of the learners concerning the knowledge which is to be delivered," which is to say attention to one's audience and their expertise (9: 126-127). Bacon throughout this discussion of method keeps reminding his reader that each sub-division of method is meant to address, on the one hand, students of a science who do not possess understanding of nature, and the on the other the aforementioned sons of science, who do possess such insight. Though Bacon's method is not Ramistic, it certainly relies on similar assumptions put through an elitist filter—namely, the scientist may deduce for himself what the proper and natural ordering of things and concepts are, but may do so best only if he is among the chosen.

Rhetoric has in Bacon's work then become merely an offshoot of logic, and is portrayed as of no more discursive use than the intuitive method he proposes. The former offices of rhetoric, however, persist, only they are here called logic, and carry all the prestige of fact.

### *Implications and conclusions*

In some ways this paper is a discussion of the rhetoric of the arts of discourse: what roles do various arts of discourse and analysis play at different times? What sort of view of discourse does a man like Bacon hold when proposing an overarching theory of logic and communication? If the art of rhetoric is seen to have no role in either humanistic or scientific inquiry at a given time, what does that say about that period's presuppositions about knowledge? Bacon's program seems to indicate that he, at least, had come to think that empirical inquiry could answer all questions, that knowledge was something that came from outside sense-data and was not a human construct. In this model, knowledge production is left to those who have true insight, men who understand the true, external state of affairs. And yet Bacon's logical arts still encompass even those tasks once given over to rhetoric, and thus also permit the seeker of truth—who is performing an avowedly logical set of operations and not rhetorical—the presentation of those truths in pleasing form.

Though I do not here wish to engage in the questions of the rhetoric of science, I think such a historical study as this leads to those questions, for Bacon has openly absorbed rhetoric into his logical arts and made it the servant of logic in all ways, rather than a self-sufficient art of inquiry. The art of invention is in his works a logical art alone, and indeed is not so much invention *per se* as discovery; it is not so much part of an art of argument as part of an art of the presentation of external truths.

### *Note*

1. The historical work in this section is drawn from Kennedy, Ong, and Kneale. 

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