Epistemology

Course Guide for PHIL 3213/324S

John G. Brungardt

Fifth Edition
Fall 2024

The School of Catholic Studies, Newman University

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Colophon
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Know Thyself.

– Inscription at the oracle at Delphi

Contents

For Andrew Seeley

Thanks for Euclid, Aristotle, Newton, and Kant.

Newman University

Phil 3213/324S – Epistemology

Fall 2024 (16 Weeks)

Time: MWF 2:00pm–2:50pm **Place:** De Mattias 185

Instructor:	**John G. Brungardt, Ph.D.**
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Caritas Christi Urget Nos
Newman University is a Catholic university named for
St. John Henry Newman and founded by the Adorers of the Blood of Christ
for the purpose of empowering graduates to transform society.

Course Description: Epistemology is the self-reflective investigation of the nature and properties of knowledge. As such, it helps students see that human knowledge is capable of gathering from contingent reality objective and necessary truths, while also recognizing the limits of human knowledge. This course considers the difficulties encountered when attempting to understand the nature of knowledge as well as the principles proposed in the Thomistic philosophical tradition to resolve those difficulties.

Upon this basis the course then considers the various powers of human knowledge, especially human reason in itself and human reason in action, its various disciplined approaches to the truth and the limitations and failures possible along the way. The self-realization of the limits of human reason leads to a discussion, to the extent possible, of types of knowledge that transcend human powers of understanding, especially God's knowledge as the exemplar and source of all truth. The course focuses on readings from Plato, Aristotle, St. Thomas Aquinas, and St. John Henry Newman, among others.

Prerequisites: None.

Instructional Methods: Face-to-face modality. Lecture by way of Socratic discussion; written assignments; (possible) quizzes & exams (midterm and final).

Course Goals: This subject of this course is knowledge and truth; it is a broad topic spanning logic, natural philosophy, the study of the soul, and metaphysics. It aims to introduce the student to the central principles, arguments, and results of the human mind's endeavor to know the nature of knowledge itself. Our master in this endeavor is St. Thomas Aquinas.

By the end of this course, the diligent and attentive student should:

(1) be able to articulate (a) what knowledge is, (b) what are its types and their methods, and (c) how the logic of knowledge relates to metaphysics and the modern sciences (e.g., psychology, neuroscience);

(2) be able (a) to explain and defend at an appropriate level the arguments for the nature of different types of knowledge, (b) address various objections, and (c) discuss clearly and cogently the various contributions of St. Thomas Aquinas to this area of philosophy;
(3) be able to competently discuss (a) the various attributes of knowledge and truth, and (b) how different types of intellects relate to knowledge and truth;
(4) and, lastly, be able to articulate how epistemology provides a ground for a deeper understanding of human experience and Catholic theology.

Course Materials and Parameters

- Aristotle. *The Basic Works of Aristotle*. Edited by Richard McKeon. Modern Library, 2001.
- Reinhard Hütter. *John Henry Newman on Truth and Its Counterfeits: A Guide for Our Times*. Washington, DC: The Catholic University of America Press, 2020.
- Josef Pieper. *Leisure: The Basis of Culture; with The Philosophical Act*. Translated by Alexander Dru. San Francisco: Ignatius Press, 2009.
- Plato. *Theaetetus*. Translated by Joe Sachs. Focus, 2004.
- Plato. *Five Dialogues*. Translated by G. M. A. Grube and John M. Cooper. 2nd ed. Hackett Publishing Co., 2002.
- William A. Wallace, O.P. The Modeling of Nature: Philosophy of Science and Philosophy of Nature in Synthesis. The Catholic University of America Press, 1996.
- Readings in the *Course Readings* packet, vol. 1 as well as vol. 2: St. John Henry Cardinal Newman. *An Essay in Aid of a Grammar of Assent*. Longmans, Green, and Co., 1913.

Course Requirements	**Value**
Attendance and participation	40%
Written assignments	
— First paper	10%
— Second paper	30%
Final Exam (written)	20%

Some dates for the papers for this course (more details upon assignment).

Paper	**Assigned**	**Draft Due**	**Final Due Date**
First paper	Wed, Sept 4	*Optional*	Fri, Sept 27
Second paper	Mon, Sept 30	Mon, Nov 4	Mon, Nov 25

The final examination has been scheduled by the University and cannot be changed.

Final Exam: Thursday, December 5, 1:00pm–2:50pm

All written assignments and the exams must be completed as a condition of passing the course. If any remain incomplete within the time alloted to them, then the class attendance and participation grade will be a zero.

Class participation is important in this course. There will be ample opportunity to answer questions, ask questions, and develop understanding. All students are expected to and will be encouraged and guided in active participation.

All details or updates will be posted to Canvas.

Grading Scale: For a detailed qualitative description of the grading scale at Newman University, please refer to the University 2020–2021 catalog. The scale is as follows:

Letter	Numerical	GPA	Qualitative
A =	90–100	4.0	Extraordinary
B =	80–89	3.0	Good
C =	70–79	2.0	Average
D =	60–69	1.0	Marginal
F =	59 or less	0.0	Failure

Course Parameters: Policies

Instruction: The instructor is committed to your educational successes when taking this course. Please email, call, or attend office hours (or set up an appointment), for all questions and concerns related to this course.

Attendance & Absences: This is mandatory, since a large part of philosophy consists of discussing and defending your views. Give or more unexcused absences will lower your grade by one full letter. Missing more than ten classes, whether as excused or unexcused absences, will typically result in failure of the course. I will consider excusing an absence only if students communicate with me regarding the reason for their absence and request that the absence be excused. Student athletes must email the instructor a playing schedule at the start of the semester.

Attendance in person: Roll will be taken at the beginning of every class period. A late arrival occurs when a student arrives after roll has been completed, and an early leave occurs when a student leaves class before class has been dismissed by an instructor. Students who arrive late must see one of the instructors after class so as to be marked present. A student who leaves early without permission obtained prior to beginning of class will be marked absent.

Attendance via web/video: Only when applicable due to extraordinary circumstances. Cameras must be on for the duration of class, and students must have working microphones. If students wish to keep their cameras off during class, this is acceptable if they also email both instructors a 1–2 page summary of their notes for that class within 24 hours of that class period.

Assignments will be announced primarily via Canvas. The student is entirely responsible for completing assignments and turning them in to the instructor on time. All reminders are a courtesy.

Examinations can only be made up due to grave reasons (e.g., due to illness with a doctor's note—interference with holiday travel plans is not a reason). The date and time of the final examination, which is scheduled by the University, can be changed only under certain stringent conditions.

Essays and any written assignments will be due on Canvas (electronically) and in a printed copy, by their due date in order to avoid a late penalty. See Canvas the assignment page for other details. Every day beyond the due date, excepting Sundays, results in a grade reduction of one letter-grade per day (e.g., A to B). Work overdue by more than five days is eligible only for a completion grade.

Reading a philosophical text requires attention to order, discrimination of detail, and much thought, because the philosophers we are reading make deep claims about reality. The average assignment in this course, if read with due diligence, will take about two hours.

Class Conduct: Students are expected to be disciplined, decorous, and diligent. Class decorum includes the use of the polite form of address ("Mr." or "Miss" with surname), and follow other customs of etiquette. The Catholic tradition witnesses to the dignity of each human person. This entails respect for the human person who expresses his or her identity within a diverse range of perspectives (race, gender, culture, age, religion, socioeconomic level, experience, etc.). Exposure to diverse points of view is encouraged as they may contribute to the overall wealth of this community of learners.

No food is permitted in class; drinks in containers are allowed.

Academic Integrity: As a student, especially in a philosophy course where the aim is truth, academic integrity is an issue of the highest importance. Academic dishonesty in any form (e.g. plagiarism, cheating, lying, improperly collaborating on work) will not be tolerated. The work you turn in must be your own, and any use of the ideas of others must be properly cited.

In this course, the default penalty for academic dishonesty is a final grade of "F" on that assignment, and all such incidents are reported to the Provost. However, penalties will be assessed according to circumstances; the maximum penalty for academic dishonesty is failure of the course (see details below).

Please also note that the University may dismiss a student for ethical infractions. Please see the 2020–2021 Catalog for further details, set forth in the University's "Ethics Code." If you have any questions about what constitutes academic dishonesty, please do not hesitate to ask me.

Details: The automatic penalty for plagiarism is a complete loss of points for that assignment and its being reported to the Provost as an ethical infraction. If the assignment is a relatively minor one (typically: worth 3% or less of the total grade for the course) *and* it is the student's first infraction in the course, then the automatic penalty will be applied and will serve as a warning. However, if the assignment is not a minor one *or* it is not the student's first infraction in the course, then the default penalty will be failure of the course.

Use of Artificial Intelligence: The use of any artificial intelligence (AI) tools to generate the final product of any assignment in this class is prohibited.

Ethical Code: Each member of the Newman University community is expected to conduct themselves according to the Newman Code. The class will follow the "Ethical Code" Both may be found in the current Student Planner Handbook.

Accommodations: If any member of this class feels that he or she has a disability of any nature whatever, the instructors and the Office of Disabled Student Services will work with you to provide reasonable accommodations to ensure that you have a fair opportunity to perform in this class. Please advise the instructors of such a disability and the desired accommodations at some point before, during, or immediately after the first scheduled class period.

Opportunities for Academic Assistance: The Newman University community is committed to your academic success. **At any time that you feel a need, you may access the following support services directly from the Student Success Center, Dugan Library and Conference Center, Ext. 2318:**

- Tutoring with subject tutors across multiple disciplines
- Online tutoring through TutorMe (found on Canvas)
- Confidential Project Care referrals
- Disability Support Services
- International Student Services
- Career Services and support
- Make-up Exams (found at: https://newmanu.accudemia.net/login)
- **Opportunities for Counseling Services:** Twelve free in-person counseling sessions per year (Dugan Library and Conference Center, Ext. 2318); Or unlimited Telehealth Sessions: UWill Mental Health and Wellness: register with NU email address at https://app.uwill.com/

Libraries: Dugan Library provides a print book collection as well as access to millions of full-text articles for immediate download. Print books may be checked out for 30 days. The research databases can be accessed at any time from both on and off campus. You will need your campus login to access the online resources. LibGuides provided on the library website contain specific information on accessing and using resources: newmanu.libguides.com.

In addition to the print books and full-text online articles, all students have access to interlibrary loan at no charge. Books not owned by Dugan Library may be borrowed from a network of thousands of libraries across the country. Copies of articles that are indexed but not available full-text in the databases can also be requested at no charge to students.

Our librarians are able and willing to assist you through the research process. They are available to answer questions about the library, its resources and how to use them effectively. Individual appointments for research are available. Email, phone or stop-by the library for assistance.

Wesley Cornett, cornettw@newmanu.edu or 316-942-4291 ext. 2107

Disclaimer: The above policies are not meant to be exhaustive by foreseeing every exigency that can arise during the conduct of the course. The instructor reserves the right to use his prudential judgment to best meet the needs of students for the successful completion of the course. The following course outlines may be modified according to the instructor's prudential judgment so as to best meet the concrete needs of the students in the course. In either circumstance, students will be informed should such changes be necessary.

Notes on the Reading of Philosophical Texts

(*with thanks to Dr. V. B. Lewis*)

(1) **You haven't read a book once until you've read it twice.** First read a book or assignment quickly through to get a sense of the overall argument and architecture. Reread it slowly for details and consistency.
(2) **Be naïve.** When you begin to study a great book, try to understand it as its author did. Put aside—at least initially—questions of historical context and biography and try to understand the argument as if it were addressed to you by a wise and honest friend. Treat the author as your teacher. Begin with the assumption that you have something important to learn. Criticism and evaluation are pointless if one does not first establish the most complete and plausible meaning of the author's argument.
(3) **Treat nothing as an accident.** Read a great book as if every word were essential. Often the most important statements elude us because we read past them due to carelessness or complacency. This is especially important in cases where one detects what appears to be an obvious contradiction or lapse in logic. Often, such apparent or intentional blunders are intended to point the careful reader to more sustained thought about the matter under consideration.
(4) **Read actively (mentally).** Great books mean to educate us about the world, so keep the world in mind when reading. Treat the question being discussed as a live question, one that it is important for you to resolve or at least to clarify.
(5) **Read even more actively (physically).** Read with pencil and paper ready. Mark up you texts, make lists, take notes, and construct summaries and outlines. It is often useful to make one's own index while reading so that specific passages can be easily recalled and compared. Scribbling down definitions of key terms that are peculiar to the author or text is also useful.
(6) **Read in a thinking-friendly environment.** Read in a quiet place, where you will not be distracted or disturbed. Take a short break every 45 minutes or so in order to recharge and allow for renewed concentration.
(7) **Keep a Reading Notebook.**

"[The Greek writers] took it for granted that the reader would actively think; and the writer's sentences were to serve as so many blazes to enable him to follow the track of that writer's thought." (C. S. Peirce, *The New Elements of Mathematics*, vol. 4, p. 236)

"The worst readers are those who proceed like plundering soldiers: they pick up a few things they can use, soil and confuse the rest, and blaspheme the whole thing." (Friedrich Nietzsche)

Course Reading Schedule

In the table below, *CG* refers to this *Course Guide*; *CR* means *Course Reader*.

Week	**Mon**	**Wed**	**Fri**
1	Aug 19: Introduction	Aug 21: *CG*, ch. 1	Aug 23: *CG*, 2.1–2.2
2	Aug 26: *CG*, 2.3	Aug 28: *CG*, 2.4	Aug 30: *Cont'd*
3	Sept 2: **Labor Day**	Sept 4: *CG*, 3.1–3.2	Sept 6: *CG*, 3.3–3.5
4	Sept 9: *CG*, 4.1–4.2	Sept 11: *Cont'd*	Sept 13: *CG*, 4.3–4.4
5	Sept 16: *CG*, 5.1–5.2	Sept 18: *CG*, 5.3	Sept 20: *CG*, 5.4
6	Sept 23: *CG*, 5.5	Sept 25: *CG*, 5.6–5.7	Sept 27: *CG*, Prel., 6.1–6.2
7	Sept 30: *CG*, 6.3–6.4	Oct 2: *CG*, 7.1–7.2	Oct 4: *CG*, 7.3
8	Oct 7: *CG*, 7.4	Oct 9: *CG*, 7.5–7.6	Oct 11: **Fall Break**
9	Oct 14: *CG*, 8.1–8.2	Oct 16: *CG*, 8.3	Oct 18: *CG*, 8.4–8.5
10	Oct 21: *CG*, 9.1–9.2	Oct 23: *CG*, 9.3	Oct 25: *CG*, 9.4–9.5
11	Oct 28: *CG*, 10.1–10.2	Oct 30: *CG*, 10.3–10.5	Nov 1: *CG*, 11.1–11.2
12	Nov 4: *CG*, 11.2–11.3	Nov 6: *CG*, 11.4–11.5	Nov 8: *CG*, Interlude
13	Nov 11: *CG*, 12.1–12.2	Nov 13: *CG*, 12.3	Nov 15: *CG*, 12.4–12.5
14	Nov 18: *CG*, ch. 3	Nov 20: *Cont'd*	Nov 22: *CG*, ch. 14
15	Nov 25: *Cont'd*	Nov 27–Dec 1: **Thanksgiving Break**	
16	Dec 2: **Scholar's Day**	Dec 3–6: **Final Exams**	

Paper	**Assigned**	**Draft Due**	**Final Due Date**
First paper	Wed, Sept 4	*Optional*	Fri, Sept 27
Second paper	Mon, Sept 30	Mon, Nov 4	Mon, Nov 25

Final Exam: Thursday, December 5, 1:00pm–2:50pm

Prayers for Students

St. Thomas's Prayer Before Study

Creator ineffabilis, qui de thesauris sapientiae tuae tres Angelorum hierarchias designasti et eas super caelum empyreum miro ordine collocasti atque universi partes elegantissime distribuisti: Tu, inquam, qui verus fons luminis et sapientiae diceris ac supereminens principium, infundere digneris super intellectus mei tenebras tuae radium claritatis, duplices, in quibus natus sum, a me removens tenebras, peccatum scilicet et ignorantiam. Tu, qui linguas infantium facis disertas, linguam meam erudias atque in labiis meis gratiam tuae benedictionis infundas. Da mihi intelligendi acumen, retinendi capacitatem, addiscendi modum et facilitatem, interpretandi subtilitatem, loquendi gratiam copiosam. Ingressum instruas, progressum dirigas, egressum compleas. Tu, qui es verus Deus et homo, qui vivis et regnas in saecula saeculorum. Amen.	***O Creator Ineffable***, who in the riches of Your wisdom did appoint three hierarchies of Angels and in wondrous order over the empyrean heaven did set them, and who did apportion the parts of the universe most gracefully: may You, who are the true fountain of light and supereminent source of wisdom, deign to pour into the obscurity of my intellect the rays of Your infinite brightness, removing from me the twofold darkness in which I was born, namely, sin and ignorance. May You, who give eloquence to the tongues of the speechless, instruct my tongue and onto my lips pour the grace of Your benediction. O give me keenness in understanding, capacity in remembering, breadth and ease in learning, subtlety of interpreting, and a gracious command of words. May you dispose the beginning, order the progress, and perfect the end: You, who are true God and true Man, who lives and reigns unto ages of ages. Amen.

Veni, Sancte Spiritus

Veni, Sancte Spiritus, reple tuorum corda fidelium, et tui amoris in eis ignem accende.	***Come, Holy Spirit***, fill the hearts of Thy faithful and inkindle in them the fire of Thy love.
V. Emitte Spiritum tuum et creabuntur; ***R.*** Et renovabis faciem terrae.	***V.*** Send forth Thy Spirit and they shall be created ***R.*** And Thou shalt renew the face of the earth.
Oremus: ***Deus***, qui corda fidelium Sancti Spiritus illustratione docuisti: da nobis in eodem Spiritu recta sapere, et de eius semper consolatione gaudere. Per Christum Dominum nostrum. Amen.	Let us pray: ***O God***, Who didst instruct the hearts of the faithful by the light of Thy Holy Spirit, grant us that, by the same Spirit, we may be truly wise, and ever rejoice in His consolation. Through Christ our Lord. Amen.

St. John Henry Cardinal Newman – The Mission of My Life

God has created me to do Him some definite service. He has committed some work to me which He has not committed to another. I have my mission. I may never know it in this life, but I shall be told it in the next. I am a link in a chain, a bond of connection between persons. He has not created me for naught. I shall do good; I shall do His work. I shall be an angel of peace, a preacher of truth in my own place, while not intending it if I do but keep His commandments.

Therefore, I will trust Him, whatever I am, I can never be thrown away. If I am in sickness, my sickness may serve Him, in perplexity, my perplexity may serve Him. If I am in sorrow, my sorrow may serve Him. He does nothing in vain. He knows what He is about. He may take away my friends. He may throw me among strangers. He may make me feel desolate, make my spirits sink, hide my future from me. Still, He knows what He is about.

Protrepticus

> Man is the measure of all things: of things which are, that they are, and of things which are not, that they are not.
>
> – Protagoras (cf. Plato, *Theaetetus*, 152a)

> Knowledge also, and perception, we call the measure of things, for the same reason, because we know something by them—while as a matter of fact they are measured rather than measure other things. But it is with us as if some one else measured us and we came to know how big we are by seeing that he applied the cubit-measure a certain number of times to us.
>
> – Aristotle, *Metaphysics*, X.1, 1053a30–35

What is knowledge? This course aims to answer that question. In the epigraphs above, we find two classic responses.

The first is from Protagoras, portrayed in one of the texts we read in this course. At first glance, Protagoras's view lies on the side of subjectivity or relativism. Here, the knower, through his own action, is the one who makes knowledge what it is, not the known and its causality.

The response to Protagoras, from Aristotle, implies a quite distinct and just as classic answer to the main question of our course. Aristotle's is also the answer our course aims to elucidate and defend.

For now, note the contrast between the activity of measuring that each philosopher uses to describe knowledge. Is knowledge an activity of the one knowing? Is it pure passivity on the part of the knower? Or is there a certain measure of both—what knowledge is is not purely passive, but we participate in some "being measured" by something other?

Working out the answers to our course question, and settling the dispute between Protagoras and Aristotle, will help us to fulfill the command of the Delphic Oracle, *Know Thyself*, which is the epigraph for this *Course Guide*. This has traditionally been interpreted as a divine command, and that in and of itself tells us something about knowledge. (For instance, can you give such a command to a plant or animal? Would a superior, angelic mind

need such an admonition? It is in the imperative mood—who is giving the command?)

Such is the task we begin in this course. In what follows, we ought to consider in a bit more detail the relationship between metaphysics and natural theology as well as the order and content of this course. Before that, however, a word on where this course falls within an overall program of studies.

Prolegomena

The sequence of studies here at Newman for the Philosophy for Theological Studies major has been designed with a long tradition of philosophical and theological education in mind. The purpose of this protrepticus* is to inform you, the students, about some of this background and how it orders the sequence of courses overall, as well as to exhort you to the study of this particular course.

Now, there are certain preparations which are required for the study of philosophy, which is the love or pursuit of wisdom. The formal requirement, long recognized since the time of Aristotle, is the study of logic, which is the art or science of right reasoning. A habitual knowledge of logic enables you to reason and think well, easily and without error.

The more informal requirement is the study of the history of philosophy, which introduces you to various traditions of philosophical inquiry. The history courses do not counsel despair at finding the truth. Rather, they seek to avoid the impression that studying the details of disagreements among philosophers is what philosophy is. These courses use philosophy's own history to motivate you towards a more disciplined, attentive wonder about resolving philosophical questions, for philosophy is not easy.

What about studying philosophy itself? The most fundamental division of the study of philosophy follows from the nature of philosophy as the love or pursuit of wisdom. Since wisdom is knowledge held in light of first or fundamental principles, and knowledge must be of the truth, the sorts of wisdom arise from the distinction of the truths knowable through first principles.

However, there is not a single sort of first principle—at least not in the sort of human wisdom which the philosopher seeks. On the one hand, some truths we seek to know for their own sake. For

* The word means "a piece of writing or speech intended to persuade or instruct, via late Latin from Greek *protreptikos* 'instructive', from *pro-* 'before' + *trepein* 'to turn'." (New Oxf. Am. Dictionary) Famously, Aristotle's own "protrepticus" exhorting his students to the study of philosophy was lost, and now exists only in fragmentary quotations in other ancient authors.

instance, the mathematician delights in knowing that lines cannot be represented by rational numbers, or the physicist marvels at the idea that mass and energy are convertible. On the other hand, some truths we seek to know for the sake of doing something or acting well. For example, by knowing what friendship truly is, through careful reflection upon our own experience and those of others, we can begin to see its goodness and then seek ways to bring it about in our lives.

If we seek truth for its own sake, this is a sort of contemplative knowledge, or "speculative" knowledge, in the older sense of that word. If we seek truth for the sake of doing or acting, this is a sort of practical knowledge. Consequently, philosophy is divided into speculative and practical parts.

Speculative philosophy studies an order of things and their causes that exists already, before our knowledge or activity intervene in that order. Practical philosophy, by contrast, studies an order of things and their causes that depend upon our knowledge and are only brought about through our activity. Consider this way of putting it: In practice, things are at first known but not already done or made by us (as of yet); while in theory, things are at first made or done, but not by us, and they are also unknown to us (as of yet).

Based upon this, which part of philosophy is more fundamental, or more important?

Thus, students taking the Philosophy for Theological Studies major should think of their courses according to the following division.[†]

- Preparatory Sequence
  - PHIL 1023 Logic
  - PHIL 214S/2143 Ancient Philosophy
  - PHIL 215S/2153 Medieval Philosophy
  - PHIL 216S/2163 Modern Philosophy
- Practical Philosophy Sequence
  - PHIL 302S/3023 Philosophy of the Human Person
  - PHIL 303S/3033 Ethics
  - PHIL 307S/3073 Catholic Social & Political Philosophy
- Speculative Philosophy Sequence
  - PHIL 302S/3023 Philosophy of the Human Person
  - PHIL 323S/3243 Thomistic Metaphysics
  - PHIL 324S/3413 Thomistic Epistemology
  - PHIL 333S/4883 Natural Theology

We can now consider how this course in particular fits within the major as a whole.

[†] PHIL 302S is included in both divisions because the content of the course includes aspects of both speculative and practical philosophy, although the course is primarily speculative.

Goals of This Course

The main goal of the course arises from the nature of its subject matter. In keeping with the Delphic command to *Know Thyself*, we can describe epistemology as the self-reflective investigation of the nature and properties of knowledge. As we will discuss below, this places the course among topics related to logic, the study of the human soul, and metaphysics. It is a difficult subject, one of the capstones to the philosophy major. The self-knowledge we hope to achieve through the readings, discussions, and reflections this semester is a goal that is difficult but worthwhile to attain.

Another goal of the course is more extrinsic, and yet related to, its subject matter. This further benefit arises from the relationship between what we can know through natural reason and what we can know through faith. This is an especially demanding question when studying philosophy so as to prepare for theological studies.

Between faith and reason—the despair of modern self-knowledge

To illustrate this, consider the following reflection by an anonymous student after the end of his undergraduate career. The student is from another Catholic college, and he reports an experience that—ever since I read it—I have hoped to help my students avoid. Whether or not what the student describes was caused by poor teaching or by poor studying does not quite matter in relation to the lesson it provides:

> One thing I have realized is how disconnected from science my philosophical education was. It's a huge problem. In my experience, there was zero healthy skepticism, and a lack of skepticism in philosophical thought seems to prevent communication with other disciplines like physics. When your philosophy is part of your theological dogma's explanation, you have to orient the world to your philosophy, and you're not really free to revise philosophy according to your experience anymore, unless you want to endanger some of the rational basis for certain dogmas (like Transubstantiation).

Note the operative role that skepticism plays in the student's argument above. What is "healthy skepticism"? Does it differ from being honest with the limits of one's personal knowledge? Note also how philosophy being "part of" the explanation of dogma is presented as a type of enslavement of reason, since then one is not

"free to revise philosophy according to [one's] experience." Note, finally, how the student's concerns about the relationship between philosophy and the modern sciences seem to be the motivation for the conclusion he draws concerning the relationship between philosophical conclusions and theological dogma.

One benefit of this course, therefore, is that I hope it shows you that the student's thought process in the above reflection is wrong, and, more importantly, why it is wrong. This requires properly understanding the nature, excellences, and limitations of human knowledge. We hope to avoid misology (the hatred of reason) and a studied indifference to the truth. This is how the course aims to prepare you for further theological studies. This goal is also difficult but nonetheless worthwhile to attain.

Arranging the goals of the course

This ulterior motive or added benefit of the course is, however, not merely negative, to avoid the errors described above. We also want to approach and contemplate the relationship between faith and reason, between philosophy and modern science, between the personal and subjective account of knowledge and the impersonal, objective accounts of both moderns and ancients alike. We hope to see the inner possibility, the core conditions, for our opinions, beliefs, insights, sciences, accepted dogmas, and the existence of truths beyond human reason.

Here, it would be opportune to review, based upon the course syllabus, the objectives of the course. **By the end of this course, the diligent and attentive student should:**

(1) be able to articulate (a) what knowledge is, (b) what are its types and their methods, and (c) how the logic of knowledge relates to metaphysics and the modern sciences (e.g., psychology, neuroscience);
(2) be able (a) to explain and defend at an appropriate level the arguments for the nature of different types of knowledge, (b) address various objections, and (c) discuss clearly and cogently the various contributions of St. Thomas Aquinas to this area of philosophy;
(3) be able to competently discuss (a) the various attributes of knowledge and truth, and (b) how different types of intellects relate to knowledge and truth;
(4) and, lastly, be able to articulate how epistemology provides a ground for a deeper understanding of human experience and Catholic theology.

As should be sufficiently clear from examining the table of contents of this *Course Guide*, the course addresses parts of the first goal

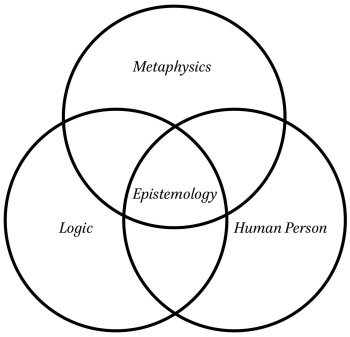
throughout the semester. Parts II and III focus on the logical elements of the second and third goals, while Part IV focuses on their metaphysical elements. The fourth objective is taken up at various opportune places throughout the course. Let us consider in a bit more detail how these objectives will be achieved, based upon the order and materials we will be studying.

Order & Content of the Course

Students should familiarize themselves with this *Course Guide*, especially the table of contents and the introductory sections to each chapter. Beyond that, what follows are some brief comments about what to expect as one progresses through the course.

In what follows, I will first describe in more detail what our course will be doing. This will involve comparing this course to other courses, contrasting the course with alternative approaches, and highlighting some of the specific topics and questions we will address. Subsequently, I will discuss reading for the course and the books we will read.

The attempts to know knowledge



The principal overlaps of this course with others in the curriculum.

Because epistemology is that part of philosophy in which we want to know what knowledge is—to *know ourselves* as knowers—it is both an exemplarily self-referential subject as well as one which must draw upon various parts of philosophy. The principal ones are logic, philosophical psychology—i.e., the study of the human person—and metaphysics.

Thus, this course completes the PHIL 1023 course by exploring the logically necessary and sufficient conditions for knowing in various degrees. The course deepens the subjects first studied in PHIL 302S. The course adds to PHIL 323S an investigation of the transcendental of truth. By treating of belief as the ground for action, conscience, and religion (with St. John Henry Newman), the course also complements the study of ethics.

Nonetheless, the course will also involve many other topics from ethics as well as history and politics. Since truth, the eminent property of knowledge, is a transcendental, it should not be a surprise that it incorporates so many subjects. This means, however, that the commanding formality of the course is metaphysics, or first philosophy.

The philosophical movements of the course track the four parts of the *Course Guide*, as follows.

– **Part I: We must first raise questions and difficulties to be settled by the course. What do we *mean* by "to know" or "knowledge"?**
    · This is proper philosophical procedure, taught by Aristotle, who learned it from Plato, who learned it from Socrates, the master of *aporiae*.‡
– **Part II: We then consider various paradigm cases of scientific knowledge. What does it mean to *really* know something?**
    · We begin by studying cases of mathematics, which is typically held up as a paradigm of knowledge; afterwards, we consider examples from the natural sciences.
    · In this part of the course, we focus on the conditions of science, with particular guidance from Aristotle's tradition of logic.
– **Part III: We turn next to consider other cases of knowledge. What does it mean to *only* believe something? When might this be an advantageous good?**
    · This will allow us to contrast the strongest instances of knowledge with the apparently weaker, less abstract, and less nobles cases of knowledge: opinion, probable knowledge, and beliefs.
    · Our guide in this part of the course will be St. John Henry Cardinal Newman, through a close reading and discussion of his masterwork, *An Essay in Aid of a Grammar of Assent*.
– **Part IV: We close by contemplating the causes of knowledge. How is the human person capable of knowledge?**
    · After the previous two parts of the course, which focus upon the logical conditions and experiential accounts of knowledge, we turn to tie knowledge to its causes in the human person and in God.
    · Our guide in this part of the course will be St. Thomas Aquinas, along with readings engaging the perennial philosophy of knowledge he inspired.

‡ "For those who wish to get clear of difficulties it is advantageous to discuss the difficulties well; for the subsequent free play of thought implies the solution of the previous difficulties, and it is not possible to untie a knot of which one does not know. But the difficulty of our thinking points to a 'knot' in the object; for in so far as our thought is in difficulties, it is in like case with those who are bound; for in either case it is impossible to go forward. Hence one should have surveyed all the difficulties beforehand, both for the purposes we have stated and because people who inquire without first stating the difficulties are like those who do not know where they have to go; besides, a man does not otherwise know even whether he has at any given time found what he is looking for or not; for the end is not clear to such a man, while to him who has first discussed the difficulties it is clear. Further, he who has heard all the contending arguments, as if they were the parties to a case, must be in a better position for judging." (Aristotle, *Metaphysics*, III.1, 995a26–b3)

While we will frequently remark on this order and division throughout the *Course Guide*, students should notice this right away. The course will first raise questions and difficulties (Part I), then study cases or examples of a wide range of types of knowledge so as to reflect on the logic of knowing (Parts II and III), and will end by connecting the logic of knowledge to the psychological and metaphysical causes of knowledge (Part IV). This will allow us—with hope, and to the degree possible for us—to resolve the difficulties raised in Part I of the course.

– *Contrasting approaches and our starting point*

The study of epistemology has something of a fraught history. Those of you who have taken the history of modern philosophy course should know something of this story. In particular, you should recall the debates between the rationalists and the empiricists, which culminated in the rise and fall of idealism.

In the previous century, a popular approach to teaching epistemology in the scholastic tradition focused on critically addressing these early modern and contemporary approaches to knowledge. However, various Thomists in the 20th-century argued that this "critical" approach was fruitless. Along the way in our own course, we will see why they were right.

That is, while we will engage in skirmishes with the early-modern skeptics, rationalists, empiricists, and idealists, our main teachers will be Plato, Aristotle, St. Thomas Aquinas, and St. John Henry Newman. In particular, students should keep at the forefront of their minds throughout this course three "guide stars" for all our various readings and discussions:

– The course motto: *Know Thyself* (the famous inscription at the oracle of Delphi).
– The dueling views of Pythagoras and Aristotle about knowledge as a "measure" (see above, p. xix).
– The definition of knowledge "reached" at in Plato's *Theatetus*.

Reading for this course

Reading well in this course is as essential overall and as complementary to the lectures and in-class discussions as a laboratory is to a science course, or studio to an art course, or a clinic practicum to a medical course. That is, just as these components are integral to the intellectual and technical objectives of the course, so too is reading well in a philosophy course.

There are various reasons why this is true of reading well in a philosophy course. The principal ones are the following:

(1) **Texts as teachers:** The primary texts chosen for the course have been written by master philosophers who serve as paradigms of the philosophical act, and all secondary texts have been chosen first and foremost for their pedagogical clarity.
(2) **Texts as sources:** The texts in this course, especially the primary ones, are some of the greatest examples of their kind written on this subject.
(3) **Texts as guides:** The texts for this course have been chosen because of their ability to form and order the mind. Sometimes, this takes place by raising difficulties, or by resolving them. Other texts or readings serve other purposes.
(4) **Texts as models:** The arguments and conclusions contained in the course texts are the exemplary means by which we can hope to arrive at knowing something of the subject of this course for ourselves.

As a consequence, students should take the reading for this course as seriously as science majors take labs, art majors take studio, or pre-med or nursing majors take clinic. Let's look at some of the course books and readings in a bit more detail.

The books for this course

The sources for this course are many and varied. Overall, these texts have been chosen to serve the ulterior purposes of avoiding the pedagogical monotone of hearing from only one teacher (myself), and to help illustrate the perennial character of this topic. It's a well-trodden road, and these authors are all reliable guides.

They are listed in the order in which they will be read:

– **Plato's *Meno* and *Theaetetus*** form the opening movements of the course, and will be read in Chapters 1 and 2 (these books are *separate physical editions*, not in the *Course Readings* packets).
– **Euclid's *Elements*** will be read, at least a selection of it. Our study of the logic of mathematics will look at the first book of this famous geometry text (see *Course Readings*, Volume 1).
– **Aristotle's logical work, the *Posterior Analytics***, will be studied alongside Euclid and others in Chapters 3 through 6.
– **William Wallace, O.P., *The Modeling of Nature***, features, in its second part, an exemplary investigation of the Aristotelian logic of ancient, medieval, and modern natural science. This will be studied along with Aristotle in Chapter 6.
– **St. John Henry Cardinal Newman's *An Essay in Aid of a Grammar of Assent***, will be read during Part III of the course (printed in the *Course Readings* packet, Volume 2). This text will be supplemented by **Hütter's *John Henry Newman: On Truth and Its***

Counterfeits, which comments not only on the *Grammar* but on Newman's thought more broadly.

– **St. Thomas Aquinas's *Summa Theologiae***, and elsewhere in his *corpus*, will structure much of Part III and Part IV (*a separate physical copy is to be obtained*; some supplemental material is in *Course Readings*, Volume 1).
– **Josef Pieper's *The Philosophical Act*** is the fitting conclusion to our course, allowing us to reflect upon the dignity and beauty of human knowledge within the universe of truth.

There is also an extensive collection of texts in the *Course Readings* packet, Volume 1, featuring a perturbing short story from Jorge Luis Borges, famous essays on the philosophy of mathematics by Carl Hempel and G. H. Hardy, the aforementioned essay by Herbert Ratner, an essay on the nature of sensation by Yves Simon and an excerpt from Bernard Lonergan's *Insight*.

Speaking of guides, this *Course Guide* is itself a bit more than a map to the course, and yet far from being an answer key. In the late 19th and early 20th centuries, many courses of philosophy featured "manuals" among the required readings. While they have been, in my estimation, more unjustly than justly maligned, it is easy to see how they could be misused as teaching tools.

The aim of this *Course Guide* is to provide the same order to a long and complicated course of study as did the manuals, but without running the risk of reading like an "answer key" that students can simply memorize and thereby "learn" the material. Thus, you will notice that there are *many* questions in each chapter. A such, you should be forewarned that the *vast majority* of what I hope you will learn in the course by using this *Course Guide* is not itself written in down in the indicative mood in this book.

Conclusion: Are We the Only Creatures Who Search for Truth?

Earlier, I had suggested that the imperative mood of the Delphic oracle *Know thyself* indicates that we are the sorts of knowers who must search for the truth. God does not need to be reminded to know or be aware of the truth. If we follow the medieval philosophers (pagan and Christian alike), the angels have minds that connaturally possess truths from the inception of their existence. Neither do they need such a command. Lastly, while the higher animals draw close to some of our cognitive capacities, none appear to possess awareness sufficient for the philosophical quest to know oneself.

It is *our* sort of mind that must "hunt for" and "cast about" in hopes of finding knowledge. This seems to be something unique to being human. We are the creatures who naturally search for the truth. Let us, therefore, boldly begin our inquiry to know the truth about knowledge.

Part I

What Is Knowledge?

What Does It Mean to Know? 1

> Knowledge is prized higher than correct opinion, and knowledge differs from correct opinion in being tied down.
>
> – Plato, *Meno*, 98a

1.1 The Beginning of the Course

What is knowledge? How does one distinguish opinion from correct or true opinion, and this from knowledge? Socrates's metaphor in the passage of the *Meno* quoted in the epigraph is one clue to be discussed during our initial foray into answering the central topic question of our course.

As discussed in the Proptrepticus (see p. xix), our approach to answering this question has many parts and stages. The beginning, however, follows Plato. We will read and discuss two of his dialogues: *Meno* and *Theaetetus*.

Goals for this chapter

(1) To introduce the topics of the course
(2) To begin to wonder what knowledge is and how we acquire it
(3) To present various difficulties about this topic

Readings for this chapter

– Optional: Borges, "The Library of Babel" in *CR* (*Course Readings* packet)
– Plato, *Meno* (all)
– Supplemental: Aristotle, *Posterior Analytics*, I.1

Chapter Questions

When completing the reading and study materials in this chapter, you should have the following general questions in mind, which are also of use when reviewing the course:

The Chapter Questions are listed all together on pp. 199ff.

– What does it mean to ask about what knowledge is?
– How does knowledge come to exist in our minds?

– What is the difference between really knowing something and merely having an opinion?

1.2 The Library of Babel & Knowledge

This section is a guide for the (optional, but highly recommended) reading of a short story by Jorge Luis Borges, "The Library of Babel." Borges (1899–1986) was an Argentinian writer and essayist, and this short story is just one among many in his library of philosophical fictions. The main reason we are reading this fictional work in this course is that it presents dramatically and poetically what we are sure to encounter. Is Borges as helpful in telling us how to avoid them? Does the story contain clues?

Reading questions

Before you read, consider the following: *If you have seven different tasks to perform which can be done in any order, six days to do them, and you need complete only one task per day, then how many different ways could you organize your to-do list? If a computer is programmed to randomly generate English alphanumeric symbols, would it ever produce the complete works of Shakespeare?*

As you read, consider the following questions:

- What is the Library? What strikes you most about It?
- What are we suppose to learn from the Library?
- Is the universe of the Library a pessimistic or an optimistic one, when it comes to the search for truth?
- Based on your previous knowledge, which philosophical views are represented in the construction of the Library?

Post-reading

The first class will discuss the course syllabus and the Protrepticus. Borges's short story is really for its own sake.

In the interim between the first class and our discussions of Plato, it would be worthwhile to review and to consider some of the following background and context for our course.

Background & context

We will soon develop a clearer and more detailed list of questions to guide our inquiry. For now, consider the following metaphysical issues and questions.

– Some metaphysical questions about knowledge

- Being is divided into the various categories. In particular, in regard to knowledge, consider certain qualities (dispositions, habits, powers), relations, as well as action and passion.
- What is a motion? What is an action? What is a passion? Is knowledge a motion?
- What sort of being is knowledge? It seems to involve change; it seems to involve accidents and substances. Should we say that "things" are "in the world" and "in our knowledge"?
- When I think of a proposition ("I am standing here") does that proposition line up with or match or parallel a "state of affairs" in the world? Is this a "relation"?
- What is a "subject" of knowledge? What is an "object" of knowledge? Do these differ?

– The known and the knower, subject and object

Based upon previous courses in the history of philosophy, the following table should be used to help review the famous debate between three schools of thought.

How is a knower related to the known?	**Does the knower become the known?**	**Is knowledge an effect in the subject, where the object is the cause?**
Realists (e.g., Aristotle, Aquinas)	Yes	Yes
Representationalists (e.g., Descartes, Locke, the Epicureans)	No	Yes
Idealists (e.g., Berkeley, Kant)	No	No

– The ancients and the nature of knowledge

While we will soon read Plato's *Theaetetus*, the founding document of epistemology, we should know that the various Pre-Socratics also considered the question of what knowledge is:

> We see Earth by means of Earth, Water by means of Water, divine Air by means of Air, and destructive Fire by means of Fire; Affection by means of Affection, hate by means of baneful Hate.

Empedocles, DK 109; this and the following fragments are from the Freeman translation.

The following fragments from Democritus have been rearranged to provide some sort of logical order—admittedly, it is an interpretation.

> There are two sorts of knowledge, one genuine, one bastard (or 'obscure'). To the latter belong all the following: sight, hearing, smell, taste, touch. The real is separated from this. When the bastard can do no more—neither see more minutely, nor hear, nor smell, nor taste, nor perceive by touch—and a finer investigation is needed, then the genuine comes in as having a tool for distinguishing more finely.

Democritus, DK 11.

> Sweet exists by convention, bitter by convention, color by convention; atoms and Void (alone) exist in reality . . . We know nothing accurately in reality, but (only) as it changes according to the bodily condition, and the constitution of those things that flow upon (the body) and impinge upon it.

Democritus, DK 9.

> We know nothing about anything really, but Opinion is for all individuals an inflowing (? of the Atoms).

Democritus, DK 7.

> One must learn by this rule that Man is severed from reality.

Democritus, DK 6.

> It will be obvious that it is impossible to understand how in reality each thing is.

Democritus, DK 8.

> It has often been demonstrated that we do not grasp how each thing is or is not.

Democritus, DK 10.

> We know nothing in reality; for truth lies in an abyss.

Democritus, DK 117.

> Color exists by convention (usage), sweet by convention, bitter by convention. (Reply of the senses to Intellect): "Miserable Mind, you get your evidence from us, and do you try to overthrow us? The overthrow will be your downfall."

Democritus, DK 125.

The Epicureans, also materialists, considered knowledge in the soul to be little "idols," little representatives of the world outside.

> Further, there exist outlines [i.e., images, *eidola*] which are similar in shape to solids, only much finer than observes objects. . . . These outlines we call 'images'. Further, since their movement through the void occurs with no conflict from [atoms which] could resist them, it can cover any comprehensively graspable distance in an inconceivably [short] time. . . . One must also believe

Inwood and Gerson, eds., *Hellenistic Philosophy*, pp. 8–9.

that it is when something from the external objects enters into us that we see and think about their shapes. . . . [F]or this reason, they give the presentation of a single, continuous thing, and preserve the harmonious set [of qualities] generated by the external object, as a result of the coordinate impact from that object [on us] which [in turn] originates in the vibration of the atoms deep inside the solid object.

1.3 The Meno Paradox & Daedalus's Statues

This section corresponds to the reading of Plato's *Meno*.

Reading questions

Before you read, consider the following: *Based on your prior knowledge of Plato, what does he (or Socrates) think that knowledge really is? If you had to explain to someone—who already speaks English—the meaning of an archaic or unfamiliar English word, how would you do it? What does you answer imply about learning and teaching? If the person doesn't speak English, how would this change your approach to explaining a word's meaning? Does this change the implications about learning and teaching?*

As you read, consider the following questions:

- The main question of the dialogue seems to be—initially—far from the question of knowledge. How does the investigation of the definition of virtue relate to the nature of knowledge?
- What is the point of the discussion which Socrates has with Meno's servant about how to double a square? What is the answer? That is, how do you double a square?
- What is the purpose of Socrates's use of the statues of Daedalus as a metaphor? What distinction does this help to draw?
- How does what is at stake in the passage about Daedalus's statues relate to what is at stake in the passage about how to double a square?

Post-reading

We should consider some examples of "true," "right," or "correct opinion" based upon the closing portion of the dialogue. What examples of such opinions? What about the discoveries of the various modern sciences? Do we *know* about the existence of atoms, for example? Or do we merely have a "correct opinion" about them, just like the person who knows how to get to a certain city, but had never been there himself?

1.4 Conclusion

After this opening salvo from Plato, we need to prepare ourselves for the next round of *aporiae*. The word *aporia* is Greek for "a roadblock" (literally, it is "*a*" + "*poros*," without a way). Plato frequently ends his dialogues in such a state of apparent cognitive confusion. However, as his best student, Aristotle, knew well, the *aporia* was also filled with clues about how to find the solution, the "way through" to conceptual roadblock. This is why he frequently fills his works with aporetic sections. This is also why St. Thomas Aquinas begins and ends his scholastic *quaestio* format with objections and replies to them.

That is, Plato's *Meno*, concerning how knowledge comes to be in the soul, is itself a self-referential, practical example of how knowledge comes to be in the soul. We will encounter another exemplar of the Platonic method in the next chapter.

Plato's *Theaetetus*: Searching for Knowledge

2

> The investigation of the truth is in one way hard, in another easy. An indication of this is found in the fact that no one is able to attain the truth adequately, while, on the other hand, no one fails entirely, but every one says something true about the nature of things, and while individually they contribute little or nothing to the truth, by the union of all a considerable amount is amassed. Therefore, since the truth seems to be like the proverbial door, which no one can fail to hit, in this way it is easy, but the fact that we can have a whole truth and not the particular part we aim at shows the difficulty of it.
>
> – Aristotle, *Metaphysics*, II.1, 993a30–b8

2.1 Introduction: Footnotes to Plato

The British philosopher Alfred North Whitehead once observed that "the safest general characterization of the European philosophical tradition is that it consists of a series of footnotes to Plato." It is partly for this reason that we turn to read Plato's *Theaetetus*, which John M. Cooper calls "the founding document of what has come to be known as 'epistemology'." You could say, then, that the study of knowledge—epistemology—is a series of footnotes to Plato's *Theaetetus*. However, we also turn to this dialogue, in conjunction with the *Meno*, to better understand certain of the authors of those footnotes, especially Aristotle.

Whitehead, *Process and Reality*, p. 39.

Editor's introduction to the *Theaetetus*, in *Plato: Complete Works*, p. 157.

However, we also read Plato's *Theaetetus*, a literary masterpiece, for the sake of entering into the search for knowledge as active inquirers, not merely passive onlookers. Thus, Myles Burnyeat writes that "This is a dialogue, not a treatise. As such it invites us not merely to witness but to participate ourselves in the philosophical activity of the speakers." While one might object that the better "treatises" invite participation, and not merely witness, his point is an important one. Plato wrote his dialogues not only to communicate philosophical truths, but to show through imitation the nature and performance of the activity of philosophizing.

Burnyeat, *The Theaetetus of Plato*, p. 2.

Note that the translator of our edition of the *Theaetetus*, Joe Sachs, has an introduction which you are free to read as a secondary source. Other commentaries are found in the editions of this book by Myles Burnyeat and Seth Benardete.

Goals for this chapter

(1) To read and discuss Plato's *Theaetetus*
(2) To continue to wonder what knowledge is, how we acquire it, and encounter various difficulties about this topic
(3) To learn certain lessons from Plato's *Theaetetus* about how to address the subject matter of our course

Readings for this chapter

– Plato, *Theaetetus* (all)

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– What are the different definitions of knowledge in the *Theaetetus*, and what is insufficient about each of them?
– How do Socrates and Theaetetus refute Protagoras? What about Heraclitus?
– What are the important lessons the *Theaetetus* teaches us about trying to know the nature of knowledge?

2.2 Distinguishing Knowledge from Sensation

This section corresponds to reading from *Theaetetus*, 142a–165e.

Reading questions

Before you read, consider the following: *Why is it true that we can say "I see that . . . " to mean what we do with our eyes as well as what we do with our minds?*

As you read, consider the following questions:

- What is the dramatic setting of the dialogue? What is striking or what seems important about this context?
- Who are the main characters of the dialogue? What are their characteristics?
- Why does Socrates talk with Theaetetus and not Theodorus?
- What are the first two definitions of knowledge?
- Why does Socrates compare himself to a "midwife"?
- How does the discussion begin to involve Protagoras?
- Why does Heraclitus become involved in the discussion?
- What responses are proposed to Protagoras and Heraclitus?

Post-reading

As we read and discuss this section of the *Theaetetus*, recall that Plato was not only a student of Socrates, but also a student of Cratylus, who was a student of Heraclitus. So, in part, the *Theaetetus* shows Plato coming to grips with the views of his teachers, just as Aristotle later reevaluates what Plato had taught him.

What does this "pedagogical lineage" tell us about the nature of human knowledge in general, and the attempt to know the nature of knowledge specifically?

For the sake of our discussion in Chapter 4 (see pp. 33ff), it is worth remembering what mathematical discovery is attributed to Theaetetus in this part of the dialogue. This discovery will serve as one of our paradigm examples of knowledge.

2.3 Getting Serious: Protagoras & Heraclitus

This section corresponds to reading from *Theaetetus*, 166a–187c.

Reading questions

Before you read, consider the following: *Is it possible to prove someone wrong who* says *that all opinions are equally valid? Can a person really* think *that? What is the reason for the significant difference between people "seeing things differently" in the sense of having distinct visual perspectives, and people "seeing things differently" when it comes to an opinion or "view" of some matter?*

As you read, consider the following questions:

- What response does "Protagoras" give to the "refutations" in the previous reading?
- What is the "serious" refutation of Protagoras?
- There is an "interlude" from 172c–177c; it is called a "digression" at 177c. Why this digression? That is, what is the purpose of this part of the dialogue, considering the purpose of the dialogue as a whole?
- What is the "serious" refutation of Heraclitus?
- What is the final verdict of Socrates the midwife concerning the "theory of Theaetetus"? How do they arrive at this verdict?

Post-reading

Consider the dialogue thus far. Are you satisfied with the answers that have been given to Protagoras, Heraclitus, and Theaetetus?

Also, recall another famous "digression" in a Platonic dialogue, the *Republic*. There, it is roughly Books IV–VII which are apparently a "digression" from the main discussion of the book. The digression in the *Theaetetus* is much shorter, but also comes roughly in the middle, and, like the one in the *Republic*, involves the nature of philosophical activity and the life of the philosopher.

2.4 The Inquiry Ends in Aporia?

This section corresponds to reading from *Theaetetus*, 187d–210d.

Reading questions

Before you read, consider the following: *What was the purpose of Socrates's comparison of knowledge to a "tied-down statue of Daedalus" in Plato's* Meno*?*

As you read, consider the following questions:

- What is the third definition of knowledge?
- What is the nature and purpose of the image of the wax block? What is its function in the discussion, and does it give us any clues about the nature of knowledge?
- What is the nature and purpose of the image of the aviary?
- What is the fourth definition of knowledge?
- What is the meaning of Socrates's "dream" (see 201e)?
- What do Socrates and Theaetetus learn from the image of syllables and letters?
- By the end of the dialogue, have Socrates and Theaetetus succeeded in any way?

Post-reading: Is knowledge "justified true belief"?

In a three-page paper published in 1963, the analytic philosopher Edmund L. Gettier argued the knowledge cannot be "justified true belief" (sometimes abbreviated as "JTB").

> Various attempts have been made in recent years to state necessary and sufficient conditions for someone's knowing a given proposition. The attempts have often been such that they can be stated in a form similar to the following: (a) S knows that P [if and only if] (i) P is true, (ii) S believes that P, and (iii) S is justified in believing that P.

Gettier, "Is Justified True Belief Knowledge?" p. 121.

That is, Gettier claims that there are counterexamples to this list of necessary and sufficient conditions for claiming to know something. He even goes so far as to say that "Plato seems to be considering some such definition at *Theaetetus* 201, and perhaps accepting one at *Meno* 98." While his original article gives two examples, there are many possible ones, and many are very old:

Ibid., fn. 1.

> Imagine that we are seeking water on a hot day. We suddenly see water, or so we think. In fact, we are not seeing water but a mirage, but when we reach the spot, we are lucky and find water right there under a rock. Can we say that we had genuine knowledge of water? The answer seems to be negative, for we were just lucky.

"The Analysis of Knowledge," in *The Stanford Encyclopedia of Philosophy*. The example is from the 8th-century Indian philosopher Dharmottara.

What is the role of "luck" in this example? Is this presenting a situation or condition that is essential to all claims regarding the "justification" of a true belief?

> Let it be assumed that Plato is next to you and you know him to be running, but you mistakenly believe that he is Socrates, so that you firmly believe that Socrates is running. However, let it be so that Socrates is in fact running in Rome; however, you do not know this.

Ibid. The example is from the 14th-century Italian philosopher Peter of Mantua.

How does this counterexample mimic the previous one? Which of the three "JTB conditions" for having knowledge does this example undermine?

> Cases like these, in which justified true belief seems in some important sense disconnected from the fact, were made famous in Edmund Gettier's 1963 paper, "Is Justified True Belief Knowledge?". Gettier presented two cases in which a true belief is inferred from a justified false belief. He observed that, intuitively, such beliefs cannot be knowledge; it is merely lucky that they are true.
>
> In honor of his contribution to the literature, cases like these have come to be known as "Gettier cases". Since they appear to refute the JTB analysis, many epistemologists have undertaken to repair it: how must the analysis of knowledge be modified to accommodate Gettier cases? This is what is commonly referred to as the "Gettier problem".

Ibid.

Now, one could wonder whether Plato himself would find such "Gettier cases" convincing. Would Aristotle? As we proceed further in the course, especially during our reading and discussion of parts of Aristotle's *Posterior Analytics* over the next four weeks, we should consider whether or not Plato and Aristotle do maintain that "justified true belief" is knowledge. If it is not knowledge, what are the necessary and sufficient conditions for such a state of mind (or soul)?

*Meanings of "***logos***"*

> If anyone asks you to give an account [*logos*] of the hope which you cherish, be ready at all times to answer for it, but courteously and with due reverence.
>
> – 1 Peter 3:15b–16a (Knox translation)

> The account [*ratio*] to be rendered of the faith is not to be understood such that it suffices for proving what belongs to faith or hope, since both of these are about invisible things; but that one knows in general how to show the probability [*probabilitatem*] of both of these, for which very extensive science [*scientia*] is not required.
>
> – St. Thomas, *In IV Sent.*, d. 24, q. 1, a. 3, qa. 2, ad 2 (Aquinas Institute translation, modified)

We should carefully compare and contrast the third and fourth definitions to each other. The word for "account" in the fourth definition is *logos*, a word with many meanings in Greek. Its close equivalent in Latin is *ratio*. Thus, the epigraphs above should be carefully considered. Even the word "probability" or *probabilitas* in ancient and medieval Latin must be cautiously understood. It is not our modern, mathematical notion, but a meaning closer to "approvability" or "soundness," or even "the appearance of truth."

The following list, taken from the authoritative ancient Greek dictionary by Liddle, Scott and Jones, might help us understand why the addition of "an account" does not exactly make for an open-and-shut case:

- computation, reckoning
    - an account of money handled, public accounts
    - generally, an account or reckoning
    - a measure or tale
    - esteem, consideration, value put on a person or thing
- relation, correspondence, proportion
    - generally, relation (e.g., of gold to lead)
    - mathematical ratio or proportion
    - a grammatical analogy or rule
- explanation
    - plea, pretext, or ground

  - statement of a theory or argument (and so also a rule, principle, or law embodying the result)
  - law, rule of conduct
  - thesis, hypothesis, or provisional ground
  - reason or ground
  - formula, or essential definition
  - the reason or law exhibited in the "world-process" or generative or regulative forces in the sensible universe
- the inward debate of the soul
  - thinking, reasoning, reflection, deliberation, discursive reasoning, demonstration
  - reason itself as a faculty, creative reason
- continuous statement or narrative, oration
  - fable
  - legend
  - tale, story
  - speech
- verbal expression or utterance, rarely: a single word
  - talk, expression, phrase; coupled or contrasted with words expressed or understood signifying act, fact, truth, etc., mostly in a depreciatory sense
  - common talk, report, tradition (rumor, mention, notice, description, repute, "the story goes")
  - discussion, debate, deliberation (incl.: leave to speak, dialogue, philosophical debate, a section of a dialogue or treatise, or a branch of philosophy)
  - in the plural: literature or "letters"
- a particular utterance or saying
  - divine utterance, oracle
  - proverb, maxim, saying
  - assertion
  - express resolution or consent; plural: terms or conditions
  - word of command or behest (e.g., in Exodus 34:28, "the Ten Commandments [*tous deka logous*]")
- thing spoken of, subject matter
  - the whole matter, the truth of the matter, the subject or question
  - plot of a narrative or dramatic poem
  - thing talked of, event
- expression, utterance, speech (formal)
  - various modes of artistic or literary expression
  - complex term, sentence or complete statement, language
- the Word or Wisdom of God (John 1:1, "In the beginning was the Word [*logos*]")

2.5 Conclusion: Clues in the *Theaetetus*

The dialogue we have discussed is a philosophical masterpiece. It is also somewhat frustrating, given its ending. However, I wonder whether we can gather the following clues from the dialogue.

(1) We learn from Protagoras and Heraclitus that knowledge must be, somehow, beyond the changeable. There is a proportion between knowledge and immobility or unchangeability.
(2) We also learn from Protagoras that "knowledge" is multi-form. It is a word used in equivocal and, perhaps, analogous ways.
(3) We learn from the third definition that we must account for how the soul receives or fails to receive knowledge; this involves the problem of error and falsity.
(4) We learn from the fourth definition that maybe there is a deeper or more fundamental sense of "to know". That is, knowing the letters of a word or "*logos*" is different from knowing the syllables.
(5) There is a difference between the "first person" and the "third person" approach to what knowledge is.
    - That is, put in the reverse, the **third person** perspective considers the being of knowledge in the soul, which is different than the **first person** experience and self-explication of our knowledge as knowers, how we claim to know something.
    - Or again: The wax and the birds and the letters (**third person**) differ from our using the wax and reading the letters or catching the birds (**first person**).

We should note that *seeing* these clues or lessons involve going through the work of reading and actively following along in the discussion of the dialogue—not just witnessing, but also participating.

Note well the last thematic point garnered from the *Theaetetus*. There is a difference between the being of knowledge in the soul and reflecting upon the conditions under which we achieve knowledge and can give an account of this to others. In Parts II and III, we will proceed by following this latter "first person" perspective. Then, in Part IV, we will switch to the "third person" perspective and ask about how knowledge exists in the soul. The second part of the course will investigate the strongest form of knowledge, scientific or demonstrative knowledge. The third part of the course will inquiry about the nature of weaker forms of knowledge, including belief.

Part II

The Logic of Science

Euclid's *Elements* 3

Euclid alone has looked on beauty bare.
Let all who prate of Beauty hold their peace,
And lay them prone upon the earth and cease
To ponder on themselves, the while they stare
At nothing, intricately drawn nowhere
In shapes of shifting lineage; let geese
Gabble and hiss, but heroes seek release
From dusty bondage into luminous air.
O blinding hour, O holy, terrible day,
When first the shaft into his vision shone
Of light anatomized! Euclid alone
Has looked on Beauty bare. Fortunate they
Who, though once only and then but far away,
Have heard her massive sandal set on stone.

– Edna St. Vincent Millay

3.1 Introduction: Mathematics, Paradigm of Knowledge?

The famous line that titles Milay's 1922 poem, "Euclid alone has looked on beauty bare," was a truth well-known to nearly every educated person during the course of Western civilization. There is also the well-known account: "Everyone knows the story of Plato's inscription over the porch of the Academy: 'let no one unversed in geometry enter my doors'."

Heath, "Introduction," p. 5, in *Elements*, vol. 1.

Euclid flourished in the generation after Aristotle, and Plato probably died before he was born. Still, the elements of Euclid's *Elements* were in formation long before, and the role of mathematics as a type of paradigm in both philosopher's accounts of knowledge is not in dispute. The book was studied by men as distant in time and philosophical outlook as St. Thomas Aquinas and Thomas Hobbes. Only in the early 20th century did it cease to be widely read in courses of liberal education.

Goals for this chapter

(1) To study the nature of geometric proof in general
(2) To reflect on the character of certain proofs
(3) To consider the limits of imagination in geometry

Readings for this chapter

– Euclid, *Elements*, Book I (all), see *CR*, vol. 1

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– What is the relationship between Euclid's principles (definitions, postulates, and common notions) and his propositions or proofs?
– How do we *know* that a triangle's interior angles are equal to two right angles? How do we *know* how to construct a square?
– Is there a difference between understanding a truth about geometry and visualizing a geometric truth?

3.2 A Triangle with Two Right Angles?

This section corresponds to the reading of Euclid's *Elements*, Book I, Definitions and Propositions 1–32 (pp. 6–35 in the Fitzpatrick translation).

Reading questions

Before you read, consider the following: *What is the difference between showing that two triangles are congruent by placing one of them on top of the other one, and showing that two triangles are congruent by using precise instruments to measure their sides and angles? How would you prove beyond a shadow of a doubt that two triangles are congruent?*

As you read, consider the following questions:

- What characterizes Euclid's list of definitions? Are they all equally obvious? How do we know what they mean and whether or not they are true definitions?
- What characterizes the postulates and the common notions? How are they different from definitions?
- What is the basic structure of one of Euclid's propositions?
- What is the difference between propositions that Euclid concludes with "(Which is) the very thing it was required to show" and those which conclude with "(Which is) the very thing it was required to do"?
- Consider Proposition 32. How do we know that it is true?

Space below for notes; post-reading items are on the next page.

Post-reading

The focal point of our discussion will be Proposition 32. Upon how many of the prior propositions does it depend? How many of the definitions, postulates, or common notions are required to understand it? What does this imply about the nature of geometric knowledge?

Consider Plato's image of the "Divided Line" found in his *Republic*, Book VI, 509c–511e. The Line is divided unequally into parts representing knowable things that are visible and intelligible. The latter part of the line is itself divided into two parts. First, the soul uses visible things as images to think the ideas of mathematical things. In the second part of the intelligible portion of the line, the soul considers the forms or ideas of things through intellection or understanding, but without using hypotheses as is done when thinking about mathematical things. Is Euclid using any hypotheses?

Consider that the word "element" can mean many things. For instance, we speak of the chemical elements, and say things such as "letters are the elements of words." The Greek term, *stoicheion*, also means "letter," but has a certain analogous meaning when used of mathematics:

> The elements of geometrical proofs, and in general the elements of demonstrations, have a similar character; for the primary demonstrations, each of which is implied in many demonstrations, are called elements of demonstrations; and the primary deductions, which have three terms and proceed by means of one middle, are of this nature.

Aristotle, *Metaphysics*, V.3, 1014a35–b2.

We should consider how Aristotle's use of the term "element" applies to the propositions of Euclid's *Elements*.

3.3 How to Construct a Square

This section corresponds to the reading of Euclid's *Elements*, Book I, Definitions and Propositions 33–48 (pp. 35–48 in the Fitzpatrick translation).

Reading questions

Before you read, consider the following: *What does it mean to "construct" a geometric shape using an argument?*

As you read, consider the following questions:

- How many of the definitions, postulates, common notions, and prior propositions are needed to understand Proposition 46?
- Recall Plato's *Meno* and the dialogue between Socrates and Meno's servant. The same diagram used in the discussion of how to double a square can also be used in a proof of the Pythagorean Theorem. How does Euclid's Proposition 47 differ from such a proof?

Post-reading

Of course, Proposition 47 is rather famous. While we will not ignore it in class, our focus will be Proposition 46. In particular, is there a way to prove Proposition 46 without using Euclid's Fifth Postulate?

3.4 Euclid III.16

After considering the first book of Euclid's *Elements*, we will take the time to consider the following proof from the third book—it is the famous sixteenth proposition. Only the proof is quoted below (from Fitzpatrick's translation). Students are to draw the diagram for themselves.

Euclid, *Elements*, III.16 (Fitzpatrick translation).

> A (straight-line) drawn at right-angles to the diameter of a circle, from its end, will fall outside the circle. And another straight-line cannot be inserted into the space between the (aforementioned) straight-line and the circumference. And the angle of the semi-circle is greater than any acute rectilinear angle whatsoever, and the remaining (angle is) less (than any acute rectilinear angle).
>
> Let ABC be a circle around the center D and the diameter AB. I say that the (straight-line) drawn from A, at right-angles to AB [Prop 1.11], from its end, will fall outside the circle.
>
> For (if) not then, if possible, let it fall inside, like CA (in the figure), and let DC have been joined.
>
> Since DA is equal to DC, angle DAC is also equal to angle ACD [Prop. 1.5]. And DAC (is) a right-angle. Thus, ACD (is) also a right-angle. So, in triangle ACD, the two angles DAC and ACD are equal to two right-angles. The very thing is impossible [Prop. 1.17]. Thus, the (straight-line) drawn from point A, at right-angles to BA, will not fall inside the circle. So, similarly, we can show that neither (will it fall) on the circumference. Thus, (it will fall) outside (the circle).
>
> Let it fall like AE (in the figure). So, I say that another straight-line cannot be inserted into the space between the straight-line AE and the circumference CHA.
>
> For, if possible, let it be inserted like FA (in the figure), and let DG have been drawn from point D, perpendicular to FA [Prop. 1.12]. And since AGD is a right-angle, and DAG (is) less than a right-angle, AD (is) thus greater than DG [Prop. 1.19]. And DA (is) equal to DH. Thus, DH (is) greater than DG, the lesser than the greater. The very thing is impossible. Thus, another straight-line cannot be inserted into the space between the straight-line (AE) and the circumference.
>
> And I also say that the semi-circular angle contained by the straight-line BA and the circumference CHA is greater than any acute rectilinear angle whatsoever,

and the remaining (angle) contained by the circumference CHA and the straight-line AE is less than any acute rectilinear angle whatsoever.

For if any rectilinear angle is greater than the (angle) contained by the straight-line BA and the circumference CHA, or less than the (angle) contained by the circumference CHA and the straight-line AE, then a straight-line can be inserted into the space between the circumference CHA and the straight-line AE—anything which will make (an angle) contained by straight-lines greater than the angle contained by the straight-line BA and the circumference CHA, or less than the (angle) contained by the circumference CHA and the straight-line AE. But (such a straight-line) cannot be inserted. Thus, an acute (angle) contained by straight-lines cannot be greater than the angle contained by the straight-line BA and the circumference CHA, neither (can it be) less than the (angle) contained by the circumference CHA and the straight-line AE.

Corollary: So, from this, (it is) manifest that a (straight-line) drawn at right-angles to the diameter of a circle, from its extremity, touches the circle [and that the straight-line touches the circle at a single point, inasmuch as it was also shown that a (straight-line) meeting (the circle) at two (points) falls inside it [Prop. 3.2]]. (Which is) the very thing it was required to show.

Class discussion will focus on working through the proof and discussing its implications for the nature of geometric knowledge. Does the argument show *why* the conclusion is true, or merely *that* it must be true?

3.5 Conclusion: Going To or From the Principles? Analysis & Synthesis

The goal of this chapter has been to examine in some detail a concrete example of knowledge. Take time to reflect on what Euclid's *Elements* reveals about the process by which we acquire knowledge, at least in the area of geometry. In particular, what is the relationship between our knowledge of geometric truths and their process of discovery?

Think about it this way: Before you read the proof for Euclid I.32, did you know that a triangle's interior angles added up to two right angles? If someone had asked you what the sum of those angles added to, what would have been your guess? Or, consider this: If you read only the *enunciation* of one of the propositions in Book I, how would you go about proving that claim on your own?

So, we should consider to what extent Plato and Aristotle's questions (below) are applicable to the process of discovering and proving Euclidean propositions:

Aristotle, *Nicomachean Ethics*, I.4, 1095a30–b4

> Let us not fail to notice, however, that there is a difference between arguments from and those to the first principles. For Plato, too, was right in raising this question and asking, as he used to do, 'are we on the way from or to the first principles?' There is a difference, as there is in a race-course between the course from the judges to the turning-point and the way back. For, while we must begin with what is known, things are objects of knowledge in two senses—some to us, some without qualification. Presumably, then, *we* must begin with things known to *us*.

We should also reflect upon another distinction that the ancient Greeks made concerning the process of mathematical knowledge: the difference between analysis and synthesis. It was by reflecting upon this difference that François Viète elaborated a proto-algebra, which was studied and then perfected by René Descartes:

Viète, *Introduction to the Analytical Art*, in Klein, *Greek Mathematical Thought and the Origin of Algebra*, p. 320.

> In mathematics there is a certain way of seeking the truth, a way which Plato is said first to have discovered, and which was called "analysis" by Theon and was defined by him as "taking the thing sought as granted and proceeding by means of what follows to a truth that is uncontested"; so, on the other hand, "synthesis" is "taking the thing that is granted and proceeding by means of what follows to the conclusion and comprehension of the thing sought."

Consider also the Greek mathematician Pappus of Alexandria's (4th century A.D.) description of analysis and synthesis:

> Now analysis is the way from what is sought—as if it were admitted—through its concomitants in order to something admitted in synthesis. For in analysis we suppose that which is sought to be already done, and we inquire from what it results, and again what is the antecedent of the latter, until we on our backward way light upon something already known and being first in order. And we call such a method analysis, as being a solution backwards.
>
> In synthesis, on the other hand, we suppose that which was reached last in analysis to be already done, and arranging in their natural order as consequents the former antecedents and linking them one with another, we in the end arrive at the construction of the thing sought. And this we call synthesis.
>
> Now analysis is of two kinds. One seeks the truth, being called theoretical. The other serves to carry out what was desired to do, and this is called problematical. In the theoretical kind we suppose the thing sought as being and as being true, and then we pass through its concomitants in order, as though they were true and existent by hypothesis, to something admitted; then, if that which is admitted be true, the thing sought is true, too, and the proof will be the reverse of analysis. But if we come upon something false to admit, the thing sought will be false, too. In the problematic kind we suppose the desired thing to be known, and then we pass through its concomitants in order, as though they were true, up to something admitted. If the thing admitted is possible or can be done, that is, if it is what the mathematicians call given, the desired thing will also be possible. The proof will again be the reverse of analysis. But if we come upon something impossible to admit, the problem will also be impossible.

Quoted by Michael Beaney, "Supplement to 'Analysis'," in *The Stanford Encyclopedia of Philosophy*.

Does this distinction shed further light on the character of mathematical knowledge in Euclid's *Elements*?

Knowledge & Truth in Mathematics

4

> In reality, there is scarcely a proposition in Euclid so simple as not to consist of more parts than are to be found in any moral reasoning which runs not into chimera and conceit.
>
> – David Hume, *An Enquiry Concerning Human Understanding*, §VII, Pt. I

4.1 Introduction: Who Could Doubt Euclid?

While it might seem incredible, in the late 19th- and early 20th-centuries severe doubts about the truth of Euclidean geometry were raised due to the discoveries of non-Euclidean geometries. In this chapter, we first discuss the central tenets of Aristotle's analysis of *scientific knowledge*, with especial regard to whether Aristotle's definition of science applies to Euclid's geometry. Then, we examine some of the doubts about the truth of Euclidean geometry. Lastly, we reflect upon the activity of mathematical thought and discovery as a whole.

Goals for this chapter

(1) To understand Aristotle's definition of scientific knowledge
(2) To wrestle with doubts about the truth of Euclidean geometry
(3) To reflect upon mathematics as an activity

Readings for this chapter

– Aristotle, *Posterior Analytics*, I.1–4
– Hempel, "Geometry and Empirical Science," see *CR*, vol. 1
– Hardy, "A Mathematician's Apology," see *CR*, vol. 1

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– What is Aristotle's definition of scientific knowledge? What are the necessary conditions of scientific knowledge?
– What is the positivistic view of the truth of Euclidean geometry?
– What most characterizes the activity of mathematics as knowledge?

4.2 Aristotle & Euclid's *Elements*

This section corresponds to the reading of Aristotle, *Posterior Analytics*, I.1–4.

Reading questions

Before you read, consider the following: *What were the different attempts at explaining "account" towards the end of the* Theaetetus *dialogue? Why did each attempt fail?*

As you read, consider the following questions:

- Questions for *Posterior Analytics*, I.1:
  - What importance does Aristotle place on "pre-existent knowledge"?
  - What kinds of pre-existent knowledge are there?
  - What is Aristotle's point with the example of knowing that a triangle's angles are equal to two right angles?
- Questions for *Posterior Analytics*, I.2:
  - What characterizes "unqualified scientific knowledge"?
  - What is a demonstration? What are its six conditions?
- Questions for *Posterior Analytics*, I.3:
  - What are the two opposing schools of thought regarding "primary premises"?
  - What is Aristotle's refutation of these two schools of thought?
- Questions for *Posterior Analytics*, I.4:
  - What is an attribute that is "true in every instance"?
  - What is an attribute that is "essential" What are the four types of "essential" attributes?
  - What does it mean for an attribute to be "commensurately universal"?

Post-reading

Does Euclid's *Elements* meet Aristotle's requirements for demonstrative knowledge?

In the upcoming weeks, we will be reading more selections from Aristotle's logical treatise, *Posterior Analytics*. Thus, students are encouraged to review some of their logical terms (e.g., what is a categorical syllogism? what is the Square of Opposition?).

Below, we review some of the more abstruse logical terms—the predicables—so as to help with the reading from Aristotle's *Posterior*

Analytics. Then, we provide a brief outline of Aristotle's work on the logic of science.

The logic of the predicables

The different ways in which the predicables compare to each other in regard to the predicable "species" illustrates how they are essentially different parts of the framework of making definitions.

– The five predicables

Predicables	**Compared to species**		**Example:**
	Extension	**Comprehension**	**A triangle is ...**
Genus	greater	part of species	a rectilinear plane figure
Difference	equal	part of species	with three sides
Property	equal	not a part	has interior angles summing 180°
Accident	greater	not a part	drawn with chalk, white

– A **genus** is a term predicable of many which differ in species. It is the beginning of a definition.
– A **species** is a term predicable of many which are under a genus.
– An **infima species** is a term predicable of many which differ only as individuals.
– A **difference** is that which divides a genus into species. It is the completion of a definition.
– A **property** is that is predicable of one species, but is not a part of the species.
– An **accident** is that which is predicable of many species, but is not a part of those species.

For some details about properties and accidents, see the table below.

	belongs to the species	**only that species**	**to all the individuals**	**all of the time**	**Example: human**
Property$_1$	yes	yes	yes	yes	risibility, political
Property$_2$	yes	yes	yes	no	moral character
— ? —	yes	yes	no	yes	— ? —
Property$_3$	yes	yes	no	no[*]	being a doctor
Property$_a$	yes	no[†]	yes	yes[*]	two-footed
Property$_b$	yes	no[†]	yes	no	going gray
Accident$_1$	yes[‡]	no[†]	no	yes	pale complexion
Accident$_2$	yes[‡]	no[†]	no	no	being asleep

[*] We are considering "man" as a species in its comprehension. So, defects or violent accidents, while naturally possible, are things which happen to the individual and not to the species. Such exception arise in virtue of what is true more generically of things (e.g., the human body is divisible and corruptible).

† The terms of the last four rows are all greater in extension than the species, and thus the weaker senses of "property" are closer to "accident." However, both Property_a and Property_b are akin to the stronger senses of "property," for they both belong to all individuals of the species.

‡ The first sense of accident, Accident_1 is called an inseparable accident, while Accident_2 is called a separable accident. Accidents "belong" in the weakest sense; *accidere* means "to happen." An accident is what happens to belong to a species.

– Details about the predicables

The species term signifies the essence of a thing. The essence is that by which a thing exists as what it is. The essence is a cause of the properties of that thing, and so the various kinds of properties depend upon the types of causes are involved in a thing's essence.

Our framework for definitions made by the predicables must be used as a tool in accord with the causes that actually exist. We must "be able to cut up each kind according to its species and long its natural joints, and to try not to splinter any part, as a bad butcher might do."

Plato, *Phaedrus*, 265e.

It's worthwhile noting that we naturally object to various proposed definitions based upon these different distinctions between the predicables. That is, we spontaneously recognize that when we predicate one term of another, there are permissible ways in which to do this (ways in which terms are predicable). We seek for exceptions to exclude something as a property, or we sift through our experience to consider how one thing differs from another.

– Details about properties and accidents

Generally, "property" is a term whose meaning is extended from the physical sense of one's belongings (what is *proprius*, akin to *peculiaris* or *privatus*). A logical property belongs to one species and not another. The various subdivisions of the senses of "property" and how these shade into "accident" are given in the second table above.

However, this "belonging" arises in different ways in reality. Porphyry distinguished the various senses of "property" based on the following criteria arising from our experience of real kinds. In the table above, is the third row really empty? Can you think of an example that fits in this row?

An Outline of the Posterior Analytics

The below outlines the major parts of Aristotle's book.

The outline follows that of Fr. James Weishiepl, O.P., in *Aristotelian Methodology: A Commentary on the Posterior Analytics of Aristotle*, p. 8.

(A) The Problem: Is demonstrative knowledge possible? (I.1)
(B) The Solution (I.2 through II.18)
    (I) The nature of demonstrative knowledge
        (1) Considered in itself, or absolutely
            (a) What is demonstrative knowledge (I. 2–3)
            (b) The conditions of demonstration: (i) General conditions required for the principles (I.4–5); (ii) Conditions required for *propter quid* demonstration (I.6–12); (iii) Conditions sufficient for demonstration (I.13–15)
            (c) The lack of these conditions: (i) Regarding ignorance (I.16–18); (ii) Regarding the impossibility of infinite regress (I.19–21)
        (2) Considered comparatively
            (a) Comparison of demonstrations to one another (I.24–27a)
            (b) Comparison of demonstrative sciences (I.27b–32)
            (c) Comparison of science to opinion (I.33) and quick wit (I.34)
    (II) The medium of demonstration, the middle term
        (1) What is the medium or middle term of demonstration? (II.1–2)
            (a) There are only four scientific questions (II.1)
            (b) These questions are all concerned with the middle term (II.2)
        (2) How is the middle term of demonstration to be found?
            (a) How the definition (*quod quid est*) and cause (*propter quid*) are related to demonstration: (i) Relation of definition to demonstration (II.3–10); (ii) Relation of cause to demonstration (II.11–12)
            (b) How definitions and causes are to be found: (ii) Discovery of definitions (II.15); (ii) Discovery of proper causes (II.14–18)
(C) The ultimate basis for the possibility of demonstration (II.19)

Aristotle's *Prior Analytics* investigates categorical syllogisms. A valid syllogism is one in which, if the premises are true, the conclusion must be true. But how do we search for true premises, must less ones that *must be true*? This is one motivation of the *Posterior Analytics*: the hunt for the necessary and sufficient conditions for scientific knowledge.

4.3 Does Euclidean Geometry Lie?

This section corresponds to the reading of Hempel, "Geometry and Empirical Science." The author, Carl G. Hempel (1905–1997), was a philosopher of science and mathematics. He was a critic of early logical positivism, and a proponent of its more refined version, logical empiricism. Logical positivism was a view that eschewed metaphysics in favor of analytic mathematical truth and the synthetic, empirical truths of natural science, holding that such science as verifiable knowledge was the limit of truth, whether it was making claims about observations or theories.

See "Carl Hempel," in *The Stanford Encyclopedia of Philosophy*.

Reading questions

Before you read, consider the following: *Can you—or a precise machine—draw any of the propositions of Euclid that we studied in the previous chapter? What if you drew the proposition with lasers?*

As you read, consider the following questions:

- What is the goal of Hempel's article?
- Why does Hempel think that Euclid's postulates are inadequate?
- What, according to Hempel, is mathematical certainty?
- What is the first of the "two important aspects" of geometry that Hempel examines in §4? What characterizes non-Euclidean geometries?
- What is the second "important aspect" of geometry that Hempel examines in §4?
- What is the difference between pure geometry and physical geometry?
- What implications does Hempel's conclusion have for the truth of mathematics?

Post-reading

After discussing the reading questions, we should consider whether Hempel would agree or disagree with Aristotle in the following lines:

> Now the mathematician, though he too treats of these things [surfaces and volumes, lines and points], nevertheless does not treat of them as the limits of a physical body; nor does he consider the attributes indicated as the attributes of such bodies. That is why he separates them; for in thought they are separable from motion, and it makes no difference, nor does any falsity result, if they are separated. The holders of the theory of Forms

Aristotle, *Physics*, II.2, 193b32–194a6.

> do the same, though they are not aware of it; for they separate the objects of physics, which are less separable than those of mathematics. This becomes plain if one tries to state in each of the two cases the definitions of the things and of their attributes. 'Odd' and 'even', 'straight' and 'curved', and likewise 'number', 'line', and 'figure', do not involve motion; not so 'flesh' and 'bone' and 'man'-these are defined like 'snub nose', not like 'curved'.

Students are encouraged to read the context of this quote.

On Being a Mathematician

This section corresponds to the optional reading of Hardy, "A Mathematician's Apology." G. H. Hardy (1877–1947), an English mathematician, composed the quasi-autobiographical essay excerpted below to give non-mathematicians an "inside view" of the mind of a working mathematician. It provides us with an excellent reflection with which to end these two chapters on the nature of mathematical knowledge.

Reading questions

As you read, consider the following questions:

- According to Hardy, what is a mathematician?
- Do the examples from Euclid and Pythagoras support Hardy's point?
- Why does Hardy think that the products of the mathematician are far more serious and beautiful than other abstract "products" like logic puzzles or chess games?
- What is the "point of view" taken by the pure mathematician? To what is his point of view opposed?

Post-reading

Time permitting, Hardy's essay is a capstone for our various discussions of mathematical knowledge thus far in the course.

4.4 Conclusion

We have begun our reflections on examples or paradigms of knowledge with the case of mathematics. We will now continue our inquiry into the logic of science with cases drawn from the natural sciences.

It is worthwhile to consider Hardy's examples that refer to Theaetetus, and even—indirectly—to the *Meno*. For instance, Hardy refers to a discovery of Theaetetus, which is related to "the spiral of Theodorus," in the diagram below:

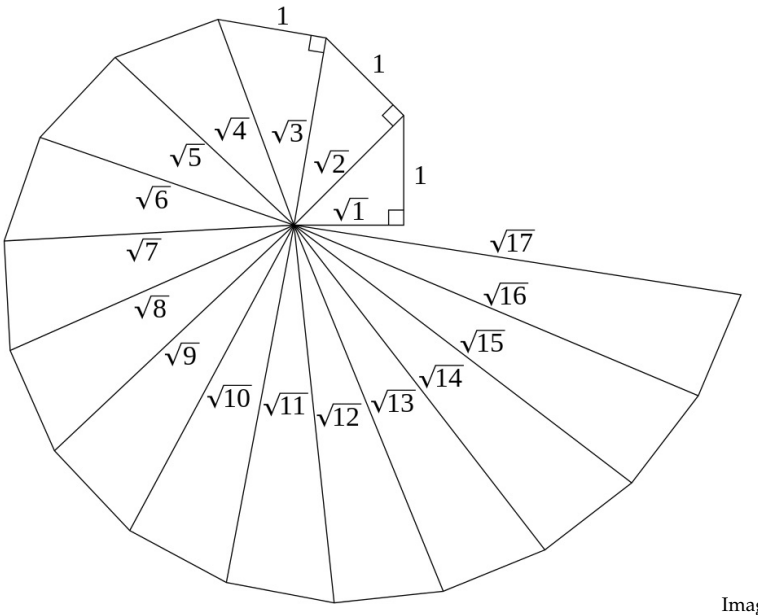


Image: WikiMedia Commons.

The *seriousness and beauty* of the objects of mathematics are characteristics which deserve much reflection, when it comes to the main inquiry of this course.

Truth and Discovery in the Natural Sciences

5

Nature loves to hide.

– Heraclitus, DK 123

I would rather discover one cause than gain the kingdom of Persia.

– Democritus, DK 118

When these men and the principles of this kind had had their day, as the latter were found inadequate to generate the nature of things, men were again forced by the truth itself, as we said, to inquire into the next kind of cause.

– Aristotle, *Metaphysics*, I.3, 984b7–10

5.1 Introduction

One of the most prominent features of the history of the natural sciences as types of knowledge is their progress. It is now expected that, with each new generation of scientists, new and more advanced discoveries will be made about the secret inner workings of the universe. The great value and nigh-on necessity of discovering "the next cause" is articulated well in our epigraphs. To understand Democritus, recall that, in his day, the empire of Persia was the only "superpower" in the Mediterranean world. For the quotation from Aristotle, recall the purpose of that part of the *Metaphysics*: a review of his predecessors theories about principles and causes, and how they are all insufficient.

Note: Before the 19th-century, the word "scientist" did not exist. "Scientists" were known as "natural philosophers" or "men of science." The word was coined by William Whewell in 1833.

However, progress is not without its price. The philosopher of science Thomas Kuhn famously compared new scientific theories to new paradigms for thinking about the natural world. The new paradigm, of course, replaces the old, with revolutionary implications. Does anything of the older theory remain? What is the logical relationship between old and the new theory? Is the progress of discovery in the natural sciences characterized more by growth or by a constant revolution?

See Wallace, *The Modeling of Nature*, pp. 216–219, for a summary of Kuhn's views about "paradigms". This is part of the supplemental reading for the chapter.

Goals for this chapter

(1) To examine the logical structure of scientific reasoning, following William Harvey as an Aristotelian scientist
(2) To understand the Aristotelian logic of scientific demonstration
(3) To study examples of scientific discovery and growth in various natural sciences (optics, astronomy, physics, biology, chemistry, and biochemistry)
(4) To study examples of controversies and their resolution in the natural sciences

Readings for this chapter

– Ratner, "William Harvey, MD: Modern or Ancient Scientist?" see *CR*, vol. 1
– Aristotle, *Posterior Analytics*, I.6 75a27–37, I.7–8, I.13, II.1–2, II.19
– Wallace, *Modeling*, chs. 8–10
– *Supplemental reading:* Wallace, *Modeling*, chs. 6–7; Aristotle, *Posterior Analytics*, I.6, I.9, I.10–12, I.33–34

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– What is the relationship between observation and theory in Harvey's discovery of the circulation of the blood and the true function of the heart?
– What does Harvey's treatise illustrate about the characteristics of an Aristotelian scientific demonstration?
– What is the Aristotelian logic of a demonstration in natural science? What is the nature of the "demonstrative regress"?
– What characterizes scientific discovery, in terms of its logical requirements and epistemic dimensions? (Note that we read about examples from various scientific disciplines.)
– Is it plausible or accurate to characterize the modern natural sciences as using or following an *Aristotelian* logic of scientific demonstration?

5.2 What Is the Human Heart For?

This section corresponds to the reading of Ratner, "William Harvey, MD: Modern or Ancient Scientist?"

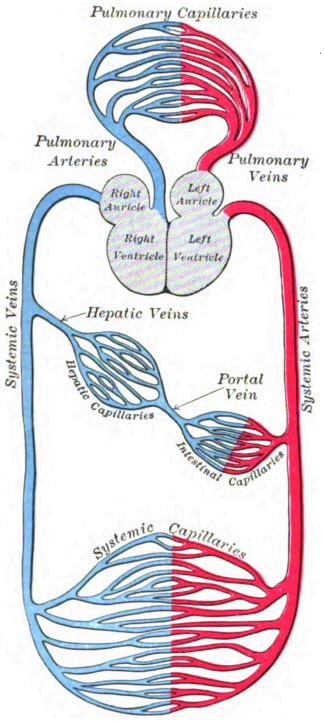
Our initial study of the sciences of nature begins with a concrete example: the human heart. What does the human heart do? It's probably without much reflection that you would say "it pumps the blood throughout the body," or give some similar answer. Yet that answer has not always been known. It was first conclusively demonstrated by the 17th-century English physician and scientist William Harvey (1578–1657). In this reading, and in preparation for a more thorough examination of the Aristotelian logic of the natural sciences in the next chapter, we study Harvey's discovery.

Reading questions

Before you read, consider the following: *To what degree does an observation of a phenomenon determine your knowledge of the truths concerned with that phenomenon? For example, consider the case of a first-year art student versus an experienced artist, both looking a newly discovered painting by a well-known Renaissance artist.*

As you read, consider the following questions:

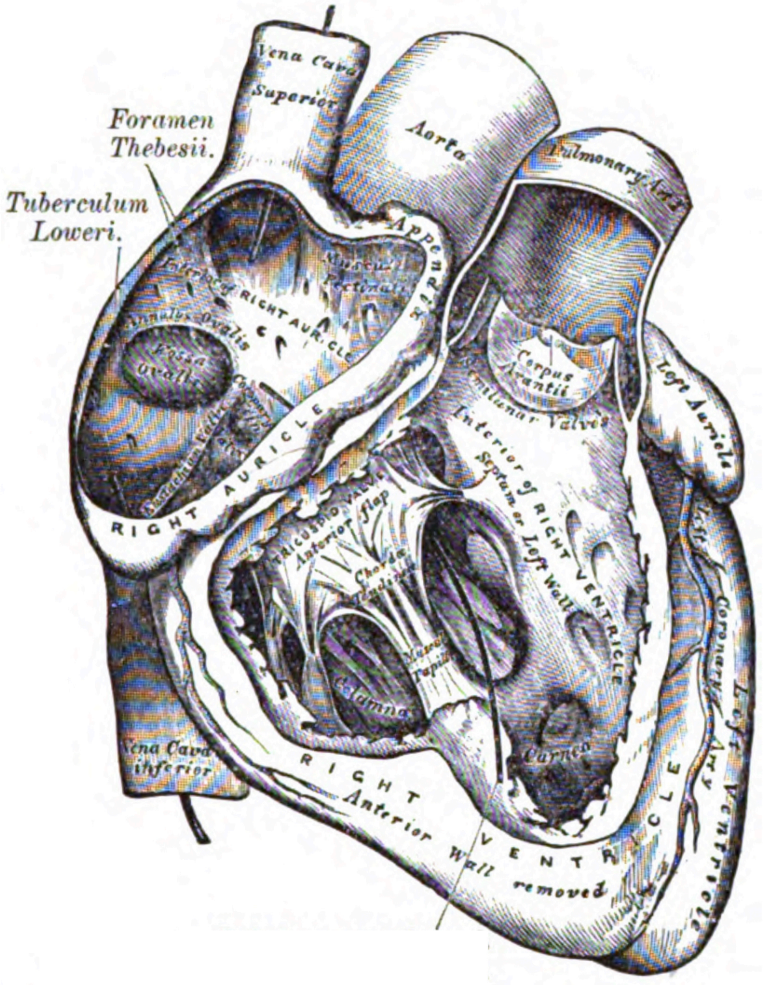
- Who was William Harvey?
- What makes it difficult to distinguish whether Harvey is a "modern" or an "ancient" scientist, according to Ratner?
- What characterizes Harvey's understanding of scientific method?
- What lessons does Ratner draw from Harvey's research into embryo development?
- In what ways was Harvey influenced by Aristotelian views of nature and science?
- What characterizes the logical and scientific organization of Harvey's *On the Motion of the Heart*?
- What characterizes Harvey's scientific inquiry as Aristotelian, according to Ratner, in the first part of the treatise on the motion of the heart?
- What are the main demonstrations that Harvey establishes?
- According to Ratner, did Harvey discover the true four causes of the heart?
- Is Harvey a "modern" or an "ancient" scientist? Why?



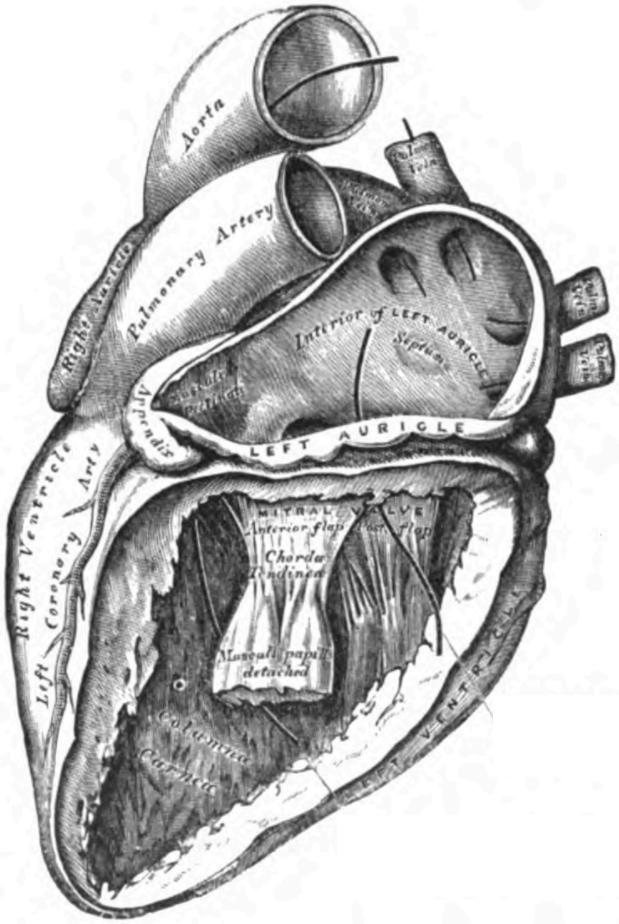
A diagram of the circulation of the blood; Gray, *Anatomy*, 15th ed., p. 456.

Post-reading

In order to assist with the reading, students may consider drawings in the margin and on the following pages.



The right auricle and ventricle, anterior walls removed; Gray, *Anatomy*, 15th ed., p. 461.



The left auricle and ventricle, posterior walls removed; Gray, *Anatomy*, 15th ed., p. 466.

5.3 Harvey's Aristotelian Insights about the Heart

This section corresponds to the final discussion of Harvey's discoveries. The reading is Aristotle, *Posterior Analytics*, I.6, 75a27–37 and I.7–8. Recommended, but optional, is *Posterior Analytics*, I.9.

Reading questions

Before you read, consider the following: *Is it possible to list the four causes of the heart?*

As you read, consider the following questions:

- Questions for Aristotle, *Posterior Analytics*, I.6, 75a27–37 (the rest of ch. 6 is optional): What is the nature of necessary premises?
- Questions for Aristotle, *Posterior Analytics*, I.7:
  - What are the three elements of a demonstration?
  - How do these three elements provide the limits or structure of a science?
- Questions for Aristotle, *Posterior Analytics*, I.8:
  - Why is demonstration in the unqualified sense "eternal"?

Post-reading

After discussing the reading questions, we should focus on whether and to what extent Harvey's demonstration of the circulation of the blood and the function of the heart bear the marks of an Aristotelian scientific demonstration.

Now that we have examined the Aristotelian logic of science in one example, provided by William Harvey, we will turn to investigate whether or not this Aristotelian model of scientific discovery and explanation can be applied to other areas of natural science.

5.4 The Aristotelian Logic of Natural Science

We continue our investigation the answers to such questions using a portion of *The Modeling of Nature*, an exemplary book about the philosophy of nature and science by the philosopher and historian of science, Fr. William Wallace, O.P. This section corresponds to the reading of Wallace, *Modeling*, ch. 8, pp. 280–312, and Aristotle, *Posterior Analytics*, I.13 (the supplemental reading is I.10–12 and I.33–34).

Reading questions

Before you read, consider the following: *If I tell you that the I know the planets are nearer than the stars* because *the planets do not twinkle in the night sky, have I given you a causal explanation?*

– As you read Wallace, consider the following questions:
  · What is the difference between hypothetico-deductive reasoning in modern science and demonstrative reasoning in the classical or Aristotelian sense?
  · How do these two types of reasoning differ in terms of causal connections?
  · What role do definitions play in demonstrative reasoning?
  · What types of demonstration does Wallace discuss? What is the difference between demonstrations *quia* and demonstrations *propter quid*?
  · What is the role of foreknowledge and other types of suppositions in demonstration?
  · What is the demonstrative regress? What are some examples of it? Does it actually work?
  · How do models feature in demonstrative reasoning in the natural sciences and their background ontology?
– Questions for Aristotle, *Posterior Analytics*, I.13:
  · How does knowledge of the fact differ from knowledge of the reasoned fact?
  · What examples does Aristotle use to illustrate the difference between these two types of demonstration?

Post-reading

The selection from Aristotle's *Posterior Analytics* is meant to complement the reading from Wallace. That is, the "demonstrative regress" is the medieval and early modern development of Aristotle's logic of demonstrative scientific reasoning. The main goal of our discussion will be to assess Wallace's interpretation of Aristotle and to understand the logical structure of the demonstrative regress.

5.5 The Growth of Natural Science

This section corresponds to the reading of Wallace, *Modeling*, ch. 9, pp. 323–376, as well as Aristotle, *Posterior Analytics*, II.1–2.

Reading questions

Before you read, consider the following: *Is the earth round* because *it casts a round shadow on the moon during a lunar eclipse?*

As you read Wallace, consider the following questions:

- In this chapter, Wallace applies the Aristotelian demonstrative regress to a variety of discoveries in the natural sciences. For each of these, consider:
  - What characterizes the first stage or "progression" of the demonstrative regress?
  - What characterizes the intermediate stage of the demonstrative regress?
  - What characterizes the second progression of the demonstrative regress? What sort of causal knowledge has been achieved at this point?
- Do you find Wallace's analysis of these scientific arguments more or less plausible or accurate when put into an Aristotelian logical framework?

Consider also the following questions about Aristotle:

- Questions for Aristotle, *Posterior Analytics*, II.1–2:
  - What are the four scientific questions? Are they related to each other in a certain order?
  - How are "middle terms" in syllogisms and "causes" related? How are both of these related to the four scientific questions?

Post-reading

We should devote careful attention to how Wallace applies the demonstrative regress to the various examples in this chapter, as he uses the same examples in the next chapter about controversies and their resolutions.

5.6 Controversy & Resolution in Natural Science

This section corresponds to the reading of Wallace, *Modeling*, ch. 10, pp. 377–426, as well as Aristotle, *Posterior Analytics*, II.19.

Reading questions

Before you read, consider the following: *What are the necessary conditions of winning a scientific debate?*

As you read, consider the following questions:

- Is Theorodic's investigation of the rainbow demonstrative? Is it only a "partial truth"?
- How does Aristotelian logic intervene in the controversies surrounding Galileo's astronomical discoveries?
- What is the actual argument that shows that the earth truly moves?
- How does Harvey respond to criticisms and misunderstandings of his investigations by Jean Riolan and René Descartes?
- Is Newton's *experimentum crucis* of the prism an instance of a scientific demonstration?
- Did Newton propose a scientific or causal explanation of the cause of gravity?
- Can you "quantify" qualitative realities?
- What does it mean to "model" nature?
- Is the philosophy and logic behind the modern natural sciences of an Aristotelian character?

Consider also the following questions about Aristotle:

- Questions for Aristotle, *Posterior Analytics*, II.19:
    - What is the purpose of this chapter?
    - What does Aristotle mean by his analogy with the "rout in battle"?
    - What does Aristotle mean by his example of the universal "man" and this man, Callias?
    - What is the role of the soul in the chapter?

Post-reading

Do Aristotle's considerations in *Posterior Analytics*, II.19 bring a full resolution to his analysis of finding the necessary and sufficient conditions for scientific knowledge?

5.7 Conclusion

We have now completed our discussion of the Aristotelian logic of science, in both mathematics and the natural sciences. Along the way, we have also studied a good portion of Aristotle's (in)famous logical treatise on scientific demonstration. You should reflect on whether or not Aristotle's understanding of demonstration and science is the worked-out version of what Socrates mean by "tying down" the statues of Daedalus in the *Meno*. Are the necessary and sufficient conditions of Aristotelian demonstration the missing notion of "with an account" in the final definition of knowledge in Plato's *Theaetetus*?

Part III

The Logic of Belief

Prelude to Newman's *Grammar of Assent*

Ratio oritur in umbra intelligentiae.
Reason emerges in the shadow of intelligence.

– St. Thomas Aquinas, *De Veritate*, q. 8, a. 3, ad 3

Ex umbris et imaginibus in veritatem.
From shadows and appearances into truth.

– St. John Henry Cardinal Newman's Epitaph

In the epigraphs above, we find St. Thomas Aquinas (1225–1274) quoting an obscure medieval thinker, Isaac Ben Solomon Israeli, who subscribed to a form of Neo-Platonism. Aquinas uses the idea not to defend emanationism but rather to describe a hierarchy of knowers. Compared to angelic minds, the intelligences, our reason emerges as if from shadows. Yet the "the angelic intellect is found to be dark and defective compared to the divine essence," St. Thomas goes on to say in the same passage.

In comparison, and not by way of opposition, St. John Henry Newman (1801–1980) describes a hierarchy within the intellectual history of the human person. We begin in the shadows of ignorance and proceed to the appearances or images of things, imperfect truths, but our ultimate goal is the truth itself. Where Aquinas and Newman agree is in regard to the heights towards which the human mind ought to strive.

In this third part of the course, we continue our inquiry into the nature of knowledge. We have been framing this investigation in terms of the *Theaetetus*'s final definition: How do I give a *logos*, an account, of the truth of my beliefs? In Part II, we asked this question at the level of scientific demonstration, or knowledge in the strongest possible mode. Here in Part III, we turn to ask this question of others modes of knowledge: opinions, everyday beliefs, and even the natural grounds for religious beliefs.

Our Method in this Part of the Course

To inquire after belief as a mode of knowing, we will take as our guide the great work by our patron saint, Cardinal Newman's *An*

Essay in Aid of a Grammar of Assent, originally published in 1870. We will also read the *Grammar* in light of what Plato, Aristotle, and Aquinas contend about the logical and psychological conditions of human knowledge. This endeavor will not be easy, but it will be richly rewarding.

One of our supplemental guides along the way will be the theologian Reinhard Hütter's excellent book *John Henry Newman on Truth and Its Counterfeits: A Guide for Our Times*. Hütter's approach to Newman's thought will also be our own, as it allows us to put Newman into conversation with the philosophy of knowledge we have been exploring thus far.

Newman was not a self-professed or formally trained academic philosopher or theologian. Nonetheless,

Hütter, *Newman on Truth*, p. 19, along with the next two quotes.

> Newman opens up with his keen psychological, phenomenological (*avant la lettre*), and logical analyses, and with his high awareness of the suppositions that his interlocutors and opponents would hold, what I will call the theological *context of discovery*.

We can add that Newman's *Grammar* will also open up for us the *philosophical* context of discovery regarding the nature of belief. However, what is this context of discovery, exactly? In order to be understood, it must be paired with the context of justification.

> What is initially brought to light, described, and tentatively explained in the context of discovery receives in the context of justification a fuller and deeper warrant. The context of discovery and the context of justification stand in a relationship of asymmetrical reciprocity to each other. Each context informs the other yet precisely in their respective specificity.

That is, in a very similar way to how demonstrations *quia* and *propter quid* relate to each other in the demonstrative regress, how mathematical analysis prepares the way for the corresponding synthesis, how a Socratic dialectical discussion opens up the possibilities for an Aristotelian resolution to a question, and how the first person perspective on knowledge is incomplete without the third person accounting, the contexts of discovery and justification are two integral parts of an intellectual whole. Into such a whole will we place Newman, Aquinas, and Aristotle:

> I regard Thomas Aquinas to be the theologian who best serves in the context of justification, not only because the [Church] has for so long regarded him as *doctor communis* . . . but also because of the central philosophical point of reference Aquinas shares with

> Newman. Aristotle was, after all, the philosophical master of both.

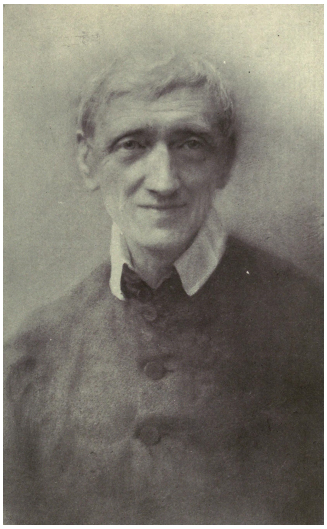
As you can readily see for yourself, the *Grammar* itself has no preface. A preface is located among Newman's drafts and preparatory materials for the book, but for some reason he decided to publish the work so that it begins "*in media res*." In what follows, I do not attempt to provide a preface to this prefaceless masterwork, but I will provide some context. First, we consider the author and the work itself, and then we will cite and discuss some key passages from the works of Aristotle and St. Thomas that are essential to fully appreciating the *Grammar of Assent*.

The Author of the *Grammar* and the Work Itself

Instead of duplicating a shorter version of it here, students should read Hütter's summary of Newman's life and work (*Newman on Truth*, pp. 5–14). However, I do wish to highlight a few points of Newman's life that provide helpful background to the book. Then, I will make a few remarks on the title of the book, its structure, and how we will read this book as part of our course.

Newman's life work

St. John Henry Cardinal Newman's *Grammar* is worthy of our close study because—as does so much of the writing of our university's patron—it speaks to us, in a modern idiom that we can understand, about ancient truths that too many in our day have forgotten. Newman, living at the opening of the modern era, foresaw the trends and fates of modernity's exaltation of individual liberty, amoral uses of science and technology, and the loss of Christian culture due to indifferentism to the truth.



Painting of Cardinal Newman, by Jane Fortescue Seymour (1876; Wiki-Media Commons).

Three facets of Newman's life are worth attending to as we begin to read the *Grammar*. The first is that Newman was a convert to Catholicism (he converted on October 9, 1845). In and of itself, this indicates the value of reading this book about the nature of belief and the justification or grounds for changing one's beliefs. Indeed, Newman wrote the *Grammar* as a defense of the acts of belief, both ordinary and extraordinary, of the unlettered and uneducated and the academic elite alike.

However, and second, Newman also wrote the book as a response to the growing liberalism and indifferentism to the truth about God and revealed religion. These factors have reached their full potential in our own day, in the various "counterfeits" of truth, conscience, and faith that are purveyed as if they were the best

of goods. In the draft of the *Grammar*'s preface which was not include in the final version, Newman wrote that he saw himself as writing

> in the time of an intellectual earthquake, when the opinions of men are stirred from their very foundations, and a revolution is passing over the ideas of the civilized world more appalling than any uprooting of thrones, however venerable, or upheaving of civil institutions, however ancient . . .

Newman, draft of a preface, "On the nature, modes and grounds of Religious assent," 30 Dec 1868, quoted in Jay Newman, *The Mental Philosophy of John Henry Newman*, p. 13.

To understand his motivations, let us consider how Newman defines faith and, in opposition to this, liberalism.

> [Faith] is assenting to a doctrine as true, which we do not see, which we cannot prove, because God says it is true, who cannot lie. And further than this, since God says it is true, not with his own voice, but by the voice of his messengers, it is assenting to what man says, not simply viewed as man, but to what he is commissioned to declare, as a messenger, prophet, or ambassador of God.

Newman, "Discourse 10, Faith and Private Judgment," Newman Reader (online).

As we will discuss, this is supernatural and not natural faith. However, even more so than natural faith, the apparent lack of all rational evidence makes the faith of simple people suspect in the eyes of the modern world. In his defense of his own conversion, Newman describes this "liberalism" in the following terms.

> Now by Liberalism I mean false liberty of thought, or the exercise of thought upon matters, in which, from the constitution of the human mind, thought cannot be brought to any successful issue, and therefore is out of place. Among such matters are first principles of whatever kind; and of these the most sacred and momentous are especially to be reckoned the truths of Revelation. Liberalism then is the mistake of subjecting to human judgment those revealed doctrines which are in their nature beyond and independent of it, and of claiming to determine on intrinsic grounds the truth and value of propositions which rest for their reception simply on the external authority of the Divine Word.

Newman, *Apologia pro Vita Sua*, p. 288, Newman Reader (online). See also Juergens, *Newman on the Psychology of Faith*, pp. 3–4 and n2.

While we will have further occasion to discuss what Newman means by "first principles" here, among other things, note the following. This "liberalism" is characterized by its *opposition* to the act of assent that constitutes faith. Later in his life, in his speech upon being made a cardinal of the Catholic Church, Newman offered the following definition:

> Liberalism in religion is the doctrine that there is no positive truth in religion, but that one creed is as good as another, and this is the teaching which is gaining substance and force daily. It is inconsistent with any recognition of any religion, as true. It teaches that all are to be tolerated, for all are matters of opinion. Revealed religion is not a truth, but a sentiment and a taste; not an objective fact, not miraculous; and it is the right of each individual to make it say just what strikes his fancy.

Newman, "The Biglietto Speech," Newman Reader (online). See also Norris, "Faith," pp. 77–78 in *The Cambridge Companion to John Henry Newman*.

Note how the first definition of liberalism is in terms of a counterfeit liberty of thought that is the antithesis of what constitutes the assent of faith. This defines liberalism by its cause. The second definition of liberalism is by effect—it is because liberalism rejects the mind's ability to assent to truths beyond its capacity that it must, as an effect, hold to the doctrine of religious indifferentism.

However, Newman conceives of his project in the *Grammar* in broader terms. He includes within the compass of his explicit and implicit interlocutors the epistemologies of John Locke, David Hume, among others. Thus, while the work is primarily a defense of the rationality of belief in the Catholic faith, he musters to his aid an entire array of resources to analyze the act of belief in general and its place in the degrees of human knowing.

The last aspect of Newman's life, of course, was his devotion to finding the truth. Thus, as the author of this text, Newman's own life is an example for we who study his life's work, the book that took him over two decades to write. Let us now examine the *Grammar* itself.

The title of the book

While we will refer to it as "the *Grammar*" for short, the full title of Newman's masterpiece is *An Essay in Aid of a Grammar of Assent*. Let us examine each of these terms to discern, at least in a preliminary way, what the book is about.

The book is called an "essay." The word itself can also mean "an attempt or effort," and it descends from "assay" meaning "to test the quality of," from old French and Latin words meaning weighing and ascertaining. The Old French word *essai* also means "trial." The work, then, is an attempt at ascertaining something, a trial in thought.

It is also "in aid of." Thus, the title holds out the work as doubly non-definitive—it is an attempt at aiding. It is "*a Grammar*" and not "*the Grammar*"—more evidence of its non-definitive status. Were

it published today, it might have been titled "*Towards a . . .* " to capture this hesitancy.

> Newman is well aware that he is not writing the definitive work on the subject. In a draft for a preface, he reflects, "Nay, if I fail in my attempt, I still may solace myself with the belief that my failure is a preliminary condition to the success of others who come after me, and may even contribute to it."

Jay Newman, *The Mental Philosophy of John Henry Newman*, p. 14.

This is perhaps why, in his seven-part, critical, and largely misdirected review of the *Grammar* in the year it was published, Fr. Thomas Harper, S.J., calls it "Hints towards a Grammar of Assent."

See Harper, "Dr. Newman's Essay in Aid of a Grammar of Assent, IV," p. 159.

These points notwithstanding, one might wonder whether the way in which Newman composed the *Grammar* is itself meant to commission the reader's own thoughts on the matter. That is, it is an aid *to the reader*—as we see below, Newman wrote the book for inquirers. Much like a Platonic dialogue, then, most of the force and fruit of the *Grammar* is only found by actively reading it.

The work is also a "grammar." Why "grammar"? It is perhaps striking—and we will discern the reasons why when reading the second part of the book—that it is not about the "logic" of assent. However, it would be a mistake to think that Newman calls his book a "grammar" as if emphasizing language itself at the expense of logic. Rather, the word is used in a transferred sense from the meaning of "grammar" as the art treating of the rules of a language, which is in turn used to name books on the subject of grammar, or "grammars," which meaning in eventual turn yields:

> 6. *transf.* **a**. The fundamental principles or rules of an art or science. **b**. A book presenting these in methodical form. (Now *rare*; formerly common in the the titles of books.)

Murray, ed., *A New English Dictionary on Historical Principles*, vol. IVB, p. 345 (published 1901). Note that "grammar" originally had a much broader meaning, one which included what we would designate today by calling something an "English" class. It included Latin, literature, and lettered learning more generally—think of the old expression "a grammar school."

Indeed, Murray's dictionary gives examples of this expression: a grammar of military performance, of ancient geography, of entomology, of the laws of England, or of painting. Newman's book is also given as an example, to which other examples of this 19th-century genre could be added, such as *A Grammar of Botany* (Thornton, 1811) or *The Grammar of Science* (Pearson, 1892).

Consider also the difference between descriptive and prescriptive grammar. For instance, the dictionary of a language could be written descriptively or prescriptively. One could tell how a language ought to be used (prescriptive), or merely "describe how people [use] the language." The old-fashioned grammars, of course, were prescriptive or normative.

Herbert C. Morton, *The Story of Webster's Third*, p. 7.

Thus, it would be a mistake to think that Newman's *Grammar* is merely a reflective description of the experience of belief and not a search for its normative principles, although the book abounds in a "phenomenology" of the experience of belief. It would also be a mistake to take this word of the title too literally, as if referring to a linguistic philosophy or marking the book as concerned with language.

Rather, as "an essay in aid of a grammar of," the book is a search for "the fundamental principles or rules of an art or science" that could then be presented "in methodical form." Newman's *Grammar* emphasizes the context of discovery, of exploratory analysis, rather than the context of justification, or system and synthesis.

Thus, we must carefully take to heart the words with which Newman opens Chapter 9: his goal is "not to form a theory" to explain the intellectual phenomena of belief and assent, but rather "to ascertain what is the matter of fact as regards them, that is, when it is that assent is given to propositions which are inferred, and under what circumstances." He is not treating knowledge *in fieri*, or how it comes about from its causes, but rather *in facto esse*, or *in its being a given*, *a fact* of our experience.

Newman, *Grammar of Assent*, p. 343.

See ibid., p. 344.

What, then, of the core word of the title: "assent"? Of course, it is the burden of the entire *Grammar* to explain all that Newman thinks this word signifies. The English word commonly means to agree to or approve of something. Its roots are Latin, "*ad*" + "*sentire*," yielding "to think or feel towards." The Latin "*assensio*" could mean assent, agreement, belief, approval, approbation, or applause. So, is "assent" firmly in the cognitive or volitional category? For "to assent" does not mean "to consent." In our discussion of Newman's meaning, the nuances of his term and his examples must be carefully considered.

The epigraph of the book

The *Grammar*'s epigraph reads: "*Non in dialectica complacuit Deo salvum facere populum suum*," or, "It was not by dialectic that it pleased God to save His people." This quotation from St. Ambrose is found in a passage about the various contentions of the Arians, heretics who held that Christ was a mere creature. Here is the quote in its context:

> Seeing, then, that the heretic says that Christ is unlike His Father, and seeks to maintain this by force of subtle disputation, we must cite the Scripture: "Take heed that no man make spoil of you by philosophy and vain deceit, according to the tradition of men, and after the rudiments of this world, not according to Christ; for

St. Ambrose, *Exposition of the Christian Faith*, Book I, ch. 5; de Romestin translation, New Advent (online).

> in Him dwells all the fullness of Godhead in bodily shape."
>
> For they store up all the strength of their poisons in dialectical disputation, which by the judgment of philosophers is defined as having no power to establish anything, and aiming only at destruction. *But it was not by dialectic that it pleased God to save His people*, "for the kingdom of God consists in simplicity of faith, not in wordy contention."

That is, one should not seek out one's salvation by sophistical logic, among mere notions and vain academic dispute. As the great Thomist philosopher Ralph McInerny observes, "Christ did not become man in order that man might become a theologian." Consequently, the context of the quote in St. Ambrose must be kept in mind. There is a poisonous use of the mind's ability to think and search for the truth, the empiricist-rationalist "notionalism" that makes up a large part of Newman's own *properly* dialectical target of dispute.

The structure of the book

To understand the structure of the *Grammar* before starting it will be of some help, as Newman places his own guideposts at various points of the book, and at that only later in the text (see the beginning of Part II, the beginning of Chapter 9, as well as pp. 362–363 and, lastly, the beginning of Chapter 10). To begin, we should note that the whole work is ordered to Chapter 10, §2, which considers inference and assent in the matter of revealed religion.

Robert Barron, "John Henry Newman and the New Evangelization," in *Renewing Our Hope*, pp. 114–115.

> A wonderfully dense and seminal text, *The Grammar of Assent* has been examined from myriad points of view, and commentators have, quite rightly, seen links between Newman's arguments and American pragmatism, Husserlian phenomenology, and postmodernism. It has been correctly interpreted as a pivotal text in the history of religious epistemology. However, what almost every commentator has tended to overlook are the roughly seventy-five pages at the very end of the text, which provide, in fact, the hermeneutical key to the entire book. Analysts have focused almost exclusively on the great sections dealing with notional and real assent, the difference between formal and informal inference, and the nature of the illative sense, but they have neglected to notice how all of that is but a propaedeutic to what Newman is attempting in those final pages—namely, a vigorous apologetic for

> the Catholic faith. The lengthy and sometimes frankly tortuous journey through the first three quarters of the *Grammar* is intended to make us more effective evangelizers.

Now, whether we will share Bishop Barron's judgment about the intention of the parts of the *Grammar* on which we will focus, he is correct in thinking that the subject with which the book ends is also the end-goal of the book. In "Note 2" appended to a later edition of the *Grammar* (in 1880), Newman gives his own summary of the work's order (see pp. 495–496). Based upon these remarks, and other indications throughout the book, we can arrive at the following analytic outline:

An Outline of the Logical Order of Newman's *Grammar*

(I) **The connection between assent and apprehension**, or, "refuting the fallacies of those who say that we cannot believe what we cannot understand" (Part I, chs. 1–5)

- (A) Fundamental terms (chs. 1–3)
- (B) Extended consideration of real versus notional assent (ch. 4)
- (C) Application to the matter of religion, or, "We are now able to determine what a dogma of faith is, and what it is to believe it." (ch. 5)

(II) **The connection between assent and inference**, or, "certitude as exercised upon a cumulation of proofs, short of demonstration separately" (Part II, ch. 6–9)

- (A) Unconditional acceptance of a proposition (chs. 6–7)
  - (1) Simple assent (ch. 6)
  - (2) Complex assent or certitude (ch. 7)
- (B) Inference, or conditional acceptance of a proposition (chs. 8–9)
  - (1) Inference in general (ch. 8), considers formal (§1), informal (§2), and natural inference (§3)
  - (2) The illative sense itself, or inference in concrete matters (ch. 9), as to its sanction (§1), nature (§2), and range (§3)

(III) **The proofs of theism & Christianity** (respectively, ch. 10, §1 and ch. 10, §2, see p. 491: "Here I end my specimens, among the many which might be given, of the arguments adducible for Christianity. I have dwelt upon them, in order to show how I would apply the principles of this Essay to the proof of its divine origin.")

The goal of the whole, as well as the logical relationship of the parts to the whole, must be kept in mind. As many commentators observe, Newman's style and method are not that of a formal philosopher, but rather that of a proper dialectician. The fundamental terms

are slowly developed throughout the course of the book so as to achieve Newman's ultimate aim.

As a consequence, we should also keep in mind the book's audience and the mode in which Newman addresses them.

> I say plainly I do not want to be converted by a smart syllogism; if I am asked to convert others by it, I say plainly I do not care to overcome their reason without touching their hearts. I wish to deal, not with controversialists, but with inquirers.

Newman, *Grammar of Assent*, p. 425.

This, of course, brings to mind Newman's famous motto: *Cor ad cor loquitur*, heart speaks to heart. Now, "*cor*" has a richness of meaning that should not escape us: "*cor*" signified the seat of wisdom, understanding, the mind, or judgment as well as the seat of feeling or emotion that *is* the heart.

The book in this course

The plan over the next several weeks is to closely study Newman's *Grammar of Assent*. The reading questions will assist us in having more of a seminar-style discussion of Newman's book, and not a tutorial over every last word. Recall also that the term paper must make substantial use of Newman's *Grammar of Assent*. Our class discussions and the reading questions for each lesson should help deepen students's understanding of the work for the purpose of writing about it.

Our reading of the *Grammar* will be paired with chapters from Hütter's *Newman on Truth*. The four chapters of Hütter's book consider, respectively, conscience, faith, the development of doctrine, and the university. The epilogue retells Hütter's own conversion story from Lutheranism to Catholicism. We will read the first three chapters and the epilogue as supplemental to the *Grammar*. The chapter on the university will be read and discussed in Part IV of the course. More will be said on each chapter at the appropriate place in the *Course Guide*.

Students should also *focus* on the book itself. There are a wide array of interpretations and secondary sources on Newman's work. Many of these are available in Dugan Library's special Newman Collection. However, our primary aim should be to attempt to understand Newman directly, not through the lens of commentators. Since our study of the *Grammar* will be complemented by comparisons and contrasts to Aristotle, Aquinas, and other philosophers, we will have enough to worry about without involving too many secondary sources.

Lastly, students should be aware of The Newman Reader, managed by the National Institute for Newman Studies. This includes an HTML version of all of Newman's published works and many other materials. It is an excellent resource for this part of our course.

Newman & His Ancient Sources

During our discussions of the *Grammar*, there will be more than enough to think about and to say regarding Newman's sources, the thinkers he quotes, or the interlocutors and influences in his argument. For instance, Newman is contending with the incredibly influential epistemology of John Locke and (implicitly) David Hume, along with a host of other English intellectual influences of his day, such as Joseph Butler and William Paley. However, our study does not seek to reconstruct an intellectual genealogy of the *Grammar*, but rather to understand the truths it defends in light of the tradition of perennial philosophy.

In what follows, therefore, I will highlight some key ideas and passages essential to fully appreciating the *Grammar of Assent*. This requires us to discuss some incidental aspects of the "Aristotelian" logic of Newman's day that should be kept in mind as we study the *Grammar*. (Later, we will highlight some key passages from St. Thomas Aquinas's teaching on belief and faith that are germane to our study of Newman.)

Newman and Aristotle contra the moderns

At the surface level, what Newman has to say about logic will surely strike us as incompatible with, if not in outright contradiction to, the Aristotelian account of knowledge developed in Part II of this course. Newman's opposition to formal logic in particular will be on display in his chapter on the act of inference.

Now, this is attributable in part to what the discipline of logic had become in Newman's day, following the detrimental influence of British empiricism, Lockean and Humean epistemology, as well as the Cartesian textbook approach found in the *Port Royal Logic*. Newman was intimately familiar with formal logic, having in his days as a young fellow of Oriel College assisted in the composition of his associate Richard Whately's *Elements of Logic*.

See Juergens, *Newman on the Psychology of Faith*, pp. 241–242.

All this is to say that what Newman argues against when arguing against "logic" should not immediately be identified with classical Aristotelian logic. Here, we should recall a point raised earlier, namely that Newman's foe in the *Grammar* is religious liberalism and indifferentism. As Juergens highlights, Newman was trying to

steer a middle course between the empiricist rationality founded by Locke and the sentimentalism of then-contemporary evangelical movements. That is, on the one hand, Locke's epistemology laid "a most insidious snare" that

> actually denies the possibility and the validity of moral certitude, for according to [Locke], in Newman's words, "doctrines are only so far to be considered true as they are logically demonstrated."
>
> Locke had laid down this rule for all assents. . . . The Liberals could therefore naturally challenge any Christian to either demonstrate his faith or be ready to abandon it, on the corollary, "It is dishonest in a man to make an act of faith in what he had not brought home to him by actual proof." A person therefore could not reasonably believe unless he could also *demonstrate* the reasonableness of that act. Evidently, then, the faith of most men is not according to reason, since but few can explicitly state the full grounds on which their faith rests.
>
> The extreme opposite of this school was that of the Evangelicals, for whom faith was not an act or habit of the intellect but a mere sentiment or feeling. The Liberals were of course quite disposed to admit that among the uneducated classes faith was but a mixture of prejudice and sentiment.

Juergens, *Newman on the Psychology of Faith*, pp. 4–5.

The quote is from Newman's *Apologia*, p. 294.

Newman's middle course, therefore, seeks to establish the true measure of belief and faith as rational acts, avoiding the extremes of overburdened logic and cheapening feeling.

Furthermore, it will be worth discussing to what extent Newman's chapter against logic is in fact against an abuse of logic. Newman is clearly against a sort of "notionalism" or "logicism" that misconceives the proper office and function of logic. As we saw in our study of the logic of science founded upon the *Posterior Analytics*, a formally valid syllogistic illation is a necessary but not a sufficient condition for demonstration. What makes for necessary and sufficient conditions must include the *insight* into the real essences of things which the propositions of a science capture.

For instance, consider what Aristotle says about the difference between science, or demonstrative knowledge, and opinion. This contrast will come in handy when discussing Newman's criticisms of inference.

> Scientific knowledge and its object differ from opinion and the object of opinion in that scientific knowledge is commensurately universal and proceeds by necessary

Aristotle, *Posterior Analytics*, I.33, 88b30–89a10.

> connexions, and that which is necessary cannot be otherwise. So though there are things which are true and real and yet can be otherwise, *scientific knowledge* clearly does not concern them: if it did, things which can be otherwise would be incapable of being otherwise. Nor are they any concern of *rational intuition*—by rational intuition I mean an originative source of scientific knowledge—nor of indemonstrable knowledge, which is the grasping of the immediate premiss. Since then rational intuition, science, and opinion, and what is revealed by these terms, are the only things that can be 'true', it follows that it is *opinion* that is concerned with that which may be true or false, and can be otherwise: opinion in fact is the grasp of a premiss which is immediate but not necessary. This view also fits the observed facts, for opinion is unstable, and so is the kind of being we have described as its object. Besides, when a man thinks a truth incapable of being otherwise he always thinks that he knows it, never that he opines it. He thinks that he opines when he thinks that a connexion, though actually so, may quite easily be otherwise; for he believes that such is the proper object of opinion, while the necessary is the object of knowledge.

Of course, one should also remember Aristotle's arguments earlier in I.8 (75b21ff) that science concerns truths that are necessary, imperishable or eternal. The difference of aim could not be starker.

In fact, Newman's famous "illative sense" is modeled not after Aristotle's notion of scientific demonstration, but his doctrine of prudence, of practical wisdom (see *Nicomachean Ethics*, Book VI, especially chs. 1–2 and 4–5). This is because prudence has to do with contingent matters, where strict demonstration is not possible. The illative sense is to the cognitive realm of belief what prudence is to the practical, moral realm. Nor is this the only place in Newman's *Grammar* that bears the mark of the doctrine of the father of logic.

We will wait until the next chapter to discuss Newman and Aquinas.

Preliminaries (*Grammar*, chs. 1–3)

6

> Hence it is proper to the believer to think with assent: so that the act of believing is distinguished from all the other acts of the intellect, which are about the true or the false.
>
> – St. Thomas, *ST*, IIa-IIae, q. 2, a. 1, c.

6.1 Introduction

The first several chapters of the *Grammar* lay out an array of distinctions about the ways in which the mind grasps claims or statements. Newman's method can be frustrating here. It is best if we approach the task through his examples, since Newman does not hang his case on some predetermined meaning of the terms, but insists that we find the meaning of these distinctions through our own experience.

Goals for this chapter

(1) To study the fundamental terms of Newman's *Grammar*

Readings for this chapter

- Optional: Newman, *Grammar of Assent*, chs. 1–3, see *CR*, vol. 2
- *Supplemental reading:* Start reading Hütter, *Newman on Truth*, prologue and ch. 1

The supplemental reading for this chapter is lengthy, but we will be spending a little over a week on this material. My suggestion is to read a bit of Hütter's book each day that you prepare for class; for instance, focus on answering one or two of the reading questions each day. Recall that his book is a required secondary resource for the term paper.

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

- What does Newman mean by the various modes and differences between "holding" and "apprehending" propositions?
- What are the various modes of the apprehension of propositions?

6.2 Holding & Apprehending Propositions

This section corresponds to the reading of Newman, *Grammar of Assent*, chs. 1–3, pp. 3–35. Below, the *CG* summarizes the principal distinctions in this reading.

Reading questions

Before you read, consider the following: *You are learning Spanish. Someone quotes a proverb from the Bible to you in Spanish, and you are given a translation into English. Have you grasped its meaning in English or in Spanish? Have you grasped its meaning as a proverb?*

If you read the optional reading, consider the following:

- Questions for Chapter 1:
  - What are the modes of holding propositions? What examples are there of each mode?
  - What are the modes of apprehending propositions?
- Questions for Chapter 2:
  - What measure of apprehension is sufficient for assent? Why is the predicate important?
  - What is Newman's main conclusion in this chapter?
- Questions for Chapter 3:
  - What is real apprehension?
  - What is notional apprehension?
  - What distinguishes these two modes of apprehension? What examples illustrate this difference?
  - What does this distinction entail for the subject-matter of Newman's book?

6.3 The Elements of Newman's *Grammar*

In the first three chapters of Newman's *Grammar*, he introduces an array of distinctions concerning propositions.

First, he distinguishes between different types or "forms" of proposition. Next, he distinguishes between three ways or "modes" of holding a proposition in one's mind, and, finally, the modes of apprehending a proposition.

This means that there are nine things to keep track of as we work through examples. Consider the table below.

(1) Propositions	(2) Holding		(3) Apprehending
(i) Interrogative, a Question	Doubt		*n/a*
(ii) Conditional, a Conclusion	Inference	≠	Notional
(iii) Categorical, an Assertion	Assent	≠	Real

Forms and modes of propositions (on Chapter 1)

In this first chapter, Newman simply lays out the various terms he is discussing. Then, in Chapter 2, he discusses the connection between assenting to a proposition and apprehending it, and in Chapter 3 the types of apprehension.

– On (1) The forms of proposition

First, the different forms of proposition follow a "beginning, middle, and end" sort of structure. At first, one has a question about a subject; next, one inquires to answer the question, and based upon the evidence, arrives at a conclusion; to this conclusion, one assents: "A question has not yet got so far as to be a conclusion, though it is the necessary preliminary of a conclusion; and an assertion has got beyond being a mere conclusion, though it is the natural issue of a conclusion."

Newman, *Grammar of Assent*, p. 4.

Consider Newman's examples:

(1) Propositions	Examples
(i) Interrogative, a Question	Does Free-trade benefit the poorer classes?
(ii) Conditional, a Conclusion	Free-trade therefore benefits the poorer classes.
(iii) Categorical, an Assertion	Free-trade does benefit the poorer classes.

Some have objected to Newman's categorization. First, a "conclusion" as a proposition is distinct from a "conditional" proposition (usually called a hypothetical proposition "if . . . , then . . . "); isn't a conclusion also a sort of assertion? Furthermore, the logicians object, a question is not a proposition if one takes the Aristotelian

definition of proposition, namely, that it is an assertion or denial capable of being true or false.

Aristotle, *On Interpretation*, ch. 4, 16b26–28.

However, if we take Newman to mean by "proposition" what Aristotle meant by "sentence," then the second difficulty dissolves: "A sentence [*logos*] is a significant portion of speech, some parts of which have an independent meaning, that is to say, as an utterance, though not as the expression of a positive judgment." Some sentences are propositions (they "have in them either truth or falsity") but not all are propositions.

We must admit some of the force of the first objection. However, Newman's focus is especially on the way in which the mind assents to propositions. So, it would make sense for him to describe, but not define, conclusions as being "conditioned by" or "caused by" the inference through which we attain those propositions. So, while conclusions can be assertive, categorical propositions, they are held by the mind as the result of an inference: a *conclusion* is a *caused* or *conditioned* proposition. The mind holds an *assertion* with a sort of independence, or in an *unconditioned* way.

– On (2) The modes of holding a proposition

Newman, *Grammar of Assent*, p. 5.

There is an analogous connection between the first column and the second: "The internal act of holding propositions is for the most part analogous to the external act of enunciating them." The first column is what we do through speech, the second (and third) what we do through thought.

The mental acts of holding a proposition also presuppose those propositions as "objects" of the mind. Thus, the objects distinguish the activities, and these activities go on to characterize the one who acts accordingly:

Ibid., p. 6.

> For instance, in the case of Revealed Religion, according as one or other of these is paramount within him, a man is a sceptic as regards it; or a philosopher, thinking it more or less probable considered as a conclusion of reason; or he has an unhesitating faith in it, and is recognized as a believer. If he simply disbelieves, or dissents, then he is assenting to the contradictory of the thesis, viz. to the proposition that there is no Revelation.

Newman also insists that:

Ibid., pp. 6–7.

> It cannot be denied that these three acts are all natural to the mind; I mean, that, in exercising them, we are not violating the laws of our nature, as if they were in themselves an extravagance or weakness, but are acting according to it, according to its legitimate constitution.

– On (3) The modes of apprehending a proposition

Newman's definition of the apprehension of a proposition is "our imposition of a sense on the terms of which they are composed." Later, he rephrases this as follows: "By apprehension of a proposition, I mean, as I have already said, the interpretation given to the terms of which it is composed."

Ibid., 9.

Ibid., ch. 2, p. 13.

How do holding and apprehending a proposition differ? It seems that the mind **holds** *a proposition as a whole* in different ways, but our mind **apprehends** *a proposition through its parts*, its terms, in different ways.

Newman observes, first, that apprehension can be either notional or real. A notional apprehension corresponds to notional propositions, while real apprehension corresponds to real propositions. A notional proposition is one "in which one or both of the terms are common nouns, as standing for what is abstract, general, and non-existing, such as 'Man is an animal'," while a real proposition is "composed of singular nouns, and of which the terms stand for things external to us, unit and individual, as 'Philip was the father of Alexander.'"

Ibid., pp. 9–10.

(3) Apprehending	**Terms of proposition**	**Examples** (see pp. 10–11)
Notional	Common or abstract	[i] "Dulce et decorum est pro patria mori." [ii] "Varium et mutabile semper fœmina."
Real	Singular or concrete	[i] Above, yet "piercing the heart of a Wallace or a Tell" [ii] Above, said of Dido in Virgil's poem

The additional examples in the above table are used by Newman to illustrate a second point, that a given proposition could be interpreted or apprehended in either a notional or a real way. Two minds can apprehend the same proposition differently.

Consider example [i], above. The Latin student looks at the famous phrase "Dulce et decorum . . . " and can apprehend its grammar and then give it a translation; the patriot apprehends the phrase in a profoundly different way, since it captures his motivations of giving his life for his country.

Horace, *Odes*, III.2.13; translation: "It is sweet and fitting to die for one's fatherland."

Newman's third point is that "the same proposition may express both what is notional and what is real." One mind can apprehend the same proposition differently (at different times), since the proposition can signify in both ways. Newman's example is of a professor in physics or chemistry: the same proposition could be exemplified in a laboratory experiment (real apprehension), and then the professor goes on to discuss it in class (notional).

Consider also example [ii], above. Newman says of it that Virgil "both sets before his readers what he means to be a general truth,

Newman, *Grammar of Assent*, p. 11.

and at the same time applies it individually to the instance of Dido. He expresses at once a notion and a fact."

The concrete versus the abstract: Is Newman a nominalist?

Newman observes the following of the difference between real and notional apprehension.

Ibid., p. 12.

> Reverting to the two modes of holding propositions, conditional and unconditional, which was the subject of the former Section, that is, inferences and assents, I observe that inferences, which are conditional acts, are especially cognate to notional apprehension, and assents, which are unconditional, to real.

Note carefully what is being said here. It is not that the real apprehension of a proposition is unconditional, or that the notional apprehension of a proposition is conditional, but rather that notional apprehension is "especially cognate to" inferences, which are conditional, and that real apprehension is "especially cognate to" assents, which are unconditional. In the original table (see above, p. 71), I've used the "not equals" sign (≠) to indicate this.

However, there is another difference between the notional and the real, found in a passage which we ignored in our exposition of Chapter 1. That passage reads as follows:

Ibid., p. 9.

> All things in the exterior world are unit and individual, and are nothing else; but the mind not only contemplates those unit realities, as they exist, but has the gift, by an act of creation, of bringing before it abstractions and generalizations, which have no existence, no counterpart, out of it.

Ibid., p. 11.

It would then make sense why Newman insists that real apprehensions are stronger, "move vivid and forcible" than notional ones. Indeed, commentators typically remark upon similarities between Newman's distrust of notions or universal terms and the nominalism arising from John Duns Scotus's philosophy. Yet, regarding the debate between "nominalism and realism, [Newman] remarks that he is 'so little versed in the controversy' that he scarcely knows where he stands on the matter."

Evans, "Newman and Aquinas on Assent," p. 203.

So, I propose that we can read the above passage as simply asserting a rather Aristotelian idea: that universals such as "animal" do not exist in some Platonic way outside the mind. Nonetheless, this does not settle the issue of Newman's (possible) nominalism.

Notional or real? (On Chapters 2 and 3)

Newman now discusses in greater detail the second and third columns of the original table (see above, p. 71). He begins Chapter 2 by noting that there is a connection between the act of assent and apprehension:

> By apprehension of a proposition, I mean, as I have already said, the interpretation given to the terms of which it is composed. When we infer, we consider a proposition in relation to other propositions; when we assent to it, we consider it for its own sake and in its intrinsic sense. That sense must be in some degree known to us; else, we do but assert the proposition, we in no wise assent to it. Assent I have described to be a mental assertion; in its very nature then it is of the mind, and not of the lips. We can assert without assenting; assent is more than assertion just by this much, that it is accompanied by some apprehension of the matter asserted. This is plain; and the only question is, what measure of apprehension is sufficient.

Newman, *Grammar of Assent*, pp. 13–14.

Newman's answer is that we must apprehend the *predicate* of a proposition. The predicate elucidates the subject. Here is his example:

> Let the question be, "What is Trade?" here is a distinct profession of ignorance about "Trade;" and let the answer be, "Trade is the interchange of goods;"—trade then need not be known, as a condition of assent to the proposition, except so far as the account of it which is given in answer, "the interchange of goods," makes it known; and that must be apprehended in order to make it known.

Ibid., p. 14.

This is a rather Aristotelian idea. The subject is to the predicate as matter to form; the predicate is what describes and defines the subject as what is not yet fully known. (This should be compared to earlier discussions about the inner structure of an premise in an Aristotelian demonstration.)

Newman then provides one of the most famous examples in the book, which I will quote at length. Note several things about the following passage. In the first paragraph, the distinction between notional and real apprehension is illustrated. In the second paragraph, Newman expands upon his use of the "Lucern" example to point out that assent can be indirect; you can "nest" one proposition within another and assent to the overall proposition. Lastly,

notice the "three directions" that Newman provides in the third paragraph.

Ibid., pp. 15–16.

> If a child asks, "What is Lucern?" and is answered, "Lucern is medicago sativa, of the class Diadelphia and order Decandria;" and henceforth says obediently, "Lucern is medicago sativa, &c.," he makes no act of assent to the proposition which he enunciates, but speaks like a parrot. But, if he is told, "Lucern is food for cattle," and is shown cows grazing in a meadow, then, though he never saw lucern, and knows nothing at all about it, besides what he has learned from the predicate, he is in a position to make as genuine an assent to the proposition "Lucern is food for cattle," on the word of his informant, as if he knew ever so much more about lucern. And as soon as he has got as far as this, he may go further. He now knows enough about lucern, to enable him to apprehend propositions which have lucern for their predicate, should they come before him for assent, as, "That field is sown with lucern," or "Clover is not lucern."
>
> Yet there is a way, in which the child can give an indirect assent even to a proposition, in which he understood neither subject nor predicate. He cannot indeed in that case assent to the proposition itself, but he can assent to its truth. He cannot do more than assert that "Lucern is medicago sativa," but he can assent to the proposition, "That lucern is medicago sativa is true." For here is a predicate which he sufficiently apprehends, what is inapprehensible in the proposition being confined to the subject. Thus the child's mother might teach him to repeat a passage of Shakespeare, and when he asked the meaning of a particular line, such as "The quality of mercy is not strained," or "Virtue itself turns vice, being misapplied," she might answer him, that he was too young to understand it yet, but that it had a beautiful meaning, as he would one day know: and he, in faith on her word, might give his assent to such a proposition,—not, that is, to the line itself which he had got by heart, and which would be beyond him, but to its being true, beautiful, and good.
>
> Of course I am speaking of assent itself, and its intrinsic conditions, not of the ground or motive of it. Whether there is an obligation upon the child to trust his mother, or whether there are cases where such trust is impossible, are irrelevant questions, and I notice

> them in order to put them aside. I am examining the act of assent itself, not its preliminaries, and I have specified three directions, which among others the assent may take, viz. assent immediately to a proposition itself, assent to its truth, and assent both to its truth and to the ground of its being true,—"Lucern is food for cattle,"—"That lucern is medicago sativa is true,"—and "My mother's word, that lucern is medicago sativa, and is food for cattle, is the truth."

Students should carefully remember this passage.

(1) How does the Lucern example illustrate the difference between real and notional apprehension?
(2) How can one proposition be "nested" in another, and what difference does this make for assent?
(3) What are the "three directions" that this passage illustrates in regards to assent?

Furthermore, we reach here another important point, crucial to Newman's epistemology. Each of the three is a way of stating a proposition to which one can assent, but for a child, the third way of stating the proposition is the one that is "personal," that is, bound up with the person telling him the truth. To the child, his mother's

> veracity and authority is to him no abstract truth or item of general knowledge, but is bound up with that image and love of her person which is part of himself, and makes a direct claim on him for his summary assent to her general teachings.

Ibid., p. 17.

What was Newman's motto?

For Newman, the relevance of the person as knower and the persons with whom one knows are highly relevant considerations.

At the conclusion of Chapter 2, Newman makes an important observation:

> It appears then, that, in assenting to propositions, an apprehension in some sense of their terms is not only necessary to assent, as such, but also gives a distinct character to its acts. If therefore we would know more about Assent, we must know more about the apprehension which accompanies it.

Ibid., p. 18.

That is, assent to a proposition depends upon apprehending its terms. This means that *assent can come in two forms*, either real or notional, as we have seen. Thus, the last two rows of the original table (see above, p. 71), are not expressing equivalent things in

columns (2) and (3); again, I've used the "not equals" sign (≠) to indicate this.

In Chapter 3, Newman provides an array of comparisons and contrasts between real and notional apprehension. Real apprehension is fixated upon the concrete, the individual. This is true not just in our use of language about things present to us (remember: real apprehension and real or notional assent concern *propositions* about things). Indeed, real apprehension includes what we remember as well as imagine: "And so the child's idea of a king, as derived from his picture-book, will be that of a fierce or stern or venerable man, seated above a flight of steps, with a crown on his head and a sceptre in his hand." Thus, a child's imagination can lead him into a *false* apprehension, but it is still a *real* one.

Ibid., p. 26.

Notional apprehension can easily slide into what we will call "notionalism," the abuse of the notional mode of thought:

> And thus it comes to pass that individual propositions about the concrete almost cease to be, and are diluted or starved into abstract notions. The events of history and the characters who figure in it lose their individuality. States and governments, society and its component parts, cities, nations, even the physical face of the country, things past, and things contemporary, all that fulness of meaning which I have described as accruing to language from experience, now that experience is absent, necessarily becomes to the multitude of men nothing but a heap of notions, little more intelligible than the beauties of a prospect to the short-sighted, or the music of a great master to a listener who has no ear.

Ibid., pp. 31–32.

We must keep this passage in mind. It is a poor use of notional propositions and their apprehension to "starve [things] into abstract notions." To do so makes logical notions out of real things; the "ideal personages" that are more like stereotypes than real people, or the extras in a movie scene (see ibid., pp. 32–33). Newman is expressing the rather Aristotelian idea that human words cannot *exhaust* the reality of things; or, the truth in things, their intelligibility to mind, exceeds our ability to express in mere thoughts and words.

Indeed, Newman later notes that "no one from the sight of a horse or a dog would be able to anticipate its zoological definition, nor from a knowledge of its definition to draw such a picture as would direct the eye to the living specimen." Here, one should consider a passage from one of Newman's sermons, on "unreal" words (see below, p. 97).

Ibid., 34.

While the abstract and even merely "semiotic" character of notions is a sound point which Newman makes, he insists that we must use both real and notional apprehensions. Both modes are part of human nature:

> Each use of propositions has its own excellence and serviceableness, and each has its own imperfection. To apprehend notionally is to have breadth of mind, but to be shallow; to apprehend really is to be deep, but to be narrow-minded. The latter is the conservative principle of knowledge, and the former the principle of its advancement. Without the apprehension of notions, we should for ever pace round one small circle of knowledge; without a firm hold upon things, we shall waste ourselves in vague speculations.

Ibid.

At the same time:

> Real apprehension has the precedence, as being the scope and end and the test of notional; and the fuller is the mind's hold upon things or what it considers such, the more fertile is it in its aspects of them, and the more practical in its definitions.

Ibid.

Is this not rather Aristotelian? Our abstract ideas must be returned to the test of real experience, and the closer we are to the reality of things, the truer our ideas of nature will be. Compare:

> Lack of experience diminishes our power of taking a comprehensive view of the admitted facts []. Hence those who dwell in intimate association with nature and its phenomena grow more and more able to formulate, as the foundations of their theories, principles such as to admit of a wide and coherent development: while those whom devotion to abstract discussions has rendered unobservant of the facts are too ready to dogmatize on the basis of a few observations.

Aristotle, *On Generation and Corruption*, I.2, 316a5–10.

This closeness to the concrete is an important idea to emphasize, and so we will consider it in what follows.

What is Newman talking about?

Let us consider Newman's interest in the way in which the mind assents to propositions, especially concerning "concrete matter." This is an important passage:

Newman, *Grammar of Assent*, p. 7.

> In this Essay I treat of propositions only in their bearing upon concrete matter, and I am mainly concerned with Assent; with Inference, in its relation to Assent, and only such inference as is not demonstration; with Doubt hardly at all.

Newman reiterates this on the next page:

Ibid., p. 8.

> Confining myself to the subject of Assent and Inference, I observe two points of contrast between them. The first I have already noted. Assent is unconditional; else, it is not really represented by assertion. Inference is conditional, because a conclusion at least implies the assumption of premisses, and still more, because in concrete matter, on which I am engaged, demonstration is impossible.

Here we encounter a key point: **What does it mean that demonstration is impossible in concrete matter?** Is this true? Is this against Aristotle? Can we have no certain knowledge about concrete things?

Newman's second point is that we can *apprehend* a proposition which we do not *understand*. This is also a rather important point (see the outline above, p. 63).

Ibid. Newman makes a similar point on pp. 19–20, saying that "[understanding] is of uncertain meaning."

> The second has regard to the apprehension necessary for holding a proposition. We cannot assent to a proposition, without some intelligent apprehension of it; whereas we need not understand it at all in order to infer it. We cannot give our assent to the proposition that "x is z," till we are told something about one or other of the terms; but we can infer, if "x is y, and y is z, that x is z," whether we know the meaning of x and z or no.

Perhaps we could paraphrase this as follows: it is possible for the human mind to grasp the truth of a proposition without grasping the inner essence of a proposition. After all, as Aristotle says, "being" is analogous, as so "is" is not always a predicate that signifies the essence of something. St. Thomas concurs: "to be" is said in many ways:

St. Thomas, *Summa Theologiae*, Ia, q. 3, a. 3, ad 2 (Shapcote translation, slightly modified).

> *To be* [*esse*] can mean either of two things. It may mean the act of existing [*actus essendi*], or it may mean the composition of a proposition effected by the mind in joining a predicate to a subject. Taking *to be* in the first sense, we cannot understand God's existence nor His essence; but only in the second sense. We know that

> this proposition which we form about God when we say God is, is true; and this we know from His effects.

An analogous example here might help. For instance, to know that it is *true* that "Topeka is the capital of Kansas" is the second sense of "to be." To say that "Topeka exists" is the first sense. Note how we have an experiential basis for the truth and being of "Topeka" in both cases. However, sometimes we can use "to be" to signify the truth only, without seeing the existence and nature of what we are talking about; for instance: "He is not in this room, so he is somewhere else." Aquinas's example is the extreme of this latter case, where we use "to be" to signify the truth, and what we are talking about exists, but we do not have direct access to the thing we are talking about.

Where is Newman going?

Consider again the principal elements of Newman's first three chapters. He began by discussing the forms of proposition (the question, the conclusion, and the assertion), and then he discussed two ways in which the mind encounters propositions as objects: it can hold them as a whole in three corresponding ways, and it can apprehend their terms in either a real or a notional fashion.

(1) Propositions	(2) Holding		(3) Apprehending
(i) Interrogative, a Question	Doubt		*n/a*
(ii) Conditional, a Conclusion	Inference	≠	Notional
(iii) Categorical, an Assertion	Assent	≠	Real

So, in Chapter 1, Newman has discussed each column of the table in a general way. Then, he argued in Chapter 2 that there is a connection between column (2) and column (3), because in order to assent to a proposition (2,iii) you must (3) apprehend its predicate term as the formal element. In Chapter 3, he discussed column (3) through a comparison and contrast of the two main types of apprehension.

Let us consider where Newman is going next (recall the outline above, p. 63). He states at the beginning of Chapter 3 that he will discuss the two types of assent insofar as they are built upon the two types of apprehension, namely, real or notional. This is what Newman accomplishes in Chapter 4, while Chapter 5 is an application of his theory of assent to a concrete case.

So, in summary: Part I of the *Grammar* discusses the above table in general (Chapters 1–3). Newman then turns to focus in on box (2,iii) and its connection to column (3), for a sustained treatment

(Chapters 4–5). Part II, as we will see, considers box (2,ii) in connection to box (2,iii).

Before continuing to Chapter 4 of the *Grammar*, however, let us consider other connections on the subject-matter of belief and faith in the thought of St. Thomas and St. John Henry Newman.

6.4 Newman & Aquinas

St. Thomas Aquinas is never quoted in the *Grammar*. However, shortly after his conversion and during his studies in Rome to become a Catholic priest, it was Aquinas who provided Newman with the "great insight" that would, over twenty years later, become fully formed in the *Grammar*.

> [Newman] notes [in 1870, looking back] that he has "manuscripts remaining to prove the following distinct separate beginnings." The first of these, from 17 June 1846, reads: "On St. Thomas's view of faith as 'cogitare cum assensu'." It was, in other words, Aquinas' treatment of the Augustinian notion of "thinking with assent" which prompted Newman to make the first deliberate beginning on a work which was to occupy him for more than twenty years. The problem of the nature of assent was not new to him . . . But when he read Aquinas on the subject he experienced a sense of recognition which, to judge from his use of italics for emphasis, had a good deal of force for him: "This is *precisely* my main distinction in my University Sermons: on which I insisted and hammered so much."

Evans, "Newman and Aquinas on Assent," p. 202. See also Hütter, *Newman on Truth*, p. 16, for an extensive description of the works of St. Thomas that Newman personally owned and had studied.

The passage was from Aquinas's *Commentary on the Sentences*, and the phrase is St. Augustine's, a famous *locus* of medieval theological exposition.

> For who cannot see that thinking is prior to believing? For no one believes anything unless he has first thought that it is to be believed. For however suddenly, however rapidly, some thoughts fly before the will to believe, and this presently follows in such wise as to attend them, as it were, in closest conjunction, it is yet necessary that everything which is believed should be believed after thought has preceded; although even *belief itself is nothing else than to think with assent* [*credere nihil aliud est quam cum assensione cogitare*]. For it is not every one who thinks that believes, since many think in order that they may not believe; but everybody who believes, thinks — both thinks in believing and believes

St. Augustine, *On the Predestination of the Saints*, Book I, ch. 5 (New Advent translation).

> in thinking. Therefore in what pertains to religion and piety (of which the apostle was speaking), if we are not capable of thinking anything as of ourselves, but our sufficiency is of God, we are certainly not capable of believing anything as of ourselves, since we cannot do this without thinking; but our sufficiency, by which we begin to believe, is of God.

So, to fully appreciate this background influence of St. Thomas, we will examine a select set of passages from his *corpus*. (Aquinas's treatment on the virtue of faith in the *Summa Theologiae* is available online.)

The Sentences *passage which inspired Newman*

The following is a key passage from the questions in Aquinas's *Sentences* that inspired Newman during his studies in Rome. One should also consult Hütter, *Newman on Truth*, pp. 121–125.

For the sake of clarity, consider the following table and then read St. Thomas's rather terse text.

	***In III Sent.*, d. 23, q. 2, a. 2, qc. 1**
Understanding	assent without thinking
Knowing	thinking before assent
Believing	thinking with perfect assent
Opining	thinking with imperfect assent
Suspecting	...
Doubting	no assent, still thinking
Ignorance	neither thinking nor assent

> It is clear, then, from the aforesaid that "to think with assent" [*cum assensione cogitare*] separates believing [*credentem*] from all the others [ignorance, doubt, opinion, science, understanding]. For since thinking [*cogitatio*] implies a discourse of reason, the one understanding [*intelligens*] has assent without thinking, because understanding is about principles, which are approved by anyone upon hearing them . . . However, the one knowing [*sciens*] has both assent and thinking, but not thinking with assent, but rather thinking before assent, because reason in its analysis arrives at understanding, as was said. However, the one believing [*credens*] has assent and thinking at once, because the intellect has not been brought to principles known *per se*. Whence, inasmuch as it is such, [believing] has a motion to diverse things, but it is determined to one by what is extrinsic, namely by the will. However, the one with

St. Thomas, *In III Sent.*, d. 23, q. 2, a. 2, qc. 1.

> opinion [*opinans*] has thinking without perfect assent, but rather has something of assent, insofar as he adheres to one more than to the other. However, the one doubting [*dubitans*] has nothing of assent, but is still thinking. However, the one who is ignorant [*nesciens*] has neither assent nor thought.

We should note here the role which the will plays in the act of assent by the intellect. Also, the list of the forms of thinking, or "cogitation," is one to which Aquinas frequently returns for the sake of comparing and contrasting faith to the other members of the list.

Note also what Aquinas says about the one with opinion: his imperfect assent leads him to adhere "to one more than to the other." This shorthand description refers to one or the other side of a contradiction. Our next passage will consider "*cogitatio*" in a bit more detail, and then we will return to the opposition between possible propositions to which the mind, when thinking, can assent.

The definition of belief

In the following passage, Aquinas returns to the idea of cogitation and assent to define belief. You should notice the many similarities in this passage to the one from the *Sentences* commentary that inspired Newman.

St. Thomas, *ST*, IIa-IIae, q. 2, a. 1, c.

> To think [*cogitare*] can be taken in three ways. First, in a general way for any kind of actual consideration of the intellect ... Second, *to think* is more strictly taken for that consideration of the intellect, which is accompanied by some kind of inquiry, and which precedes the intellect's arrival at the stage of perfection that comes with the certitude of sight. ... In this way thought is, properly speaking, the movement of the mind while yet deliberating, and not yet perfected by the clear sight of truth. Since, however, such a movement of the mind may be one of deliberation either about universal notions, which belongs to the intellectual faculty, or about particular matters, which belongs to the sensitive part, hence it is that *to think* is taken second for an act of the deliberating intellect, and third for an act of the cogitative power.
>
> Accordingly, if *to think* be understood broadly according to the first sense, then *to think with assent*, does not express completely what is meant by *to believe*: since, in this way, a man thinks with assent even when he

considers what he knows by science, or understands. If, on the other hand, *to think* be understood in the second way, then this expresses completely the nature of the act of believing.

For among the acts belonging to the intellect, some have a firm assent without any such kind of thinking, as when a man considers the things that he knows by science, or understands, for this consideration is already formed. But some acts of the intellect have unformed thought devoid of a firm assent, whether they incline to neither side, as in one who *doubts*; or incline to one side rather than the other, but on account of some slight motive, as in one who *suspects*; or incline to one side yet with fear of the other, as in one who *opines*. But this act *to believe*, cleaves firmly to one side, in which respect belief has something in common with science and understanding; yet its knowledge [*cognitio*] does not attain the perfection of clear sight, wherein it agrees with doubt, suspicion and opinion. Hence it is proper to the believer to think with assent: so that the act of believing is distinguished from all the other acts of the intellect, which are about the true or the false.

Ibid., ad 3um.

Note, again, that the proximate agent cause of the act of belief is the will: "The intellect of the believer is determined to one object, not by the reason, but by the will, wherefore assent is taken here for an act of the intellect as determined to one object by the will." This act of the will is necessary because the intellect does not possess "the perfection of clear sight" that is necessary to assent to the truth of its own natural power.

	Thinking	**Certitude**	**Assent**	**Resulting Character of the Knower**
Understanding	Formed	Yes	Firm	Determined to principles or conclusions
Knowing	Formed	Yes	Firm	Determined through a demonstration
Believing	Unformed	Yes	Firm	Determined to one side, not the other
Opining	Unformed	No	Lacking	Inclines to one side, fears the other
Suspecting	Unformed	No	Lacking	Inclines slightly to one side
Doubting	Unformed	No	Lacking	Inclines to neither side
Ignorance	None	n/a	n/a	[*A lack of determination*]

Also, the taxonomy of the forms of thinking agrees generally with the *Sentences* passage (but adds "suspecting" to the list). However, the explanation of how these states differ is more clearly put. "To believe" shares the cognitive firmness of science and understanding (certitude), yet it shares the form of thinking with doubt, suspicion, and opinion.

To more fully understand the gradation here, however, we should consider the difference between formable and formed thought. Then, we can consider the nature of faith more clearly.

– Cogitation and formable words

When commenting on the first two verses of St. John's Gospel, Aquinas notes about our words, in comparison to the Divine Word, that our words are imperfect, and not themselves *persons*. In contrast, the Word is perfect and is also a divine person. But the first difference between human words and the divine Word is the one I wish to highlight:

> The first difference, according to Augustine, is that our word is formable before being formed, for when I wish to conceive the notion of a stone, I must arrive at it by reasoning. And so it is in all other things that are understood by us, with the sole possible exception of the first principles, which, since they are known in a simple manner, are known at once without any discourse of reason.
>
> So as long as the intellect, in so reasoning, casts about this way and that, the formation is not yet complete [*intellectus iactatur hac atque illac, nec dum formatio perfecta est*]. It is only when it has conceived the notion of the thing perfectly that for the first time it has the notion of the complete thing and a word. Thus in our mind there is both a cogitation [*cogitatio*], meaning the discourse involved in an investigation, and a word, which is formed according to a perfect contemplation of the truth. So our word is first in potency before it is in act. But the Word of God is always in act. In consequence, the term cogitation does not properly speaking apply to the Word of God.

St. Thomas, *In Iohan.*, ch. 1, lect. 1, n. 26 (Aquinas Institute translation, as also in the quotations to follow unless noted). An excellent article to consider here is Marie I. George, "Aquinas's Teachings on Concepts and Words."

Thus, the "casting about" of thought, our thinking or cogitating, begins in an imperfect state. Our minds and our words are formable before being perfectly formed. The formation itself is with respect to what can be affirmed or denied: propositions or statements.

Following Aristotle, St. Thomas arrayed propositions into a logical array which the medievals called the "Square of Opposition." So, a helpful image might be to think of the person cogitating—thinking things through "casting about"—as wavering between the corners of the square, not yet assenting to one corner or side over another.

Next, let us consider some details about faith.

The nature of faith

The act of faith is "to believe in God" (see *ST*, IIa-IIae, q. 2, a. 2). When considering the Scriptural definition of faith in Hebrews (11:1), "Faith is the substance of things to be hoped for, the evidence of things that appear not," Aquinas again considers assent and the comparison of faith to other forms of knowing.

> In this way faith is distinguished from all other things pertaining to the intellect. For when we describe it as *evidence*, we distinguish it from opinion, suspicion, and doubt, which do not make the intellect adhere to anything firmly; when we go on to say, *of things that appear not*, we distinguish it from science and understanding, the object of which is something apparent; and when we say that it is *the substance of things to be hoped for*, we distinguish the virtue of faith from faith commonly so called, which has no reference to the beatitude we hope for.

St. Thomas, *ST*, IIa-IIae, q. 4, a. 1, c.

In this act of supernatural faith, in which we believe God, the First Truth, we still believe complex objects, or propositions, as it were the matter or material object of faith, which propositions are expressed dogmatically in credal statements, the "symbols" of the faith. But this does not make our faith abstract or notional.

> The symbol mentions the things about which faith is, insofar as the act of the believer is terminated in them, as is evident from the manner of speaking about them. Now the act of the believer does not terminate in something utterable [*enuntiabile*], but in a thing. For we do not form enunciations except that through them we might have knowledge about things: just as this is the case in science, so too is it the case in faith.

St. Thomas, *ST*, IIa-IIae, q. 1, a. 2, ad 2um (Aquinas Institute translation modified).

– Aquinas on the causes of faith, both natural and supernatural

Lastly, we should take note of some comparisons which Aquinas makes between supernatural and natural faith when discussing the causes of faith. These occur when he speaks of the involvement of the will in the act of faith, as well as in the counterfeit or natural "faith" that is present in the fallen angels or in heretics.

This first passage notes that the will is the proximate but not the sufficient cause of faith. God is required as the ultimate cause of our will in the act of assent.

> Two things are requisite for faith. First, that the things which are of faith should be proposed to man: this is necessary in order that man believe anything explicitly.

St. Thomas, *ST*, IIa-IIae, q. 6, a. 1, c.

> The second thing requisite for faith is the assent of the believer to the things which are proposed to him. Accordingly, as regards the first of these, faith must needs be from God. Because those things which are of faith surpass human reason, hence they do not come to man's knowledge, unless God reveal them. To some, indeed, they are revealed by God immediately, as those things which were revealed to the apostles and prophets, while to some they are proposed by God in sending preachers of the faith, according to Rom. 10:15: *How shall they preach, unless they be sent?*
>
> As regards the second, viz. man's assent to the things which are of faith, we may observe a twofold cause, one of external inducement, such as seeing a miracle, or being persuaded by someone to embrace the faith: neither of which is a sufficient cause, since of those who see the same miracle, or who hear the same sermon, some believe, and some do not. Hence we must assert another internal cause, which moves man inwardly to assent to matters of faith.
>
> The Pelagians held that this cause was nothing else than man's free-will: and consequently they said that the beginning of faith is from ourselves, inasmuch as, to wit, it is in our power to be ready to assent to things which are of faith, but that the consummation of faith is from God, Who proposes to us the things we have to believe. But this is false, for, since man, by assenting to matters of faith, is raised above his nature, this must needs accrue to him from some supernatural principle moving him inwardly; and this is God. Therefore faith, as regards the assent which is the chief act of faith, is from God moving man inwardly by grace.

Ibid., ad 3um.

Yet we are still causes in this inward movement of grace: "To believe does indeed depend on the will of the believer: but man's will needs to be prepared by God with grace, in order that he may be raised to things which are above his nature."

This supernatural causality is lacking in two prominent cases: in the demons and in heretics.

St. Thomas, *ST*, IIa-IIae, q. 5, a. 3, c. and ad 2um.

> The believer's intellect assents to that which he believes, not because he sees it either in itself, or by resolving it to first self-evident principles, but because his will commands his intellect to assent. Now, that the will moves the intellect to assent, may be due to two causes. First, through the will being directed to the good, and in this way, to believe is a praiseworthy action.

> Second, because the intellect is convinced that it ought to believe what is said, though that conviction is not based on objective evidence. Thus if a prophet, while preaching the word of God, were to foretell something, and were to give a sign, by raising a dead person to life, the intellect of a witness would be convinced so as to recognize clearly that God, Who lieth not, was speaking, although the thing itself foretold would not be evident in itself, and consequently the essence of faith would not be removed.
>
> Accordingly we must say that faith is commended in the first sense in the faithful of Christ: and in this way faith is not in the demons, but only in the second way, for they see many evident signs, whereby they recognize that the teaching of the Church is from God, although they do not see the things themselves that the Church teaches, for instance that there are three Persons in God, and so forth. . . .
>
> [*Reply to Obj. 2:*] Faith, which is a gift of grace, inclines man to believe, by giving him a certain affection for the good, even when that faith is lifeless. Consequently the faith which the demons have, is not a gift of grace. Rather are they compelled to believe through their natural intellectual acumen.

In the case of a heretic or disbelieves even one article of faith, Aquinas similarly resolves the apparent "faith" of the heretic to a natural sort of belief based on his own will.

> Whoever does not adhere, as to an infallible and Divine rule, to the teaching of the Church, which proceeds from the First Truth manifested in Holy Writ, has not the habit of faith, but holds that which is of faith otherwise than by faith. Even so, it is evident that a man whose mind holds a conclusion without knowing how it is proved, has not scientific knowledge, but merely an opinion about it. Now it is manifest that he who adheres to the teaching of the Church, as to an infallible rule, assents to whatever the Church teaches; otherwise, if, of the things taught by the Church, he holds what he chooses to hold, and rejects what he chooses to reject, he no longer adheres to the teaching of the Church as to an infallible rule, but to his own will. Hence it is evident that a heretic who obstinately disbelieves one article of faith, is not prepared to follow the teaching of the Church in all things; but if he is not obstinate, he is no longer in heresy but only in error. Therefore it is clear that such a heretic with regard to

St. Thomas, *ST*, IIa-IIae, q. 5, a. 3, c.

> one article has no faith in the other articles, but only a kind of opinion in accordance with his own will.

What is striking in this analysis is the homology of the will as a cause in both cases. That is, for both supernatural and natural belief, the will is required to "bridge the gap," due to lack of evidence, between the truth proposed to the intellect and the intellect's own native act of assent.

With these passages from St. Thomas, and keeping the remarks we have made in this Prelude in mind, let us continue our study of St. John Henry Newman's *Essay* on the nature of belief.

Real & Notional Assent (*Grammar*, chs. 4–5)

7

> For however suddenly, however rapidly, some thoughts fly before the will to believe, and this presently follows in such wise as to attend them, as it were, in closest conjunction, it is yet necessary that everything which is believed should be believed after thought has preceded; although even belief itself is nothing else than to think with assent.
>
> – St. Augustine, *On the Predestination of the Saints*, Book I, ch. 5

7.1 Introduction

Having seen the basic elements which Newman assumes, we will now study his fundamental distinction, that between real and notional assent.

Goals for this chapter

(1) To distinguish between notional and real assent
(2) To apply the distinctions made about assent to cases of religious belief

Readings for this chapter

– Newman, *Grammar of Assent*, chs. 4–5, see *CR*, vol. 2
– *Supplemental reading:* Finish reading Hütter, *Newman on Truth*, prologue and ch. 1

Be deliberate about working through the remainder of the supplemental reading from Hütter!

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– What is real assent? How is it distinguished from notional assent?
– How are apprehension and assent found in cases of religious belief, according to Newman?
– How do conscience and real assent play a role in such cases?

7.2 Notional Assent

This section corresponds to the reading of Newman, *Grammar of Assent*, ch. 4, pp. 36–74 (introduction and §1).

Reading questions

Before you read, consider the following: *Consider the examples of demonstration in the natural sciences which we discussed previously in the course. How would you characterize your* assent *or* apprehension *of those conclusions?*

As you read, consider the following questions:

- In his introductory section, how does Newman compare and contrast the real and the notional in parallel with assent and inference?
- What characterizes the notional assent that Newman calls "profession"? What are examples of it?
- What characterizes the notional assent that Newman calls "credence"? What are examples of it?
- What characterizes the notional assent that Newman calls "opinion"? What are examples of it?
- What characterizes the notional assent that Newman calls "presumption"? What are examples of it?
- What characterizes the notional assent that Newman calls "speculation"? What are examples of it?

Post-reading

Our discussion of this portion of the *Grammar* should aim at ranking or organizing the various types of notional assents that Newman describes, at least once we have some handle on what they mean. We might also consider how to compare and contrast these five with the forms of thinking that St. Thomas lays out (see above, p. 83, as well as p. 85).

7.3 Real Assent

This section corresponds to the reading of Newman, *Grammar of Assent*, ch. 4, pp. 75–97 (§§2–3).

Reading questions

Before you read, consider the following: *Reflect upon an experience you have had where what was once just a set of words or a mere description or "just an idea" was made more real or concrete or present to you through some event or experience: for instance, hearing Matthew 18:21–22 versus receiving the forgiveness it describes.*

As you read, consider the following questions:

- Questions for §2:
  - What are the various examples that Newman gives to contrast notional with real assent? What characterizes each of them?
  - What are the three remarks Newman makes to clarify the nature of real assent?
  - What is the power of real assent like?
- Questions for §3:
  - How does notional and real assent differ in terms of action?
  - How do inference and assent differ in terms of the effects on a person?
  - Newman closes the chapter with a long quotation from a prior work of his. How are life, action, belief, and intellectual or rational knowledge related in this passage?

Space below for notes; post-reading items on the next page.

Post-reading

Newman was a lifelong scholar and thinker, devoted to the moral and intellectual lives of his university students. It is worthwhile reflecting upon the breadth and balance of the view of the life of the mind he is taking in this chapter. For instance, after working through the reading questions, we might ponder what sort of rhetorical effect Newman intends in this passage:

Newman, *Grammar of Assent*, pp. 95–96.

> Let no one suppose, that in saying this I am maintaining that all proofs are equally difficult, and all propositions equally debatable. Some assumptions are greater than others, and some doctrines involve postulates larger than others, and more numerous. I only say, that impressions lead to action, and that reasonings lead from it. Knowledge of premisses, and inferences upon them,—this is not to live. It is very well as a matter of liberal curiosity and of philosophy to analyze our modes of thought: but let this come second, and when there is leisure for it, and then our examinations will in many ways even be subservient to action. But if we commence with scientific knowledge and argumentative proof, or lay any great stress upon it as the basis of personal Christianity, or attempt to make man moral and religious by libraries and museums, let us in consistency take chemists for our cooks, and mineralogists for our masons.

7.4 Religious Apprehension & Assent

This section corresponds to the reading of Newman, *Grammar of Assent*, ch. 5, pp. 98–153 (we will focus on pp. 98–121).

Reading questions

Before you read, consider the following: *Is it true that, unless you can answer every objection that someone might make against something that you believe, that you are not entitled to believe it to be true? The belief could be anything—for instance, the belief "My mother loves me."*

As you read, consider the following questions:

- What is a dogma? What distinguishes religious from theological acts, according to Newman? How are these conclusions the applications of distinctions made in the first part of the *Grammar*?
- Questions for §1:
  - In what way is notional assent about God possible?
  - What is Newman's argument that a real assent to God's existence is possible?
  - How does Newman understand the following claim?—"Without a proposition or thesis there can be no assent, no belief, at all." (see p. 119)
  - How are religion and theology related?
- Questions for §2:
  - What sort of assent do revealed doctrines receive?
  - In what way, according to Newman, can we have a real assent to dogmas such as the belief in the Holy Trinity?
- Questions for §3:
  - What is the "familiar charge" against the purportedly unintelligible dogmas of the Catholic Church? How does Newman formulate this objection more precisely?
  - What are the distinctions that Newman makes to answer this objection?
  - How does Newman defend religious assent to the Church as "the word of revelation" in terms of real assent?

Post-reading

In a clarificatory note published in 1880, Newman describes Part I of the *Grammar* in these terms: "The Essay begins with refuting the fallacies of those who say that we cannot believe what we cannot understand." After working through the reading questions, we should determine to what degree we think Newman has succeeded in fulfilling that aim.

See Note 2, p. 495.

7.5 Newman & Conscience

In what follows, we offer some questions for the sake of discussing (time permitting) Hütter, *Newman on Truth*, Prologue and ch. 1, pp. 1–73 (optional, pp. 73–89). To facilitate reading this material over several days, I have supplied specifying page numbers for each question.

- What is the purpose of Hütter's book on Newman? What does he mean by a "counterfeit"? (pp. 1–5, p. 14)
- What strikes you most of all about Newman's life? (pp. 5–14)
- How does Hütter propose to relate the thought of Newman to that of Aquinas? (pp. 14–20)
- What events in Newman's life contributed to his polemical writings on conscience? (pp. 21–24)
- According to Hütter, how did Newman diagnose the nature and extent of the "counterfeit" of conscience? (pp. 24–33)
- What does St. Thomas mean by *synderesis* and *conscientia*, following Hütter's exposition? (pp. 33–37)
- What relationship does *synderesis* have with the natural law, eternal law, and the order of the universe itself? (pp. 37–41)
- What is the relationship between conscience and prudence? (pp. 42–45)
- What characterizes an erroneous conscience and invincible ignorance? (pp. 45–50)
- How does the true, "theonomic" sense of "conscience" differ from the counterfeit of conscience? (pp. 51–53)
- Do St. John Henry Newman and St. Thomas Aquinas have compatible teachings on the true nature of conscience? (pp. 53–59)
- How ought we understand the relationship between conscience and the magisterium of the Church? What does this imply about true "freedom of conscience"? (pp. 59–73)

This chapter of Hütter's book is clearly relevant for our discussion of Chapter 5 of the *Grammar*. His next topic, the counterfeit of faith, is relevant to the first part of the *Grammar*, but is more directly pertinent to Part II.

7.6 Conclusion: Unreal Words

To complement our discussion of the dangers of merely "notional" assent, a sort of habitual "notionalism" about matters of truth and ultimate importance, I offer the following excerpt from one of Newman's sermons.

———— ⁜ ————

Newman, *Parochial and Plain Sermons*, vol. 5, Sermon 3, Unreal Words, pp. 34–36.

Of course it is very common in all matters, not only in religion, to speak in an unreal way; viz., when we speak on a subject with which our minds are not familiar. If you were to hear a person who knew nothing about military matters, giving directions how soldiers on service should conduct themselves, or how their food and lodging, or their marching, was to be duly arranged, you would be sure that his mistakes would be such as to excite the ridicule and contempt of men experienced in warfare. If a foreigner were to come to one of our cities, and without hesitation offer plans for the supply of our markets, or the management of our police, it is so certain that he would expose himself, that the very attempt would argue a great want of good sense and modesty. We should feel that he did not understand us, and that when he spoke about us, he would be using words without meaning. If a dim-sighted man were to attempt to decide questions of proportion and colour, or a man without ear to judge of musical compositions, we should feel that he spoke on and from general principles, on fancy, or by deduction and argument, not from a real apprehension of the matters which he discussed. His remarks would be theoretical and unreal.

This unsubstantial way of speaking is instanced in the case of persons who fall into any new company among strange faces and amid novel occurrences. They sometimes form amiable judgments of men and things, sometimes the reverse,—but whatever their judgments be, they are to those who know the men and the things strangely unreal and distorted. They feel reverence where they should not; they discern slights where none were intended; they discover meaning in events which have none; they fancy motives; they misinterpret manner; they mistake character; and they form generalizations and combinations which exist only in their own minds.

Again, persons who have not attended to the subject of morals, or to politics, or to matters ecclesiastical, or to theology, do not know the relative value of questions which they meet with in these departments of knowledge. They do not understand the difference between one point and another. The one and the other

are the same to them. They look at them as infants gaze at the objects which meet their eyes, in a vague unapprehensive way, as if not knowing whether a thing is a hundred miles off or close at hand, whether great or small, hard or soft. They have no means of judging, no standard to measure by,—and they give judgment at random, saying yea or nay on very deep questions, according as their fancy is struck at the moment, or as some clever or specious argument happens to come across them. Consequently they are inconsistent; say one thing one day, another the next;—and if they must act, act in the dark; or if they can help acting, do not act; or if they act freely, act from some other reason not avowed. All this is to be unreal.

———— ❖ ————

Assent & Certitude (*Grammar*, chs. 6–7)

8

> Moreover, if a man sets out to acquire the scientific knowledge that comes through demonstration, he must not only have a better knowledge of the basic principles and a firmer conviction of them than of the connexion which is being demonstrated: more than this, nothing must be more certain or better known to him than these basic principles in their character as contradicting the fundamental premisses which lead to the opposed and erroneous conclusion. For indeed, pure science must be unshakable.
>
> – Aristotle, *Posterior Analytics*, I.3, 72a34–b4

> It is hard to be sure whether one knows or not; for it is hard to be sure whether one's knowledge is based on the basic principles appropriate to each attribute—the differentia of true knowledge.
>
> – Aristotle, *Posterior Analytics*, I.9, 76a26–28

8.1 Introduction

The word translated as "unshakeable" at the end of the first epigraph above is *ametapeiston*, which means not to be moved by persuasion, inexorable, something unchangeable or steadfast. We should reflect upon this transfer of the meaning of immovability from the physical realm to the cognitive and volitional realm. Of course, as the second epigraph from Aristotle points out, this unshakeable status of pure science is difficult to achieve.

Having argued—in the first part of the *Grammar* (see above, p. 63)—that we can believe what we cannot fully understand, in Part II Newman devotes himself to resolving another apparent paradox: How can we assent unconditionally through inference to a proposition that we cannot prove through formal or mathematical reasoning? Note how Newman divides Chapters 6 through 9 in the opening to Part II (where I insert the corresponding chapter numbers in brackets).

> [W]hat presents some difficulty is this, how it is that a conditional acceptance of a proposition,—such as is an act of inference,—is able to lead as it does, to an

Newman, *Grammar of Assent*, pp. 157–58.

> unconditional acceptance of it,—such as is assent; how it is that a proposition which is not, and cannot be, demonstrated, which at the highest can only be proved to be truth-like, not true, such as "I shall die," nevertheless claims and receives our unqualified adhesion. To the consideration of this paradox, as it may be called, I shall now proceed; that is, to the consideration, first, of the act of assent to a proposition, which act is unconditional [chs. 6–7]; next, of the act of inference, which goes before the assent and is conditional [ch. 8]; and, thirdly, of the solution of the apparent inconsistency which is involved in holding that an unconditional acceptance of a proposition can be the result of its conditional verification. [ch. 9]

Goals for this chapter

(1) To study Newman's distinction between assent and certitude
(2) To see how this distinction fits into Newman's overall project

Readings for this chapter

– Optional: Newman, *Grammar or Assent*, chs. 6–7
– *Supplemental reading:* Hütter, *Newman on Truth*, ch. 2

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– In what sense is simple assent unconditional? How does Newman refute the contrary position of John Locke?
– What is complex assent and how is it constitutive of certitude?
– How does certitude differ from assent? Under what conditions is certitude indefectible?

8.2 Simple & Complex Assent

This section corresponds to the reading of Newman, *Grammar of Assent*, ch. 6, pp. 157–209. Since chapters 6 through 8 are particularly complex, an outline and guide is provided between the *CG* chapters 8 and 9; see 108ff.

Reading questions

Before you read, consider the following: *Is the evidence for claims about truth measurable by mathematical proportions? For instance, could you say that there is a 99 in 100 chance that it is true that your best friend cares for your well being? Are there certain subjects which admit of evaluating truth probabilistically, and others not?*

As you read, consider the following questions:

- Questions for §1, on simple assent:
  - What is John Locke's view of assent, in Newman's account? Where does Locke actually agree with him, according to Newman?
  - What six circumstances does Newman employ to show that assent exists?
  - What are the arguments Newman makes to show that assent is unconditional, or does not admit of degrees?
  - What is Locke's mistaken conflation between degrees of inference and degrees of assent?
  - What examples does Newman provide of unconditional assents to truths that "have an immediate and an unhesitating hold" on our minds?
  - Which linguistic expressions seem to convey degrees of assent? How does Newman explain these apparent counterexamples to his position?
- Questions for §2, on complex assent:
  - In what ways are acts of inference related to acts of assent?
  - How does inference and assent fulfill human nature?
  - What is Newman's definition of certitude?
  - What conditions tell us what certitude is not? What is the character or quality of these conditions?
  - What experiential conditions tell us what certitude is?

Post-reading items on the following page.

Newman against Locke, Butler, and Hume

Of Newman's many famous interlocutors in the *Grammar*, we meet with one of them in this chapter: John Locke. While it is not within the scope of our course to compare and contrast Locke's own case with Newman's, we can consider the following excerpt from his consideration of the degrees of assent.

– Locke and the degrees of assent

Previous to this passage, in the first chapters of the fourth book of his monumental *Essay Concerning Human Understanding*, Locke had described probability as "likeliness to be true," in a matter which falls short of demonstration. The grounds of probability are our own experience or the testimony of others's experience. In the following passage, Locke begins his case that there are degrees of assent.

Locke, *Essay Concerning Human Understanding*, IV.16.1 (OLL online).

> The grounds of probability we have laid down in the foregoing chapter; as they are the foundations on which our assent is built, so are they also the measure whereby its several degrees are, or ought to be regulated: only we are to take notice, that whatever grounds of probability there may be, they yet operate no farther on the mind, which searches after truth, and endeavours to judge right, than they appear; at least in the first judgment or search that the mind makes. I confess, in the opinions men have, and firmly stick to, in the world, their assent is not always from an actual view of the reasons that at first prevailed with them: it being in many cases almost impossible, and in most very hard, even for those who have very admirable memories, to retain all the proofs, which upon a due examination made them embrace that side of the question. It suffices that they have once with care and fairness sifted the matter as far as they could; and that they have searched into all the particulars, that they could imagine to give any light to the question: and with the best of their skill cast up the account upon the whole evidence; and thus having once found on which side the probability appeared to them, after as full and exact an enquiry as they can make, they lay up the conclusion in their memories, as a truth they have discovered; and for the future they remain satisfied with the testimony of their memories, that this is the opinion, that by the proofs they have once seen of it deserves such a degree of their assent as they afford it.

How does Newman reply to such ideas?

– Butler and the very guide of life

Joseph Butler's famous *Analogy of Religion* influenced Newman as a young fellow at Oriel College in Oxford, and Butler is in the background of the last chapter of the *Grammar*. An Anglican bishop and one of England's most influential Anglican theologians and moralists of the 18th century, Butler was also a harsh critic of aspects of Locke's philosophy. However, Butler's argument in his *Analogy*, which defends the coherence of Christianity and its evidences from analogies to the natural order found in the world, is founded on the logic of probability.

See Ker, *Newman*, p. 26; Juergens, *Newman on the Psychology of Faith*, p. 243.

> Probable evidence is essentially distinguished from demonstrative by this, that it admits of degrees; and of all variety of them, from the highest moral certainty, to the very lowest presumption. We cannot indeed say a thing is probably true upon one very slight presumption for it; because, as there may be probabilities on both sides of a question, there may be some against it; and though there be not, yet a slight presumption does not beget that degree of conviction, which is implied in saying a thing is probably true. But that the slightest possible presumption is of the nature of a probability, appears from hence; that such low presumption, often repeated, will amount even to moral certainty. Thus a man's having observed the ebb and flow of the tide to-day, affords some sort of presumption, though the lowest imaginable, that it may happen again to-morrow: but the observation of this event for so many days, and months, and ages together, as it has been observed by mankind, gives us a full assurance that it will. . . .
>
> Probable evidence, in its very nature, affords but an imperfect kind of information; and is to be considered as relative only to beings of limited capacities. For nothing which is the possible object of knowledge, whether past, present, or future, can be probable to an infinite intelligence; since it cannot but be discerned absolutely as it is in itself, certainly true, or certainly false. But to us, probability is the very guide of life. . . .
>
> It is enough to the present purpose to observe, that this general way of arguing is evidently natural, just, and conclusive. For there is no man can make a question but that the sun will rise to-morrow, and be seen, where it is seen at all, in the figure of a circle, and not in that of a square.

Butler, *Analogy of Religion*, Introduction (Gutenburg.org).

Would Newman agree with Bulter?

– Hume and probabilistic experience

Famously, David Hume's radical empiricism leads to the undermining of certitude in matters of fact. Hume uses a "calculus" of probabilities based upon experience to argue against the evidences of Christianity based upon human testimony, especially testimony concerning miracles. Hume's basic contention was that no degree of human testimony could cause one to assent to a miracle, when one's own experience attests to the higher probability of the regular course of the laws of nature, there being a higher likelihood of the falsehood of human testimony than a violation of the laws of nature.

Hume, *Enquiry Concerning Human Understanding*, §X, "Of Miracles," Part I, n. 87 (Gutenburg.org)

> A wise man, therefore, proportions his belief to the evidence. In such conclusions as are founded on an infallible experience, he expects the event with the last degree of assurance, and regards his past experience as a full *proof* of the future existence of that event. In other cases, he proceeds with more caution: He weighs the opposite experiments: He considers which side is supported by the greater number of experiments: to that side he inclines, with doubt and hesitation; and when at last he fixes his judgement, the evidence exceeds not what we properly call *probability*. All probability, then, supposes an opposition of experiments and observations, where the one side is found to overbalance the other, and to produce a degree of evidence, proportioned to the superiority. A hundred instances or experiments on one side, and fifty on another, afford a doubtful expectation of any event; though a hundred uniform experiments, with only one that is contradictory, reasonably beget a pretty strong degree of assurance. In all cases, we must balance the opposite experiments, where they are opposite, and deduct the smaller number from the greater, in order to know the exact force of the superior evidence.

Newman replies to Hume later in the *Grammar*.

8.3 Certitude

This section corresponds to the reading of Newman, *Grammar of Assent*, ch. 7, pp. 210–258. Since chapters 6 through 8 are particularly complex, an outline and guide is provided between the *CG* chapters 8 and 9; see 108ff.

Reading questions

Before you read, consider the following: *Are you certain that you do not live on an island? Are you certain that two sides of a triangle are always longer than the remaining third side? What is the difference between these two certainties?*

As you read, consider the following questions:

- Questions for §1, on the comparison of assent and certitude:
  - Do most men have simple assent or complex assent concerning the most important propositions?
  - How do simple assent and complex assent (or certitude) compare to real and notional assent?
  - How ought assent, certitude, and mental introspection be related, according to Newman?
  - How are assent and certitude contrasted on the point of endurance or persistence?
- Questions for §2, on the indefectibility of certitude:
  - What is the object of certitude? What does this reveal about the constitution of our intellect?
  - What objection does Newman raise against the various "stipulations" of certitude?
  - How is certitude like and unlike infallibility?
  - How can the rest or security of certitude be attained without infallibility?
  - How does Newman address the possibility of being deceived as to one's certitude?
  - What matters or topics are subject to certitude, according to Newman? Which are not?
  - How does Newman answer the objection that certitudes do not admit of the same degree of universal approval? That there are hosts of contradiction, conflict, and change among the "certitudes" proposed by systems of belief?
  - Is certitude subject to some sort of test to distinguish it from false certitude?
  - What are the conditions of certitude? Are these necessary or sufficient conditions, or both?

Post-reading items on the next page.

Post-reading

In our discussion of this chapter, the two appendices to Hütter's ch. 2 (pp. 121–129) will be most helpful secondary resources.

8.4 Newman & Faith

In what follows, we offer some questions for the sake of discussing (time permitting) Hütter, *Newman on Truth*, ch. 2, pp. 90–129. To facilitate reading this material over several days, I have supplied specifying page numbers for each question.

- What is the concern or problem that Hütter seeks to address in this chapter? (pp. 90–93)
- How does Newman's understanding of faith stand in contrast to private judgment? (pp. 93–102)
- What is the relationship between private judgment and Protestantism? (pp. 102–106)
- According to Newman, what is the significance of faith being a matter of divine grace? (pp. 106–108)
- What is the object of faith, according to Aquinas? What is the difference between the formal and material object of faith? (pp. 108–113)
- How do the foregoing distinctions help to explain the essential integrity of faith? (pp. 113–117)
- What implications for contemporary believers and intellectuals does Hütter highlight in his conclusion, based upon the teachings of Aquinas and Newman? (pp. 117–121)
- In what ways was Newman's understanding of faith deepen and clarified during his studies after his conversion to Catholicism? (Appendix 1, pp. 121–125)
- What does Hütter emphasize about Newman's treatment of certitude and his "alleged leanings toward skepticism"? (Appendix 2, pp. 125–129)

8.5 Conclusion: The Certitude of Vision or the Firmness of Assent?

When reviewing the readings and our discussions thus far, it would be worthwhile to return to the "degrees" of thinking or "*cogitatio*" set forth by St. Thomas in his question on the Augustinian definition of belief, *to think with assent*. The text can be found on p. 84. The accompanying table is reproduced below.

	Thinking	**Certitude**	**Assent**	**Resulting Character of the Knower**
Understanding	Formed	Yes	Firm	Determined to principles or conclusions
Knowing	Formed	Yes	Firm	Determined through a demonstration
Believing	Unformed	Yes	Firm	Determined to one side, not the other
Opining	Unformed	No	Lacking	Inclines to one side, fears the other
Suspecting	Unformed	No	Lacking	Inclines slightly to one side
Doubting	Unformed	No	Lacking	Inclines to neither side
Ignorance	None	n/a	n/a	[*A lack of determination*]

Consider whether or not the unconditionality of simple assent is found in St. Thomas's consideration of these forms of thinking. How might Newman's consideration of complex assent be compared and contrasted to the various gradations outlined by St. Thomas?

Recall that "certitude of sight [*certitudo visionis*]" characterizes "formed" cogitation or thinking. Keep in mind that this certitude of vision, in Aquinas's comparison of science to belief, rests upon an Aristotelian logical basis. What might our considerations of the Aristotelian logic of demonstration from Part II tell us? Where would probability show up in Aquinas's hierarchy of forms of thinking?

A Guide to Particularly Complex Chpaters

Newman's *Grammar*: Assent, Certitude, & Inference

Since chapters 6 through 8 are particularly complex, an outline and guide is provided here.

(I) **Simple Assent (ch. 6)**

Introductory remarks (157–58)

- A brief review of Part I
- A brief outline of Part II: A consideration of the paradox that "how it is that a conditional acceptance of a proposition,—such as is an act of inference,—is able to lead as it does, to an unconditional acceptance of it,—such as is assent." (157)

§1 **Simple Assent (159–187)**

- ***Examination of Locke's theory of degrees of assent*** (159–164)
  - Draws attention to Locke's theory (159–160)
  - That Locke's theory "cannot be carried out in practice) (160)
  - Examples where Locke is inconsistent on his own terms (161–64)

1. ***Whether assent exists independently from inference*** (165–172)
   - "The first step then towards deciding the point, will be to inquire what the experience of human life, as it is daily brought before us, teaches us of the relation to each other of inference and assent." (166)

   (1.) "First, we know from experience that assents may endure without the presence of the inferential acts upon which they were originally elicited." (167)

   (2.) "Again; sometimes assent fails, while the reasons for it and the inferential act which is the recognition of those reasons, are still present, and in force." (167–168)

   (3.) "And as assent sometimes dies out without tangible reasons, sufficient to account for its failure, so sometimes, in spite of strong and convincing arguments, it is never given." (168–169)

   (4.) "The proof is capable of growth; but the assent either exists or does not exist."

   (5.) "A man convinced against his will / Is of the same opinion still."

   (6.) "Strange as it may seem, this contrast between inference and assent is exemplified even in the province of mathematics. Argument is not always able to command our Assent, even though it be demonstrative." (169–172)

2. ***Assent, unlike inference, is unconditional*** (172–176)
   - Three arguments: [1] from opposition of conditional and unconditional; [2] opposition of truth and conditionality; [3] opposition between cases where univocity of meaning of "assent" and "inference" is demanded
   - "We might as well talk of degrees of truth as of degrees of assent." (174)
   - There are no degrees in assent, "that is, **not variations of assent to an inference, but assents to a variation in inferences.** When I assent to a doubtfulness, or to a probability, my assent, as such, is as complete as if I assented to a truth; it is not a certain degree of assent." (175)

3. ***Various examples of assent*** (176–181)
   - "**If human nature is to be its own witness, there is no medium between assenting and not assenting.**" (176)

- Assents to our own selves and faculties (177)
- Assents to the world around us (177)
- Assents to our parents, birth, events of history beyond our memory (177–78)
- Assents to meaningful and transcendent realities (178)
- Assents to truths "not intuitive, not demonstrated, yet sovereign" (179)
- Locke's mistake a conflation of a scientific rule or logical formulas with the mental act or state or interior act: "They are contemplating how representative symbols work, not how the intellect is affected towards the thing which those symbols represent. . . . **It is the mind that reasons and assents, not a diagram on paper.**" (179–180)
- **Locke's position cannot defend our assent to the proposition that "Great Britain is an island."**

4. ***Explaining why we do speak of "degrees" of assent*** (181–187)

(1.) The varieties of ways we describe these "degrees" (181–82)
(2.) The scope of assent: *I assent that . . .* (182–83)
(3.) The circumstances or conditions of assent account for the degrees (183–84)
(4.) The psychological conditions can cause the appearance of degrees (184–86); "But again, when we carefully consider the matter, it will be found that this increase or decrease of strength does not lie in the assent itself, but in its circumstances and concomitants; for instance, in the emotions, in the ratiocinative faculty, or in the imagination." (185)
(5.) **Natural assents compared with the assent of faith** (186–87)

§2 **Complex Assent (188–209)**

- ***Introductory considerations of complex assent*** (188–195)
- ***Introducing certitude and related terms*** (195–197)
  - "Certitude, as I have said, is the perception of a truth with the perception that it is a truth, or the consciousness of knowing." (197)

1. ***The a priori conditions of certitude*** (197–203)
   - A certitude is intolerant of the opposite truth claim; thus, various examples can reveal the lack of this condition (197–200)

(1.) Example of the overbearing disputants (200)
(2.) Example of Bible thumpers in the presence of the Apostles (200)
(3.) Example of a disproved miracle (200–201)
(4.) Example of the lack of emotion when contradicted, no "intemperance of language" (201–202)
(5.) Example of "intellectual anxiety, which is incompatible with certitude, shows itself in our running back in our minds to the arguments on which we came to believe, in not letting our conclusions alone, in going over and strengthening the evidence, and, as it were, getting it by heart, as if our highest assent were only an inference." (202)

   - "These . . . may be called **the meteorological phenomena of the human mind**, and do not interfere with the broad principle which I would lay down, that to fear argument is to doubt the conclusion, and to be certain of a truth is to be careless of objections to it;—nor with the practical rule, that mere assent is not certitude, and must not be confused with it." (203)

2. ***The a posteriori conditions of certitude, in our experience*** (203–209)

– The token of certitude is a "special relaxation and repose of mind" (203–204)
(1.) Pleasure in knowing a truth (where you might as well be believing) versus knowing that you know (205–206)
(2.) The contrast between pleasure in pursuing knowledge versus certitude (206–208)
(3.) The pleasures of someone doubtful or a skeptic versus certitude of one's ignorance (208–209)

(II) **Certitude (ch. 7)**

§1 **Assent and Certitude contrasted (210–220), certain characteristics**

1. Most men have only simple assent regarding the most important propositions.
2. Simple assent is closer to real assent than to notional; notional assent is closer to complex assent (certitude).
3. "Introspection of our intellectual operations is not the best of means for preserving us from intellectual hesitations." (216)
4. "There is another characteristic of Certitude, in contrast with Assent, which it is important to insist upon, and that is, its persistence. Assents may and do change; certitudes endure." (220)

§2 **Indefectibility of Certitude (221–258)**

Introductory remarks: The objection to be answered

(i) "It is the characteristic of certitude that its object is a truth, a truth as such, a proposition as true. . . . the human mind is made for truth, and so rests in truth, as it cannot rest in falsehood." (221)
(ii) The objection: How do we know that certitude is possible? that it is not always a counterfeit waiting to be exposed? (222–23)

1. Certitude is a disposition regarding a proposition, and so is not infallibility, which is a faculty. (224ff)
2. How can fallible knowers attain certitude? (228ff)
3. Assent to counterfeit certitudes: *usum no tollit abusus* (232ff)
4. The subject matters of certitude (236ff)
5. How, then, do people convert? (240ff)
6. "Certitude does not admit of an interior, immediate test, sufficient to discriminate it from false certitude." (255, &ff)

(III) **Inference (ch. 8)**

§1 **Formal Inference (259–287)**

Introductory remarks: Discussion of the nature of logical inference (259–269)

1. All formal inference regarding the concrete is probable, because all inference uses assumed premises (i.e., ones that are not proved by prior inferences). (269–277)
2. All formal inference regarding the concrete is probable, because all inference concludes in the abstract. (277–287)

§2 **Informal Inference (288–329)**

Introductory remarks

(i) There is a need for a "cumulation of probabilities" when it comes to inference and being certain about concrete matters. (288)
(ii) Discussion of a syllogistic conversion (289–292)
(iii) The "real method of reasoning in concrete matters" is logical form "carried out into the realities of life," it is also implicit, and conditional. (292)

1. ***Reflecting on the phenomena of informal inference—present, past, and future***
   (1.) "We are all absolutely certain . . . that Great Britain is an island." (294ff)
   (2.) Ancient texts are not "the forgeries of the monks of the 13th century." (296ff)
   (3.) "I, in my own particular case, shall die[.]" (298ff)
2. ***Mechanical formal logic versus "a living* organon*" (301–316)***
   Introductory remarks: Reasoning about concrete matters escapes the strictures of formal logic and requires "a living faculty in the individual intellect" and not "mere skill in argumentative science" (302) "Such a living *organon* is a personal gift, and not a mere method or calculus." (316)
   (1.) Example of the "for" relation in political judgment (303ff)
   (2.) Example of judgment of the religious sense (304ff))
   (3.) Example of Hume, who argues against miracles (306ff)
   (4.) Example of Pascal's argument for Catholicism as the true religion (307ff)
   (5.) Example of Pascal versus Montaigne (310ff)
   (6.) Example of the poor dying factory-girl: "Here is an argument for the immortality of the soul." (312; see 312–313)
   (7.) Example of Clarke on God's attributes (313ff)
3. ***Informal inference as a type of prudence—moral certitude***
   Introductory remarks: On personal knowledge (316–322); the personal element is, as it were, *ex opere operatoris*, nor *ex opere operato* in such conclusions (318); moral certitude is all we can attain when it comes to knowledge (318ff); there a method by which we can attain such certitude (320ff).
   (1.) Example: The laws of motion in physics (322–323)
   (2.) Example: Evidence in courts of law (324–328)
   (3.) Example: Proof of authorship of an anonymous work (328–329)

§3 **Natural Inference (330–342)**

- "I say, then, that our most natural mode of reasoning is, not from propositions to propositions, but from things to things, from concrete to concrete, from wholes to wholes." (330) "Sometimes, I say, this illative faculty is nothing short of genius." (333) "This faculty [natural and spontaneous ratiocination], as it is actually found in us, proceeding from concrete to concrete, is attached to a definite subject-matter, according to the individual." (338)
- "So is it with Ratiocination; and as we should betake ourselves to Newton for physical, not for theological conclusions, and to Wellington for his military experience, not for statesmanship, so the maxim holds good generally, "C*uique in arte suâ credendum est*:" or, to use the grand words of Aristotle [*Nic. Ethics* VI.11], "We are bound to give heed to the undemonstrated sayings and opinions of the experienced and aged, not less than to demonstrations; because, from their having the eye of experience, they behold the principles of things." Instead of trusting logical science, we must trust persons, namely, those who by long acquaintance with their subject have a right to judge." (341–42)
- "This doctrine, stated in substance as above by the great philosopher of antiquity [Aristotle], is more fully expounded in a passage which he elsewhere quotes from Hesiod. "'Best of all is he,' says that poet, 'who is wise by his own wit; next best he who is wise by the wit of others; but whoso is neither able to see, nor willing to hear, he is a good-for-nothing fellow." Judgment then in all concrete matter is the architectonic faculty; and what may be called the Illative Sense, or right judgment in ratiocination, is one branch of it." (342)
- ***The final quotations above leads into the famous ninth chapter.***

Inference (*Grammar*, ch. 8)

9

> What has been said is confirmed by the fact that while young men become geometricians and mathematicians and wise in matters like these, it is thought that a young man of practical wisdom cannot be found. The cause is that such wisdom is concerned not only with universals but with particulars, which become familiar from experience, but a young man has no experience, for it is length of time that gives experience.
>
> – Aristotle, *Nicomachean Ethics*, VI.8, 1142a12–15

9.1 Introduction

With his chapter on inference, Newman moves to the subject matter at the heart of the *Grammar*, our assent to the concrete realities of life and the things of God. Here, a brief recapitulation of the whole may be in order:

> The *Grammar of Assent* is an ex professo study of the certitude demanded for action in life, with the particular purpose of analyzing and justifying the certitude of an average person, even a *rudis*, in his faith as a Christian. Part One is devoted to the study of assent and apprehension, particularly real assent. Part Two is a contrast between assent and inference to set out in relief the faculty of implicit reasoning, that is, the illative sense. These two principles, real assent and the illative sense, are applied, at the end of their respective sections, to matters of faith or religion.

Juergens, *Newman on the Psychology of Faith*, p. 20.

It is therefore with an eye to this subject of the real, the concrete, the in-the-flesh here-and-now that Newman strains logic against itself to show its formal limitations. Does he stray into antirealism? Does he fall into skepticism? It is with the concrete in mind that Newman begins more frequent references to the full breadth of Aristotle's methodology. The particulars of things require experience that the young cannot possess. They can become wise in the quick inferences and conceptual leaps of formal logic and abstract mathematics, but not in the matters that require familiarity with the order of real things in all their particularity.

Goals for this chapter

(1) To study Newman's account of inference
(2) To understand the difference between formal, informal, and natural inference
(3) To consider the difference between inference in notional and real cases

Readings for this chapter

– Newman, *Grammar of Assent*, ch. 8
– *Supplemental reading:* Hütter, *Newman on Truth*, ch. 3

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– What is the difference between inference and assent?
– What defines formal, informal, and natural inferences?
– How does the chapter on inference advance Newman's argument in the *Grammar*?

9.2 From Formal to Informal Inference

This section corresponds to the reading of Newman, *Grammar of Assent*, ch. 8, pp. 259–301. Since chapters 6 through 8 are particularly complex, an outline and guide is provided between the *CG* chapters 8 and 9; see 108ff.

Reading questions

Before you read, consider the following: *In logic class, what is the definitional difference between validity and soundness? What explains this difference, philosophically speaking?*

As you read, consider the following questions:

- Questions for §1, on formal inference:
  - What does Newman mean by logical inference and ratiocination? What are examples?
  - In Newman's account, what are the three limitations of the success of logical inference?
  - What is the first reason why inference can only conclude with probability in concrete matters? What examples does Newman use to illustrate, or prove, this point?
  - What is the second reason why inference can only conclude with probability in concrete matters? What examples does Newman use to illustrate, or prove, this point?
  - As Newman concludes this section, what does he emphasize as the strengths and weaknesses of ratiocination or formal inference?
- Questions for §2, on informal inference (up to p. 301):
  - In what ways does informal inference differ from formal inference? How does Newman illustrate this difference?
  - What are the three examples which Newman uses to show the different phenomena of informal inference in concrete matters past, present, and future? Are they convincing illustrations?
  - What are the various examples to which Newman appeals to illustrate the "distinction between ratiocination as the exercise of a living faculty in the individual intellect, and mere skill in argumentative science"? Are they convincing illustrations?
  - What does Newman mean when he says that "Such a living organon is a personal gift, and not a mere method or calculus."?
  - What are the three examples Newman provide "to illustrate the intellectual process by which we pass from conditional inference to unconditional assent"? Do they make his case?

Post-reading: Do we live on an island?

This chapter of the *Grammar* is rich in its controversy, potential confusions, and tantalizing insights. We will focus on the reading questions and examples provided by Newman. For instance:

> We are as little exposed to the misgiving, "Perhaps we are not on an island after all," as to the question, "Is it quite certain that the angle in a semi-circle is a right-angle?" It is a simple and primary truth with us, if any truth is such; to believe it is as legitimate an exercise of assent, as there are legitimate exercises of doubt or of opinion.

The reference is to Euclid's *Elements*, III.31. How is this example supposed to work? Where do any disanalogies lie? Do these undermine Newman's case, or is he not concerned with them? Why or why not?

9.3 From Informal to Natural Inference

This section corresponds to the reading of Newman, *Grammar of Assent*, ch. 8, pp. 301–342.

Reading questions

Before you read, consider the following: *When you are working on a geometric proof, must you keep explicitly remembering to appeal to the principle of non-contradiction? When you are walking down the stairs, to you call to mind any of the relevant facts about gravity in order to guide your steps? When an experienced basketball coach draws up a play for his team in the final moments of the game, why does he not have to provide an argument or proof to get his team to run the play? When experienced doctors make decisions about how to treat patients during a routine day, would you expect them to be making constant reference to medical textbooks to guide their decisions?*

As you read, consider the following questions:

- Questions for §2, on informal inference (from p. 301 onwards):
    - What are the seven examples to which Newman appeals to illustrate the "distinction between ratiocination as the exercise of a living faculty in the individual intellect, and mere skill in argumentative science"? Are they convincing illustrations?
    - What does Newman mean when he says that "Such a living organon is a personal gift, and not a mere method or calculus."?
    - In what way is informal inference a type of "moral certitude"?
    - What are the three examples Newman provide "to illustrate the intellectual process by which we pass from conditional inference to unconditional assent"? Do they make his case?
- Questions for §3, on natural inference:
    - What, according to Newman, is "our most natural mode of reasoning"? What examples does he provide to illustrate this?
    - What connection does this "illative faculty" have with genius? What are examples here?
    - In what way is natural inference limited to individuals and to specific subjects?
    - Why does Newman end with a comparison to Aristotle and the prudent man?
    - How is the subject of inference related to the subject of the next chapter, the illative sense?

Post-reading: The limits of knowledge

In what follows, I would like to provide some context for Newman's appeal to Newton's "Lemma," and what this analogy might illustrate about informal inference.

Newman is referring to the Newton's *Principia*, Book I, Section I, Lemma 1. The entirety of the Lemma is as follows:

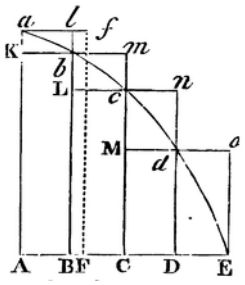
> *Quantities, and the ratios of quantities, which in any finite time converge continually to equality, and before the end of that time approach nearer the one to the other than by any given difference, become ultimately equal.*
>
> If you deny it, suppose them to be ultimately unequal, and let D be their ultimate difference. Therefore they cannot approach nearer to equality than by that given difference D; which is against the supposition.

Newton, *The Mathematical Principles of Natural Philosophy*, I.I, lem. 1 (Wiki-Source edition).

Today, you learn this in a calculus class as the definition of approaching a limit (albeit in a modernized form). For example, if you have a series of added quantities such as

$$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \ldots \frac{1}{n^2}$$

where $n = 1$ at first and increases by 1 each instance, then this series is converging to a sum of 1. Thus, "ultimately," or in the limit, the sum of the series and the number 1 become equal.



The diagram for Newton's Lemma 2, the convergence of inscribed and circumscribed rectangles to a curve, illustrating equality in the limit.

A similar illustration is that of a series of polygons inscribed in a circle or other curve. As the number of sides increases without limit, the "given difference" between the boundary of the polygon and the circle becomes less and less, and "ultimately" they become equal.

Now, the point of Newman's analogy with Newton's fundamental lemma in calculus is to highlight how our knowledge of a limit-process and our knowledge of a concrete, informal inference have a similar characteristic. They yield a knowledge *that it must be so*, even if we do not have evidence why. A demonstration by *reductio* gives us no other option but to assent to the truth of the conclusion, just as our informal inferences in a concrete matter of fact under consideration.

This might be compared and contrasted to the "rout in battle" where the men slowly take a stand, Aristotle's famous image in *Posterior Analytics*, II.19 (100a9–14). It might also be compared, later in the course (see Chapter 12, §4) to our discussion of insight.

9.4 Newman & Dogma

In what follows, we offer some questions for the sake of discussing (time permitting) Hütter, *Newman on Truth*, ch. 3, pp. 130–155 (pp. 155–166 optional).

It is important to consider how it is possible for truths to be simultaneously revealed by God and expressed in human language such that those truths are perennial, or endure over the course of history. While the topic of Hütter's chapter is a bit tangential to our main course of study, it provides a helpful theological supplementation. (See also below, p. 181 and p. 191, for a continuation of this theme.)

- What are the two extreme positions which Hütter describes when it comes to the development of doctrine?
- What is the Church's magisterial understanding of dogma and doctrine and its development?
- What are the seven "notes" of authentic development of doctrine proposed by St. John Henry Newman?
- How are these notes of development found in Hütter's "test case" of religious liberty?
- What are the two "counterfeits" of the development of doctrine and how does Newman help to diagnose them?

9.5 Conclusion: Tacit Knowledge

Newman's defense of informal and natural inference bears many similarities to what contemporary philosophers sometimes refer to a implicit or tacit knowledge. Such knowledge is not able to be made explicit on pain of infinite regress. The Thomist philosopher Edward Feser gives the example of a student who is learning the logical rules for syllogistic arguments. A given student might not realize when to "apply" the rule that certain forms of syllogism are valid, and thus be able to see and draw the correct inference *here and now* in a given argument.

Neither could you address the problem by adding more and more rules of formal inference or other propositions.

Feser, *Aristotle's Revenge*, p. 101

> So, adding further explicit propositions will not solve the problem, and it is not what solves the problem in the case of the normal student. If it were, then since there is always yet another further explicit proposition we could add, what the normal student would be doing is explicitly grasping an infinite series of explicitly formulated propositions, all at once, when he judges that *Socrates is mortal*. Obviously, that is not what is going on. What is going on ... is that the normal student's explicit *knowledge that* the propositions in question are true and the inference rule valid leads the student to draw the right conclusion only because he also possesses practical *knowledge how* to apply that theoretical knowledge. This *knowing how* cannot be a matter of grasping explicit propositions, on pain of infinite regress, but rather involves ... the having of certain capacities, dispositions, and the like.

Consideration of this example of "knowing how," or tacit knowledge—and precisely because of its abstract context—might assist us in seeing why Newman's case for other forms of "knowing" and "inferring" in informal and habitual ways is not as implausible as it might seem.

The Illative Sense & Faith (*Grammar*, chs. 9–10)

10

> "Every one that hath heard of the Father and hath learned cometh to Me." [John 6:45] Now a man does not become a partaker of this learning immediately, but successively, according to the mode of his nature. Moreover, every such learner must believe, so that he may attain to perfect knowledge, just as the Philosopher also says, [*De Soph. Elench.*, I.2 165b3] that "It behooves the learner to believe."
>
> – St. Thomas Aquinas, *Summa Theologiae*, IIa-IIae, q. 2, a. 3, c.

10.1 Introduction

With this chapter, we reach the culmination of Newman's long course of argument in the *Grammar*. It is this chapter which has been both praised and excoriated by Newman's interpreters. Is the illative sense Newman's psychological discovery of genius, or a singular failure?

Ian Ker, in his biography of Newman, quotes the saint as saying that writing the *Grammar* "was so hard it was 'like tunnelling through the Alps'." Ker, *John Henry Newman*, p. 619.

In like fashion to our discussion of inference in the previous Chapter, we will have to bear in mind Newman's method and his overall purpose. It is frequently remarked that Newman exhibits the influences of various epistemological skeptics, nominalists, conceptualists, or near-such, but it seems that Newman's true purpose is only keenly felt throughout the *Grammar* as a whole—he is intent upon defending realism. "[Newman] would have adhered to the Scholastic doctrine if only it had been brought home to him," one commentator opines.

Zeno, *Our Way to Certitude*, p. 69.

What should we know beforehand of Newman's purpose in delineating and then applying the illative sense?

> Newman considers the recognition and admission of the existence of the faculty called illative sense as the solution of the problem, Can we attain certitude in the concrete? He thus opposes the two a priori schools of Locke and Kant, the former of which claims that "since experience leads by syllogism only to probabilities, certitude is ever a mistake," while the latter assumes the existence of intellectual forms and intuitions by which we reach certitude.

Juergens, *Newman on the Psychology of Faith*, p. 87.

Ibid.

This interpretation of Juergens's is borne out in the first two pages of the chapter. Understanding what Newman means by this faculty for possessing "material certitude in concrete things" is our main focus in this chapter.

Goals for this chapter

(1) To study and understand what Newman means by the illative sense
(2) To apply Newman's doctrine of assent to the case of natural religion

Readings for this chapter

– Newman, *Grammar of Assent*, chs. 9–10
– *Supplemental reading:* Hütter, *Newman on Truth*, Epilogue (we will read ch. 4 later in the course)

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– What is the illative sense? Why does Newman compare it to prudence?
– How does the illative sense complete Newman's argument in the *Grammar*?
– Does Newman's illative sense realistically portray the psychology and logic of belief, as evidenced in the autobiographical account of Reinhard Hütter's conversion?

10.2 The Illative Sense

This section corresponds to the reading of Newman, *Grammar of Assent*, ch. 9, pp. 343–383. Following the reading questions, a passage from St. Thomas's treatment of the nature of prudence from the *Summa* is included.

Our discussion will focus on Newman's examples and his comparison of the illative sense to the Aristotelian virtue of prudence or *phronêsis*. This is elaborated in Book VI of his *Nicomachean Ethics*. Besides his commentary on that book of Aristotle's, St. Thomas treats of prudence particularly in *ST*, Ia-IIae, qq. 57 and 61, as well as *ST*, IIa-IIae, qq. 47–56.

Reading questions

Before you read, consider the following: *Is Newman's teaching on "informal inference" something that seemed to be a new discovery, or was Newman articulating something that previous thinkers have long recognized, even if under different names?*

As you read, consider the following questions:

- Questions for the introductory portion of ch. 9:
  - What do we learn about Newman's method or approach?
  - How does Newman answer the charge of skepticism?
- Questions for §1, on the sanction of the illative sense:
  - How do Newman's remarks in this section cut against Descartes?
  - How does Newman's discussion of the law of progress in the life of the mind compare and contrast with various modern philosophers you have studied?
  - What *is* the sanction of the illative sense, ultimately?
- Questions for §2, on the nature of the illative sense:
  - What does Newman highlight concerning Aristotle's virtue of prudence (*phronêsis*)?
  - How does the comparison to *phronêsis* illuminate the illative sense? What differences are noted?
  - How is the illative sense unified? How is it diversified?
- Questions for §3, on the range of the illative sense:
  - How does Newman relate the illative sense to the "beginning, middle, and end of all verbal discussion and inquiry"?
  - What examples does Newman provide of the illative sense operative during the conduct of an argument?

- Newman gives seven instances of the use of the illative sense regarding first principles, and first as to "the statement of the case." What lesson does he drawn from these instances of the illative sense?
- Newman then considers four cases of the illative sense in regard to implicit assumptions as first principles.
- How does the illative sense influence the antecedent reasons of an argument?
- Based on this discussion of the range of the illative sense, what does Newman mean by a "first principle"?

See the next page for the selections from St. Thomas on prudence. As you read, consider: Could Newman's illative sense, following how St. Thomas defines prudence, be defined as follows: ***recta ratio assentibilia*, "right reason about things to be assented to," where *things* is emphasized?**

Aquinas on prudence

ST, Ia-IIae, q. 57, a. 4, c. (Aquinas Institute translations, slightly modified). The article asks whether prudence is a distinct virtue from art.

Where the account of virtue differs, there is a different kind of virtue. Now it has been stated above [*ST*, Ia-IIae, q. 57, a. 1; q. 56, a. 3] that some habits have the nature of virtue, through merely conferring aptness for a good work: while some habits are virtues, not only through conferring aptness for a good work, but also through conferring the use. But art confers the mere aptness for good work; since it does not regard the appetite; whereas prudence confers not only aptness for a good work, but also the use: for it regards the appetite, since it presupposes the rectitude thereof.

The reason for this difference is that art is the *right reason of things to be made* [*ars est recta ratio factibilium*]; whereas prudence is the *right reason of things to be done* [*prudentia . . . est recta ratio agibilium*]. Now *making* and *doing* differ . . . in that *making* is an action passing into outward matter, e.g., *to build*, *to saw*, and so forth; whereas *doing* is an action abiding in the agent, e.g., *to see*, *to will*, and the like.

Accordingly prudence stands in the same relation to such like human actions, consisting in the use of powers and habits, as art does to outward making: since each is the perfect reason about the things with which it is concerned. But perfection and rectitude of reason in speculative matters, depend on the principles from which reason argues; just as we have said above [*ST*, Ia-IIae, q. 57, a. 2, ad 2um] that science depends on and presupposes understanding, which is the habit of principles.

Now in human acts the end is what the principles are in speculative matters, as stated in the *Ethics*, VII.8. Consequently, it is requisite for prudence, which is right reason about things to be done, that

man be well disposed with regard to the ends: and this depends on the rectitude of his appetite. Wherefore, for prudence there is need of moral virtue, which rectifies the appetite.

On the other hand the good of things made by art is not the good of man's appetite, but the good of those things themselves: wherefore art does not presuppose rectitude of the appetite. The consequence is that more praise is given to a craftsman who is at fault willingly, than to one who is unwillingly; whereas it is more contrary to prudence to sin willingly than unwillingly, since rectitude of the will is essential to prudence, but not to art. Accordingly it is evident that prudence is a virtue distinct from art.

———— ⌖ ————

Is Newman's illative sense ***recta ratio assentibilia*, "right reason about things to be assented to"?**

Note that prudence depends upon learning from others. You know the truth through your mind, but you encounter the truth through other people (recall Newman's episcopal motto).

Consider the following passage:

> Half the controversies in the world are verbal ones; and could they be brought to a plain issue, they would be brought to a prompt termination. Parties engaged in them would then perceive, either that in substance they agreed together, or that their difference was one of first principles. This is the great object to be aimed at in the present age, though confessedly a very arduous one. We need not dispute, we need not prove,—we need but define. At all events, let us, if we can, do this first of all; and then see who are left for us to dispute with, what is left for us to prove. Controversy, at least in this age, does not lie between the hosts of heaven, Michael and his Angels on the one side, and the powers of evil on the other; but it is a sort of night battle, where each fights for himself, and friend and foe stand together. When men understand each other's meaning, they see, for the most part, that controversy is either superfluous or hopeless.

Newman, *Oxford University Sermons*, "Sermon 10. Faith and Reason, contrasted as Habits of Mind," pp. 200–201, n. 45 (preached on Epiphany, 1839; see The Newman Reader).

While this passage was written long before the *Grammar*, how might Newman expect us to relate its ideas to the illative sense?

10.3 Religious Inference & Assent

This section corresponds to the reading of Newman, *Grammar of Assent*, ch. 10, pp. 384–415.

In this final chapter of the book, Newman reaches for his ultimate goal, the "proof of theism" and "the proof of Christianity" (ibid., p. 496), which have been his goals all along. The first section of the chapter applies his notions of inference and assent to the issue of natural religion, whereas the second section does the same for revealed religion.

Our reading focuses on §1, and we will discuss the beginnings of §2, up until p. 415, where Newman ends his introduction of the second section with an appeal to Aristotle and to the Psalmist.

Reading questions

Before you read, consider the following: *Does the illative sense seem to be truly operative in areas of our life besides assent to religious truths?*

As you read, consider the following questions:

- Questions for the introduction of ch. 10:
  - How does Newman articulate the subject-matter of this chapter? That is, in his thinking, how do the previous topics of the *Grammar* bear on the themes of the final chapter?
- Questions for §1, on natural religion:
  - What are the three "main channels" that leads to the knowledge of religion by natural reason?
  - How is conscience a "guide" in this area of natural religion?
  - What are the elements of natural religion offered by the "voice of mankind"?
  - In what way is "the system and the course of the world" a "natural informant on the subject of Religion"?
  - Do these channels show God openly? Are they more optimistic or pessimistic? How does Newman relate the existence of evil and suffering to the evidences of natural religion?
  - What are the seven integral parts of natural religion?
- Questions for §2, on revealed religion (up to p. 415):
  - How does Newman compare and contrast the first and second sections?
  - What does Newman mean by "a special preparation of mind" on p. 414?
  - For what purpose does Newman appeal to the authority and teaching of Aristotle?

Post-reading

In this final chapter, among its many fascinating topics, two minor points are worth noting so as to relieve some of the burden of our discussion.

First, Newman argues that "Conscience, then, considered as our guide, is fully furnished for its office." Recall some of Newman's references to Butler, and even Newman's paraphrase of Butler's famous line that "probability is the very guide of life." Note how Newman is correcting Butler here, as conscience is not an assessment of moral probabilities. That is, conscience is the greater guide of life. Recall here, of course, our discussion of conscience and *synderesis*, especially as explained by Hütter.

Newman, *Grammar of Assent*, p. 390.

See ibid., p. 237, in the chapter on certitude.

Second, note what Newman says just before he begins his application of the illative sense to the defense of Christianity. He is speaking of cases where making converts is more difficult:

> Whether his mind will ever grow straight, whether I can do anything towards its becoming straight, whether he is not responsible, responsible to his Maker, for being mentally crooked, is another matter; *still the fact remains, that, in any inquiry about things in the concrete, men differ from each other, not so much in the soundness of their reasoning as in the principles which govern its exercise*, that those principles are of a personal character, that where there is no common measure of minds, there is no common measure of arguments, *and that the validity of proof is determined, not by any scientific test, but by the illative sense.*

Newman, *Grammar of Assent*, p. 413 (with emphases added).

It is striking to compare Newman's assessment of the character of the illative sense and its place in the life of the mind. We should contrast it with the opening of Descartes's *Discourse on Method*. The Frenchman, while famed for his rationalism, opens the *Discourse* with the founding ideas of modern enlightenment philosophy more generally: that human reason is capable, through a single, unified method, of determining the truth of all things for itself with a level of clarity that should eliminate private disagreement, error, and ignorance.

> *Good sense* is, of all things among men, the most equally distributed; for every one thinks himself so abundantly provided with it, that those even who are the most difficult to satisfy in everything else, do not usually desire a larger measure of this quality than they already possess. And in this it is not likely that all are mistaken the conviction is rather to be held as testifying that the

Descartes, *Discourse on Method*, Part I (Gutenburg online edition).

> power of judging aright and of distinguishing truth from error, which is properly what is called good sense or reason, is by nature equal in all men; *and that the diversity of our opinions, consequently, does not arise from some being endowed with a larger share of reason than others, but solely from this, that we conduct our thoughts along different ways, and do not fix our attention on the same objects.* For to be possessed of a vigorous mind is not enough; the prime requisite is *rightly to apply it*.

I have added the emphases above to point out how the modern, Cartesian apprehension of reason differs from the Aristotelian, Thomistic, and—dare we say it—Newmanian one.

10.4 Newman & Conversion

While the remainder of §2 of the final chapter of the *Grammar* is optional, it is, of course, worthwhile reading. Our class discussions will aim at incorporating the autobiographical account of Prof. Hütter's own Newmanian conversion.

Consequently, in what follows, we offer some questions for the sake of discussing (time permitting) Hütter, *Newman on Truth*, Epilogue, pp. 215–35.

- How does Hütter define the "principle of private judgment," and what role does it have in his conversion?
- Hütter discusses three "theological areas" that were the catalysts in his conversion (see p. 217). What "Newmanian" features does his conversion story exhibit in each area?
- How does Hütter finally overcome the principle of private judgment?

Discussing this portion of Hütter's book will be important to our study of Newman's *Grammar*, for it provides a concrete illustration of certain of the key principles Newman articulates.

10.5 Conclusion: An Insight Long in the Making

The idea of the illative sense, much like the *Grammar* itself, was a work long in progress. Below, I excerpt a passage from one of Newman's sermons which contains the germ of the illative sense. We should note that, when these were revised for the edition of 1871, a note was added that connects Newman's topic with informal inference, of which the illative sense is a part.

———— ⁜ ————

It is not too much to say that there is no one of the greater achievements of the Reason, which would show to advantage, which would be apparently justified and protected from criticism, if thrown into the technical forms which the science of argument requires. The most remarkable victories of genius, remarkable both in their originality and the confidence with which they have been pursued, have been gained, as though by invisible weapons, by ways of thought so recondite and intricate that the mass of men are obliged to take them on trust, till the event or other evidence confirms them. Such are the methods which penetrating intellects have invented in mathematical science, which look like sophisms till they issue in truths.* Here, even in the severest of disciplines, and in absolutely demonstrative processes, the instrument of discovery is so subtle, that technical expressions and formulæ are of necessity substituted for it, to thread the labyrinth withal, by way of tempering its difficulties to the grosser reason of the many. Or, let it be considered how rare and immaterial (if I may use the words) is metaphysical proof: how difficult to embrace, even when presented to us by philosophers in whose clearness of mind and good sense we fully confide; and what a vain system of words without ideas such men seem to be piling up, while perhaps we are obliged to confess that it must be we who are dull, not they who are fanciful; and that, whatever be the character of their investigations, we want the vigour or flexibility of mind to judge of them. Or let us attempt to ascertain the passage of the mind, when slight indications in things present are made the informants of what is to be. Consider the preternatural sagacity with which a great general knows what his friends and enemies are about, and what will be the final result, and where, of their combined movements,—and then say whether, if he were required to argue the matter in word or on paper, all his most brilliant conjectures might not be refuted, and all his producible reasons exposed as illogical.

And, in an analogous way, Faith is a process of the Reason, in which so much of the grounds of inference cannot be exhibited, so much

Newman, *Oxford University Sermons*, Sermon 11, nn. 24–25 (Newman Reader edition). This sermon was preached before Newman's conversion (1845), but the annotation was added in the 1871 edition.

* Note 2: "The principle of concrete reasoning," which leads to Faith, "is parallel to the method of proof, which is the foundation of modern mathematical science, as contained in the celebrated Lemma, with which Newton opens his Principia." [*Grammar of Assent*, ch. 8, p. 320].

lies in the character of the mind itself, in its general view of things, its estimate of the probable and the improbable, its impressions concerning God's will, and its anticipations derived from its own inbred wishes, that it will ever seem to the world irrational and despicable;—till, that is, the event confirms it. The act of mind, for instance, by which an unlearned person savingly believes the Gospel, on the word of his teacher, may be analogous to the exercise of sagacity in a great statesman or general, supernatural grace doing for the uncultivated reason what genius does for them.

———— ❖ ————

Postlude: The Creature Who Searches for Truth

> Compared to the unity we approach by imitation, our method is but a toy. Yet, even a toy is a likeness. Perhaps the allegory of the Cave would be more fitting.
>
> – Charles De Koninck, "Concept, Process, and Reality"

We have now completed our study of the degrees of human knowing from, as it were, a "first person" vantage point. Recall that we had framed our investigation in terms supplied by the *Theaetetus*'s final definition of knowledge: How do I give a *logos*, an account, of the truth of what I believe? In Part II, we asked about the *logos* in scientific demonstration, and in Part III we asked about this account in others modes of knowing, especially in regards to belief.

St. John Henry Cardinal Newman's *Grammar of Assent* has provided us with an array of phenomena of the mind in its acts of belief, ubiquitous in ordinary and extraordinary matters, to which we have added certain Aristotelian principles from St. Thomas Aquinas. While there are various differences of emphasis, style, and approach, there are fewer—if any—irreconcilable differences between the two saints when it comes to a philosophical understanding of knowledge on the whole.

What Newman elucidates in the context of discovery, Aquinas clarifies in the mode of justification; St. Thomas sees the array of the hierarchy of knowers, while St. John Henry Newman leads us to reflect on the experience of being such a knower.

> Newman understood his spiritual journey as a providentially guided sojourn from shadows and images into truth, a sojourn that would find its fulfillment only in the beatific vision.
>
> Hütter, *Newman on Truth*, p. 235.

In the final part of our course, we turn to a metaphysical inquiry into the roots causes of human knowledge, from the shadows of sensation and reason to the light of intelligence. Our task is still guided by the conflict between the "being the measure of" of Protagoras and the "being measured by" of Aristotle (see above, p. xix). What we shall find is that the hierarchy of the measures of human knowledge ends exactly where Newman sojourn found its fulfillment.

Part IV

The Metaphysics of Knowledge

11 Sensation

> [Wittgenstein] once greeted me with the question:
> "Why do people say that it was natural to think that the sun went round the earth rather than that the earth turned on its axis?"
> I replied: "I suppose, because it looked as if the sun went round the earth."
> "Well," he asked, "what would it have looked like if it had looked as if the earth turned on its axis?"
> This question brought it out that I had hitherto given no relevant meaning to "it looks as if" in "it looks as if the sun goes round the earth".
>
> – G. E. M. Anscombe, *An Introduction to Wittgenstein's Tractatus*

11.1 Introduction

We frequently hear about the founding insight of modern science: the use of experiment and measurement. Yet it bears reflecting on just how difficult this transition is. We can do so by thinking about the above epigraph.

The point is that it would have "looked" just the same. Thus, the development of a specific enough physics for understanding the heavens did not merely have to improve our sense of sight but rather nuance our interpretation of our sense of touch and with it our sensations of motion (pushing and pulling, moving and being moved). Indeed, many of the arguments against the motion of the earth were based upon such sensations of what rapid motion (or more precisely, acceleration) was supposed to "feel like."

Both Galileo and Einstein proposed thought experiments to have us carefully dissociate our felt sensation of motion and being moved, on the one hand, from the principles at work in inertial and gravitating bodies, on the other. Other discoveries in modern astronomy show how long and difficult is the necessary transition from common experience to the scientific experience (e.g., discovering the finitude of the velocity of light and the discovery of the spectra of different types of materials and their spectral shifts, red- or blueshifts).

It is hard for reason to convince our senses just how much the immediately sensible does not also immediately reveal the essences

or natures of things. Yet at the same time, reason depends upon the senses.

Democritus, DK 125.

> Color exists by convention (usage), sweet by convention, bitter by convention. (Reply of the senses to Intellect): "Miserable Mind, you get your evidence from us, and do you try to overthrow us? The overthrow will be your downfall."

This dependence of reason upon the senses, the fundamentally empirical character of human knowledge, is the subject of this chapter.

Goals for this chapter

(1) To study the being and activity of sensation
(2) To form a principled judgment on sense realism
(3) To compare sense realism and modern neuroscience and psychology of sensation

Readings for this chapter

– Yves Simon, "An Essay on Sensation" (in *CR*)
– St. Thomas, *ST*, Ia, q. 78

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– What is sensation? How does it differ from physical motion and from thought?
– What is sense realism? Is it defensible?
– What are the principal differences between realism and representationalism, and which characterizes modern scientific research in sensation?

11.2 Simon on Sensation

This section corresponds to the reading of Yves Simon, "An Essay on Sensation," pp. 57–79. The remainder is optional.

Reading questions

Before you read, consider the following: *Which is a better metaphor: saying "I see your point" or "I grasp your point"?*

As you read, consider the following questions:

- How does Simon characterize the study of sensation?
- How does Simon use the contrast between "the physical and the psychical" and "cognition and affection" to set up the main questions of the essay? What are they?
- Questions for pp. 58–66 (sensation as activity)
    - What is the difference between heteronomic and autonomic passions?
    - How does Simon characterize sensation in terms of this difference among passions?
    - What is the difference between immanent and transitive action?
    - How does Simon characterize sensation in terms of this difference among actions?
    - How are activity and passivity related in sensation?
    - Of what degrees of presence does experience admit?
    - Based upon this discussion, how does Simon define sensation?
- Questions for pp. 66–69 (sensation as union)
    - What fact is to be explained when considering sensation as a kind of union?
    - What is the difference between objective and subjective union?
    - How is this distinction among types of union related to the prior discussion of action and passion?
    - Based upon these two parts of the essay (sensation as activity and as union), how does Simon define sensation?
- Questions for pp. 70–79 (the cause of sensation)
    - What problems are there for a Cartesian or "dualistic framework" when it comes to giving sensation a causal explanation?
    - What distinctions does Simon point out between sensations, images, ideas, and things?
    - How did the Epicurean atomists answer the causal question of sensation?

  - How does the Aristotelian causal account of sensation differ from the materialists's view?
  - What are the various difficulties with the "daring theory" of Aristotle?
  - In his summary, how does Simon characterize the causality of sensible objects in terms of distinctions made in the previous parts of the essay?

– In the next section of the essay (pp. 79–91), Simon considers distinctions among the objects of sensation, as well as in what way truth, falsity, and a sort of "judgment" is present in the senses.
– In the last section of the essay (pp. 91–95), Simon ends with some reflections on the relationship between a scientific and philosophical approach to sensation.

Post-reading

Simon's essay introduces us two key fronts in the philosophical discussion of sensation: one ancient, the other modern. In the next section, we will consider the modern aspects, and in the subsequent section we will discuss St. Thomas Aquinas's Aristotelian understanding of sensation.

11.3 Sensation, Perception, & the Brain

One might too easily get the impression that Aristotelian sense realism is a pre-scientific and (therefore) outdated understanding of the senses. The purpose of this section is to is to argue otherwise. It is, in fact, not the case that sense realism is implausible or false, but rather the more modern approach that—like its ancient Epicurean forebears—runs into difficulties. The Interlude (on p. 155) discusses a positive alternative.

It is in fact a hard problem

First, let's simply establish it as a fact that contemporary philosophers and neuroscientists consider sensation and perception to involve difficulties. Below is a classic statement from the philosopher David Chalmers.

> The really hard problem of consciousness is the problem of experience. When we think and perceive, there is a whir of information processing, but there is also a subjective aspect. As Nagel (1974) has put it, there is something it is like to be a conscious organism. This subjective aspect is experience. . . . Why is it that when our cognitive systems engage in visual and auditory information processing, we have visual or auditory experience: the quality of deep blue, the sensation of middle C? How can we explain why there is something it is like to entertain a mental image or to experience an emotion? It is widely agreed that experience arises from a physical basis, but we have no good explanation of why and how it so arises. Why should physical processing give rise to a rich inner life at all? It seems objectively unreasonable that it should, and yet it does.

Chalmers, "Facing Up to the Problem of Consciousness" (online).

We will hear from Thomas Nagel—the philosopher to whom Chalmers refers—at the end of this section. Before we do, we should answer the "How did we get here?" question. To do so, we will look at the roots of the problem in early modern philosophy and science, and how these roots are still attached to the tree of contemporary scientific research.

The roots of the problem

To examine the roots of the problem, we will turn to René Descartes and Thomas Hobbes. Despite their being a dualist and a materialist, Descartes and Hobbes actually have a great deal of agreement as to how sensation works and what it is. Quoted below are two

passages from Descartes and one from Hobbes. My comments are numbered in the margins.

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– The amazing, hypothetical, mechanical man

René Descartes, *Treatise on Man* (written prior to 1637, published posthumously 1664), in *The Philosophical Writings of Descartes: Volume 1*, excerpts from pp. 99, 101–102.

These men will be composed, as we are, of a soul and a body.* First I must describe the body on its own; then the soul, again on its own; and finally I must show how these two natures would have to be joined and united in order to constitute men who resemble us.

1: Note the "hypothetical" rhetoric of this and the previous paragraph.

2: This "to be nothing but" is often the first chord played by the reductionist.

I suppose[1] the body to be nothing but[2] a statue or machine made of earth, which God forms with the explicit intention of making it as much as possible like us. Thus God not only gives it externally the colours and shapes of all the parts of our bodies, but also places inside it all the parts required to make it walk, eat, breathe, and indeed to imitate all those of our functions which can be imagined to proceed from matter and to depend solely on the disposition of our organs.[3]

3: The approach here is mechanical and reductive; that's part of the hypothesis. Note Descartes's three examples in the first sentence of the next paragraph.

We see clocks, artificial fountains, mills, and other such machines which, although only man-made, have the power to move of their own accord in many different ways. But I am supposing this machine to be made by the hands of God, and so I think you may reasonably think it capable of a greater variety of movements than I could possibly imagine in it, and of exhibiting more artistry than I could possibly ascribe to it.

[. . .]

Next, to understand how the external objects which strike the sense organs can prompt this machine to move its limbs in numerous different ways, you should consider that the tiny fibres (which, as I have already told you, come from the innermost region of its brain and compose the marrow of the nerves) are so arranged in each part of the machine that serves as the organ of some sense that they can easily be moved by the objects of that sense.[4] And when they are moved, with however little force, they simultaneously pull the parts of the brain from which they come, and thereby open the entrances to certain pores in the internal surface of the brain. Through these pores the animal spirits[5] in the cavities of the brain immediately begin to make their way into the nerves and so to the muscles which serve to cause movements in the machine

4: Consider how this explanation of the entire human organism is entirely in terms of mechanical motion, or physical, transitive action.

5: Here, imagine Descartes is talking about "electrico-chemical energy."

* By 'these men', Descartes means the fictional men he introduced in an earlier (lost) part of the work. Their description is intended to cast light on the nature of real men in the same way that the description of a 'new world' in *The World*, ch. 6, is intended to cast light on the real world.

quite similar to those we are naturally prompted to make when our senses are affected in the same way.

Figure 1

Thus, for example [in Fig. 1], if fire A is close to foot B, the tiny parts of this fire (which, as you know, move about very rapidly) have the power also to move the area of skin which they touch. In this way they pull the tiny fibre cc which you see attached to it, and simultaneously open the entrance to the pore de, located opposite the point where this fibre terminates—just as when you pull one end of a string, you cause a bell hanging at the other end to ring at the same time.[6]

When the entrance to the pore or small tube de is opened in this way, the animal spirits from cavity F enter and are carried through it—some to muscles which serve to pull the foot away from the fire, some to muscles which turn the eyes and head to look at it, and some to muscles which make the hands move and the whole body turn in order to protect it . . .

Now I maintain that when God unites a rational soul to this machine (in a way that I intend to explain later) he will place its principal seat in the brain, and will make its nature such that the soul will have different sensations corresponding to[7] the different ways in which the entrances to the pores in the internal surface of the brain are opened by means of the nerves.

6: Note how Descartes's model equivocates between the feeling of pain and the activity of the other senses. Or, feeling pain and seeing a color are now all conceived according to the same univocal model of processes of mechanical motion.

7: How does this "correspondence" work? Is this objective or subjective union, in Simon's terms?

– Seeing in the dark with Descartes

René Descartes, *Optics* (published 1637), in *Discourse on Method, Optics, Geometry, and Meteorology*, pp. 66–68.

Thus, not having here any other occasion to speak of light than to explain how its rays enter into the eye, and how they can be deflected by the different bodies that they encounter, I need not undertake to explain its true nature. And I believe that it will suffice that I make use of two or three comparisons which help to conceive it in the manner which to me seems the most convenient to explain all those of its properties that experience acquaints us with, and to deduce afterwards all the others which cannot be so easily observed; imitating in this the Astronomers,[8] who, although their assumptions are almost all false or uncertain, nevertheless, because these assumptions refer to different observations which they have made, never cease to draw many very true and well-assured conclusions from them.

8: Similar to the previous excerpt, Descartes is proposing a method of using hypothetical models.

It has sometimes doubtless happened to you, while walking in the night[9] without a light through places which are a little difficult, that it became necessary to use a stick in order to guide yourself; and you may then have been able to notice that you felt, through the medium of this stick,[10] the diverse objects placed around you, and that you were even able to tell whether they were trees, or stones, or sand, or water, or grass, or mud, or any other such thing. True, this sort of sensation is rather confused and obscure in those who do not have much practice with it; but consider it in those who, being born blind,[11] have made use of it all their lives, and you will find it so perfect and so exact that one might almost say that they see with their hands,[12] or that their stick is the organ of some sixth sense given to them in place of sight. And in order to draw a comparison from this,[13] I would have you consider light as nothing else, in bodies that we call luminous, than a certain movement or action, very rapid and very lively, which passes toward our eyes through the medium of the air and other transparent bodies, in the same manner that the movement or resistance of the bodies that this blind man encounters is transmitted to his hand through the medium of his stick. This will prevent you from finding it strange at first that this light can extend its rays in an instant from the sun to us;[14] for you know that the action with which we move one of the ends of a stick must thus be transmitted in an instant to the other end, and that it would have to go from the earth to the heavens in the same manner, although it would have more distance to travel there than it has here. Neither will you find it strange that by means of it we can see all kinds of colors; and you may perhaps even be prepared to believe that these colors are nothing else,[15] in bodies that we call colored, than the diverse ways in which these bodies receive light and reflect it against our eyes:

9: This is the first part of the model.

10: The stick and the sense of touch are now key elements of the model.

11: This is the second part of the model, which actually serves to explain or clarify the first part, based upon an experience that many have never had.

12: Is this a univocal use of the word "see"? Or, does it not matter, given Descartes's adopted method of explanation?

13: In the remainder of this sentence, Descartes applies his model, completing the analogy he has been building as a hypothetical explanation. Rays of light are to our eyes just as the stick is to the night walker or blind man's sense of touch.

14: In this first explanation using the model, note how Descartes draws a conclusion that is actually false (neither light nor the force in the stick are transmitted instantaneously). The model "hides" the true situation and thus falsifies our thinking.

15: This is the second explanation made with the model. What prevents it from being just as false as the first one?

you have only to consider that the differences which a blind man notes among trees, rocks, water, and similar things through the medium of his stick do not seem less to him[16] than those among red, yellow, green, and all the other colors seem to us; and that nevertheless these differences are nothing other, in all these bodies, than the diverse ways of moving, or of resisting the movements of, this stick. In consequence of which,[17] you will have occasion to judge [i] that there is no need to assume that something material passes from the objects to our eyes to make us see colors and light, [ii] nor even that there is anything in these objects which is similar to the ideas or the sensations that we have of them: just as nothing comes out of the bodies that a blind man senses, which must be transmitted along the length of his stick into his hand; and as the resistance or the movement of these bodies, which is the sole cause of the sensations he has of them, is nothing like the ideas he forms of them. And by this means your mind will be delivered from all those small images flitting through the air, called intentional species, which worry the imagination of Philosophers so much.[18] You will even easily be able to decide the question which is current among them concerning the origin of the action that causes the sensation of sight. For, just as our blind man can sense the bodies which are around him, not only through the action of these bodies when they move against his stick, but also through that of his hand, when they are only resisting it, so we must affirm that the objects of sight can be felt, not only by means of the action which, being in them, tends toward the eyes, but also by means of that which, being in the eyes, tends toward them.

16: What does "seeming to one" mean? Where does this take place? (Descartes: "In the soul.") But how?

17: Here, two consequences [i, ii] are drawn from the second (dubious) application of the model.

18: The second consequence, of course, is directed against the Aristotelian theory of sensation. One cannot help but note how Descartes's language evokes the idea of an intellectual exorcism. Ironically, by "delivering" the mind—or soul—from these images, Descartes also undermines sense realism.

———— ❖ ————

– A philosophical accord across the Channel

The cause of sense is the external body, or object, which presseth the organ proper to each sense, either immediately, as in the taste and touch; or mediately, as in seeing, hearing, and smelling: which pressure, by the mediation of nerves, and other strings, and membranes of the body,[19] continued inwards to the brain, and heart, causeth there a resistance, or counter-pressure, or endeavour of the heart to deliver it self: which endeavour because *outward*, seemeth to be some matter without.[20] And this *seeming*, or *fancy*, is that which men call *sense*; and consisteth, as to the eye, in a *light* or *colour figured*; to the ear, in a *sound*; to the nostril, in an *odour*; to the tongue and palate, in a *savour*; and to the rest of the body, in *heat*, *cold*, *hardness*, *softness*, and such other qualities, as we discern by *feeling*. All which qualities called *sensible*, are in the object that causeth them but so many several motions of the matter, by which it presseth our organs diversly.

Thomas Hobbes, *Leviathan*, Book I, ch. 1, n. 4.

19: The casual process is physical, mechanistic. Here, note that Descartes would agree.

20: Again, note Descartes's agreement; consider the blind man and what "seems to him".

———— ⌖ ————

Note how Descartes and Hobbes agree in their reduction of sensation to physical motion. In the next paragraph of the *Leviathan*, Hobbes also argues against "the philosophy-schools" and their defense of the Aristotelian adoption of sensation. As we will see in what follows, this triumph of the mechanistic model of sensation continues into present-day neuroscience. However, we will also see how it is still attended by insuperable difficulties.

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Modern neuroscience and its discontents

Let us consider an example of a modern neuroscientist defending a representationalist viewpoint. We will carefully note that, despite the great advances in experimental research, the philosophical approach has not changed. Then, we will read a contemporary criticism of that author.

– *"Can we be sure of this? We cannot. Nevertheless . . . "*

John Martin, "Coding and Processing of Sensory Information," in Kandel, Schwartz, and Jessell, eds., *Principles of Neural Science*, p. 330.

They [the early psychologists] soon found that although the details of sensory reception differed for each of the senses, three steps were common to all senses: (1) a physical stimulus, (2) a set of events by which the stimulus is transduced into a message of nerve impulses, and (3) a response to the message, often in the perception or conscious experience of sensations.[21] This sequence lent itself to two modes of analysis, giving rise to the fields of psychophysics and sensory physiology. Psychophysics focused on the relationship between the physical characteristics of a stimulus and the attributes of the sensory experience. Sensory physiology examined the neural consequences of a stimulus—how the stimulus is transduced by sensory receptors and processed in the brain. Much of the current excitement in the neurobiology of perception comes from the recent merging of these two approaches in experiments on animal and human subjects.

21: These steps are virtually identical to the ones proposed by Descartes and Hobbes.

The early findings in psychophysics and sensory physiology soon revealed a weakness in the empiricist argument.[22] The studies revealed that our mind is not blank nor is our perceptual world formed simply from a direct encounter of a naive brain with the physical properties of a stimulus. In fact, our perceptions differ qualitatively from the physical properties[23] of stimuli because the nervous system only extracts certain information from a stimulus and then interprets this information in the context of its earlier experience. We experience[24] electromagnetic waves of different

22: This refers to the Lockean-inspired view of the early psychologists that our minds are "blank slates."

23: This is the distinction, made by Locke and others before him, between primary and secondary qualities.

24: Carefully note how the word "as" functions in these three sentences.

frequencies not as waves but as actual colors that we see: red, blue, or green. We experience objects vibrating at different frequencies as different tones that we hear. We experience chemical compounds dissolved in air or water as specific smells and tastes. Colors, tones, smells, and tastes are mental constructions created by the brain out of sensory experience.[25] They do not exist, as such, outside of the brain. Thus, we can answer the traditional question raised by philosophers: Does a sound exist when a tree falls in the forest, if no one is near enough to hear it? We now believe[26] that the fall causes vibration in the air but not sound. Sound only occurs when pressure waves from the falling tree reach and are perceived by a living being.

25: Has science proven this to be true? Is this an equivocation on "experience"?

26: Only now? See Aristotle, *De Anima*, II.8 and II.12.

Even though sensory experience is a construction of the brain, such constructions seem not to be arbitrary.[27] Although our perceptions of the size, shape, and color of objects are different from the images formed on our retinas, our perceptions appear to correspond to the physical properties of objects. Can we be sure of this? We cannot. Nevertheless,[28] in most instances we can show that our perceptions of a shape, for example, the shape of a right triangle, is an accurate prediction of inferred reality because we can measure what we see.[29] We can demonstrate, by measurement, that the square of its hypotenuse is equal to the sum of the squares of its sides. Perception therefore can be shown to be an accurate organization of the essential properties[30] of an object that allows us to manipulate the objects successfully.[31]

27: Again we have the appearance of "seem to be." Compare this to "appear to" in the next sentence.

28: Stop for a moment and consider the implications of the admission in the previous sentence, in contrast to this oblivious "nevertheless."

29: So, we can defend the accuracy of some parts of sensation by measuring primary qualities? Isn't this a circular argument? Here is where George Berkeley's idealism wins.

30: What are these?

31: Pragmatism, not truth, is the basis of our interaction with the world. How, then, can there be a true scientific theory of sensation?

Thus, our perceptions are not direct records of the world around us but are constructed internally, at least in part, according to innate rules and constraints imposed by the capabilities of the nervous system.

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– Seeing what you cannot see

It is important not to conflate perception with sensation. A long tradition in philosophy, as well as in psychology and neuroscience, assumed that perceiving something characteristically involves having sensations. The roots of this conception lie in the seventeenth and eighteenth-century conception of perception as the causation of ideas or impressions in the mind resultant upon the impact of stimuli on our nerve endings and the consequent excitation of the animal spirits in the nerves.[32] Damage to nerve endings by cutting, burning, etc. causes ideas of pain; the impact of light on the retina or of sound waves on the eardrum causes ideas of colour or of sound. Ideas of pain and ideas of colour and sound were held to stand on the same level—they are all produced by the action of

Bennett and Hacker, *Philosophical Foundations of Neuroscience*, pp. 128–130.

32: Thus includes both Descartes and Hobbes, but many other thinkers of their day.

things upon our nerve endings.[33] In so far as neuroscientists today conceive of perception as a matter of the reception of sensations, they are conforming to a venerable (although confused) tradition. We shall revert to this issue after we have clarified the source of the confusion.

A complement to the conception of perceiving as the reception of ideas or impressions was the thought, originating with Galileo and further developed by Descartes, Boyle and Locke, that just as[34] the sensation of pain is a subjective modification of the mind caused by an object's deleterious impact upon our nerve endings and is not the apprehension of a quality of pain in the object, so too the 'sensations' of colour, sound, smell, taste, warmth and cold are merely subjective modifications of the mind, and not the apprehension of objective qualities of perceptibilia. Objects as they are, independently of our perception of them, were thought to have only primary qualities of extension, shape, size, solidity, motion or rest. The secondary qualities of colour, sound, smell, taste and thermal (as well as further tactile) qualities, as they are objectively, are merely powers of objects to cause ideas of colour, sound, etc. *in us*. As we experience them, they are no more than ideas or sensations in our minds. According to this conception, the world as we perceive it is dramatically different from the world as it is in itself.[35] Perceiving an object was conceived of as having an array of partly unrepresentative ideas[36] of the object caused in one's mind as a consequence of the activities of the brain. What we apprehend in perception is not the object itself, but rather the ideas it causes in us. Ideas of primary qualities represent objective qualities of the objects we perceive, but ideas of secondary qualities do not. This conception became embedded in the foundations of the scientific conception of reality and the psychological and neuroscientific conception of perception.

34: This "just as" introduces the key conflation that grounded Descartes's analysis of sensation.

35: This conclusion was noted by both the old (Descartes) and the new scientists (Martin).

36: Note the denial of the "likeness" that undergirds Aristotelian sense realism.

It is still as firmly entrenched as ever.[37] Kandel, Schwartz and Jessell introduce their discussion of "The sensory systems" thus:

[. . . *a quotation follows, which we read in the previous segment* . . .]

This misconception contributes to a systematic distortion of empirical investigations into the neural mechanisms of perception. So, although this is not the place for a detailed examination of the doctrine, some remarks are in order.

First, it is important to emphasize that this is not an empirical claim or a scientific hypothesis, let alone a scientific theory that can be or has been confirmed experimentally. It is a *philosophical* or *conceptual* claim, which can be confirmed or disconfirmed only by conceptual investigations and a priori arguments. [. . .]

37: In their own note, Bennett and Hacker state: "Neuroscientists still cleave to this seventeenth-century doctrine."

Second, it is important not to lose sight of the extraordinary nature of this ancient conception [of primary versus secondary qualities]. If it is right, then we are subject to perpetual illusion. The world as it is independently of our perception of it is *profoundly* different from the world as we perceive it to be. If colours, sounds, smells and tastes are 'mental constructions created in the brain by sensory processing',[38] and if they 'do not exist, as such, outside of the brain', then, to be sure, what we perceive when we perceive the golden sunset, blue sea and silvery waves is no more than a mental construct created in the brain, and what we enjoy when we dine is not the taste of the food we eat, but a mental construct in the brain. The world as we experience it is largely a figment of our imagination . . . that is, of our image-making faculty. Nature, as it really is, independently of our perception of it, 'is a dull affair, soundless, scentless, colourless; merely the hurrying of material'.[39] This is a *metaphysical*, not a physical, conception of reality.

38: This is a quotation from Martin, see above.

39: They quote A. N. Whitehead, from *Science and the Modern World*.

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The authors of the immediately preceding passage are a philosopher (Hacker) and a neuroscientist (Bennett). Perhaps it should not be surprising that it took both disciplines to correct the errors of earlier thinkers!

What is it like to be a perceiver?

Earlier, we quoted the philosopher David Chalmers, who referred to a famous essay by the philosopher Thomas Nagel. That essay is entitled "What Is It Like to Be a Bat?" Nagel argues that our philosophical and scientific accounts of sensation and experience are wanting because we are hampered by the wrong models, the wrong presuppositions, in our inquiries. At one point he observes, in regard to the idea of "physicalism," or an entirely material-mechanistic account of sensation:

> At the present time the status of physicalism is similar to that which the hypothesis that matter is energy would have had if uttered by a pre-Socratic philosopher. We do not have the beginnings of a conception of how it might be true. In order to understand the hypothesis that a mental event is a physical event, we require more than an understanding of the word "is." The idea of how a mental and a physical term might refer to the same thing is lacking, and the usual analogies with theoretical identification in other fields fail to supply it. They fail because if we construe the reference of mental terms to physical events on the usual model, we either

Nagel, "What Is It Like to Be a Bat?" p. 447.

> get a reappearance of separate subjective events as the effects through which mental reference to physical events is secured, or else we get a false account of how mental terms refer . . .

What is striking here is that the question of being and meaning—which is precisely what Simon had raised in his essay—is the question that now forcibly exerts itself on the physicalist-mechanistic conception of sensation.

To develop a more positive account of this alternative, we should continue to the next section. Further clues will be offered in the Interlude after this chapter.

11.4 The Being & Activity of Sensation

This section corresponds to the reading of St. Thomas, *ST*, Ia, q. 78. We will focus especially on aa. 1, 3–4.

Reading questions

Before you read, consider the following: *Is it possible to sense two contradictory sensations at the same time and in the same respect?*

As you read, consider the following questions:

- Questions for *ST*, Ia, q. 78, a. 1:
  - How does St. Thomas distinguish the kinds of souls by their powers and modes of life?
  - How are the operations of the soul related to the organs of the body?
- Question for *ST*, Ia, q. 78, a. 2:
  - How does the way in which Aquinas distinguishes these powers of soul follow the method that he employed in the previous article?
- Questions for *ST*, Ia, q. 78, a. 3:
  - How are the five senses distinguished as to their objects?
  - How are the objects of sensation distinguished?
- Questions for *ST*, Ia, q. 78, a. 4:
  - How are the internal senses distinguished from each other?
  - What purpose do each of the internal senses serve in the mode of life of an animal?

Post-reading

In our discussion of Question 78, we will focus especially on the last two articles.

A key idea behind Aquinas's methodology is that one infers the nature of the powers of the soul by examining the activities of those powers insofar as they are directed to certain objects. He explains this in the following passage:

> A power as such is directed to an act. Wherefore we seek to know the nature of a power from the act to which it is directed, and consequently the nature of a power is diversified, as the nature of the act is diversified. Now the nature of an act is diversified according to the various natures of the objects. For every act is either of an active power or of a passive power. Now, the

St. Thomas, *ST*, Ia, q. 77, a. 3, c.

> object is to the act of a passive power, as the principle and moving cause: for color is the principle of vision, inasmuch as it moves the sight. On the other hand, to the act of an active power the object is a term and end; as the object of the power of growth is perfect quantity, which is the end of growth. Now, from these two things an act receives its species, namely, from its principle, or from its end or term; for the act of heating differs from the act of cooling, in this, that the former proceeds from something hot, which is the active principle, to heat; the latter from something cold, which is the active principle, to cold. Therefore the powers are of necessity distinguished by their acts and objects.

We should also know of other passages where Aquinas provides us with some key details. Consider the following example of the estimative power. In this question, St. Thomas is considering whether irrational animals have choice. His reply to this example in the objection doesn't dispute the example, but denies that it is evidence of choice.

St. Thomas, *ST*, Ia-IIae, q. 13, a. 2, obj. 3.

> We see this plainly, in wonderful cases of sagacity manifested in the works of various animals, such as bees, spiders, and dogs. For a hound in following a stag, on coming to a crossroad, tries by scent whether the stag has passed by the first or the second road: and if he find that the stag has not passed there, being thus assured, takes to the third road without trying the scent; as though he were reasoning by way of exclusion, arguing that the stag must have passed by this way, since he did not pass by the others, and there is no other road.

We would call the estimative power "instinct" today. Its similarity to reason, especially in the higher animals, has fascinated philosophers and biologists in all ages.

St. Thomas notes other limitations and strengths to the "world" of an animal without reason. Consider the following two quotations from his some of his commentaries on Aristotle.

St. Thomas, *Commentary on Aristotle's De Anima*, II.6, lect. 13, n. 398.

> Note, however, that the cogitative faculty differs from the estimative power. The former apprehends the individual thing as existing in a common nature, and this because it is united to intellect in one and the same subject. Hence it is aware of a man as this man, and this tree as this tree; whereas the estimative power is not aware of an individual thing as in a common nature, but only in so far as this individual thing is the

term or principle of some action or passion. Thus a sheep knows this particular lamb, not as this lamb, but simply as something to be suckled; and it knows this grass just in so far as this grass is its food. Hence, other individual things which have no relation to its own actions or passions it does not apprehend at all by their natural estimation. For the purpose of the estimative power in animals is to direct them in their actions and passions, so as to seek and avoid things according to the requirements of their nature.

But hearing announces to us only differences among sounds, which are not found in all bodies, and are not expressive of the many diversities of things. But to a few animals hearing does show differences of voice. Voice is sound projected with an imagining from an animal's mouth, as is said in *On the Soul* II, and so the voice of an animal as such naturally indicates the animal's inner feeling (*passio*), as the barking of dogs indicates their anger. Thus the more perfect animals know one another's inner feelings from voices, a knowledge that is not in imperfect animals.

St. Thomas, *Commentary on Aristotle's On Sense and What Is Sensed*, lect. 1 (on 437a5; White translation), p. 29.

11.5 Conclusion: To Know Is to Be the Other as Other

First, we should note that, in our study of sensation, we have illustrated the most fundamental way in which the scholastic definition of knowledge is verified. The traditional adage was that "to know is to be the other as other." The sort of being that knowledge is, even sense knowledge, is the being of some other without *becoming* that other. As we will have further occasion to contemplate as we proceed, this is because the formal perfections of things are communicable. Form as the perfection of one is "apt to be in another."

St. Thomas, *De Veritate*, q. 2, a. 2, c. See also Nieto, "On the Essential Objectivity of Knowledge," pp. 75–79.

Second, we have now considered the views of both the sense realists (Aristotle, Aquinas) as well as the representationalists and their modern scientific counterparts. However, our account of the first has the disadvantage of being generic, remaining at the level of a "commonsense" view of the world in many ways (but not in others). Our account of the second has the disadvantage of being only negative. That is, it shows that a representationalist account of knowledge collapses into some form of idealism, which cuts of off from the real world.

Is there a way to offer a positive and detailed account of sense realism, one which includes the findings of contemporary science? The beginnings of such an account are outlined in the Interlude following this chapter.

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Chapter Appendix

While St. Thomas's account suffers from some outdated science, it is worth considering in light of the philosophical weaknesses of the contemporary alternatives.

	Sight	**Hearing**	**Smell**	**Touch**	**Taste**
Does the sense power undergo a 'spiritual' change or immutation?	Yes	Yes	Yes	Yes	Yes
Does the sense object and medium undergo a physical change?	No	Yes (local motion)	Yes (qualitative change)	Yes	Yes
Does the sense organ and its medium undergo a physical change?	No	No	No	Yes	Yes

The following table may be of use for the discussion of the internal senses.

Name	**Object**	**Purpose**	**Examples**
Common Sense	Present sensible objects in common	Distinguishing & comparing the objects of the five senses, to be aware of sensing	"Someone sees that he sees" (*ST*, Ia, q. 78, a. 4, ad 2um)
Imagination	Sensible objects when absent	Retaining & recombining the objects of sensation in their absence	people's faces, a gold mountain
Estimative Power*	Particular "intentions," good or utility	So that animals can perceive what is good for them in sensible things	that is a predator dog at the crossroads
Memory**	Sensible objects as past experiences	So that animals can retain previously experienced intentions and learn	human recollection animal training

* In humans, it is called the cogitative power.

** In humans, reminiscence is also possible.

Interlude: Knowing is a Way of Being in the World

> Cognoscens in actu, est ipsum cognitum in actu.
>
> – St. Thomas, *Sent. de Anima*, Book II, lect. 12, n. 377

The following brief defense of sense realism will proceed in three stages. First, we will review how the Aristotelian-Thomistic approach articulates what sensation is in terms of its overall method. Then we will discuss in more detail what sense knowledge is in terms of its being a mode of union in being. Lastly, we will consider some contemporary experimental approaches which are investigating the scientific details that correspond to sense realism.

Being, Living, & Knowing

Not only is sense realism in accord with our "commonsense" understanding of things, it is also a necessary condition for the coherence of the scientific method. However, we should review, in the context of the course as a whole, how we have developed the Aristotelian-Thomistic methodology for understanding sensation.

Footnotes to Plato all the way down

This search began in the *Theaetetus*, and after traversing all the way to brain science's assumption of a 17th-century metaphysical framework, we went back to Aristotle and Aquinas. Recall how Plato led us to consider that sensation and knowledge cannot be entirely motion. Somehow, if knowledge is a reception into the soul, and by it we attain to the truth, there has to be some form of being that escapes a reality all in flux. So a key insight of the *Theaetetus* was knowledge's separation from motion and its conditions (see above, p. 19). That dialogue also distinguished between the first and third person perspectives

Now, a great deal of the course (in Parts II and III) was devoted to the logic of knowledge. This corresponded more closely with an analysis of the "first person" perspective on knowledge: How do I give a *logos*, an account, of the truth of my beliefs, whether at the level of scientific demonstration (Part II) or everyday belief (Part III)? It has only been in Part IV that we have turned to the "third

person" perspective regarding knowledge and have been asking how knowledge exists in the soul.

Yves Simon began our search in this quarter by discussing the distinction between being and knowing as two types of union, a form-matter union and objective union. A form-matter union results in a new individual. An objective union does not. Since the representationalists run into difficulties explaining objective union, their account of sensation as a type of knowledge fails.

To more fully eliminate physical motion as a necessary and sufficient condition for the explication of knowledge, the Aristotelian account of transitive or transeunt causality was necessary. The agent's action exists in the patient (its causal efficacy is transmitted to the effect and resides there; the teacher's teaching is in the student). This transitive causality results in a new form-matter sort of union at its terminus (a moving object, set in motion by the mover).

We then examined the history of the mechanical-representationalist theory of mind, from Descartes and Hobbes onward, and found that its philosophical assumptions, and their resulting idealism and self-referential incoherence, still attend modern neuroscience research. In the case of sensation, a new "mode of being" is needed.

Objects–act–power, Aristotelian psychological method

We have previously seen the following passage, where Aquinas explains his Aristotelian psychological method for looking "into the soul" to understand its powers.

St. Thomas, *ST*, Ia, q. 77, a. 3, c.

> A power as such is directed to an act. Wherefore we seek to know the nature of a power from the act to which it is directed, and consequently the nature of a power is diversified, as the nature of the act is diversified. Now the nature of an act is diversified according to the various natures of the objects. For every act is either of an active power or of a passive power. Now, the object is to the act of a passive power, as the principle and moving cause: for color is the principle of vision, inasmuch as it moves the sight. On the other hand, to the act of an active power the object is a term and end; as the object of the power of growth is perfect quantity, which is the end of growth. Now, from these two things an act receives its species, namely, from its principle, or from its end or term; for the act of heating differs from the act of cooling, in this, that the former proceeds from something hot, which is the active principle, to

> heat; the latter from something cold, which is the active principle, to cold. Therefore the powers are of necessity distinguished by their acts and objects.

Note how this methodology *presupposes* the fact of sense realism, and then seeks to understand how it is possible. It is also supported by a few other general ideas of St. Thomas's Aristotelian philosophical approach:

- The soul is the formal cause of the living being; the body is organic matter, but not alive without the soul as its act (see *ST*, Ia, q. 75, a. 1; Aristotle, *De Anima* II.1–2).
- While plants and animals still have souls, they are forms that do not exceed the corporeal world (these souls are 'material' forms, as it were, *forma materialis*); however, even though the intellectual soul exceeds the power of matter, it is still the form of the human body (see *ST*, Ia, q. 76, a. 1; Aristotle, *De Anima*, III.4–5).
- The soul as a form of the living being is also a holistic cause; Aquinas is firmly anti-reductionistic because the living being acts and lives as a whole.†
- The soul as form gives rise to the powers are qualitative parts or dispositions; that is, the soul and its powers are not identical, otherwise the powers would always be "activated" or "active" (no sleep! see *ST*, Ia, q. 77, a. 1).

The anti-reductionism of this method or way of proceeding in knowledge ought to be highlighted. The modern approach goes from subjective experience and the components or parts in order to recover the objective whole. By contrast, Aquinas and Aristotle begin with the whole as a given, objective truth and then ask about the parts and conditions required for it. It is fruitless and futile to grant Descartes's starting position of doubting the senses and then argue him out of it. The eminent historian of philosophy and Thomist, Etienne Gilson, has this to say about such a project:

> The overriding importance of the problem of knowledge in modern philosophies is plain enough. But there is something which is perhaps not so easily noticed: that to some extent even Neo-Scholasticism is affected by the preoccupation with epistemology. Yet it is a

Etienne Gilson, *Methodical Realism*, pp. 11–14.

† See *ST*, Ia, q. 76, a. 8, c.: "The soul has not quantitative totality, neither essentially, nor accidentally, as we have seen; it is enough to say that the whole soul is in each part of the body, by totality of perfection and of essence, but not by totality of power. For it is not in each part of the body, with regard to each of its powers; but with regard to sight, it is in the eye; and with regard to hearing, it is in the ear; and so forth. We must observe, however, that since the soul requires a variety of parts, its relation to the whole is not the same as its relation to the parts; for to the whole it is compared primarily and essentially, as to its proper and proportionate perfectible; but to the parts, secondarily, inasmuch as they are ordained to the whole."

> fact. . . . What do the systems which the Neo-Scholastic philosophers want to refute have in common? The idea that philosophical reflection ought necessarily to go from thought to things. The mathematician always proceeds from thought to being or things. Consequently, critical idealism was born the day Descartes decided that the mathematical method must henceforth be the method for metaphysics. Reversing the method of Aristotle and the medieval tradition, Descartes decided that *a nosse ad esse valet consequentia* [it is valid to infer being from knowing], to which he added that this was indeed the only valid type of inference, so that in his philosophy whatever can be clearly and distinctly attributed to the idea of the thing is true of the thing itself. . . . [T]he three centuries of philosophical speculation which have intervened between the scholastic period and the present have made us lose the habit, and even forget the possibility, of thinking from the perspective of the object. . . . Put in the simplest terms, the question comes down to what has been called 'the problem of the bridge.' As L. Noel has clearly shown in his penetrating *Notes d'epistemologie thomiste*, the problem thus conceived is the result of picturing things in spatial terms. The object is placed on one side, the understanding on the other, and the question is then asked how the object can be where it is while at the same time being somewhere else, that is to say—as some people put it—inside consciousness; or how consciousness, while remaining itself, can depart from itself to lodge in the object. Furthermore, as L. Noel has also stated in a definitive manner, thought gets beyond this naively imaginative stage only to find itself in an impasse, because one can only cross a bridge which exists, and here there is none. A thought which starts from a mental representation will never get beyond it. . . . In other words, he who begins as an idealist ends as an idealist; one cannot safely make a concession or two to idealism here and there. One might have suspected as much, since history is there to teach us on this point.

The teleology of the senses and their distinction

Aquinas distinguishes the senses *teleologically*, that is, according to the needs of the animal to interact with the environment, and thus the bodily organs are for that sake. The sense power is the *logos* of the organ (its *ratio* in the sense of form or nature, see *De Anima* II.12, 424a27), and it is teleologically ordered to its objects

through various media. So the senses are not distinguished by organs or by media, but by the objects through various media to the corresponding powers of sensation as forms sense organs. Thus St. Thomas states (ST, Ia, q. 78, a. 3, c., translation my own): "And similarly, diverse media were allotted [by nature] to the diverse senses, in accordance with how it was fitting for the acts of those powers."

Since the objects ultimately determine the nature of the sense power (i.e., we have various senses for the sake of sensing various objects in various ways), it seems that what St. Thomas must mean here is not that the various media (light, air, etc.) were arranged so that the senses would work, but that the senses are adapted to the media qua possible media for sensible objects. This teleological order between sense powers and organs, media, and objects is also noted by Robert Sokolowski:

> The world in which the human organism is embedded is pervaded by many kinds of energy, such as the gravitational, mechanical, fluid, thermal, chemical, electromagnetic, and nuclear. Once the earth had become hospitable enough, living things developed on it, and they did so by both taking advantage of and responding to the various kinds of surrounding energy. The earth provided a niche for life, and the differentiations of energy provided more specific niches for the various kinds of living things, which responded not only to the accessible energy but also to the other kinds of living things that were present. . . .
>
> As living things became complex enough to develop awareness and to have wants, their sensibility became differentiated in response to some of the forms of energy that surrounded them. Since we are immersed in energy, it is not surprising that we became able to react perceptually to it in its various kinds. Thus, vision developed in the medium of electromagnetic energy; hearing developed in the fluid media of water and air; touch developed in the medium of mechanical energy, with its pressure and motion; and taste and smell developed in response to chemical energy. A sensibility for heat and cold responded to thermal energy, and kinesthesia responded to forms of kinetic energy associated with the force of gravitation. We might think of living organisms as unfolding and becoming more complex in order to take advantage of the resources these forms of energy afford. Organisms evolved not only to survive but also to explore and exploit. We developed vision, for example, not just

Sokolowski, *Phenomenology of the Human Person*, pp. 198–199.

> because things can appear shaded and colored, but because electromagnetic energy surrounds us.

Now, this talk of energy might not sound that convincing at first, until we contemplate that—in contemporary scientific terms—"energy" is often a quantifiable placeholder for the form and structure and even the information contained in a physical system apart from its mere mass or matter.

We will return to Sokolowski's ideas in the last section. For now, let us examine in more detail what sense knowledge is in terms of its being a mode of union in being.

The Wax & the Signet Ring, Again

It was in Plato's *Theaetetus* that we first encountered the comparison or analogy of the wax block. This image was used to help us wonder how exactly knowledge exists in the soul. Plato's student Aristotle also uses this idea of wax and a seal (a signet ring, someone's personal seal). Let us examine how St. Thomas understands this, when he comments on the passage from Aristotle's *De Anima*.

Aquinas's interpretation of the wax

First, Aquinas observes Aristotle's comparison of the operation of the senses to wax receiving a seal, and then raises a problem with this comparison.

> First, then, he says that it must be maintained in general, as true of all the senses without exception, that the senses receive forms without matter, as wax receives the mark of a ring without the iron or gold. This, however, would seem to be common to all cases of passive reception; every passive thing receives from an agent in so far as the agent is active; and since the agent acts by its form, not its matter, every recipient as such receives form without matter. Which indeed is sensibly apparent; e.g. air does not receive matter from fire acting upon it, but a form. So it would seem not to be peculiar to sensation that it receives form without matter.

St. Thomas, *Commentary on Aristotle's De Anima*, II.12 (lect. 24, quotes from the passage nn. 551–555). The translation is my modification of the Foster/Humphries translation. Quotes of the *De Anima* are from the McKeon edition.

Aquinas proceeds to distinguish two ways in which form is received. In one way, the form is received with a material disposition in the recipient just as in the agent. This material reception of form is a physical process, what Simon had called a heteronomic passion with transeunt activity. In another way, however, form can be

received without that material disposition. This is what Simon had highlighted as occurring in sensation. In St. Thomas's terms, "in the sensible thing it has a natural existence [*habet esse naturale*], while in the sense it has a cognitional and spiritual being [*habet esse intentionale et spirituale*]." Ibid.

This is why, Aquinas thinks, Aristotle uses the analogy of the wax and the seal or signet ring:

> Aristotle finds an apt analogy [*exemplum*] of this in the imprint of a seal on wax. The disposition of the wax to the image is not the same as that of the iron or gold to the image; hence wax, he says, takes a sign, i.e. a shape or image, of what is gold or bronze, but not precisely as gold or bronze. For the wax takes a likeness of the gold seal in respect of the image, but not in respect of the seal's intrinsic disposition to be a gold seal. Likewise the sense is affected by the sense-object with a color or taste or flavor or sound, 'but it is indifferent what in each case the substance is,' [424a22–23] i.e. it is not affected by a colored stone precisely as stone, or sweet honey precisely as honey, because in the sense there is no such disposition to the form as there is in these substances; but it is affected by them precisely as colored, or tasty, or as having this or that *ratio* [*logos*] or form. For the sense is assimilated to the sensible object in point of form, not in point of the disposition of matter. Ibid.

Now, as St. Thomas notes, Aristotle goes on to assure the reader that sensation is still rooted in a physical organ. How exactly this "intentional being" can exist with a foundation in a physical organ is the "hard problem" we had raised in the previous chapter (contemporary analytic philosophers call it the "qualia problem"). However, for Aristotle and Aquinas it is not so much a problem as the result of their analysis when you start by assuming that we really experience the world through our senses.

We could ask about the scientific details of this physical foundation for sense realism—this is the topic of the last section. However, before we turn there, we should note what exactly this "intentional being" in the sense organ means.

The knower becomes the known?

Here is the famous passage where St. Thomas describes the being of sensation. Note that Aquinas is implicitly answering two questions in the affirmative: Does the knower become the known? Is

knowledge an effect in the subject (the knower) whose cause is the object?

St. Thomas, *Commentary on Aristotle's De Anima*, II, lect. 12, n. 377

> While the sense-faculty is always the function of a bodily organ, intellect is an immaterial power—it is not the actuality of any bodily organ. Now everything received is received in the mode of the recipient. However, all knowledge arises in this way, that the thing known is somehow present in the knower, namely by its similitude. For the knower in act is the very thing known in act [*cognoscens in actu, est ipsum cognitum in actu*]. It is therefore necessary that the sense-faculty receive a similitude of the thing sensed in a bodily and material way, whilst the intellect receives a similitude of the thing understood in an incorporeal and immaterial way. Now in material and corporeal beings the common nature derives its individuation from matter existing within specified dimensions, whereas the universal comes into being by abstraction from such matter and all the individuating material conditions. Clearly, then, a thing's similitude as received in sensation represents the thing as an individual; as received, however, by the intellect it represents the thing in terms of a universal nature. That is why individuals are known by the senses, and universals . . . by the intellect.

At this juncture, it might be helpful to review the comparison between realists, representationalists, and idealists.

How is a knower related to the known?	**Does the knower become the known?**	**Is knowledge an effect in the subject, where the object is the cause?**
Realists (e.g., Aristotle, Aquinas)	Yes	Yes
Representationalists (e.g., Descartes, Locke, the Epicureans)	No	Yes
Idealists (e.g., Berkeley, Kant)	No	No

Given our discussions of representationalism and idealism in the previous chapter, this table should be obvious.

Note that Aquinas is comparing the mode of reception in sensation with that of intellect. In this comparison, the senses still receive the object in a corporeal way—that is, with the attendant material conditions of individuality. Furthermore, note how we must interpret "represent" in the last couple sentences. Because "*cognoscens in actu, est ipsum cognitum in actu*," that is, the knower in act is the known thing itself, this cannot mean Cartesian representationalism.

The Cartesian "idea" is a numerically distinct individual from the object that it "represents." But if the sense power is the very thing known in act, this implies that its act is not cut off from the form of the object known. It's *as if* the form is in two places at once.

Sense Realism Today

Is sense realism defended today? Consider what it would mean to be a consistent sense anti-realist. What would explain the behavior of animals? Are they really representing and reconstructing or "modeling" a reality that they do not directly know? Is their behavior mechanical, as Descartes seemed to think? Do animals merely function "as if" they had perceptions? Consider just how radical anti-realism about animal sensation would be. Animals would not be truly aware of their environments, or its meaning and information.

It seems, then, that Aristotle and Aquinas, by making the opposite assumption than the representationalists, run into an opposite problem. That is, by assuming based on our experience that we truly experience the world through our senses, and thereby arguing to the need for a sort of being that is sustains that capacity, they must now ponder how exactly this "cognitive being" of sensation is related to physical motions.

However, this is a different problem entirely than the one faced by the representationalists who fall into idealism. It is also a problem that is not self-undermining or self-refuting. Rather, it is a problem that is really a question: We now want to know more about the physical basis of the intentional mode of being in sensation.

Trying to understand the "physical side" of realism is not as popular a scientific research project. However, we could consider the work of the psychologist James Gibson ("direct perception" and "invariants" in sensation), or the current research of Giulio Tononi ("integrated information theory"). For our purposes, it will suffice to make some observations about Gibson's research. Before that, however, let us make some observations about how the apparent weakness of Aristotelian sense realism is only apparent.

The invariant form of sensation

James J. Gibson (1904–1979) was a psychologist whose research into sensation started with investigations into how pilots perceive their environments when flying. As it developed, Gibson eventually grounded his work in visual perception upon the antithesis of representationalist assumptions about how perception works—that it

is essentially a process "in one's head." This approach is called "ecological," because it aims to understand how animals—including humans—actually live and perceive in their environments.

To appreciate this, consider a competing approach:

> Perceptions are constructed, by complex brain processes, from fleeting fragmentary scraps of data signaled by the senses and drawn from the brain's memory banks—themselves constructions from snippets of the past. . . . On this view all perceptions are essentially fictions: fictions based on past experience selected by present sensory data.

Mace, "James J. Gibson's Ecological Approach: Perceiving What Exists," p. 212, citing the views of Richard Gregory.

By contrast, this is Gibson's approach:

> Gibson not only provides an account of perceiving grounded in access to environmental properties, but he establishes a basis for perceiving this particular world as a specific arrangement of [perceptible things]. The world we perceive, according to Gibson, is a connected, public world that we share. It is, again, the world, the logical individual world and not an abstraction.

Ibid., p. 196

Interestingly enough, this approach leads to two key points of correspondence with the Aristotelian-Thomistic account. The first has to do with Gibson's idea of an "invariant" in sensation, which ought to be compared the senses receiving the form without the matter (cf. the signet ring in wax). The second point is Gibson's notion of "affordances," which should be compared to the sensible object that is known to the estimative or cogitative power.

Let us begin with the latter. Here is what Gibson himself means by the term "affordances":

> The *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill. . . . I mean by [affordances] something that refers to both the environment and the animal . . . It implies the complementarity of the animal and the environment. . . . If a terrestrial surface is nearly horizontal (instead of slanted), nearly at (instead of convex or concave), and sufficiently extended (relative to the size of the animal), and if its substance is rigid (relative to the weight of the animal), then the surface *affords support*. It is a surface of support, and we call it a substratum, ground, or floor. It is stand-on-able, permitting an upright posture for quadrupeds and bipeds. It is therefore walk-on-able and run-over-able. It is not sink-into-able like a

James J. Gibson, *Visual Perception*, p. 127, quoted in De Haan (2014).

> surface of water or a swamp, that is, for heavy terrestrial animals.

This is what Gibson means by the invariant in sensation:

> The key step in the analysis of optical patterns for Gibson was the 'invariant.' He pointed out that when there is change in a pattern, not everything changes. As one sees varying perspective on a solid surface, textures and other internal adjacencies remain the same. . . . Detecting invariants, [Gibson] argued, not only provided a basis for experiencing a world that existed apart from us, but made possible a public world, a world that could be experienced in common. That is, two people cannot be in the same place at the same time, but over time, they can occupy enough positions to extract the same invariants. . . . Change of pattern over time, recall, does not necessarily change every aspect of a pattern. Again, invariance forms the basis for the (direct) perception of an extended, shared environment.

Ibid., pp. 208, 210.

We should immediately note how the invariant is both something public (not a "seeming only to me") as well as a pattern which the senses can actually receive. These correspond nicely to the Aristotelian idea, taken up by Aquinas, that the senses receive the sensible form—the invariants of objects in the environing world—in a non-material way albeit with the conditions of matter retained (the *hic et nunc*).

The philosopher Robert Sokolowski, drawing on Gibson's work, compares this to the "ambient energy" surrounding a living thing. Sokolowski introduces here a more contemporary analogy. Rather than thinking of Aristotle's wax being sealed by a signet ring, think of listening to a radio program that is "carried" by an electromagnetic medium. The information of the radio program is like the "sensible form" that is received "without the matter" of the radio waves, even though they are necessary conditions of the process.

> We can draw out the analogy between radio waves and vision. In the case of vision, I am surrounded by ambient light rebounding off surfaces. The light is configured in countless ways, transmitting the colors, shades, and shapes of the things around me, and it depends on the direction of the reflection. As I move around, different colors and different things come into view and others go out of sight. The field is there, and I fill a niche within it. Fortunately, I have the appropriate

Sokolowski, *Phenomenology of the Human Person*, p. 201 and n9.

> receiver, which my ancestors and I have developed for situations just like this. In fact, I would not even be in this situation, nor would this *situation* as such exist, had we not developed our receiver. I can subsist as what I am because I enjoy the power of vision, along with other powers related to it. When I see things in their colors and shades, I do not see the configurations in the ambient light that mediate them to me. Something nonvisible has to intervene between me and what I see, just as something nonaudible has to intervene between me and what I hear. If the visible and audible things merely slammed into my eyes and ears, if they became reduced to mechanical energy, they would not be seen or heard; in fact, they would not even be touched, any more than a club being used to strike my hand can be said to be touched. Distance and a medium are required for perception, as well as active intervention on the part of the perceiver. We do not just receive when we perceive. It is sometimes said that mechanical philosophers like Hobbes reduce all perception to the tactile, but this is not true; they reduce it to mere impulse and striking, and then they cannot explain how the impact can become an appearance. They have to say that the brain constructs the seeming. The problem would be less intractable if they did reduce the other senses to touch, because touch does involve appearances.

If the above quotation is read carefully, you should be able to see how this recapitulates, in contemporary terminology, just what Aristotle and Aquinas mean by saying that the form of the sensible thing exists in the sense power in a non-material way, even though the physicality of the sense organ is a necessary condition. (This is especially clear in Sokolowski's very precise qualification of the Cartesian-Hobbesian attempt to "reduce" sensation to versions of touch.) The "seeming" and "appearance" of the sensations themselves are not merely "in" the soul but are *received* by the soul from without.

Sokolowski also highlights the importance of the sense organs and the sense powers. Sensation cannot be reduced to some "event" in the brain:

> There is, however, an intermediate stage between the diverse forms of ambient energy outside the organism and the univocal electrochemical impulses within the nervous system. Between the energy in the external

Ibid., pp. 203–204.

> medium and the chemical-electrical energy in the neurons, we find the sense organs and their activations. The skin, the retina, the eardrum, and the taste and olfactory buds come between the ambient energy and the activities of the nervous system. The sense organs are different from one another in the ways they process energy (the inner ear, for example, involves an ingenious sequence of drums, hammers, anvils, and stirrups, with mechanical energy transmitted through them), but all the senses turn their respective incoming energy patterns into one kind of energy and one kind of patterning as they funnel everything into the nervous system and the brain. The nervous system itself, whether the central nervous system (brain, spinal cord, and optic and olfactory nerves) or the peripheral nervous system (everything else), involves only one kind of medium, the neurons and their synapses, and one complex kind of energy. The sense organs, thus, are the translators or transducers between the variety of energy that lies outside the body and the unity that lies within.

In the above two quotations, it seems to me, Sokolowski has provided to Aristotle and Aquinas's account a necessary component, how the physical organ is a foundation for sensation as an intentional mode of being. To put it in different terms, what Descartes had thought a benefit, being "delivered from all those small images flitting through the air, called intentional species," Sokolowski has recaptured using Gibson's idea of the invariant information contained in the form and structure of energy (the *logos* or *ratio* of matter) that is truly present in the sensible environment.

Concluding remarks

This is how one could recapture the Aristotelian-Thomistic account of sensation in more contemporary terms. While Aquinas's treatment of it can sound decidedly too medieval, the Cartesian-representationalist alternative is not philosophically acceptable. What we have proposed is that the intentional mode of being of sensation, that our senses really do experience the world by receiving the sensible forms of things in a non-material way, finds an analogous expression in contemporary scientific research, even if it is not the "dominant paradigm." However, given that sense realism is the only philosophically coherent account of sensation, perhaps such scientific research should enjoy more prominence.

Imagination & Intellect | 12

> The soul is in a way all existing things . . . It is not the stone which is present in the soul but its form.
>
> – Aristotle, *De Anima*, III.8, 431b20, b30

12.1 Introduction

We now turn from the external and internal sense powers to consider the mode of being and activity of the intellect. Sometimes we might hear—or read Aquinas as asking—the question this way: How is the intellect dependent upon the body for knowledge? However, keep in mind that St. Thomas agrees with Aristotle's dictum that

Goals for this chapter

(1) To consider Aquinas's causal account of the intellect
(2) To study the relationship between sensation, imagination, and the intellect
(3) To study the mode and order within our intellectual activity

Readings for this chapter

– Selections from St. Thomas, *ST*, Ia, qq. 75, 79, 84–85, 86
– A selection from Lonergan's, *Insight*, in *CR*

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– How do we know that the intellect is an immaterial power?
– In what way is the intellect dependent upon the body for knowledge?
– What evidence supports Aquinas's account of the different parts and aspects of the intellectual soul (e.g., active, passive, speculative, practical)?
– How is the process of intellectual abstraction to be understood?
– What order is there in our intellectual activity?

12.2 The Being & Compass of Mind

This section corresponds to the reading of St. Thomas, *ST*, Ia, q. 75, aa. 1–2, and q. 79, aa. 1–5 along with aa. 11–13 (the intervening articles are optional).

Reading questions

As you read, consider the following questions:

- Questions for *ST*, Ia, q. 75, aa. 1–2:
  - What is the reason given for why the soul is not a body?
  - What evidence is given that the human intellectual soul is subsistent?
- Questions for *ST*, Ia, q. 79, aa. 1–5:
  - What is the meaning of the question asked in the first article?
  - What evidence allows us to characterize the intellect as passive?
  - What evidence allows us to characterize the intellect as active? Is the active intellect (or, agent intellect) the same as the passive intellect (or, possible intellect)?
  - The fourth and fifth articles are concerned with showing that the agent intellect is actually a power we each possess. Who holds the opposing view to this? What is the significance of the conclusion that each individual human person has an agent intellect?
- Questions for *ST*, Ia, q. 79, aa. 11–13:
  - Are the speculative and practical intellects distinct powers of the soul? (Compare this to the distinction between the possible and agent intellects.)
  - What is synderesis? What is conscience?
  - Given what Aquinas says about the intellectual soul, how are synderesis and conscience required to understand the human person's moral capacities?

Post-reading

Our discussion will focus on the high points of these articles (picked out by the above reading questions), as they are a foundation for what follows in the remainder of this chapter.

12.3 The Embodied Knower

This section corresponds to the reading of St. Thomas, *ST*, Ia, q. 84, aa. 1–7 (a. 8 is optional), and q. 85, aa. 1–2.

Reading questions

Before you read, consider the following: *What is the role of the soul in Plato's account of knowledge in the* Meno*? Is it a true cause? Is sense experience required in Plato's account?*

As you read, consider the following questions:

- For Question 84:
    - In Article 1, how does Aquinas navigate between the positions of Heraclitus and Plato?
    - In Article 2, how does Aquinas navigate between the positions of Empedocles (& others) and Plato?
    - In Article 3, Aquinas begins to adjudicate between Plato and Aristotle. What is the main evidence against innatism?
    - In Article 4, Aquinas completes his judgment of the debate between Plato, Avicenna, and Aristotle. How does the soul as the form of the body play a role in his argument? That is, how does Aquinas explain our status as *embodied knowers*?
    - In Article 5, St. Thomas is qualifying St. Augustine's theory of knowledge. In what ways does Aquinas agree, and in what ways does he disagree?
    - In Article 6, Aquinas explains Aristotle's "middle course" between Democritus and Plato. What is this? What is the "process of abstraction"?
    - In Article 7, What is the role of the phantasm in intellectual knowledge?
- For Question 85, Articles 1 and 2:
    - How does our dependence upon phantasms highlight the difference of the human intellect from other intellects? How does it underscore our mode of being as *embodied* knowers?
    - How does Aquinas use "abstraction from phantasms" to argue against Plato and Protagoras?

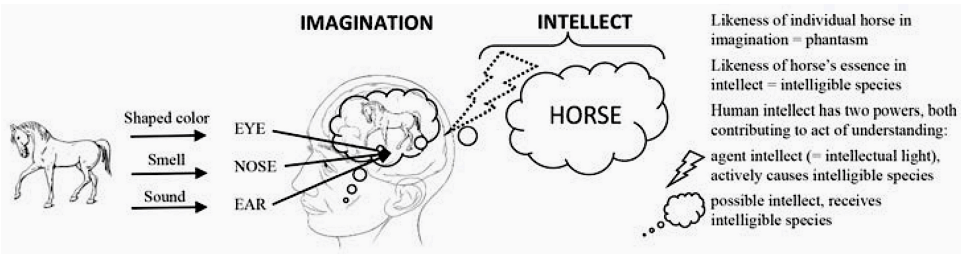
Post-reading

Our discussion will focus, first of all, upon the slew of alternative positions that Aquinas considered in the first five articles. Then, we will focus upon the process of abstraction. The main points to

be considered concerning abstraction as an activity in the soul are given in what follows.*

What does Aquinas' account try to hold together? Cory notes that it includes all of the following:

(1) All our knowledge originates with sensation. (St. Thomas nuances this: "Sensate knowledge is not the entire cause of intellectual knowledge." See *ST* Ia, q. 84, a. 7, ad 3um.)
(2) In order for a cognitive power (sense, imagination, or intellect) to cognize some object, it must be assimilated to that object. That is to say, the cognitive power must acquire a form that is a likeness of that object—reception of the form without the matter.
(3) In order to inhere in a cognitive power, a form must have the same mode of existing as the cognitive power:
    (a) the senses receive the form of sensible things without their matter, but still in an individuated way;
    (b) the intellect receives the form of intelligible things in a wholly immaterial way, and thus universally.
(4) The senses and imagination are material cognitive powers.
(5) The human intellect is an immaterial cognitive power; (a) it knows all types of bodies; (b) it knows things in a universal way, transcending spatio-temporal conditions.



Cory, "Rethinking Abstractionism," p. 610.

Cory observes that "this simplified structure [in the above diagram] omits the contribution of some inner senses—common sense, estimation, and memory—in order to focus on the elements relevant to this analysis." Now, even if this is a simplification, how exactly does "abstraction" work, in Aquinas's thinking (pun intended)? That is, how do we get the intellectual thought of a horse "out of" our experience of the horse?

There are two competing "models" that Aquinas's interpreters have proposed. Cory calls them the "X-Ray model" and the "Unwrapper Model".

* The remainder of the section closely follows the exposition of Therese Scarpelli Cory in "Rethinking Abstractionism: Aquinas's Intellectual Light and Some Arabic Sources." The diagrams and quotes included here are from this article.

> Abstraction consists in bracketing the horse-specific content so as to isolate the essential content, as an X-ray that reveals bones apart from soft tissues, enabling a doctor to examine the previously invisible skeletal structure. . . .
>
> According to [the Unwrapper Model] model, the imagination 'delivers' a phantasm to the intellect, [e.g., a particular horse], from which the agent intellect extracts the intelligible essence 'horse' by stripping or peeling away everything in the phantasm that blocks cognition—the material, particular 'packaging.' . . . Once all the material particularity has been stripped away, the universal, immaterial core within can be received into the possible intellect as the intelligible species. . . .
>
> The difference between the Unwrapper and the X-Ray Models is that the latter conceives abstraction in more psychological terms as a selective consideration, whereas the former conceives it in more metaphysical terms as the stripping-away of certain properties. At root, however, they share the same notion of abstraction as a content-sorting that isolates universal and essential features.

Ibid., pp. 610–611.

Cory goes on to note two problems with these models.

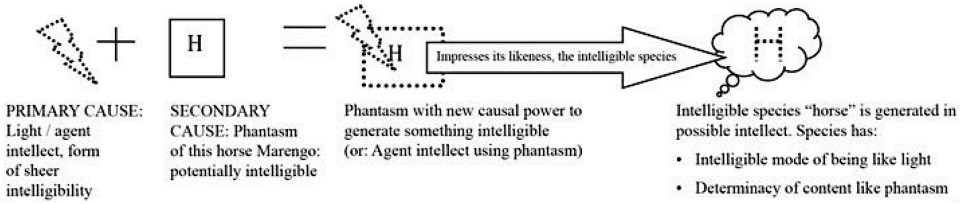
(1) **The transmission problem.** The senses do not grasp essences, so how is the essence "there" to be "x-rayed" or "unwrapped"?
(2) **The sorting-criteria problem.** How does the agent intellect know which parts of a "phantasm" are the essential ones? Either it doesn't have that criterion (so it can't do its job), or it has that criterion (and so already has the essence, so abstraction is unnecessary).

To avoid these problems, Cory has to find a better interpretation of St. Thomas. The right model for the agent intellect is in line with what St. Thomas actually says: it is an active power.

Aquinas's actual model, in his own thinking, borrows a scheme of primary and secondary causality based upon one medieval theory of light, namely, that light makes possible colors in objects to be actual colors, and actually visible. The reasoning is that particular objects in our sense experience are potentially intelligible, but material particulars in our memory and imagination are still known as particulars, not as universal truths. So the sensate level of knowledge requires help to cause this higher mode of knowledge that we experience. So, Aquinas thinks that the agent intellect is the active power required to make our sense-and-phantasm cognition (intelligible in potency) into what is intelligible in actuality:

Ibid., p. 620, diagram below from p. 623.

> Intellectual light does not transform the phantasm *itself* into an intelligible. Rather, it uses the phantasm [of horse] to generate a new intelligible form—the intelligible species 'horse'—in the intellect. In other words, the agent intellect lends to the phantasm the causal power for producing something intelligible, *without giving the phantasm itself the form of intelligibility that would normally be the basis for that causal power*. With this causal "boost," the phantasm [of a horse] can impress its likeness "horse" in the possible intellect according to the agent intellect's own immaterial, intelligible mode of existing.



This account is assisted by noting the various meanings of "abstraction" (compare *ST* Ia, q. 85, a. 6). Indeed, we have to be careful when reading the word "abstraction" in St. Thomas' account. For instance, in q. 85, a. 6, c., he states: "The higher and more noble agent which [Aristotle] calls the agent intellect . . . causes the phantasms received from the senses to be actually intelligible, by a process of abstraction."

See Cory, "Rethinking Abstractionism," p. 628.

Cory helpfully notes two meanings of the term "abstraction" that Aquinas uses:

(I) **Abstraction as an activity in the soul, we are not aware of this directly:** "The agent intellect's activity of generating intelligible species via phantasms, which is the necessary condition not only for one's initial intellectual acquaintance with 'horse,' but also for any further development in one's understanding of horses."

(II) **Abstraction as a mode of our attention and thinking, we are aware of this directly:** "An intellectual operation in which the intellect deliberately draws distinctions in the process of refining its indistinct cognition."

Does this account of the agent intellect avoid the two difficulties noted above?

(1) **The transmission problem.** On the above account, all that the agent intellect does is allow objects in our sense experience to be actually understood (Abstraction I), but only insofar

as we have experience of those objects. So an essence is not "magically" transported into our minds. We still need to think abstractly (Abstraction II), analyze, reason, etc., to figure out what things are essentially.

(2) **The sorting-criteria problem.** On the above account, there is no such problem, because the agent intellect does not sort: "Given the right psychological conditions, the agent intellect naturally acts to reproduce the phantasm's likeness—whatever that may be—in an intelligible mode of existing in the intellect. This is a natural process, not a deliberate one. A natural agent does not know how to transmit its actualizing form—it simply does so in the presence of an appropriate receiver." (Ibid., p. 637)

The proper object of our intellect "which is united to a body, is a quiddity or nature existing in corporeal matter; and through such natures of visible things it rises to a certain knowledge of things invisible." (*ST*, Ia, q. 85, a. 7, c.) So, we must turn to sense experience to think out and realize further insights about reality. The process of Abstraction I on the part of the agent intellect conditions or allows a process of intellectual growth, involving Abstraction II, that takes time. We are dependent upon the body (see *ST*, q. 84, a. 7; also a. 8 and the interference of sleep or disease) and thus must acquire intellectual insight piecemeal, over time. That is, Abstraction I on the part of the agent intellect does not eliminate the possibility of intellectual error about what and why things are, nor does it obviate the need to investigate and sort out the accidental features of things until we discover the true essence and causes at work (say, if we're investigating nature or mathematics or metaphysics).

Thus, the correct understanding of what abstraction is, an activity in the soul vs. a mode of our attention, helps us to defend intellectual realism, better grasp the possibility of intellectual error, and reflect upon how we "sort out" reality (which is a topic of the next section).

12.4 The Mode & Order of Intellectual Insight

This section corresponds to the reading of St. Thomas, *ST*, Ia, q. 85, a. 3 (the remaining articles are entirely optional), q. 86, a. 1, as well as Lonergan's *Insight*, to be found in *CR*.

Reading questions

Before you read, consider the following: *If a young child calls all green vegetables "lettuce," or calls all small animals "dogs," what sort of intellectual error is this?*

As you read, consider the following questions:

- For Question 85, Article 3, and Question 86, Article 1:
  - How is the more universal first in our intellectual knowledge? What does this mean?
  - Does the conclusion to which Aquinas argues comport with your own experience?
  - How can an immaterial mind know material, singular, sensible objects?
- Questions on the selection from Lonergan's *Insight*:
  - What are the five aspects of insight that Lonergan highlights, based upon the story of Archimedes?
  - What are Lonergan's eight observations about the process of arriving at the definition of a circle? What do they tell us about insight as an intellectual act?
  - Does Lonergan's description of the intellectual act of insight comport with what St. Thomas argues in q. 85, a. 3 and in his prior consideration of the activity of the intellect? If they are in disagreement, how?

Space below for notes.

Post-reading

The example that Aquinas cites from Aristotle's *Physics*, I.1, that children "at first" call all men "fathers" and all women "mothers" is worth pondering at length. This is what Aristotle calls the "natural path" in our thinking: we begin with what is first and better known to us, and we proceed to what is first and better known in itself.

We should think of this "path" *from* the more universal and more vaguely understood *towards* the more specific and distinctly known in contrast to Descartes's idea that one must *begin with* what is clearly and distinctly known. How are such "clear and distinct" ideas *arrived at* in the first place? Note what follows if Aquinas's Aristotelian position is correct: the Cartesian runs the risk of *beginning* with what appears to be clear and distinct at first, but in truth is not.

Given what Aquinas and Lonergan say about attending to particular objects, have they an effective reply against Descartes's famous skepticism about the senses?

12.5 Language & Intelligence, Artificial & Natural

This section corresponds to the reading of Karl D. Stephan and Gyula Klima's article "Artificial Intelligence and Its Natural Limits." See *CR*, vol. 1.

Reading questions

Before you read, consider the following: *Do you know what an artificial intelligence or "large language model" does when it produces a verbal output? How does this work?* Students are encouraged to watch some background videos on this (see Canvas).

As you read, consider the following questions:

- What is the scope and topic of the article? How do the authors set up the problem?
- What do Aristotle and Adler contribute to this topic?
- How do the authors define the following: "AI system"? "cognitive faculty"? "information"?
- To what purpose is the excerpt from *The Caine Mutiny* put?
- What is the Adler criterion? How does it compare or contrast to a Turing test?
- What examples of AI do Stephan and Klima examine?
- What are GNW theory and IIT theory?

Space below for notes.

Post-reading

Have Stephan and Klima convinced you of the limitations of artificial intelligence? Why or why not? What would be required to complete or to refute their arguments?

Consider also the following:

> A sign is something that besides presenting itself also presents something (or some things) as its semantical value(s) to a cognitive subject. We can quickly note here that a semantical value of a sign can coincide with the sign itself, but then it is not presenting itself only as just a thing, but also as that which it is a sign of.
>
> A language is a system of signs, consisting of a set of simple signs (called a vocabulary) and a set of complex signs (called well-formed expressions) generated by some rules of construction (called the grammar of the language).
>
> 1. A language has the syntactical feature of generativity if its grammar allows the generation of a potential infinity of well-formed expressions even from a finite vocabulary.
>
> 2. A language has the semantical feature of compositionality if the semantical values of its well- formed expressions are a function of the semantical values of its simple components.
>
> 3. A language has the pragmatic feature of productivity if its users can produce new, both syntactically and semantically simple signs in its vocabulary (where a sign is both semantically and syntactically simple when it is not generated by generativity and its semantic values are not deter- mined by compositionality).
>
> 4. Finally, a language has the pragmatic feature of malleability if its users can systematically reassign the semantic values of both its existing vocabulary and its expressions for the sake of their practical purposes at will.
>
> Based on these definitions or "meaning postulates," my two theses are as follows:
>
> I. AI cannot use, let alone produce, a language that has all four features listed above.
>
> II. AI can use, and even produce, a language that has the first two features listed above.

Gyula Klima, "Language and Intelligence, Artificial vs. Natural or What Can and What Cannot AI Do with NL," in H. Bordihn, G. Horváth, G. Vaszil (Eds.): *12th International Workshop on Non-Classical Models of Automata and Applications* (NCMA 2022) EPTCS, January 1, 2022, pp. 1–2.

Prof. Klima has made this paper available online (see his Academia.edu page to obtain a copy).

12.6 Conclusion: The *Verbum Cordis*

Our consideration of the embodied mode of human intellectuality should lead us, in closing, to reflect upon what St. Thomas calls the "word of the heart." Here, we can see how our "human words" are imperfect at first, before becoming more an more perfect. But does our knowledge ever become perfect knowledge?

Here, we should recall what we had said about cogitation and assent when discussing St. Thomas and St. John Henry Newman on the act of belief. Our human mode of knowledge begins "in the shadows," so to speak, before it attains any sort of clarity. Here is what one Thomistic philosopher observes concerning this natural path in our intellectual activity:

> The intellect, before it understands anything in act, is often compared to a blank slate. Building on this comparison, the first imperfect concepts that we abstract are like rough sketches and the perfect concepts are like the completed pictures. Just as an individual may start a sketch and then in subsequent sessions fill it in, so too an individual who has formed a vague idea of a thing may over time arrive at a more and more complete understanding of what that thing is. For example, the person who initially only conceived "human being" as a substance could over time form more and more distinct knowledge of the kind of substance it is (animate, sensitive, and so forth). The more distinct knowledge completes, rather than replaces the vague knowledge; e.g., the person who comes to understand "human being" to be an animal still understands "human being" to be a substance, since an animal is a kind of substance. And two different people can be at different stages of this process, one person understanding "human being" only as a kind of substance and the other knowing it to be kind of animal.

Marie I. George, "Aquinas's Teachings on Concepts and Words," p. 363, fn. 18.

That is, we each possess and develop a truly personal intellectual history. Our speech about things is imperfect at first, as is the case with children. But this is only because our speech is measured and caused by our intellectual grasp of or insight into reality. External words arise from the *verbum cordis*, or word of the heart:

> Since procession always supposes action, and as there is an outward procession corresponding to the act tending to external matter, so there must be an inward procession corresponding to the act remaining within

St. Thomas, *ST*, Ia, q. 27, a. 1, c.

> the agent. This applies most conspicuously to the intellect, the action of which remains in the intelligent agent. For whenever we understand, by the very fact of understanding there proceeds something within us, which is the concept of the thing understood, a concept arising from our intellectual power and proceeding from our knowledge. This concept is signified by the spoken word; and it is called the word of the heart [*verbum cordis*] signified by the word of the voice.

So, when we read of the "procession" of the word of the heart, in which we conceive of the true essences of things, this should not be understood as if that word were a perfect expression of those essences. Our interior words are *formable* by reality. They are measured measures of reality. They are, as Augustine states, "formable before being formed." (We examined this passage briefly in the Prelude to Newman's *Grammar*, see p. 86.) This should recall to our minds the contrast between Protagoras's view of knowledge and the Aristotelian response to it:

> Knowledge also, and perception, we call the measure of things—for the same reason, because we know something by them—while as a matter of fact they are measured rather than measure other things. But it is with us as if some one else measured us and we came to know how big we are by seeing that he applied the cubit-measure a certain number of times to us. But Protagoras says man is the measure of all things, meaning really the man who knows or the man who perceives, and these because they have respectively knowledge and perception, which we say are the measures of objects. They are saying nothing, then, while appearing to be saying something remarkable.

Aristotle, *Metaphysics*, X.1, 1053a31–b4. The first portion of this was quoted in the Protrepticus.

Note the nuance of Aristotle's use of the image of "some one else [measuring] us" with a cubit-measure (we would say a ruler or a tape-measure). The image is both passive and active. We are being measured when we know—measured by the reality of things—but at the same time we are seeing this done to us. By this double aspect, Aristotle is able to include what Protagoras is saying while at the same time showing its limitation. We do indeed measure things in our knowledge, but it is not a determination on our part but a being determined by the truth of things.

Finally, we should note that this Aristotelian idea of a natural path of development, a progression in our knowledge from, say, what is more commonly knowable and known to what is more scientifically and technically precise, has important theological

implications. Consider the following passage from Pope Paul VI's encyclical letter on the Eucharist:

Pope Paul VI, *Mysterium Fidei*, n. 24.

> In the same way, it cannot be tolerated that any individual should on his own authority take something away from the formulas which were used by the Council of Trent to propose the Eucharistic Mystery for our belief. These formulas—like the others that the Church used to propose the dogmas of faith—express concepts that are not tied to a certain specific form of human culture, or to a certain level of scientific progress, or to one or another theological school. Instead they set forth what the human mind grasps of reality through necessary and universal experience and what it expresses in apt and exact words, whether it be in ordinary or more refined language. For this reason, these formulas are adapted to all men of all times and all places.

Thus, Aristotelian realism is an apt, if not necessary, defender of the cogency of revealed dogma expressed in human language. Sacred theology is expressed in human words, which in this case, even more than in the case of the philosopher or scientist, are measured measures, formed ultimately by the Word or *Logos* (see below, p. 191).

Order & Unity of Knowledge | 13

> "It is better to limp along on the way than to walk briskly off the way." For one who limps on the way, even though he makes just a little progress, is approaching his destination; but if one walks off the way, the faster he goes the further he gets from his destination.
>
> – St. Thomas Aquinas, *Commentary on the Gospel of John*, ch. 14, l. 2, n. 1870

13.1 St. Thomas's *Super Boetium de Trinitate*

The quotation within the epigraph above is from St. Augustine: "*Melius est enim in via claudicare, quam praeter viam fortiter ambulare.*" We have been considering the various causes of human knowledge in the previous two chapters. It is now time to consider how human knowledge is divided into areas, these subjects ordered to each other, and how our mind ought to progress actively through these subjects, from discovery and learning to wisdom.

This fits with the theme of this part of the course, the "metaphysics of knowledge," insofar as metaphysics is also first philosophy, providing order to knowledge. For it belongs to wisdom to instill order, as both Aristotle and Aquinas teach. For this purpose, we will be reading two questions from St. Thomas Aquinas's *Super Boetium de Trinitate*, which together constitute one of the most important treatise on human knowledge ever written.

Goals for this chapter

(1) To understand the division of speculative philosophy
(2) To grasp the speculative character of natural philosophy, mathematics, and metaphysics
(3) To introduce the various methods utilized by speculative philosophy
(4) To apply the Thomistic approach to the speculative sciences to the modern university

Readings for this chapter

- Excerpts in *CG* from St. Thomas, *The Division and Methods of the Speculative Sciences*, with commentary
- Hütter, *Newman on Truth*, ch. 4, pp. 167–214

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

- How is philosophy divided into parts? What are the three parts of speculative philosophy?
- What characterizes the three speculative sciences? How are they related to each other in regard to what they know?
- What is the order or method that human knowledge follows in each of the three speculative sciences?
- How does this division of the speculative sciences affect our understanding of the university and pedagogy?

13.2 The Division & Methods of Philosophy

We will compare Aristotle's discussion from the *Metaphysics*, Books IV and VI, with St. Thomas's account of the parts of speculative philosophy from Question 5, Article 1 of his commentary *Super Boetium de Trinitate*. This short work is available online at aquinas.cc, under the tab "Other Commentaries."

The division of speculative philosophy

Consider how one ought to complete the following table:

Speculable Objects	It does depend upon matter for its being	It does not depend upon matter for its being
It does depend upon matter for its being understood		
It does not depend upon matter for its being understood		

The explication of the above table should be seen as corresponding to Aristotle's discussion in *Metaphysics*, IV.1 and VI.1, especially his metaphor about "cutting off" a part of being. Another item to recall for Aristotle and St. Thomas's discussion is what they mean by science. Science as a habit in the soul is that by which we possess or know scientifically, i.e., through causes.

A helpful metaphor—instead of "cutting off"—is one that uses light. Just as different features of the same object appear in different lights (e.g., normal daylight vs. evening twilight vs. a blacklight), so too the different ways of considering being in the above table are all ways of considering being, merely in different "intelligible lights" or "degrees of abstraction" from matter and motion.

Some other things to note from St. Thomas's discussion in *SBDT* are the following. First, there is the reply to the fifth objection. The fifth objection argues that natural science or "physics" is not a part of specualtive philosophy because it involves practical applications like medicine or agriculture. Note how, in his answer, St. Thomas distinguishes ways in which different sciences are related to eath other (in part, this continues his answer to the fourth objection).

> One science is contained under another is a twofold way. In one way, as a part of it, namely, because its subject is some part of the subject of the other one (as plants are a certain part of natural body, whence the science of plants is contained in natural science as a part). In another way, one science is contained under another as subalternated to it, namely, when the superior science assigns the reasons why for those

St. Thomas, *SBDT*, q. 5, a. 1, ad 5.

> things which the inferior science only knows that they are the case (as music is placed under arithmetic). Therefore, medicine is not placed under physics as a part. For the subject of medicine is not a part of the subject of natural science according to that notion by which it is the subject of medicine. For although the curable body is a natural body, nonetheless it is not the subject of medicine insofar as it is curable by nature, by rather insofar as it is curable by art.
>
> Yet, because among those cures which come about by art, art is minister to nature (because from some natural virtue health is perfected with the help of art), thus it is that the reasons why for the operations of the art must be taken from the properties of natural things. And on this account, medicine is subalternated to physics, and by the same reasoning alchemy and the science of agriculture and all of such a sort. Thus, it remains that physics in itself and according to its parts is speculative, although some operative sciences are subalternated to it.

Medicine is related to or "subalternated to" natural science insofar as it takes the theoretical knowledge gained in those sciences and applies them. Later in *SBDT*, this same line of thinking is used to explain how mathematics can be used in the natural sciences (apparently "combining" the two parts of speculative philosophy).

Second, note the reply to the sixth objection, which argues that the other "parts" of speculative philosophy are really parts of divine science (metaphysics), since this studies the whole of being. St. Thomas replies by distinguishing the "mode" or way in which metaphysics considers being from the way in which natural science or mathematics considers being. A key takeaway from this reply, developed further in *SBDT*, qq. 2–4, is that all of speculative philosophy studies being, it's just that each part does so using a different "intelligible light."

St. Thomas, *SBDT*, q. 5, a. 1, ad 6.

> While the subjects of the others sciences are parts of being, which is the subject of metaphysics, nonetheless it is not necessary that the other sciences are its parts. For each one of the sciences takes up one part of being according to a special mode of consideration, which is different from the mode in which being is considered in metaphysics. Whence, properly speaking, the subject of some particular science is not part of the subject of metaphysics, for it is not a part of being according to that notion by which being is a subject of metaphysics.

> Rather, considered in this way it is a special science separated off from the others. However, that science could be called a part of metaphysics which is about potency or act or the one of some such topic, because these have the same mode of consideration as does being which is treated in metaphysics.

Finally, let us consider the reply to the ninth objection. The ninth objection argues that divine science or metaphysics ought to come "first" (in what way the objector is unclear), because all the other sciences depend upon it for the ultimate explanation or defense of their own principles. For example, as we will see in the next chapter, metaphysics engages in a defense of the most fundamental principle of logic. Here is Aquinas's reply:

> Although divine science is naturally the first of all the sciences, nonetheless with respect to us the other sciences are prior. For as Avicenna says in the beginning of his *Metaphysics* [Book I, ch. 3], the sequence for this science is that it be learned after the natural sciences, in which are determined many things which are employed by this science (such as generation, corruption, motion, and other things of this sort). Likewise, it is also learned after mathematics. For this science requires, for the inquiry into the separated substances, a knowledge of the number and order of the celestial orbs, which is not possible without astronomy, to which the whole of mathematics is prefaced. However, the other sciences are ordered to the completion of this science, such as music and morals and others of this sort.

St. Thomas, *SBDT*, q. 5, a. 1, ad 9.

In his reply, St. Thomas makes a distinction. Metaphysics is the first science by its very nature, but in our regard, it is not the first (think of Aristotle's bats in *Metaphysics*, II.1). Even more, metaphysics presupposes things that the other sciences are used to show. There is not a danger of circular reasoning here, because the other parts of philosophy begin from what is evident to us at first, just based upon experience. Thus, the philosophy of nature can eventually show things that metaphysics uses as its own.

We are creatures who must search for the truth, from our sensible experience of the material world to the transcendent truths of the immaterial causes of the entirety of the created order.

The methods of philosophy

Both Plato and Aristotle compare knowledge of God to trying to look at the sun (*Republic*, Book VI; *Metaphysics*, II.1). Plato discusses

this in his extended analogy of the cave (*Republic*, Book VII), and Aristotle compares us to bats (surely knowing full well, as a biologist, that bats live in caves). It is worthwhile to consider, in conclusion, a few passages from St. Thomas on what this means less metaphorically.

St. Thomas, *SBDT*, q. 6, a. 1c, c.

> Just as to proceed rationally is attributed to natural philosophy—because in it one follows the mode of reason most of all—so also to proceed intellectually is attributed to divine science, because in it one follows the mode of the intellect.
>
> Now, reason differs from intellect as multitude from unity. Whence Boethius says in Book IV of *The Consolation of Philosophy* that these are similarly related to each other: reason to intelligence, time to eternity, and the circle to its center. For it is proper to reason to be dispersed through many things and from them to gather together a knowledge one and simple. Whence Dionysius says in Ch. 7 of *On the Divine Names* "Souls have rationality in this way, that they go about diffusively measuring the truth of existing things, and in this they fall short of the angels; but inasmuch as they gather together many things into one, in a way they are made equal to the angels." However, the intellect, by contrast, first considers a truth, one and simple, and in that knowledge it takes hold of a whole multitude, just as God knows all things by understanding His own essence. Whence Dionysius says, in the same place, that "Angelic minds have intellectuality inasmuch as they unifiedly understand the intelligibilities of divine things."
>
> It is in this way clear, therefore, that rational consideration terminates in intellectual consideration according to the way of resolution, inasmuch as reason collects one simple truth from many things. Again, intellectual consideration is the principle of rational consideration according to the way of composition or discovery, inasmuch as the intellect comprehends a multitude in one. Therefore, that consideration which is the terminus of the whole of human ratiocination is intellectual consideration most of all.
>
> However, the whole consideration of reason by way of resolution, in all the sciences, terminates in the considerations of divine science. As was said previously,* reason sometimes proceeds from one thing to another according to a real order, as when there is a demonstration through causes or extrinsic effects. This sometimes

* This refers to earlier in q. 6.

> takes place by composition, when one proceeds from causes to effects; sometimes it happens by resolution, when one proceeds from effects to causes (because causes are simpler than effects, remaining more unchanged and uniform). Therefore, the ultimate terminus of resolution in this life is when one arrives at the supreme and maximally simple causes, which are the separate substances.
>
> Yet sometimes reason proceeds from one thing to another according to a rational order, as when it proceeds according to intrinsic causes. This takes place by composition when it proceeds from maximally universal forms to ones that are more particular; it happens by resolution, however, when it proceeds conversely, because the more universal is simpler. However, those that are maximally universal are the things common to all beings [*communia*]. Therefore, the ultimate terminus of resolution in this life is the consideration of being and of those things which belongs to being as such. However, these are the things that divine science considers, as said above, namely the separate substances and the things common to all beings. Whence it is clear that its consideration is maximally intellectual.
>
> Furthermore, it is also the case that divine science furnishes the principles for all the other sciences, inasmuch as intellectual consideration is the principle of rational consideration. On this account, it is called first philosophy. This notwithstanding, it is learned after natural philosophy and the other sciences, inasmuch as intellectual consideration is the terminus of rational consideration. On this account, it is called metaphysics (as it were, trans-physics), because it occurs after physics by way of resolution.

Note, then, the following steps in St. Thomas's consideration. First, he appeals to Boethius and Dionysius to compare how our intellect operates in a more "discursive" or rational mode versus its intellectual, quasi-angelic mode. Then, he argues that, however our minds proceed to think about reality discursively, our thinking must begin and end with something contemplated or understood. Intellectual thought is the principle and goal of rational thought. This is true whether (a) we are investigating things causally, which have a real order amongst themselves, or (b) whether we are doing "conceptual analysis" in proper philosophical sense. In either case, rational analysis or "resolution" arrives at metaphysical subjects.

13.3 The Idea of a University

This section corresponds to the reading of Hütter, *Newman on Truth*, ch. 4, pp. 167–214.

Reading questions

As you read, consider the following questions:

- According to Hütter, what characterizes the modern university? What were the origins of the modern university?
- By contrast, what is the true nature of a university? How does Hütter define the counterfeit of the university?
- How should one properly understand the role of theology and metaphysics in a university?
- How does the counterfeit of the university treat theology and metaphysics?
- Why is theology—including natural theology—indispensable for a university education?
- What results when the counterfeit of the university eliminates theology from its studies?
- How does Hütter relate the doctrine of Aquinas from Question 5 and 6 of the *Division and Methods* to the idea of a university?

Post-reading

The goal of our discussion of Hütter's chapter on Newman, Aquinas, and the tradition of the university is to integrate as much of our discussion thus far in the course as possible. It will allow us to see in a very practical way how and why what Newman in his *Grammar*, Aquinas in his *Summa* and *Super Boetium de Trinitate*, Aristotle in his *Analytics*, and Plato in his *Theatetus* and *Meno* are invaluable truths about the meaning and importance of knowledge.

13.4 Conclusion: Theology as a Sacred Science

The final two chapters of the course entertain transcendental subject: the nature of truth itself and the way in which God possesses knowledge. Before entering into these subjects, it would may be helpful to consider a brief *coda* to St. Thomas's consideration of the divisions of philosophy. For St. Thomas considered sacred theology to be a science, and by "science" he meant something that Aristotle would recognize as his own.

How is Catholic theology scientific?* St. Thomas teaches that theology is a true science, that is, certain, evident knowledge through causes, yet with various qualifications. Theology is "subalternated to the science [*scientia*] of God and the blessed in heaven, and on that account imperfect for lack of present evidence." This Thomistic position employs the Aristotelian logical doctrine about the nature of the sciences, and in this case, how one science can be "subalternated" to another. We have studies this with Fr. Wallace in Chapter 6, as well as in this chapter in the readings from the *Division and Methods*. Here is how St. Thomas expresses it in his *Summa*:

Hugon, *Tractatus Dogmatici*, t. 1, 5th ed. (Paris: P. Lethielleux, 1927), p. 11.

> We must bear in mind that there are two kinds of sciences. There are some which proceed from a principle known by the natural light of intelligence, such as arithmetic and geometry and the like. There are some which proceed from principles known by the light of a higher science: thus the science of optics proceeds from principles established by geometry, and music from principles established by arithmetic. So it is that sacred doctrine is a science because it proceeds from principles established by the light of a higher science, namely, the science of God and the blessed. Hence, just as the musician accepts on authority the principles taught him by the mathematician, so sacred science is established on principles revealed by God.

St. Thomas, *ST*, Ia, q. 1, a. 2, c. (Aquinas Institute translation).

So, just as mathematics establishes theorems that physics uses (but does not prove), so also God and the saints enjoying the beatific vision know directly that which the theologian can only use indirectly as his starting points, not having the intuitive vision of their truth. (Of course, the analogy limps in no small part because one could study both mathematics and physics. However, the key is to focus on the claim that physics as such cannot provide the evidential reasoning for a properly mathematical theorem, but rather that theorem is employed and even contracted to another domain.) On this account, theology is a disciplined mode of human

* What follows is, in part, adapted from my translator's introduction to Édouard Hugon, O.P., *Mary, Full of Grace* (Providence, RI: Cluny Media, 2019).

inquiry into divine things that relies for its insights, foundations, and explanations upon God's own knowledge of those divine things, providentially imparted to us in revelation and assented to by faith.

This dependence upon faith explains theology's limitations, for "faith is the substance of things to be hoped for, the evidence of things that appear not" (Hebrews 11:1), and so must eventually rest upon evidence we cannot intuit in this life. Just as the moon reflects the light of the sun, so too Catholic theology illuminates truths only by participating in a light that is inestimably more luminous in its principle—"We see now through a glass in a dark manner; but then face to face" (1 Corinthians 13:12).

Yet it is still possible for us to see something of divine things in this "darkened" manner in this life. Here is a contemporary recapitulation of how St. Thomas's understanding of *sacra doctrina* is still relevant and, indeed, vital, to our understanding of the relationship between revelation, faith, and reason.

> The first formal act of sacred theology is the ongoing, active reception of the cognitive content of divine revelation (*principia revelata a Deo*) as proposed in sacred scripture, according to the Church's understanding. This first formal act of holy teaching (*sacra doctrina*) might properly be circumscribed by the Latin word *positus* and hence by the name "positive theology." The second form act of sacred theology is the discursive activity of understanding the faith (*intellectus fidei*), later called "speculative theology." In this second formal act of sacred theology, the *intellectus fidei* draws upon created reality as it delivers itself to the human intellect as "what things are," that is, as substances.
>
> Hence, natural theology (in the precise sense of the *praeambula fidei* as understood by Vatican I) is the primordial as well as indispensable conceptual and ontological point of reference for its discursive and argumentative operation. In the *ordo disciplinae*, i.e., in the specific order of learning of sacred theology as *scientia*, Thomas rightly advises that the training in the sciences that culminates in metaphysics antecedes the training in theology proper. Would that, in the deeply confused state of philosophical and theological studies, a glimpse of Aquinas's wisdom were to be caught and instantiated in an *ordo disciplinae* in which students would again more from A to B to C (an *ordo* that the natural sciences tellingly seem to have maintained).

Hütter, *Aquinas on Transubstantiation*, p. 4 and n. 7.

To the above, we must add that the grounding of faith—by which we participate in the science of God and the blessed as transcendent principle of theology—does not relate to theology merely as a science which deduces conclusions, but rather as the intellectual virtue of understanding relates to wisdom. In this case, sacred wisdom is superior to even itself considered as a mere science (or a demonstrative elaboration and defense of conclusions from its proper principles). This is because wisdom is capable of reflecting upon its own principles, ordering and comparing its own considerations to other sciences, and judging the progress or results of those sciences which fall under its purview. *Sacra doctrina*, then, is the highest form of wisdom of which the human mind is capable.

To this, we must hasten to add that such wisdom is both speculative and practical (see *ST*, Ia, q. 1, a. 4). It is not to be understood as a merely academic subject. (In much the same way, true philosophy is not an academic or scholarly pursuit.) Indeed, *sacra doctrina* is a "twofold wisdom" that ought to rely upon the fruits of study and the gifts of grace (see *ST*, Ia, q. 1, a. 6, ad 3um). This comports with its full range, for *sacra doctrina* includes within itself not only systematic and moral theology but also ascetical and mystical theology:

> Mystical theology, as its name indicates, treats of more hidden and mysterious things: of the intimate union of the soul with God; of the transitory phenomena that accompany certain degrees of union, as ecstasy; and of essentially extraordinary graces, such as visions and private revelations. In fact, it was under the title of "Mystical Theology" that Dionysius and many after him dealt with supernatural contemplation and the intimate union of the soul with God. . . .
>
> [W]e may easily answer the question proposed as to what is the object of ascetical and mystical theology, without as yet making a distinction between these two branches of spiritual doctrine. It is Christian perfection, union with God, the contemplation which this presupposes, the ordinary means leading to it, and the extraordinary helps favoring it.

Reginald Garrigou-Lagrange, O.P., *Christian Perfection and Contemplation*, pp. 15–16. Consider also St. Francis de Sales, *Treatise on the Love of God*, Bk. VI, ch. 1.

This is a transcendence that truly perfects the human person as a "measured measurer" of the truth of things.

The Philosophical Act | 14

We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.

– T. S. Eliot, "Little Gidding," in *The Four Quartets*

14.1 Introduction

We are at the conclusion of our course. The final "act" will be one of self-reflection (the course motto is, after all "Know Thyself"). Many students may have already read Josef Pieper's essay on leisure and its relationship to culture. In this chapter, we will study his essay on the act of philosophizing.

Goals for this chapter

(1) To study Pieper's essay on the philosophical act
(2) To reflect upon the course as a whole in light of Pieper's essay

Readings for this chapter

– Pieper, *The Philosophical Act* (all)

Chapter Questions

The Chapter Questions are listed all together on pp. 199ff.

– What characterizes the activity of philosophy? In what does it not consist?
– How does the perennial philosophical tradition compare and contrast to the modern philosophical tradition in its understanding of the act of philosophizing?
– Is a non-philosophical life possible for a human person?

14.2 The Good of Being Fully Human

This section corresponds to the reading of Pieper's essay on the act of philosophy. The essay on leisure is not required, but students who have read it are encouraged to review it, and students who have not read it are exhorted to do so.

Reading questions

Before you read, consider the following: ***Why was leisure the basis of culture, according to Pieper?***

As you read, consider the following questions:

- What characterizes the philosophical act? How is it related to the "world of work"?
- How is the act of theorizing or philosophy related to the world as a whole?
- Why is wonder necessary for philosophy? What sorts of attitudes or dispositions prevent true philosophy?
- Is philosophy ever "done" or "over"?
- How is philosophy related to human nature?
- Is a non-philosophical life possible for a human being?
- For what reason(s) does Pieper disagree with the philosophical outlook of the likes of Marx or Nietzsche?

Post-reading questions

Take good notes and thoroughly consider the above reading questions. Our discussion might also benefit from reviewing some scholastic sayings about knowledge.

- Everything received is received in the mode of the receiver.
- To know is to become the other as other.
- Form is the perfection of one thing apt to be in another.
- Truth is the adequation of the mind with being.

14.3 Conclusion

According to Pieper's essay, how should a course on philosophy conclude?

Return to the epigraphs found in the Protrepticus. Is it is God who is the one "[applying] the cubit-measure a certain number of times to us" (*Metaphysics*, X.1)?

Or, is what Protagoras says true of God alone?

Review Guide

The various Chapter Questions are all repeated below, so as to assist students in reviewing for the final examination.

- Chapter 1 (Introduction, Plato's *Meno*)
  (1) What does it mean to ask about what knowledge is?
  (2) How does knowledge come to exist in our minds?
  (3) What is the difference between really knowing something and merely having an opinion?
- Chapter 2 (Plato's *Theaetetus*)
  (1) What are the different definitions of knowledge in the *Theaetetus*, and what is insufficient about each of them?
  (2) How do Socrates and Theaetetus refute Protagoras? What about Heraclitus?
  (3) What are the important lessons the *Theaetetus* teaches us about trying to know the nature of knowledge?
- Chapter 3 (Euclid)
  (1) What is the relationship between Euclid's principles (definitions, postulates, and common notions) and his propositions or proofs?
  (2) How do we *know* that a triangle's interior angles are equal to two right angles? How do we *know* how to construct a square?
  (3) Is there a difference between understanding a truth about geometry and visualizing a geometric truth?
- Chapter 4 (Truth in mathematics)
  (1) What is Aristotle's definition of scientific knowledge? What are the necessary conditions of scientific knowledge?
  (2) What is the positivistic view of the truth of Euclidean geometry?
  (3) What most characterizes the activity of mathematics as knowledge?
- Chapter 5 (Truth and discovery in the natural sciences)
  (1) What is the relationship between observation and theory in Harvey's discovery of the circulation of the blood and the true function of the heart?
  (2) What does Harvey's treatise illustrate about the characteristics of an Aristotelian scientific demonstration?
  (3) What is the Aristotelian logic of a demonstration in natural science? What is the nature of the "demonstrative regress"?

(4) What characterizes scientific discovery, in terms of its logical requirements and epistemic dimensions? (Note that we read about examples from various scientific disciplines.)
(5) Is it plausible or accurate to characterize the modern natural sciences as using or following an *Aristotelian* logic of scientific demonstration?

– Chapters 6 and 7 (Newman's *Grammar*, chs. 1–5)

(1) What does Newman mean by the various modes and differences between "holding" and "apprehending" propositions?
(2) What are the various modes of the apprehension of propositions?
(3) What is real assent? How is it distinguished from notional assent?
(4) How are apprehension and assent found in cases of religious belief, according to Newman?
(5) How do conscience and real assent play a role in such cases?

– Chapter 8 (Newman's *Grammar*, chs. 6–7)

(1) In what sense is simple assent unconditional? How does Newman refute the contrary position of John Locke?
(2) What is complex assent and how is it constitutive of certitude?
(3) How does certitude differ from assent? Under what conditions is certitude indefectible?

– Chapter 9 (Newman's *Grammar*, ch. 8)

(1) What is the difference between inference and assent?
(2) What defines formal, informal, and natural inferences?
(3) How does the chapter on inference advance Newman's argument in the *Grammar*?

– Chapter 10 (Newman's *Grammar*, chs. 9–10)

(1) What is the illative sense? Why does Newman compare it to prudence?
(2) How does the illative sense complete Newman's argument in the *Grammar*?
(3) Does Newman's illative sense realistically portray the psychology and logic of belief, as evidenced in the autobiographical account of Reinhard Hütter's conversion?

– Chapter 11 (Sensation)

(1) What is sensation? How does it differ from physical motion and from thought?
(2) What is sense realism? Is it defensible?
(3) What are the principal differences between realism and representationalism, and which characterizes modern scientific research in sensation?

- Chapter 12 (Intellect and imagination)
  (1) How do we know that the intellect is an immaterial power?
  (2) In what way is the intellect dependent upon the body for knowledge?
  (3) What evidence supports Aquinas's account of the different parts and aspects of the intellectual soul (e.g., active, passive, speculative, practical)?
  (4) How is the process of intellectual abstraction to be understood?
  (5) What order is there in our intellectual activity?
- Chapter 13 (The division and order of the sciences)
  (1) How is philosophy divided into parts? What are the three parts of speculative philosophy?
  (2) What characterizes the three speculative sciences? How are they related to each other in regard to what they know?
  (3) What is the order or method that human knowledge follows in each of the three speculative sciences?
  (4) How does this division of the speculative sciences affect our understanding of the university and pedagogy?
- Chapter 14 (The philosophical act)
  (1) What characterizes the activity of philosophy? In what does it not consist?
  (2) How does the perennial philosophical tradition compare and contrast to the modern philosophical tradition in its understanding of the act of philosophizing?
  (3) Is a non-philosophical life possible for a human person?

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