Towards a Reassessment of British Aristotelianism*

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Abstract
The aim of the paper is to reassess the role of British Aristotelianism within the history of early modern logic between the sixteenth and seventeenth centuries, as a crucial moment of cultural transition from the model of humanistic rhetoric and dialectic to that of facultative logic, that is, a logic which concerns the study of the cognitive powers of the mind. The paper shows that there is a special connection between Paduan Aristotelianism and British empiricism, through the mediation of British Aristotelianism. British Aristotelians took the ideas of the Paduan Aristotelian tradition and carried them to an extreme, gradually removing them from the original Aristotelian context in which they were grounded and developing what would later become the fundamental ideas of British empiricism.

Keywords
British Aristotelianism, Paduan Aristotelianism, Empiricism, Zabarella, Harvey, Hobbes, Locke

I. Aristotelianism and Modern Philosophy
In his pioneering article, ‘The Development of Scientific Method in the School of Padua’, John H. Randall suggested that Paduan Aristotelianism had a decisive impact on the making of modern science and that this impact was attributable to the advanced theories of scientific method elaborated at the

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* The title of this paper is inspired by the famous article of Charles B. Schmitt, ‘Towards a Reassessment of Renaissance Aristotelianism’, History of Science 11 (1970): 159-193. This paper is dedicated to the memory of Charles B. Schmitt on the 25th anniversary of his premature death. This research has been possible thanks to a Frances A. Yates Fellowship at The Warburg Institute. I am grateful to Enrico Berti, Constance Blackwell, Charles Burnett, Stephen Clucas, Guido Giglioni, Jill Kraye, Howard Hotson, Sarah Hutton, Per Landgren, Peter Mack, Elizabeth A. Moyer, Gregorio Piaia and Riccardo Pozzo for their comments and suggestions.
University of Padua during the Renaissance. Randall’s historical reconstruction has been criticized by scholars such as Alexandre Koyrè, Neal W. Gilbert and Eugenio Garin, who have claimed that Aristotelianism played only a marginal role in the emergence of modern science in comparison to Platonism and the rediscovery of the Greek mathematical texts. However, as William F. Edwards argues, ‘it is a mistake to narrow this question of continuity to Aristotelianism and modern science only’, for ‘to evaluate the contribution of the Paduan Aristotelians...we must begin where we should have begun in the first place, viz., with a careful study of the development of logical and methodological thought in the late sixteenth, and early seventeenth, centuries’.

In the past, many scholars have dealt with Paduan Aristotelians by isolating individual passages from their writings and thus creating implausible connections between Aristotelian methodology and empiricism, without paying careful attention to the context. Locating an idea in its religious, economic, and social context helps to bring to light the assumptions and presuppositions that an author absorbs from his surroundings. Often these assumptions are what make his arguments meaningful. This is precisely the case for the impact of

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4) On this topic see the insightful remarks of Paolo Rossi in his ‘Aristotelici e moderni: le ipotesi e la natura’, in *Aristotelismo veneto e scienza moderna*, 142.
Paduan Aristotelianism on the development of British Aristotelianism in the seventeenth century.

Unfortunately, recent literature has recognized neither the innovation nor the creativity of British Aristotelianism, which has not been subject of any adequate investigation. For instance, the most comprehensive history of seventeenth-century philosophy in Britain, Überweg’s *Grundriss der Geschichte der Philosophie*, mentions a few Aristotelians only briefly, characterizing them as Scholastic philosophers and textbook writers, rather than as original thinkers. Likewise, *The Cambridge History of Seventeenth-Century Philosophy* completely neglects the developments of the British Aristotelianism in favour of a detailed examination of Cambridge Platonism.

The aim of my paper is to reassess the role of British Aristotelianism within the history of early modern logic between the sixteenth and seventeenth centuries, as a crucial moment of cultural transition from the model of humanistic rhetoric and dialectic to that of facultative logic, that is, a logic which concerns the study of the cognitive powers of the mind. I shall also argue that there is special connection between Paduan Aristotelianism and British empiricism, through the mediation of British Aristotelianism.

Early modern British Aristotelianism can be seen as an eclectic and heterodox form of Aristotelian philosophy, strongly biased towards an empirical perspective in the field of logic and epistemology. My thesis is that its empiricist strand is not ‘a vague empiricism that can be found in almost any Aristotelian, or for that matter in any writer who thinks that we learn anything from

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5) There are some good studies of the impact of Aristotelianism on authors such as Hobbes and Locke, but they are confined to natural philosophy, see for instance, Cees Leijenhorst, *The Mechanization of Aristotelianism. The Late Aristotelian Setting of Thomas Hobbes’s Natural Philosophy* (Leiden: Brill, 2002).


observing the world around us’, but rather that it is a coherent and uniform set of doctrines which British Aristotelians drew from Paduan Aristotelianism and, in particular, from the logic of Jacopo Zabarella, professor of logic and natural philosophy at the University of Padua from 1564 to 1589. Even when the presence of Paduan Aristotelianism is not explicit, its concepts, ideas and doctrines formed the basis of the British philosophical debates throughout the seventeenth century.

Paduan Aristotelianism is characterized by a clear experimental, physical and logical orientation, alien to metaphysical questions and close to theology. In particular, ‘Paduan Aristotelianism’ is defined not only by a set of logical doctrines developed at the University of Padua, but also—and, above all, in this case—by a number of authors inspired by Zabarella’s interpretation of Aristotle, which had a wide dissemination throughout Europe between the late sixteenth and early seventeenth century. In this period, Paduan Aristotelianism coincided with a sort of ‘Zabarellism’, in which, however, Zabarella’s views were not just adopted and followed slavishly, but instead were constantly revised and modified depending on the different contexts in which they took root, and on the different perspectives of the thinkers who re-elaborated them.

I can only summarize here the basic ideas of Zabarella’s logic and theory of method. Zabarella has an original conception of logic, according to which it is neither an art nor a science, but a instrument for other disciplines: logic is an instrumental habit of the mind that serves the acquisition and perfection of the other five habits (art, prudence, intellect, science, wisdom). In particular, logic deals with ‘second notions’ or ‘mental concepts’ aimed at acquiring knowledge and distinguishing truth from falsehood, which are modi considerandi (ways of considering) of the res considerata (the considered object). The way of conceiving things depends on the development of the mind, namely on the acquisition of the habit of logic and of praecoginta of knowledge.

12) Jacopo Zabarella, Opera logica (Köln: Zetzner, 1597), 21 A.
13) Ibid., 6 A-C.
that is, the presuppositions and principles which the mind has in acquiring knowledge.\footnote{Zabarella devoted an entire book, \textit{De tribus praecognitis}, to the study of the \textit{praecognitae}; see Zabarella, \textit{Opera logica}, 498 E-530 C.} All knowledge proceeds from previous knowledge, or is acquired through experience, and forms the habits: in Zabarella’s epistemology no knowledge is innate.\footnote{Ibid., 1263 C.}

Different minds can consider the same thing in various ways, and this leads Zabarella to draw a distinction between the mental and cognitive order (\textit{ordo mentalis}), on the one hand, and the ontological order (\textit{ordo naturalis}), on the other.\footnote{Zabarella, \textit{Opera logica}, 505 A-506 B.} The way in which the mind knows is not necessarily the way in which the things are, that is, what is ‘most knowable by us’, through sensation, is different from what is ‘most knowable by nature’, through the understanding.\footnote{Ibid., 663 F-666 A. On this distinction see Wilhelm Risse, \textit{Zabarellas Methodenlehre}, in \textit{Aristotelismo veneto e scienza moderna}, 155-172.}

From this observation, Zabarella elaborates the well-known distinction between order and method, according to which order is the way of presentation of things as they are, while method is the way of discovering things, i.e. how the mind knows the objects of experience.\footnote{Ibid., 224 E-255A. See also Jacopo Zabarella, \textit{Opera physica} (Verona: Aemme, 2009), 7.}

In order to explain how the mind knows the world, according to Zabarella, it is necessary to investigate the three operations of the mind: apprehension, judgment and reasoning.\footnote{Ibid., 54 C-D.} The first operation of the mind coincides, from a psychological standpoint, with sensation. According to Zabarella, sensation is not only passive, but it is the mind’s active faculty of judging (\textit{dynamis kritike}) and the sole source of knowledge, on which all logical argumentations, such as induction and demonstration \textit{ab effectu} are based.\footnote{Zabarella devoted an entire book, \textit{De sensu agente}, to sensation as an active faculty of the mind; see Jacopo Zabarella, \textit{De rebus naturalibus libri triginta} (Köln: Zetzner, 1590), 754-774.} Unlike many Aristotelians, Zabarella believes that induction has a scientific value and can be a form of demonstration, that is, demonstrative induction.\footnote{Ibid., 485 D-E.} Induction is necessary to discover the first principles of every demonstration. However, the knowledge of the principles of demonstration is not scientific knowledge, because the latter is knowledge of what there is (things) and happens (effects) in the world. In order to acquire knowledge, the mind proceeds from ‘what is most knowable to us’ through sensation, to arrive at the apparent cause of that sensation.
Then, by consideration, the mind examines whether the apparent cause is the real cause. If it is, the mind acquires the knowledge of effects through the cause, which is what is ‘most knowable by nature’. The acquisition of scientific knowledge proceeds first from effects to causes (resolutio), and then from causes back to effects (compositio)—the latter stage is the regressus and characterizes Zabarella’s epistemology.

Zabarella’s epistemology is based on a threefold notion of experience:

1) experientia principium scientiae, a general experience which grasps universals, that is, a kind of apprehension of the intelligible object, which coincides with the inductive experience as an instrument for establishing the knowledge of the principles of scientific discourse;
2) experientia imperfecta, which deals with the question an sit and with observation rather than with scientific explanation of the cause;
3) experientia singularis, used to refute universal conclusions.

British Aristotelians took these Zabarellan ideas and carried them to an extreme, gradually removing them from the original Aristotelian conceptions in which they were grounded and developing what would later become the fundamental ideas of British empiricism. I shall demonstrate this by examining how these ideas were used in the main logical works of the late sixteenth and early seventeenth centuries.

II. Early British Aristotelianism (1570-1620)

After an intense burst of creativity in the fourteenth century, England underwent a period of severe decline in the field of logic. It continued to languish...
until the last quarter of the sixteenth century, with the rise of Ramist logic. Scholars usually describe the late sixteenth and the first half of the seventeenth century as the era in which Ramism was at its height in England.\textsuperscript{30} Ramism was not, however, the only philosophical movement at the time. Debates pitting Ramus against Aristotle indicate the presence of a strong Aristotelian logical tradition in England, so much so that Thomas Hobbes did not hesitate to label the philosophy of his day as ‘Aristotelian’.\textsuperscript{31} The renewed interest in logic did not bring about, as one might have expected, a return to the rigorous and highly sophisticated methods of the Aristotelian-scholastic logic which had flourished in late medieval England. Instead, it looked to the new directions offered by continental developments in the field: ‘logic, in this new ordering, was now conceived of as a fusion of the arts of reasoning well and of ordering discourse, as an instrument for the better direction of the mind and the better organization of knowledge’.\textsuperscript{32}

Only in the last two decades of the sixteenth century did Aristotelianism in England begin ‘to show some of the vigour it had previously enjoyed on the Continent and to regain some of the force it had exerted at Oxford during the thirteenth and early fourteenth centuries’,\textsuperscript{33} probably following changes in the university statutes, such as those adopted in Oxford in 1586, which required students to pay greater attention to the reading of Aristotle himself and his faithful interpreters.\textsuperscript{34} These statutes were a decisive factor in the development of a new Aristotelian school, which was characterized by a shift in emphasis from humanistic dialectic to the logic of science set out in Aristotle’s \textit{Posterior Analytics}.\textsuperscript{35}

\begin{thebibliography}{99}
\bibitem{howell} See Wilburn S. Howell, \textit{Logic and Rhetoric in England 1500-1700} (New York: Russell, 1961 2nd ed.).
\bibitem{howell} See \textit{Logic and Rhetoric in England 1500-1700} (New York: Russell, 1961 2nd ed.).
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Who were the authentic interpreters of Aristotle mentioned in the statutes, marking the return of Aristotelian *scientia*? It can be demonstrated by means of letters, catalogues, statutes, lectures and theses that these interpreters were the Paduan Aristotelians. There are many signs of their strong influence, both direct and indirect, at the time.

One of the first to acknowledge Paduan Aristotelianism was Roger Ascham, who in a letter referred to ‘Bernardino Tomitano’, Zabarella’s mentor, and esteemed him an ‘excellent learned man’. Ascham went on to express the hope that there would soon be a Tomitano in Cambridge. The first important Aristotelian textbook produced in sixteenth-century England, Richard Stanyhurst’s *Harmonia seu catena dialectica* of 1570, contains frequent references to the ‘schola Veneta’ and to its great exponent, Agostino Nifo.

The ‘Cambridge Tomitano’ for whom Ascham wished would turn out to be Everard Digby, who, in his *Theoria analytica* (1579) and his *De duplici metodo libri duo* (1580), criticized Ramist logic and favoured, instead, a genuine interpretation of Aristotle. Unfortunately, Digby does not mention the Paduan Aristotelians. We cannot say, then, whether the similarity between some of his doctrines and those of Paduan Aristotelianism is merely coincidental or whether he did, in fact, draw on ideas taken from this tradition. It is perhaps not by chance, however, that all of Digby’s works were published in the years immediately following the publication of Zabarella’s *Opera logica* in 1578.

Against Ramist ‘unica methodus’, Digby insists that method is a twofold process. This is because the order of nature and the order of the mind are not the same, since what is ‘most knowable by us’ differs from what is ‘most

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*England*, 43: ‘an Aristotelian revival during the final quarter of the sixteenth century…was possible within the existing statutes [i.e., of 1586]. This revival represents a turning away from the language arts of the humanists back to the solid *scientia* of the Stagirite’.

36 For the dissemination of Zabarella in Oxford see Feingold, ‘The Humanities’, 221-358; and for his dissemination in Scottish universities see Christine M. King, *Philosophy and Science in the Arts Curriculum of the Scottish Universities in the 17th century*, University of Edinburgh, PhD dissertation 1975, 61-111. See also my paper ‘La presenza dell’aristotelismo padovano in Gran Bretagna (1589-1689)’, in *Nuovi Maestri e antichi testi: Umanesimo e Rinascimento alle Origini del Pensiero Moderno*, ed. by Stefano Caroti and Vittoria Perrone Compagni, (Firenze: Olschki, 2012), forthcoming.


knowable by nature'. In the process of knowledge, what is ‘most knowable by us’ is prior, whereas, in teaching, what is ‘most knowable by nature’ is prior, since the mind is already in possession of scientific knowledge. But what is ‘most knowable by us’ is what comes from sensation, while what is ‘most knowable by nature’ is last thing that we know; the former usually consists of singular objects while the latter are universal objects. The process of knowledge from one to the other is a method of discovery characterized by analysis, which can be either ascending or descending. The former infers from particulars to the universal, while the latter infers from the universal (i.e. causes) to particulars as a form of syllogism. Analysis, however, is not a real demonstration because it proceeds from proximate cause to conclusion, whereas a real demonstration always infers starting from the first cause. Therefore, for a scientific demonstration the synthetic part of the method is necessary. But since every scientific demonstration is based on universals, according to Digby, it is important to focus on the act of grasping the universals, which is called apprehension; otherwise, the mind would proceed from what is less knowable and most confused and obscure (the universal itself), inferring incorrectly and coming to the wrong conclusion. For discovering, it is necessary to start from the apprehension of the universal that is based on sensation, which is prior to us. Sensation, as the mind’s active faculty of judging and discerning, is the basis of the method of discovery and the principle of all knowledge. From sensation comes experience, from many experiences comes memory, and from memory comes science. It is an ascending method from sensation to understanding. According to Digby, however, scientific knowledge is achievable, in the wake of Zabarella, only by combining the analytic and synthetic methods in the theory of regressus or methodus mixta. Distinguishing the methodus inveniendi from the methodus essendi and focusing his attention on

40) Digby, De duplici methodo libri duo, b.1, ch. 16.
41) Ibid., b.1, ch. 19.
42) Ibid., b.1, ch. 26.
43) Ibid., b.1, ch. 27.
44) Ibid., b. 1, ch. 30.
45) Ibid., b.1, ch. 36: ‘Sensus est initium notitiae nobis prioris… Quem quidem primae abstrac-
tionis notitiaeque esse initium… Si nullum in nobis naturale est principium iudicandi, neque
artificioso quicquam poterimus invenire; sin tale inveniatur in natura, in arte utique confirma-
bitur. Assero omnes habere naturalia iudicia… ex multis sensibus, fieri experientiam: experien-
tiis, memoriam, memoriiis, scientiam… actio prima ab obiecto ad sensum, per hunc ad
intellectum ascendit’.
46) Ibid., b. 1, ch. 51.
the method of discovery—that is, the sensation and the apprehension of universals—at the expense of all other types of method such as definition and division, Digby considered reality from the subjective point of view in opposition to the Ramist perspective, which considered reality in itself, equating that what is ‘most knowable by us’ with that what is ‘most knowable by nature’. But in doing so, Ramist logic neglected the importance of the empirical process of sensation, which proceeds from the particulars to the universals, in the making of scientific knowledge, which for Digby was the most significant aspect. This standpoint, however, can only be understood in relation to the dissemination of the doctrine of Paduan Aristotelianism to which it implicitly refers: it is highly implausible that he invented by himself such an advanced theory of method and one which Paduan Aristotelians had already elaborated over at least two centuries. Digby’s work is ‘a serious attempt to say something new about logic’ and set the tone for the new enthusiasm for Aristotle’s methodology and for the emergence of a new British Aristotelianism.

Following Digby’s lead, John Case, ‘the most important English Aristotelian of the Renaissance period’, made the empirical import of the process of knowledge the central claim of his scientific method and, in his *Summa veterum interpretum in universam dialecticam Aristotelis* of 1584, reduced the entire theory of scientific knowledge to sensation. There are two kinds of knowledge, according to Case: sensible knowledge (*cognitio sensitiva*) and intellectual knowledge (*cognitio intellectiva*). Sensible knowledge can be either external, when the objects affect the external senses, or internal, when the objects affect the common sense. Intellectual knowledge can be either complex, when the principles have their origin in the light of the active intellect or when conclusions issue from the perception of principles, or incomplex, when the mind knows the species of the objects directly from the senses. Intellectual knowledge, however, always relies on sensible knowledge in two ways:


48) In his response to the Ramist William Temple, Digby elaborates his empiricist account based on sensation and induction, see Everard Digby, *Admonitioni F. Mildapetti Navareni de unaica P. Rami methodo retinenda, responsio* (London: Bynnemann 1580), preface.


52) Ibid., 120.

53) Ibid.
1) directly, receiving the species from the senses; 2) indirectly, by means of the light and the acumen of the active intellect, which abstracts intelligible species from sensible objects. All scientific knowledge is based on sensation, and it is always discursive knowledge, since intuitive knowledge is possible only for a mind unconnected to the body. Furthermore, Case argues that the mind can know perfectly through sensation, and it always acquires new knowledge—in other words, it is not a kind of memory or reminiscence in the Platonic sense. Sensation, in his view, lies at the foundation of the method for discovering the principles of knowledge, and without it, no scientific knowledge is possible. The problem is whether all principles issue from sensation through the process of induction, or whether there is another way to discover such principles. For Case, the knowledge of principles, which are common, evident and known per se, is possible through a sort of intellection of the understanding, which he distinguishes from induction. Induction and intellection are two different ways of discovering principles, and they are both related to the understanding. Sensible knowledge is related to intellectual knowledge by means of the operation of the apprehension (the faculty of conceiving) and of judgment (the faculty of discerning). Even if all knowledge starts from sensation, this does not mean that intellectual knowledge is unimportant or sterile. The intellect has a natural light according to which the mind can easily illustrate and assent to principles, without any mediation of induction. Principles like ‘the whole is greater than the sum of its parts’ or ‘if we add an equal to two equals, they will remain equals’, which are remote from induction, are perceived directly by the intellect. Case does not neglect the importance of induction, but he establishes the distinction between the constitution of principles by means of induction through comparisons and the direct perception of them by means of the intellect.

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54) Ibid: ‘Omnis intellective cognitio, sive complexa, sive incomplex sit, oritur a sensu, vel 1) directe recipiendo species, ut in objectis rerum corporearum, quae vi sua pulsant moventque sensum; 2) indirecte per lucem et acumen intellectus agentis, qui ex corporeis formis a sensu ad se translatas saepe res incorporeas percipit’.
55) Ibid., 120-121.
56) Ibid., 121.
57) Ibid., 128.
58) Case is the only British logician of the time to distinguish intellection from induction. Intellection was often confused with the process of induction or with demonstrative induction.
59) Ibid., 134.
60) Ibid., 134-135.
The whole process of acquiring knowledge of principles is therefore characterized by four operations of the mind: 1) apprehension, which grasps from sensation the species of objects; 2) judgment, which discerns among the perceived objects; 3) sagacity, or the capacity to perceive immediately, without induction, the principles of knowledge; 4) order of discipline (study or teaching), which infers from the induction of singular objects to general concepts. Properly speaking, intellection does not discover any new principles of knowledge but, instead, simply gives its assent to what is perceived by sensation. Case is not claiming that scientific knowledge is intuitive, but only that some truths are self-evident and are grasped immediately. It is always from sensation or, in the longer term, from induction, that the principles of science are discovered. The human mind can never avoid the hard work of experience, which is based on sensation. In his *Lapis philosophicus*, where the debt to Zabarella’s comments on *Physics* I.1 is explicit, Case affirms once again that scientific knowledge is always discursive and never intuitive. In particular, he makes clear that discursive knowledge can either be perfect, following demonstration, or imperfect, following abstraction, thus identifying induction with a process of abstraction from particulars in the production of general concepts and principles. According to Case, induction, or at least the process of apprehending general concepts, is a part of the resolutive method, which characterizes the *ordo disciplinae* and proceeds from effects to causes. Scientific method, however, also needs to work back from causes to effects, that is, the compositive method, according to the *ordo naturae*. Nonetheless, Case does not pay attention to the reverse process from causes to effects, which constitutes the regressive method, as, for instance, Zabarella did, but instead concentrates solely on the *ordo disciplinae* or *mentalis*, without considering the *ordo naturae*. The reason is clear from Case’s words: what is important is sensation and observation, from which all knowledge derives, even if its beginning is confused and obscure. He draws his arguments from a direct reading of Aristotle and of his faithful interpreters such as Zabarella and the ‘Schola Veneta’; but undoubtedy he emphasizes, like Digby, the empirical process of acquiring knowledge rather than its rational systematization.

Paduan Aristotelianism became more widespread with the dissemination of the writings of Giulio Pace, a student of Zabarella whose bilingual edition of

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(61) Ibid., 135.
(63) Ibid., 34.
(64) Ibid., 38.
the *Organon* was adopted as a reference work for the study of Aristotle's logical treatises, together with his analytical commentary on the *Organon* and on Porphyry's *Isagoge*. Furthermore, in 1597 Pace's *Institutiones logicae* was published in Cambridge, followed in 1612 by his *Logicae rudimenta*. These two successful handbooks marked the final entry of Paduan Aristotelianism into Britain and the decline of humanist and Ramist approaches to logic.

A noteworthy sign of the impact of Paduan Aristotelianism in Britain was the publication in 1594 of Griffith Powell’s *Analysis analyticorum posteriorum sive librorum Aristotelis de demonstratione*, which examined Aristotle’s *Posterior Analytics*, borrowing heavily from Zabarella’s *Opera logica*. While presenting a narrow perspective on the *Posterior Analytics*, Powell emphasized the importance of induction for the definition of logic as an intellectual discipline and showed how the process of induction was intertwined with that of sensation. For Powell, all knowledge is knowledge of causes and principles, and it is through this that we know an object; therefore, universal causes are not what is most knowable to human beings, but what must instead be looked for. What is most knowable to human beings, by contrast, is what comes from the senses, that is, sensations, which are always particular. The Aristotelian question, rephrased in the language of Zabarella’s logic, is: how can we acquire knowledge of first principles and causes from sensations, that is, from what is most knowable to us as human beings? It is apparent, Powell argued, that we have no innate knowledge of first principles in our mind; but rather the mind acquires knowledge of them as a result of habit, that is, an intellectual virtue in the Aristotelian sense. There is no knowledge prior to sensible knowledge, for it is only through the senses that we acquire knowledge. Like Zabarella, Powell stressed the active nature of the power of sensation in gaining knowledge of sensible objects. This occurs in some animals and involves sensible *species* remaining in the memory; the memory of many particular things then enables the mind to form general concepts. What was important for Powell was that the memory of experience was possible only through sensation, and

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69) Griffith Powell, *Analysis Analyticorum posteriorum sive librorum Aristotelis de demonstratione* (Oxford: Barnes, 1594), front-matter. The commentary was republished in 1631.
it was only through experience that general concepts remained in the mind.\textsuperscript{70}

This process, which operates in the mind, together with sensation and understanding, is called induction;\textsuperscript{71} and it is the true and only way to know the first universal principles and causes by means of the intellect or \textit{habitus principiorum}.\textsuperscript{72}

The penetration of Paduan Aristotelianism into Britain was reinforced by the increasingly widespread dissemination of the works of continental Aristotelians who adopted or summarized the views of both Zabarella and Pace. I am thinking of authors such as Bartholomäus Keckermann, Martin Smiglecki, Franco Burgersdijk and Philippe Du Trieu.\textsuperscript{73} In the wake of such works of continental Aristotelians, which were strongly influenced by Paduan Aristotelianism, British Aristotelians published a number of successful manuals and handbooks which shaped the teaching of logic in universities for over fifty years.

The legacy of Zabarella is particularly evident in Samuel Smith’s \textit{Aditus ad logicam}, in which entire propositions taken from him are repeated, revised and expanded.\textsuperscript{74} A large number of Zabarella’s views can be found in Smith’s book; they are presented from an empiricist perspective, especially with regard to the theory of science and of method. According to Smith, demonstration leads from something already known to the knowledge of something unknown; and

\textsuperscript{70} Ibid., 338-339: ‘Et haec nullam habent cognitionem praeter cognitionem sensus, quam in ipso sentiendi actu tantum acquirunt. Nam nihil cognoscunt, nisi cum sentient, cum illa rei etiam absentis cognitionem habeant. Deinde animalia, quae memoriam habent, non unius sunt generis. Nam quaedam rationem, quae similes rerum sensibilium conceptus inter se componit, et universale ex illis colligit habent: ut homo quaedam non habent: ut caetera bruta animantia. Haec cognitionem tantum singularum: ille etiam universale habet: Unde in homine ex sensu, sive ex sensatione sit memoria: ex memoria saepe rei eiusdem (non numero sed specie) facta sit experientia: siquidem multa memoriae numero unam experientiam contingunt: ex experientias, sive ex omni universali quiescente in anima, nimium uno praeter multa, quod in omnibus est unus et idem, sit artis et scientiae principium: artis si pertineat ad generationem; scientiae, si pertineat ad id quod est, sive quod iam existit’.

\textsuperscript{71} Ibid., 340.

\textsuperscript{72} Ibid., 340.


\textsuperscript{74} See Samuel Smith, \textit{Aditus ad logicam} (London: Stansby, 1613). This handbook went through eleven editions in eighty years in London and in Oxford (1613, 1615, 1617, 1618, 1621, 1627, 1633, 1634, 1639, 1649, 1656, 1684).
it is for this reason that it is necessary to investigate the praecognita: the presuppositions and principles of the mind in acquiring knowledge. What is known can be expressed in two ways: with respect to us and with respect to nature. What is ‘most knowable to us’ are individual sensible objects; what is ‘most knowable by nature’ are universal concepts, which can only be understood by the intellect and which are usually the causes of things. If what is ‘most knowable to us’ is what comes from sensation, that is, the effects of a cause, then demonstration should proceed from this sensible data and conclude with the knowledge of what is ‘most knowable by nature’, that is, universal concepts. Like Zabarella, Smith thinks that this process consists in a regressive method. In addition to scientific demonstration based on the process of regressus, however, Smith also stresses the role of demonstrative induction and defends its validity as a method of discovery in opposition to induction in general. For Zabarella, demonstrative induction played only a marginal role; but for Smith it is the only instrument by means of which the principles of science are recognized. The characteristics of demonstrative induction are: firstly, that the knowledge is of something which really exists, usually particular objects; secondly, that the conclusion is necessary, so that it leads to scientific knowledge; and, thirdly, that the principles of science are known per se without any further proof. By contrast, in dialectical induction, the knowledge is of opinions, the conclusion is not necessary, and it based on only a limited number of observations. Demonstrative induction also differs from demonstration from effects: while the latter has the task of discovering principles which are unknown by nature, the former discovers the principles which are knowable to us through sensation. In his discussion of these matters, Smith follows Zabarella very closely, using the same words. Nevertheless, while Zabarella still favours demonstration from effects (ab effectu) based on the

75) Ibid., 116-119.
76) See John P. McCaskey, Regula Socratis. The Rediscovery of Ancient Induction in Early Modern England (Stanford: PhD, 2006), 145-178. I agree with McCaskey’s argument that induction must not be confused with the resolutive method. I do not believe, however, that it plays an unimportant role in the regressive method, just because its two constituent parts are the demonstration ab effectu and the demonstration propter quid: in fact, induction is the only way to discover the principles of any demonstration, including the demonstration ab effectu, which constituted the resolutive part of the regressus.
77) Ibid., 120: ‘Inductio est proprium instrumentum, quo principia scientiarum quae per se nota dicuntur nobis innotescunt’.
78) Ibid.
79) Ibid., 120-121.
syllogism, Smith leans more towards demonstrative induction as the only instrument capable of establishing and discovering principles, which are knowable per se beginning from sensation, the source of all knowledge. In giving to induction a central role and devoting an entire chapter to it, Smith clearly emphasizes the importance of the empirical part of the scientific method, which begins from what is ‘most knowable to the human mind’.

Without doubt, the most popular handbook of logic for university teaching was Robert Sanderson’s *Logicae artis compendium*, published in 1615.80 Zabarella’s influence on Sanderson is evident in the latter’s instrumental conception of logic as a tool for directing the mind in the acquisition of knowledge, and in his theory of method.81 It is method that leads the mind from the knowledge of things which are ‘most knowable to us’ to those which are most unknown, progressing from sensible and particular objects to intelligible and universal ones.82 But, while in Zabarella this process follows the regressive method, Sanderson, following Smith, reduces the method of discovery to four interconnected operations, culminating in induction. The basis of any scientific discovery is sensation, through which we know particular objects. The second operation is observation, or *historia*, through which we place in our minds what has been collected by sensation. The third operation is experience, which gathers further observations useful for future knowledge. The fourth and final operation is induction, which leads from many experiences to a universal conclusion.83 Sanderson’s account of method, although inspired by Zabarella, presents a radical shift towards a much more empirical perspective, omitting any reference to syllogistic demonstration as a cognitive process.

Perhaps the best indication that Paduan Aristotelianism was becoming an important part of university education between the sixteenth and the seventeenth century, as well as the clearest sign that an empirical strand was becoming a prominent feature of British Aristotelianism, is the posthumous

80) See Robert Sanderson, *Logicae artis compendium* (Oxford: Lichfield, 1618 2ed.). The companion was particularly widespread and it went through fourteen editions (1615, 1618, 1631, 1640, 1657, 1664, 1668, 1672, 1680, 1700, 1705, 1707, 1741, 1841).
81) On Sanderson’s Zabarellaism see Ashworth, ‘Introduction’, XXXV-LIV.
82) Ibid., 225-226.
83) Ibid., 226-227: ‘Methodi Inventionis quatuor sunt Media et velut gradus per quos ascendimus. Primus Sensus est; cujus adminiculo colligimus aliquam singularis rei notitiam; secundus Observationis, sive Historia; qua colligimus, et mente collocamus, quae sensu aliquidies hausimus; tertius Experientia; qua collectas plures observationes ad certum usum applicamus; quartus et ultimus Inductio, qua collectas plures Experientias ad universalem conclusione constituendam adhibemus’.
publication in 1619 of John Flavell’s *Tractatus de demonstratione methodicus et polemicus*, a manual of Zabarellaan logic. According to Flavell there are two kinds of knowledge: 1) sensible knowledge, which knows the object by means of senses and which is prior to intellectual knowledge; 2) intellectual knowledge, which grasps ideas and principles. Flavell argues, against Plato, that there are no innate principles or ideas, but instead all knowledge derives from sensation, and it is through sensation that the mind continuously gains new knowledge which leads to the acquisition of the habit of ‘science’. Sensation is therefore the primary instrument of scientific knowledge, and without it no science is possible for three main reasons. In the first place, all scientific knowledge comes from the conclusion of a demonstration, which depends on the cognition of principles based on induction, which is itself grounded in sensation. Secondly, all intellectual knowledge derives from previous knowledge, which cannot be intellectual knowledge, since this would imply an infinite circular regress, but is rather sensible knowledge. Lastly, there is nothing in the intellect that was not first in the senses. Flavell states clearly that without sensation science is impossible because 1) intellectual knowledge needs the confirmation of the senses; 2) the mind cannot make judgments about colours, odours and sounds without the senses; 3) the intellectual object always comes from the senses. Sensible knowledge is the basis of induction, which is the process of the constitution of the universals and of the principles. All the arts and sciences are based on experience and induction, from which the first

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84) John Flavell, *Tractatus de demonstratione methodicus et polemicus* (Oxford: Lichfield-Short, 1619). The treatise was reprinted at least three times in 1619, 1624, and 1651. The 1651 edition may have had some impact on the last draft of the Thomas Hobbes’s sixth chapter on method in his *Logica*, since this part was completely modified from the earlier version of the 1640s.

85) Ibid., 2, 13.

86) Ibid., 2, 107-108.


88) Ibid., 2, 109: ‘Quod ad alterum spectat, de hoc vel illo sensu deficiens, et de objecto huic vel illius sensus, res est aequo dilucida. Nam primo, cum confirmatum sit, sine sensu prorsus non esse scientiam, et cum res ista ab uno tantum sensu percipit posit, necesse est sublato uno illo sensu tolli universam ejus rei scientiam. Secundo, cecus non potest judicare de coloribus, surdus de sonis, et sic de ceteris: ergo neque eosdem perfecte cognoscunt’. 
principles derive after many observations. Induction does not infer directly from a singular observation to conclusions, for the mind can only give assent to principles through the experience of many singular observations and by means of experiments. Principles are conclusions of intellectual knowledge, which derives them from sensible knowledge, because, as Flavell repeats again, nothing is in the intellect that was not first in the senses. He emphasizes the fact that the cognition of principles cannot be reduced to a mere apprehension of ideas from experience, but rather involves experiments and judgments. This is important because, according to Flavell, as also for Zabarella, induction is not a process which leads from the unknown to the known. By itself, induction is not equivalent to the scientific method; nonetheless, it is the process that notifies the intellect of the universal aspect of what comes from sensation, which would otherwise be too obscure for intellectual knowledge. Induction has a necessary but ancillary role in the scientific method, which is, properly speaking, the regressus. For Flavell, following Zabarella, regressus is constituted, firstly, by a process that infers from the effects to the cause, that is, demonstration ab effectu, and, then, by a process that concludes from the proximate causes to the effects. In particular, regressus follows three steps: 1) the confused knowledge of the effects from which the mind derives a confused knowledge of the causes; 2) mental examination, which compares the causes with the effects and by which the mind acquires a distinct knowledge of the causes; 3) perfect demonstration (demonstratio potissima), which, by means of a distinct knowledge of the causes, acquires a perfect understanding of the

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89) Ibid., 2, 48.
90) Ibid., 2, 48-49: Hoc ratione etiam dilucide constat: quia cum naturaliter non fiat transitus ab uno extremo in alterum, nisi per medium; fieri non potest, ut homines consueto naturae modo assentiantur principiis, antequam eorum habeant experientiam in plaerisque singularibus. Nam inter judicium unius singularis propositionis, et judicium universalis principii, medium est experimentum. Etenim judicium singularis propositionis uni tantum singulari addictum est: judicium vero universalis ad infinita diffunditur: at experimentum nec est unius tantum rei singularis, nec omnium, sed quorumdam’.
91) Ibid., 2, 49: ‘Secundo, omnis cognitio intellectualis a sensitiva originem ducit; nihilque est in intellectu, quod non prius fuerit in sensu: hoc est, quod non fuerit sensu perceptum, vel per se, ut colores; vel per suas partes, ut mons aureus, et caetera quae fingimus; vel per sua effecta, ut Deus Opt. Max. et substantiae separatae, et virtutes rerum naturalium nostris sensibus occultae; vel per aliquid sibi simile, ut absentes et defuncti per depictas eorum imagines; vel per opposita, ut aspera, per levia, tenebrae per lumen; vel per sua fundamenta, ut secundae intensiones per res substratas seu denominatas; vel aliquo alias modo. Ergo principiorum omnium, etiam primorum, assensus non ex nuda apprehensione terminorum, sed ex alia sensitiva cognitione emanabit’.
92) Ibid., 2, 51.
effects. Once again taking his lead from Zabarella, Flavell states clearly that scientific knowledge is a demonstrative knowledge based on regressus; but, like other British Aristotelians, he places emphasis on the method of discovery, which is induction involving sensations, observations, experiments and judgments. The works of Powell, Smith, Sanderson and Flavell reveal a radical change in the field of logic, a shift from rhetoric to epistemology, for these authors understood that ‘Zabarella’s work on scientific demonstration, growing out of the Posterior Analytics, must be the basis for any high-level discussion of method along traditional Aristotelian lines’. 

III. British Aristotelianism and Experimental Philosophy (1620-1662)

During the 1620s, 30s and 40s, the dissemination of Aristotelian textbooks in the universities was wide and far-reaching, and these works enjoyed numerous reprints and editions. There were no new significant publications in the field of logic in this period, with the exception of the Novum Organum of Francis Bacon, who did not hesitate to criticize Aristotelian methodology, even though the new Baconian methodology could probably never have developed without it. It is a mistake to think that with Bacon’s work the momentum of British Aristotelianism and of its empirical perspective was over. Instead, it influenced important exponents of the new ‘experimental philosophy’ such as William Harvey and Thomas Hobbes; and, at least throughout the 1660s and 70s, it had a considerable circulation in university textbooks.

In the Prefatio to his Exercitationes de generatione animalium, Harvey goes back to the empirical methodology elaborated by British Aristotelians such as Sanderson and Flavell in his reappraisal of the Aristotelian doctrines of sensation, observation and experiment and to their centrality for the discovery of new knowledge. There is only one path to scientific knowledge, which is
when the mind proceeds from things that are more knowable to those that are less knowable, from the evident to the obscure. Scientific knowledge aims at universal and general concepts, and the mind itself reasons from universals to particulars. The comprehension of universals by the understanding is, however, based on the perception of individual things by sensation; it therefore becomes crucial to explain how the mind grasps universals from particulars. Harvey states that since universals are first imbibed from particulars by the senses, they are only more known to us to the extent that a universal is a whole and indistinct thing, and a whole is more known to us according to sense. In fact, universals cannot be understood directly through a sort of Platonic intellection, but can only be grasped by the senses. Knowledge of universals from the senses is obscure and confused, and only further reasoning can clarify it in order for us to acquire scientific knowledge. Therefore, according to Harvey, all knowledge begins from sensation, because sensible particulars are better known to the senses; nevertheless, the sensation itself is a universal, even if an obscure one. For although in the external sense the object perceived is singular, when this impression comes to be made into an abstraction and to be judged and understood by the inner sense, it is a universal. This is why it happens that several people viewing the same object at the same time abstract various species and conceive different notions. Harvey is claiming that in vision, or the act of seeing itself, each particular impression is clear and distinct; but the moment the object is removed, as it is merely by shutting one’s eyes, and becomes an abstraction in the imagination or is only retained in the memory, it appears as an obscure and indistinct idea; nor is it any longer apprehended as a particular, but as something which is common and universal. In order to explain such doctrines, Harvey uses the conceptual distinction between impression and idea, according to which the impression is vivid and distinct because it always refers immediately to a singular perception, while an idea is confused and obscure because it does not refer immediately to the object, even if it is more general. According to Harvey, science is a habit

99) Ibid., 20.
100) Ibid.
101) Ibid., 21.
102) Notably, the distinction between ideas and impressions occurs also in David Hume’s empiricism.
103) Harvey refers directly to the fifty-eighth Epistle of Seneca. However, in his letter Seneca seeks to emphasize the ontological and epistemological primacy of the idea in relation to the impression, whereas Harvey does the opposite.
with respect to things to be known, which are natural things. Scientific knowledge has its origin in sensation and experience, and it is impossible for it to exist without a visible instance or example. Nonetheless, what the mind perceives in sensible objects differs from the image retained in the imagination or memory; for one is a real entity, while the other is a representation or similitude, constructed by the reason. While the former deals with the individual thing and is itself single and particular, the latter is a universal and common thing. To the mind, sensible things are clearer and more perfect, while those constructed by reason are more obscure, since things perceived by the senses are more certain and evident than those inferred by reason, inasmuch as the latter proceed from and are illustrated by the former. Harvey stresses the importance of sensation as the initial process in acquiring scientific knowledge, because sensible things exist in their own right and are antecedent, while things of the intellect are consequent and arise from the former—indeed, the mind can only acquire them with the help of sensible things. Therefore, without the assistance of the senses, frequent observation and reiterated experiments, the mind goes astray, chasing phantoms and appearances. Harvey concludes that diligent observation is the requisite for every science, and one must appeal frequently to the senses. All true science rests on those principles which have their origin in the operation of sensation; otherwise, the mind will embrace empty and unstable opinions, and solid and true science will escape its grasp. For Harvey, this is the true method of knowledge according to Aristotle. In grounding the method of discovery on sensation, Harvey maintains that there is no innate knowledge: neither opinion, nor art, nor understanding, nor speech, nor reason itself inheres in the mind by nature and from birth, but rather all knowledge of every kind has to be acquired. Still following Aristotle, he argues that scientific knowledge derives from precedent, which seems to contradict the statement that there is no innate knowledge. Harvey solves this dilemma by reporting the solution which Aristotle gives in *Posterior Analytics* II.19. The thing perceived by the senses remains; from the permanence of the thing perceived, memory results; from many memories, experience; and from experience, universal reason, definitions and maxims or common axioms, which are the most certain principles of

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104 Harvey is implicitly referring to anatomical investigation.
105 Ibid., 22.
106 Ibid.
107 Ibid., 22-23.
108 Ibid., 25.
knowledge, even if they are initially known in an obscure way.\textsuperscript{109} Therefore, according to Harvey’s interpretation of Aristotle, there is no knowledge apart from what has been obtained through experience or derived in some way from the senses; all knowledge is examined by experience and the senses, approved by them and finally presents itself to the mind firmly grounded in some pre-existing knowledge, which it possessed, because without memory there is no experience, which is nothing other than repeated memory. In like manner, memory cannot exist without the endurance of the things perceived, and the thing perceived cannot remain where it has never been.\textsuperscript{110} Again, recalling the first chapter of the first book of Aristotle’s \textit{Metaphysics}, Harvey says that no one can be truly judicious or well informed who does know know from his own experience, that is, from repeated memory, frequent perception by the senses, and diligent observation, that a thing is so in reality. Without experience, the mind only imagines or believes or conjectures, not true ideas, but false fantasies and empty visions; it conjures up shadows and chimeras, and its knowledge is nothing more than a waking dream or a delirium engendered by a diseased imagination.\textsuperscript{111}

Likewise, one can find Aristotelian traces in the \textit{Logica sive computatio} of Hobbes, who in his natural philosophy severely criticizes Aristotle. Edwards has implausibly attributed these traces directly to Zabarella;\textsuperscript{112} but they can be better understood in relation to native British Aristotelianism. Hobbes defines philosophy as a knowledge of effects or appearances, which the mind acquires by true ratiocination from the knowledge it has first of their causes or generation, and then of such causes or generations as may be gained from knowing first effects. Here the Aristotelian heritage of his logic is clear, specifically in his distinction between the two ways of acquiring knowledge: the first proceeding from the effects to the knowledge of the causes, the second proceeding from the first causes and principles to the effects.\textsuperscript{113} Consequently, method is the most direct way of discovering effects by their known causes, or causes by their known effects. Scientific knowledge is only \textit{cognitio rei per causas}; but it needs, as a preliminary, knowledge of effects, which proceeds from sensation, imagination and memory, since the first beginnings of knowledge are the phantasms of sense and imagination. It is by reason, however, that we know why things are or from what

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\item \textsuperscript{109} Ibid., 27.
\item \textsuperscript{110} Ibid.
\item \textsuperscript{111} Ibid., 30.
\item \textsuperscript{112} See Edwards, \textit{Paduan Aristotelianism and the Origins of Modern Theories of Methods}, 205-220.
\item \textsuperscript{113} Thomas Hobbes, \textit{Opera philosophica}, ed. by William Molesworth (London: Bohn, 1739), 2.
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causes they proceed; and this reasoning consists of composition and resolution. Every method, therefore, by which the mind discovers the causes of things, is either compositive (i.e., synthetic) or resolutive (i.e., analytic).\textsuperscript{114} Scientific knowledge, following the doctrine of Paduan Aristotelianism, as mediated by British Aristotelians, results from the combination of these two methods, both of which rest in different ways on sensation.\textsuperscript{115}

British Aristotelianism continued to exert its influence up to the end of the seventeenth century. A remarkable example is the publication in 1662 in Oxford of the first English edition of Philippe du Trieu's \textit{Manuductio ad logicam}, one of the most important sources for the emergence of a distinctively British form of empiricism, given the impact which it is known to have had on John Locke.\textsuperscript{116} Appended to this edition is a short treatise entitled \textit{Logica apodictica} by Thomas Tully,\textsuperscript{117} which shows the extent to which Zabarellian ideas, through the intermediary of British Aristotelians, penetrated into logical works in the second half of the seventeenth century. In addition, the fact that Tully felt the need to supplement the original version of the handbook with this short treatise on method shows how important the problem of scientific knowledge was for the logic of that period. Tully follows Zabarella (or, more probably, Flavell) by assigning the main role in acquiring scientific knowledge to perfect syllogistic demonstration (\textit{demonstratio potissima}); however, he focuses on the place of sensible knowledge in this kind of demonstration. If the premises are the causes of the conclusion, and these premises are known through sensation, no scientific knowledge is possible without an appeal to sensation and to experience. Sensation is what provides all forms of knowledge with truth, which is known by the intellect. Sensation, moreover,

\textsuperscript{114} Ibid., 58-59.


\textsuperscript{117} There were two English editions of Du Trieu’s handbook (1662, 1678), which include an essay by Pierre Gassendi and Tully’s \textit{Logica apodictica}. There are no clues in the text, nor in the preface and introduction, that this \textit{Logica apodictica} was not written by Du Trieu, since it follows immediately after his work, though with a new pagination. Anthony à Wood, however, attributed the authorship of the treatise to Tully; see Worcester College MS 4.17 and \textit{Athenae Oxonienses an Exact History of all the Writers and Bishops who have had their Education in the University of Oxford}, ed. by Anthony Wood (London: Rivington, 1817), 3, c. 1055-1059.
is the only operation of the mind which provides direct and certain knowledge of material bodies, at the beginning of the process, and of intelligible entities, at the end of it. Sensation is the cause of intellectual knowledge: properly speaking—and here Tully is stressing one of Zabarella’s ideas—it is an instrumental cause. From the second half of the seventeenth century, then, the instrument of logic was no longer the syllogism, but sensation, interpreted according to a very empiricist perspective.

IV. Final Remarks

Philosophy in Europe underwent profound changes from the end of the sixteenth century to the late seventeenth; but these changes were almost imperceptible in Britain in the field of logic. The new Aristotelian tradition established in English universities supplanted Ramism and was deeply influenced by Paduan Aristotelianism. The present study of handbooks of seventeenth-century English logic, which Schmitt advocated in the 1980s, has demonstrated that there was a shift of emphasis from classical syllogistic logic to facultative logic within English Aristotelianism and that this laid the basis for future developments in British empiricism. Authors such as Francis Bacon, William Harvey, Thomas Hobbes and John Locke cannot really be understood outside of this philosophical framework. English empiricism referred to the doctrines of Zabarella and of Paduan Aristotelianism with regard to the process of induction, the problem of method, the distinction between what is

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118) Ibid. 5-6: ‘Q.7. Si praemissae sint causae conclusionis, quid tribuendum est sensibus externis, cum dicitur, Deficiente sensu deficit Scientia? R. Sensum esse omnis scientiae intellectivae januam verissimum est, Nihil enim est in intellectu, quod non prius fuit in sensu; vel scilicet directe, primario, et per se, ut Entia Materialia; vel indirecte et per alium, ut Entia materiae experitia (puta Deus, Angeli, et Animae rationales). Hinc damus sensum esse causam Scientiae intellectivae sine qua non (uptote a quo originaliter dependet) non vero causam proprie dictam, ut sunt praemissae. Quod si quis sensum causam instrumentalem remotissimam esse contenderit, non altercabimur’.

119) On the developments of the history of philosophy in Britain during this period see Jill Kraye, ‘British Philosophy Before Locke’, in A Companion to Early Modern Philosophy, ed. by Steven Nadler (Oxford: Blackwell, 2002), 283-297. For the decline of the Aristotelian scientia see also Thomas Sorell, G. A. John Rogers, and Jill Kraye (eds), Scientia in Early Modern Philosophy: Seventeenth-Century Thinkers on Demonstrative Knowledge from Initial Principles (Dordrecht: Springer 2010), especially Rogers’ important paper on Locke’s rejection of Aristotle’s scientia based on principles. Locke’s refutation of Aristotelian demonstrative science needs to be placed within the context of British Aristotelianism, from which he seems to have derived his theory of the primacy of sensation.
most knowable to us and what is most knowable by nature, and the instrumental and heuristic conception of logic. To be sure, we cannot say that the views of Zabarella are found in Hobbes or Locke. We can say, however, that important elements of the distinctively Paduan version of Renaissance Aristotelianism, especially through the mediation of Zabarella's influential interpretation, became an integral part of logical thought in early modern Britain. British Aristotelianism should not, therefore, be regarded merely as the survival of ancient and outdated doctrines into a new era. It was instead a very original and innovative logical movement insofar as it elaborated an empirical form of Aristotelianism, the historical importance of which should not be underestimated. A fundamental break happened in the history of philosophy within the movement of British Aristotelianism: sensation and induction, and not syllogistic demonstration, were the new instruments of science. A new assessment is needed in order to understand developments in British philosophy of the seventeenth and eighteenth centuries, as well as much of the modern philosophy.