THE FIRST DEFINITION OF REASON

The first definition of reason should be three things. First, it must be speech making known what reason is. Otherwise, it would not be a definition. Every definition of a thing is speech convertible with the thing defined and making known, however imperfectly, what that thing is. Second, it must make known what reason is by what is most known to us about it. It could not be the *first* definition of reason if it did not do this. For the order of learning proceeds from what is more known to us to what is less known to us. And third, it should be a beginning and seed of the whole use and growth of reason. For a beginning is what is first. Hence, the first definition of reason, although short, is great in its power.

Speech that fulfills the above three requirements is a most beautiful first definition of reason.

One should not expect the first definition of reason to give us a complete knowledge of what reason is although it should be useful in the search for such knowledge. Further, one should not think that the first definition is the only beginning of the whole use and development of reason.

Shakespeare has given us the elements of a first definition of reason in his exhortation to use reason:

> .....What is a man,
> If his chief good and market of his time
> Be but to sleep and feed: a beast, no more.
> Sure he that made us with such large discourse,
> Looking before and after, gave us not
> That capability and god-like reason
> To fust in us unus'd.[1]

Shortening one of his words, one could state Shakespeare's definition thus: reason is the *ability for large discourse, looking before and after*. Reason is

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[1] *Hamlet*, Act IV, Sc. 4

the ability for a large discourse which is, or in which there is, a looking before and after.

We must first understand Shakespeare's definition and then we can see that it makes known what reason is by what is most known to us about it. And last, we can see that it is a beginning of the whole use of reason.

UNDERSTANDING SHAKESPEARE'S DEFINITION

Shakespeare is defining reason in the sense in which we say that man is an animal with reason, not in the sense in which a reason is given for a statement. The former reason is an ability or capacity for some act while the latter is a thought of why the statement is so or why we think that it is true. There is, of course, a connection between these two senses of the word *reason*. For reason in the first sense is able to give a reason in the second sense. Moreover, Shakespeare is defining reason strictly and properly as it belongs to the animal called man.[2]

We need not spend time on the word *ability* since the interested reader can find a full consideration of the senses of *ability* in the fifth and ninth books of the *Metaphysics* of Aristotle. Likewise, it is well known to the reader of those books and the *De Anima* that an ability must be known and defined by the act for which it is an ability. The ability of matter is an ability for form while the ability of form is an ability to do something. Reason is an ability to do something. Hence, what we must chiefly understand here is the act for which reason is an ability.

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[2]Thomas Aquinas, *Scriptum Super Lib.I Sententiarum* , Distinctio XXV, Quaest I, Art. I, Ad 4: "rationale dicitur dupliciter. Quandoque enim sumitur stricte et proprie, secundum quod ratio dicit quamdam obumbrationem intellectualis naturae, ut dicit Isaac, quod ratio oritur in umbra intelligentiae. Quod patet ex hoc quod statim non offertur sibi veritas, sed per inquisitionem discurrendo invenit; et sic rationale est differentia animalis, et Deo non convenit nec angelis. Quandoque sumitur pro qualibet cognitione virtutis non impressae in materia, et sic convenit Deo, angelis et hominibus..."

Carrying-over the word *discourse* or *running* to reason

The word *discourse* names an act of reason from the Latin word for running (or running to and fro).

The word *discourse* or *course* or *running* is first placed upon the well known act of the legs. It is then carried over and placed upon any outward action of men. In this sense, the American Declaration of Independence speaks of the *course of human events*. Or in Patrick Henry's famous words: "I know not what course other men may take, but as for me, give me liberty or give me death!" The native English word is used by Prince Henry upon the death of his father when he foresees the course of his own mortality:

> Even so must I run on, and even so stop.[3]

And Shakespeare manages to use both the Latin derived word and the native English word in this famous line:

> The course of true love never did run smooth.[4]

It is then carried over to an inward act of man. The eye can run over a number of things and the imagination can run from one thing to another. And reason itself runs from one thing to another. When Fr. Laurence says to the hasty Romeo: *Wisely and slow: they stumble that run fast*, he is thinking of *running* in the sense of doing or acting, but his words look back to the act of the legs and also could be applied to the running of our reason. (In a similar carry over of a word, we also say that reason makes mistakes when it *jumps* to conclusions.) [5]

But the discourse which defines reason is not just a running or going from this to that, but one in which the latter is made known in some way

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[3]Shakespeare, *King John*, Act V, Sc. 7

[4]*A Midsummer Night's Dream,* Act I, Sc. 1

[5]Sometimes also the word *discourse* is used, not for an act of reason, but for the words or speech in which the discourse of reason is signified.

by the former. Thomas distinguishes two discourses of reason by how it goes from this to that:

> In our reasoned-out knowledge, there is a twofold discourse. One by succession only: as when, after we understand something in act, we turn to understanding another thing. The other discourse is by causality, as when through beginnings we arrive at a conclusion...The second discourse presupposes the first; for those proceeding from beginnings to conclusions, do not consider both at once.... Such a discourse belongs to one proceeding from the known to the unknown...when the first is known the second is still unknown. And thus the second is not known in the first, but from the first. The end of the discourse however is when the second is seen in the first, the effects having been untied in the causes: and then the discourse stops.[6]

In the light of this text, the question arises about the word *discourse* in the definition of reason. Should we understand the first or the second discourse? Although both could be understood by the word *discourse* in Hamlet's definition, it seems nevertheless that one should have chiefly in mind the second discourse. Two reasons can be given for this. The first is based on the truth that we should define an ability by its utmost.[7] We define, for example, a person's weight-lifting ability by the greatest weight

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[6] *Summa Theologiae*, Prima Pars, Q. 14, Art. 7, c: "In scientia enim nostra duplex est discursus. Unus secundum successionem tantum: sicut cum, postquam intelligimus aliquid in actu, convertimus nos ad intelligendum aliud. Alius discursus est secundum causalitatem: sicut cum per principia pervenimus in cognitionem conclusionum...secundus discursus praesupponit primum: procedentes enim a principiis ad conclusiones, non simul utrumque considerant...discursus talis est procedentis de noto ad ignotum...quando cognoscitur primum, adhuc ignoratur secundum.Et sic secundum non cognoscitur in primo, sed ex primo. Terminus vero discursus est, quando secundum videtur in primo, resolutis effectibus in causas: tunc cessat discursus."

[7] Aristotle, About the Universe, 281a 11-12

they can lift, not by any lesser weight they can also lift. Now, as Thomas points out, the second discourse presupposes and includes the first, but the reverse is not true. Whoever is capable of the second discourse must also be capable of the first, but not vice-versa. Hence, we should define reason by the second discourse which is the utmost to which its ability (for discourse) extends.

The second reason is that the second discourse seems to be properly of reason, the discourse that fits reason alone. The eyes can run down a column of figures or names. But they do not see one thing through seeing another or by seeing another. Indeed, the eyes and the imagination go from one thing to another in this common way. When one walks through a picture gallery, one's eyes see one painting after another. But seeing one painting does not cause one to see another. One does not come to see one painting through seeing another. Reason not only goes from one thing to another (as in a course in which many different things are taken up, one after the other), but it also reasons from one thing to another. A sign of this is that *discursus* became for the Latin logicians often a synonym for *reasoning* which is the second discourse and *reasoning* is named from *reason*, as if its own or most characteristic act. Hence, Thomas says that discourse is properly to know one thing from another:

> To discourse is properly to go from one thing to knowledge of another...then something is said to be known from something when there is not the same motion in both; but the understanding is first moved to one and from this it is moved to another; whence there is some discourse here, as is clear in demonstrations. For the understanding is first carried to the beginnings only and, secondly, it is carried to the conclusions through the beginnings.[8]

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[8] *De Veritate* , Q. 8, Art. 15, c: " discurrere proprie est ex uno in cognitionem alterius devenire....tunc dicitur aliquid *ex* aliquo cognosci, quando non est idem motus in utrumque; sed primo movetur intellectus in unum, et ex hoc movetur in aliud; unde hic est quidam discursus, sicut patet in demonstrationibus. Primo enim intellectus fertur in principia tantum, secundario fertur per principia in conclusiones." See also Sylvester De Ferrara, *Commentary on the Summa Contra Gentiles* Liber I, Caput 57, on the first argument, Leonine Edition, Tomus Decimus

Although reason, like the eye, may merely look at one thing after another, the discourse which defines reason is more than this. Thomas points out this difference between the eye and reason:

> There is this difference between understanding and bodily sight: to bodily sight all its objects are equally near to being known; for sense is not a power that brings together so that from one of its objects it necessarily has to arrive at another. But to the understanding, all understandables are not equally near to being known; but some it is able to look upon at once while others it does not see except from other beginnings which it has seen.[9]

Tertius: "Advertendum ex doctrina Sancti Thomae Prima q. lviii, art. 3 et *Verit*., q. viii, art 15, quod ad rationem discursus duo requiruntur: primo, ut distinctis cognitionibus cognoscantur plura; secundo, quod cognitio unius sit causa cognitionis alterius.Unde discurrere est ex uno prius cognito in cognitionem alterius posterius noti devenire, quod prius erat ignotum. Propter defectum primi, videns plura in speculo non dicitur discurrere: quia omnia unica visione cognoscit. Propter defectum secundi, cognoscens primo hominem et secundo lapidem, non dicitur discurrere: quia una cognitio non est causa alterius."

[9]*De Veritate*, Q. 11, Art. 3, c: "inter intellectum et corporalem visum haec est differentia: quod visui corporali omnia sua obiecta aequaliter sunt propinqua ad cognoscenda; sensus enim non est vis collativa, ut ex uno obiectorum suorum necesse habeat pervenire in aliud. Sed intellectui non omnia intelligibilia aequaliter vicina sunt ad cognoscendum; sed quaedam statim conspicere potest, quaedam vero non conspicit nisi ex aliis principiis inspectis." See also *De Veritate*, Q. 11, Art. 1, Ad 12: "non est simile de intellectu et visu corporali. Visus enim corporalis non est vis collativa, ut ex quibusdam suorum obiectorum in alia perveniat; sed omnia sua obiecta sunt ei visibilia, quam cito ad illa convertitur: unde habens potentiam visivam se habet hoc modo ad omnia visibilia intuenda, sicut habens habitum ad ea quae habitualiter scit consideranda; et ideo videns non indiget ab alio excitari ad videndum, nisi quatenus per alium eius visus dirigitur in aliquod visibile, ut digito, vel aliquo huiusmodi. Sed potentia intellectiva, cum sit collativa, ex quibusdam in alia devenit; unde non se habet aliqualiter ad omnia

Distinguishing the discourses of reason

We can distinguish a number of discourses of reason. Reason first runs from the sensible to the understandable. Thomas speaks of this first discourse:

> For from this that the soul is the form and act of a body, there proceed from its essence certain powers fixed to organs, as the senses and the like from which it gets intellectual knowledge, on account of this that it is reasonable, having knowledge running from one thing to another; and thus it comes from sensibles to understandables, and by this it differs from an angel who gets knowledge not by running from sensibles to understandables. [10]

Second, there is also a discourse of reason in trying to understand what a thing is and again the soul is also distinct here from the angel who does not need such a discourse:

> The understanding, according to its name, implies a knowledge arriving at what is within a thing. Whence the senses and the imagination are concerned with accidents which stand as it were around the nature of a thing, but the understanding

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intelligibilia consideranda; sed statim quaedam videt, ut quae sunt per se nota, in quibus implicite continentur quaedam alia quae intelligere non potest nisi per officium rationis ea quae in principiis implicite continentur, explicando."

[10]Thomas Aquinas, *Scriptum Super Lib. II Sententiarum* , Dist. III, Quest. I, Art. VI, Solutio: "ex hoc enim quod anima corporis forma et actus est, procedunt ab essentia ejus quaedam potentiae organis affixae, ut sensus, et hujusmodi, ex quibus cognitionem intellectualem accipit, propter hoc quod rationalis est habens cognitionem decurrentem ab uno in aliud; et sic a sensibilibus in intelligibilia venit, et per hoc ab angelo differt, qui non a sensibilibus discurrendo ad intelligibilia, cognitionem accipit."

> arrives at the nature itself. Whence according to the Philosopher in the third book *About the Soul*, the object of the understanding is the *what it is.* But there is a difference in the grasping of this nature. Sometimes the nature is grasped by itself, so that the understanding does not enter into it from those things which are rolled around the nature; and this is the way of grasping in the separated substances - whence they are called *intelligences*. But sometimes it does not come to what is within except through what is placed around it, as it were through certain doors or entrances; and this is the way of grasping in men who from effects and properties go forward to a knowledge of the nature of a thing. And because it is necessary for there to be a certain discourse in this, therefore the grasping of man is called *reason,* although it ends in understanding in that the investigation leads to the nature of the thing.[11]

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[11] Thomas Aquinas, *Scriptum Super Lib. III Sententiarum,* Distinctio XXXV, Quaest II, Art. II, Solutio I:"...intellectus secundum suum nomen importat cognitionem pertingentem ad intima rei. Unde cum sensus et imaginatio circa accidentia occupentur quae quasi circumstant essentiam rei, intellectus ad essentiam ipsam pertingit. Unde secundum Philosophum in III *De Anima* (430b 28; lectio 11, n;. 762) objectum intellectus est *quid*. Sed in apprehensione hujus essentiae est differentia. Aliquando enim apprehenditur ipsa essentia per seipsam, non quod ad eam ingrediatur intellectus ex ipsis quae quasi circumvolvuntur ipsi essentiae; et hic est modus apprehendendi a substantiis separatis, unde *intelligentiae* dicuntur. Aliquando vero ad intima non pervenitur nisi per circumposita quasi per quaedam ostia; et hic est modus apprehendendi in hominibus, qui ex effectibus et proprietatibus procedunt ad cognitionem essentiae rei. Et quia in hoc oportet esse quemdam discursum, ideo hominis apprehensio *ratio* dicitur, quamvis ad intellectum terminetur in hoc quod inquisitio ad essentiam rei perducit."

Thomas also speaks of discourse and reasoning when we come to define by dividing a genus.[12]

Third, reason runs from premises to conclusions. This is what is usually understood by the word *discourse.* In the Latin logicians. *Discursus* is often a synonym for *reasoning*. But this discourse may not go from one thing to another thing, as in geometry where, when one reasons from one figure to another, one figure is not really outside another, but contained in it potentially.[13]

But the culmination of reason's discourse is when it reasons from knowing one thing to knowing another thing outside of it in reality. It is this discourse which Thomas distinguishes into four: running from cause to effect, running from effect to cause, running from like to like, and running

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[12] *Summa Contra Gentiles* , Liber III, Caput 108:"intellectus noster non statim, sed cum quodam inquisitionis ordine ad cognoscendam quidditatem alicuius rei pertingit: sicut cum primo apprehendimus *animal,* et dividentes per oppositas differentias, altera relicta, unam generi apponimus, quousque perveniamus ad definitionem speciei. ...Sic autem procedere ad cognoscendum de aliquo quid est, est intellectus ratiocinando discurrentis de uno in aliud."

[13] Thomas Aquinas, *In Boetii de Trinitate* , Lectio II, Q. II, Art. 1, Ad primam quaestionem: "In scientiis enim mathematicis proceditur per ea tantum, quae sunt de essentia rei, cum demonstrent solum per causam formalem; et ideo non demonstratur in eis aliquid de una re per aliam rem, sed per propriam definitionem illius rei. Etsi enim dentur aliquae demonstrationes de circulo ex triangulo, vel e converso, hoc non est nisi inquantum in circulo est potentia triangulus, et e converso. Sed in scientia naturali, in qua fit demonstratio per causas extrinsecas, probatur aliquid de una re per aliam omnino extrinsecam. Et ita modus rationalis in scientia naturali maxime observatur, et ideo scientia naturalis inter alias est intellectui hominis magis conformis. Attribuitur igitur rationabiliter procedere scientiae naturali, non quia ei soli conveniat, sed quia ei praecipue competit."

from one opposite to the other. In these four ways, it seems that knowing one thing is a cause of knowing, or knowing better, another thing.

The discourse *ab uno in aliud secundum rem* is the high point of reason's ability. Not only is reason's discourse not confined within the limits of one thing, but it enables reason to know things it has not experienced. Thomas touches upon these things and also gives us a division of this kind of discourse in this key text:

> ...a knowledge of things is not only able to be acquired by an experience of those things, but also by an experience of certain other things: since by the power of the active understanding's light man is able to go forward to understanding effects through causes and causes through effects, and like things through like things, and contraries through contraries.[14]

Reason runs from one thing to another when knowing one thing makes or helps us to know another thing. This happens when one thing depends upon another or when one thing is like another or when one thing is the opposite of the other. When one thing depends upon another, sometimes the cause is known and from this one comes to know, or know better, the effect. But more often, reason runs from the known effect towards an unknown cause. If neither of two things depended upon the other, nor was one like the other, nor was one the opposite of the other, it does not appear how knowing one thing could help one to know the other in particular. There are, then, four discourses of reason from one thing to another where knowing or accepting one thing is the cause of knowing, or knowing better, another thing. Reason sometimes runs from the cause to the effect, but more often from the effect to the cause. And then reason runs from like to like and from one opposite to the other.[15]

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[14] *Summa Theologiae*, Tertia Pars, Q. 12, Art. 1, Ad. 1: "...scientia rerum acquiri potest non solum per experientiam ipsarum, sed etiam per experientiam quarandam aliarum rerum: cum ex virtute luminis intellectus agentis possit homo procedere ad intelligendum effectus per causas, et causas per effectus, et similia per similia, et contraria per contraria."

[15] We seem to have left out two common discourses of reason: counting and calculating. But counting is like the second above and calculating like

When Aristotle, following Plato, asks in the *Nicomachean Ethics* whether we are on the way *from* the beginnings or causes, or on the way *to* the beginnings or causes, he compares these two movements of reason to those of a runner who sometimes runs from the starting-line down to a post, and sometimes in the reverse way, from the post back to the starting point.[16] So likewise, reason sometimes runs from the cause towards the effect (as in geometry) or in the reverse direction, from the effect towards the cause (as is usual in moral matter and in natural things).

Many of these four discourses may be found in thinking about the same thing. For example, we reason about God from his effects and their likeness to him and by way of negation of their defects.

The word *large*

The discourse of reason can be called *large* because it is (1) about the large as an object, or (2) its limit is large, or (3) the discourse is itself large or long.[17]

There are two senses in which the discourse of reason could be said to be *about the large*. The senses know only the singular, but the discourse of reason can be about *the universal* which is said of many things or even an

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the third. One has a confused knowledge of the quantity of a material multitude until one counts it. And in calculating one comes to know a number from two already known, just as in reasoning one comes to know a statement from two already known.

[16]*Nicomachean Ethics*, Book One, 1095a 30-1095b 1

[17]When Holmes says to Watson: "What seems strange to you is only so because you do not follow my train of thought or observe the small facts upon which large inferences may depend." (*The Sign of Four*, Chapter I, The Science of Deduction, *The Complete Sherlock Holmes*, Garden City Publishing Co. Inc., 1938, pp. 95-96), it is possible to understand *large* in more than one of these ways

infinity of things. In this sense, the discourse of reason covers a large area. In another sense, the discourse of reason can be called *large* because it is *about great things*. This sense of *large* is opposed to *small* as in *small talk*, that is, talk about unimportant things. In this sense, a discourse of reason about the purpose of life or about the universe or about God, is a *large* discourse. The discourse of the wise man is the largest in both of these ways for he discourses about being and one which are said of all things and about the first cause which is God.

The discourse of reason can also be called large *from its limit*. The limit of a discourse is its beginning or its end. In his Exposition of Boethius' *De Trinitate*, Thomas states that "It is a property of reason to be spread about many things and to gather one simple knowledge from them."[18]

This is first seen in the discourse of reason from experience. Thus, the marvelous character Mr. Jaggers, the great lawyer, says to Pip when they first meet at Miss Havisham's house:

> "Well! Behave yourself. I have a pretty large experience of boys, and you're a bad set of fellows. Now mind!" said he, biting the side of his great forefinger as he frowned at me, "you behave yourself!"[19]

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[18] *In Boetii De Trinitate*, Lectio II, Q. II, Art 1, Ad Tertiam quaestionem: "Est enim rationis proprium circa multa diffundi et ex eis unam simplicem cognitionem colligere."

[19] Charles Dickens, *Great Expectations*, Chapter 11, The Franklin Library Edition, 1979, p. 90. Pip also uses the phrase when speaking of how Pumblechook seems *everywhere* to get (undeservedly) credit for giving him his start in life. Chapter 28, p. 251: "I entertain a conviction, based upon large experience, that if in the days of my prosperity I had gone to the North Pole, I should have met somebody there, wandering Esquimaux or civilised man, who would have told me that Pumblechook was my earliest patron and the founder of my fortunes."

From his "large experience" of them, Jaggers has arrived at one simple universal truth that boys are "a bad set of fellows." This distinguishes reason in knowing the universal from the understanding of an angel.[20]

The discourse of reason is also called *large* from its beginning when there is a *manuductio* from many less universal statements to a more universal one.[21]

But understanding, as contrasted with reason, is characterized by the opposite condition of seeing many things in something one. As Thomas continues in the above text of his Exposition of Boethius' *De Trinitate:*

> The understanding conversely first considers one simple truth and, in that, it grasps a knowledge of a whole multitude of

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[20]Thomas Aquinas, *Summa Theologiae*, Prima Pars *,* Q. 59, Art. 1, Ad 1: "intellectus et ratio differunt quantum ad modum cognoscendi: quia scilicet intellectus cognoscit simplici intuitu, ratio vero discurrendo de uno in aliud. Sed tamen ratio per discursum pervenit ad cognoscendum illud quod intellectus sine discursu cognoscit, scilicet universale."

[21]The classic text on the necessity of *manuductio* is in the *Summa Theologiae*, Prima Pars, Q. 117, Art. 1, Corpus: "Ducit autem magister discipulum ex praecognitis in cognitionem ignotorum, dupliciter. Primo quidem, proponendo ei aliqua auxilia vel instrumenta, quibus intellectus eius utatur ad scientiam acquirendam: puta cum proponit ei aliquas propositiones minus universales, quas tamen ex praecognitis discipulus diiudicare potest; vel cum proponit ei aliqua sensibilia exempla, vel similia vel opposita, vel aliqua huiusmodi ex quibus intellectus addiscentis manuducitur in cognitionem veritatis ignotae. Alio modo cum...proponit discipulo ordinem principiorum ad conclusiones." Philosophers are deeply indebted to Msgr. Maurice Dionne for bringing out the necessity of *manuductio* and for showing the manuductio necessary in those most difficult forms of reasoned out knowledge, logic and wisdom.

> things, as God by understanding his nature, understands all things.[22]

But reason can imitate this when, from understanding one simple truth (which it has gathered from many things), it proceeds to consider many things. And in this way, the discourse of reason is large from its end.

Thus the discourse of reason is large from its beginning when it ends in understanding one simple truth from many things and large from its end when it begins with one simple truth that is great in its power.[23] (To see at the same time many truths in one universal truth is, of course, not a discourse, but the perfection of understanding.)

The discourse of reason can also be called *large* because it is itself large or long.[24] Again, there are two ways in which this could be said. The

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[22] *In Boetii De Trinitate* , Lectio II, Q. II, Art 1, Ad Tertiam quaestionem: "Intellectus autem e converso per prius unam et simplicem veritatem considerat, et in illa totius multitudinis cognitionem capit, sicut Deus intelligendo suam essentiam omnia cognoscit."

[23] And thus understanding is a limit of the discourse of reason in the reverse way of the large or many as Thomas explains in the same text *In Boetii De Trinitate*, Lectio II, Q. II, Art 1, Ad Tertiam Quaestionem: "Sic igitur patet quod rationalis consideratio ad intellectualem terminatur secundum viam resolutionis, inquantum ratio ex multis colligit unam et simplicem veritatem. Et rursum, intellectualis consideratio est principium rationalis secundum viam compositionis vel inventionis inquantum intellectus in uno multa comprehendit."

[24] It may seem a misuse of the word *large* to call a length *large*, but Shakespeare does, for example, in this passsage from *King John* , Act I, Sc. 1 where *large* modifies *lengths* :

> Th 'advantage of his absence took the king
> And in the mean time sojourn'd at my father's;
> Where how he did prevail, I shame to speak.
> But truth is truth, large lengths of seas and shores
> Between my father and my mother lay,
> As I have heard my father speak himself
> When this same lusty gentleman was got.

discourse itself of reason can be called large or long because it goes through many steps by continuous definitions or syllogisms to understand what one thing is, or to see one conclusion, as we see in geometry; or because it goes between things that are far apart, as in the fourth tool of dialectic and, even infinitely apart, as in reasoning from motion to God. The largest discourse in this latter sense is that in Books Eleven & Twelve of the *Metaphysics* where Aristotle's discourse goes from accidental being and motion to the first cause who is pure act.

Shakespeare defines reason by the ability for *large* discourse even though it is also capable (or even more capable) of a *small* or short discourse. The reason for this is that an ability must be defined by its utmost. The ability to do less is included in the ability to do more, but the reverse is not true. Hence, one does not fully define the ability of reason for discourse without saying that it is an ability for *large* discourse. Reason is capable of a large discourse in all six senses distinguished above.

Shakespeare has told us much about reason in saying that it is the ability for large discourse. But to complete the definition, he adds *looking before and after.*

What does the word *looking* mean here? And what does the word *before* mean here? (The meanings of *after* will correspond to those of *before.*) And why does he couple *looking* with *before and after*. And how do these words complete our understanding of that discourse for which reason is the ability?

The word look

The word *look* means *try to see*. Since we name things as we know them, and our knowledge begins with our senses, the word *see* is first placed upon the well known act of the eye. Then, we place the word *see* upon the act of the imagination which is like the act of the eye. A sign of their close likeness is that imagining is confused with the act of the eye in our dreams. Third, we place the word *see* upon the act of reason called

understanding. This is further from the act of the eye, but we do sometimes confuse thinking with imagining. In the exhortation *look before and after,* it is this third sense of *see* which we have in mind in using the word *look*.

By adding the word *looking*, Shakespeare brings out the end of the discourse of reason. In its discourse, reason is trying to understand. Discourse is reason's way of coming to understand. The separated substances understand without any need of discourse. Hence, they are more strictly said to have an understanding or intellect and man, a reason.

The word before

The word *before* is also equivocal by reason. And since reason looks before and after, there is also an order among the senses of *before;* that is, one sense comes before or after another. Thus we cannot understand the word *before* (and the word *after*) without looking before and after.

Aristotle seems to have been the first to see clearly the order of these senses of *before*. In the twelfth chapter of the *Categories*, he distinguishes in order four central senses of the word *before*. Later, in the same chapter, he brings out another sense which is the crowning one, especially for the philosopher.[25] We can learn the ordered senses of *before* by reading carefully this chapter of the *Categories.*

Aristotle begins Chapter 12 with these words:

> One thing is said to be *before* another in four ways.[26]

When Aristotle distinguishes the senses of a word equivocal by reason, he does not give all the senses of the word. Rather, he distinguishes in order the main or chief central senses. To each of these main senses can be attached other meanings very closely related. Thus

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[25]I do not think that this "fifth" sense is fifth in order, but I will try to explain how it is related to the four ordered senses that he first distinguishes when we look at the text of Aristotle.

[26]*Categories*, Chapter 12, 14a 26

when he distinguishes the senses of *in* in the fourth book of the *Physics*, he does not give the sense of *in time*. But as Thomas rightly notes there, this sense is reduced to the first sense whereby something is said to be in place (for place and time are both extrinsic measures).[27] Likewise, when he distinguishes the senses of *beginning* in the fifth book of the *Metaphysics*, he does not distinguish the senses of the beginning in time and the beginning in motion although he had distinguished them in the first book of the *Physics*. They are distinct meanings as can be seen from Aristotle's critique of Melissus in Book One of the *Physics*.[28] These meanings are reduced to the first one in place since, as is shown in the sixth book of the *Physics*, before and after and beginning in motion and time follow that in place.

Next, Aristotle gives the first sense of *before:*

> First and most strictly according to time, by which one thing is older and more ancient than another. For something is said to be older or more ancient in that its time has been longer.[29]

Since we name things as we know them, the order in naming follows the order in knowing. And since the first road or order in our knowledge is the road from the senses into reason, it can be seen why the first meaning comes most under the senses and that later meanings are ordered by their likeness and distance from the first meaning.

Why the first meaning of *before* is that in time and motion can be seen from two things. Time measures the before and after in motion. Aristotle points out the connection of time and before and after in Book IV of the *Physics:*

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[27] Thomas Aquinas, *In I Sent.*, Dist. XIX, Q. III, Art. II, Ad 1: "stricte accipiendo, non omnes modi quibus aliquid est in aliquo, continentur in illis octo, nisi per quamdam similitudinis reductionem, sicut esse in tempore reducitur ad illum modum quo aliquid dicitur esse in loco, quia utrumque est sicut mensuratum in mensura."

[28] *Physics*, Book I, 186a 10-16

[29] *Categories*, Chapter 12, 14a 26-29

> But we know time when we divide the motion, separating the before and after. And then we say time has been when we have sensation of the before and after in time.[30]

Since time is the number of motion according to the before and after in motion, it is not hard to see why this should be first. For we name things as we know them so that the order in naming follows the order in knowing. But our knowledge begins with our senses and as Ulysses observes in *Troilus and Cressida:*

> things in motion sooner catch the eye than what not stirs[31]

It is a sign of the natural genius of Shakespeare that he introduces his greatest comic character, Falstaff, by a reference to time. Falstaff is represented as having his chief good no more than that of the beast, as if he were living without reason that looks before and after. But the first sense of before and after is in time. This is the conversation that first introduces Falstaff to the world:

> Falstaff: Now, Hal, what time of day is it, lad?
>
> Prince: Thou art so fat-witted, with drinking of old sack and unbuttoning thee after supper and sleeping upon benches after noon, that thou hast forgotten to demand that truly which thou wouldst truly know. What a devil hast thou to do with the time of day? Unless hours were cups of sack, and minutes capons, and clocks the tongues of bawds, and dials the signs of leaping-houses, and the blessed sun himself a fair hot wench in flame-coloured taffeta, I see no reason why thou shouldst be so superfluous to demand the time of day.[32]

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[30] *Physics,* Book IV, Chapter 11, 219a 22-25

[31] Shakespeare, *Troilus and Cressida,* Act III, Sc. 3

[32] *Henry IV, Part I,* Act I, Sc. 2

To this first central sense of *before* in time can be reduced *before in motion* and *before in place*. The close correspondence of these three and the reason for it can be seen from a study of the sixth book of the *Physics*. Since time arises by numbering the before and after in some motion (like that of the sun), to this sense is reduced that of the before and after in motion. And since motion is over some distance, we can also reduce to this sense the before and after in a road or path. The closeness of these three can be seen by one who reads carefully the first quatrain of Shakespeare's *Sonnet 60* (lines 1-4):

> Like as the waves make towards the pebbled shore,
> So do our minutes hasten to their end;
> Each changing place with that which goes before,
> In sequent toil all forwards do contend.

Just as to the first of sense of *beginning* in the fifth book of the *Metaphysics* are attached beginning in motion and beginning in time, so to the first sense of before in time are attached before in motion and in place. But in the *Metaphysics*, beginning in place (or in the magnitude over which is the motion) is given as the central sense while here before *in time* is given as the central sense. The reason for the latter would seem to be that *before and after* are explicitly in the definition of time, but not in that of place or motion, as can be seen from the definitions in the third and fourth books of the *Physics*.

The second sense of *before* given by Aristotle can also be exemplified in outward sensible things, but Aristotle gives a mathematical example:

> Second, that whose existence does not follow reversibly, as one is before two. If two exists, it follows right away that one exists; but if one exists, it is not necessary that two exist; so that the existence of the other does not follow reversibly from the one. Thus the *before* is such that from it, existence does not follow reversibly.[33]

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[33] *Categories,* Chapter 12, 14a 29-35

The second sense of before is in being. What can be without another, but that other cannot be without it, is before that other. It is significant that Aristotle uses a mathematical example here since there is no motion or time in mathematics.

What is before in the second sense may also be before in the first sense, but it is not necessary. One is always before two in the second sense, but not always in the first sense. When one slices a loaf of bread with a knife, one has one slice before two in time. But a slicing machine in the bakery goes at once from no slices to thirteen or fourteen. Most people have one child before two in time, but not those who have twins or triplets. If the stamp prints two A's at once, one is not before two in time. Yet it is before it in being. The letter *C* is before the written word *CAT* in being, but if the press prints the whole word at once, *C* is not before *CAT* in time. But, if one prints by hand the word *CAT*, the letter C is before it both in time and in being. One can be a man (a male human being) without being a brother, but one cannot be a brother without being a man. Thus being a man is always before being a brother in the second sense of *before*. But sometimes one is also in time a man before being a brother and sometimes not. The older brother is a man in time before he is a brother. But the younger brother is not in time a man before he is a brother. And the same can be seen with woman and sister. But sometimes one thing is always before another in both the first and second senses of *before*. Thus man is before father always in both senses and likewise woman is before mother.

The point is that, although what is before in being is often also before in time, it is not always so. And hence it is clear that before *in being* is a distinct sense of *before* from that *in time*.

The third sense of *before* is given by Aristotle in these words:

> In a third way, *before* is said according to a certain order, as in the sciences and speeches. The order of before and after belongs to the demonstrative sciences: the elements are in order before the diagrams; and in grammar, the letters are

> before the syllables. Likewise, in speeches, the proemium comes in order before the narration.[34]

The words "according to a certain order" do not tell us what distinguishes this third sense from the other senses. For order consists in a before and after, and hence there is an order corresponding to every sense of *before*. But the examples given by Aristotle help us to recognize that he is talking about before *in the discourse or knowledge of reason*. This sense comes after the first two which are found in outward or sensible things. For a similar reason, the sense of *beginning* in our knowledge comes after the more outward senses of *beginning* in the fifth book of the *Metaphysics.* To this third sense of *before* can be reduced every before in our knowledge.

The words in the *Tempest*[35] "What's past is prologue" touch upon a likeness of this third sense of *before* to the first. As the past is before the future, so the prologue is before the play.

A special likeness to the second sense of *before* is found in our knowledge when one thing can be known without another, but the reverse is impossible. Just as a square can be without a cube, but the reverse is impossible; so too we can know what a square is without knowing what a cube is, but one cannot know what a cube is without knowing what a square is.

But what is before in our knowledge may not be before in time or before in being. I may know you before your parents even though your parents are before you in time. The natural philosopher may know water before hydrogen even though hydrogen is before water in being. Clearly, then, this is another sense of *before* from the first two senses of in time and in being.

The fourth sense of *before* is still in common use, but is stranger than the others:

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[34]*Categories,* Chapter 12, 14a 35-14b 3

[35]William Shakespeare, *The Tempest*, Act II, Sc. 1

> Further, besides the aforesaid, the better and more honorable seems to be before by nature. For even the many say that those honored or loved by them come *before* with them. But this is perhaps the strangest of the ways.[36]

The fourth sense of *before* is *in goodness* in which what is *better* or *more loved* is said to be or come before. This sense seems to be the farthest from the first sense of *before*. If what is after in time and generation is more perfect or better, there seems to be a great distance between what is before in time and what is before in the sense of better. Yet there is enough likeness that in the introduction of many people we often hear the phrase "And last, but not least" so that one will not think that the last person in time to be introduced is the last in excellence. And for a similar reason, Antony says "Though last, not least in love" when shaking the hands of the conspirators:

> First, Marcus Brutus, will I shake with you;
> Next, Caius Cassius, do I take your hand;
> Now, Decius Brutus, yours; now yours, Metellus;
> Yours, Cinna; and my valiant Casca, yours,
> Though last, not least in love, yours, good Trebonius.[37]

The likeness is enough between the first and fourth senses that we use words drawn from motion in talking about the fourth sense. Iachimo uses the words *go before* when talking about the fourth sense of before:

> If that thy gentry, Britain, go before
> This lout as he exceeds our lords, the odds
> Is that we scarce are men and you are gods.[38]

Before in motion is reduced to the first sense of *before* and *go before* seems to look back to this first meaning. And in the age of

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[36]*Categories*, Chapter 12, 14b 3-8

[37]Shakespeare, *Julius Caesar*, Act III, Sc. 1)

[38]Shakespeare, *Cymbeline,* Act V, Sc. 2

primogeniture, the brother who comes first in time is more honored than the younger brother. Hence, Orlando says to his older brother:

> The courtesy of nations allows you my better, in that you are the first born, but the same tradition takes not away my blood, were there twenty brothers betwixt us. I have as much of my father in me as you. Albeit I confess your coming before me is nearer to his reverence.[39]

But so great is the distance that one would have no difficulty in thinking of the first sense before this fourth sense. Notice how *before* and *better* are used with no confusion for the listener. We tend to fall back on the first sense of a word equivocal by reason when it is used with synonyms for later senses. [Likewise, although *first* has as many meanings as *before* (*first* in general means before all the rest), we find it natural to speak of first and best, knowing that everyone will understand by *first* what is first *in time*. Thus, Irving uses *first* and *best* with no confusion in this passage from *The History of New York:*

> I have been the more anxious to delineate fully the person and habits of Wouter Van Twiller, from the consideration that he was not only the first, but also the best governor that ever presided over this ancient and respectable province.[40]

Everyone would understand the words "not only the first, but also the best". Likewise, if someone said that "Washington was not only the first, but also the best President." In such a context, the first meaning of *first* appropriates the word and *best* is used for the last sense of *first*.

Aristotle then states

> So many then are the ways *before* is said[41]

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[39]Shakespeare, *As You Like It,* Act I, Sc. 1

[40]Book Three, Chapter One

[41]*Categories*, Chapter 12, 14b 9-10

Shakespeare is, of course, well aware that *before* has many meanings. In accord with his custom, he puns upon a meaning attached to the first and the fourth meaning of *before* in the words of Helena's confession to the Countess of her love:

> .....Then I confess,
> Here on my knee, before high heaven and you,
> That before you, and next unto high heaven,
> I love your son.[42]

Puns, of course, take the most distant meanings as a way of being clear. Hence, the saying "I see said the blind man; but he couldn't see at all" puns on the first and last sense of *seeing* distinguished earlier.

Thomas Aquinas would seem to have these four ordered meanings in mind when he shows that God the Father is in no way before God the Son. Thus when considering this in the Commentary on the *Sentences* of Peter Lombard, he says:

> The Father is in no way before the Son, neither in duration, nor by nature, nor in understanding, nor in dignity.[43]

And in the *Contra Errores Graecorum*, Thomas again eliminates four senses of *before* from the Father and the Son:

> There is no way of being before in which the Father can be said to be before the Son. For the Father is neither before in time since the Son is eternal; nor before by nature since there is one nature of the Father and the Son; nor in dignity since the Father and the Son are equal; nor in understanding since they are not distinguished except by relations and relatives are

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[42] *All's Well That Ends Well* , Act I, Sc. 3

[43] *Commentum in Lib. I Sententiarum,* Dist. IX, Quaestio II, Art. 1, Solutio: "Pater nullo modo est prior Filio neque duratione, neque natura, neque intellectu, neque dignitate"

> together in understanding since one is of the understanding of the other.[44]

Reason looks before and after in all of the senses of those words.

The words which are defined by before and after have also as many meanings or senses. Thus the words *order, first, second* and *last, beginning, middle* and *end* all have ordered meanings corresponding to those of *before* and *after*. Hence, whenever we look for order or for what is first or second or last or for the beginning or end or what is in the middle of something, we are looking before and after.

But after distinguishing four senses in order of *before* and saying so many are the senses, Aristotle then brings in another sense:

> There would seem to be another way *before* is said in addition to the above. Of those things whose existence follows reversibly, the cause in whatever manner of existence to the other would reasonably be said to be before by nature. That there are such things is clear. The existence of a man follows reversibly in existence to the true statement about him. For if a man exists, the statement by which we say the man exists is true. But the true statement is in no way a cause of the thing being, but the thing being would seem to be a cause in some way of the statement being true. For the statement is said to be true or false as the thing is or is not.[45]

This sense is sufficiently different from the above four and so important for reason and the philosopher that it needs to be made explicit. This

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[44] *Contra Errores Graecorum* , Pars Prior, Caput 2, n. 1034: "Nullus enim modus prioritatis est, secundum quem Pater prior Filio dici possit. Neque enim prior est Pater tempore, cum Filius sit aeternus; neque prior natura, cum Patris et Filii sit una natura; neque dignitate, cum Pater et Filius sint aequales; neque etiam intellectu, cum non distinguuntur nisi relationibus, relativa autem sunt simul secundum intellectum, cum unum sit de intellectu alterius."

[45] *Categories*, Chapter 12, 14b 10-22

"fifth" sense is the crowning sense of *before,* especially for the philosopher whose end is to know why. If *looking* means here *trying to understand*, we can see why looking before in this sense perfects reason. For we fully understand a thing only when we know its underlying cause.

Although Aristotle speaks of this sense after the other four because it is not as familiar and is harder to see, I do not think that it is necessarily fifth by its distance from the first sense of *before.* It seems to resemble in some ways the second sense. In the second sense, what is after *depends on* what is before for its existence even though what is before is not necessarily followed by what is after. And we think that the effect depends upon the cause for its existence.

What is after in time need not depend at all upon what is before in time. And reason, for the most part, knows the effect before the cause so that what is before and after in the discourse of reason seems contrary to the fifth sense.

Perhaps there is also a sign of the closeness of the second and "fifth" senses of *before* from the senses of *hama* (at the same time, together; *simul* in Latin) in Chapter 13 of the *Categories* which are opposed to before and after. Things that are together are neither before nor after one another. The first sense Aristotle gives there is opposed to before and after in time.[46] Aristotle then gives two senses of together by nature. The first of these is opposed to both the second and the "fifth" sense of before and after. Things like *double and half* which are convertible in being and one of which is not the cause of the other are together in this sense.[47] The second sense of together by nature (and hence, the third sense of together in Chapter 13) is that of things divided against each other by the same division of a genus.[48] The immediate species of the same genus are together in this sense. To what sense of *before and after* are these opposed? Aristotle contrasts this sense of together with the

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[46]*Categories*, Chapter 13, 14b 24-26

[47]*Categories*, Chapter 13, 14b 27-32

[48]*Categories*, Chapter 13, 14b 32-15a 4

genus always being before the species. He speaks of this *before* immediately afterwards.[49] Although the genus seems to be before the species in the second sense of *before* (for if dog is, then animal must be; but if animal is, dog need not be), nevertheless the genus might seem even more properly to be before the species *in the discourse of reason* or *in our knowledge* more than in things. Hence, the third sense of *together* seems to be opposed to the third sense of *before*. Aristotle then close the chapter by recalling the three senses he has distinguished.[50] (The Greek Commentators ask why Aristotle does not give a sense of *together* opposed to the fourth sense of *before and after*. We need not here go into that question.) If then the first sense *together* is opposed to the first sense of *before* and the third sense of *together* somewhat to the third sense of *before* and the second sense of *together* is opposed to both the second and the "fifth" senses of *before*, we should perhaps be careful of thinking that it is more like the third and fourth senses of *before* than like the second. (Three kinds of cause, however, are better than their effects.[51])

It is, of course, possible that what is *before* in the sense of a cause could be together, neither before nor after, in the sense of time.[52]

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[49]*Categories*, Chapter 13, 15a 4-7

[50]*Categories*, Chapter 13, 15a 7-12

[51]Thomas Aquinas, *De Veritate*, Q. 7, Art. 7, Ad 1: "quaedam causae sunt nobiliores his quorum sunt causae, scilicet efficiens, formalis et finalis; et ideo quod est in talibus causis, nobilius est in eis quam in his quorum sunt causae. Sed materia est imperfectior eo cuius est causa; et ideo aliquid est in materia minus nobiliter quam sit in materiato; in materia enim est incomplete et in potentia, et in materiato est actu. Omnis autem dispositio, quae praeparat subiectum ad aliquam formam vel perfectionem recipendam, reducitur ad causam materialem; et hoc modo gratia est causa gloriae; et ideo vita non est nobilius in gratia quam in gloria."

[52]*De Veritate*, Q. 18, Art 6, 8 & Ad 8: "8. Praeterea, dum homo primo peccato peccavit, in actu ipso nondum erat in statu culpae; quia cum status culpae causetur ex peccato, ante primum peccatum fuisset aliud

Sometimes Thomas is careful to distinguish these two senses[53] as if they are apt to be confused (which would be due to their likeness) and at other times, he seems to identify them.[54] Both of these are a sign of the likeness of the second and "fifth" senses of *before*.[55]

Moreover, in the disjunctive syllogism (we saw above in the *Commentum in Lib. I Sententiarum* and the *Contra Errores Graecorum*) that there is no before and after in the Trinity, Thomas has only four parts. For the second and fifth senses are eliminated by the three Persons having the same nature. That this eliminates the fifth sense as well is seen in Thomas'

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peccatum. Sed in actu quo primo homo peccavit, deceptus fuit. Ergo ante statum culpae homo decipi potuit...Ad octavum dicendum, quod actus momentanei simul dum esse incipiunt suum effectum habent, sicut in eodem instanti quo aer illuminatur, oculus videt. Unde cum motus voluntatis, in quo primo consistit peccatum, sit in instanti: in eodem instanti quo peccavit, fuit a statu innocentiae destitutus; et sic decipi potuit in illo instanti."

[53]*De Veritate,* Q. 6, Art. 2, Ad 13: "licet illud a quo non convertitur consequentia, sit aliquo modo prius, tamen non sequitur quod sit eo modo prius quo causa prius dicitur, sic enim coloratum esset causa hominis; et propter hoc non sequitur quod praescientia sit causa praedestinationis."

[54]*In Librum Beati Dionysii De Divinis Nominibus Expositio* , Caput XIII, Lectio II, n. 977: "illud a quo non convertitur consequentia essendi, est naturaliter prius et quodammodo principium. Sed unum est huiusmodi quia *sine uno non* invenitur aliqua *multitudo*, sed invenitur aliquod *unum* absque omni *multitudine*. Unum igitur est prius omni multitudine et principium eius. Cuius signum apparet in numeris, quia *unitas* est *ante omnem numerum*, qualitercumque multiplicetur."

[55]The sense in which the cause is before the effect has some likeness to *better* for the cause (except for matter) is better or more honorable than the effect. It is especially the end, the cause of causes, which is better than what is for the sake of the end. And the agent seems better than the patient. But *in our knowledge*, the effect is usually before the cause.

reason why the Holy Spirit does not proceed from the Father more than from the Son.[56]

In the last sentence of Chapter 12, Aristotle sums up, saying:

> Thus, one thing is said to be *before* another in five ways.[57]

As *forenoon*, *forecast, foretell, foretaste, forestall, forethought. forefather, afternoon, afterwards* and *hindsight is easier than foresight* refer to the first sense of *before* (and *after*), so foreword, *afterword* and *therefore* indicate a before and after in the discourse of reason and *foremost* and *foreman* refer to the fourth sense, what is before in goodness or dignity.[58] *Wherefore* looks for what is before in the sense of

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[56] *Commentum in Lib. I Sententiarum* , Dist. XII, Quaestio I, Art. 2(?): "Videtur quod Spiritus Sanctus magis procedit a Patre quam a Filio. Sicut enim dicit Philosophus in lib. *De Causis*, omnis causa primaria plus est influens in suum causatum quam causa secundaria. Sed Filius est quasi secunda causa. Pater autem quasi primum principium qui non est de alio. Ergo Spiritus Sanctus magis procedit a Patre quam a Filio."..."Ad primum ergo dicendum quod Pater quamvis dicatur principium Filii et Spiritus Sancti, tamen non potest dici causa, proprie loquendo: causa enim semper ponit diversitatem essentiae, sicut patet in omnibus. Sed principium aliquod a quo aliquid fluit est consubstantiale rei cujus est principium sicut dicimus quod punctus est principium lineae, et cor principium animalis, et fundamentum domus et ideo propter consubstantialitatem Pater dicitur principium sed non causa. Praeterea, causatum habet dependentiam ad causam. Sed principium importat originem quamdam secundum quod dicitur principium ex quo incipit aliquid. Item quamvis dicatur principium, non tamen potest dici primum; quia ibi non est aliquid prius et posterius, ut dictum est."

[57] *Categories*, Chapter 12, 14b 22-23

[58] But in English we also have many words derived from Latin prefixes signifying before or after such as *prologue, preface, premiss, proposition, proposal,* and *postscript*. *Prior* and *posterior* are synonyms for *before* and *after*. One's "priorities" may be in the first and second or fourth senses of *before*.

cause. Thus Cleopatra asks, "Wherefore is this?" to the angry Antony and Juliet wonders "O Romeo, Romeo, wherefore art thou Romeo?"[59]

Since *before* is said in many ways, it is possible that something be before another in more than one way. Thus bricks are before a brick wall both in time and in being. In time the bricks are made before the wall is made. And the bricks can be without the brick wall, but the reverse is not true. Hence, the bricks are sometimes sold after the demolition of a brick wall.

Further, since *before* is said in many ways, it is possible that two things be before each other. If the bricks are for the sake of the brick wall and letters for the sake of words, then the brick wall is before the bricks in the fourth sense of before (better) and in the same way, words are before letters. But in being, the bricks are before the brick wall and the letters before words. Chaucer comes before Shakespeare (in time), but the critics put Shakespeare before Chaucer (in the sense of better). The end is before the means in goodness even though the means might be before in time or being. And what is before in being or as the cause is before the effect, is often after in our knowledge. Hydrogen may be before water in being, but water is before hydrogen in our knowledge. (Hence, hydrogen was named from water and we name things as we know them.) In things, the cause is before the effect. But in our knowledge, the effect is usually before the cause. Hence, we ask why.

Hence, looking before and after is, not only trying to see if this is before that, but also in what way this is before that. This may be before that in more than one way. And it is also possible that this is after that in some other sense of before and after. John the Baptist must have looked before and after to have said about the Lamb of God: "This is he of whom I said: 'After me there comes a man who was made before me because he was before me'"[60]

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[59]Shakespeare, *Antony and Cleopatra* , Act III, Sc. 11 and *Romeo and Juliet*, Act II, Sc. 1

[60]*The Gospel According to St. John*, Chapter 1, v. 30: Thomas coments *In I Super Evangelium S. Ioannis,* Lectio XIV, nn. 26o--262: **Hic**, scilicet agnus, digito eum demonstrans, **est ille de quo dixi**, scilicet in eius absentia, **Post me venit vir**, ad praedicandum et baptizandum, qui

Here we could ask the tongue-twister question: In what sense of *before* is one sense of *before* before another sense of *before*?

Since we name things as we know them, the order in naming follows the order in knowing. Hence, one sense of *before* comes before another in the third sense of *before* (or one reduced to the third).

There are other ways of distinguishing one before and after from another besides distinguishing the senses of the words *before* and *after*.[61]

Why a *before and after* is the object of reason's looking

We have seen the meaning of *look* in Shakespeare's exhortation and the meanings of *before (*and consequently *after*). We should now ask why these go together. *Before and after* are the object of looking in this exhortation. And since *looking* here means trying to understand, we should try to see why the understandable is a before and after. Answering this

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post me venit nascendo. Secundo quantum ad ordinem dignitatis, cum dicit **Qui ante me factus est.**. Quasi dicat: Licet post me venerit ad praedicandum, tamen **ante m e** idest praelatus mihi factus est dignitate...Tertio quantum ad ordinem durationis, cum dicit **Quia prior me erat.** Quasi dicat: Non mirum si praefertur dignitate, quia etsi posterior sit tempore, est tamen prior aeternitate. **Quia prior me erat**."

[61]There are perhaps four ways in which one before and after or order can be distinguished from another. These ways correspond roughly to the four kinds of cause. In his proemium to the *Nicomachean Ethics*, Thomas distinguishes between the order made by nature and that made by reason. He then subdivides the second by *that in which* the order is made (the acts of reason or the acts of the will or exterior matter) These two ways of distinguishing correspond to the maker and matter among the causes. Thomas also speaks there of the order of things among themselves as being on account of their order to an end. We might also then distinguish orders on the basis of their ends. When we distinguish the senses of *before*, we are distinguishing kinds or forms of order.

question will at the same time help us to understand in general why the philosopher must look before and after. Since philosophy is a reasoned out understanding, the philosopher naturally seeks the understandable. If the understandable is a before and after, then the philosopher must look before and after. Indeed, if one does not look before and after, one is not using one's reason.

Speaking with the brevity of wisdom, we can say that the connection between the *understandable* and *before and after* is *one*. The understandable is one and before *and after* follow upon one. This in a nutshell is the reason why *looking* goes together with *before and after* and why it is so important for the philosopher to look before and after. Let us examine the steps in this reasoning.

The connection of the *understandable* with *one* can be seen by looking at the before and after of *true* and *one*. In the following text, Thomas helps us to see the before and after of *one*, *true* and *good:*

> In considering therefore true and good by themselves, true is before good in reason since it is perfective of another by reason of the species. The good however is perfective, not only by reason of the species, but by the being which it has in reality. And thus the definition of good includes in itself more things than the definition of true, and has itself in a way by addition to that, and thus good presupposes true.
>
> True however presupposes one since the definition of true is perfected from the grasping of the understanding and each thing is understandable insofar as it is one. For the one who does not understand something one, understands nothing, as the Philosopher says in the fourth book of the *Metaphysics*.[62]

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[62] *De Veritate* , Q. 21, Art. 3, c: "Considerando ergo verum et bonum secundum se, sic verum est prius bono secundum rationem, cum sit perfectivum alterius secundum rationem speciei; bonum autem non solum secundum rationem speciei, sed secundum esse quod habet in re. Et ita plura includit in se ratio boni quam ratio veri, et se habet quodammodo per additionem ad illa; et sic bonum praesuppponit verum, verum autem praesupponit unum. Cum veri ratio ex apprehensione

Another text of Thomas also enlightens us on the connection of the understandable or knowable and one. Thomas is explaining an importance text of Aristotle in the *Metaphysics:*

> He lays down a certain property following upon one; and he says that the account [ratio] of one is in this that it is a beginning of some number. And this is clear from the fact that one is the first measure of number, by which every number is measured. A measure however is considered to be a beginning. For things measured are known by their measure and things are known by their own beginnings. And from this it is clear that one is the beginning of the known or knowable about each thing, and it is in all the beginning of knowing.
>
> The one however which is the beginning of knowing is not the same in all genera...In all however this is common, that what is the first measure is indivisible according to quantity or according to form.
>
> It should be known however that to be a measure is the proper account of the one which is the beginning of number. But this is not the same as the one which is convertible with being, as has been said in the fourth book. For the account of this one consists only in being undivided, but of that one in measurement.
>
> Nevertheless, although it belongs first to the one which is a beginning of number to be considered a measure, it is derived by a certain likeness to the one in other genera, as the Philosopher shows in the tenth book. And in this way measure can be considered to be in every genus. And this account of measure follows that of being undivided, as has been said.

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intellectus perficiatur; unumquodque autem intelligible est inquantum est unum; qui enim non intelligit unum, nihil intelligit, ut dicit Philosophus in IV Metaph."

> And therefore *one* is not said wholly equivocally of that which is convertible with being and of that which is the beginning of number, but rather before and after.[63]

That *before and after* are a part of one or rather follow upon one is clear from the study of the division and order of names in Book Five of the *Metaphysics*. Thomas divides the part of the text which is about the names of the parts of one thus:

> ...he distinguishes the names which signify the parts of one...It is divided into two. In the first part, the names which signify the parts of one. In the second part, names which signify something following the account of one which are *before* and *after*. For to be one is to be a beginning, as has been said above. The first part is divided into two. In the first part he

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[63] *In V Metaphysicorum* , Lectio VIII, n. 872-875: "Ponit quamdam proprietatem consequentem unum; et dicit, quod ratio unius est in hoc, quod sit principium alicuius numeri. Quod ex hoc patet, quia unum est prima mensura numeri, quo omnis numerus mensuratur: mensura autem habet rationem principii, quia per mensuram res mensuratae cognoscuntur, res autem cognoscuntur per sua propria principia. Et ex hoc patet, quod unum est principium noti vel cognoscibilis circa quodlibet, et est in omnibus principium cognoscendi. Hoc autem unum, quod est principium cognoscendi, non est idem in omnibus generibus.....In omnibus tamen istis hoc est commune, quod illud, quod est prima mensura, est indivisibile secundum quantitatem, vel secundum speciem.... Sciendum est autem quod esse mensuram est propria ratio unius secundum quod est principium numeri. Hoc autem non non est idem cum uno quod convertitur cum ente, ut in quarto dictum est. Ratio enim illius unius in sola indivisione consistit: huiusmodi autem unius in mensuratione. Sed tamen haec ratio mensurae, licit primo conveniat uni quod est principium numeri, tamen per quamdam similitudinem derivatur ad unum in aliis generibus, ut in decimo huius Philosophus ostendit. Et secundum hoc ratio mensurae invenitur in quolibet genere. Haec autem ratio mensurae consequitur rationem indivisionis, sicut habitum est. Et ideo unum non omnino aequivoce dicitur de eo quod convertitur cum ente, et de eo quod est principium numeri, sed secundum prius et posterius."

> distinguishes the names which signify the first parts of one and its opposite, multitude. In the second, he distinguishes the names which signify certain secondary parts....[64]

The secondary parts are the opposites, the basis for distinction, which is presupposed to order. Thus in the *Metaphysics*, as in the *Categories*,[65] a consideration of the four kinds of opposite immediately precedes that of before and after. Since the one is a beginning and before and after are said in comparison to some beginning, before and after are said to follow upon one.[66] Moreover, order, which consists in a before and after, seems itself to be some kind of unity for we speak of the unity of order.

Order, or before and after, presupposes distinction, as has been said. But distinction based on opposites also pertains to the understandable as one. In the following text, Thomas notes the connection between these four (understandable, one, distinction and opposites:

> According to the Philosopher in the fourth book of the *Metaphysics*, whoever does not understand something one, understands nothing. Something is one however through this that it is undivided and distinct from others. Whence anyone who knows something, must know its distinction from others. But distinction is first considered in affirmation and negation.

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[64]*In V Metaphysicorum,* Lectio XI, nn, 906-907: "...distinguit nomina quae significant partes unius...dividitur in duas. In prima distinguit nomina quae significant partes unius. In secunda, nomina, quae significant aliquod consequens ad rationem unius, scilicet prius et posterius. Nam unum esse, est principium esse, ut supra dictum est...Prima dividitur in duas. In prima distinguit nomina que significant primas partes unius et eius oppositi, scilicet multitudinis. In secunda, distinguit nomina, quae significant quasdam secundarias partes..."

[65]Chapters 10 and 11 are about the four kinds of opposites and Chapter 12, as we saw above, is about the senses of *before*.

[66]*In V Metaphysicorum*, Lectio XIII, n. 936: "significatio prioris dependet a significatione principii. Nam principium in unoquoque genere est id quod est primum in genere. Prius autem dicitur quod est propinquius alicui determinato principio."

> And therefore whoever knows an affirmation, must know the negation.[67]

The connection of order and the understandable is seen everywhere. Heisenberg speaks thus in his Gifford Lectures:

> For our senses, the world consists of an infinite variety of things and events, colors and sounds. But in order to understand it we have to introduce some kind of order, and order means to recognize what is equal, it means some sort of unity[68]

The fact that Thomas can distinguish the parts of philosophy by the comparison of order to reason is a sign of how central is the consideration of order to the philosopher. In his Proemium to the *Nicomachean Ethics*, Thomas proceeds thus:

> As the Philosopher says in the beginning of the *Metaphysics*, ordering belongs to the wise. The reason for this is that wisdom is the greatest perfection of reason whose property is to know order. For, although the sense powers know some things absolutely, nevertheless to know the order of one thing to another belongs only to the understanding or reason.
>
> There is found, however, a two-fold order in things. One is of the parts of some whole or multitude toward each other; as the parts of a house are ordered to each other. The other is the order of things to an end. And this order is more the chief

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[67] *De Veritate* , Q. 2, Art. 15, c: "secundum Philosophum in III [IV] Metaphysicorum, quicumque non intelligit aliquod unum, nihil intelligit. Per hoc autem est aliquid unum, quod est in se indivisum, et ab aliis distinctum; unde quicumque cognoscit aliquid oportet quod sciat distinctionem eius ab aliis. Prima autem distinctionis ratio est in affirmatione et negatione: et ideo oportet quod quicumque scit affirmationem, cognoscat negationem."

[68] *Physics and Philosophy*, Harper, & Brothers, New York, 1958, pp. 62-63. Heisenberg, as a physicist, thinks of order as introduced by our reason through equations.

> one because it is first. For as the Philosopher says in the eleventh [twelfth] book of the *Metaphysics*, the order of the parts of an army to each other is on account of the order of the whole army to the leader.
>
> Order, however, is compared to reason in four ways. There is an order which reason does not make, but only considers, as is the order of natural things. There is also an order which reason by considering makes in its own act, as when it orders its thoughts to each other, and the signs of thoughts which are signifying vocal sounds. There is, moreover, a third order which reason by considering makes in the acts of the will. And further, there is a fourth order which reason by considering makes in exterior things of which it is itself the cause, as in a box or house.
>
> And because the consideration of reason is perfected by habit, there is a diverse knowledge corresponding to each of these diverse orders which reason properly considers. For it belongs to natural philosophy to consider the order of things which human reason considers but does not make; thus that under natural philosophy, we also include metaphysics. The order however which reason by considering makes in its own act belongs to rational philosophy which considers the order of the parts of speech to each other and the order of principles to each other and to conclusions. The order of voluntary actions however belongs to the consideration of moral philosophy. The order however which reason by considering makes in exterior things put together by human reason belongs to the mechanical arts.[69]

Someone might object that something is understandable to the extent it is in act, as the Philosopher shows in the ninth book of the *Metaphysics*. However, as Aristotle shows there and we have seen in our consideration of why the first sense of *before* is in time, motion is the act most known to us and from this we come to know other acts. But there is

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[69] *Expositio in Decem Libros Ethicorum Aristotelis Ad Nicomachum* , Liber Primus, Lectio I, nn. 1-2

a connection between motion and the one and the many and between motion and the opposites which are the basis of formal distinction and between motion and order. Thomas points out that the sensing of the common sensibles, motion and rest, is to sense in a way the one and the many.[70] And motion or change is between opposites and motion is one of two ways of distinguishing opposites.[71] And order is first said in change of place.[72]

Thus there is a harmony between saying that something is understandable insofar as it is one and something is understandable insofar as it is in act.

Understanding further the meaning of looking before and after

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[70] *Summa Theologiae*, Prima Pars, Q. 78, Art. 3, Ad 2: "....magnitudo et figura et huiusmodi, quae dicuntur communia sensibilia, sunt media inter sensibilia per accidens et sensibilia propria, quae sunt obiecta sensuum. Nam sensibilia propria primo et per se immutant sensum; cum sint qualitates alterantes. Sensibilia vero communia omnia reducuntur ad quantitatem. Et de magnitudine quidem et numero, patet quod sunt species quantitatis. Figura autem est qualitas circa quantitatem, cum consistat ratio figurae in terminatione magnitudinis. Motus autem et quies sentiuntur, secundum quod subiectum uno modo vel pluribus modis se habet secundum magnitudinem subiecti vel localis distantiae, quantum ad motum augmenti et motum localem; vel etiam secundum sensibiles qualitates, ut in motu alterationis: et sic sentire motum et quietem est quodammodo sentire unum et multa.."

[71] Thomas Aquinas, *In V Metaphysicorum*, Lectio XII, n. 923: "Ponit duos modos, secundum quos potest cognosci quod aliqua sunt opposita: quorum primus est per comparationen ad motum. Nam in quolibet motu vel mutatione, terminus a quo, opponitur termino ad quem. Et ideo ex quibus est motus, et in quae est motus, sunt opposita..."

[72] Thomas Aquinas, *In V Metaphysicorum*, n. 751: "Ordo autem prioris et posterioris invenitur in diversis; sed secundum id quod primo est nobis notum, est ordo inventus in motu locali, eo quod ille motus est sensui manfestior."

It should not remain hidden from us that reason sometimes knows two things without seeing that one is before the other or which one is before the other. Reason could know, for example, two plays of Shakespeare without knowing which was written before the other. Or, one could know two things without seeing that one was better than the other. In this case, when reason looks before and after, it is trying to see which of two things it knows already is before the other (in time or in goodness or in some other sense of *before*). But sometimes reason does not know at all what is before or after what it does know. Thus, for example, if one thought that water was the beginning of material things, and there is something before water (such as hydrogen) whose existence one does not even suspect, one is in double ignorance. One is ignorant both of what is before water and one is ignorant that it is before water. In this case, then, it is necessary to look before and after, not only to see that this is before that, but also to know what it is that is before or after the other. In this case of double ignorance, one must look before and after both to know what is before or after and to know that it is before or after.

Everyone who is ignorant of what is before or after something is also ignorant that it is before or after. But not everyone who is ignorant that this is before or after that, is ignorant of this or that.

Thus one man is wiser than another because he sees what is before or after what the other man sees or because, at least, he sees a before and after which the other man does not see. But in both cases, he is wiser because he has looked before and after more or better than the other man.

Wisdom also consists in seeing that nothing is before or after something. The wisdom of the theologian, for example, consists not only in seeing the ways that God is before all other things, but also in seeing that one Person in the Trinity is *not* before or after another. And it belongs to wisdom to know that no knowledge is better than wisdom.

What comes for reason before seeing a before and after

Having seen the before and after in the senses or meanings of the word *before*, we should now look before *before and after*. Or to avoid the tongue twisting here, we can ask whether anything is before order since order is nothing other than a before and after.[73] Order means before and after. Hence, when Baptista says in *The Taming of the Shrew* that he will not give his youngest daughter in marriage *before* his older daughter has a husband, [74] Hortensio can rightly speak of this as an *order* which he has established.[75]

It is impossible that anything be before or after itself. Nothing is before or after itself (in any sense of *before*). Hence, before every order, there is some distinction.[76] Distinction is before order in the second sense of *before*. Distinction can be without order, but order cannot be without distinction. One reason for this is that order requires not only the distinction of things, but also their coming together in some way.[77]

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[73]Thomas Aquinas, *Summa Theologiae*, Secunda Secundae, q. 26, art. 1, c: "Ordo autem includit in se aliquem modum prioris et posterioris."

[74]Shakespeare, *The Taming of the Shrew*, Act I, Sc. 1:

> Gentlemen, importune me no farther,
> For how I firmly am resolv'd you know;
> That is, not to bestow my youngest daughter
> Before I have a husband for the elder.

[75]Shakespeare, *The Taming of the Shrew*, Act I, Sc. 2:

> Therefore this order hath Baptista tane.
> That none shall have access unto Bianca
> Till Katherine the curst have got a husband.

[76]Thomas Aquinas, *Commentum in Liber I Sententiarum* , Dist. XX, Quaest. I, Art. III, Solutio I: "ordo in ratione sua includit...rationem prioris et posterioris; unde secundum omnes illos modos potest dici esse ordo aliquorum secundum quos aliquis altero prius dicitur et secundum locum et secundum tempus et secundum omnia huiusmodi. Includit etiam distinctionem quia non est ordo aliquorum nisi distinctorum. Sed hoc magis praesupponit nomen ordinis quam significet."

[77]Thomas Aquinas, *In Librum Beati Dionysii De Divinis Nominibus,* Caput IV, Lectio I, n. 283: "...ubi non est distinctio, ordo locum non habet; si

Another reason for this is that there can be a distinction of relatives, as we saw in the second sense of *hama* above, but one is not before the other.[78]

This casts some light on why both in the *Categories* and in the *Metaphysics*, Aristotle considers the four kinds of opposition immediately before the word *before*. For every distinction is either material by the division of quantity or formal by opposites.[79] The philosopher is, of course, more interested in formal distinction than material distinction since his object is something universal or immaterial.

We cannot see that one thing is before another if we cannot see their distinction. If we could not distinguish between one and two, we could not see that one is before two. We must distinguish between act and ability before we can see the many ways in which act is before ability (and the one way in which ability is, in a qualified way, before act). But we could see some distinction between things without seeing how one is before the other. For example: we could distinguish between two men without seeing which one is older or which one is better.

Seeing a distinction always comes before seeing a before and after. But something else comes before seeing a before and after. It may also come before seeing a distinction, but it is more apt to come before seeing a *before and after*. For the most part, if not always, a *discourse* of reason

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autem quae distinguuntur in nullo convenirent, unius ordinis non essent." See also Thomas' *Responsio as Ioannem Vercellensem de art. cviii,* quaestio 50: "Ordo enim non est nisi aliquorum distinctorum convenientium in aliquo: quae enim in nullo conveniunt, nullum habent ordinem ad invicem."

[78]For a Christian, the most interesting example of distinction without a before and after is in the Trinity.

[79]Thomas Aquinas, *Summa Contra Gentiles* , Liber II, Caput 44: "Omnis distinctio est aut secundum divisionem quantitatis...aut secundum divisionem formalem." *Summa Contra Gentiles*, Liber IV, Caput 24: "in rebus enim, remota materiali distinctione... non inveniuntur aliqua distingui nisi per aliquam oppositionem. Quae enim nullam oppositionem habent ad invicem, simul esse possunt in eodem, unde per ea distinctio causari non potest: album enim et triangulare, licet diversa sunt, quia tamen non opponuntur, in eodem esse contingit."

is necessary before reason can see clearly a before and after. In his immortal exhortation to use reason, Shakespeare teaches us that reason is the ability for "large discourse, looking before and after". The wisdom of Shakespeare is seen in his placing the word *discourse* before *looking before and after. The* discourse of reason is a looking before and after. Or reason, in its discourse, looks before and after. *Looking* means *trying to see*. In saying then that the discourse of reason is a looking before and after, or that reason looks before and after in its discourse, Shakespeare is teaching us that a discourse of reason is necessary to see a before and after or to see it well. And this, as Thomas teaches us, is a major difference between the seeing of reason and the seeing of the eyes:

> There is this difference between understanding and bodily sight. To bodily sight, all objects are equally near to being known. For sense is not a power of bringing together so that from one of its objects it needs to come to another. But for the understanding, all understandables are not equally near to being known. But some things it is able to look upon at once and some things it does not see except from having seen other beginnings.[80]

In other passages where Thomas talks about this difference between seeing in the first and last senses, he compares bodily sight to a reason formed by the habits of science and art. The man who possesses the habit of geometry, for example, can think at once about anything he want to that comes under that habit. But reason is not in this condition in the beginning when it sees some things at once and must come to know others things through the former.[81] The name for this motion of reason

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[80] *De Veritate,* Q. 11, Art. 3, c: "inter intellectum et corporalem visum haec est differentia: quod visui corporali omnia sua obiecta aequaliter sunt propinqua ad cognoscenda; sensus enim non est vis collativa, ut ex uno obiectorum suorum necesse habeat pervenire in aliud. Sed intellectui non omnia intelligibilia aequaliter vicina sunt ad cognoscendum; sed quaedam statim conspicere potest, quaedam vero non conspicit nisi ex aliis principiis inspectis."

[81] *De Veritate*, Q. 11, Art. 1, Ad 12: "non est simile de int ellectu et visu corporali. Visus enim corporalis non est vis collativa, ut ex quibusdam

going from what it knows already to knowing something unknown before is called *discourse* from the Latin word for running.[82]

It is striking that there is a before and after in the discourse of reason since that discourse is like a motion and every motion is from something before to something after.[83] For as we have seen, motion is what first gets the attention of our senses and is the act most known to our reason. Hence, there is a before and after both in what reason first knows and in the discourse of reason which is necessary to see a before and after. Reason must take into account the before and after in what it knows and the before and after in the discourse by which it comes to see the former before and after.

The words *looking before and after* bring out the end or goal of reason's discourse which is to understand by seeing a before and after. And this is especially true of the crowning sense of *before*, the sense in

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suorum obiectorum in alia perveniat; sed omnia sua obiecta sunt ei visibilia, quam cito ad illa convertitur: unde habens potentiam visivam se habet hoc modo ad omnia visibilia intuenda, sicut habens habitum ad ea quae habitualiter scit consideranda; et ideo videns non indiget ab alio excitari ad videndum, nisi quatenus per alium eius visus dirigitur in aliquod visibile, ut digito, vel aliquo huiusmodi. Sed potentia intellectiva, cum sit collativa, ex quibusdam in alia devenit; unde non se habet aliqualiter ad omnia intelligibilia consideranda; sed statim quaedam videt, ut quae sunt per se nota, in quibus implicite continentur quaedam alia quae intelligere non potest nisi per officium rationis ea quae in principiis implicite continentur, explicando."

[82]Thomas Aquinas, *Summa Theologiae*, Prima Pars, Q. 58, Art. 3, Ad 1: "discursus quendam motum nominat. Omnis autem motus est de uno priori in aliud posterius. Unde discursiva cognitio attenditur secundum quod ex aliquo prius noto devenitur in cognitionem alterius posterius noti, quod prius erat ignotum."

[83]Thomas Aquinas, *Summa Theologiae,* Prima Pars, Q. 58, Art. 3, Ad 1: "discursus quendam motum nominat. Omnis autem motus est de uno priori in aliud posterius. Unde discursiva cognitio attenditur secundum quod ex aliquo prius noto devenitur in cognitionem alterius posterius noti, quod prius erat ignotum."

which the cause is before the effect. For understanding means especially knowing the underlying cause which is said to stand under its effect.

There is always a before and after in the discourse itself of reason,[84] but in that discourse, reason is also trying to see a before and after in whatever the discourse is about. Reason looks before and after in things and in its discourse about those things. Seeing the before and after in things is more the end or goal of reason, but in order to reach that end, reason needs to look at the before and after in its own discourse about those things.

SHAKESPEARE'S DEFINITION AND THE PROEMIUM TO WISDOM

When Aristotle in his Proemium to Wisdom[85] goes from sensing, memory and experience towards art or science, he is going from the senses (the inward as well as the outward) towards reason. The first difference which he sees between art or science and experience is that art or science is a knowledge of the universal while experience is still a knowledge of the singular or singulars. The second difference which he sees is that art or science knows the cause while experience as such knows only that it is so.

The first difference corresponds to the first sense of *large* said of discourse. We have seen that the discourse of reason can be called *large* because it is about the universal. The second difference corresponds, of course, to looking before and after since the crowning sense of *before* is the sense in which the cause is before the effect.

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[84]Thomas Aquinas, *Summa Theologiae*, Prima Pars, Q. 58, Art. 3, Ad 1: "*discursus* quendam motum nominat. Omnis autem motus est de uno priori in aliud posterius. Unde discursiva cognitio attenditur secundum quod ex aliquo prius noto devenitur in cognitionem alterius posterius noti, quod prius erat ignotum."

[85]Aristotle usually begins his books with a *proemium* (which is a Greek word meaning *paving the way*). The Proemium to Wisdom is found in the beginning of the first book of the *Metaphysics*, 980a 22 - 983a 24.

This is also a sign that Shakespeare's definition is from what is most known to us about reason for when we first see what is proper to reason, we touch upon large discourse and looking before and after. And when Aristotle points out how art or science arise from experience, he also touches upon the large discourse of reason from its beginning (large experience).

Later, Aristotle thinks out a six-part description of the wise man or wisdom. And from the first three parts of this description, he reasons to wisdom being a knowledge of the most universal. And from the second three parts, he reasons to wisdom being a knowledge of the first cause. These again correspond in a superlative degree to large discourse and looking before and after. Since wisdom is the highest or greatest perfection of reason, there is great harmony between what we learn there about wisdom and what Shakespeare's definition tells us about reason. It is interesting to note also how the first and last or sixth part of the description of the wise man or wisdom again correspond to the definition of reason. The first part is that the wise man knows all things in some way and this corresponds to one sense of *large* discourse. The sixth and crowning part of the description, the wise man orders (*sapientis est ordinare*), corresponds to looking before and after.

What we learn about wisdom later on in the Proemium is also in perfect harmony with the definition of reason. Wisdom is about the best or most honorable thing and hence, its discourse is the largest in the sense of being about the best. Its discourse in books eleven and twelve is also the largest or longest in one sense, going from accidental being and motion to what most is, the unmoved mover. And the discourse of the wise man is also largest in its limits. Hence, Boethius teaches us that it proceeds *intellectualiter*. And the wise man most of all *understands* in the sense of that word connected with its etymology.[86]

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[86]Causes are said to underlie effects and the wise man considers the first cause. The wise man especially considers substance and the etymology of *substance* is the same as that of *understanding*, And the wise man most of all knows the axioms which stand under all other statements. And the wise man distinguishes the roads that underlie all our knowledge.

Thus, the perfect harmony between what reason is and what wisdom is, confirms the truth of what is said of each. For with the truth all things harmonize. When Thomas in his Proemium to the *Nicomachean Ethics* wants to show the suitability of distinguishing reason's knowledge by the relation of order to reason,[87] he also recalls the harmony between the sixth attribute of the wise man (*sapientis est ordinare*) and the property of reason, in distinction from the senses, which is to know order. Since wisdom is the highest perfection of reason, there must be harmony between what is characteristic of reason and of wisdom.

WHY NOT DEFINE REASON AS THE ABILITY TO UNDERSTAND

Someone might object here that we should define reason as the ability to understand. Since we define an ability by its utmost and the ability of reason extends not only to thinking and reasoning, but to thinking out and reasoning out which result in understanding, we should define reason by this its ultimate end. Although this is reasonable, there seems to be at least two reasons why it is better to define reason as Shakespeare does.

To simply define reason as *the ability to understand* would be to confuse reason with the understanding of an angel or God who understand without need of discourse. Hence, Thomas says that "the name *intellectus* is taken from the intimate penetration of truth but the name of *reason* from inquiry and discourse".[88] *Understanding* or *intellectus* is sometimes divided into understanding and reason, the second being given a new name (*reason)* because it partakes only imperfectly of understanding. Man is placed above the other animals by his reason, but below those who

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[87] *In N. Ethicorum,* Lectio I, n. 1: "Sicut dicit Philosophus in principio*Metaphysicae*, sapientis est ordinare. Cuius ratio est, quia sapientia est potissima perfectio rationis, cuius proprium est cognoscere ordinem."

[88] *Summa Theologiae* , Secunda Secundae, Q. 49, Art. 5, Ad 3: "nomen enim *intellectus* sumitur ab intima penetratione veritatis; nomen *rationis* ab inquisitione et discursu."

understand since man partakes only imperfectly of understanding. This is why man is properly defined as the animal with reason rather than understanding.[89]

A second reason is that Shakespeare's definition brings out what is proper to reason's understanding as distinguished from that of an angel or God. Human understanding is by way of motion (*per modum motus)*. Thomas puts it this way:

> The understanding itself of the human soul is by way of motion; for the soul understands by running from effects to causes and from causes to effects and from like to like and from opposite to opposite.[90]

When Shakespeare defines reason as the ability for large discourse, looking before and after, he brings out that our understanding is *per modum*

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[89] *Scriptum Super Lib. II Sententiarum* , Dist IX, Q. I, Art. IV, Sol.:"Ad hoc enim quod aliquod nomen nominet proprie aliquam rem, duo requiruntur: scilicet quod hoc quod significatur per nomen, habeatur perfecte secundum completum actum, et ut sit ultima perfectio eius...Verbi gratia, in homine est quaedam participatio intellectus: et quia non habet plenum actum intellectus, ut sine inquisitione et imaginatione intelligere possit, ideo in ordine intellectualium non ponitur. Similiter etiam quamvis sensum habeat secundum completissimam operationem respectu omnium animalium: quia tamen sentire non est secundum ultimam perfectionem eius; non ponitur in ordine sensitivorum, sed in ordine rationalium: quia rationis actus plene habet, et est actus eius inquantum est homo."

[90] *Quaestiones Disputatae de Spiritualibus Creaturis* , Art. 10, c.: " Ipsum autem intelligere animae humanae est per modum motus; intelligit enim anima discurrendo de effectibus in causas, et de causis in effectus, et de similibus in similia, et de oppositis in opposita."

motus. We do not simply understand like an angel or God, but we come to understand by way of a motion.[91]

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After this partial explanation of the meaning of Shakespeare's immensely powerful definition of reason, we must now turn to showing that it is the *first* definition of reason, or that it is by what is most known to us.

DEFINING REASON BY WHAT IS MOST KNOWN TO US

We must now consider whether the ability called *reason* is most known to us by the word *discourse* and then by the word *large, which* modifies discourse and the phrase *looking before and after* which completes our understanding of the discourse of reason. But we should not expect *large* and *looking before and after* to be as well known as *discourse* since they give us a more distinct knowledge of the discourse of reason and the distinct is necessarily less known to us.[92]

Moreover, since the word *discourse* or *running is* a word equivocal by reason, we should not expect its later senses to be more known than its first sense. It is unreasonable or preposterous not to look before and after

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[91]This does not mean that *understanding* itself is a motion, but that it is a result of a motion. Hence, the Greek word for a reasoned out understanding, *episteme* is taken from *coming to a halt or stop*

[92]The classic text on the confused being more known and more certain to us than the distinct is in the opening chapter of the first book of Aristotle's *Physics*. Descartes made one of the greatest mistakes in the history of human thought when he identified certitude with clarity and distinction. Descartes'mistake is so destructive of philosophy. It was Charles de Koninck who most fully exposed and refuted the error of Descartes; and in so doing, he defended the very possiblity of philosophy and brought about a quantum leap in our understanding of the first chapter of Aristotle's *Physics*. We can never be sufficiently grateful to him for this.

at the senses of a word equivocal by reason. And since we name things, as we know them, the order in the meanings of a word follows the order in our knowing. And since the first order in our knowledge is from the senses into reason, it is not strange that this order is often seen in words equivocal by reason such as *discourse* or *running*.

And in considering the word *discourse*, we should not be led astray by the modern confusion resulting from our bad custom of not carrying over enough our native words from what can be sensed to what cannot be sensed and substituting foreign words in their later senses while all too often forgetting or ignoring their first sense. There is no good reason why we should not carry over the English word *running* instead of taking over the Latin word *discursus* in its later senses. And we do sometimes carry over the English word *running* to the act of reason. When York speaks to Clifford, he uses the native English word of *running:*

> O Clifford! but bethink thee once again,
> And in thy thought o'er-run my former time[93]

And King Henry says:

> For now we have no thought in us but France,
> Save those to God, that run before our business.[94]

And Rosalind says:

> I might ask you for your commission; but I do take thee, Orlando, for my husband: there's a girl goes before the priest; and, certainly, a woman's thought runs before her actions.[95]

Since our knowledge starts with our senses, motion, or things in motion, would seem to be most known to us. As Shakespeare says:

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[93]Shakespeare, *Henry VI, Part Three*, Act I, Sc. 4

[94]Shakespeare, *Henry V*, Act I, Sc. 2

[95]Shakespeare, *As You Like It* , Act IV, Sc. 1. Note how the thoughts run faster than the actions.

things in motion sooner catch the eye than what not stirs[96]

If things in motion sooner catch the eye of the imagination also (as Aristotle notes in praise of Homer), and things like revolution, the attention of the historian, it is not strange that reason in motion should be most known to us.

We should recall that *discourse* names an act of reason which is like a motion. Since we name things as we know them, we should consider whether motion is the act most known to us. Since our knowledge begins with our senses, and "things in motion sooner catch the eye than what not stirs", it is reasonable to conclude that motion is the act most known to us.

Further, Aristotle in the ninth book of the *Metaphysics* (the book dedicated to a consideration of act and ability) states that the word *act* has been carried over from motion to other acts.[97] If motion then is the act most known to us, it is not strange that the act of reason which is like a motion is most known to us. And in carrying over a word that first names a sensible motion (running) and placing it upon a different but similar act of reason, Shakespeare leads us from what is simply most known (the sensible motion) to what is most known in our reason's acts.

Moreover, since the discourse of reason is an act of a living thing or indeed part of the life (meaning by *life* here, not the existence of a living thing, but its operations) of a living thing, we can also consider whether there is a connection between what is most known about life and discourse. What we seem to first mean when we say that something is *alive* is that it moves itself. Self-motion seems to be the common notion of life. Life then (or a living act) is first recognized in some motion. When Aristotle follows the investigation of the soul or cause of life in his predecessors (in the first book *About the Soul*), he first does so through motion (before through sensation) Hence, it also is reasonable that the life

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[96] *Troilus and Cressida*, Act III, Sc. 3

[97] *Metaphysics,* Bk. 9, 1047a 30-33

of reason in particular is first recognized in its act which is like a motion; namely, *discourse.*

We can also reason from part to part. The desiring ability is named in Greek and Latin from the act which is like motion. *Appetitus* in Latin comes from the verb meaning desire or wanting. Originally *appeto* means to reach to, to grasp at and then is carried over to the desire within. (It comes from *peto* meaning to *reach out.*) When we distinguish love, desire and pleasure, love seems to be a conformity or agreement of the desiring ability with its object and pleasure a resting in that object had, but desire seems to be like a seeking of that object, a reaching out for it. In Greek, this part or ability of the soul is also named from desire. We can see in ourselves and in the other animals that they have a desiring ability best from their hunger and thirst and anger (which is a desire for revenge). So, as the desiring ability is first named from the act in it which is most like motion, so too reason is first known from its act which is most like motion (*discourse*).[98]

Since *discourse* especially names reasoning from a sensible motion, the word *reasoning* can also witness to the motion of reason being the act of it which is most known to us. Since *reasoning* is named from *reason*, it is a sign that it is the act most seen to be characteristic of reason. *Discourse* is almost a synonym for *reasoning* (although it can cover other movements of reason that are not reasoning), but it also names it from a sensible motion and it is the sensible motion that is first known by us. There is also a connection between the act called *reasoning* and the other sense of the word *reason*, not as the ability, but pertaining to the object. The man who reasons gives a reason for what he thinks. *Reason* in this last sentence does not mean the *ability* to reason. When Aristotle first distinguishes reason (the ability) from the imagination, he does so by our freedom to imagine what we want to and our need to have a reason for what we think. Thus in Chapter 3 of Book Three *About the Soul*, he distinguishes reason from the imagination by the third act of reason which is like a motion and it not until Chapter 8 that he distinguishes them by the second and the first

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[98]Kittredge in his note on the words "The motions of his spirit are dull as night" (said of "The man that hath no music in himself") in *The Merchant of Venice*, Act V, Sc. 1, Note on line 86, Ginn & Company, 1945, p. 143: "**motions of his spirit**. *Motions* is a common word for the operations of the mind and heart."

acts of reason which are more an understanding (as Thomas explains in the Proemium to logic in the beginning of his commentary on the *Posterior Analytics*). The second reason is also in terms of an effect that is even more so a motion (the passions).

Thomas unfolds the text where Aristotle first distinguishes reason from imagination in the third book *About the Soul*[99] (where he seems to do so from the act which is more a discourse than an understanding) thus:

> He proves that opinion and imagination are not the same...The passion of imagination is in us when we will, because it is in our power to form something appearing as it were before our eyes, as gold mountains or whatever we want...But to have an opinion is not in our power; because it is necessary that the one having an opinion have a reason by which he thinks something is true or false; therefore opinion is not the same as imagination.[100]

I am free to *imagine* terrorists in the next room or my winning the lottery, but I cannot *think* that there are terrorists in the next room or that I have won the lottery without having some reason to think so. Only much later[101] does Aristotle distinguish reason or the understanding from imagination by what is more an act of understanding (the first two acts of reason as we call them in logic) and first and more clearly from the act in which there is the true and the false. Thomas's commentary follows the order of Aristotle' text:

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[99]*De Anima*, Book III, Chapter 3, 427b 16-26

[100]Thomas Aquinas, *In III De Anima,* Lectio IV, n. 633: "Probat quod non sit idem opinio et phantasia..Passio phantasiae est in nobis cum volumus, quia in potestate nostra est formare aliquid, quasi apparens ante oculos nostros, ut montes aureos, vel quicquid volumus... Sed opinari non est in potestate nostra; quia necesse est, quod opinans habeat rationem, per quam opinetur, vel verum vel falsum; ergo opinio non est idem quod phantasia."

[101]*De Anima,* Book III, Chapter 8,

> Then...he shows the difference between imagination and understanding. And first as regards the common operation of the understanding which is composition and division; saying that imagination is different from the affirmation and negation of the understanding because in the intertwining of understandables there is already the true or the false which is not in imagination. For to know the true and the false is only of the understanding. Second...he investigates how the first understandings, that is the understanding of indivisibles, differ since they are not images. And he answers that they are not without images, but they are not images, because images are likenesses of singulars, but understandables are universals separated from individuating conditions: whence images are understandable in ability and not in act.[102]

When we come to this last difference, we touch upon the first meaning of *large* when said of the discourse of reason; and this follows the order from the more known (to us) to the less known (to us).

When Aristotle distinguishes the genera of powers in the second book *About the Soul,*[103] the word he uses to name reason or our

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[102]Thomas Aquinas, *In III De Anima* , Lectio XIII, nn. 793-794: "Deinde...Ostendit differentiam inter phantasiam et intellectum. Et primo quantum ad operationem communem intellectus, quae est compositio et divisio; dicens quod phantasia est alterum ab affirmatione vel negatione intellectus; quia in complexione intelligibilium iam est verum vel falsum: quod non est in phantasia. Nam cognoscere verum et falsum est solius intellectus. Secundo...Inquirit in quo differant primi intellectus, idest intelligentiae indivisibilium, cum non sint phantasmata. Et respondet, quod non sunt sine phantasmatibus, sed tamen non sunt phantasmata, quia phantasmata sunt similitudines particularium, intellecta autem sunt universalia ab individuantibus conditionibus abstracta: unde phantasmata sunt intellecta in potentia, et non in actu."

[103]Aristotle, *About the Soul* B, 414a 31-33 And a little after B, 414b 17-19b

understanding seems close to thinking or discourse. This is the word *dianoetikon* which is the word used in the beginning of the *Posterior Analytics*[104] when Aristotle is inducing that we teach and learn from pre-existent knowledge. Thus Aristotle uses a word that seems to signify the discourse which is proper to reason in which it not only goes from this to that, but in which knowing this is a cause of its coming to know that. Plato also seems to use the word for this discursive knowledge.[105]

When Thomas first distinguishes between the human understanding or reason and the angelic understanding, he distinguishes between the *intellectus deiformis* and the *intellectus discursivus.*[106]

When Augustine and Descartes are trying to come up with something that even the skeptic has a hard time denying (and therefore something more known to us), they point to the doubt of the mind and hence to the doubter's existence as undeniable. But when the mind is doubting it is in motion, not at rest. This then is another sign that the act of reason which is like motion is more known to us than the act which is like rest. This sign also recalls Aristotle's observation in the ninth book of the *Metaphysics* that non-existent things are said to be thought of or wished for, but not to be in motion.

Since *thinking* and *reasoning* also name the movement of reason, is it better to define reason by the word *discourse* than by the words *thinking* and *reasoning?* Although the latter words are more familiar in English than the former, nevertheless *discourse* names the movement of reason from a

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[104]71a 1-2

[105] *Republic*, Book VI, 511D-E

[106]An imperfect echo of this teaching even found its way into *Paradise Lost. See* Arden Edition of the Works of William Shakespeare, *Hamlet*, edited by Harold Jenkins, Longer Note on Act I, Sc. 2, line 150, Methuen & Co. Ltd., London, 1982, pp. 438-439: "The 'discursive reason' which was a property of man was distinguished form the higher 'intuitive reason' of angelic beings. In *Par. Lost* (V.469ff.) Raphael tells Adam that 'Reason is [the Soul's] being, Discursive or intuitive: discourse Is oftest yours, the latter most is ours'."

more known motion of our legs. *Thinking* and *reasoning* seem to start with the less known act of reason. But the words *thinking* and especially *reasoning* seem to name the movement of reason which stops when something has been thought out or reasoned out. And this corresponds to the discourse which is looking, or in which there is a looking, in the definition of Shakespeare. For when we are thinking about something, we do not yet understand it. But when we have thought it out, we understand it. The same is true in reasoning. Reasoning tries to reason out something. And this, by the way, is what philosophy is: a reasoned out understanding. Hence, Aristotle often calls philosophy in its perfection an *episteme* for it is a rest or understanding after a movement of reason thinking out, or reasoning out, something.

We should also recall the proportion of Boethius: reasoning is to understanding, as motion is to rest. We reasoned above that motion is the act most known to us and that things in motion are more known to us than things at rest. Hence, reason is more known to us in its discourse than in its understanding.

Moreover, since rest in its first sense is a lack of motion in that which is able to move and when it is able to move, an act which is like rest in the proportion of Boethius seems at first to be no act at all.

Some editions of *Hamlet* have relevant notes on the *discourse of reason* showing that these words were well known as distinguishing man from the beast.[107]

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[107]See, for example, in The Arden Edition of the Works of William Shakespeare, *Hamlet*, edited by Harold Jenkins, Longer Note on Act I, Sc. 2, line 150, Methuen & Co. Ltd., London, 1982, pp. 438-439: "I.ii.150. *wants discourse of reason*] The faculty of reason was traditionally recognized as the crucial difference between man and beast, for the classical statement of which see Cicero, *De Officiis*, I.iv.11. This lends further significance to the Hyperion-satyr comparison above (l. 140). It was through his reason that man could perceive the relation of cause and effect and thus connect past with future, whereas the beast, precisely because it lacks reason, must live largely in the present moment. Hence, the axiom that its mourning would be brief. Cf. IV.iv.33-9; and for Gertrude's failure to be guided by reason, III.iv.88. *Discourse*

Since *discursus* or *running* is not only the name of a sensible motion but of one particular kind, someone might ask that whether there is any suitability in naming the motion of reason from this one in particular.

Since thoughts are more like numbers than continuous quantity,[108] it is appropriate that we name the movement of reason from a step-like motion, such as walking or running, than from one that seems purely continuous, like the falling of a rock. And the proverbial swiftness of thought compared to that of the body makes it suitable to name the movement of reason from running rather than walking. Shakespeare often touches upon the swiftness of thought in this way. When Lancaster upbraids Falstaff for the latter's coming slowly to the scene of battle:

> Now, Falstaff, where have you been all this while?
> When everything is ended, then you come.
> These tardy tricks of yours will, on my life,
> One time or other break some gallows' back.

Falstaff replies:

> .... do you think me a swallow, an arrow, or a bullet? have I, in my poor and old motion, the expedition of thought? I have speeded hither with the very extremest inch of possibility.[109]

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of reason was a regular term, occurring also in *Troil*. II.ii.116, as well as in, e.g., Bright's *Treatise of Melancholy* (dedication), Holland's Plutarch (*Moral Virtue*), Florio's Montaigne, the translation of La Primaudaye's *The French Academy* (pp. 269, 270). For other instances, see Boswell, and OED discourse *sb*. 2b. While sometimes apparently used as a cliché for 'reason', it properly denotes the faculty or process of reasoning from premises to conclusions. *Discourse* alone is also used in the same sense (see IV.iv.36.)."

[108]See Aristotle's argument in the first book *About the soul* (*De Anima*), 407a 8-9seq.

[109]Henry IV, Part Two, Act IV, Sc. 3

And King John says to the Bastard when haste is in need:

> Be Mercury, set feathers to thy heels,
> And fly like thought from them to me again[110]

But even in the fastest thinking there are steps however little we may be aware of them. Thus Holmes says that he quickly came to the conclusion that Watson had come from Afghanistan when they first met, but that his mind did go through a number of steps.[111]

The word *large* is necessary, as we have seen above, to bring out the utmost of reason's ability for discourse. But it also pertains to what is more known to us about reason as distinct from the senses. Art and science, which are in reason, are first distinguished from experience which is in the inward senses and close to them, by the former being a knowledge of the universal and experience, of singulars. Anaxagoras' great fragment on the mind (DK 12) begins by saying that the mind is unlimited (in its object and not in magnitude) and that is rather large. It is important also to note that the word *large* is taken from quantity, which is involved, in all the common sensibles. Heraclitus had also seen this infinity of the mind.

Reason is most known by its looking before and after

We can first note that there is a connection between *motion* being most known and *before and after* being also well known. Thomas teaches us that:

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[110] *King John*, Act IV, Sc. 2

[111] *A Study in Scarlet* , Part I, Chapter II, *The Complete Sherlock Holmes* , Garden City Publishing Co. Inc.,1938, p. 14: "I *knew* you came from Afghanistan. From long habit the train of thoughts ran so swiftly though my mind that I arrived at the conclusion without being conscious of intermediate steps. There were such steps, however. The train of reasoning ran...[and then he gives the steps]"

> It is impossible for something to be now when before it was not unless it is changed or something into it; nor is this able to come about by a miracle, just as neither that it be a mortal rational animal and not be a man; for to have itself otherwise now and before is the same as to be moved or changed.[112]

And in replying to an objection there, Thomas even more strongly identifies *other now than before* with motion:

> ...to this position there follows a more grave absurdity; to wit, that contradictories are true at the same time; because it lays down the definition, to wit, *otherwise now than before*, and it is not able to lay down the defined, to wit, motion...[113]

If otherwise *now than before* is almost a definition of motion, then it seems one cannot know motion without looking before and after.[114] And since motion is the act most known to us, before and after pertain to what is most known to us.

But one should also consider by itself how well it is known that reason looks before and after.

Pope Paul VI began his General Audience on Jan. 10, 1973, with this Exhortation:

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[112] *Scriptum Super Lib. IV Sententiarum*, Distinctio XI, Quaest. I, Art. 1, Ad Primam Quaestionem: "impossibile est aliquid esse nunc cum prius non fuerit nisi ipso mutato vel aliquo in ipso; nec posset etiam per miraculum fieri, sicut quod nec esset animal rationale mortale, et non esset homo; aliter enim se habere nunc et prius est idem quod moveri vel transmutari."

[113] *Scriptum Super Lib. IV Sententiarum*, Distinctio XI, Quaest. I, Art. 1, Ad Primam Quaestionem, Ad 3: "Ad tertium dicendum quod ad hanc positionem sequitur gravius inconveniens, scilicet quod contradictoria sint simul vera; quia ponit definitionem, scilicet aliter nunc quam prius, et non potest ponere definitum, scilicet motum..."

[114] In the ability to look before and after is included the ability to distinguish since nothing is before or after itself.

Let just one word kindle our thought, the word "after".

This is in harmony with Shakespeare's exhortation to look before and after which is also an urging to use reason. But it is also a sign that looking before and after is well known to characterize reason.

There are many ways of showing that *looking before and after* pertain to what is most known (*after* discourse) about reason. The first or most known sense of *before and after* is that in time. And it is when men look before and after in time that we see the beginning of the use of reason in what they do. So long as they pursue only what is pleasant here and now and avoid what is painful here and now, they do not seem any different from the animals without reason. Reason gives us a sense of time and the continent listen to reason while the incontinent, overcome with passion, seem to pursue merely what is pleasant here and now, which is what the animal does. The incontinent wrongly judge that something is good simply because they remain in the ignorant present, not having a sense of time. Aristotle speaks of this in the third book *About The Soul:*

> Desires come to be contrary to each other. This happens when reason and concupiscence are contrary. This comes about in those having the sense of time: for the mind urges us to hold back on account of the future while concupiscence on account of the present - for what is pleasant now seems to be simply pleasant and simply good on account of not seeing the future.[115]

Thomas Aquinas comments on this passage:

> in man there are contrary desires, one of which the continent follow and others resist. He says therefore that desires are able to become contrary to each other and this happens when reason is contrary to concupiscence. And this "comes about", that is, it happens "in those having the sense of time"; that is, those who do not only know what is in the present, but who

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[115]Chapter 10, 433b 5-10

> consider the past and the future - because the understanding sometimes commands one to draw back from something concupiscible on account of the consideration of the future, as when to one with a fever, it seems from the judgment of the understanding, that he ought to abstain from wine lest the fever become warm.[116]

Men, and not beasts, have these contrary desires because men have the sense of time by their reason. Something may seem good to us here and now, as to the beast, if we do not have the sense of time, if we do not look before and after in the first sense of these words. Man's actions first reveal the work of reason in him when he shows that he has the sense of time and avoids something pleasant here and now, or undergoes something painful here and now, because of his ability to consider the past and the future.[117] Reason gives man "a sense of time". This is why Shakespeare's metonym[118] for man's life in the *Exhortation to Use Reason* is appropriate. Shakespeare calls the end or goal of man's life the "market of his time". Man lives in time in a way that the beasts do not. When a man becomes incontinent, he comes to resemble a boy who is apt to follow his present pleasure rather than looking before and after on the basis of experience. Caesar thus compares Antony in his infatuation with Cleopatra to a boy:

> .....But to confound such time
> That drums him from his sport, and speaks us loud
> As his own state and ours, 'tis to be chid
> As we rate boys who, being mature in knowledge,
> Pawn their experience to their present pleasure

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[116] *In III De Anima*, Lectio 15, n. 829

[117] Since our knowledge begins with ours senses, it is natural for man to pursue first what is agreeable to his senses and avoid what is disagreeable to them. And many men, and even thinkers such as Mill, still keep pleasure and pain as their basic criterion of good and bad. But where we first begin to see the use of reason in them is not in seeing a higher criterion of good and bad, but in their trying to maximize their pleasures and minimize their pains by looking before and after.

[118] When the name of the measure is given to the measured, we have metonymy.

And so rebel to judgment.[119]

Dr. Samuel Johnson made this statement on looking before and after in time and our being rational creatures:

> Whatever withdraws us from the power of the senses, whatever makes the past, the distant, or the future predominate over the present, advances us in the dignity of thinking beings.[120]

For our present purpose, we should look at what the great poets, or makers of fiction, have said about reason more than the words of philosophers and scientists. For the latter go a long way into reason and its use while the poets, or makers of fiction, speak of what is more known to all men. And our present purpose is not to go into reason and its use in detail, but to make clear the beginning which is most known to us. The poets and makers of fiction speak of what is more known to all men; for they represent men in all their more manifest differences. What is most known to us, or most obvious, thus stands out in the representation of men and their actions. But among these differences is that some men excel in the use of reason while others because of youth and inexperience or passion or defective character are unable or fail to use reason.

The first poet to be called in as a witness is, of course, Homer whom the Greeks, the fathers of our fiction, regarded as their greatest poet and whom Aristotle calls *The Poet*.

Rolfe, in his edition of *Hamlet*, has preserved for us a remark of Theobald of great philosophic interest:

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[119]Shakespeare, *Antony and Cleopatra*, Act I, Sc. 4

[120]Quoted in *Gray Days and Gold* by William Winter, Macmillan, N.Y. 1893, p. 13

> Theobald remarks that *looking before and after* is "an expression purely Homeric" and refers to *Iliad*, III, 109 and XVIII, 250.[121]

Although Homer's expression or phrase is not exactly the same as Shakespeare's,[122] it has for a long time impressed me as being like enough to allow us to speak of a harmony between the two greatest poets on what is most known to us about reason. Theobald's remark has strengthened my conviction. At the crucial moments when men fail to use their reason, Homer always speak of a failure or inability to look before and behind them. Agamemnon is guilty of this when he offends Achilles and drives him from active fighting to the detriment of the Achaean army. Likewise, when Hector will not listen to Poulydamas about getting back into the city before Achilles returns to action, Homer speaks of Poulydamas as alone looking before and behind himself while Zeus had taken away from Hector and the rest their mind or reason or wits. This harmony of the two greatest poets moves us to accept *looking before and after* as pertaining to what is most known, or what most stands out, about reason.

Sherlock Holmes is very much represented as using his reason and, as Watson sometimes thinks, not listening to his emotions enough.

To what extent does Sherlock Holmes see the last part of Hamlet's definition (looking before and after) as the function of reason? Consider Holmes' words on the ideal reasoner in the story of *The Five Orange Pips:*

> Sherlock Holmes closed his eyes and placed his elbows upon the arms of his chair, with his finger-tips together. "The ideal reasoner," he remarked, "would, when he had once been shown a single fact in all its bearings, deduce from it not only all the chain of events which led up to it but also all the results that would follow from it. As Cuvier could correctly describe a

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[121]Harper and Brothers, 1894, p. 246

[122]Homer speaks more of looking before and behind oneself while Shakespeare, although sometimes using a similar phrase, defines reason by *looking before and after*. The latter phrase is more able to be clearly extended to the whole use of reason as can be seen from the senses of *before* in the *Categories*, Ch. 12.

> whole animal by the contemplation of a single bone, so the observer who has thoroughly understood one link in a series of incidents should be able to accurately state all the other ones, both before and after. We have not yet grasped the results which the reason alone can attain to. Problems may be solved in the study which have baffled all those who have sought a solution by the aid of their senses."[123]

The ideal reasoner has, of course, the perfection of the reasoner and seeing the before and after is the perfection of the ability to look before and after. If then the perfect reasoner succeeds in seeing the before and after, reason is indeed characterized by looking before and after. And notice how Holmes sees this as enabling one to solve something that is beyond the senses.

In a burst of enthusiasm, Holmes says to Inspector MacDonald in *The Valley of Fear:*

> ...the quick inference, the subtle trap, the clever forecast of coming events, the triumphant vindication of bold theories - are these not the pride and justification of our life's work?[124]

In this passage, Holmes touches first upon the discourse of reason ("the quick inference") and then upon looking before and after ("the clever forecast of coming events, the triumphant vindication of bold theories").

In the following passage from "The Man with the Twisted Lip", there is again reference to discourse and looking before and after in the same order:

> Holmes drove in silence, with his head sunk upon his breast, and the air of a man who is lost in thought, while I sat beside

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[123]From *The Adventures of Sherlock Holmes* in *The Complete Sherlock Holmes*, Garden City Publishing Co. Inc., 1938, p. 253

[124]Chapter VII - The Solution, *The Complete Sherlock Holmes*, Garden City Publishing Co. Inc., 1938, p. 951

> him, curious to learn what this new quest might be which seemed to tax his powers so sorely, and yet afraid to break in upon the current of his thoughts. We had driven several miles, and were beginning to get to the fringe of the belt of suburban villas, when he shook himself, shrugged his shoulders, and lit up his pipe with the air of a man who has satisfied himself that he is acting for the best..."I shall just have time to tell you the facts of the case before we get to Lee. It seems absurdly simple, and yet, somehow, I can get nothing to go upon. There's plenty of thread, no doubt, but I can't get the end of it into my hand. Now, I'll state the case clearly and concisely to you, Watson, and maybe you can see a spark where all is dark to me."[125]

Watson is afraid to break in upon the *current* of Holmes' thoughts. *Current*, of course, has the same root as *discourse*. But what is Holmes trying to do in this discourse or current of thoughts? He is trying to find the *end* of a thread which will be the beginning of an understanding of the case. Holmes is clearly looking before and after in the current of his thoughts. When our reason is puzzled in daily life as to what we should do, we often remark that we don't know where to begin.

There is another phrase from daily speech often used in Sherlock Holmes stories for reason unable to understand something. Holmes says to Inspector Stanley Hopkins:

> Which means, I suppose, that you were not quite clear about your case?

And Hopkins replies:

> It means that I can make neither head nor tail of it. So far as I can see, it is just as tangled a business as ever I handled, and

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[125] *The Adventures of Sherlock Holmes* in *The Complete Sherlock Holmes*, Garden City Publishing Co. Inc., 1938, pp. 262-263

> yet at first it seemed so simple that one couldn't go wrong. There's no motive, Mr. Holmes.[126]

And in discussing another case, Watson is in the same position as Hopkins, but Holmes as usual is ahead in the use of reason. Holmes begins the conversation:

> Our little problem draws to a close...No doubt you have outlined the solution in your own mind."

And Watson replies:

> I can make neither head nor tail of it.

And to this, Homes replies:

> The head is surely clear enough and the tail we should see tomorrow. Did you notice nothing curious about the advertisement?[127]

Head and *tail* are metaphors for *beginning* and *end*. Beginning and end are, of course, defined by before and after. Clearly then, anyone trying to use his reason, or to make head or tail out of something, is looking before and after. If reason cannot make head or tail out of something, it cannot understand it.

But we can also see that reason is well known to look before and after by those who are unable or fail to use their reason. This may be because of youth and inexperience or passion (such as love) or defect of character (as in the thoughtless).

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[126]"The Adventure of the Golden Pince-Nez" in *The Return of Sherlock Holmes* in *The Complete Sherlock Holmes,* Garden City Publishing Co. Inc., 1938, p. 711

[127]"The Adventure of the Three Garridebs" in *The Case Book of Sherlock Holmes* in *The Complete Sherlock Holmes*, Garden City Publishing Co. Inc., 1938, p. 1238

Shakespeare has Bottom remark that reason and love keep little company nowadays and that it is a pity that no one will make them more acquainted:

> reason and love keep little company together now-a-days; the more the pity that some honest neighbors will not make them friends[128]

The reasons for this are touched upon in the second stanza of an exquisite song in *Twelfth Night:*

> What is love? 'Tis not hereafter;
> Present mirth hath present laughter;
> What's to come is still unsure:
> In delay there lies no plenty;
> Then come kiss me, sweet and twenty!
> Youth's a stuff will not endure.

Because they are in love and because they are young, they do not use their reason. For the lover is absorbed in the delight of the present and hence does not look before and after. And youth lacks experience and hence is not so able to look before and after. The first four lines indicate why the lover remains in the present and does not look before and after and the sixth line touches upon the second reason. And there is a fitting together of love and youth. In this way, the young lover resembles the incontinent who pursue what is pleasant here and now against what is known to be reasonable by looking before and after. This is why Antony in his infatuation[129] for Cleopatra was compared to "boys who, being mature in knowledge, Pawn their experience to their present pleasure And so rebel to judgment." Because they are absorbed in the present pleasure, they exchange their experience (which would enable them to look before and after) for that pleasure and hence rebel to the judgment of reason.

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[128]Shakespeare, *A Midsummer Night's Dream*, Act III, Sc. 1

[129]*Infatuation,* like *fond,* originally means *foolish* and therefore opposed to wise and reason.

The young do not use their reason or are not able to look before and after. Youth hardly knows there is a tomorrow. In *The Winter's Tale*, Polixenes describes his youth with Leontes:

> We were, fair queen,
> Two lads that thought no more behind
> But such a day to-morrow as to-day,
> And to be boy eternal.[130]

In his greatest novel, Dickens represents the very young David and Emily as living in the now:

> We used to walk about that dim old flat at Yarmouth in a loving manner, hours and hours. The days sported by us, as if Time had not grown up himself yet, but were a child too, and always at play. I told Em'ly I adored her, and that unless she confessed she adored me I should be reduced to the necessity of killing myself with a sword. She said she did, and I have no doubt she did. As to any sense of inequality, or youthfulness, or other difficulty in our way, little Em'ly and I had no such trouble, because we had no future. We made no more provision for growing older, than we did for growing younger.[131]

At the end of the hilarious, mad scene, where David and Dora become engaged, Dickens speaks as if they didn't look before and after and remained in the *ignorant present* when they became secretly engaged:

> Well, well! Dora and I were sitting on the sofa by-and-by, quiet enough, and Jip was lying in her lap, winking peacefully at me. It was off my mind. I was in a state of perfect rapture. Dora and I were engaged. I suppose we had some notion that this was to end in marriage. We must have had some, because Dora stipulated that we were never to be married without her papa's consent. But, in our youthful ecstasy, I don't think that

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[130]Shakespeare, *The Winter's Tale,* Act I, Sc. 2

[131]*David Copperfield*, Chapter III, Random House, Mod. Lib. Ed., 1950, pp. 39-40

> we really looked before or behind us, or had any aspiration beyond the ignorant present.[132]

In their "youthful ecstasy" (*ecstasy* can mean *madness* and is an effect of love), they remained in the ignorant present, unable or failing to look before and after. The phrase "ignorant present" may have been suggested to Dickens from *Macbeth* where Lady Macbeth learns of the predictions of the witches:

> Great Glamis! worthy Cawdor!
> Greater than both by the all-hail hereafter!
> Thy letters have transported me beyond
> This ignorant present, and I feel now
> The future in the instants.[133]

Since foresight or prudence requires experience and this comes with age, Homer rightly speaks of the older as more looking before and behind than the young. In the *Iliad*, we find the distinction between the young and the old:

> Always it is, that the hearts in the younger men are frivolous,
> but when an elder man is among them, he looks behind him
> and in front,
> so that all comes out far better for both sides.[134]

Washington Irving touches upon this difference between the young and the older in his account of *A Tour on the Prairies:*

> There was an abundant supply of meat in the camp; for besides other game, three elk had been killed. The wary and

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[132] *David Copperfield*, Chapter XXXIII, Random House, Mod. Lib. Ed., 1950, p. 513

[133] Shakespeare *Macbeth,* Act I, Sc. 3. Notice t he word *hereafter* in the second line while the question "What is love?" was answered in the song from Twelfth night by the words "'Tis not hereafter."

[134] *Iliad*, Book III, Lattimore Translation, Univ. of Chicago Press, 1962, p. 103

> veteran woodmen were all busy jerking meat, against a time of scarcity; the less experienced reveled in present abundance, leaving the morrow to provide for itself.[135]

The experienced men foresee that a time of abundance on the prairie is likely to be followed by a time of scarcity, but the young and inexperienced rest in the ignorant present and its abundance. Because of experience, the older can recall the past and foresee the future which the young are not able to do. Later in his account, Irving notes what happened to the "young, heedless, and inexperienced":

> Most of the rangers were young, heedless, and inexperienced, and could not be prevailed upon, while provisions abounded, to provide for the future, by jerking meat, or carrying away any on their horses. On leaving an encampment, they would leave quantities of meat lying about, trusting to Providence and their rifles for a future supply. The consequence was, that any temporary scarcity of game, or ill luck in hunting, produced almost a famine in the camp. In the present instance, they had left loads of buffalo meat at the camp on the great prairie; and, having ever since been on a forced march, leaving no time for hunting, they were now destitute of supplies, and pinched with hunger. Some had not eaten anything since the morning of the preceding day. Nothing would have persuaded them, when reveling in the abundance of the buffalo encampment, that they would so soon be in such famishing plight..[136]

Lacking the large discourse which is from experience, they were not apt to look before and after. Something of the same improvidence could be seen in their handling of the horses.[137]

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[135] *A Tour on the Prairies*, Univ. of Oklahoma Press, 1962, pp. 98-99

[136] *A Tour on the Prairies*, Univ. of Oklahoma Press, 1962, pp. 203-204

[137] *A Tour on the Prairies* , Univ. of Oklahoma Press, 1962, p. 194: "Our men, too, had acted with little forethought; galloping off whenever they had a chance, after the game that we encountered on the march. In this way they had strained and wearied their horses, instead of husbanding their strength and spirits. On a tour of the kind, horses should as seldom

Since memory or experience of the past is an integral part of prudence or foresight (*Prudentia* in Latin is a contraction of *providentia*.), the young are not so able to have this virtue as the older. Practical reason is more known to us than looking reason. And practical reason is perfected by two virtues: prudence and art (as we learn in the sixth book of the *Nicomachean Ethics*). Hence, this virtue is called in English *foresight*. As its name indicates, foresight is named from seeing before. Thus this virtue is named from before and after. Fabian alludes to the fact that prudence looks before and behind when he comments on the deception of Malvolio:

> Ay, an you had any eye behind you, you might see more detraction at your heels than fortunes before you.[138]

Kittredge, in his note on this line, points out that there is an allusion here to the symbolic figure of Prudence which has three eyes - one in the back of the head.[139] This way of speaking is like that of Homer above.[140]

But of course it is not only boys who seem to live in the present moment. The character of some men is such as not to live with a sense of time. Comedy represents men inferior to us and Shakespeare's greatest comic character, Falstaff, is represented as pursuing the goods of the beast as his chief good. Hence, it is very significant that Shakespeare introduces his most famous comic character for the first time by a joke on his having no concern with time in his intemperance. The conversation in

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as possible be put off of a quiet walk; and the average day's journey should not exceed ten miles."

[138]Shakespeare, *Twelfth Night*, Act II, Sc. 5

[139]*Twelfth Night*, edited by George Lyman Kittredge, Ginn and Company, Boston, 1941, p. 130: "149. *any eye behind you* Fabian alludes (with a phantom pun) to the symbolic figure of *Prudence*, which has three eyes - one in the back of the head. Cf. Chaucer, *Troilus*, V, lines 744-749."

[140]Art also is characterized by looking before and after. For art, speaking generally, is nothing other than an *ordering* by reason of how something can be made through definite steps. Thus both art and foresight, the virtues of practical reason, clearly involve looking before and after. And practical reasonis more known to us than theoretical or looking reason.

which Falstaff is first introduced to the world begins with a question of Falstaff:

> Now, Hal, what time of day is it, lad?

and Prince Hal replies:

> Thou art so fat-witted, with drinking of old sack and unbuttoning thee after supper and sleeping upon benches after noon, that thou hast forgotten to demand that truly which thou wouldst truly know. What a devil hast thou to do with the time of the day? Unless hours were cups of sack, and minutes capons, and clocks the tongues of bawds, and dials the signs of leaping-houses, and the blessed sun himself a fair hot wench in flame-coloured taffeta, I see no reason why thou shouldst be so superfluous to demand the time of the day.[141]

The prisoner Barnardine does not use his reason, even when under the sentence of death, as seen in this description of him by the Provost:

> A man that apprehends death no more dreadfully but as a drunken sleep: careless, reckless, and fearless of what's past, present, or to come; insensible of mortality, and desperately mortal.[142]

Jane Austen says of Crawford in *Mansfield Park* that "thoughtless and selfish from prosperity and bad example, he would not look beyond the present moment".[143] It is significant that she couples *thoughtless* with not looking before and after.

Thomas Hardy in like manner speaks of Lucetta's "thoughtless want of foresight":

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[141] *King Henry IV, Part One*, Act I, Sc. 2

[142] Shakespeare, *Measure for Measure*, Act IV, Sc. 2

[143] Chapter XII, J.M. Dent & Sons, London, 1963, pp 87-88

> Moreover, that thoughtless want of foresight which had led to all her trouble remained with poor Lucetta still.[144]

Sergeant Troy is also represented by Hardy as one whose reason and desires had parted company and who seemed to live almost only in and for the present:

> Sergeant Troy ...was a man to whom memories were an encumbrance, and anticipations a superfluity. Simply feeling, considering, and caring for what was before his eyes, he was vulnerable only in the present. His outlook upon time was as a transient flash of the eye now and then: that projection of consciousness into days gone by and to come, which makes the past a synonym for the pathetic and the future a word for circumspection, was foreign to Troy. With him the past was yesterday; the future, to-morrow; never the day after... Sergeant Troy, being entirely innocent of the practice of expectation, was never disappointed. To set against this negative gain there may be some positive losses from a certain narrowing of the higher tastes and sensations which it entailed... His reason and his propensities had seldom any reciprocating influence, having separated by mutual consent long ago.[145]

Anthony Trollope compares Bertie to a beast in his lack of foresight:

> As to Bertie, one would have imagined from the sound of his voice and the gleam of his eye that he had not a sorrow nor a care in the world. Nor had he. He was incapable of anticipating to-morrow's griefs. The prospect of future want no more disturbed his appetite than does that of the butcher's knife disturb the appetite of the sheep.[146]

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[144] *The Mayor of Casterbridge* , Macmillan & Company, 1966, Greenwood Ed., Chapter XXXV, p. 289

[145] *Far From The Madding Crowd,* Chapter XXV, “The New Acquaintance Described”, Dodd, Mead & Company, 1968, pp. 156-157

[146] *Barchester Towers*, Mod. Lib. Ed., p. 383

We have looked at the poets and makers of fiction for witnesses to what is more known to us about reason. But the scientists would also give witness to looking before and after as giving rise to science. The scientist is always looking for *laws* and law and order are almost synonymous. When the scientist stands back, he sees this clearly. Sir Arthur Eddington, for example, writes thus:

> Knowledge of the relatedness of sensory perceptions e.g., the sound of thunder following the flash of lightning, is the beginning of science.[147]

In his more sober moments, Darwin referred to "the extreme difficulty or rather impossibility of conceiving this immense and wonderful universe, including man with his capacity for looking far backwards and far into futurity, as the result of blind chance or necessity."[148]

The words we use to signify what is opposed to reason are also very revealing. We might begin with a letter of George Washington:

> Virginia, in the very last session of her legislature, was about to have passed some of the most extravagant and preposterous edicts on the subject of trade, that ever stained the leaves of a legislative code.[149]

What is opposed to reason is here called *extravagant* and *preposterous*. The first is opposed to the first part of the definition of reason and the second is opposed to the second part of the definition. When something wanders from the true or straight course of reason, it is

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[147] *The Philosophy of Physical Science*, p.114

[148] Quoted in Ernst Mayr's *Towards a New Philosophy of Biology* , Harvard University Press, 1988, p.241:

[149] Letter to the Marquis de Lafayette, Mount Vernon, 28 April, 1788

extravagant. And when it puts the cart before the horse, it is *preposterous*.[150]

Our two common words for a defect in our thinking, *error* and *mistake*, correspond somewhat in their etymology to these two and to discourse and looking before and after. *Error* comes from the Latin word for wandering. And wandering is a disordered movement and hence indicates a defect in the discourse of reason. *Mistake* comes, according to Partridge,[151] from taking the *minus* or lesser or bad (not from missing in taking) and thus is named from a defect of looking before and after (in the fourth sense distinguished in the *Categories*).

Daniel Defoe, in *The Adventures of Captain John Gow*, narrating the foolish actions of some pirates, speaks of them as "void of any forecast or reasonable actings" and speaks also of their "preposterous way of proceeding"[152] Here, there are two references to the lack of looking before and after as indicative of their failure to use or follow reason.

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[150]There are also words taken from the beginning and last end of reason's discourse which are used to name what is opposed to the judgment of reason. Since judgment is the separation of the true from the false by some beginning in our knowledge and the first beginning of our knowledge is in the senses, reason in its discourse returns to the senses to judge. Hence we also call what is opposed to reason by such names as *nonsense* and *absurd.*

[151]Eric Partridge, *Origins*, A Short Etymological Dictionary of Modern English, Routledge & Kegan Paul, London, 1996, p. 829

[152]*The Works of Daniel Defoe* , Vol. 16, Fred DeFau & Company, N.Y., 1903, Univ. Press Cambridge Mass, p. 334: "..for the going away with the long-boat, and ten men in her, confounded all their measures, and made them jealous and afraid of one another, and made them act afterwards as if they were under a general infatuation or possession, always irresolute and unsettled, void of any forecast or reasonable actings; but having the plunder of Mr. Fea's house in their view, when they should chiefly have regarded their own safety and making their escape, they pushed at the least significant though most difficult part, and which was their ruin in the undertaking, when they should at first have secured their lives, which, at least to them, was the thing of most value, though the easiest at that time to secure. By this preposterous

Something obviously or very much against reason is said to be *preposterous*. As the etymology of the names indicates, this is putting the before, after and the after, before. As the Fool says to Lear:

> May not an ass know when the cart draws the horse?[153]

Since disorder is a main source of the laughable (as when someone paints himself into a corner), the preposterous is an object that pleases Puck. In *A Midsummer Night's Dream,* Act III, Sc. 2 Puck is amused with the foolish, laughable lovers:

> Shall we their fond pageant see?
> Lord, what fools these mortals be...
> Then will two at once woo one;
> That must needs be sport alone;
> And those things do best please me
> That befall preposterously.

Fond originally meant *foolish*. To say that a man was *fond* of a girl meant that he was acting foolishly about her. If the foolish is preposterous, then the wise is ordered. Hence, the sixth attribute of the wise man is that he orders: *sapientis est ordinare*. For wisdom is the greatest perfection of reason which looks before and after.

Iago points out in his conversation with Roderigo (who wants to drown himself over his loss of Desdemona to Othello) that, without reason, our emotions would lead us to what he calls *preposterous* results:

> If the balance of our lives had not one scale of reason to poise another of sensuality, the blood and baseness of our natures would conduct us to most preposterous conclusions.[154]

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way of proceeding they drew themselves into the labyrinth and were destroyed, without any possibility of recovery"

[153]Shakespeare, *King Lear*, Act I, Sc. 4

[154]Shakespeare, *Othello*, Act I, Sc 3

The fourth sense of *before* in Chapter Twelve of the *Categories* is *better*. But the Poet speaks in this quatrain that passion could not be so strong as to lead him to a "most preposterous conclusion" or action:

> Never believe, though in my nature reign'd
> All frailties that besiege all kinds of blood,
> That it could so preposterously be stain'd
> To leave for nothing all thy sum of good.[155]

Why not define reason as the ability to count and calculate

Some trace the etymology of *reason* to the Latin for counting and then thinking. Partridge gives the following origin of the word reason:

> reason....rests upon L. *ratus,* pp (*s rat-)* of *reri*, to count, calculate, reckon, hence to think[156]

Would not then the most known definition of reason be the ability to count and calculate? But this is perhaps too narrow an account of reason's ability. One would define reason too narrowly if one defined it as the ability to count or calculate. Counting and calculating are forms of discourse in which one comes to know by a movement and in the case of calculating, at least, one thing from other things. But not every discourse of reason is counting or calculating. But at any rate, both counting and thinking name an act of reason which is like a motion. And *discourse* names this act by carrying over the name of a sensible motion. And counting is involved in the first sense of *looking before* and *after* (in time) for time is the number of the before and after in motion.

If the etymology of the word *reason* is a clue to what is more known about reason, it would seem that reason is first known as the ability to

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[155]Shakespeare, Sonnet 109, lines 9-12

[156]Eric Partridge, *Origins*, A Short Etymological Dictionary of Modern English, Routledge & Kegan Paul, London, 1996, p. 553

count and then to calculate. Since definitions are like numbers, as Plato pointed out, then defining is like counting. and to syllogize, the most perfect kind of reasoning with statements, comes from the Greek word for to calculate.

However, to define reason as the ability to count or even as the ability to count and calculate might seem too particular and not to bring out the full ability of reason. If *discourse* can cover all movements of reason (counting and calculating as well as reasoning) it might be better as a definition (and more known to us insofar as motion is most known to us).

Moreover, some recognition of the movement of counting as most known among the movements of reason might be seen in the first two meanings of *before*. Time is the number of the before and after in motion. And Aristotle exemplifies the second meaning of *before* by using the example of one being before two.

CONCLUSION

Reason is, of course, the ability for large discourse. And it would be preposterous to deny that reason looks before and after.

Further, it would be difficult to deny that *the ability for large discourse, looking before and after* is speech convertible with reason and making known, to some extent at least, what it is.

And if anyone should try to show that some other definition of reason is the *first* one, they would be forced to make a large discourse and look before and after. For a discourse about reason must be *large* in several of the senses distinguished before. And anyone who looks for the *first* definition of reason must look before and after. For it is impossible to define without looking before and after. And *first* is also defined by before and after. So if there is a definition *before* that of Shakespeare, one would have to look before Shakespeare's definition to find it. And it would take a large discourse to show that such a definition is the first one. If someone asserts that Shakespeare has not made the *first* definition of reason, they must show that some other definition of reason comes *before* this one.

Thus, anyone who uses reason to find the first definition of reason, or to find one before Shakespeare's definition, is forced to use reason as indicated in that definition. This is perhaps a sign that Shakespeare has indeed given us the first definition of reason.

Shakespeare's definition is, *of course*, the first definition of reason. To put any other definition before it would be *preposterous*.

TOWARD THE THIRD PART OF THIS PAPER

We said in the beginning that a first definition of reason should not only tell us what reason is and from what is most known to us about reason, but that it should also be a beginning and seed of the whole use and growth of reason.

Since reason is defined by its act and its act is its use, clearly the exhortation to use reason is chiefly urging us to look before and after. If one does not look before and after, one is hardly using one's reason. Hence in what follows, we need to show how looking before and after is a beginning and seed of the whole use and growth of reason.

THE PHILOSOPHER MUST LOOK BEFORE AND AFTER

The importance and necessity of looking before and after for the philosopher must be considered in particular before it can be understood.[157] There are many ways in which one could divide to begin a particular consideration. One could, for example, consider in particular according to each of the five chief senses of *before*. One could also divide

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[157]The consideration of a universal truth in less universal statements is a part of the *manuductio* necessary in teaching. See *Summa Theologiae*, Prima Pars, Q. 117, Art. 1, corpus. It was Msgr. Maurice Dionne who most illuminated the philosophical world on the necessity of *manuductio* and, in particular, on the *manuductio* necessary for the most difficult sciences of logic and metaphysics. Both as students and teachers, we are forever indebted to this Master.

by *that in which* a before and after must be considered by the philosopher. There is a before and after *in things* which we want to know, and there is a before and after *in our knowledge* of them, and there is a before and after *in our desire* for that knowledge. We should not confuse these before and afters and it is important to see each of them. Seeing the before and after *in the things* we want to know is a part of knowing them and perhaps the crowning or chief part of knowing them. Seeing the before and after *in our knowledge* is a help to acquiring that knowledge and indeed is necessary to acquire that knowledge. Seeing the before and after which should be *in our desire* to know can direct us in acquiring the dispositions of will and feeling necessary for coming to know.

But to us, it seems especially appropriate to consider in particular the necessity for the philosopher of looking before and after by the distinction of the beginning, middle and end of philosophy.

Since nothing is more necessary in philosophy than to begin well (as Plato and Aristotle and Thomas have taught us), we should first consider the necessity of looking before and after to begin well. Second, since all's well that ends well, we must consider the necessity of the philosopher looking before and after to reach his end which is to know the first cause and first being which is God. And third, we can consider in the middle the need to look before and after.

LOOK BEFORE AND AFTER TO BEGIN WELL

Nothing is more necessary in philosophy than to begin well. The reason why the beginning is so important in philosophy is that everything else depends upon it. But no one can begin well without looking before and after. The reasons for this can brought out step by step.

First, no one can know what a beginning is without looking before and after. *First* is in the common account of beginning which Aristotle brings out after distinguishing in order the central senses of *beginning* in the fifth book of the *Metaphysics*.[158] And since *first* is defined by before

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[158]*Metaphysics*, Book Five, 1013a 17-19

and after, we cannot know what a beginning is without looking before and after. And sometimes we define *beginning* immediately by before and after as Aristotle does in the *Poetics*.[159] Since a beginning is before everything else (in that of which it is a beginning) and is not after anything else (in that of which it is a beginning), clearly no one knows what a beginning is without looking before and after.

Second, no one can find a beginning without looking before and after. For to find a beginning, one must look for what comes before all the rest and not after anything. Every beginning is found by looking before and after. For a beginning is before everything of which it is the beginning.

Since dialectic has a road to the beginnings of all reasoned-out knowledge,[160] it is interesting to note that a concern with before and after (and opposites) is seen to be characteristic of the dialectician. The eighth question raised in the third book of the *Metaphysics* witnesses to this:

> And in addition to these, about the same and other and like and unlike and contrariety, and about the before and after and all other such things about which the dialecticians try to consider, making their investigation from probable statements only, to whom does it belong to consider all these? [161]

Since it by looking before and after that every beginning is seen to be a beginning, there is an obvious connection between the dialectician's interest in before and after and his having a road to the beginnings of all reasoned out knowledge.

Third, since nothing is a beginning of itself, but always of something other that comes *after* it, reason cannot see a beginning *as a beginning* or recognize it *as a beginning* without looking before and after. Even if the

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[159]*Poetics*, 1450b 27-28

[160]Aristotle, *Topics*, 101b 3-4

[161]*Metaphysics*, 995b 20-25

beginning had been found, it could not be known to be the beginning without looking before and after.

Further, since a beginning in general is what is *first* either in being or becoming or knowing (see V *Metaphysics*), and *first* is defined by before and after (the first is before all the rest and after nothing, either simply or in some genus), no one can know that something is a beginning without looking before and after.

And every beginning is known to be a beginning or as a beginning by looking before and after. For we know a beginning as a beginning by seeing that something comes after it or follows upon it.

Fourth, one cannot know the importance of a beginning without looking before and after. For the power of a beginning is not seen in its size, but by what comes *after* it or follows upon it. And the power of every beginning is known or measured by looking before and after. For the power of a beginning is not judged by its size, but by that of which it is the beginning, and all of this comes after it.

Fifth, it is only by looking before and after that one can see the need to consider carefully each beginning. When someone has seen how many other things become clear *after* a beginning has been well considered that were not clear *before*, he sees the importance or need to consider each beginning very carefully.

Sixth, it is only by looking before and after that one can see the danger of even a little mistake in the beginning. A little mistake in the beginning is multiplied in what comes after. And since even a small mistake in the beginning is a great one in the end (as those who take the wrong turn at a fork in the road get further and further from where they should be), only the man who looks before and after can properly appreciate the importance of avoiding even the smallest mistake in the beginning.

Seventh, it is only by looking before and after that reason can see the order of beginnings. For knowing the order of beginnings is to see how one is before or after another. It is necessary to see the order of beginnings since the beginning which comes after depends upon the beginning which comes before.

Since the whole growth of philosophy depends upon its beginnings, as Plato and Aristotle so well understood, it is not hard to see in general the immense importance of looking before and after for the whole growth of reason.

However, we must consider this more in particular. There are three genera, or three kinds, of beginning in philosophy.

The first genus of beginnings in philosophy is in desire; that is, in the will (and to a lesser extent in the emotions.) In this genus is included, for example, the *wonder* which is said to be the beginning of philosophy and the *love of wisdom* whence the philosopher is named.

The second genus of beginnings in philosophy is a knowledge of the road to follow in philosophy. Since philosophy is knowledge over a road or knowledge that follows a road, knowledge of that road is a beginning of philosophy. In this genus, for example, is found *logic* which is a knowledge of the common road of philosophy. Since philosophy is in the end a reasoned out knowledge of things, logic is in part about the common road of reasoned out knowledge. But since the philosopher makes reasonable guesses before he reaches reasoned out knowledge, logic is also in part about the road to follow in making reasonable guesses.

But there is a third genus of beginnings in philosophy which is a knowledge of the beginnings about things. Since philosophy is a reasoned out knowledge *of things*, the philosopher must reason from beginnings about things. Otherwise, his conclusions would not be about things. Some of these beginnings are common to all things, such as the axioms, and others are private to one reasoned out knowledge. Thus, for example, the axiom about contradiction, *the same thing cannot both be and not be at the same time and in the same way*, is a beginning about all things. Likewise, the axiom that *a whole is larger than one of its parts* is a beginning about things studied in every reasoned out knowledge. But the definition of right angle and the statement that *all right angles are equal* are beginnings private to one reasoned out knowledge, geometry.

Looking before and after has a special importance in recognizing the *first* beginnings in each genus and not only because *first* is defined by before and after. One of the greatest results of looking before and after is the recognition that the *nature* of a thing (in the sense of what it is) is

what is *first* in that thing.[162] It is obviously impossible for a thing to be something else *before* it is what it is. How could a thing be anything else *before* it is what it is? It could not even *be* before it is what it is. And having seen by looking before and after that the nature of a thing is what is first in it, it is not hard to see that the *natural* beginnings of philosophy or reasoned out knowledge must be the *first* beginnings of such knowledge. Hence, the first beginning of philosophy in the will is wonder, which is natural. For all men *by nature* desire to know. And among statements about things, those *naturally* known by all men, the *axioms* (not in the modern sense of the word, but in that of Euclid and Aristotle), are *first* beginnings about things. And before the roads made by reason and studied in logic, there must be also a natural road in our knowledge. This natural road will be the first road to be followed in philosophy. Since man is by nature an animal with reason, the natural road in our knowledge must be the road from the senses into reason. For animal is defined by having senses. But man has reason in addition. And what is generic comes before (in time and generation) what is specific.

But does looking before and after help us to know and acquire the beginnings in each of these genera? This question should be considered in particular in each of the three genera of the beginnings of philosophy.

Looking before and after and the beginnings of philosophy in our will

The first genus of the beginnings of philosophy is in our will and emotions. Are these beginnings before or after *looking before and after*? We had best reply to this question by considering one by one the main beginnings of philosophy in our will.

Plato in the *Theaetetus* and Aristotle in the *Metaphysics* both noted that men begin to philosophize out of wonder. Does wonder arise from looking before and after or is it a desire to look before and after? There is

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[162]Thomas Aquinas, *Summa Theologiae* , Prima Pars, Q. 82, Art. 1, c: "Oportet enim quod illud quod naturaliter alicui convenit et immobiliter, sit fundamentum et principium omnium aliorum: quia natura rei est primum in unoquoque, et omnis motus procedit ab aliquo immobili."

perhaps something of both. The wonder of the philosopher is most of all a desire to know the unknown cause of a known effect, especially when this effect is contrary to what we would expect.[163] Unless one had looked before and after in the past, one would not be struck by an effect being contrary to what is expected. And the desire to know why, to know the cause of this strange effect, is of course a desire to look before in the "fifth" and crowning sense of the *Categories*. Thus wonder, the beginning of philosophy, presupposes that one has looked before and after and is itself a desire to look before. Perhaps it is correct to say that wonder is more *before* looking before and after than *after* it. However, the fact that wonder, the beginning of philosophy,[164] is most of all a desire to look before in the fifth and crowning sense of Chapter 12 of the *Categories* is a sign that looking before and after is the activity of a philosopher. Nevertheless, this desire to know the cause is especially strong when the effect is contrary to what we expect; and this presupposes looking before and after.

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[163]Thomas Aquinas, *In II Sent.,* Dist. XVIII, Q. I, Art. III, Sol. and Ad 1: "sicut ex verbis Philosophi habetur in principio *Metaphysic.* in proem., admiratio ex duobus causatur, scilicet ex hoc quod alicujus effectus causa occulta est, et ex eo quod aliquid in re videtur per quod aliter esse deberet; unde in hoc quod est diametrum quadrati non posse commensurari lateri, admiratio causatur ex hoc quod hujus causa ignoratur, et ex hoc quod ex parvitate linearum videtur quod una lateri commensurari possit." Also, *De Potentia*, Q. 6, Art. 2, Corpus: "Ad admirationem autem duo concurrunt, ut potest accipi ex verbis Philosophi in principio *Metaphysicorum*: quorum unum est, quod causa illius quod admiramur, sit occulta; secundum est quod in eo quod miramur, appareat aliquid per quod videatur contrarium eius debere esse quod miramur, sicut aliquis posset mirari si videret ferrum ascendere ad calamitam, ignorans calamitae virtutem, cum videatur quod ferrum naturali motu debeat tendere deorsum." Einstein uses a similar example to that in the *De Potentia* when writing of his own early experience of wonder. See Albert Einstein, “Autobiographical Notes”, in *Albert Einstein: Philosopher-Scientist*, Harper Torchbooks, Vol. I, p. 9

[164]Are Plato and Aristotle speaking by antonomasia when they say that wonder is the beginning of philosophy? When they emphasize the necessity of beginning well, it is usually in the context of the beginnings in reason about things.

Moreover, much of the philosopher's desire to know comes only after one has looked before and after in other ways. Men do not wonder or desire to know unless they think that they are ignorant. As Aristotle said in the *Metaphysics*, men begin to philosophize out of wonder and hence to escape their ignorance. Socrates discovered that most men do not know that they do not know. After he shows the slave-boy of Meno that he is ignorant of how to double a square, he turns to Meno and says that now the slave-boy will want to know while before, when he thought he knew how to double a square (by doubling the side), he did not so desire. It is, of course, by looking before and after in the third sense that Socrates found that men did not know what they thought they knew. What came after some of the statements they admitted (*after* as a conclusion comes after the premisses) contradicted something else they admitted before. Men do not directly contradict themselves in conversation with Socrates, but they admit three statements and from two of them follows the contradictory of the third. It is often dangerous to admit three statements to Socrates. Three may be enough to get one into a contradiction.

And the deepest and strongest desires to look before and after (which lead one to investigate the greatest questions and to the greatest discoveries) come after one has already seen a before and after, especially a continuous one. Thus when the logician sees that the genus is before the species and that the same thing can be a genus and a species in comparison to different things, he wonders and asks whether every genus has a genus before it or is there a *first* genus. This eventually led to the discovery or recognition of the ten categories or highest genera, the genera that are not species. Likewise, after reason sees how the premisses are before the conclusion in a syllogism and that the conclusion of one syllogism can be the premiss of another, he wonders whether every premiss is a conclusion. This eventually leads to the discovery or recognition of statements known through themselves, the foundation of all other statements. And after the natural philosopher sees the before and after in time, he wonders whether time has a beginning or an end. And after he sees that nothing moves itself (first and through itself) and that the movers around him are themselves moved or have a mover before them, he wonders whether there is another mover before every mover or there is a first mover. This leads us eventually to the unmoved mover, God. And the moral philosopher sees that the end is desired before the means, but some ends are desired for the sake of other ends which are desired

before them. Is there some end which is *first* desired and everything else is desired *after* it? This leads us to consider happiness, the end which is desired in life for its own sake and not for the sake of something else, but everything else for the sake of it. In all of these, a profound and intense desire to look before comes only after one has seen a number of before and afters. Thus the wonder, or desire to know, of the philosopher is both a desire to look before and after and a result of having looked before and after.

Although wonder is the beginning of philosophy, the philosopher is named, not from wonder, but from the *love of wisdom*. Wonder is not sufficient to make one a philosopher. But a true philosopher must love wisdom for its own sake (not for honor or for wealth, like the sophist) and indeed more than anything else that he might love for its own sake, so that wisdom is the very end or goal of his life. But one could not come to love wisdom thus unless one saw that wisdom is better than any other knowledge. Nay more, one would have to see that wisdom is better than anything else in life before one could love wisdom as one's end in life. Better however is the fourth sense of *before* as we have seen in the *Categories*. Hence, it is impossible to love wisdom as a philosopher must without looking before and after.

Moreover, the lover of wisdom pursues not only wisdom, which is the best knowledge, but also among other kinds of knowledge, that which is better. Hence, he must know which knowledge is better, not only to know which is best (for best is defined by better - the best is better than all the rest), but to pursue the better among other kinds of knowledge.

Aristotle answers the question of which knowledge is better in the Proemium to his three books *About the Soul*. One knowledge (as knowledge) is better than another in two ways. In every knowledge, we can distinguish between what we know and how we know it. Hence, one knowledge can be better than another because the thing known is better or the way it is known is better. Either what is known is better or it is known better (with more certitude or clarity etc.) Aristotle praises the study of the soul for both reasons.[165] But it is possible that a lesser thing

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[165]Charles De Koninck pointed out that the certitude in the study of the soul is in regard to its existence rather than what it is.

be known better than a greater thing. We know better what a triangle is than what God is. Hence, the philosopher must also look to see which is better (before in the fourth sense) when one knowledge excels in certitude and another in the nobility of its object. There is no doubt in the tradition of Aristotle and Thomas that the nobility of the object is the greater criterion.[166]

We can see from the above how necessary it is for the philosopher to look before and after to know which knowledge he should pursue before another knowledge. But the pursuit of one knowledge before another in time depends, not only upon which thing is better to be known, but also upon which must be known before another. For example: the knowledge of God is better than the knowledge of motion and time and the knowledge of the soul. But should a philosopher pursue a knowledge of God before a knowledge of motion and time and the soul? It is better to know God than to know motion. But if we know God through motion as a cause is known through its effect and by the negation of motion, then it seems we must study motion before God. If it is better to know the eternity of God than to know time, but we know eternity by the negation of time, then we must study time before we study eternity.[167] It is better to know God than the soul, but if we know God in part by the likeness of our soul to God, we should pursue a knowledge of the soul before a knowledge of God. A knowledge of the soul is a beginning for the study of any other understanding substance.[168] It is through knowing our own understanding

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[166]Thomas Aquinas, *In I De Anima,* Lectio I, n. 5: "Nihilominus tamen illa est melior quae de rebus melioribus et honorabilioribus est. Cuius ratio est, sicut dicit Philosophus in lib. *undecimo de Animalibus*, magis concupiscimus scire modicum de rebus honorabilibus et altissimis, etiam si topice et probabiliter illud sciamus, quam scire multum, et per certitudinem de rebus minus nobilibus. Hoc enim habet nobilitatem ex se et ex sua substantia, illud vero ex modo et ex qualitate."

[167]When Thomas Aquinas explains Boethius' great definition of eternity in the *Summa Theologiae*, he show how it involves many negations of what is found in time as Aristotle defines it in the *Physics*.

[168]Thomas Aquinas, *Summa Theologiae*, Prima Pars, Q. 88, Art. 1, Ad 1: "apud philosophos dicatur quod scientia de anima est principium quoddam ad cognoscendum substantias separatas. Per hoc enim quod anima nostra cognoscit seipsum, pertingit ad cognitionem aliquam

and will that we must by likeness (and negation of defects) come to know, however imperfectly, the understanding and will of what is above us. Thus we can see that it is not always better to try to know before what is better to know. But this consideration takes us into the second genus of beginnings which is a knowledge of the order within our knowledge.

The third beginning of philosophy in the will (after wonder and the love of wisdom) is humility. Humility in knowing comes after seeing that one mind is better than another. First one must see that the divine mind is better than the human mind. And second, one must see the before and after in human minds which Hesiod pointed out

> He is best of all who by himself understands all things.
> Good also he who believes the one speaking well.
> But who neither himself understands, nor hearing another
> Throws into his mind - this one is a useless man.[169]

Looking before and after and knowledge of the roads of philosophy

Philosophy is knowledge over a road or knowledge that follows a road. Hence, Aristotle often gives *methodos* as the genus of philosophy for philosophy is knowledge *meta* (after or over) *odos* (a road). Philosophy is knowledge that follows a road.

After one has seen this before and after in the genus of philosophy, it is not hard to see that a knowledge of the road to follow is before knowledge over that road or that follows that road. Hence, Aristotle and

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habendam de substantiis incorporeis, qualem eam contingit habere; non quod simpliciter et perfecte eas cognoscit."

[169]Hesiod, *Works and Days*, 293 ff.

Boethius and Thomas Aquinas insist in many places[170] that one must have knowledge of the road to follow *before* one can acquire well the knowledge which is over that road. Aristotle, in his proemium to this or that kind of philosophy, often considers the road to follow in that kind of philosophy.[171]

But the road made by nature in our knowledge, the road from the senses into reason, is *before* the roads made by reason in our knowledge. And it is necessary to see that the road made by nature is before the roads made by reason in perhaps all five senses of *before* distinguished in the *Categories*. It is especially important to see that the natural road can be without the roads made by reason, but they cannot be without it, and that the natural road is the reason or cause of much that is basic in the roads made by reason. We acquire what is not natural through what is natural and it is not even possible to understand why we use the word *road* in our knowledge without following the road from the senses into reason.

Moreover, it is necessary to see that the common road of reasoned out knowledge (which is studied in logic) is *before* the private road of this or that reasoned out knowledge (which should be studied in the beginning of each reasoned out knowledge).

Not only is it necessary for the philosopher to look before and after to see that a knowledge of the road is before knowledge that follows a road and to see that one road is before another, but also to understand each road. For a road in our knowledge is nothing other than a before and after, or a continuous before and after therein. Hence, it is obvious that no one can know any road to follow in philosophy without looking before and after.

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[170]Some of the classical texts for this are: Aristotle, *Metaphysics*, Book 2, Chapter 3 and *Parts of Animals*, Book 1, Chapter 1; Boethius, *De Trinitate*, II and Thomas' Commentary thereon; Thomas Aquinas, *Summa Contra Gentiles*, Book One, Chapters 3-9

[171]See, for example, the proemia to the *Physics*, the *De Anima*, and the *Nicomachean Ethics*.

But it should not remain hidden from us that there is more than one before and after to be seen in each road. Let us exemplify this in the first and last roads of philosophy.

The *first* road in our knowledge must be the natural road in our knowledge as anyone can reasonably guess who know that what is natural comes before what is not natural. The natural road in our knowledge is the road from the senses into reason. Since man is an animal with reason, the natural road in our knowledge must be the road from the senses into reason. For animal is defined by sense and what is generic comes before what is specific in time and generation. There are many before and afters which must be seen before this road is fully understood. We can distinguish some of them here.

First, it can be seen that one knowledge is before or after another along this road. Sensation is before memory and memory before experience and experience before a knowledge of the universal as Aristotle shows in the beginning of the *Metaphysics* and elsewhere.

Second, it can be seen how one thing is known before another along this road. Sensible things, of course, are known *before* things that cannot be sensed along this road. And since material things are to some extent sensible and immaterial things are not, material things are known before immaterial things along this road. And since effects are more sensible than causes, effects are usually known before causes along this road. And composed things are known before simple things along this road. And this is so, not only because immaterial things are simpler than material things and causes than effects, but also even in imaginable things we know the point by the negation of parts or by the negation of length, breadth and depth.

Third, the *same* thing is known along this road in one way before it is known in another way. Thus, as the great Boethius said, a thing is singular when sensed and universal when understood. And a thing is known in an outward before it is known in an inward way for the senses know things in an outward way and reason seeks insight. And the same thing is known in a confused way before it is known distinctly. And this is so, not only because reason is apt to distinguish things that the senses do not, but also because both the senses and reason go from ability to act in their knowing and to know a thing in a confused way is between ability and act.

And fourth, there is another before and after most profound and difficult to see which penetrates and gives reason for many of the above. And this is that the road is from what is more known *to us* to what is more known *by nature* or *simply*. And this enters, for example, into our knowing effects before causes (for the most part - mathematics is the great exception to this rule) and into our knowing things in a confused way before distinctly.

There are many other before and afters to be seen in this road, but the above is sufficient to indicate how much it is necessary to look before and after before we can know sufficiently a road.

The same need to see more than one before and after can be considered in the last road of philosophy, the private road of this or that reasoned out knowledge. For example: even in the private road of geometry, which is easier to know than that of most other forms of reasoned out knowledge, there is more than one before and after to be seen. In Euclid's *Elements*, for example, there is more than one before and after to be seen. The simple comes before the composed for the most part. This is seen, not only in plane geometry coming before solid geometry, but also within plane geometry. And the equal comes before the unequal for the most part, not only in the theorems, but also in the definitions and the axioms. And the cause is before the effect, contrary to what is found for the most part along the natural road.

We could also exemplify that there is more than one before and after to be seen in the middle road. The middle road of the philosopher is the common road of philosophy, studied in logic. But since this is the *middle* road, after one road and before another, it may be appropriate to use this road to exemplify the necessity of seeing how one road is before another. (At the same time, however, we will see that there is more than one before and after to be seen along this road.) For the road which is before enters into our understanding of the road which comes after

The middle road is especially the common road of reasoned out knowledge. Defining and dividing and reasoning are along this road. But why is it necessary to define and divide in our reasoned out knowledge? This presupposes a before and after in the natural and first road. We know things in a confused way before distinctly. And definition and division are

two of the chief ways for reason of going from a confused knowledge of things to a distinct knowledge of them. But *after* we have seen definition as the beginning of reasoned out knowledge, we can see the necessity of considering the way of defining in the private road of each particular reasoned out knowledge. As Aristotle taught in the *Physics* and Metaphysics, the way of defining is different in each of the looking philosophies. There are many other ways in which a knowledge of the natural and first road enters into that of the road studied in logic. Aristotle teaches us in logic, for example, that induction comes before syllogism. This again goes back to the natural and first road. Our knowledge starts with the senses and singulars, as does induction while the syllogism begins with something universal.

Whence Socrates in the *Phaedo*, when considering the arguments for and against the immortality of the soul, sees the need for an art about arguments[172] before we can evaluate properly those particular arguments. Socrates warns against our becoming haters of argument through our ignorance of this art.

Although philosophy is in the end a reasoned out knowledge, it begins with reasonable guesses.[173] Hence, one could say that the common road of philosophy is from reasonable guesses to reasoned out knowledge. There is also a reason in the natural road why we guess the truth before we know it.

From these and similar things, it is not hard to see that this genus of the beginnings of philosophy is entirely dominated by the need to look before and after. No road can be known without looking before and after, nor can the order of the roads be known without so doing, nor the need to consider the road of a reasoned out knowledge before trying to acquire fully that knowledge, nor the need to know the common road before the private roads nor the need to know the natural road before all the roads made by reason.

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[172] *Phaedo*, ... This is to my knowledge the first time a philosopher saw this before and after: Logic is before the perfect learning of the other parts of philosophy.

[173] We define philosophy as a *reasoned out knowledge* because each thing is defined by its utmost.

Looking before and after and the knowledge of the beginnings about things

As regards the third genus of the beginnings of philosophy, which is a knowledge of the beginnings about things, the necessity of looking before and after to know them can also be shown. Such beginnings arise from experience which is after memory and sensation. Now it is difficult to see how there can be memory or experience without looking before and after. But we should consider the necessity of looking before and after in order to know the beginnings about things which are in reason. This again can be considered in particular after the division of such beginnings.

Some beginnings in our knowledge about things are common to all forms of reasoned out knowledge. Foremost among these are the statements which are axioms (in the sense of Aristotle and Euclid). For example: the axiom about contradiction and the axiom about whole and part. The axiom about contradiction (*the same thing cannot both be and not be at the same time and in the same way*) is followed in all reasoned out knowledge. Likewise, the axiom about whole and part (*the whole is greater than one of its parts*) is used in every reasoned out knowledge

Some beginnings about things in our knowledge are private to this or that reasoned out knowledge. The first beginnings about things private to this or that reasoned out knowledge are definitions of the things which are considered in that reasoned out knowledge. And second are the statements which are understood by these definitions. Thus the definitions of circle and diameter and the definition of right angle are private to geometry. Likewise, the statements which can be known after these definitions are known. For example: the statement that *the diameter bisects the circle* and the statement that *all right angles are equal*.

The common beginnings of reasoned out knowledge, as the axioms, are before the private beginnings of this or that reasoned out knowledge. Thomas tells us that an ordered asking goes forward from the common beginnings which are known through themselves towards the private things and that reasoned out knowledge is caused in the soul of the learner

through such a going forward.[174] This reminds one of Socrates' teaching by asking questions in an ordered way (and then denying that he is teaching although his *ordered* questioning is what leads the one replying to see something new.)

But not only is it important to see the order *from* the axioms which is to see a before and after of which the axioms are the beginning, but also in knowing the axioms well it is necessary to look before and after. For there is a before and after among the axioms and a before and after in understanding each axiom.

Among the axioms, the axiom about contradiction is before the others. For it is the natural beginning of all the other axioms. And the words in every axiom are equivocal by reason which means that there is a before and after in the many senses or meanings of those words (as we saw in the senses of the word *before*). Such words, then, cannot be understood fully without looking before and after. And since the words must be understood before the statements can be understood, it is clear that a perfect knowledge of the axioms or statements about things underlying all reasoned out knowledge of things is had only by looking before and after. Growth in understanding the words used everywhere and avoiding the frequent mistakes due to the equivocation of these words require one to look for the before and after in their meanings.

It is also necessary to look before and after to know the beginnings about things *private* to this or that reasoned out knowledge. The first private beginnings about things are definitions of the things studied in that reasoned out knowledge. But it is impossible to define without looking before and after. We define a thing by its cause(s) or effect.[175] Since the cause is before in the "fifth" or crowning sense and the effect is after in the corresponding sense, it is clear that no one can define by either a

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[174] *Summa Theologiae* , Prima Pars, Q. 84, Art. 3, Ad 3: "ordinata interrogatio procedit ex principiis communibus per se notis, ad propria. Per talem autem processum scientia causatur in anima addiscentis."

[175] The definition by cause is a perfect definition, but we often define imperfectly by effect, especially since the effect is more known to us. We define the good at first by its effect which is desire. The good is what all desire.

cause or effect without looking before or after. If we define things by either their causes or their effects, then it is by looking before and after the thing (in the "fifth" sense) that we come to define.

We are also said to define a species either by genus and differences or by property.[176] And in either case, we must look before and after. For the genus and the species-making differences are before the species[177] and the property is after the species. The genus is before the species in the second and third senses of before and the difference is also before the species in these two senses. Quadrilateral, for example, can be without square, but the reverse is impossible. Likewise, equilateral and right-angled can be without square, but the reverse is impossible. One adds differences to the genus until the resulting speech is no longer before the species, but is convertible as *equilateral and right-angled quadrilateral* is convertible with *square*. Neither is before or after the other in the second sense of before (in the sequence of being. A property in the strict sense (what belongs to only one species, to every member of it and always) is also convertible with the species, but after it as an effect is after a cause.

Thus, it is impossible to define without looking before and after. And in the definition, it is important to know which part comes before and which after.[178]

And by these definitions, we know the statements which are also beginnings private to each reasoned out knowledge. As, for example, the statement that *all right angles are equal* is known after the definition of right angle.

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[176]This distinction of definition is almost the same as the first one since the property is an effect of the nature of the species. The definition by property is also an imperfect definition, but often the property is known first.. Thus the child first knows virtue as a praiseworthy quality.

[177]The genus and difference can be without the species, but not vice-versa. Likewise, they are before in our knowledge for we know the general before the particular

[178]Thomas Aquinas, *In II Posteriorum Analyticorum* , Lectio XIV, n. 540:"Dicit ergo primum quod multum differt quid prius et quid posterius praedicetur inter ea quae ponuntur in definitione."

There is, of course, a special way in which looking before and after is necessary to define. And this is when before and after are in the definition itself, or something defined by before and after is in the definition, or the thing being defined is essentially before one thing and after another, or the thing defined consists essentially in an order of parts. We will see this in particular when we come to examine the necessity of looking before and after in the middle of philosophy.

LOOK BEFORE AND AFTER TO END WELL

The end of the philosopher is know the first cause, as Aristotle shows in his *Proemium to Wisdom* in the beginning of the *Metaphysics*. That it is necessary to look before and after to reach this end is obvious. For the crowning sense of *before* is the sense in which the cause is said to be before the effect. And *first* is defined by before and after. But this should be unfolded.

There can be more than one kind of cause before an effect. And the philosopher needs to see the kinds of cause which can be before an effect. In the first book of the *Metaphysics*, Aristotle goes through the thinking of his predecessors on causes. He does this, not only to prepare the way for a discussion of the truth or falsity of their positions on causes, but also to see whether they touched upon any other kind of cause besides the four distinguished in the *Physics*. We see here the care which Aristotle takes not to overlook any kind of cause which could be before an effect. Some of the philosophers before him saw only one kind of cause before effects and some more than one kind. The very first philosophers saw only one kind of cause before effects while those who came after saw two or three kinds. But it is not until Aristotle that anyone saw fully and clearly that there are as many as four kinds of cause before an effect.[179] Most thinkers even to

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[179]The first philosophers saw only matter before effects while the later ones saw also that a mover is before them. Pythagoras and the Platonists saw form before effects. Empedocles saw three kinds of cause before effects like flesh and bone. Aristotle saw that natural things can have four kinds of cause before them. In the first book of the *Metaphysics*, Aristotle considers the opinions and arguments of his predecessors about causes, not only to prepare for seeing whether they

this day do not see, or do not see clearly, all the kinds of cause that can be before effects.

But Aristotle was perhaps the first to see clearly that there can be as many as four kinds of cause before an effect. (In mathematics, there is only one of these four kinds of cause before an effect. But in natural things, there can be as many as four kinds of cause before an effect.) We can begin to see here and also in the *Phaedo* of Plato how much one must look before effects to see all the kinds of cause in general that can be before an effect.

But in the second book of the *Metaphysics*, Aristotle looks before and after within each of these four kinds of cause. Within each kind of cause, there is a before and after to be seen. One matter may be made out of another matter. The sentence is made out of words and the words are made out of letters. And something may move other things insofar as it is itself moved, as one wagon pulls another insofar as it is pulled itself. And the end for the sake of which something is, or is done, may be a means to a further end. I go to the well for the sake of getting water and I get water for the sake of drinking it.

And after seeing that there are causes before and after each other within one kind of cause, Aristotle wonders whether there is a cause before every cause within each kind of cause. And by a wonderful discourse, he comes to see that there is a first cause within each kind of cause. Thus looking before and after has helped the philosopher arrive to some extent at the first cause or causes.

But it is necessary not to overlook another before and after among causes before one can see the first cause. Not only is there a before and after *within* each of the four kinds of cause, but there is also a before and after to see among the four kinds of cause. The matter is formed by a maker for some end or good. Hence, the maker seems to be responsible for the matter and form being causes. And the end seems to be responsible for the maker acting. Thus, the end seems to be the cause of the causality of all the other causes. But does this mean that the first

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have arrived at the first cause, but also to see if they saw any kind of cause before things in addition to the four (matter, form, mover, end). They did not.

cause is a cause only in the genus of end? Is the first mover or maker something other than the first end (the end which is not desired for the sake of any further end)? Or could the first mover or maker act for the sake of itself (not to make or acquire itself, but to communicate itself and lead all other things in some way to itself)? Could the first mover or maker be also the end for which all things are? This requires one to look at being.

Here we can begin to see the necessity of looking before and after in beings and not only in causes. The first cause is also the first being. Since the first being is before all other beings, one must see the before and after of beings before one can find the first being.

Before the philosopher can see a before and after in beings, he must see a distinction in beings. For nothing is before or after itself.

The first distinction of beings in the fifth book of the *Metaphysics* is between being as such and accidental being. And it is not hard to see that being as such is before accidental being.

And in being as such, we soon see that substance is before accidents in more than one sense of *before*. (Descartes and perhaps the Pythagoreans and Platonists did not see anything before quantity or extension. Here we have an example of double ignorance and the need to look before and after more than once.)

But the most important before and after to look for in being is that which can be seen after the distinction of act and ability. Thus in the ninth book of the *Metaphysics*, Aristotle distinguishes abilities in comparison to the act most known to us which is motion. Then, he distinguishes acts in general and, consequently the abilities for them. And then he shows the many ways in which act is before ability (and the one qualified way in which an ability can be before act, but not simply so). We see that act is before ability in definition and, more generally, in knowability. We come to see also that act is simply before ability (although what goes from ability to act is in ability before it is in act) because nothing goes from ability to act

except by reason of something already in act.[180] And we come to see that act is before ability in perfection and goodness. And after seeing all these ways in which act is before ability, we can come to see that the first being is pure act and most knowable and most perfect and good.[181]

Seeing the before and after of act and ability will help us to see that the first cause cannot be in the genus of matter for such a cause is in ability.[182] But it is possible for the first cause to be both in the genus of maker and end for both of these are based on actuality as can be seen respectively from the second and the third senses in which act is before ability.

The above outline of some of the before and afters which must be seen before the philosopher can come to know the first cause is a sufficient manifestation of the necessity of looking before for the philosopher if he is going to end well.

The philosopher most of all wants to know the first cause for this is the best thing there is to know. But after this comes a knowledge of the order of the universe. And he cannot know this without looking before and after for the order of the universe consists most of all in the fourth and fifth senses of *before*.[183]

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[180]If something were to give itself the act which it does not have, it would have to have the act before having it - a manifest contradiction. One cannot give what one does not have.

[181]We can show that the first cause is simple, perfect, unchanging, infinite and therefore one through its being pure act, as is done in the two *Summas* of Thomas.

[182]Those who think that matter is the first cause have seen only what is before in some respect or qualified way and not what is before simply and without qualification. And in not seeing both before and afters, they fall into the mistake of simply and in some respect about the first cause. They have not looked before and after enough.

[183]Thomas Aquinas, *Summa Theologiae,* Prima Pars, q. 103, Art. 4, Ad 1: ordo universi includit in se et conservationem rerum diversarum a Deo institutarum, et motionem earum: quia secundum haec duo invenitur

LOOKING BEFORE AND AFTER IN THE MIDDLE

We have seen some of the necessity of the philosopher looking before and after both to begin well and to end well. We should now consider this necessity in the middle. It is convenient to divide this consideration according to the particular parts of philosophy which come before wisdom or first philosophy. But here we must be even more sketchy than in the other parts.

Looking before and after in logic

Logic is about defining and dividing and reasoning. Hence, definition, division, and syllogism (and the other forms of argument) are considered in logic. The father of logic, Aristotle, uses the word *tool*[184] within logic almost exclusively for the four tools of dialectic. But the chief purpose of these tools, as Aristotle explains in the *Topics*,[185] is to reason and define and divide.

As we have seen before, it is impossible to define without looking before and after what is to be defined. But there is more than one before and after to be seen here. The logician should see that we name things before we define them. And he needs to see that the first name in a definition is the genus and that the second names are differences. But is there also a before and after among the differences? When Aristotle divides the imitative arts in the *Poetics* and defines tragedy, he uses the same kinds of difference. But the order is not the same. He distinguishes the imitative arts first by *that in which* they imitate, then by *what* they imitate, and last by *how* they imitate. But when he defines tragedy he uses

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ordo in rebus, secundum scilicet quod una est melior alia, et secundum quod una ab alia movetur.

[184]In Greek *organon*

[185]See *Topics*, I, Chapters 18. The tool of likeness, for example, is useful for definitions, inductions and hypothetical syllogisms.

the difference from *what* it imitates first, and second, the difference from *that in which* it imitates and last the difference by *how* it imitates. The reason why the order of the first two is the reverse would seem to be that the beginning or the genus is different. If the genus is the imitative art and art is a way of making in some matter, then it seems natural to first divide the imitative arts by *that in which* they imitate. For the way of making and the tools of making and the skill are different for different matters. Hence, the carpenter also makes both bookcases and chairs out of wood and the metalworker, both out of metal. It is not one art that makes bookcases and another art that makes chairs. Likewise, it is not one art that makes sad stories and sad music, but one art that makes sad and joyful music. But in the case of the products of the imitative arts, the genus is imitation or likeness. And a likeness seems to be first *of* something, just as a relation. Hence, *what* is imitated seems closer to the genus than *that in which* it is imitated. For a similar reason, Euclid divides *trilateral* into equilateral, isosceles and scalene triangles before he divides it into right-angled, obtuse-angled and acute-angled triangles. Hence, the significance of the use of the word *trilateral* for the genus rather than *triangle*. (This is not arbitrary. For rectilineal plane figure is naturally divided into trilateral, quadrilateral etc.)

Again, the logician needs to know whether we should define before we divide or divide before we define. For logic, as Thomas teaches us, is the art which helps reason to proceed orderly, easily and without error. And order is a before and after. Therefore the logician must try to see whether defining is before dividing or the reverse.

If a highest genus is known without definition and only a species can be defined, then we divide before we define. We divide a genus into its species before we define the species. But if the species is itself a genus (of what is below it), then we define it before we divide it into species. Thus Euclid defines triangle before dividing it into its species. And indeed if he had not defined it before, one could not see clearly the basis for the division into species.

But when definition is compared with the other main kind of division, the division of a composed whole into its parts, the logician must again try to see which is before so he can direct us in our thinking. If the species to be defined is a composed whole, do we divide it as a composed whole before or after we define it?

Knowing the composing parts of a whole would seem to be a help to defining it or knowing what it is. We take apart something (if it is composed of parts) when we try to know what it is. Aristotle considers noun and verb before statement and premiss before syllogism.

However, if there is definition of a thing by its end and a definition of a thing by its matter or parts, and the definition by end is the middle term for uniting the definition by parts to the thing defined, then in this way a definition by end is before a consideration of the parts of which the defined is composed. Hence, someone might define definition as *speech making known what a thing is* before it is shown that definition is *speech composed of a genus and differences*. The former definition is the reason why of the second definition.

Yet even here, it would seem that we know *what a genus is* and *what a difference is* before we know *speech composed of a genus and differences*. Of course, it is not the same thing to know what a genus is and to know that it is the first part of a definition. Likewise, it is not the same thing to know what a difference is and to know that it is the second part of a definition. And we know something in a confused way before we know that this and that are parts of it. However, to know something in a confused way is not to know it by definition.

We cannot enter further here into the before and after of definition and division. But the above is sufficient to see how much the logician must look before and after if he is going to be able to direct us in our defining and dividing And indeed, this comes under the general purpose of logic which is to help us proceed orderly in our thinking.

It is also impossible to reason without looking before and after for the premisses (as the prefix in their name indicates) are before the conclusion. The premisses of a syllogism are before the conclusion of that syllogism, as a cause is before the effect. Hence, we say in the definition of the syllogism that something else follows necessarily because of what has been laid down. But the statements (which become premisses) are also before in the sense that they can be known without the conclusion, but the reverse is not possible. The logician must see how the premisses are before the conclusion and how some statements are before other statements. This, of course, requires him to look before and after.

There is also a before and after in the premisses which he must see. The major premiss is before the minor premiss of a syllogism. The minor premiss contracts the power of the major in a way proportional to the difference contracting the ability of the genus to, or towards, the species.

But reasoning by the very common if-then syllogism even more clearly requires reason to look before and after. The if-then statement by itself is understood by looking before and after. Hence, we call the simple statements in it the *antecedent* and *consequent*. Sometimes one can make both a true and a false if-then statement out of the same two simple statements.[186] And the second premiss either affirms the antecedent or denies the consequent. If one wants to establish a simple statement by this kind of syllogism, one looks *before* that simple statement. One is looking for a simple statement which is true and which can be the antecedent in a true if-then statement whose consequence is the statement to be established. One looks for a statement which is true and which the statement to be established follows upon necessarily. If one wants to syllogize to the negation of some simple statement, one looks *after* that simple statement. One looks for a simple statement that is false, but which can be the consequent in a true if-then statement whose antecedent is the statement to be overthrown. One looks for a statement that is false, but necessarily following upon the statement to be overthrown.[187]

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[186] *If this number is four, then this number is even* is true. *If this number is even, then this number is four* is false.

[187] In letters, statement B can be established by looking for a statement (A) before it or which it follows upon. If the statement before (A) is known or thought to be so, one can syllogize thus: If A is so, then B is so. But A is so. Therefore, B is so. In overthrowing or reasoning against a statement B by the hypothetical syllogism, one looks after it for a statement C that is known or thought not to be so. We then syllogize thus: If B is so, then C is so. But C is not so. Therefore, B is not so. When Socrates reasons dialectically in the *Meno* for and against the statement that *virtue can be taught,* he use these two forms.

Not only must the logician see the before and after in a definition or syllogism, but he must further see the before and after of *continuous*[188] definitions and syllogisms. Since there are *continuous* syllogisms and arguments and *continuous* definitions in every part of philosophy, it is necessary to look before and after many times. If one of these steps is left out, one ceases to know for a chain is no stronger than its weakest link.[189] The logician must see that reasoned out knowledge involves continuous definitions, divisions and syllogisms. (And since the syllogism begins with something universal, induction comes before syllogism. The logician must also see this before and after.)

And the logician must see that, although there are continuous definitions and syllogisms, yet there is not a definition before every definition or a syllogism before every syllogism. If we know one thing through another when we reason or define or calculate, does this go on forever? If this were so, would we be able to know anything? But if some things are known, but not through other things, what are these things? And why are some things known through other things and some things known, but not through other things? Looking before and after in these

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[188]I call syllogisms *continuous* in which the conclusion of one is the premiss in the other. Likewise, two definitions are continuous when what is defined by one is used in the definition of the other. In this use of the word *continuous*, I imitate Euclid when he calls a proportion such as four is to six as six is to nine *continuous*, but not a proportion such as two is to three as four is to six. The likeness of course is to the definition of continuous in logic, not to that proper to natural philosophy. Likewise, what is defined by one definition becomes part of another definition

[189]Thomas Aquinas, *Summa Theologiae,* Prima Pars, Q. 108, Art. 7, Ad 2:"Inveniuntur autem in nobis multae intelligibiles actiones quae sunt ordinatae secundum ordinem causae et causati; sicut cum per multa media gradatim in unam conclusionem devenimus. Manifestum est autem quod cognitio conclusionis dependet ex omnibus mediis praecedentibus, non solum quantum ad novam acquisitionem scientiae, sed etiam quantum ad scientiae conservationem. Cuius signum est quod, si quis oblivisceretur aliquod praecedentium mediorum, opinionem quidem vel fidem de conclusione posset habere, sed non scientiam, ordine causarum ignorato."

ways leads to the knowledge of the highest genera and the distinction between statements known through themselves and statements known through other statements.

The logician must also see how one two things are before each other in different senses of *before*. For example, we name a thing before (in time and in our knowledge) we define it, but defining gives us a better knowledge of a thing than naming it. And we guess by the dialectical syllogism before (in time and in the discourse of reason) we know by a demonstration, but a demonstration is better (before in the fourth sense) than a dialectical syllogism.

The above is enough to show some of the importance of looking before and after for the logician.

Looking before and after in mathematics

After we recall here the first two senses of *before* in the *Categories*, it is interesting to consider these words of Thomas Aquinas:

> Order follows the account both of time and of number because one species of number is naturally before another and time is also the number of motions according to their before and after.[190]

We have seen that the first sense of *before* is in time and the second sense was exemplified by one being before two in being. (One can be without two, but two cannot be without one.) One number is also before another number in this same sense of *before*. One number is naturally before another number.[191]

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[190] *In Librum Beati Dionysii De Divinis Nominibus* , Caput IV, Lectio lll, n. 310: "Rationem autem tam temporis quam numeri sequitur ordo, quia una species numeri naturaliter est alia prior et tempus est etiam numerus motuum secundum prius et posterius."

[191] Aristotle in Book V of the *Metaphysics* (1019a 2-4) calls this sense of *before* katà fúsin.

Not only is one number naturally before another in the second sense of *before*, but even in one number there seems to be order. Thomas indicates that an order of parts pertains to the account of quantity in general:

> Since an order of parts is in the account of quantity, and infinite follows upon quantity, to know the infinite by way of the infinite is to know by numbering part after part.[192]

But the most interesting before and afters are seen after the discourses of the arithmetician. Before all other numbers in the same ratio or which are proportional, there are numbers prime to each other. And these numbers prime to one another are not only before in the second sense, but also as a measure is before the measured. They measure all the other numbers respectively.

It is not difficult to see that after every square number, there is another square number. But Plato himself, it is said, saw that, after every square number and before the next square number, there is one number which is a mean proportional between the two square numbers. And after every cube number and before the next cube number, there are two mean proportionals.

But perhaps it is not necessary to illustrate further the importance of looking before and after for the mathematician.

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[192] *Summa Theologiae*, Prima Pars, Q. XIV, Art. 12, Ad 1: "cum de ratione quantitatis sit ordo partium, et infinitum sequatur quantitatem, cognoscere infinitum per modum infiniti est cognoscere ipsum numerando partem post partem." Sylvester of Ferrara on *S. C. Gentiles*, Liber I, Caput LXIX after quoting above says: "Et ideo inquit Sanctus Thomas hic quod haec est propria ratio quantitatis, ut scilicet per numerationem suarum partium cognoscatur. Et quia nunquam compleri posset numeratio infiniti, ideo infinitum, inquantum infinitum, est ignotum."

Looking before and after in natural philosophy

It is not hard to see that the natural philosopher must look before and after. Beginning and first are in the definition of nature and, as we have seen, beginning and first are defined by before and after. Nature is a cause and the natural philosopher looks for the causes of natural things which is, of course, to look before in the "fifth" and crowning sense.

The natural philosopher considers motion (indeed nature is a cause of motion) and motion takes time and the mobile is in place or moves from one place to another. There is a before and after in all of these which is the first meaning of before and after or attached to the first chief sense. This is most explicit in the case of time. Before and after are in the definition of time.

Eventually we wonder whether every time has a time before it and after it. Does time have a beginning or an end? Thomas Aquinas has written a work devoted to examining the discourses of thinkers looking before and after in this way. Some think it impossible for time to have a beginning. Unable to transcend their imagination or unable to move the word *before* from its first meaning, they think that if anything were before time, then time would be before it was - a manifest contradiction. If nothing was before the beginning of time, how could it begin? Nothing cannot give rise to anything. One is forced by such questions to distinguish the senses of *before*. Christian revelation teaches that time had a beginning. Was there anything before this beginning? Surely not before in the first chief sense of before. But if there was nothing before time existed, how could time come into existence? When Christ said "Before Abraham was, I am", what does *before* mean? One must speak of the eternity of God by the negation of before and after (and of other aspects of time). Looking before and after leads sometimes to the negation of before and/or after. We see that nothing is before or after itself. And we see that there is no before and after in God's existence or life.

Both motion and time have such an imperfect existence that they do not exist in a full way without reason looking before and after. Thomas explains this difficult teaching of Aristotle and we can enter only a little into it here. But it is important to touch upon this for manifesting the

necessity of looking before and after for the natural philosopher whose subject could be said to be motion (and time follows upon motion). In the commentary on the fourth book of the *Physics*, Thomas writes:

> If therefore motion had fixed being in things, as a stone or horse does, it could be said absolutely that, just as there is a number of stones even without the soul existing, so also there would be the number of motion which is time even without the soul existing. But motion does not have fixed being in time, nor is anything of motion found in act in things, except the indivisible of motion which is the division of motion. But the wholeness of motion is taken by the consideration of the soul comparing the disposition of the mobile before to that after. Thus also time does not have being outside the soul except by its own indivisible. But the wholeness of time is taken by the ordering of the soul numbering the before and after in motion, as has been said above. And therefore the Philosopher says significantly that time without the soul existing is *barely* a being, that is imperfectly; just as if it was said that motion can be without the soul imperfectly.[193]

Earlier in the commentary on the third book of the *Physics*, Thomas had already spoken of this necessity of looking before and after to complete an account of motion as distinct from the term or limit of motion:

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[193] *In IV Physicorum* , Lectio XXIII, n. 629: "Si ergo motus haberet esse fixum in rebus, sicut lapis vel equus, posset absolute dici quod sicut etiam anima non existente est numerus lapidum, ita etiam anima non existente esset numerus motus, qui est tempus. Sed motus non habet esse fixum in rebus, nec aliquid in actu invenitur in rebus de motu, nisi quoddam indivisibile motus, quod est motus divisio: sed totalitas motus accipitur per considerationem animae, comparantis priorem dispositionem mobilis ad posteriorem. Sic igitur et tempus non habet esse extra animam, nisi secundum suum indivisibile: ipsa autem totalitas temporis accipitur per ordinationem animae numerantis prius et posterius in motu, ut supra dictum est. Et ideo signanter dicit Philosophus quod tempus, non existente anima, est *utcumque* ens, idest imperfecte; sicut et si dicatur quod motum contingit esse sine anima imperfecte."

> For the account of motion is completed not only through what there is of motion in things, but also by what reason apprehends. For there is nothing more of motion in things than an imperfect act which is a beginning of perfect act in that which is moved; just as in that which is becoming white, there begins to be already something of whiteness. But that this imperfect [beginning] be accounted motion, there is required further that we understand it as a middle between two things: of which the one going before is compared to it as ability to act, whence motion is said to be an act; and the one following is compared to it as the perfect to the imperfect or as act to ability, on account of which motion is said to be the act of what exists in ability, as has been said above. Whence whatever imperfect thing is taken as not tending to something other that is perfect, is said to be the limit of motion and will not be motion by which something is moved, as if something begins to become white, and the alteration is at once interrupted.[194]

When we divide motion in natural philosophy, there are other before and afters to be seen. After we divide motion or change into kinds, we need to see the many ways in which change of place is before the other

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[194] *In III Physicorum* , Lectio V, n. 324-325: "Nam ratio motus completur non solum per id quod est de motu in rerum natura, sed etiam per id quod ratio apprehendit. De motu enim in rerum natura nihil aliud est quam actus imperfectus, qui est inchoatio quaedam actus perfecti in eo quod movetur: sicut in eo quod dealbatur, iam incipit esse aliquid albedinis. Sed ad hoc quod illud imperfectum habeat rationem motus, requiritur ulterius quod intelligamus ipsum quasi medium inter duo; quorum praecedens comparatur ad ipsum sicut potentia ad actum, unde motus dicitur actus; consequens vero comparatur ad ipsum sicut perfectum ad imperfectum vel actus ad potentiam, propter quod dicitur actus existentis in potentia, ut supra dictum est. Unde quodcumque imperfectum accipiatur ut non in aliud perfectum tendens, dicitur terminus motus et non erit motus secundum quem aliquid moveatur; utpote si aliquid incipiat dealbari, et statim alteratio interrumpatur."

kinds. And after we divide motion into its quantitative parts, there is many a before and after to be seen.

The quantitative division of motion is part of a larger philosophy of the continuous (its infinite divisibility, its not being composed of indivisibles, and so on) which includes time and place or distance. This larger philosophy is the subject of the sixth book of the *Physics* of Aristotle. Motion down a continuous road will be itself continuous. And likewise the time it takes. But what is most striking in the consideration of the before and after in the continuous is the negation sometimes of a first or a last. In the change from one contradictory to the other, such as from not being a sphere to being a sphere, there is no last instant in which one is in the term from which (in the example, there would be no *last* instant in which something is not a sphere) but there is a *first* instant in which it is in the term to which (in the example, there would be a first instant in which something is a sphere) This is a profound witness to Aristotle's looking before and after. And it solves one of the most difficult apparent contradictions in change which has plagued theologians and modern philosophers down through the ages.[195]

Looking before to see if there is a first distance covered in motion or a first part of motion completed and so on (in the sixth book of the *Physics*) leads to a negative conclusion. And this conclusion is the beginning for seeing in book seven that nothing moves itself and that *before* what is in motion, there is a mover.[196] And later in the *Physics* of

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[195]We have touched here upon part of the before and after to be seen in book six of the *Physics* of Aristotle. But to understand it, one would have to follow the discourse of Aristotle there with the help of the commentary of Thomas Aquinas. Charles de Koninck, in his article *Une paradoxe du devenir par contradiction* (*Laval Theologique et Philosophique*, Vol. XII, Numéro 1, 1956, p. 9-51*)* has shown the great difficulty theologians and philosophers have had down through the ages in seeing this before and after and the errors into which they fall because of this.

[196]Thomas Aquinas, *In VII Physicorum* , Lectio I, n. 889: "aliquid movere seipsum nihil aliud est, quam esse sibi causa motus. Quod autem est sibi causa alicuius, oportet quod *primo* ei conveniat; quia quod est primum in quolibet genere, est causa eorum quae sunt post. Unde ignis, qui sibi et

course, Aristotle will look *before* moved movers and find an unmoved mover.

When Aristotle begins to consider place, he wonders if place is the first of all things. Place seems to be before all other things in that it can be without them, but they cannot be without it. The common thought is that whatever is must be somewhere; and if it is not somewhere, it does not exist. Without place, then, nothing else can exist. If all things are bodies or in bodies, and bodies must be somewhere, and where one body is now another can have been or will be, place seems to be the first of all things in the second sense of first. Such wonder leads one to investigate whether place is before all other things.

The above is sufficient to begin to see how necessary looking before and after is for the philosopher in the first part of natural philosophy.

Socrates (or Plato) gave a great impetus to the study of the soul when he asked whether the soul existed before or after the body. There are four possible positions on this question. Three are false and one is true. All the false positions are touched upon in the *Phaedo* and defended to some extent, but Aristotle found the true one. But in investigating this question and all other questions about the soul and its powers or abilities, one must see as Aristotle did, the before and after in our knowledge of these things. We must know objects before we can know acts, and we must know acts before we can now abilities and we must know abilities before we can know souls. And there is also a before and after to be seen in souls or their parts.

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aliis est causa caloris, est primum calidum. Ostendit autem Aristoteles in sexto, quod in motu non invenitur primum, neque ex parte temporis, neque ex parte magnitudinis, neque etiam ex parte mobilis, propter horum divisibilitatem. Non ergo potest inveniri primum, cuius motus non dependeat ab aliquo priori: motus enim totius dependet a motibus partium, et dividitur in eos, ut in sexto probatum est. Sic ergo ostendit Aristoteles causam quare nullum mobile movet seipsum; quia non potest esse primum mobile, cuius motus non dependeat a partibus: sicut si ostenderem quod nullum divisibile potest esse primum ens, quia esse cuiuslibet divisibilis dependet a partibus: ut sic haec conditionalis sit vera: *si pars non movetur, totum non movetur*, sicut haec conditionalis est vera: *si pars non est, totum non est.*"

The Moral and Political Philosopher must look Before and After

The practical philosopher must understand good *before* everything else in ethics and politics. The practical philosopher must see that good must be understood *before* better and best. For good is in the definition of better and better is in the definition of best.

And it is Socrates in the *Euthyphro* who teaches us how to look before and after in the *first* definition of good which is *what all desire*. When Euthyphro defines piety as what all the gods approve, Socrates teaches us how to begin looking before and after. Is it pious because the gods approve of it, or do the gods approve of it because it is pious? This is a question of before and after in the "5th" sense. Is the approval of the gods, the cause or the effect of the pious?

And we can ask a similar question about good. Is it good because we desire it or do we desire it because it is good? This is a question of before and after in the sense of cause and effect. Is desire the cause or the effect of the good? Are we defining by cause or by effect?

It makes no little difference, but rather all the difference, in the thinking of the moral and political philosopher whether he has seen that good is before desire as a cause is before its effect even though in another sense of *before* desire comes before. He must see that, although desire is before good in the discourse of reason (or in definition or in our knowledge since we know causes at first by their effects), nevertheless the good is the cause of desire. If the good is the cause of desire, then good is in things; and there can be knowledge of good and bad.

We cannot enter here into the reasoning by which the practical philosopher can come to see that good is the cause of desire and answer

objections to this fundamental truth.[197] This is a before and after that can be seen well only after some reasoning.

If something is not good because we want it, then something is not better because we want it more. The before and after in the consequent is seen from the before and after in the antecedent. Hence, too, there is a basis in things for saying that one thing is better than another. One can reason out first that the end is always better than what is for the sake of it. This is perhaps the first before and after which must be seen in goods.

And in the *Apology,* Socrates says that the chief thing he tried to convince the Athenians of in his conversations with them was that the goods of the soul are better than the goods of the body and outside goods. The distinction between goods of the soul, goods of the body and outside goods must be seen before we can see that the inside goods are better than the outside ones and the goods of the soul better than those of the body.[198] But reasoning is necessary after the distinction before we can see well what is before in this 4th sense of the *Categories*. Most men think like the Athenians all their life and maybe all men before they think things out. Socrates is wiser than the Athenians because he sees this before and after. That the goods of the body and outside goods are before the goods of the soul in the third sense of the *Categories* (before in knowledge or more known to us) must be seen before we can see why the Athenians or most men and all children think this way.

After we have seen clearly why the goods of the soul are better than those of the body and outside goods, we are prepared to see the paradoxical positions of Socrates that it is better to suffer injustice than to commit injustice and that, if one commits injustice, it is better to get caught and punished than to escape without punishment.

Once the philosopher sees that the goods of the soul are better than those of the body and outside goods, he should have a greater desire to

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[197]The author presented some of this reasoning at a conference of the Society for Aristotelian Studies in the summer of 1994 at St. Anselm's College.

[198]Aristotle speaks most explicitly of this before and after in the seventh book of the *Politics*.

study the former than the latter. And since the end is always better than what is for the sake of it, it is very clear to the practical philosopher that the end of man or the end of human life must be found in the goods of the soul. Hence, Aristotle considers at length the goods of the soul before his final determination of the end of man and human life in the 10th book of the *Nicomachean Ethics*. And in this long consideration of the goods of the soul, he must eventually determine which goods are better.

Happiness, or the end of man and human life, is before everything else in human things both in the fourth and fifth senses. The moral philosopher must see these befores. For the end is the cause of causes and the end is better than what is for the sake of it.

But unless one sees that the common good is better than the private good, as the good of the whole is better than the good of the part, one will never become a political philosopher.

The political philosopher looks for the best government and how one government is better than another. He should see the best government (simply), the best government for most men, and the best government for a given people.[199]

And after this, the political philosopher must see what comes before a revolution. Knowing how to prevent or encourage a revolution depends upon such knowledge.

In general, practical philosophy is ordered to the virtue of practical reason called *foresight*.[200] And the very name *foresight* indicates the importance of looking before and after for that virtue.[201] Hence, the practical philosopher must look before and after if he is going to be any help to foresight.

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[199]Some political thinkers now hold that liberal democracy is the best government for us with our customs in the modern world. It surely is better than a communist or any other totalitarian government.

[200]Ethics is ordered to the foresight of the individual; domestics, to the foresight of the father; and political philosophy, to the foresight of the statesman.

[201]The latin word *prudentia* is a contraction of *providentia*.

Conclusion

It should be clear now that it is most necessary for the philosopher to look before and after. If reason is the ability for large discourse which is a looking before and after;[202] clearly all use of reason requires one to look before and after.[203] But since wisdom is the highest perfection of reason, the philosopher must *most of all* look before and after.

Shakespeare has given us the first definition of reason as reason.

Duane H. Berquist

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[202]Shakespeare defines reason thus in his great exhortation to use reason. There is much reason for thinking that this is the first definition of reason.

[203]Practical reason, as well as looking reason, looks before and after. One of its virtues is named from this: *prudence,* we have noted, is a contraction of *providentia* or *foresight*. But art also is always an *ordering* of how human acts can arrive at a suitable end through determined means. Hence, practical reason is also dominated by the need to look before and after.