EMPIRICAL HOBBES: SCIENCE AND POLITICAL THEORY IN THE WORKS OF THOMAS HOBBES

by
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DISSERTATION ABSTRACT

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This dissertation adjudicates the role of empiricism in the science and political theory of Thomas Hobbes. It accords "empiricism" status as a separate, coherent motivation, apart from others (like geometricization), which helped to orientate Hobbes, shaping his political theory and filtering into his scientific ideas and practices. The dissertation demonstrates that experience played a more dynamic, if misunderstood role in early Hobbesian science than is accounted by interpreters, and disaggregates the different meanings Hobbes gave "experience," particularly in *The Elements of Law* (1640) and in the first (1642) and second (1647) editions of *De cive*. This demonstration culminates in a treatment of *Leviathan* (1651) that challenges methodological interpretations, and offers, instead, that the text's exposition was, in part, crafted to address a pair of substantive concerns about the effects of un-empirical speech and causal myopia in human decision-making. The dissertation also considers the relationship between serial composition, the method Hobbes used to construct many of his texts, and his empiricism. The study of this relationship yields two principal findings. First, serial composition encouraged changes in Hobbes's empiricism, prompting the development of new empirical concepts, analytical-

empirical strategies, and changes in his political methodology. Second, the practice resulted in layered, bricolage texts, all responding to different features of Hobbes's world, and in which are embedded different understandings of what the empirical study of that world entails. The empirical "drift" of Hobbes's works potentially makes assembling some set of them into a whole and the search for systematicity in Hobbes's political theory a futile task. Thus, the dissertation questions the interpretive utility of the methodological statements elaborated in *De corpore* (1655). A close analysis of the statements also offers an entry-point into a discussion of Hobbes's practice of retrojecting new, emergent understandings of science and scientific method *back* onto previous texts. This practice of retrojection, the analysis shows, went hand-in-hand with and, to an extent, stemmed from Hobbes's use of serial composition, combined with his empiricism. The dissertation also features a revised chronology of the *Elementa Philosophiae*, Hobbes's plan for a trilogy of texts that would elaborate the elements of his philosophy.

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Science is a collective project. That is, the creation of a body of knowledge happens neither in a vacuum nor without the involvement of others. Even among graduate students, dissertation writing is sometimes imagined to be a solitary enterprise. Ph.D. candidates are portrayed as latter-day Henry David Thoreaus, writing in isolation in the solemnity of a cramped university office space instead of at Waldon Pond. The reality is sharply different. A dissertation only comes into existence through and with the support of others. It is a barn-raising event. Similarly, a dissertation is not the product of a single mind. It is the sum of innumerable influences and builds on the labor of others. It is a synthesis, the result of a re-combinatory process that involves putting different ideas, some of them very old, together in new and interesting ways.

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CHAPTER I

INTRODUCTION

The idea for this dissertation originated in a simple puzzle. Thomas Hobbes's first major work of political theory, *The Elements of Law* (1640), appears to minimize the role of experience in the construction of scientific knowledge, and specifically, in the production of universal, certain truths. In fact, in *The Elements* Hobbes seems to forcefully prise the two, experience and science, apart. He offers the curt assessment that "Experience concludeth nothing universally,"[1] and develops a typology of knowledge that explicitly disaggregates[2] science from simple prudential reasoning, "conjecture from experience,"[3] mere "knowledge of fact."[4] Yet, it would be a mistake to draw conclusions about the place of experience in science on the basis of these

[1] Hobbes, Thomas, *The Elements of Law Natural and Politic*, ed. Ferdinand Tönnies (Cambridge: Cambridge University Press, 1928), 12 [4.10]. Hereafter, all references to *The Elements of Law* include three elements: (i) a page number and (ii) the chapter and (iii) paragraph (as numbered in the text) in which the relevant material is found (in brackets). Moving forward, a chapter and paragraph or article number is given in brackets in references to Hobbesian works which originally featured numbered paragraphs (as in *De cive* and *De corpore*) or articles (as in Thomas Hobbes's commentary on Thomas White's *De mundo*).

[2] Hobbes specifies, "there be two sorts of knowledge, whereof the one is nothing else but sense, knowledge original…and remembrance of the same; the other is called science or knowledge of the truth of propositions, and how things are called, and is derived from understanding." However, he adds, "Both of these sorts are but experience; the former being experience of the effects of things that work upon us from without; the latter the experience men have of the proper use of names in language. And all experience being (As I have said) but remembrance, all knowledge is remembrance: and of the former, the register we keep in books, is called history; but the registers of the latter are called the science," ibid, 18-19 [6.1]. In 6.4, he adds, "And of these two kinds of knowledge, whereof the former is experience of fact, and the latter evidence of truth: as the former, if it be great, is called prudence, so the latter, if it be much, hath usually been called, both by ancient and modern writers, SAPIENCE or wisdom: and of this latter, man is only capable; of the former, brute beasts also participate," ibid, 20 [6.4].

[3] Ibid, 12 [4.10].

[4] Ibid, 20 [6.4].

ostensibly unequivocal remarks. Hobbes *also* notes that "right reason," the *organon* of science, begins with "principles that are found indubitable by experience."[5] So too, he lampooned *dogmatici* for substituting ersatz, bogus maxims for the tried-and-true conclusions that flow from "evident demonstrations…from experience."[6]

Many Hobbes interpreters have simply overlooked or swept away the puzzle. After all, to admit the puzzle would be to invite murkiness into an otherwise clean, solid distinction between (deductive) science and (inductive) experience, two distinct forms of knowledge and knowledge creation Hobbes is supposed to have held separate. To admit the puzzle would also complicate the projects of some of Hobbes's intellectual biographers, who have deployed the distinction between science and experience as a historiographical device, as a means by which to mark and track changes in the trajectory of Hobbes's intellectual life. In such contexts, the distinction between knowledge begot by experience and knowledge derived by ratiocination (i.e., scientific, syllogistic reasoning) is made into fulcrum, a pivot point, around which Hobbes's intellectual development revolves.

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[5] Hobbes writes, "Now when a man reasoneth from principles that are found indubitable by experience, all deceptions of sense and equivocation of words avoided, the conclusion he maketh is said to be according to right reason; but when from his conclusion a man may, by good ratiocination, derived that which is contradictory to any evident truth whatsoever, then is he said to have concluded against reason: and such a conclusion is called absurdity," ibid, 17 [5.12].

[6] The quotation, which appears in chapter 13, "How by language men work upon each other's minds," contains an "either" omitted in the ellipsis: "without any evident demonstration either from experience, or," Hobbes adds, "from places of Scripture of uncontroverted interpretation," ibid, 51 [13.4].

A clarifying illustration is found in Mariam Reik's *The Golden Lands of Thomas Hobbes*. Reik locates a shift in Hobbes's epistemological posture, between the views about knowledge and truth operative in Hobbes's introduction to his translation of Thucydides (1628)[7] and the positions adumbrated in *The Elements* (1640). There is a noticeable friction between the former introduction, which locates "truth"[8] in Thucydides' history, having been rendered "evident"[9] through artful deployments of rhetoric and historical

[7] The text bears 1629 as the year of publication. However, as Noel Malcolm points out, the text was registered in March 1648, and adds, "In his letter to the widowed Countess of Devonshire, sent from London on 6 [/16] November, Hobbes said that the printers would 'shortly be ready' for the Epistle Dedicatory, which was printed last of all. The title page of the book gives the date of publications as 1629; but it was common practice to put the next year's date on a book published in November or December. The exemplum in Dr Williams's Library London…bears the inscription: 'Ex Authoris dono Januarij primo [1628 *altered to* 1629] Ex libris Samuel. Harrisonj,'" *Reason of State, Propaganda, and the Thirty Years' War: An Unknown Translation by Thomas Hobbes* (Oxford: Clarendon Press, 2007), 11 n. 44.

[8] As Reik notes, Hobbes "finds no conflict between such reconstructed speeches [i.e., Thucydides' "fictive orations"] and his requirements for 'truth' in the historian," *The Golden Lands of Thomas Hobbes* (Detroit: Wayne State University Press, 1977), 48.

[9] Ibid, 48. In the passage, Reik explains, "By skillful description, the historian provokes the emotions of a spectator in the reader, and the events thereby become 'evident' – a word that appears several times in the Hobbes essay and one that he uses more in the order meaning of the immediately manifest or 'seen.'" However, Reik offers a highly qualified interpretation of Hobbes's remarks. She notes, "nor was Hobbes really satisfied to substitute belief engendered in the reader for demonstration of historical causes and consequences. The nature of history, he said, is 'merely narrative,' and no style, no matter how vivid, could of itself make historical narrative instructive." The conclusions Reik draws are somewhat misleading. First, the meaning and scope of Hobbes's remark about histories that are "merely narrative" is ambiguous; a plausible interpretation of the line is that the evaluation was intended to apply to a subset of histories, specifically ones that are inferior to Thucydides', see: Thomas Hobbes's "Of the Life and History of Thucydides," in *The English Works of Thomas Hobbes of Malmesbury* vol. VIII, ed. Sir William Molesworth (London: Richards, 1843), vii-viii. Second, Hobbes makes clear that the instructiveness of history turns on and is highly related to the historian's capacity to render evident narration: "But Thucydides is one, who, though he never digress to read a lecture, moral or political, upon his own text, nor enter into men's hearts further than the acts themselves evidently guide him: is yet accounted the most politic historiographer that ever writ. The reason whereof I take to be this. He filleth his narrations with that choice of matter, and ordereth them with that judgment, and with such perspicuity and efficacy expresseth himself, that, as Plutarch saith, he maketh his auditor a spectator. For he setteth his reader in the assemblies of the people and in the senate, at their debating ; in the streets, at their seditions; and in the field, at their battles. So that look how much a man of understanding might have added to his experience, if he had then lived a beholder of their proceedings, and familiar with the men and business of the time : so much almost may he profit now, by attentive reading of the same here written. H e may from the narrations draw out lessons to

reconstruction, and the view Hobbes marks out later in *The Elements*, a text that embraces an idea of truth, fashioned on the model of deductive geometry, from which history, "experience of fact," had apparently been jettisoned. Reik writes,

> These are crucial terms[10] to consider in view of Hobbes's later formulations about method. Inasmuch as his model for scientific knowledge would be drawn from geometry because its conclusions were demonstrable and necessary, history (both civil and natural) would be classified as indemonstrable knowledge of fact. Both kinds of history made a man prudent by adding to his experience; both were kinds of memory. [11]

Closing out the point, Reik adds, "profoundly skeptical of the evidence of the senses, he would hold that no *certain* knowledge of fact could ever be attained in any case." What she offers is that Hobbes's turn to geometric science can be understood within a larger arch of discovery, a search for certain

himself, and of himself be able to trace the drifts and counsels of the actors to their seat," ibid, viii.

[10] The "crucial terms" are, in fact, a distinction between probable and certain knowledge. Reik fills in the content of Hobbes's epistemological outlook at the time of writing the introduction with especial attention to rules of rhetoric and, especially, context, pointing out that, "Hobbes was not, of course, alone in his time in permitting fictive orations to live alongside requirements for truth; such speeches were often considered allowable if they were 'probable.'" However, she goes on to add, more speculatively, that, for Hobbes, "Thucydides' method is perspicuous in its presentation of causal factors because it renders 'probable' reconstructions of what would have been said under the circumstances and it concretizes true abstractions," *The Golden Lands of Thomas Hobbes*, 49. While not sharply divergent from Hobbes's remarks on conjecture and (some) history in the introduction, Reik both pushes beyond the text of these remarks and, in the assessment, quietly relies on distinctions delineated in later Hobbesian works and correspondence (as between science and experience, and science and non-demonstrable physics), combined with context, to make the point. The simple, but historically and interpretively unsatisfying fact is that Hobbes supplies insufficient detail in the introduction to draw strong, clear conclusions about the epistemic status of history, and more broadly, his epistemological outlook at the time. However, it may be offered that the retrojection of the distinction between science and experience, or physics and non-demonstrable science, back on to Hobbes as he wrote the introduction to his translation of Thucydides may plausibly introduce distortion into Reik's analysis of Hobbes's introduction as well as misrepresent the epistemic status of experience in both contexts (i.e., within the context of the introduction and then, in particular, within the context of Hobbes's later work).

[11] Reik, *The Golden Lands of Thomas Hobbes*, 49.

knowledge. An important milepost in the search is the introduction to the translation of Thucydides, the idea that there can be "truth" in history (and thereby, experience). After, "[h]e would become intrigued by the possibilities of geometrical methods," she writes, "precisely because they seemed to combine the evident with necessary truth…"[12] Thus, Reik positions Hobbes's embrace of "geometrical methods" against an earlier flirtation with "truth" in history, which was a necessary stop on the road to discovering a method capable of generating the kind of certain conclusions for which Hobbes was earnestly searching.

Elements of the view are reproduced and amplified in Timothy Raylor's new book, *Philosophy, Rhetoric, and Thomas Hobbes*. Raylor's book addresses the relationship between rhetoric and science in Hobbes's work[13] for the

[12] The full quotation proposes, "He would become intrigued by the possibilities of geometrical methods precisely because they seemed to combine the evident with necessary truth, and they could be applied to moral philosophy," ibid, 49-50. The analysis harmonizes with dimensions of Timothy Raylor's. Raylor argues that Hobbes's innovation within the context of the study of civil science was to make an area of inquiry which, previously, produced merely plausible conclusions into one that could claim the mantle of geometric certainty. Raylor writes that, for Hobbes, "civil philosophy is not (as moral philosophers since Aristotle and up through Lipsius and Bacon had believed) part of the realm of things open to argument and deliberation; it is, by contrast, apodeictically demonstrable; its truths can be known with absolute certainty. Civil science is no longer, as Aristotle insisted in the *Nicomachean Ethics* and Hobbes had assumed in the prefatory matter to his Thucydides, a matter of prudence—limited, contingent, and practical; it is, rather, a species of wisdom: a certain, demonstrable, and universal science. There is no place in it for dialectical reasoning, and none therefore for rhetoric," *Philosophy, Rhetoric, and Thomas Hobbes* (Oxford: Oxford University Press, 2018), 212.

[13] Of the scope and critical aims of his project, Raylor explains, "that, from the earliest point at which we have evidence, Hobbes, although a humanist by profession, did not conceive of rhetoric in civic humanist terms, as a noble enterprise, which required—or, according to some theorists, guaranteed—impeccable moral credentials in the speaker—as in Quintilian's famous definition of the orator as 'a good man skilled in speaking' ('vir bonus dicendi peritus'). Hobbes's tutoring, by contrast, appears strongly pragmatic, aimed at training a young aristocrat in the management of his affairs, and the handling of his public responsibilities. Even in this early, 'humanist' period Hobbes is preoccupied with the dangers of persuasion and views rhetoric less as the foundation of civic life than as an instrument of its potential subversion. Such concerns are of a piece with those he would express on many occasions, in works ranging from *De cive* and *Leviathan* through to *Behemoth*. Hobbes's humanism is in general terms not, I argue, Ciceronian or civic; it is, rather, as Richard Tuck and Noel Malcolm have argued, 'late' or

purpose of dismantling a scheme of periodization popularized by Quentin Skinner that proposes a shift in Hobbes's comfort with the use of rhetoric in philosophy. In the process of making his anti-Skinnerian case, Raylor accepts the view that Hobbes "abandon[ed]" the practice of "collecti[ng]"[14] experiences when he embraced the ideal of demonstrative science, à la geometry. Thus, while dismantling one scheme of periodization (Skinner's), Raylor substitutes another scheme in its place.

The view endorsed by Raylor, like Reik, asserts that Hobbes operated under two different epistemological paradigms at different times in his life. He held distinct, incommensurate[15] views on the relationship between experience and truth (Reik) and experience and science (Raylor) before and then following a turn to geometric science. Luc Borot presents a strong version of the point: "Hobbes seems to have undergone an epistemological crisis on one of his

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Tacitean in its emphasis on uncovering deceit, dissimulation, and the hidden springs of power," ibid, 13.

[14] Raylor assesses that "Hobbes abandons the collection and registration of experiences," having embraced an "austere, narrowly restricted version of Aristotelian syllogistic as the only route to knowledge," ibid, 191.

[15] I use the language of "paradigm" in the full Kuhnian sense. Of revolutionary change in science, Thomas Kuhn explains, "Revolutionary changes are somehow holistic. They cannot, that is, be made piecemeal, one step at a time, and they contrast with normal or cumulative changes like, for example, the discovery of Boyle's law. In normal change, one simply revises or adds a single generalization, all others remaining the same. In revolutionary change one must either live with incoherence or else revise a number of interrelated generalizations together [...] roughly speaking, the distinctive character of revolutionary change in language is that it alters not only the criteria by which terms attach to nature but also, massively, the set of objects or situations to which those terms attach. What had been paradigmatic examples of motion for Aristotle – acorn to oak or sickness to health – were not motion at all for Newton...Or again, what had been the unit cell of Volta's battery was no longer the referent of any term forty years after his invention was made. Though Volta's successors still dealt with metals, liquids, and the flow of charge, the units of their analyses were different and differently interrelated," "What are Scientific Revolutions?," in *The Road Since Structure: Philosophical Essays, 1970-1993, with an Autobiographical Interview*, eds. James Conant and John Haugeland (Chicago: The University of Chicago Press, 2000), 29-30.

journeys to the Continent…about 1630,"[16] Borot writes. The outcome, Borot contends, was a thoroughgoing reconsideration of, and a turn away from history, "knowledge of the past," mere "time and memory," or simple experience, to a "science of politics…based on strong deductive grounds, on undebatable premises."[17]

There *was* a change during the relevant period with respect to Hobbes's epistemological posture, how he conceptualized science and truth. However, there is less distance and more continuity between the two postures than any of the views suppose. What Raylor and Reik miss – something overlooked even by scholars who eschew the idea of such a break[18] in Hobbes's intellectual

[16] Borot, Luc, "History in Hobbes's Thought," in *The Cambridge Companion to Hobbes*, ed. Tom Sorell (Cambridge: Cambridge University Press, 1996), 306.

[17] Ibid, 307.

[18] David Johnston, while focused on the distinction between science and history, uses the science-experience distinction as ballast for his account, writing "This distinction [i.e., between the "particulars of experience" and "universal knowledge"] is commonly regarded as the most important sign of the gulf that divides the scientific and philosophical outlook of Hobbes's later years from the humanistic viewpoint of his earlier period. The reason Hobbes turned away from history is neither that he considered it incapable of causal explanation nor that he began to distrust its reliability. Instead, Hobbes turned away from history because he had discovered a different source of political knowledge, science, which is more powerful than history because it makes universal statements possible," *The Rhetoric of* Leviathan: *Thomas Hobbes and the Politics of Cultural Transformation* (Princeton: Princeton University Press, 1986), 11. Likewise, Luke Borot explores a continuity in Hobbes's work with respect to his views on history, but as pointed out, uses the distinction as an analytical device wherewith to parse Hobbes's biography, "History in Hobbes's Thought," 305-328. So too, Ioannis Evrigenis, not unlike Reik, attempts a reconciliation of Hobbes's biography with respect, specifically, to his use of rhetoric. He writes, "Focusing on 1629 as the point at which Hobbes allegedly broke with humanism and turned to science thus causes us to lose sight of the fact that Hobbes had been and continued to be primarily concerned with persuasion," but nevertheless leaves the distinction intact, without pausing to consider the relationship between the two in depth, *Images of Anarchy: The Rhetoric and Science in Hobbes's State of Nature* (Cambridge: Cambridge University Press, 2014), 46, and also see 8-9. Further, Evrigenis uses the distinction a prism through which to interpret and taxonomize Hobbes's political theory, writing, "Far from constructing a philosophical account that will yield universal conclusions in conformity with the demanding standards of *De Corpore*, in appealing to experience in the *Elements* and *De Cive*, Hobbes is merely extending the principles that he had expounded in his analysis of history where he had identified prudence toward the present and providence toward the future as the benefits of good history," ibid, 96. The puzzle on which Evrigenis gets hung up – Hobbes's invocations of

development but who nevertheless reproduce and traffic in the hard experience-science distinction – is how Hobbes brought experience into the new conception of science and truth. Embedded in Raylor's contention that, following the turn, "Hobbes" was "interested…not in the facts of experience or the pursuit of particular cases by way of induction" is a misrepresentation, as Raylor's point elides the enduring role of experience, and even particular cases (dressed up to appear more credible), in the science of *The Elements of Law* and the works that followed.

Even David Johnston, who is a stated ally[19] of the broad view elaborated here, misses the mark. Johnston, like the rest, leaves in place the wedge that divides science and experience, and reproduces the elements of a periodized history at which he, himself, directs critical ire. Johnston holds that "the 'precepts' [Hobbes] had associated with philosophy in 1628 were no more than loose generalizations, rules of thumb drawn from experience. Now," Johnston emphasizes, "[Hobbes] was confronted with a form of reasoning that seemed to offer the prospect of genuinely universal conclusions, based less on experience than upon rigorous definitions."[20] Hence, Johnston is thrown by Hobbes's requirement that science be rooted in experience. He finds the meaning of the

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experience within the context of elaborating his political theory – is a subject that receives extended scrutiny in the next two chapters.

[19] While not a proponent of precisely the same view, Johnston does reject the idea of a break, if of a different nature. He writes, "It is therefore impossible to concur with the view that the break between Hobbes's early conception of history and his later idea of philosophy or science occurred over the issue of causation, if it occurred at all," *The Rhetoric of* Leviathan. It bears noting that Reik makes a similar argument in *The Golden Lands of Thomas Hobbes*. For an assessment of one element of the argument, see footnote 7.

[20] Johnston, *The Rhetoric of* Leviathan, 22-23.

passage in which Hobbes relates the requirement "obscure," and assesses, with obvious (and understandable) confusion, that Hobbes "was unable to define clearly" just how science is "grounded…in experience."[21]

What a long history of Hobbes's intellectual development reveals is that Hobbes was deeply wedded to the project of engineering forms of explanation capable of mapping the shifting topographies of human experience. As the second chapter shows, he maintained an earnest empirical curiosity, engaging in different forms of experiential probing throughout all relevant "periods." Even as a young student at Oxford, Hobbes eschewed the abstruse, overwrought precepts of "Aristotelity"[22] promoted by the school curriculum. Instead, he was keen to know how things that he witnessed in the world worked, and was inclined to a straightforward, concrete style of thinking. Though drawn into different philosophical movements and programs at different points in his life, the aim always was to anatomize and understand the world he saw. He brought his experience and his world into his work. Likewise, Hobbes did not push experience out of his science. He conceived of a science and engaged in patterns of scientific praxis deeply reliant on sense experience and observation, as evidenced by *The Elements of Law*. Reik's assessment that Hobbes was "profoundly skeptical of the evidence of the senses," so much so that "he would hold that no *certain* knowledge of fact could ever be attained in

[21] Ibid, 49.

[22] See footnote 39 in the chapter that follows on empiricism in Hobbes's early science and *The Elements of Law*.

any case"[23] may have, in some period,[24] applied to Hobbes's friend, the French philosopher Pierre Gassendi. As a characterization of Hobbes, it is simply wrong.

Hobbes's intellectual biography may not conform to a straight line. However, as the second chapter shows, his empiricism, his close attention to experience and quest for empirical truth, form the basis for a motivation that can be seen at work, churning throughout his life. Where others posit a break

[23] Reik, *The Golden Lands of Thomas Hobbes*, 49.

[24] Reik's assessment, by necessity, is not a summary of Gassendi's view, especially with respect to how he subtly navigated questions related to certainty and the epistemic reliability of sense experience versus, e.g., reason; Susan James addresses the subject in "Certain and Less Certain Knowledge," *Proceedings of the Aristotelian Society* 87 (1986-1987): 227-242. However, early on, Gassendi famously eschewed the idea of certain knowledge. As Paolo Mancosu records, "Gassendi went as far as to claim in the second part of his *Exercitationes Paradoxicae adversum Aristoteleos*, written in 1624 but published posthumously in 1658, that no science exists, and in particular Aristotelian science," *Philosophy of Mathematics and Mathematical Practice in the Seventeenth Century* (Oxford: Oxford University Press, 1996), 13; on Gassendi's views in *Exercitationes Paradoxicae adversum Aristoteleos* also see Richard H. Popkin's *The History of Scepticism: From Savonarola to Bayle* (Oxford: Oxford University Press, 2003), 92-93. However, Gassendi's skepticism softened over time, as he accorded information derived from sense experience provisional status as knowledge. Of the shift, Henry G. van Leeuwen writes, "In his early writings, Gassendi had argued for complete skepticism, using the views of Montaigne and Sextus to reach the negative conclusion that no science is possible, least of all that of Aristotle. The only conclusion is that nothing can be known. Later on, Gassendi tempered his epistemological skepticism by joining it to the constructive conclusion of his friend, Mersenne. In the analysis of knowledge in the *Syntagma philosophicum* Gassendi tried to establish a *via media* between dogmatism and skepticism. The type of absolute knowledge sought by the dogmatic philosophers cannot be found, but at the same time we can find a type of knowledge which we have no reason to doubt, and which suffices to enable us to understand the world. This limited knowledge consists of what is obvious to us, our sense experience, plus certain conclusions drawn from this. We can judge from a cautious and careful examination of sense experience that certain other facts should be true, or might be true. These judgements are either verified by later experience, or by the conformity of experience with the system of judgements. Hence, Gassendi's physical theory, atomism, is 'justified' as a system of judgments about experience, and is 'verified' by the fact that experience is what one would expect, if atomism were true. This yields what he called a shadow of truth, rather than true knowledge itself. Gasendi made no effort to defend his atomic theory as a true picture of reality, and hence, as a metaphysical system. It was defended as the best predictive hypothesis considering what we 'know' from sense experience," *The Problem of Certainty in English Thought* 1630-1690 (The Hague: Springer, 1963), viii. Nevertheless, Gassendi's skepticism would put he and René Descartes on a collision course and at loggerheads; indeed, Gassendi demolished some of the undergirding epistemological structure supporting Descartes's *Meditations on First Principles*.

in Hobbes's intellectual biography, this dissertation sees a continuity, an overarching trajectory and an orientation whose core features changed little across time and space.

The fact of Hobbes's empiricism has not gone unnoticed in the secondary literature.[25] Yet, no one has, to date, produced a monograph centered on the theme, which, specifically, aims to delineate his empiricism as it operated in its different modes. The word "empiricism" and its cognates abound across this dissertation. "Empiricism," as it is variously used, broadly refers to either a *disposition* – that is, an inclination to probing explanations of experiences of nature (including human nature); a *pattern or style of analysis* that fundamentally relies on sense experience, or inferences from sense experience, for data to fill out and fill in explanations of the world; or an *explanation* that describes some fact or feature of the world as disclosed directly through or inferred from bare sense experience. Hobbes was empirical in all three senses. Empiricism was a way of being in the world and represented

[25] Notable examples include David Boonin-Vail, who expounds, "The definitions in science, that is, the elementary propositions about natural bodies, must remain open to revision in light of new evidence, but the scientist can nevertheless 'reason aright' from those definitions that best fit the evidence to find conclusions that follow inexorably from them. In this way, Hobbes can reasonably claim to maintain a view of science that benefits from the example of geometry without becoming detached from empirical reality," *Thomas Hobbes and the Science of Moral Virtue* (Cambridge: Cambridge University Press, 1994), 33; Johnston, who, while observing that "Scientific propositions are abstract, but they are abstracted *from experience*," remarks somewhat tentatively that "there is a sense in which the *validity* of any science as a whole is dependent upon its connection with reality," *The Rhetoric of* Leviathan, 52; and especially John Danford, who, in the process of explicating the relationship between Hobbes's ideas and Euclidean geometry, points out (seemingly) of geometry, that "science is not constructed out of thin air, or on the basis of merely arbitrary principles. The conceptions which lie at its base are the result of careful analysis of the sensible observable world. It is emphatically empirical," "The Problem of Language in Hobbes's Political Science," *The Journal of Politics* 42, no. 1 (1980), 118.

an approach to studying that world. It was an approach that, in turn, furnished explanations capable of making sense of the world he experienced.

The dissertation also explores the theme of serial composition in tandem with Hobbes's empiricism. A carryover from scribal publication, serial composition was the practice of "producing multiple, progressively expanded versions of a text" as to facilitate the "adaption of works for different audiences and the rapid production of new(ish) volumes."[26] With adaptation came changes in the presentation and purpose of the four[27] main versions of Hobbes's political theory (*The Elements of Law* (1640), the first (1642) and second (1647) editions of *De cive*, and *Leviathan* (1651)). And, as the third chapter demonstrates, some forms of adaptation engendered changes in Hobbes's empiricism, having pushed him to fill out new empirical concepts and develop new empirical-analytical strategies sufficient to address alterations in the set up and design of his work that would have otherwise compromised its empirical integrity. In addition, the practice enabled the use of the works that resulted to address new, emergent features of Hobbes's world that had become a source of concern, the subject of chapter 4 on *Leviathan*.

While allowing for the refinement and reworking of different aspects of his political theory across different texts (and contexts), serial composition

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[26] Baumgold, Deborah and Ryan Harding, "Excavating *De cive*," in On the Citizen: *A Critical Guide*, eds. Robin Douglass and Johan Olsthoorn (Cambridge: Cambridge University Press, 2020), 12.

[27] Hobbes's major political works are, most typically, construed as comprising a trio of texts: *The Elements of Law* (1640), *De cive* (1642), and *Leviathan* (1651). However, two principal editions of *De cive* were published in the 1640s, a first edition (published in Paris) in 1642, and a second edition (published in Amsterdam) in 1647. As discussed in the following chapters, the second edition is, plausibly, sufficiently distinct as to be counted as a distinct presentation of Hobbes's political theory.

created opportunities for Hobbes to expand the empirical footprint of his political theory – to bring more and more of the world into his work. What resulted are complex, bricolage compositions that are a tangle of old and new material. The compositions are shot through with an array of motivations, substantive concerns, shifting forms and styles of political argumentation, conceptions of science and scientific method, and different patterns of scientific practice. In all instances, texts were stretched, trimmed, and otherwise reworked to account for new empirical concerns and conditions, new empirical problems, and new perspectives on what the empirical study of the world entails.

All of Hobbes's major works of political theory are time capsules which, when opened, provide a portrait of Hobbes at that moment, rich with information about whose company he kept, his concerns, his world, and his epistemological outlook. That is, the practice of serial composition, resulted in the production of increasingly layered compositions, featuring patterns of exposition, all dating to different periods of Hobbes's life. As chapter 5 addresses, it is unlikely that the compositions comport to the rigid methodological strictures elaborated in *De corpore*, published fifteen years after Hobbes completed his first work on politics, *The Elements of Law*.

In summary, this dissertation addresses the evolving relationship between Hobbes's empiricism, science, and political theory. The next three chapters of the dissertation (chapters 2-4), if lined up one next to the other, form a single chronology, which starts with Hobbes's education at Oxford (c.

1603[28]) and ends with *Leviathan*. The first chapter in the three-chapter set, chapter 2, draws different threads of Hobbes's biography together to produce a long history of his scientific interests, attending throughout to the role of empiricism in guiding his scientific engagements and eventually informing his assessment of different forms of geometricized explanation. The long history establishes Hobbes's commitment to empiricism and empirical truth as a motivation that emerged apart from, and which helped to govern and control a later commitment to geometricized science. The final part of the second chapter traces out the ways in which these early empirical commitments filtered into the science and political theory of *The Elements of Law*. The final part of the second chapter also solves the puzzle that opens this introduction, in part, by developing a conceptual map of Hobbes different uses and invocations of "experience." The disaggregation of semantically and conceptually distinct forms of experience is aided by a study of how experience, in all its modes, was deployed in forms of contemporaneous scientific discourse *The Elements* reproduces.

Chapter 3 picks up where the first chapter leaves off, in the period following the completion of *The Elements of Law*. It supplies a revisionist chronology of the development and crystallization of Hobbes's *Elementa Philosophiae* ("The Elements of Philosophy"), a plan for a sprawling

[28] Noel Malcolm explains that "The exact date of Hobbes's matriculation is not known; his autobiography states that is was during his fourteenth year, i.e. between April 1601 and April 1602. He adds, however, that he stayed at Oxford for five years, and we know that he was admitted BA in Feb. 1608. Aubrey says he entered Oxford 'at fourteen years of age,' and dates his arrival there, plausibly, to the beginning of 1603," *Aspects of Hobbes* (Oxford: Oxford University Press, 2002), 4 n. 9.

philosophical trilogy on first philosophy, physics, human nature, and politics. The chapter argues that, feeling some measure of social pressure to make his name in Parisian philosophical circles, Hobbes made the decision to conscript the prefabricated material of *The Elements of Law* into the new philosophical trilogy. However, shoehorning the material into the new mould entailed that Hobbes trim it down, tear away its empirical underpinnings, and alter it in ways that potentially compromised the argument and the empirical integrity of his political theory. The quandary pushed Hobbes, in the first edition of *De cive* (1642), to develop his empiricism in new directions, toward a greater reliance on (universal) experience and the concept of "right reason." And though he would later abandon "right reason," the second edition of *De cive* (1647) made (universal) experience into a core element of his political methodology.

Chapter 4, on *Leviathan*, bookends the chronology that begins in chapter 2. It shows that the interpretive practice of using method as a device wherewith to decode or make sense of *Leviathan* is mistaken. Instead, the chapter offers that interpreters should look beyond method, to the substantive or empirical concerns that helped to inform the process of adaptation that produced *Leviathan*. It is these concerns – about, specifically, the perils that flow from the use of unempirical speech and the social and political wreckage that results when individuals fail to reckon correctly about the effects of their actions – that make *Leviathan* distinctive. Understanding how the concerns are operative in the text also pays the ancillary benefit of elucidating, in part, how Hobbes *did* use method in the work. The chapter focuses on four different areas

of exposition in which the concerns manifest, and concludes with observations on the impact of Hobbes's empiricism on the political theory of *Leviathan*.

The theme of empiricism and method continues into chapter 5. This chapter questions the reliability and value of the statements on the subject of method and civil science found in *De corpore* (1655). Specifically, it argues that there are a variety of reasons to question whether the methodological pronouncements found in *De corpore* are interpretively useful and therefore should be the basis for interpreting Hobbes's (earlier) political works. The argument has two prongs. First, the chapter argues that the statements, and accompanying illustrations, are sufficiently vague and, in some instances, clumsy in design as to encourage questions about their actual utility. Second, the chapter traces the history of how the key methodological concepts that organize *De corpore*'s discussion of method were (or were not) plausibly used or featured in Hobbes's works, beginning with *The Elements of Law*. The history militates against the view that Hobbes developed his works with the method delineated in *De corpore* in mind. Instead, the history shows that his understanding of science and method drifted over time, making any attempt to discover a single, unifying method across the Hobbesian corpus potentially futile.

Such a project is also possibly futile, the chapter's conclusion points out, because of the role of empiricism and serial composition in the production of Hobbes's political works. The conclusion to chapter 5 argues that serial composition inclined Hobbes to a liquid, or fluid understanding of texts. The texts on which he worked were never complete or finished; they were an

always-changing assemblage, or mass of prefabricated material that could be remade, recombined, and redirected to new ends and new designs, to meet the demands of new emergent contexts. It is unsurprising that, in the process of remaking these materials, Hobbes's own understanding of these materials, and his political theory specifically, changed with time. He embedded these new understandings into later texts, and in so doing, retrojected the epistemological positions and corresponding methodological views associated with later texts *back* onto earlier texts. These later statements pose perils for the interpreters who rely on them to shape and inform interpretations of his political works. Relatedly, I offer that the discovery of unity in Hobbes's political theory is also fraught because of the "drift" of his political works, i.e., because of Hobbes's empiricism, how his works reacted and responded to his changing world. It is this drift, I impress, that makes reading Hobbes's works worthwhile and interesting. Like different layers of sediment, each encoded with information about what was happening in the world at the moment of its formation, so too, the different layers of Hobbes's political theory, *The Elements of Law*, the first and second edition of *De cive*, and *Leviathan*, tell us about the world in which each work was made. They also, importantly, tell us something about Hobbes.

CHAPTER II

EMPIRICISM IN HOBBES'S EARLY SCIENCE AND *THE ELEMENTS OF LAW*

In Thomas Hobbes's first study of politics, *The Elements of Law* (1640), readers are presented with a bifurcated conception of knowledge. Knowledge, he explains, comes in two forms: science and "experience of fact."[29] What the distinction conveys is that scientific knowledge is not something that can be excavated directly out of the soil of experience. Hobbes is well-known for the admonition that "Experience concludeth nothing universally."[30] And what Hobbes was after were necessary, universal conclusions, not "experience[s] of" particularistic "fact."

Instead, Hobbes pointed to geometry as a suitable model for science. The title of *The Elements* hints at the work's methodological lineage. It is a signal to readers of an intention to deliver a study modeled on Euclid's *Elements*.[31] His work makes good on the intention. Hobbes's *Elements*, like the Euclidean original, is organized around a structure of defined terms.[32] These

[29] Thomas Hobbes, *The Elements of Law*, 20 [6.4].

[30] Ibid, 12 [4.10].

[31] The title of *The Elements* contains a clear geometrical reference, signalling an intent to deliver a political analysis modelled on geometry. However, the title is also evocative of Francis Bacon's *Elements of the Common Lawes of England* as well as Edward Forset's *A Comparative Discourse of the Bodies of Natural and Politique* (London: John Bill, 1606). For the Baconian connection, see Patricia Springborg's "Quentin Skinner and Hobbes's Artificial Person of the State Redux," *Global Intellectual History* (2019), 11-12.

[32] Deborah Baumgold, "The Composition of Hobbes's "Elements of Law," *History of Political Thought* 25, no. 1 (2004), 11, 25. Baumgold writes, "The bulk of the work – four-fifths of the chapters, to be precise – is fleshed out on a skeleton of defined terms, which appear highlighted in black goth script in the manuscript," 25.

definitions, he intimated, were to provide a base around which the superstructure of his work would be built. "[T]here is no way," Hobbes explains, "but first to put such principles down for a foundation…and afterward to build thereon the truth of cases in the law of nature…till the whole be inexpungable."[33] Hobbes believed science should be carried out *more geometrico* (in the style of geometry), its conclusions the byproduct of careful deductions erected upon certain principles and formed using well-drawn definitions.

The Euclidean features of *The Elements* – its title, epistle dedicatory, and its most obvious stylistic features – are not superficial. The definitions Hobbes sets down accumulate as the exposition proceeds, and eventually form the base for an original treatment of the "cases in the law of nature." However, within the content of these definitions – and layered around them – are patterns of scientific practice and theorization that cannot always be neatly or consistently assimilated to the Euclidean ideal. These practices and ways of thinking are part of a longer history and arc of intellectual development.

Close examination of these practices and ways of thinking show Hobbes was as concerned with the project of empirical truth as achieving "geometric" certainty. To be clear, he did not see geometry and empiricism as opposed.[34]

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[33] Hobbes, *The Elements of Law*, xvii [epistle dedicatory].

[34] As Peter Dear notes in *Discipline and Experience: The Mathematical Way in the Scientific Revolution* (Chicago: Chicago University Press, 1995), "The classical mixed mathematical sciences appealed to just such empirical principles. The basic empirical premise of the mathematical science of optics, for example, held that light rays (or visual rays) travel in straight lines in homogenous media. This counted as evident because everyone knew, from common experience, that you can't see around corners," 43. Such a classical, principally Aristotelian orientation and understanding of evident (or universal) experience carried through into the work of Jesuit mathematicians and 17th century natural philosophers, including Galileo,

Like other mathematician-scientists of his day he did not believe that demonstrative certainty need be purchased at the price of empiricism.

However, greater attention to Hobbes's "empiricism" elucidates aspects of *The Elements* and his scientific practices that are often misunderstood, especially by commentators who misconstrue the nature of and outcomes associated with Hobbes's conversion to geometric (or syllogistic) science. He did not, as Gregory Kavka puts it, "generally denigrat[e]…observation and experience."[35] Nor were Hobbes's "appeals to experience" a signal that he was engaged in something *other* than science, as Ioannis Evrigenis maintains.[36] Likewise, Timothy Raylor is misleading in the suggestion that "Hobbes" gave up "the collection and registration of experiences," turning instead to an "austere,

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who aimed to render mathematicized treatments anchored in non-particularistic common notions and, in turn, the actual substance of the (observed) world, 44-46. Of the relation between empiricism and geometry specifically, Kinch Hoekstra notes, "it was not until the 1820s, when Lobachevsky formulated a non-Euclidean geometry, that mathematicians began to understand Euclid's *Elements* as an abstract series of internally consistent axioms rather than a 'system of propositions deduced from premises which were supposed to describe the space in which we live.' Before Lobachevsky, Euclid's starting points were seen as reflections of our spatial experience, and Hobbes too accepts that sense experience provides the materials from which any formal structure of deductions must be built," "II* - The End of Philosophy (The Case of Hobbes)," *Proceedings of the Aristotelian Society* 106, no. 1 (2007), 33-34. Hoekstra uses the observation as a basis to challenge strong conventionalist readings of Hobbes's theory of truth.

[35] Gregory Kavka, *Hobbesian Moral and Political Theory* (Princeton: Princeton University Press, 1986), 7. In the relevant passages, Kavka relates that despite a "need" for "empirical assumptions or evidence about human motives, actions, and interactions to arrive at substantive and interesting conclusions about morals and politics," Hobbes's "discussions of…method…generally denigrates the obvious source of such assumptions and evidence – observation and experience."

[36] Ioannis Evrigenis, *Images of Anarchy: The Rhetoric and Science in Hobbes's State of Nature*, 96.

narrowly restricted version of Aristotelian syllogistic as the only route to knowledge."[37]

I show that both in practice *and* in conceptualization Hobbes's science was more sensitive to experience and observation, empirically driven and *a posteriori* than is accounted by many twentieth and twenty-first century interpreters. In other words, the argument positions itself against a common vein of interpretation, just recently typified in the work Tom Sorell, who categorically rejects the idea that Hobbes "concede[d] cognitive authority to sense and memory."[38] A long history of the development of Hobbes's scientific ideas and practices reveals that he did accord sense and memory a certain degree of cognitive authority, beyond what a bulk of Hobbes's interpreters, including Kavka, Evrigenis, Raylor, and now Sorell, permit.

The focus of this chapter is the early history of Hobbes's scientific thought. It is divided into two parts. The first part shows that Hobbes's interest in scientific subjects emerged separately from an interest in geometry. It is true

[37] Timothy Raylor, *Philosophy, Rhetoric, and Thomas Hobbes*, 191. In the cited passage, Timothy Raylor draws a contrast between the early Hobbes, who, under the influence by Baconian *dicta*, engaged in the "collection and registration of experiences," and the Hobbes of *The Elements*, who equated scientific reason with reasoning by syllogism. The contrast Raylor draws is too neat and tidy, and as the analysis that follows does, can be complicated.

[38] Sorell reasons, "In short, Hobbes condescends not only to experiment but experience." However, he notes that the purpose of his essay is to "consider an unusual break from that condescension – in Hobbes' civil philosophy. Although he claims for his own formulation of civil philosophy a kind of definitiveness and certainty that only geometry has among the sciences, and although both geometry and civil philosophy are supposed to be the products of reason, the necessity of establishing and submitting to the commonwealth is open to a certain sort of confirmation from experience. This is not because Hobbes cedes cognitive authority to sense and memory after all, but because civil philosophy has a rhetorical purpose that a certain kind of appeal to experience helps to achieve," "Appeals to Experience in Hobbes' Science of Politics," in *Experiment, Speculation and Religion in Early Modern Philosophy*, eds. Alberto Vanzo and Peter R. Anstey (New York: Routledge, 2019), 81.

that these strands of interest would later combine, that geometry became a rubric by which he would consider scientific subjects. Yet, he was not an unreflexive proselytizer of geometricized explanations: he was critical of the unreal abstractness of some forms of geometrical theorizing. In Hobbes's early writings is found a concern for fashioning explanations that were not just demonstrative (à la geometry), but which were empirically and observably true.

The second part links this concern to *The Elements of Law*. It examines three aspects of the work: uses and invocations of experience; Hobbes's theory of truth; and use of both the language of "cause" and causal explanation. Taken together, an examination of these aspects highlights the ways in which Hobbes's conception and practice of science was more empirical and experiential than some of his own statements would seem to indicate. Furthermore, I show that many of Hobbes's scientific practices and ideas cannot be traced to a desire to emulate Euclid. Rather, in *The Elements*, we find Hobbes employing and mixing patterns of scientific theorization that comport with his own pre-*Elements* scientific speculations as well as a (nearly) contemporaneous literature on mechanics. The most relevant among the latter is "A Short Tract on First Principles," a work probably written by Hobbes's close associates in the period just before he began composing *The Elements of Law*.

Part I: Hobbes's early scientific interests

a. Before 1630

Astronomy (1603 – 1618)

In his verse autobiography, Hobbes recalls having been force-fed an un-nourishing diet of Aristotelianisms[39] while a young student at Oxford. In particular, he remembers thinking the Aristotelian precepts dutifully consumed by his classmates were rarified and over his head.[40] The concepts being "too high" for him to "grasp,"[41] he sought solace elsewhere.

Hobbes found respite in the more pleasing[42] concrete subjects of geography and astronomy. Geography and astronomy presented him with

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[39] Of the pedagogical prevalence of Aristotelianisms in England over the relevant period, Charles Schmitt explains, "by 1600 Aristotelian logic had a stronger foundation in England than it had had any time since Henry's break with Rome. There was not the gradual withering away of the tradition from the end of the Middle Ages, hastened by the twin spurs of humanism and Ramism, that most modern interpreters of the period claim to see there, but quite the opposite. Aristotelian logic, as did Aristotelian philosophy in general, grew in stature quite significantly during the last quarter-century of Elizabeth's reign," *John Case and Aristotelianism in Renaissance England* (Kingston: McGill-Queen's University Press, 1983), 37. With respect to the pedagogical import of "Aristotelity" at Oxford specifically, and Hobbes's experiences with the curriculum, Noel Malcolm recounts, "The official curriculum laid down in the statutes of 1564-5 was indeed conservative and dominated by the works of Aristotle (thought it did include some standard astronomical and geometrical works, including Euclid, which Hobbes would have had to study if he had wanted to proceed MA). Hobbes's complaint that the philosophy taught at the universities was 'Aristotelity' had some truth to it. There had been a definite revival of Aristotelianism in England in the latter part of the sixteenth century [as Schmitt notes], and extra decrees were issued in Oxford in 1586 to exclude the use of authors who disagreed with the 'ancient and true philosophy' of Aristotle." However, Malcolm adds that while Aristotelian outlooks were hegemonic, counter-hegemonic discourses were also in circulation, viz. the prescribed Aristotelian outlook was not universally accepted: "there is a mass of evidence that academics in the early seventeenth century had intellectual interests, especially in the sciences, which went far beyond the official curriculum, and that these interests were often reflected in their teaching." Similarly, we should not "assume that Hobbes's hostility to scholastic logic would have found no sympathetic echo in the Oxford of his day. The humanist criticism of scholasticism lingered on at the university," *Aspects of Hobbes*, 4-5.

[40] In his verse autobiography, Hobbes recalls, "Then I was promoted to Physics, where the Master taught that everything consists of a union of two parts, Matter and Form, and that appearances of things, flitting through the air, present now forms to the eye, now sounds to the ear. He also attributed many effects to Sympathy and Antipathy, with much more of the same sort too high for me to grasp," "The Autobiography of Thomas Hobbes," trans. Benjamin Farrington, *The Rationalist Annual* (1958), 24. However, Farrington adds a finish to Hobbes's reminiscence that is not present in the Latin. Hobbes writes, simply, that the ideas were "over my head" (*supea captum…meum*), *Thomæ Hobbes Malmesburiensis Opera Philosophica* vol. I, ed. William Molesworth (London: John Bohn, 1839), lxxxvii.

[41] See footnote 40.

[42] "Accordingly," Hobbes wrote in his verse autobiography, "I turned to more inviting themes…" "The Autobiography of Thomas Hobbes," 24.

forms of understanding that were easier to follow. He studied geographical maps with an adventurer's interest, and looked on in wonder at a globe whose "gaps"[43] were, then, being quickly filled in. Using celestial maps, Hobbes eagerly studied constellations. He would imagine himself accompanying the sun on its orbit, and found particular delight in perceiving, for himself, the "art" by which the sun produces equal days (*dies justos*).[44]

Both interests and a corresponding inclination to concrete, cognizable subjects followed Hobbes into the life he pursued after Oxford. In 1618, not more than a decade after leaving his alma mater he looked up at the sky with interest as a comet, the third of that year, streaked across it. He "pondered the fact that neither the comet itself nor its mane could at that time have fallen within the shadow of the earth unless the comet was indeed near to the earth." Hobbes was stricken by the fact that "the sun," at the time, "was about 20° in Sagittarius but the comet was more to the north than Arcturus was."[45] As puzzlement about the comet's location set in, Hobbes consulted the

[43] "I fed my mind too on maps celestial and maps terrestrial, and as I gazed on the painted constellations I rejoiced to companion the sun on his travels and to observe the art with which he apportions the days justly to all mankind. I observed, too, where Drake and Cavendish had cast a girdle round Neptune's waist and the different regions they had visited. I picked out the tiny settlements of mankind and the Monsters depicted on unexplored lands. Geographers have their own way of filling up gaps. The best testimony to their learning is no spot left empty on the globe," ibid, 24. John Aubrey, Hobbes's biographer, adds that Hobbes "tooke great delight there to go the booke-binders' shops, and lye yet gaping on mappes…," *"Brief Lives," Chiefly of Contemporaries, Set Down by John Aubrey, Between the Years 1669 & 1696* vol. I, ed. Andrew Clark (Oxford: Clarendon Press, 1898), 330.

[44] In the Latin, Hobbes writes, *…soli…justos qua facit arte dies*, *Opera Philosophica*, lxxxvii.

[45] Thomas Hobbes, *Thomas Hobbes: Thomas White's* De Mundo *Examined*, trans. Harold Whitmore Jones (Crosby: Bradford University Press, 1976), p. 87.

astronomical literature just as any keen scholar might. In it, he found nothing "but grounds for [further] doubt."[46]

From Hobbes's reminiscence about the comet can be excavated a pair of inferences, one related to his use of mathematics in support of empirical investigation and the other concerning his philosophical disposition. Beginning with the first, the 1618 episode highlights a comfort with *mathematica media* investigation. Astronomy, like other mixed-mathematical subjects, relied heavily upon mathematical, and more specifically, geometrical, scaffolding. Hobbes's investigation of the third comet of 1618 is colored by mathematical understanding and shows an ease of use of mathematical tools to query about underlying complexities disclosed by empirical observation. Second, notable is the tide of puzzlement that submerged Hobbes as he contemplated the comet's position in the sky. This puzzlement, which resulted from the peculiar angle of the sun and the comet at the time, suggests Hobbes had sufficient depth of understanding *to be* puzzled.[47]

Zooming out, the episodes lend support to the idea that, for Hobbes, natural philosophy represented an occasional, but nevertheless long-simmering interest, aspects of which had already taken root while he was still a student at

[46] Ibid.

[47] The conclusion is supported by Karl Schuhmann, who in the essay "Hobbes's Concept of History," notes that "The only history, or better, as he calls it himself, 'little history' (*historiola*) which he himself ever worked out is a history of the comets between 1531 and 1618," explaining that whereas Hobbes's other compiled histories "took over information from earlier authors," the history of comets did not, having stemmed from "his inability to explain the nature and the path of the famous (third) comet of 1618, which he observed during the whole duration of its appearance – one of the earliest scientific activities of Hobbes we know of," in *Hobbes and History*, eds. G.A.J. Rogers and Tom Sorell (London: Routledge, 2000), 11.

Oxford. And he, at times, pursued the interest with a critical vigor. Just as with his dissatisfaction with Aristotle at Oxford, a decade later in 1618, Hobbes found wanting the existing menu of explanations proffered[48] to make sense of natural phenomena he observed. Looking forward, it was, in part, an escalating dissatisfaction engendered by an awareness of the strangeness and unempiricalness of the philosophical explanations being offered up to him[49] that pushed him to mount numerous philosophical campaigns, as he attempted to reshape philosophy as he received it.

Natural philosophy and *De mirabilibus pecci* (1626-7)[50]

[48] Later, in or around 1643, Hobbes would offer the appraisal that "I did not know what to make of this, nor, when I had read other authors, did I subsequently find anything but grounds for [further] doubt. Let me openly profess my ignorance on the formation and nature of comets – not only do I know nothing for sure, but also I do not put forward any conjecture worth of consideration: all the men I have so far read declare, each in his own different way, that the natures of the phenomena of comets are two different questions. Nor are they satisfied until, with regard to the question in hand, they have put forth ridiculous speculations on light," *Thomas Hobbes: Thomas White's* De Mundo *Examined*, 87-88.

[49] Yet, the terms of Hobbes's work were, in many instances, unavoidably set by or developed in response to (and thereby determined by) philosophical precursors (including scholastic philosophers and Aristotle as such). Cees Leijenhorst notes that, in general, "The moderns were more affected by their Aristotelian education than they were prepared to admit and whatever the force of their attempt to break with petrified Aristotelianism, in many cases they had to formulate their alternatives in terms comprehensible to a larger public that like them was steeped in Aristotelianism," "Sense and Nonsense about Sense: Hobbes and the Aristotelians on Sense Perception and Imagination," in *The Cambridge Companion to Hobbes's Leviathan*, ed. Patricia Springborg (Cambridge: Cambridge University Press, 2007), 83.

[50] For an extraordinarily substantive and historically rich study (and an examination of the intellectual lineage) of Hobbes's poem, see the remarkable third chapter of Raylor's *Philosophy, Rhetoric, and Thomas Hobbes*. Of the date of the poem's composition, Raylor reasons, "Hobbes gives the season as harvest time ('Anni tempus erat quo tellus foenora soluit'); this tallies with Andrews's dating of his tour to August 1627. The year is congruent with the poem's treatment of William, husband of Christian Bruce, as present Earl of Devonshire, from which it is clear that the poem must have been written between the death of the first Earl in March 1626 and that of the second in June 1628.9 Since it took place at harvest time, the only possible years for the tour are 1626 and 1627. External evidence to support the later dating comes from John Aubrey, usually reliable on such matters where Hobbes is concerned, who claims that Hobbes presented the poem to the second Earl as a new year's gift, 'about 1627' (i.e. January 1627[/8]), for which he received a munificence of £5," *Philosophy, Rhetoric, and Thomas Hobbes*, 96-97.

Slightly less than another decade later, Hobbes completed *De mirabilibus pecci* ("On the wonders of the peak"), a travel poem[51] that follows Hobbes and some upper-crust companions[52] as they toured the area around Peak District, exploring natural curiosities and other local sites. Though essentially a travel log put into verse, *De mirabilibus pecci* offers a rare snapshot of Hobbes, his acquaintances and his interests, in a period before he is thought to have become fixated on natural philosophy and science.[53]

Consequently, it deserves to be pointed out, as Timothy Raylor recently has, that among the interests represented in the poem natural philosophy is prominent.[54] Scrutiny of *De mirabilibus pecci* reveals lines that are threaded

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[51] See Jess Edwards's "Thomas Hobbes, Charles Cotton and the 'Wonders' of the Derbyshire Peak," *Studies in Travel Writing* 16, no. 1 (2012): 1-15.

[52] Hobbes set out on the adventure with a coterie of chums. Raylor notes, "From [Richard] Andrews [a physician, and member of the group] we learn that there were around seven in the party. Prime among these was [the Earl of] Devonshire's cousin, also named William Cavendish, then Viscount Mansfield (and subsequently Earl, Marquess, and Duke of Newcastle)….the party included a second physician, Eleazer Hodson (or Hodgson), an otherwise unidentified figure named George Deane, and a blusterer to whom Andrew refers jestingly as 'Roister,' and who Martinich speculates might have been Hobbes," *Rhetoric, Philosophy, and Thomas Hobbes*, 97-98.

[53] It is sometimes taken for granted that there exists a break in Hobbes's biography, a *volte-face* point at which he took up the study of natural philosophy and geometry. Examples of this style of periodization continue to abound in the literature on Hobbes. Quentin Skinner is notable for having developed a somewhat strong version of the classic periodization, arguing that, at the relevant point in time, Hobbes turned his back on the *studia humanitatis* and took up science. Skinner writes that it was "During the 1630s that Hobbes began to direct his intellectual energies along new paths. He began to turn away from – and against – his humanist allegiances, and to take an increasingly professional interest in the study of mathematics and the natural sciences," "Hobbes's life in philosophy," *Visions of Politics: Hobbes and Civil Science* vol. III (Cambridge: Cambridge University Press, 2004), 5. Whereas Skinner, as other interpreters have, posits a break in Hobbes's biography, the analysis unspooled above and below tells a different story: that there is a continuity in Hobbes's biography, particularly with respect to his interest in natural philosophy and the way in which he oriented himself with respect to the world, even if Hobbes's approach to studying nature became more "geometrical" over time and, as Hobbes himself points out, he only began to feel the strong pull of geometry somewhat later in life.

[54] Raylor pulls the poem into a Baconian frame, situating it within the context Hobbes's relationship with William Cavendish, a fervent admirer (and imitator) of Bacon's, *Philosophy, Rhetoric, and Thomas Hobbes*, 106-109. I do not dispute or deny the relevance of the context,

with speculation about the hidden causes responsible for the natural spectacles observed by Hobbes on the trip. The poem shows Hobbes was not content to simply experience the natural curiosities he witnessed. As he did when marveled the third comet of 1618, he endeavored to explain what he saw.[55]

In particular, the lines supply examples of the styles of natural-philosophical theorizing of which Hobbes was, at the time, capable. Remarking upon the origination of rivers and wind,[56] the mechanics of natural fountains,[57] and other natural curiosities,[58] Hobbes, throughout the poem, maintains an evident interest in tracing the physical lineage of the spectacles he saw. For example, his description of a natural fountain is sufficiently vivid as to make it easy to picture the process he specifies.

> But while the footsteps of the floud that leads
> It followes, seeking through the womb of earth
> For Fountains, whence its waters may have birth,
> On subterraneous Caves its flouds do fall,
> With narrow vent, and entrances but small.
> Hither as oft as that the waters flow,
> With swelling tides, and stop the vents below
> With their swift currents, suddenly the air
> Shut up within, does for the place prepare

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nor the influence Bacon and Cavendish exerted or may have exerted on Hobbes. However, Raylor and I part company with respect to what the poem illustrates. Whereas Raylor uses the poem to construct and then defend a version of the classic periodization of Hobbes's intellectual biography – to show how Hobbes shed these early epistemological commitments as he embraced geometry – I use the poem to the contradicting aim of problematizing that periodization, and to, thereby, elucidate an underlying continuity across many of Hobbes's works.

[55] Hobbes was surely among those who, as he writes in the poem, "long'd to know/The cause of things, to seem them joyn to goe," *De Mirabilibus Pecci: BEING THE VVONDERS OF THE PEAK IN* DARBY-SHIRE, Commonly called *The Devil's Arse of Peak* (London: William Crook, 1678), 15.

[56] Ibid, 34-35.

[57] Ibid, 58-59.

[58] Ibid, 39, 46-50.

Defence against the waters, and deny
Their entrance, having no where for to fly.[59]

The content of *De mirabilibus pecci*, when compared to Hobbes's earlier forays into astronomy, helps to establish the notion of a disposition toward straightforward causal analysis and concrete, empirical reasoning. Seeing this does not require adducing further examples, or locating Hobbes's theorizations within a particular intellectual milieu (e.g., neo-Aristotelian) or research program (e.g., Francis Bacon's), as Timothy Raylor does in his new pathbreaking study.[60] It is the mere presence of this kind of explanatory content in *De mirabilibus pecci* that matters, for when combined with the other evidence, it shows both how Hobbes's early philosophical work occasionally bent toward natural philosophy and that he possessed a cast of mind that was inclined to causal, empirical probing. This bent and inclination features even in his translation of Thucydides.

Hobbes's translation of Thucydides (1628)

Hobbes's translation of Thucydides features natural-philosophical content not unlike what is found in his poem on the wonders of the Peak District, albeit in even smaller quantities. Most interesting are marginalia Robin Bunce highlights in an article that aims to measure the extent of Francis Bacon's influence on Hobbes. The occasion for one such marginal note is a

[59] Ibid, 65-66.

[60] It is Raylor who, just recently, pointed out that "In addition to showing Hobbes's neo-Aristotelianism in the 1620s" the poem "reveals [Hobbes's] engagement with Renaissance naturalism and his active interest, during the same period, in the emerging field of Baconian natural history: a finding that furnishes fresh evidence for Bacon's impact on Hobbes's early philosophical interests," *Philosophy, Rhetoric, and Thomas Hobbes*, 95-96.

passage of text that enumerates the particular hardships to which the Athenians were subjected as they "beſieged the *Lacedæmonians*." These included a shortage of both "Corne and Water." To secure the latter, Hobbes translated that the Athenians "turned vp the grauell, and drunke ſuch as they were * like to find there." The asterisk in the quotation refers to a note in the margins, inserted by Hobbes, explaining the process by which sea water, once "ſtrained, and ſo purged of the ſalt," becomes potable with "the paſſage of the water through the ſand."[61]

Bunce traces the explanation Hobbes supplies to Francis Bacon's *Sylva Sylvarum*, published a couple years before Hobbes's translation of Thucydides' *History* appeared in print.[62] The first experiment adumbrated by Bacon in *Sylva Sylvarum* specifies a process by which to create "Water, Freſh and Potable"[63] that maps cleanly onto Hobbes's own description of the process. Hobbes's inclusion of experimental findings, lifted straight out of the first page of a Baconian text, as well as a few other marginalia that Bunce notes "would have been of interest to readers of Bacon's other natural histories,"[64] may not register as peculiar. After all, just a couple years before Hobbes authored a poem that

[61] Thomas Hobbes, *Eight Bookes of the Peloponnesian Warre Written by Thucydides the Sonne of Olorus. Interpreted with Faith and Diligence Immediately Out of the Greeke by Thomas Hobbes Secretary to Ye Late Earle of Deuonshire* (London: Eliot's Court Press, 1629), 226.

[62] Bunce, relying upon the work of Graham Rees, notes that "in the mid-1620s Bacon would have been preparing material" for the volume, "Thomas Hobbes' Relationship with Francis Bacon – an Introduction," *Hobbes Studies* 16 (2003), 51. It was published posthumously, immediately following Bacon's death in 1626.

[63] Francis Bacon, *Sylva Sylvarum* OR A Natural History, IN TEN CENTURIES (London: J.R., 1670), 1.

[64] Bunce, Robin, "Hobbes' Forgotten Natural Histories," *Hobbes Studies* 19 (2006), 83.

featured the same kind of content. However, that scientific and other interests occasionally merge in the translation is a conclusion that disturbs well-established periodizations of Hobbes's work and life.

Hobbes's translation of Thucydides has been considered a distilled expression of his (non-science oriented) "humanism."[65] Indeed, Hobbes's translation of the *History of the Peloponnesian War* is sometimes construed as a bookend, marking the terminus of an early humanist phase, in the period after which he turned to natural philosophy[66] and geometricized science.[67] However, for Hobbes, there existed no boundary between so-called humanist projects, like translating ancient Greek texts, and engaging in causal probing of natural processes.[68] This boundary, between humanism and science, or even humanism

[65] Like *De mirabilibus pecci*, Skinner situates the text, and Hobbes's translation of it, within the context of the *studia hamanitatis* tradition, the paradigm within which Skinner contends Hobbes was working until performing an about-face, taking up the study of geometry and natural philosophy. He writes, "Hobbes's next work reflected an even keener interest of the other basic element of the *studia hamnitatis*, the art of poetry. Around the year 1627 Hobbes composed a Latin poem of some five hundred hexameters, *De Mirabilibus Pecci, Carmen*, which he presented as a gift to the second earl and subsequently published in c. 1636. But by far the most important product of Hobbes's so-called 'humanist period' was his translation of Thucydides's history, which he published as *Eight Bookes of the Peloponnesian Warre* in 1629," "Hobbes's Life in Philosophy," 5. The argument is extended in the essay "Hobbes and the *studia humanitatis*," also in *Vision of Politics* vol. III (Cambridge: Cambridge University Press, 2004), 38-65.

[66] Similarly, Raylor holds the poem up as evidence that "there was no sharp distinction between his literary and his 'scientific' (natural philosophical) interests at this time," *Philosophy, Rhetoric, and Thomas Hobbes*, 126.

[67] See footnote 53.

[68] As Robin Bunce contends in "Hobbes' forgotten Natural Histories," Hobbes "attempted to provide an edition of *Thucydides* that would easily yield its natural historical data to an interested reader," 81. Raylor, rightly, draws a parallel conclusion with respect to *De mirabilibus pecci*, writing, as noted in footnote 66, "The poem shows that there was no sharp distinction between his literary and his 'science' (natural philosophical) interests at the time," *Philosophy, Rhetoric, and Thomas Hobbes*, 126.

and geometricized reason,[69] is an artifact of scholarship, something that has been reified into existence, and then de-naturalized by scholars like Ted Miller.[70] Capable of working on behalf of simultaneous interests at one time, both the translation of ancient texts and nature-directed causal probing were pursuits Hobbes clearly enjoyed. Understanding this, it should be expected that the two would become entangled in his translation of Thucydides' *History*.

Taken together, the foregoing evidence supplies an image of Hobbes that troubles conventional portraits. Some scholars retroject Hobbes's later

[69] Some humanists went as far as to make philosophical reason equivalent to geometric reasoning and the demonstrative proof, while also assaying how the demonstrations rendered by geometers enrich other areas of philosophical inquiry (as in mixed-mathematical disciplines). *Vide* Philip Melanchthon, who in a preface to Johannes Voeglin's *Book on the Elements of Geometry*, effused, "For these [geometric demonstrations] are the true beginnings of natural philosophy. Furthermore, since geometrical demonstrations are most distinct, no one without a knowledge of that art understands what is the power of demonstrations; without it no one will be a master of method. Therefore Plato, too, said that geometry needs to be studied for the reason that the knowledge of it leads to understanding the other arts more easily and correctly. But its most obvious benefit lies in measuring the size of the earth, of the heavenly bodies and of distances. And that is the great success of geometry, that it did not cleave to trifling and lower machines, but took flight to the heavens, and raised human minds, having cast off the earth, back to the heavenly abode, and showed us the wonderful construction and regulation of the world. Furthermore, it led exiled minds to their homeland and to acquaintance with the heavens, and even to the recognition of God. For that very teaching, in which the construction and the ruling of the world are beheld, has great power in strengthening worthy beliefs about God in the hearts of men," *Philip Melanchthon: Orations on Philosophy and Education*, ed. Sachiko Kusukawa and trans. Christine F. Salazar (Cambridge: Cambridge University Press, 1999), 98-99. Jan Prins punctuates the point in the essay "The Influence of Agricola and Melanchthon on Hobbes' Early Philosophy of Science," in *Rodolphus Agricola Phrisius 1444-1485: Proceedings of the International Conference at the University of Groningen 28-30 October 1985*, eds. F. Akkerman and A.J. Vanderjagt (Leiden: Brill, 1988). He writes, "Especially Melanchthon's ideas on 'method' in the strict [i.e., geometrical] sense of the word were very influential. Not only did he have many followers in Germany but, like Agricola, soon his fame was great abroad as well. He strongly influenced English logicians like John Seton, Thomas Wilson, Thomas Blundeville and Robert Sanderson. Although his direct influence diminished after 1600, his ideas remain active in the work of the Systematics, particularly that of Bartholomew Keckermann," 297.

[70] I owe an unrepayable debt to Ted Miller, whose *Mortal Gods* opens a door to this style of critique (also at work in Raylor's *Philosophy, Rhetoric, and Thomas Hobbes*), and inspired this chapter. See especially *Mortal Gods'* second chapter "The Humanist Face of Hobbes's Mathematics, Part I," *Mortal Gods: Science, Politics, and the Humanist Ambitions of Thomas Hobbes* (University Park: Pennsylvania State University Press, 2011), 9-33.

interest in geometry back onto his earlier life,[71] sifting through those biographical data with an eye to the few elements of Hobbes's early biography that prefigure a later geometrical preoccupation.[72] Instead, what a quick study of Hobbes's early biography puts into relief is a pattern and arch of general interest that cannot be reduced to – and is quite separate from – a later interest in geometry. Hobbes maintained an empirical interest; using a variety of explanatory tools, he desired to understand and map the world he observed.

However, the inquiry did not stop at natural-causal processes. He also expressed an interest in understanding the determinants of human action.[73] As

[71] In *Philosophy, Rhetoric, and Thomas Hobbes* Raylor speculates (of Hobbes's limited use of geometry as a lens through which to admire natural surroundings in *De mirabilibus pecci*), "His praise of the 'eternal Geometrician' responsible for the vaulted roof of the Peak Cavern, for instance, is not a point of departure for epistemological or methodological comment, it is mere Christinized Platonism. Nor is his presentation of the view, from the top of Longstone Edge, of Chatsworth on the Derwent as a point on a curved line more than a witty conceit. But the poem shows that the distinction of certain from conjectural knowledge was one with which he was already familiar. And it may have been his tour of the Peak in the company of two methodologically sophisticated investigators of natural signs that first led Hobbes seriously to contemplate the epistemological and philosophical implications of the distinction between *scientia* and *opinio*," 126-127. It is in the final sentence that Raylor takes a step beyond what the evidence allows, and retrojects a distinction at the heart of Hobbes's later scientific writings back onto the Hobbes of the mid 1620s, as he rambled 'round the Peak District.

[72] On the other hand, I attribute the absence of Hobbes's poem from discussions of his science and (even) his biography, to the paucity of "geometric" material within it. For example, Malcolm does not discuss the poem in "A Summary Biography," in *Aspects of Hobbes*, 1-26. So too, Miriam M. Reik gives the poem short shrift in *The Golden Lands of Thomas Hobbes*, writing simply that "Hobbes described an excursion to the Derbyshire Peak near Chatsworth in a poem of more than five hundred Latin hexameters, aptly entitled *De Mirabilibus Pecci Carmen* ["A poem on the wonders of the peak"]. The poem is of little interest here (Hobbes himself thought little of it later) except that it shows Hobbes's continued delight in this classical form, and the way he chose to amuse himself during these obscure years," *The Golden Lands of Thomas Hobbes*, 33-34.

[73] Though attaching no date to the episode, Hobbes's prose autobiography describes an encounter with "certain learned men," which set off a decades-long preoccupation with the nature and physics of human sense. However, the language Hobbes uses – noting the interest strengthened and formed "subsequent" to his youth – indicates the turn to the subject of the physics of sense occurred during a still-early period of intellectual development. He recounts, "Such were his inclinations that in his youth he was drawn to read history and poetry; and he himself composed verse, with a considerable degree of success (as many have judged). On a subsequent occasion, when he was in the company with certain learned men, and discoursing on the nature of the senses, one of them, speaking contemptuously, asked him 'what might a

signaled in his preface to Thucydides, if we fail to "penetrate into" human passions "without much meditation, we are not to expect a man should understand them at the first speaking."[74] And just as he endeavoured to understand natural-causal processes, Hobbes aspired to develop penetrative insights into the operations of human nature.

In the decades that followed, Hobbes turned meditation on the themes of natural philosophy and human passions into a vocation. Accompanying Hobbes's vocational pursuit of these themes were two noteworthy developments. The first is well known, but badly understood: Hobbes's escalating preoccupation with geometry. The second, not unrelated to the first, was Hobbes's embrace of motion as a universal and scientifically unifying explanatory device. The next several sections consider these and other developments, all related to Hobbes's conception and practice of science beginning in or around 1630.

Hobbes and Euclid (1628-1630)

Hobbes recalled having "seized upon" Euclid at some point in the late 1620s.[75] Thereafter, the conventional story goes, he became a zealous promoter

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sense be?' He no sooner heard this, than he responded, wondering how it might be possible that those who had the name of being wise men might so despise the judgement of their own senses, which in ignorance they were unwilling to acknowledge. From that time he devoted himself to determining the nature of the senses, disputing whether corporeal body and all its parts were inert, or in a state of continuous movement, and (in consequence) totally sensate…," "The Prose Life," in *The Elements of Law Natural and Politic, Part I Human Nature, Part II De Corpore Politio, with Three Lives*, ed. J.C.A. Gaskin (Oxford: Oxford University Press, 1999), 252-253.

[74] Thomas Hobbes, "Of the Life and History of Thucydides," xxix.

[75] In the relevant passage, Hobbes uses the Latin verb "capere," "to seize," *Thomæ Hobbes Malmesburiensis Opera Philosophica* vol. I, lxxxvii.

of geometry and geometricized science. However, biographies of Hobbes are short on detail about the Euclid episode. Oddly, Hobbes makes no mention of the encounter in his verse autobiography. It is in the prose autobiography that he explains it was during his second European tour that "he began to study Euclid's *Elements*. There he read with utmost diligence, delighting in his methodology, not only in relation to the theorems, but also in terms of his skilful reasoning."[76] The most widely cited account of the episode is provided in the biographer John Aubrey's *Brief Lives*. Aubrey adds,

> He was…40 years old before he looked on geometry; which happened accidentally. Being in a gentleman's library, Euclid's *Elements* lay open, and 'twas the 47th Element at Book I. He read the proposition. "By G--," said he, "this is impossible!" So he reads the demonstration of it, which referred him back to such a proposition; which proposition he read. *Et sic deinceps*, that at last he was demonstratively convinced of that truth. That made him in love with geometry.[77]

Some scholars make too much of the encounter. They locate within it the germ of a philosophical project and outlook that would later possess Hobbes.[78] Yet Hobbes's own autobiographical reminiscence, Aubrey's

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[76] Thomas Hobbes, "The Prose Life," 247.

[77] Aubrey, *Brief Lives*, 332.

[78] A recent example, giving voice to the general impulse, is provided by Otfried Höffe, who writes, "There is a certain break in the evolution of Hobbes's thought, namely that marked by his 'conversion' from a rhetorical humanistic culture to a rigorously scientific form of argument inspired by Euclid's *Elements*, even if this approach is not itself entirely devoid of rhetorical aspects. But once he had fundamentally committed himself to this method, around the age of forty, Hobbes's philosophy remained remarkably constant throughout his significant philosophical texts," *Thomas Hobbes*, trans. Nicholas Walker (Albany: SUNY Press, 2015), 14. Similar patterns of thinking abound in the literature. Some, like Perez Zagorin, offer Hobbes's conversion as evidence of his authorship of the "Short Tract," noting, "Apart from its contents, the *Short Tract* presents other features that associate it with Hobbes. Its geometric form, consisting of the statement of principles resembling axioms and of deductive conclusions that include demonstrations with the help of diagrams, was unusual in a philosophic treatise at the time. Only Hobbes's previous exposure to Euclid's *Elements* at this early period in his philosophic career and the powerful intellectual effect it had upon him can explain this aspect of the work," "Hobbes's Early Philosophical Development," *Journal of the History of Ideas* 54,

biographical entry too, are too vague to support the conclusion. It is obvious that the force and clarity of the demonstrative proof resonated with Hobbes. However, the descriptions of the encounter offer no further details about whether it was this encounter, specifically, that pushed Hobbes to contemplate geometry as a model for the study of nature and society.[79]

Other scholars approach these biographical data with more caution. Though Hobbes may have "seized upon" Euclid sometime in the later 1620s, he would have been and was familiar with geometry before then.[80] As others have pointed out[81] and I elucidate above, he was even inclined to occasionally think about nature geometrically. Similarly, in *Mortal Gods*, Miller writes about Aubrey's description of the encounter in skeptical tones, remarking that within

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no. 3 (1993), 511. Raylor persuasively disproves the conclusion by showing that, in form and methodology, the tract is highly reminiscent of a tract by Benedetto Castelli on fluid dynamics, which was translated by Robert Payne, who, Raylor (and others) contend, penned the tract, "Hobbes, Payne, and 'A Short Tract on First Principles'," *The Historical Journal* 44, no. 1 (2001), 44.

[79] Johann Sommerville agrees, noting that though "The demonstrative certainty of geometrical theorems greatly impressed [Hobbes]…it is unclear quite how far his mathematical and scientific ideas had developed by 1630," *Thomas Hobbes: Political Ideas in Historical Context* (New York: St. Martin's Press, 1992), 12.

[80] As E.G. Jacoby points out in the review essay "Thomas Hobbes in Europe," "The geometry section of the [Hardwick] reading list includes among its 123 titles 10 different editions of Euclid's *Elements*, one of them being the famous translation by John Dee (London, 1570). Pacci concludes that 'this also signifies that the English thinker had discovered Euclid and geometry *before* his travel with Clifton' if his first reading does not really belong to his student years at Oxford before 1607," *Journal of European Studies* 4 (1974), 60.

[81] Martinich notes that Hobbes, in *De mirabilibus pecci*, "compared Chatsworth to a point, and the Derwent to a line; and he referred to God as the eternal geometer," *Hobbes: A Biography* (Cambridge: Cambridge University Press, 1999), 84-85. For Raylor's interpretation of the same lines, see footnote 71 [Longstone Edge]. In addition, Malcolm, as I do, draws attention to Hobbes's early forays into astronomy, indicating, "It is unlikely, given his known earlier interest in astronomy, that this was Hobbes's first encounter with geometry; nor need we assume that he had never encountered Euclid's work before." Rather, Malcolm continues, the reminiscence "suggests that Hobbes's mind was already preoccupied with some philosophical problems to which Euclidean method seemed to supply the solution. Of the nature of those problems, however, there is no direct evidence from this period itself," *Aspects of Hobbes*, 9.

Aubrey's account are allusions to Pythagoras's own discovery of the theorem. That is, it is possible that Aubrey's account of the event is more literary and figurative than historical. Miller writes,

> There are good reasons to doubt this story of a sudden conversion to the church of mathematical worship. Book I, proposition 47, of Euclid is the Pythagorean Theorem. Upon its discovery, Pythagoras is said to have sacrificed one hundred oxen to the gods. Aubrey's account, with its reference to divinity and Hobbes's joy upon seeing the truth of something he first thought impossible, may be a creative seventeenth-century inversion allowing us to imagine Hobbes experiencing the same revelation centuries later. This story, which has Hobbes encountering a book of geometry in the same way enthusiasts encounter an open Bible, bespeaks as much humanist continuity as it does sudden transformation.[82]

The details of Hobbes's encounter with Euclid are fuzzy. It is not clear what in Euclid's *Elements* dazzled Hobbes, beyond the certainty and persuasiveness of a demonstrative proof. Although familiar to him, the idea of geometric demonstration, as an epistemological tool, appreciated in value and strongly resonated with him in that moment.[83] In the moments and years that immediately followed, Hobbes did turn to subjects of study that were geometry-inflected, like optics. However, it would be wrong to conclude that the Euclid episode *per se* propelled Hobbes in these directions. His interest in these subjects, an extension of and continuous with earlier interests, emerged separate from, but certainly not at odds with, a burgeoning interest in geometry as such.

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[82] Miller, *Mortal Gods*, 10.

[83] Martinich rightly notes that "there is a difference between learning something and being struck by its power and importance," *Hobbes: A Biography*, 85.

b. 1630-1636

Hobbes and the Newcastle Cavendishes

It was around the time of the Euclidean encounter that Hobbes fell back in with elements of the Cavendish family. He had long served the aristocratic Cavendishes. Upon completing his studies at Oxford, he was hired as a tutor for and companion to William Cavendish, son of the First Earl of Devonshire. He continued to serve the Devonshire Cavendishes until William, then the Second Earl of Devonshire, died in 1628. After leaving the service of the family, he soon returned to the Cavendish fold in 1630. It was during these gap years, between 1628 and 1630, that Hobbes began to study Euclid in earnest. The gap in employment also freed him to accompany another aristocrat, the young Gervase Clifton, on a Continental tour (Hobbes's second).

Not long after returning to England from the Continent, in or around 1630, Hobbes became increasingly enmeshed with the Newcastle side of the Cavendishes.[84] At the time, the Earl of Newcastle, also a William Cavendish, was not an unfamiliar face. Newcastle, but not his brother Charles, was a member of the adventuring party that toured the wonders of the Peak District with Hobbes and some others (including William, the Second Earl of Devonshire).

[84] Malcolm records that "By late 1630, when Hobbes came back from his continental tour with Sir Gervase Clifton's son, Mansfield [Newcastle] and his brother [Charles Cavendish] seem to have formed the centre of gravity of Hobbes's intellectual world in England: during that winter he spent some time at Mansfield's house in Nottinghamshire, Welbeck Abbey, discussing his new philosophical theories about sense perception with Mansfield and Sir Charles Cavendish," *Reason of State, Propaganda, and the Thirty Years' War*, 15.

Not unlike the young Devonshire, who was an enthusiastic devotee of Francis Bacon and surely present as Hobbes pursued Baconian projects (like *De mirabilibus pecci*), the Cavendish brothers were similarly inclined to science, having been early to the shores of "new philosophy."[85] At their Welbeck estate, Newcastle and Charles became the center of an England-located network of practitioners whose work focused on newly popular subjects, such as optics and mechanics. Hobbes soon represented an important node in the network, and it was in the presence of the Cavendish brothers that he honed a long-brewing interest in the study of nature and man.

Motion, optics, and the Welbeck group

Around the time of the encounter with Euclid, Hobbes stumbled into another insight, one that Hobbes himself connected to the Cavendish brothers' interest in motion. The insight is reducible to a simple notion: motion can be applied as a powerful explanatory device, used to make sense of different dimensions of human experience, including light, sounds, and ideas. A decade later, Hobbes would recall having rendered a "doctrine of the nature and production of light, sound, and all phantasms or ideas…explained by me in the presence of those most excellent brothers William Earl of Newcastle and Sir

[85] "By the early 1630s," writes Raylor, "he [Newcastle] and his scholarly brother, Charles, were at the forefront of the new philosophy in England, promoting theoretical research and practical experiment on optics, mathematics, and mechanics. They established correspondence with such European scholars as Claude Mydorge and Marin Mersenne the Minim friar, who acted as a conduit for Continental ideas," "Newcastle's Ghosts: Robert Payne, Ben Jonson, and the 'Cavendish circle'," in *Literary Circles and Cultural Communities in Renaissance England*, eds. Claude J. Summers and Ted-Larry Pebworth (Columbia: University of Missouri Press, 2000), 94.

Charles Cavendish…in the year 1630."[86] Much of the work that followed branched from this basic insight. However, as Hobbes's early forays into optics show, it took him time to convert the insight into a workable scientific precept.

By 1634 Hobbes had become knitted into the community at Welbeck. In the first month of the year Hobbes's remarks signal an involvement in Welbeck-related projects. He apologized to Newcastle for having taken so long with "business I haue so long owed to your Lo^{p}."[87] The first specific reference to Hobbes's Welbeck business comes in a letter penned by Walter Warner, who, like Hobbes, had been drawn into Newcastle's circle.

The occasion for the reference was an exchange between Warner and Robert Payne, a Welbeck member and chaplain to Newcastle,[88] about the nature and causes of refraction.[89] In the letter, Warner obliquely refers to a Hobbes-produced treatment on refraction, which we now know to have been written out by Hobbes and ascribed the title "M^{r} Hobbes analogy" by Warner. The treatment, as expected, incorporated the idea of motion. However, the approach featured in Hobbes's "analogy" conformed to prevailing orthodoxy

[86] Thomas Hobbes, "Letter 34: Hobbes to Marin Mersenne, from Paris [20/] 30 March 1641," in *The Correspondence of Thomas Hobbes* vol. I, ed. and trans. Noel Malcolm (Oxford: Clarendon Press, 1997), 108.

[87] Thomas Hobbes, "Letter 10: Hobbes to William Cavendish, Earl of Newcastle, from London 26 January [/5 February] 1634]," in *The Correspondence of Thomas Hobbes* vol. I, ed. Noel Malcolm (Oxford: Clarendon Press, 1997), 19-20.

[88] Malcolm, *Aspects of Hobbes*, 81.

[89] Franco Guidice, "Those Most Curious of Science: Hobbes's Optics," in *The Oxford Handbook of Hobbes*, eds. A.P. Martinich and Kinch Hoekstra (Oxford: Oxford University Press, 2016), 150-151.

and fell in with "textbook"[90] kinematic treatments[91] of optics. Such a treatment works, Franco Giudice explains, by "resolv[ing]" the "refracted motion of light…into perpendicular and parallel components."[92] Amenable to the approach, Warner assessed that Hobbes's treatment was "very conducible to the theory and investigation of the cause of refraction."[93]

However, soon after, Hobbes believed Warner's optimism was misplaced. Hobbes would express scepticism about "old" textbook and other treatments, which tended to bend toward excessive geometrical abstractness.[94] What old style treatments elided, he believed, were the dynamic, ramifying

[90] The adjective is borrowed from Malcolm. He writes, "the kinematic approach adopted in the 'analogy'…was merely the standard approach taken by all the optical textbooks: refraction had been treated on such a basis, distinguishing vertical and lateral components, as writers from Alhazen to Kepler," *Aspects of Hobbes*, 120, see also 121.

[91] Alan Shapiro explains that "The essence of the kinematic approach was its attempt to give a complete description of the motion – rectilinear, reflected, and refracted – of a wave or ray front. This attempt to describe mathematically the propagation of a motion in a fluid medium reflects a characteristic concern of mid-seventeenth-century science, the high period of the mechanical philosophy: to describe natural phenomena in terms of matter and motion," "Kinematic Optics: A Study of the Wave Theory of Light in the Seventeenth Century," *Archive for the History of Exact Sciences* 11, no. 2/3 (1973), 137.

[92] Guidice, "The Most Curious of Science," 151.

[93] Ibid, 151 n. 12.

[94] By 1636 Hobbes could no longer countenance the strictly geometrical approach at work in his own analogy. The change in methodological posture is recorded in a letter from Charles Cavendish to Walter Warner. In the letter, Cavendish recounts that Hobbes had undertaken an "experiment of the place of the image of a thing contrarie to the olde tenet; a dandle being put into a glasse of a cylindricall forme, the image hangs perpendicularie over the candle itself […] and not at the concourse of the perpendicular from the object with the visual line," as quoted in José Médina's "Hobbes's Geometrical Optics," *Hobbes Studies* 29 (2016), 62. Médina explains that the "alternative explanation" proffered by Hobbes "about the reflection of beams in a cylindrical mirror shows that the purely geometrical approach (the old tenet) is not satisfying because it does not take into account what is a specific aspect of Hobbes's account of light: a dynamic conception of the action of light…Here again, pure geometry is deficient because a mathematical point does not give the cause of the radiation and the production of heat (and fire) at the focus of the mathematical ray of light," ibid. However, Médina rejects Malcolm's conclusion that Hobbes had turned his back on "textbook" kinematic treatments altogether, ibid, 62.

effects of varieties of matter in motion.[95] In the years that followed, it was this appreciation rather than an overwhelming preoccupation with geometry that was a hallmark of Hobbes's theorizations.

Motion as the cause of everything existing

In late 1634, Hobbes found himself back on the Continent, this time accompanying the son of his previous charge and friend, the Second Earl of Devonshire. In his autobiographies, Hobbes marks out the third Continental tour as a period during which important elements of his philosophical identity rapidly intensified and then crystalized.[96] Not unrelated, it was during the trip that Hobbes joined the Continental-based philosophical movement, to which the small England-located Welbeck group was an outpost.

Through a connection supplied by Newcastle and Charles Cavendish, Hobbes was introduced to the mathematician Claude Mydorge, and through him the Minim friar Marin Mersenne.[97] Mersenne was a human switchboard. Based in Paris, Mersenne was a central node connecting networks of people, all interested in different substantive areas and applications of science.[98] Referring to himself in the third person, Hobbes recalls,

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[95] Believing that "the variety of thinges is but a variety of locall motion in ye spirits or unuisible partes of bodies," Hobbes pointed out in a July 1636 letter to Newcastle, "the old way by beames and reflection, and refraction leaues a man destitute of any thing to say to it…," "Letter 19: Hobbes to William Cavendish, Earl of Newcastle, from Paris 29 July/8 August 1636," in *The Correspondence of Thomas Hobbes* vol. I, ed. Noel Malcolm (Oxford: Clarendon Press, 1997), 33-34.

[96] Namely, it was during the relevant period, as the analysis that follows shows, that Hobbes became a zealous promoter of the idea of motion as the cause of everything existing.

[97] Malcolm, *Aspects of Hobbes*, 11-12.

[98] Peter Dear writes that "Soon after his move to the Minim convent off the Place Royale in 1619, his literary career got under way with works of a religious and apologetic nature; he turned shortly thereafter to the publication of treatises that dealt primarily with mathematical sciences

> When he was staying in Paris, he began to investigate the principles of natural science. When he became aware of the variety of movement contained in the natural world, he first inquired as to the nature of these motions, to determine the ways in which they might effect the senses, the intellect, the imagination, together with the other natural properties. He communicated his findings on a daily basis to the Reverend Father Marin Mersenne, of the Order of the Minim Brothers, a scholar who was venerated as an outstanding exponent of all branches of philosophy.[99]

Hobbes found inspiration in the conversations he had during the trip, including one with Galileo Galilei.[100] He became fully aware of the "variety of movement in the natural world." Specifically, the 1630 intuitions about the relation between motion and "all phantasms" of the mind had grown into an ideology centered on the ontological principle of motion.

The fact and weight of this awareness is visible in a letter sent by Hobbes to Newcastle in the summer of 1636. In the letter, Hobbes responds to a query, from Newcastle, about the optical work of "M^{r} Warner and M^{r} Mydorge." While acknowledging both to be "able men," Hobbes's criticism of their work is devastating. Hobbes criticizes that, while both men referred to their "writings"

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of the physical world. The sciences of music, mechanics, and optics engaged his attention above all others, but the religious significance of his work was never submerged, always remaining a central motivation. His correspondence expanded through the 1620s, and by the following decade his role as a philosophical intelligencer had become firmly established." In the preceding paragraph Dear points out that Mersenne freely "promoted the work of…iconoclasts" – like "Descartes, Galileo, Bacon, and others" – and, "among other things, he arranged for the publication of some of Descartes's writings and produced his own versions of a number of Galileo's," *Mersenne and the Learning of the Schools* (Ithaca: Cornell University Press, 1988), 4. Likewise, Daniel Garber notes that Mersenne was "at the center of the intellectual network that put thinkers from all over Europe sympathetic to the new science in touch with one another," "On the Frontlines of the Scientific Revolution: How Mersenne Learned to Love Galileo," *Perspectives on Science* 12, no. 2 (2004), 136.

[99] Hobbes, "The Prose Life," 247.

[100] Details related to the meeting are not well known. For additional information see Frithiof Brandt's *Thomas Hobbes' Mechanical Conception of Nature* (Copenhagen: Levin & Munksgaard, 1927), 392-393, and Jacoby's "Thomas Hobbes in Europe," 62-63.

as "demonstrations," they were wrong to do so, having failed to ground their work using correct principles. He writes,

> the grounds and suppositions they vse, so many of them as concerne light, are vncertayne and many of them not true. Mr Warner has sent a tract to Sr Charles concerning the place of the Image in conuexe and concaue glasses…[which relies upon] the old way by beames and reflection, and refraction leaues a man destitute of any thing to say to it…[101]

Hobbes took aim at the "old" geometrical "way"[102] of analysis that featured in Warner's "tract." This pattern of analysis, Hobbes inveighs, "leaues a man destitute of any thing to say to it."[103]

Hobbes himself offers only a sketchy explanation of similar optical experiments,[104] admitting his "reason is not cleare enough to make one see how nature workes."[105] However, the speculative account Hobbes offers cannot be said to develop from "grounds and suppositions" that are "vncertayne and…not true." Instead, Hobbes supplied a thicker, qualitative explanation in which a particular variety or quality of "motion" does the explanatory work.[106] And herein is found the nub of Hobbes's critique.

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[101] Hobbes, "Letter 19: Hobbes to William Cavendish, Earl of Newcastle, from Paris 29 July/8 August 1636," 33-34.

[102] Antoni Malet argues that, "Regardless of what they say, Hobbes suggests, Warner's results are useless because they are purely geometrical and do not convey or support causal physical explanations," "The Power of Images: Mathematics and Metaphysics in Hobbes's Optics," *Studies in the History and Philosophy of Science* 32, no. 2 (2001), 317.

[103] Hobbes, "Letter 19: Hobbes to William Cavendish, Earl of Newcastle, from Paris 29 July/8 August 1636," 34.

[104] For a description of the experiments, one related to the appearance of a human image in a blood-filled retort, and other of trees on fire on a broken remnant of a retort, see Malcolm's *The Correspondence of Thomas Hobbes*, 35, footnotes 4-5.

[105] Ibid, 34.

[106] Ibid.

Hobbes assessed that Warner's treatment, set in the "old way," failed because it relied upon an unreasonable degree of geometrical reduction.[107] In other words, it offered no empirical, explanatory grip on the "nature" of the image undergoing examination. The insights delivered by Warner, as Hobbes said, were premised on principles that were untrue. Instead, Hobbes required that demonstrations proceed from true grounds. Consequently, he stipulated that a "true" demonstration – that is, a demonstration worthy of the name – must make use of correct physical, substantive principles, and, as Hobbes failed to do, reliably specify empirical processes of causation.

Science, sense experience, and experimentation

Yet, the sureness Hobbes felt about motion-based ontologies did not prevent him from feeling fundamentally unsure about natural philosophy featuring motion as causes. Hobbes believed he had found the correct empirical starting point for any demonstration aiming to explicate the operations of nature. At the same time, he embraced the idea that human knowledge extends only as far as actual human sense allows.[108] In other words, while sure he had hit upon the "true" grounds for natural philosophy, Hobbes believed that we are doomed to speculate, maybe forever, as to how some dimensions of nature come together. As Hobbes explains to Newcastle,

> In thinges that are not demonstrable, of w^{ch} kind is y^{e} greatest part of Naturall Philosophy, as dependinge vpon the motion of bodies so subtile

[107] See footnotes 94 and 102.

[108] Hobbes, here, tacked with the scholastic "maxim" *nihil in intellectu quod non prius in sensu*, "There is nothing in the mind which was not first in the senses," Peter Dear, "The Meanings of Experience," in *The Cambridge History of Science: Early Modern Science* volume III, ed. Katharine Park and Lorraine Datson (Cambridge: Cambridge University Press, 2006), 107.

> as they are inuisible, such as are ayre and spirits, the most can be atteyned vnto is to haue such opinions, as no certayne experience can confute, and from w^{ch} can be deduced by lawfull argumentation, no absurdity, and such are your Lo^{ps} opinions in your letter…namely, That the variety of thinges is but variety of locall motion in ye spirits or inuisible partes of bodies.[109]

Embedded in this view of natural philosophy is a notion of science in which sense experience is epistemically privileged. Indeed, Hobbes made sense experience a precondition for scientific demonstration. Natural philosophers, Hobbes observed, sit at a remove from the processes they theorize. By highlighting how these processes "depen[d] vpon the motion of bodies so subtile" they may as well be "inuisible," Hobbes signals it is only possible to demonstrate and, in turn, know what is visible. Beyond this boundary – beyond literal lines of sight, sound, and so on – it is only possible to have opinions. And although weighing one's opinions against "certayne experience" makes it possible to be confident in them, speculation about "y^{e} greatest part of Naturall Philosophy," Hobbes observes, will never be as certain as the "certayne experience" against which one's speculations are tested.

In practice, Hobbes relied upon particular experiences, often in the form of experimental results,[110] to test the viability of the opinions put in front of him. Hobbes principally used experiments in two ways. First, as with the image he sketchily explicates in the letter to Newcastle, experimentally generated

[109] Hobbes, "Letter 19: Hobbes to William Cavendish, Earl of Newcastle, from Paris 29 July/8 August 1636," 33.

[110] James Everest adds that though Hobbes "seems to have been comfortable using instruments and conducting experiments" he "apparently had no desire to share details of this activity beyond trusted members of a close intellectual network," "Practical Optics and Polemical Purposes in Seventeenth-Century England" (Ph.D. dissertation, University College London, 2017), 144.

results were treated as empirical effects demanding explanation. For example, in the letter, Hobbes describes an "experiment of y^{e} mans image in y^{e} glasse of bloud."[111]

Experiments were also wielded as a tool by which to produce experiences that could knock down and disprove the claims of others. Hobbes worked in this mode with respect to vitiating the work of Warner and undercutting the old-fashioned explanatory toolkit upon which Warner relied.[112] In a May 1636 letter, Charles Cavendish informed Warner of "an experiment" conducted by Hobbes "of the place of the image of a thing contrarie to olde tenet." The experiment proceeded as follows: "a candle being put into a glasse of a cylindricall forme, the image hangs perpendicularlie over the candle itself…and not at the concourse of the perpendicular from the object with the visual line."[113] The point, writes Giudice, was to show that "Such phenomena…suggested that geometry was inadequate to achieve the right kind of explanation in optics."[114] For later seventeenth century experimentalists, Peter Dear writes, "The singular experience," strictly speaking, "could not be

[111] Hobbes, "Letter 19: Hobbes to William Cavendish, Earl of Newcastle, from Paris 29 July/8 August 1636," 34.

[112] The observation, in dimensions, accords with Everest's findings regarding Hobbes's polemical use of experimental data against Warner. Everest makes the more restricted, modest claim that "the experiments that Hobbes refers to do not exactly invalidate Warner's ideas, but they certainty reveal their limitations," "Practical Optics and Polemical Purposes in Seventeenth-Century England," 100. However, I disagree with the conclusion. Just as Hobbes would later use experimental data to put a wrench into the work of René Descartes, so too he did so for the purpose of razing the work of Walter Warner.

[113] As quoted in Franco Guidice's "The Most Curious of Science: Hobbes's Optics," 153.

[114] Ibid.

evident, but it could provide *evidence*."[115] In practice, Hobbes contravened the dictum. The singular experience was, on occasion, treated as both evident and evidence.

In sum, Hobbes attached significant weight to sense experiences. This weighting is apparent both in terms of how he conceptualized what is and is not science and how he tested different forms of knowledge. However, in so doing, his aim, throughout, was to render certain empirical demonstrations. And, as Hobbes pointed out in his letter to Newcastle, certain empirical explanations, not opinions, are borne of sense experience. It will be important to hold this point in mind as we move to examine Hobbes's first major work, *The Elements of Law*.

Part II: Science in The Elements of Law *(1640)*

a. Sense experience and science in *The Elements of Law*

The beginnings of Hobbesian science

The prominent role sense experience played in Hobbes's conception of science is, at first glance, unremarkable. An emphasis on sense put him well within the range of the intellectual mainstream, scholastic antecedents, and in particular, other geometry-inclined scientists of his day.[116] For example,

[115] For such experimentalists, Dear explains, "The new scientific experience of the seventeenth century established its legitimacy by rendering credible its historical reports of events, often citing witness. The singular experience could not be *evident*, but it could provide *evidence*," *Discipline and Experience*, 25.

[116] Peter Dear notes that "The Aristotelian kind of scientific experience [as discussed in the pages below] held sway even among figures later regarded as opponents of Aristotle. In his famous account of fall along inclined planes…Galileo Galilei…tried to establish the authenticity of the experience that falling bodies in fact behave as he claimed they do by deriving it from the memory of many individual instances," "The Meaning of Experiences," 122. Furthermore, writing about Jesuit mathematicians in *Discipline and Experience*, Dear clarifies that "From a practical standpoint, empirical principles concerning the natural world could be made evident

through the character Salviati, Galileo, in the *Dialogue Concerning the Two Chief World Systems* (1632), writes approvingly that Aristotle, whose ideas about science continued to saturate the sixteenth and seventeenth century imaginaries,

> first tried to ascertain the conclusion as much as possible by means of the senses, experiences, and observations, and then he searched for ways of demonstrating it. In fact, this is more or less what one does in the demonstrative sciences…whatever the a priori theorizing preceded the a posteriori senses or vice versa, the important point is that Aristotle himself places sensible experience before all theorizing….[117]

Galileo later used the point as a wedge to put distance between Aristotle's practice of demonstrative science and the "most submissive and slavish servants of Aristotle," the "Peripatetics," who would unthinkingly parrot Aristotelianisms, "deny[ing] all experience and all observation in the world and even refus[ing] to use their senses in order not to have to make the confession."[118]

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in a similar way, just as (for Aristotle) geometrical axioms themselves ultimately derived from the senses: they would be evident if everyone agreed on their truth and judged argument to be unnecessary in the establishment of that agreement. Experiential statements, therefore, could not play a role in scientific discourse unless they were universal; if they were not, they could never be evident. Formal universality did not in itself establish an experience as 'evident,' of course; the experience had to express, and derive from, the perennial lessons of the senses," 43. The mathematician Isaac Barrow would later reject the Aristotelian view of the role of sense in the production of universal experiences (especially in the form of axioms). Paolo Mancosu writes that, in the fifth lecture in his *Lectiones*, Barrow pointed out that "The evidence and truth of mathematical axioms…were already questioned in Greek times. One of the main skeptical objections usually raised in this connection is that universal axioms are obtained by induction and therefore are fallible. This opens up the problem of certainty and the role that sense and intellect play in science…Barrow rejected the theory that all principles of mathematics depend only upon induction from the senses." However, Mancosu adds, Barrow "is ready to add that sensation plays a role in showing the possibility of a mathematical hypothesis," *Philosophy of Mathematics and Mathematical Practice in the Seventeenth Century*, 20.

[117] Galilei Galileo, *Galileo on the World Systems: A New Abridged Translation and Guide*, ed. and tr. Maurice A. Finnocchiaro (Berkeley: University of California Press, 1997), 96-97.

[118] Ibid, 224.

The Elements of Law (1640), Hobbes's first significant treatment on human nature and politics, delineates a multi-step process by which to generate scientific knowledge. Not unlike the process Salviati outlines in Galileo's *Dialogue*, Hobbes sees the process as beginning with "sense." He explains, "Knowledge, therefore, which we call SCIENCE, I define to be evidence of truth, from some beginning or principle of sense."[119] Sense perception, the root of all human experience, furnishes the raw material out of which the edifice of scientific knowledge is made. The requirement that science, as Hobbes put it in his letter to Newcastle, be "demonstrable," necessitates a relation between scientific knowledge and the senses.

However, it would be wrong to draw broad conclusions on the basis of this initial framing, which groups simple sense experience, or "knowledge original,"[120] and science together. The passages that follow lay out a dyadic typology of knowledge, with types of knowledge formed directly out of the bulk of sense experience on one side and science on the other. Scientific knowledge is set apart from knowledge comprised of un-adapted sense experience. Sense experience – a mass of material thrown off by sense perception – may supply initial building blocks out of which vast systems of scientific knowledge are made; however, Hobbes indicates it would be wrong to run the two, experience and science, together.[121]

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[119] Hobbes, *The Elements of Law*, 19 [6.4].

[120] Ibid, 18-19 [6.1].

[121] Ibid, 20 [6.4]. Also see 4.10 and 4.11 in Hobbes's *The Elements of Law*, 12-13.

Scientific knowledge, Hobbes attests, is universal and derived through the construction of categorical propositions, which are then laboriously[122] joined together into syllogisms, producing necessary, universal conclusions.[123] (For example, propositions like "all whales are mammals" and "all mammals are warm-blooded" combine to produce the necessary, universal, and empirically true insight that "all whales are warm-blooded.")[124] It is true that experiences of the world furnish the conceptions (of a whale), which, when named (whale), become the stuff out of which propositions, and then syllogisms, are made. However, the knowledge that results from this kind of syllogizing is unlike bare experiential knowledge, furnished by our senses.

Experience, Hobbes famously exclaimed, "concludeth nothing universally."[125] Simple experience, he believed, represents a distinct form of knowledge. It is "evidence of fact,"[126] not to be confused with syllogistically derived truths. Experience is a bulk of unrefined material lodged in our memory that we casually, and often unconsciously, mine for conjectural insights about the world we inhabit. "Experience," he describes, "is nothing else but" the simple "remembrance of what antecedents [e.g., ash-colored clouds]

[122] Hobbes contended that as "to demonstration and teaching of the truth, there are required long deductions, and great attention, which is unpleasant to the hearer," ibid, 140 [27.14].

[123] Ibid, 20 [6.4].

[124] For a discussion of the historical position of Hobbes's adumbrations on logic, see A.P. Martinich's *Hobbes* (Routledge: New York, 2005), 137-151.

[125] Hobbes, *The Elements of Law*, 12 [4.10].

[126] Ibid, 20 [6.4].

have been followed with what consequents [e.g., rain]."[127] The insights thrown off by experience,[128] how we sense and experience the progression of the world and life, are contingent[129] and diametrical to the necessary, universal truths laid down by science.

Hobbes's statements produce mixed impressions of the relation between sense experience and science. The content of one's experiences is, through comparison, made to appear as an untrustworthy guide, unsuitable to supply the kind of necessary, universal conclusions Hobbes sought. As such, experience, it can be inferred, is involved in science, but only at the margins. However, the inference, and the added inference that Hobbes "denigrate[d]" experience,[130] flattens and mispresents Hobbes's understanding of experience and its place in the production of scientific knowledge.

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[127] Ibid, 11 [4.6].

[128] A question overlooked by the secondary literature is whether "experience," as signified and conceptualized in the fourth chapter of *The Elements of Law*, is *pre*-linguistic. If so, it is possible that a key distinction between accumulated experience and science is a linguistic one; that, in part, what makes conjectural speculation uncertain is that it is carried out un-systematically, i.e., without the artifice and systematizing structure of language. Language permits the sifting and sorting of experience, supplying an apparatus that can be used to put one's experiences in order and discriminate between them. Hobbes comes close to filling out the inference in his commentary on Thomas White's *De mundo*, writing, "So the beasts also set one present event against another; but it is impossible for them, lacking the aid of artifice, to compare past with present events owing to the dimness and wavering of the concept," *Thomas Hobbes: Thomas White's* De Mundo *Examined*, 372. In other words, Hobbes elaborates in the sentences that follow, beasts are resigned to think without the aid of language, ibid, 372-373. For a treatment that gestures toward the possibility, see Arash Abizadeh's "The Absence of Reference in Hobbes' Philosophy of Language," *Philosophers' Imprint* 15, no. 22 (2015), 2.

[129] Hobbes framed the point using the language of probability, writing "As in conjectural things concerning past and future, it is prudence to conclude from experience, what is likely to come to pass, or to have passed already; [and] so is it an error to conclude from it, that is so or so called," *The Elements of Law*, 13 [4.11].

[130] Kavka, *Hobbesian Moral and Political Theory*, 7. See footnote 35 for the full quotation.

The line Hobbes drew between experience and science is meant to disaggregate the two in terms of method and form.[131] That is, Hobbes used the distinction between science and experience (a bulk of cognitively retained sense data) to draw attention to two distinct operations of knowledge production, each producing different forms of knowledge. Hobbes did not use the distinction to "denigrate" or demean experience as such. He did not consider the substance of experience, in all instances, to be unreliable.[132] Just the opposite.

As Hobbes telegraphs when he notes that "SCIENCE" originates from "some beginning or principle of sense," the fundamental principles that anchor the deductions of science are registered by sense. It is sensate experience, not logic, that delivers the sure principles from which syllogistic science branches out.[133] The point is underscored in the final, summarizing paragraph of *The*

[131] The observation jibes with Tom Sorell's. Sorell notes, "Instead of taking the place of experience, reason is supposed to transform, partly by introducing new ways of organizing," *Hobbes* (London: Routledge & Kegan Paul, 1986), 31. However, there may be issues with the larger account within which the observation is nested. Sorell's account of experience, drawn principally from *The Elements of Law*, is framed by a discussion of appetite-driven means-ends reasoning. Although Hobbes, himself, explores the means-ends theme in the paragraphs building to the discussion of experience found in chapter 4 of *The Elements*, that discussion is not used as a device to explore the structure and succession of human appetites, and thus, it is unclear to what extent Hobbes viewed the discussion of experience, beginning in 4.6, as continuous with 4.1-4.5. Rather, Hobbes uses the discussion in 4.6, and in the paragraphs that follows, to stake out the epistemological limits of experience, and for the purpose of setting up a distinction, drawn latter, between experience and science. This is not to suggest that Sorell's analysis is necessarily misdrawn. Instead, the question posed here about the relationship between the different passages in the fourth chapter of *The Elements* deserves more scrutiny than Sorell (rather understandably) gives.

[132] For example, Hobbes made experience ("any evident truth whatsoever") crucial in the assessment of the empirical durability of a conclusion, explaining "when from his conclusion a man may, by good ratiocination, derive that which is contradictory to any evident truth whatsoever, then is he said to have concluded against reason: and such a conclusion is called absurdity," *The Elements of Law*, 17 [5.12].

[133] As noted previously, elements of Hobbes's conceptualizations were well within the strictures of mainstream interpretations of geometry and geometric science. However, *pace* persuasive

Elements' second chapter. Hobbes writes that it is easy to be fooled into believing that the "accidents or qualities" of "our senses" are really and actually "in the world." However, it is also possible to slice through the deceptions of sense. Someone paying attention is capable of navigating the minefield of deceptions, and in so doing, discovering fundamental truths. He indicates,

> The things that really are in the world without us, are those motions by which these seemings are caused. And this is the great deception of sense, which also by sense to be corrected. For as sense telleth me, when I see directly, that the colour seemeth to be in the object; so also sense telleth me, when I see by reflection, the colour is not in the object.[134]

"[T]he great deception of sense," Hobbes explains, is "also by sense to be corrected." The senses do deliver certain, bedrock insights, like the idea of the subjectivity of secondary qualities (that "colour is not" actually "in the object"). Hobbes contended that what is needed is a mind, like his, capable of registering the insights.

Beyond furnishing principles, Hobbes made it clear that this bulk of sense material, if systematized and put in the proper order, becomes the content of science. What Hobbes aspired to change with respect to experience was its presentation, not its substance. A clarifying example, which elucidates

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comparisons drawn by some in Hobbes studies (like John Danford and Hardy Grant), it is impossible to know what Hobbes's precise reference points were. That is, it is unknown, and unknowable, whether Hobbes's conception of science stems from entanglements with work that was nearer and more local to him (e.g., Calvius's, Case's, Galileo's, Mersenne's, Descartes's), or of an older, more ancient vintage (e.g., Aristotle's and Euclid's). Put another way: because of their commonality, the threads of influence are un-parsable. What is more, the sum of Hobbes's science cannot be reduced to these influences. For the studies referenced above, see John W. Danford's "The Problem of Language in Hobbes's Political Science," 116-117 and Hardy Grant's "Geometry and Politics: Mathematics in the Thoughts of Thomas Hobbes," *Mathematics Magazine* 63, no. 3 (1990), 147-149.

[134] Hobbes, *The Elements of Law*, 6 [3.10].

the point, is found in Hobbes's insistence that the principal marker of "truth" is the "concomitance of a man's conception with the words that signify such conception in the act of ratiocination [syllogistic reasoning]."[135] The words that are bolted together to create the propositions and syllogisms of science must map directly onto a person's conceptions – how that person, and more broadly, all people experience or should experience the world.

Scientific knowledge, it follows, is thoroughgoingly loaded with sense-delivered, experiential, empirical content. And deriving necessary, not merely probable conclusions from this content does not entail a radical working of it. Rather, generating the necessary, universal conclusions of science involves surrounding experiential content with the correct scaffolding. It is simply a matter of putting it into the right form and structure.

To the modern mind, an intriguing corollary emerges from an analysis of the place of experience in Hobbes's science. It is evident that he expected his readers, and readers of (true) science more broadly, to experience selfsame concomitances of conceptions and words.[136] The expectation raises an

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[135] Ibid, 19 [6.3].

[136] Whereas Cees Leijenhorst uses Hobbes's materialism as a cypher to explain Hobbes's view, I rely on contextualization to fill out Hobbes's epistemology and this feature of his philosophy. Leijenhorst writes that "scientists are able to reach a *communis opinion* because ordinary language already contains a pre-scientific consensus…Viewed from the material perspective, these definitions pertain to a literal *consensus*, a unity of conception which external bodies cause in us," "Insignificant Speech: Thomas Hobbes and Late Aristotelianism on Words, Concepts, and Things," in Res et Verba *in the Renaissance*, eds. I. Maclean and E. Kessler (Wiebaden: Harrasowitz (2002), 134. While philosophically well-footed, the approach Leijenhorst endorses is emblematic of many others', insofar as it extrapolates on the basis of and extends the principles of Hobbes's metaphysics to address different varieties of problems and puzzles in Hobbes's philosophy, despite a relative shortage of clear textual evidence that the puzzles are a byproduct of Hobbes's materialism. Put differently, Leijenhorst, as others do, adduces Hobbes's metaphysical commitments to close gaps and address ambiguities in his philosophy, when it is possible that "materialism" may not be a suitable answer for many of these queries. To work, the accounts proffered by Leijenhorst and others must assume that

interesting possibility: that baked into Hobbes's mind was the idea that some experiences are universal – the notion that an experience, sometimes, delivers information so vividly evident as to command universal assent.[137]

Experience in early modern science and *The Elements of Law*

As noted in the chapter's introduction, interpreters have misunderstood the role of experience in Hobbes's conception and practice of science. The true extent and nature of the relationship is distorted by simple caricatures, designed to present a clean, easy-to-follow contrast between the two. Yet, by Hobbes's own admission, experience and science are intimately bound up together: "right ratiocination," the *organon* of science, entails "reason[ing] from principles that are found indubitable by experience."[138] The judgment is echoed in the stipulation that "SCIENCE" emerges "from some beginning or principle of sense."[139]

What simple caricatures overlook is how an early-modern mind, like Hobbes's, would have presumed different forms or modes of experiencing, having taken for granted the idea that not all experiences are alike or equal. Indeed, some of the confusion related to Hobbes's treatment of the relationship between experience and science in *The Elements* can be attributed to how

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Hobbes applied the premise of materialism consistently and rigorously across his work. In the absence of solid textual evidence to support it, I am not convinced by the assumption, especially when other, simpler, and more probable explanations abound.

[137] For a discussion of the concept and the discursive use of experience in the work of seventeenth century geometers and Jesuit mathematical scientists, see Dear, *Discipline and Experience*, especially, 42-43.

[138] Hobbes, *The Elements of Law*, 17 [5.12].

[139] Ibid, 19 [6.4].

analysts, and Hobbes himself, run together different kinds of experience that can be pried apart and conceptually differentiated.

The work of prying apart the different forms of experience operative in Hobbes's work should begin with manifest, universal, or as he put it in his letter to Newcastle, "certayne" experience, a concept that has received little or no serious, sustained scholarly attention. That such a notion has currency in Hobbes's work sits at odds with his reputation as a philosopher with deep concerns about the reliability of the senses and the hypostatization of universals. However, his ideas often fail to assimilate to the rigid ideological strictures his interpreters retroject back onto him. Such is the case with his appeals to universal experience.

The concept was an element of early modern scientific discourse (including mixed-mathematical or physico-mathematical[140] discourse), a carryover from scholastic precursors and Aristotle. Peter Dear explains,

> In the academic world inherited by seventeenth-century Europe, an "experience" [as for Aristotle] was a universal statement of how things are, or how they behave….Experience provided phenomena, and phenomena were, literally, *data*, "givens;" they were statements about how things behave in the world, and they were to be taken into account when discussing topics concerning nature.[141]

Universal experience, a universally true "statement of how things are, or how they behave," contrasts with singular, idiosyncratic experience, forms of experience that are non-universalizable. What the contrast and distinction

[140] The terminology was used by Mersenne, and deployed by Dear in "The Meaning of Experience," 124-126.

[141] Dear, *Discipline and Experience*, 22-23.

between universal and singular experience admits is the common-sense notion that not all people, everywhere will experience the same things. Although there may be experiences that are universally shared, e.g., that the "sun *always* rises in the east; acorns *always* (barring accidents) grow into oak trees,"[142] one's experiences are also inextricably linked to and symptomatic of a particular historical horizon, one's specific historical circumstance. "Singular experiences," witnessing "the eruption of Vesuvius in 79 c.e. or the coronation of Pope Urban VIII," are the result of historical contingency and one's historical location. They are one-off events, never to be experienced again by anyone in human history. Thus, singular experiences, in contrast with universal experience, "could only subsequently be known by historical report, as something that had happened on a particular occasion. They were thus unfit to act as scientific axioms…Most people had not witnessed them."[143]

Within the context of early-modern squabbles over the status and role of singular experiences in science building, experiments, as historically bounded "experiential event[s]," were occasionally held apart from experience.[144] However, this was not the rule. The authors of early modern scientific tracts relied on a range of Latin terms, not always deployed in consistent ways, to refer to different modes of experience. For example, the Latin term *experimentum*, which we would associate with experiment, was used to refer to

[142] Dear, "The Meaning of Experience," 109.

[143] Ibid.

[144] Dear, *Discipline and Experience*, 13.

a variety of kinds of experience, including, counterintuitively, universal experience. Thus, rather than draw a consistent, cut-and-dry distinction between experiment and experience, or singular and universal experience, early modern writers used an assortment of Latin terms in idiosyncratic patterns. "More often," writes Dear, "none [i.e., no distinction] is evident, and each [Latin term, *experimentum* and *experientia*] seems simply to mean 'experience' of some kind."[145]

There was an absence of standardization with respect to the Latin signifiers used by early modern writers to refer to different kinds of experience. While some authors did draw distinctions, as between *experientia universalis* (universal experience) and *experientia singularis* (singular experience),[146] often, as Dear highlights, they used the same terms to refer to dramatically different forms of experience. In other words, the Latin terms used to mean "experience" were polysemic. Writers loaded the terms with different kinds of content and fabricated new associational links, connecting them to a range of qualitatively distinct forms of experience. "Experience," in one context, would refer to universal experience, and in another, a singular experience or experimental result.

Similar polysemic slippage is present in *The Elements*. The semiotic purchase of "experience" varies in the text. Put differently, the label "experience" is applied to conceptually distinct forms of experience, the explicit

[145] Ibid, 13 n. 5.

[146] Ibid, 14 n. 5.

borders between which are faint or even non-existent. Readers will see only a single kind of experience *defined* in the text. Hobbes uses the definition to link the concept of "experience" with "experiments," explaining that "To have had many experiments, is what we call EXPERIENCE," specifying that both experiments and experience are the product of "remembrance of what antecedents have been followed with what consequences."[147] In the aggregate, experience of causes and effects adds up to "prudence:" "experience of fact…if it be great, is called prudence."[148] Prudence is an accumulation of "the experience of the effects of things that work upon us from without."[149]

Thus, *The Elements* gives the impression that experience simply entails conjectural knowledge, relating solely to the inferences we dig out of perceptions of cause and effect. According to the definition Hobbes gives, experience is the basis for the simple mental calculus we, like other animals, perform as we navigate the world and anticipate its unfolding.[150] Compared with science, conjectural experience is an inferior guide, but not because it is singular. The distinction Hobbes draws cuts in a different direction. As noted earlier, conjectural experience is inferior because, unlike the categorical propositions of science, it is probabilistic.[151]

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[147] Hobbes, *The Elements of Law*, 11 [4.6].

[148] Ibid, 20 [6.4].

[149] Ibid, 19 [6.1].

[150] Ibid, 20 [6.4].

[151] Ibid, 19-20 [6.1, 6.3, 6.4].

However, *The Elements* uses the language of experience in ways that violate Hobbes's own definition of the term. Most significant, the text's uses of the term betray a commitment to a separate, universal conception of experience. Consider Hobbes's definition of right reason. Right reason entails reasoning "from principles that are found indubitable by experience."[152] An axiomatic principle is not a principle of prudence or a conjectural inference. The principle is bedrock, an undoubtable premise demonstrated by experience. *The Elements* takes for granted that experience can furnish universal, unimpeachable principles, of a kind suitable for use within the context of scientific demonstration. Yet, this particular idea of experience is nowhere explicitly explicated in the text.

There are two additional forms of experience on which the text trades, which, like universal experience, receive no explicit analytical treatment. First, the idea that there are principles known to be indubitable by experience (i.e., that there are principles of universal experience) suggests there are principles, and therefore forms of experience, that are less indubitable or less manifest, less known and less clear. Indeterminate, or ambiguous experience may produce principles that, while not sufficiently crystalline as to be indubitable, may serve, for a time, as suppositions – premises to which we grant preliminary status *as* premises, "proposition[s]" which "when, not being evident [i.e., sufficiently obvious as to be universally true], [are] nevertheless admitted for a time"[153] in the course of some reasoning.

[152] Ibid, 17 [5.12].

[153] Ibid, 20 [6.5].

Second, and relatedly, the notion that experience can furnish indubitable (universal) principles, by logical necessity, admits the possibility of non-universal, or singular experiences.[154] Although a concept given short shrift[155] in *The Elements*, the idea of singular experience, despite its absence, is present in the text, as the idea of universal experience is only meaningful when situated with respect to its opposite: singular experience. Two political science examples clarify the (Derridean) point: "a state's construction of 'its' national identity is only possible through a simultaneous delineation of something which is different or Other;" likewise, "a 'terrorist' can only be identified through a differentiation from the legitimate 'freedom fighter' or 'state sanctioned soldier.'"[156] Similarly, universal experience trades on, and is comprehensible only insofar as we understand its opposite: singular, or non-universal experience.

Thus, the analysis of *The Elements* can be said to rely on, at a minimum, five kinds of experience, including (i) the sense data and individual sense experiences that, in the aggregate, become a basis for (ii) conjectural experience, (iii) universal experience, (iv) indeterminate experience, and (v) singular experience. Between these it is possible there is some conceptual

[154] It is unclear whether singular experience is, in all instances, coextensive with indeterminate experience.

[155] Hobbes does associate "history" (and, one assumes, natural and political history) with the first kind of knowledge; however, the distinction is used to distinguish "experience of effects of things that work upon us from without" from "experience men have of the proper use of names in language," *The Elements of Law* 19 [6.1].

[156] Lene Hansen, *Security as Practice: Discourse Analysis and the Bosnian War* (London: Routledge, 2006), 17.

overlap (as between indeterminate and singular experience), and some, like singular experience, are present despite their absence in the exposition. However, of the kinds of experience listed, universal experience holds significant promise as a subject of scholarly study. Its importance to and role in Hobbes's work has yet to be suitably interrogated. The sections that follow aim to further pin down what universal experience is, how it was deployed in early modern discourse, and how Hobbes's work partakes in and reproduces forms of understanding embedded in this discourse (a subject that receives further attention in chapter 3).

Universal experience in the work of Mersenne and Galileo

Hobbes, like Galileo and Mersenne, used experience with the universal valence Dear describes.[157] Two simple examples, one from Mersenne's *Harmonie Universelle* (1636) and the other from Galileo's *Dialogue Concerning the Two Chief World Systems* (1632), provides a sense of how universal experience was deployed in discourse and puts Dear's description of the concept as "statements about how things behave in the world" into more concrete relief.

In *Harmonie Universelle*, while addressing how his discourse on stringed instruments might be brought to bear on "medicine, for mathematics, and for many other things," Mersenne notes that "as experience teaches" a string can be applied to horological ends – keeping time. A string will "mark the seconds," Mersenne explains. All one must do is attach one end to "to a nail" and

[157] Dear, *Discipline and Experience*, 44 (for Galileo) and 129-132 (for Mersenne).

"attac[h] some weights to the other [of a string]," allowing "the string to hang freely toward the center of each, each of its complete vibrations will last exactly a second."[158] So suspended, a string can function as a serviceable timepiece. With the locution "as experience teaches" Mersenne sets down what he took to be "a universal statement of how things are."

In the *Dialogue Concerning the Two Chief World Systems*, Salviati, Galileo's mouthpiece, delivers a demonstration showing how the two regular motions of the earth (its daily revolution and annual orbit) produce an irregular motion. Such an irregular motion, Salviati reasons, is the cause of ocean tides. He proves the point analogically.

> Thus, if it is true (and it is most true, as experience shows) that the acceleration and retardation of a vessel's motion make the water contained in it run back and forth along its length and rise and fall to its ends, who will want to raise difficulties about granting that such an effect can (or rather, must necessarily) happen in seawater, which is contained in various basins subject to similar variations, especially in those whose length stretches out from west to east (which is the direction along which these basins move)?[159]

In the analogy, universal experience is marshalled for the purpose of universalizing an observation – that "acceleration and retardation of a vessel's motion make the water contained in it run back and forth along its length and rise and fall to its end" – which undergirds a conclusion that connects the production of irregular motion to ocean tides.

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[158] Marin Mersenne, *Harmonie Universelle: The Books on Instruments*, trans. Roger E. Chapman (The Hague: Martinus Nijhoff, 1957), 65.

[159] Galileo, *Galileo on the World Systems*, 292-293.

Hobbes had read Galileo's work,[160] probably Mersenne's too,[161] before finishing *The Elements of Law*. However, close scrutiny of Hobbes's (more frequent) use of statements of universal experience shows a close resemblance to the uses in the so-called "Short Tract on First Principles," with which Hobbes is known to have engaged.[162] Written on "pot" paper from a batch used by Robert Payne in the mid-1630s,[163] the unique style of the "Short Tract," Raylor points out, emulated "the applied geometry of Galileo" generally and Benedetto Castell's work on hydrodynamics, *Della misura dell'acque correnti*, specifically.[164] Examination of the "Short Tract" helps to illuminate how universal experience was a fixed element of Hobbes's scientific praxis.

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[160] For a full accounting of the connection, see Douglas Jesseph's, "Galileo, Hobbes, and the Book of Nature," *Perspectives on Science* 12, no. 2 (2004), 192-197.

[161] Malcolm, *Aspects of Hobbes*, 123.

[162] As shown definitively by Karl Schuhmann in "Le Short Tract, première œuvre philosophique de Hobbes," *Hobbes Studies* 8 (1995), 3-36.

[163] Raylor, "Hobbes, Payne, and 'A Short Tract on First Principles,'" 42.

[164] Raylor notes that though "Professor Zagorin drew attention to a general similarity between the structure of the *Short tract*, and its Principles and Conclusions, and that of Euclid's *Elements*, with its Axioms" there is "a more immediate model for the method of the *Short tract*, with its division into Principles, Conclusions, and Corollaries," viz. "Payne's translation for Castelli." Raylor writes that "Benedetto Castelli (1578-1643), a student of Galileo, was a consultant on hydraulics to Pope Urban VIII. His researches into the rate of flow of the Tiber led to the publication of *Della misura dell'acque correnti* in 1628, a work which forms the foundation of modern hydromechanics. The second part of the volume, *Demonstrazioni geometriche della misura dell'acque correnti* – a title translated by Payne as 'Geometricall demonstrations of the measure of running-waters' – is an exercise in applied geometry, in which Euclidean principles are employed to calculate the rate of a river's flow. It begins (in Payne's translation) with a series of three 'Suppositions' and a 'Declaration of Termes,' before moving to a statement of five 'Principles' which form the basis for a series of six 'Propositions,' the second and third of which are each accompanied by a 'Corollary.' Propositions and Corollaries were, of course, the standard equipment of students of mechanics; but the debt of the *Short tract* to Castelli's *Demonstrazioni geometriche* is a specific one. Even the layout of the former, with its hanging paragraphs for numbered Principles, appears to be modelled on that of Payne's translation of the latter….," ibid, 43-44.

"A Short Tract on First Principles" in *The Elements of Law*

First, some remarks on the "Short Tract on First Principles" are necessary. There exists a debate, now multiple decades old, about the identity of the tract's author. Although some have, recently, written off the debate as settled,[165] it remains live. In one camp are interpreters like Jean Bernhardt,[166] Karl Schuhmann,[167] and Perez Zagorin,[168] who hold to the view that the tract was composed by Hobbes in the early 1630s.[169] In the other camp are interpreters who attribute the document to Payne or Newcastle, and reckon the tract was worked up sometime later, in the mid to later 1630s. Principal among

[165] The remark applies to Cees Leijenhorst, who recently dismissed that arguments against Hobbes's authorship are "easily refuted," noting that "The most decisive argument in favor of Hobbes' authorship is Schuhmann's discovery of two direct textual parallels in the *Short Tract* and Hobbes' later work. Apart from this, there is a wealth of less direct parallels," *The Mechanisation of Aristotelianism: The Late Aristotelian Setting of Thomas Hobbes' Natural Philosophy* (Leiden: Brill, 2002), 12. I disagree. Direct parallels – even Hobbes's use of material from the "Short Tract" – proves nothing more than engagement. Hobbes borrowed ideas – even organizational schemes and phrasing – from a variety of contemporaries (Bodin, Galileo, Grotius, and Selden, to name only a few), often, or usually, without attribution.

[166] Raylor gives a short history of the scholarly brouhaha in "Hobbes, Payne, and 'A Short Tract on First Principles,'" 31.

[167] See Karl Schuhmann's "Le Short Tract."

[168] Zagorin, "Hobbes's Early Philosophical Development," especially, 508-512.

[169] Brandt supplies a less-definitive, but more defensible assessment, reasoning, correctly, that extant evidence only proves that, were Hobbes the author of the tract, he would have composed it before 1636, but no earlier than 1630, *Thomas Hobbes' Mechanical Conception of Nature*, 48-50.

the latter group are Richard Tuck, who touched off the debate,[170] Timothy Raylor,[171] and Noel Malcolm.[172]

There exists evidence that the document was produced by close associates, viz. that it was authored by Robert Payne,[173] or represents a record, written out by Payne, of precepts articulated by Newcastle.[174] However, the ultimate issue of who authored the tract matters little. What is clear, and analytically significant, is that Hobbes thoughtfully engaged with its content.

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[170] Richard Tuck originally concluded, perhaps with insufficient circumspection, "there is actually no evidence whatsoever that the Short Tract is by Hobbes. It is among the papers of Sir Charles Cavendish, and it is anonymous; the handwriting of the manuscript closely resembles that of Robert Payne." Tuck adds that "There is no reason to suppose that the Short Tract is not by Payne himself, or (possibly) by [Charles] Cavendish, or by some other person; there is no special reason, other than Tönnies's enthusiasm, for attributing it to Hobbes," "Hobbes and Descartes," in *Perspectives on Thomas Hobbes*, ed. G.A.J. Rogers and Alan Ryan (Oxford: Clarendon Press, 1988), 17-18. Raylor and Malcolm would later add substance to and hunt down evidence to support Tuck's assertion. However, the counterfactual Tuck endorses in the second quotation is plausible and needs no added defense: Had Ferdinand Tönnies not attributed the "Short Tract" to Hobbes in the first instance, it is likely a connection would have been made, but it is unlikely that there would be a claim of Hobbesian authorship. Much of the work undertaken to defend Tönnies's original assessment, when weighed against Raylor's more forensic and empirical study of the document, is best characterized as connoisseurship.

[171] Raylor, "Hobbes, Payne, and 'A Short Tract on First Principles."

[172] Malcolm, *Aspects of Hobbes*, 80-145.

[173] Malcolm contends that "It…seems very likely that Payne, who possessed most of the requisite interests and abilities, was stimulated – both by his friend Thomas Hobbes and by his employer, the Earl of Newcastle – to work on the same set of issues [vis-à-vis human psychology] himself. The 'Short Tract' is, most probably, a record of his attempt, and in the end his failure, to solve those problems….," ibid, 139.

[174] Raylor points out, as other have, a tension in the "Short Tract" between its commitment to a metaphysics of species and an opposing commitment to the principle of the subjectivity of secondary qualities. In fact, the tension, and muddle, features in Newcastle's work. Raylor offers that the "Short Tract" is a synthetic work, combining ideas that had been expressed by Hobbes with others that were circulating at Welbeck, which had shaped and influenced Newcastle's thinking. He writes the tension was a result of "Payne's inability to develop the ideas which Hobbes had adumbrated ad hoc at Welbeck into a fully mechanized account of reality without being able to jettison the familiar terms and assumptions of scholastic natural philosophy," "Hobbes, Payne, and 'A Short Tract on First Principles,'" 52. However, ultimately, as Raylor points out, it is impossible to know whether the "Short Tract" represented an attempt to systematize Newcastle's (misguided) ideas or was the source of them.

Whether Newcastle's or not, the imprint of the "Short Tract" is visible in Hobbes's own work, *The Elements of Law* in particular.

The "Short Tract" and *The Elements of Law* correspond both in formal and substantive dimensions. In terms of form, the third of the three-sectioned "Short Tract" covers a range of topics, and offers truncated discussions of, in order, the building blocks of comprehension and mental discourse; the basic operations of human sense, the nature of phantasms (mental images); understanding; the composition of human appetites; and moral and aesthetic concepts, like the good (*bonum*), the bad (*malum*) and beauty (*pulchrum*). As shown by the chart below (Table 2.1), *The Elements of Law* proceeds in similar fashion, with a procession of chapters on "The cause of sense" (chapter 2), "Of imagination and the kinds thereof" (chapter 3), "Of the several kinds of discursion of the mind" (chapter 4), "Of names, reasoning, and discourse of the tongue" (chapter 5), "Of knowledge, opinion, and belief" (chapter 6), "Of delight and pain; good and evil" (chapter 7).

In addition to a similar procession of content, there are more substantive links that connect the two works. For example, the author of the "Short Tract" defined "Appetite" as "a Motion of the Animal Spirits toward the obiect that moveth them" and its opposite "a motion, or passive power in the Animal Spirits, to be moved from the obiect."[175] So too, Hobbes defines pleasure and pain as a "solicitation or provocation either to draw near to the thing that pleaseth, or to retire from the thing that displeaseth." Building on the

[175] "A Short Tract on First Principles," 166.

Table 2.1: A Comparison of the Progression of Discussion Points in Section 3 of the "Short Tract on First Principles" and Chapters 2-7 of *The Elements of Law*

Progression of discussion points in Section 3[176] of the "Short Tract on First Principles"	Chapter outline for *The Elements of Law*
"Animal Spirits are those spirits which are the Instruments of Sense and motion."[177]	"The cause of sense" (Chapter 2)[178]
"A Phantasma is an Action of the brayne of the Animal spirits by the power it receiveth from externall sensible things."[179]	"Of imagination and the kinds thereof" (Chapter 3)[180]
"The Act of Understanding is a Motion of the Animal Spirits, by the Action of the brayne, qualified with the active-power of the external object."[181] "We are sayd to understand a thing when we have the Phantasma or Apparition of it…"[182]	"Of the several kinds of discursion of the mind" (Chapter 4)[183] "Of names, reasoning, and discourse of the tongue" (chapter 5)[184] "Of knowledge, opinion, and belief" (chapter 6)[185]
"Therefore whatsoever is actually desir'd, supposeth motion in the Animal Spirits, by the obiects, immediately or mediately."[186]	"Of delight and pain; good and evil" (chapter 7)[187]

[176] Anonymous, "A Short Tract on First Principles," in *The Elements of Law, Natural & Politic*, ed. Ferdinand Tönnies (Cambridge: Cambridge University Press, 1928), 161-167.

[177] Ibid, 161.

[178] Hobbes, *The Elements of Law*, xv.

[179] "A Short Tract on First Principles," 163.

[180] Hobbes, *The Elements of Law*, xv.

[181] "A Short Tract on First Principles," 165.

[182] Ibid.

[183] Hobbes, *The Elements of Law*, xv.

[184] Ibid.

[185] Ibid.

[186] "A Short Tract on First Principles," 165.

[187] Hobbes, *The Elements of Law*, xv.

Table 2.1, continued

Progression of discussion points in Section 3 of the "Short Tract on First Principles"	Chapter outline for *The Elements of Law*
"Good [*bonum*] is to every thing, that which hath active power to attract it locally."[188] "*Malum*, therefore to everything is that which hath active power to repell it."[189]	

description of pleasure and pain, Hobbes further specifies that an appetite is an "endeavor or internal beginning of animal motion" that "delighteth" or pleases, and an aversion of a thing that which "displeaseth."[190]

An illustrative sampling of parallel explanations proffered by the "Short Tract" and *The Elements of Law* are highlighted in Table 2.2 below. The parallel constructions are bolded and numbered.

Although beyond the present scope, further analysis of the expository strategy employed by Hobbes in *The Elements of Laws* would reveal that he did not just respond to and build on the "Short Tract," but perfected and extended the lines of inquiry and argumentation it sets out.[191] For present purposes it

[188] Ibid, 166.

[189] Ibid.

[190] Hobbes, *The Elements of Law*, 22 [7.2].

[191] In substance, Hobbes agreed with the "Short Tract." He writes that "Every man…calleth that which pleaseth, and is delightful…good" while "evil" is that "which displeaseth him," *The Elements of Law*, 22. As such, like the author of "Short Tract," Hobbes presented a physicalist theory of the good, whereby his understanding of "good" was tied to a physical explanation of the way in which "animal motion" works within us. (As regards Hobbes's physicalism, see Alan Cromartie's "*The Elements* and Hobbesian Moral Thinking," *History of Political Thought* 32, no. 1 (2011): 21-47.) However, unlike the author of the "Short Tract," Hobbes unpacked and theorized the implications of a physicalist explanation of the good. He notes that such an explanation, which posits the variable ways in which "animal motion" works within people, militates against the possibility of a *summum bonum*, an utmost good, and likewise a unified, universal theory of the Good. He explains that "insomuch that while every man differeth from

Table 2.2: A Comparison of "A Short Tract on First Principles," Section 3, Article 7 and *The Elements of Law*, Chapter 7, Sections 2-3

"A Short Tract on First Principles," Section 3, Article 7[192]	*The Elements of Law*, Chapter 7, Sections 2-3[193]
7. Good is to every thing, that which hath active power to attract it locally. Whatsoever is Good is desireable; and whatsoever is desireable is Good; and whatsoever is actually desir'd, suppoeseth actuall sense of actuall understanding; but actuall sense and Understanding are local motions of the Animal Spirits…Therefore whatsoever is actually desir'd, supposeth motion in the Animal Spirits, by the obiects, immediately or mediately. In this motion, that which is desired is eyther Agent or Patient…Therefore it is Agent; and [i] **because that which is desired is *Bonum*, therefore *Bonum* is the Agent; and because *Bonum* is desirable, therefore every *Bonum* may be Agent in this motion. Every *Bonum* therefore…hath power to move; and because all motion is eyther to the Agent or from it, and that which is Good cannot be imagined to repell that, to which it is good, therefore Good hath**	2. [i] **This motion, in which consisteth pleasure or pain, is also a solicitation or provocation either to draw near to the thing that pleaseth, or to retire from the thing that displeaseth. And this solicitation is the endeavor or internal beginning of animal motion, which when the object delighteth, is called APPETITE; when it displeaseth, it is called AVERSION, in respect of the displeasure present**; but in respect of the displeasure expected, FEAR. [ii] **So that pleasure, love, and appetite, which is also called desire, are diverse names for divers considerations of the same thing**. 3. [iii] **Every man, for his own part, calleth that which pleaseth, and is delightful to himself, GOOD; and that EVIL which displeaseth him**: insomuch that while every man differeth from other in constitution, they differ also one from another concerning the common distinction of good and evil….And as we call

other in constitution, they differ also one from another concerning the common distinction of good and evil," ibid. It follows, Hobbes writes, that there can be no "any such thing" that is "simply good," ibid. What is more, he remarks, is that what pleases people changes – once someone has fulfilled an appetite, something else will grab their attention. Thus, there can be no capital-"G" Good, because people are, by nature, never satisfied. "Seeing all delight is appetite, and appetite pressuposeth a farther end," Hobbes points out, "there can be no contentment but in proceeding," ibid, 23. Clearly, the author of the "Short Tract" did not make Hobbes's point about the relativity of the "good." However, it is arguable that, by reducing the good (*bonum*) to mere appetite, the author's analysis, if logically extended, would resolve in a moral relativist point. And support for the suggestion is found in Hobbes's own analysis, which clarifies and zooms in on the implication.

[192] "A Short Tract on First Principles," 165-166.

[193] Hobbes, *The Element of Law*, 22.

Table 2.2, continued

"A Short Tract on First Principles," Section 3, Article 7	*The Elements of Law*, Chapter 7, Sections 2-3
power to attract, and [iii] **because that which is desireable or good to one, may not be so to another, and so what attracts one, may not attract another**; Good is to everything that, which hath power to attract it. This definition agrees well with Aristotle, who defines Good to be that, to which all things are moved; which hath bene metaphorically taken, but is properly true; as if we draw the obiect to us, whereas the obiect rather drawes us to it by locall motion. *Corollary*.— *Malum*, therefore to every thing is that which hath active power to repell it. Goodness is the Power of *Bonum*. Badness is the power of *Malum*. *Corollary*.—Hence it also appears that *Pulchrum* is the species of Good. For whatsoever is *Bonum* is *Pulchrum*, and whatsoever is *Pulchrum* is *Bonum*; but it is called *Bonum*, as it attracteth, and *Pulchrum*, as it pleaseth. *Bonum* suppoesth absence of that which it attracteth, *Pulchrum supposeth* the Presence of that which it pleaseth. [ii] ***Bonum* is the obiect of Desire, or Appetite; and *Pulchrum* is the obiect of Love**. *Turpe* is the Species of Malum. [iv] ***Turpitudo* and *Pulchritudo* are powers of *Turpe* and *Pulchrum***.	good and evil the things that please and displease; [iv] **so we call goodness and badness, the qualities or powers whereby they do it. And the signs of that goodness are called by the Latins in one word PULCHRITUDO, and the signs of evil, TURPITUDO**; to which we have no words precisely answerable.

suffices to point out that as a product of someone in the Newcastle circle, and composed in the mid-1630s, Hobbes had read the "Short Tract" and composed a text, *The Elements of Law*, that bears some of its expository, discursive, and schematic hallmarks.

Universal experience and the practice of science in "A Short Tract on First Principles" and *The Elements of Law*

One notable expository and discursive strategy upon which the author of the "Short Tract" relies is an invocation of universal experience. As highlighted earlier, the work of other geometric scientists certainly carried similar invocations. However, what makes the "Short Tract" notable is the frequency with which the author invokes this mode of experience. Invocations of universal experience surface throughout the "Short Tract," sufficient to make the invocations a noticeable feature of the text and its analytical strategy.

At the same time, the author uses statements of universal experience in discursively typical ways. It is invoked to prove points and establish the validity of propositions and premises. Propositions are known "from…Experience,"[194] the effects of species are "manifest by Experience,"[195] while aspects of the mechanics of perception are "proved by Experience."[196] Universal experience is also used to knock down counterarguments and to forestall contrary patterns of scientific thinking and argumentation. Contrary premises and contrasting

[194] "A Short Tract on First Principles," 157.

[195] Ibid, 158.

[196] Ibid, 164.

points of argumentation and conclusions are found wanting, "contrary to"[197] or "agaynst Experience."[198] An illustrative example of the latter kind of use involves the author's evaluation of whether "Animal Spirits move the body" by "power inherent in themselves" or are "moved Locally," spurred "by Motion received from another," i.e., externally. He finds the first idea of "inherent" power implausible, responding that, were it so, "they should always move it [the body], which," the author observes, is simply wrong, "contrary to Experience,"[199] i.e., experience in all instances, everywhere.

In most respects, Hobbes's use of experience follows the "Short Tract" template. The uses are most visible and explicit in the early chapters of *The Elements*, which engage most directly with the principles of the "Short Tract." There, the language of experience and claims related thereto, all carrying an air of universality, pop up frequently. For example, universal experience is invoked to give empirical weight to Hobbes's discussion of the concept of imagination that opens the text. "[E]very man," Hobbes observes, "by his own experience know[s] that the absence or destruction of things once imagined, doth not cause the absence or destruction of the imagination itself. This imagery and representations…we call our cognition, imagination, ideas,"[200] etc.

[197] Ibid, 156, 157, 162, 163, 165.

[198] Ibid, 159-160.

[199] Ibid, 162.

[200] Hobbes, *The Elements of Law*, 2 [1.8].

Hobbes also marshaled universal experience to substantiate major propositions and premises. At the outset of *The Elements*' second chapter, he enumerates four "points," which he aims "to make plain." The first point posits: "the subject wherein color and image are inherent, is not the object or thing seen." He leverages a specific, particular experience, capable of being universalized, to prove the point. "Every may hath so much experience," he writes, "as to have seen the sun and other visible objects by reflection in the water and in glasses, and this alone is sufficient for this conclusion: that color and image may be there where the thing seen is not."[201] After admitting the counterargument that, even so, "the color really [is] in the thing itself," Hobbes boldly retorts by "urg[ing]" his reader to "further" consider the universal, human "experience" of seeing double. At "divers times men see directly the object double." Seeing double is used to show that the "colors and figures" of the doubled object cannot inhere in both, thus, "the one of them is no more inherent than the other, and consequently neither of them both are in the object."[202]

Hobbes follows the selfsame tack with respect to concretizing point three, that "color is but an apparition unto us of that motion, agitation, or alteration, which the object worketh in the brain or spirits, or some internal substance of the head." He universalizes the specific, particular experience of having been subjected to a violent blow to empirically substantiate the claim. "[I]f the stroke be upon the eye, whereby the optic nerve suffereth any great

[201] Ibid, 3 [2.5].

[202] Ibid, 3-4 [2.5].

violence, there appeareth before the eyes a certain light, which light is nothing without…all that is real being the concussion or motion of the parts of that nerve." He continues that "From which experience we may conclude that apparition of light without, is really nothing but motion within."[203]

One final example makes the point. Chapter 9 delivers a much-discussed explication of laughter. The discussion begins by offering a loose definition of laughter. "There is a passion which hath no name," Hobbes writes. "[T]he sign of it is that distortion of the countenance we call laughter, which is always joy; but what joy, what we think, and wherein we triumph when we laugh," he claims incredibly, "hath not hitherto been declared by any." He then adds, "That it consisteth in wit, or, as they call it, in the jest, this experience confuteth."[204] What "this experience" bears out aligns with classical theories of laughter: "for men laugh at mischances and indecencies, wherein there lieth no wit or jest at all."[205] By filling "experience" with content from classical theories of laughter Hobbes quietly employed a typical strategy: his statement of

[203] Ibid, 7 [2.4].

[204] Ibid, 31 [9.13].

[205] As Skinner shows, Hobbes's explanation of laughter was hardly out of place or wholly idiosyncratic. Indeed, in some dimensions, it bears a close resemblance to Descartes's. Ultimately, Skinner assesses that "Few of Hobbes's original readers would have lacked the benefits of a classical education, and almost all of them would in consequence have known that virtually nothing in Hobbes's analysis was as novel as he pretended. On the contrary, almost everything that Hobbes and his humanist predecessors say about laughter arises out of two strands of ancient thinking about the phenomenon, both of which can ultimately be traced to the philosophy of Aristotle," "Hobbes and the Classical Theory of Laughter," in *Visions of Politics: Hobbes and Civil Science*, 151.

universal experience is made on the basis of the authority of classical antecedents (Aristotle in particular).[206]

The two works are also linked with respect to the methodological prescripts Hobbes set down in *The Elements*, which address the use of (universal) experience within the context of suppositional reasoning, as in "Short Tract." Hobbes delineates, "A proposition is said to be supposed, when, being not evident…is nevertheless admitted for a time…[until] we may conclude something; and so proceed from conclusion to conclusion, for a trial whether the same will lead us to any absurd or impossible conclusion."[207] The methodological note gives evident (i.e., universal) experience pride of place. A proposition is "supposed" if it is not "evident," that is, perceptibly universal. Determinative of whether a supposition is empirically tenable is whether it generates conclusions that are "absurd" or, it can interpolated, revealed as "[empirically] impossible" by evident experience.

Like the author of the "Short Tract," Hobbes used universal experience as he indicated one should: as an instrument to evaluate the empirical integrity of different strands of reasoning. However, the uses made him vulnerable to a temptation that bedeviled the work of contemporaries. Contemporaries played fast and loose with invocations of universal experience.[208] The practice of

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[206] As Dear notes, within the context of "the academic world inherited by seventeenth-century Europe…one did not need to have acquired such [universal] experiences personally in order to use them in argumentation, provided that they were commonly accepted, either through daily familiarity or through the statements of a weighty authority," 22.

[207] Hobbes, *The Elements of Law*, 20 [6.5].

[208] Dear explains that although "There were some restrictions, in that principles should be primitive and indemonstrable…if a purported empirical principle could be made evident, however that might in practice be accomplished, then it was fit for use in scientific

regularly invoking (universal) statements of experience as proof latently encouraged the universalization of particular or singular (if probably common or publicly reported)[209] experiences.[210] The "Short Tract's" author was no more immune to the temptation than Galileo, who in a dust-up with Orazio Grassi, found himself, as Dear describes, having had his invocation of universal experience "called into question." Dear writes,

> The experience is presented [by Galileo] as a general unproblematic statement of how things behave, glossing over the constructed character of the conditions. In similar circumstances Grassi would probably have done the same thing, but in the context of the controversy he decides instead to call into question the experience itself.[211]

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demonstration. The very imprecision of Aristotle's talk of 'induction' indicates the wealth of possibilities open to those who sought new ways of grounding a science of nature," *Discipline and Experience*, 58-59.

[209] See footnote 206.

[210] Given Aristotelian *dicta*, which located the capacity to think and reason universally in the normal functioning of human memory ("'from perception there comes memory…and from memory (when it occurs often in connection with the same thing) experience; for memories that are many in number form a single experience'"), the danger could hardly be avoided, Dear, *Discipline and Experience*, 22. Dear highlights how the demarcating line separating singular and universal experiences blurred in practice, to an extent that the boundary between the two became porous to the point of, at times, non-existence. "A science needed to be *certain*, whereas histories were matters of fallible record and testimony. The difficulty was unavoidable; most, if not all, of an individual's knowledge of the world relies very heavily on things believed from the testimony of others…those subscribing to an Aristotelian ideal of science of this kind developed a variety of techniques to 'universalize' their own specialist empirical work," "The Meaning of Experience," 109. Likewise, in *Discipline and Experience*, Dear notes Clavius's subtle treatment of the difficulty, specifically with respect to the use of discrete observations within the context of astronomical analysis. "Regarding questions to do with the rotation of the heavens and procession," Dear records, "Clavius concludes: 'Wherefore faith is to be had in the experiences of astronomers, until something else is brought forward to the contrary by which it be demonstrated that what is propounded by astronomers concerning the motion of the stars from the west towards the east above the poles of the zodiac is not true.' The 'experiences of astronomers,'" Dear adds, "refers to their general accumulated experience in this matter rather than to a body of discrete observations, but the acknowledged possibility is that 'something else' could be 'brought forward to the contrary' admits the practical dependence of astronomical doctrine on such observations," *Discipline and Experience*, 47.

[211] Ibid, 87.

The discourse of universal experience licensed authors, Hobbes included, to invoke experience to justify arguments, enabling the universalization of particular, singular experiences. Put differently, the discourse encouraged Hobbes to read his own, local experiences out onto the wider world. That Hobbes was vulnerable to this universalizing tendency was once noted by René Descartes, whom he, for years, detested.[212] Descartes, not incorrectly, objected to the practice, remarking, "And when he [Hobbes] says it is contrary to experience, he is completely mistaken; for experience varies in this matter…"[213]

Experiential inference in *The Elements of Law*

Hobbes brought his own (universalized) experience into his work; however, it is neither easy nor always possible to draw clear lines around these uses. There is a particular difficulty with respect to making solid interpretive judgments about which elements of Hobbes's political theory were carved directly out of his own experiences; which derive from the ontological principle of motion, a principle that putatively supplies the underpinnings for his theorizations; and which represent a fusion, mix, or untidy tangle of the two.

[212] Martinich memorably traces the feud to an intuitive, relatable cause: "Similarity breeds contempt. Both wanted to give materialistic and mechanistic explanations to the physical world. Both wanted the physical laws of the universe to be formulated mathematically. Both believed that sensations are noniconic; ideas are not similar to the features of the physical objects that cause them. Colors, sounds, tastes, and odors, as they are experienced, exist only in being perceived and not in bodies. On a personal level, both were vain, glory-seeking, self-absorbed, self-proclaimed geniuses. This statement is purely descriptive. Hobbes, like Descartes, was obsessed with being first," *Hobbes: A Biography*, 169.

[213] René Descartes, "Letter 36: René Descartes to Marin Mersenne for Hobbes, from Endegeest [11/] 21 April or [18/] 28 April 1641," in *The Correspondence of Thomas Hobbes* vol. I, ed. and trans. Noel Malcolm (Oxford: Clarendon Press, 1997), 119.

An illustration of how particular *qua* universal experience is mixed into Hobbes's theorizations about human nature and politics is found across two passages in chapter 7. In the relevant passage, Hobbes targeted the ancient idea of a *finis ultimus*. "But for an utmost end," Hobbes objects, "in which the ancient philosophers have placed felicity, and have disputed much concerning the way thereto, there is no such thing in this world, nor way to it, more than to Utopia."[214] Hobbes's objection is not exclusively borne of conceptual or epistemological critique. Rather, Hobbes offers a straightforward empirical evaluation of the concept. "[T]here is no such thing in this world," he writes. Within the contents of the world as he received it, he could find no evidence to support the notion, nor, surveying the world around him, could he locate tools to get himself there. Thus, he assesses universally, the idea of "an utmost end" has no place "in this world."

What Hobbes saw in the world contradicted the idea of a *finis ultimus*. "Seeing all delight is appetite, and appetite supposeth a farther end, there can be no contentment but in proceeding."[215] However, in Hobbes's contention that "there can be no contentment but in proceeding," experiential inference becomes knotted up with the ontological principle of motion, making it difficult to discern which is doing the work in the judgment. In the observation that "there can be no contentment but in proceeding" motion becomes a

[214] Hobbes, *The Elements of Law*, 23 [7.6].

[215] Ibid [7.7].

metaphor[216] for understanding the progression of human appetites. Humans are perpetually moved to pursue new appetites. While we are alive, the motion of our appetites never ceases, but our appetites do change form. Hobbes's observation that "appetite is the beginning of animal motion toward something which pleaseth us"[217] can be contorted and rearranged to produce the observation that we are "animals" perpetually in "motion" oriented "toward something which pleaseth us." Humans are propelled by motion. We are also in motion.

It is unclear whether the assessment that "there can be no contentment but in proceeding" originates in an analysis of the effect of motion on human appetites, personal observation, or both. However, in the remarks that follow, Hobbes relies on his reader's – and, it is no stretch to think, his own[218] –

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[216] The observation is influenced by Thomas Spragens's insightful account, which suggests that the relation between Hobbes's theory of human nature and motion may be analogical, rather than strictly deductive: "Even where one theoretical model cannot properly produce a theoretical model appropriate to another realm of reality by a process of logical deduction, it may have a profound influence upon the other area of theory by means of analogy. Theory developed to explain one area of reality – the motion of physical bodies, for example – may have a persuasive structuring impact upon a second theoretical model directed toward understanding another area of reality – the emotions of human beings, for example," *The Politics of Motion: The World of Thomas Hobbes* (Lexington: The University Press of Kentucky, 1973), 166.

[217] Hobbes, *The Elements of Law*, 22 [7.5].

[218] It was a form of competition and gamesmanship, and a character trait, that Hobbes expressly admonished in an August 1638 letter to Charles Cavendish, the younger brother of William Cavendish, the Earl of Devonshire. The letter, sent by Hobbes to Cavendish who was, then, running wild on the Continent, is a stern, somewhat punishing indictment, as of a kind that might be delivered by an older family member. In it, Hobbes openly worries that the young Cavendish's behavior could result in "quarrell" and "scandall sufficient to ground an honourable duell on," offering the lesson that "If a man could value himself moderately, & at the rate that other men hold him currant, examyning what true and iust title he hath to pretend to more respect & priviledge then others, and that done would not (as Children that crye for euery thing that is deneyed them) expect more then is due, & when he cannot either out of passion or in passion to be offensiue," "Letter 28: Hobbes to the Hon. Charles Cavendish, from Chatsworth 22 August [/1 September] 1638," in *The Correspondence of Thomas Hobbes* vol. I, ed. Noel Malcolm (Oxford: Clarendon Press, 1997), 53.

experience to give the point extra solidity. "[A]nd therefore we are not to marvel, when we see, that as men attain to more riches, honours, or other power; so their appetite continually groweth more and more; and when they are come to the utmost degree of one kind of power, they pursue some other."[219] With the use of the first person plural, "we," Hobbes subtly invites his reader to join him in conjuring what was an experience he and his reader had, surely, jointly shared: aristocratic men with progressive, escalating appetites, all caught up in an interminable competition with one another for "riches, honours, or other power." For Hobbes, it was undoubtedly a scene and pattern repeated enough[220] to make the proposition that "appetite continually groweth more and more" evident and universal.

It is unclear whether the observation Hobbes serves up from his personal store, something he assumed all readers had experienced, is the basis for the state of interminable conflict he describes. The conflict could be construed as an outcome that can be traced to motion. It is also possible that the two, experience and ontological principle, combined to create a singular orientation, which inclined Hobbes to a set of theoretical precepts – like interminable conflict – that gave his (somewhat agonistic) political theory a unique tone and texture.

Whatever the case may be, Hobbes was more sensitive to experience and observation (both his own, and others') than his own prescripts, at times, appear to make room for. Not unlike the science of the "Short Tract," Galileo,

[219] Ibid, 23 [7.7].

[220] See footnote 218.

and Mersenne, he created space for experience – especially universal, or universalized particular experience – in his work and used it as an empirical ground. He adapted and deployed this feature of scientific discourse to his own ends, making experience a signal feature of the science of *The Elements of Law*.

b. Truth and propositions in Hobbes's science

The relationship between words and things

A discussion of Hobbes's conception of truth should begin with the more basic units out of which syllogisms are made, words (or names), and the relation between words and things. The fifth chapter of *The Elements* designates that a name, generally understood, is "the voice of a man, arbitrarily imposed, for a mark to bring to his mind some conception concerning the thing on which it is imposed."[221] As the general definition indicates, names stand in for a "mark," which "is a sensible object which a man erecteth…to the end to remember thereby somewhat past, when the same is objected to his sense again."[222] Marks exist to conjure memories of specific objects in the world. For example, "As men…passed by a rock at sea" they might "set up some mark,

[221] Hobbes, *The Elements of Law*, 14 [5.1]. *The Elements*' formulation of the point, that a name replaces or stands in for "a mark" whose purpose is to "bring to mind some conception *concerning the thing on which it is imposed*" (emphasis added) would seem to suggest that there was more development in Hobbes's philosophy of language than is attended to in Abizadeh's analysis in "The Absence of Reference in Hobbes' Philosophy of Language." Of Hobbes's mature position, Abizadeh summarizes, "To sum up, for Hobbes, names perform two basic functions: they *mark* conceptions and *signify* conceptions. True, for Hobbes names also literally *name* things. Indeed, in a non-literal sense, one can say that names mark, signify, and denote things. But these are all simply shorthand for saying that names mark or signify conceptions of things. They are not ways of saying that names refer to or stand for things (or conceptions)," "The Absence of Reference in Hobbes' Philosophy of Language," 11. For an opposing view, see Stewart Duncan's "Hobbes, Signification, and Insignificant Names," *Hobbes Studies* 24 (2011): 158-178.

[222] Ibid.

whereby to remember their former danger, and avoid it."[223] If all names are marks, and all marks exist to "remember" when "the same is objected to" one's "sense," then names are strongly connected to the original sense experiences that set off the cycle of marking and naming.

It is true that names, so conceived, cannot disclose the inner essence of a thing. What names – like marks – arouse is "some conception concerning the thing on which it is imposed." However, Hobbes believed all conceptions are effects of sensory experience. Names, thereby, are tied to actual things in the world by means of the local, sense-derived conceptions encountering those things engenders. Recall the whale from earlier. Sensory experiences of whales beget conceptions of whales; such conceptions are ascribed the arbitrary name "whale."

It follows that a proliferation of names, accompanying a proliferation of sense experiences, would permit one to catalogue, sort, and then classify greater quantities and qualities of things in the world. In turn, combining these names in the right pattern and putting them in the correct structure would allow one to draw together a reliable roadmap of the world as it is registered by human senses. For Hobbes, the "right pattern" and "correct structure" was the demonstrative (qua categorical) syllogism: "a syllogism whose premises and conclusions are categorical propositions…expressing relationships among terms."[224] Consider the categorical proposition mentioned earlier, that "all

[223] Ibid.

[224] Douglas Jesseph, "Hobbes and the Syllogism," in *The Aftermath of the Syllogism: Aristotelian Logical Argument from Avicenna to Hegel*, eds. Marco Sgarbi and Matteo Cosci (London: Bloomsbury, 2018), 75.

whales are mammals." The proposition, when set in relation to the minor premise "all mammals are warm-blooded," produces the conclusion that "all whales are warm-blooded."

Evidence of truth

Hobbes's theory of truth involved more than drawing together true propositions into syllogisms that generate true conclusions. He indicates that what is determinative of truth, within the context of ratiocinating (that is, syllogizing), is "evidence." The attribute of truth obtains only when words, propositions, and syllogisms are supported by observational data collected as we navigate the world and experience things. For a statement to be true there must exist "evidence of truth."[225] Evidence of truth, he writes, entails the "concomitance of a man's conception with the words that signify such conception in the act of ratiocination."[226] He adds, "For if words alone were sufficient, a parrot might be taught as well to know a truth as to speak it."[227] Evidence, Hobbes evinces, is what supplies truth with substance and force. "Evidence is to truth, as the sap is to the tree, which so far as it creepth along with the body and branches, keepeth them alive…For this evidence, which is meaning with our words, is life of truth; without it truth is nothing worth."[228] In other words, one must have had empirical experiences that hook up to the

[225] Hobbes, *The Elements of Law*, 20 [6.4].

[226] Ibid, 19 [6.3].

[227] Ibid.

[228] Ibid.

words one uses, and which fill those words with content. It is this observational data that makes a concomitance of conceptions and words possible.

Some interpreters have noted that "the names we give to bodies tell us…how we think of them,"[229] and, relatedly, locate in aspects of Hobbes's philosophy a constructivist impulse, sometimes represented using the language of a "linguistic turn."[230] However, *The Elements of Law* confounds the characterization. The rudiments of a constructivist gaze do not lurk within Hobbes's philosophy. For Hobbes, the world was not made with or from words, even if some important pieces of it are. Rather, Hobbes believed the world we encounter is pre-populated with things. And the words we use elucidate and make that world and the things within it cognitively retainable and available to be reasoned about. Consequently, an "evident demonstration," on Hobbes's

[229] Jon Parkin, "Thomas Hobbes and the Problem of Self- Censorship" (paper presented at the Morrell Conference on the subject of self-censorship, York, UK, 2007), 17.

[230] Terence Ball notes that "Hobbes is hardly a closet critical theorist; nor does he reject the standard protopositivist account of explanation via general laws. But if he sometimes seems to profess one thing while actually practicing another that is because he does not distinguish between the different levels of description. Although trying his hardest to remain a reductionist, he fails miserably and magnificently. His account, like that of Thucydides, is too richly suggestive, too pregnant with multiple possibilities, to be confined within any austerely reductionist framework. This may be because the linguistic turn, once taken, will not permit him to take the reductionist route that he apparently wished to follow. Once viewed as speaking subjects, and not merely as material objects, human beings become self-defining creatures of convention, not of nature," "Hobbes' Linguistic Turn," *Polity* 17, no. 4 (1985): 747. Similarly, Victoria Kahn uses the language in the set-up for "Hobbes and the Science of Metaphor," remarking, "Instead, in Hobbes's new constructive model of political science, language and the will, rather than nature and reason, took center stage. Thus we can say that, although the later Hobbes voiced a distinct antipathy for humanist rhetoric, his vision of the political scientist as *homo faber* recast its deepest insights of humanist rhetoric and poetics into the power of human beings to shape the world around them. Hobbes's science is a science of language, and language is, conversely, the precondition of this science. The turn to science is thus, paradoxically, a turn to language and, in particular, as we will see, to the constructive power of metaphor. In this way, the voluntarism and linguistic turn of Hobbesian science – the science, we could say, that founded political science as we know it – paradoxically also anticipated some of the insights of eighteenth-century discourse of aesthetics," in *Scientific Statesmanship, Governance, and the History of Political Philosophy*, ed. Kyriakos N. Demetrious and Antis Loizides (New York: Routledge, 2015), 85.

model, emerges "*from* experience."[231] Hobbes, showing his commitment to some (weak) form of objectivism, did believe words, if used improperly, could twist the human mind into *mis*perceiving the world.

Hobbes envisaged that, if used properly, words will reflect humanity's shared experience of the world,[232] a precondition if there is to be a "concomitance of a man's conception with the words that signify such conception in the act of ratiocination." Even if, as many have repeatedly emphasized, the commonwealth, the legal and moral systems that comprise it, are pure artifice and wrought by human will and human words, [233] the world and meanings that sit beneath and support these constructions are not. The language of a "linguistic turn," and an emphasis on the constructivist elements of Hobbes's civil philosophy, throws a shadow over elements of Hobbes's thought, his theory of truth in specifically, that cannot comport to the characterization.

The empirical determinants of propositional truth

The forgoing analysis adds up to a vision of Hobbes's theory of truth that breaks with principles and interpretive impulses that have reigned in some quarters of Hobbes studies. In particular, such a vision sits in tension with those that argue truth, for Hobbes, was merely a function of a straightforward "logico-linguistic" operation. Marcus Adams summarizes, "Several

[231] Hobbes, *The Elements of Law*, 51 (emphasis added) [13.4].

[232] See footnote 136.

[233] See, for example, Kahn's use of the language and metaphor of *homo faber* in the quotation cited in footnote 230.

commentators argue that Hobbes's account of the nature of science is conventionalist, according to which 'determining scientific truth is purely a logico-linguistic matter.'"[234] Adams fails to find support for the notion, showing how, in Hobbes's later works, "simplest conceptions" are supplied as "foundation for geometry and the sciences in which we use geometry."[235] Simple conceptions, Adams clarifies, are "form[ed]…from our sense experiences and…give us properties of bodies…out of which we explicate definitions such as 'place.'" Yet, Adams puzzles, "Hobbes does not detail how exactly experience provides us with these conceptions…"[236]

As Adams points out, it is not unusual for modern readers to misunderstand the place and status of empirical postulates, like "simplest conceptions," in Hobbes's work. The point can be extended to how some interpreters have cast Hobbes's political theory. Indeed, for some the notion that he endeavored to use empirical, material premises to anchor his political theory errs in terms of how it portrays the nature of Hobbes's scientific outlook. The view is expressed by John Deigh.[237] Deigh pries apart the material and formal dimensions of Hobbes's philosophical project[238] to argue that, in

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[234] Marcus Adams, "Hobbes, Definitions, and Simplest Conceptions," *Hobbes Studies* 27 (2014), 37.

[235] Ibid.

[236] Ibid, 47.

[237] John Deigh restricts his analysis to *Leviathan*, which he considers to be "the best statement of his philosophy," "Reason and Ethics in Hobbes's *Leviathan*," *Journal of the History of Philosophy* 34, no. 1 (1996), 35.

[238] Andrea Bardin elaborates a similar interpretation, which turns on a similar distinction. However, Bardin's interpretation concerns the relationship between the science of *The Elements of Law* and *De cive*, "Materialism and Right Reason in Hobbes's Political Treatises: A Troubled Foundation for Civil Science," *History of Political Thought* 30, no. 1 (2019): 85-110.

conception, Hobbes's civil science was purely "definitivist" and formal. Hobbes intended for definitions to anchor his science, not empirical, material premises about the moral psychology of humans. "The definitivist interpretation" promoted by Deigh "takes seriously Hobbes's express understanding of ethics as a science and his conception of science as proceeding by deductive inferences from definitions." Thus, Deigh explains, "This understanding and conception secure the logical independence of his ethics from his moral psychology, given Hobbes's view as to what makes a definition correct."[239]

Deigh's "definitivist" interpretation, in part, turns on a claim about how Hobbes's understanding of science and reason should have been impacted by an intellectual commitment to nominalism, the philosophical belief that only particular things can be said to properly exist. Put differently, Deigh's definitivist conclusions about Hobbes's science stem, partly, from implications drawn from Hobbes's countenance of nominalism. Deigh reasons that "a material criterion of reason implies either universal concepts that inhere in the human mind or a world of universals that exists independently of any particulars and is accessible to reason alone." He continues, "either implication contradicts Hobbes's thesis that nothing universal exists independently of speech."[240] Of course, Deigh is correct. However the view Deigh articulates makes nominalism into an intellectual straight jacket, a philosophical commitment that should have prevented Hobbes from endorsing a view of

[239] Deigh, "Reason and Ethics in Hobbes's *Leviathan*," 59.

[240] Ibid, 50.

science or reason that depends upon material premises about, namely, human moral psychology. Such a dependence, Deigh shows, would have been a back-door endorsement of the un-nominalistic idea that there is an extant "world of universals that exists independently of any particulars."

However, Hobbes did not press the philosophical point as far as Deigh presumes. *The Elements of Law* does broadcast his nominalist credentials, proclaiming "there is nothing universal but names."[241] However, as Noel Malcolm observes, Hobbes's "nominalism was a good deal less extreme than is popularly supposed."[242] Likewise, Hobbes's intentions vis-à-vis nominalism were less sweeping than, and did not operate in the way Deigh thinks they did. As the quotation from *The Elements* indicates, Hobbes did eschew an ontology of universal things. He believed that only particular things properly exist. But like Galileo, Mersenne, and the author of the "Short Tract," Hobbes inherited a vision of science within which the notion of universal experience remained operative as an assumption. And Hobbes, like the others, was wedded to the empirical idea of "indubitable,"[243] universal experiences. The idea was simply a taken-for-granted feature of Hobbes's world and outlook. Put differently, it was an idea that was baked into the prevailing episteme.

As S.A. Lloyd correctly diagnoses, Hobbes relied on material premises – universal experiences – to anchor his theorizations. Lloyd uses the artful term

[241] Hobbes, *The Elements of Law*, 15 [5.6].

[242] Malcolm, *Aspects of Hobbes*, 152.

[243] Hobbes, *The Elements of Law*, 17 [5.12].

"indubitable introspectables" to describe the universal, empirical "premises" used by Hobbes that, he believed, "reader[s]" would "see as undoubtedly true in [their] own case."[244] As the next chapter shows, the concept of indubitable introspectables became an explicit cornerstone of his political theory in *De cive*.

Against this background, it is unsurprising that Adams locates empirical attachments in Hobbes's later work (*De corpore* in particular) that disprove the idea that Hobbes believed scientific truth to be merely a matter of convention. However, Hobbes's empirical commitments are broader and more entrenched than Adams appreciates. The focus of Adams's study is Hobbes's later works. However, it is in *The Elements* that there is a more obvious emphasis on universal experience as well as a string of methodological prescripts that cement the role of experience, including "indubitable introspectables," in all stages of the production of scientific knowledge. Were Adams to look to *The Elements*, he would find the beginnings of an answer to the query of "how exactly experience provides us with" base or simple "conceptions." In *The Elements* Adams would also find evidence of a theory of truth that is more roundly and robustly empirical than the one he describes.

Truth, Hobbes makes clear in *The Elements*, is intimately bound up with experience and made possible through observation.[245] More incisively, Hobbes's

[244] S.A. Lloyd, *Morality in the Philosophy of Thomas Hobbes: Cases in the Law of Nature*, (Cambridge: Cambridge University Press, 2009), 212.

[245] Hobbes clarifies the point in the epistle dedicatory to *De cive*, explaining that philosophy offers a "path" (*via*) from the "contemplation of singular things to universal precepts" (*Per hanc enim a rerum singularum contemplatione, ad pracepta universalia, via aperitur*"), *Elementorum Philosophiae Sectio Tertia De Cive* (Paris, 1642), iii.

theory of truth is, in a strong sense, empirically bounded. He did not think truth to be something simply generated through convention. Rather, as it is described in *The Elements*, truth is a feature that accrues when a direct relation obtains between the propositions we make and the world without (as experienced by us). Put simply, truth, as specified by Hobbes, is a property made possible and *made* by a particular kind of empirical relation.

c. Causes (and effects)

Is the science of *The Elements of Law* causal?

The theory of truth and the vision of science set out in *The Elements* impose strict empirical requirements that, as Hobbes had previously pointed out to Newcastle, "the greatest part of Natural Philosophy" cannot meet.[246] Remember that Hobbes, in the 1636 letter, surmises "In thinges that are not demonstrable, of w^{ch} kind is y^{e} greatest part of Naturall Philosophy, as dependinge vpon the motion of bodies so subtile as they are inuisible…the most can be atteyned vnto is to haue such opinions."[247] In *The Elements*, Hobbes drew a line between truth and science, which are empirically bounded and address classes of objects that can be comprehended by human sense, and the "opinions" of "the great part of Natural Philosophy." Speculations about discreet processes of nature and imperceptible natural causes ostensibly have no role in the manufacture of scientific knowledge.

[246] Hobbes, "Letter 19: Hobbes to William Cavendish, Earl of Newcastle, from Paris 29 July/8 August 1636," 33.

[247] Ibid.

Noel Malcolm notes that it was not until later, into the mid 1640s, that Hobbes began to "include the knowledge of causes in his definition" of science.[248] Malcolm is correct.[249] Hobbes left out "knowledge of causes" from the definition of science elaborated in *The Elements*. Science, Hobbes then wrote, emerges "from some beginning or principle of sense," and proceeds by way of a four-step process. In not one of the four steps is there room for suppositions about natural causes. As Hobbes elaborates,

> The first principle of knowledge…is…that we have such and such conceptions; the second, that we have thus…named the things [conceived]…the third is, that we have joined those names…to make true propositions; the fourth…that we have joined those propositions in such manner as they be concluding.[250]

Yet, Malcolm's formal point, that Hobbes's definition of science excludes "knowledge of causes" obscures a substantive reality. Hobbes may have agreed, to an extent, with Mersenne that "there is nothing certain in physics."[251] However, specifications of natural causes are deeply enmeshed in Hobbes's arguments in *The Elements*. Causal narrative represents an integral strand in the analysis Hobbes wove together in the text.

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[248] Malcolm, *Aspects of Hobbes*, 154.

[249] Evidence of the change appears in "Logica. Cap. 1. Ex T.H.," an early draft of *De corpore*, resembling notes written out in Charles Cavendish's hand in 1645, in *Critique Du De Mundo De Thomas White*, ed. Jean Jacquot and Harold Whitmore Jones (Paris: Vrin, 1972), 463. Also see Malcolm's *Aspects of Hobbes*, 154.

[250] Hobbes, *The Elements of Law*, 20. [6.4]

[251] As quoted in Claudio Buccolini's "Mersenne: Questioning Descartes," in *The Oxford Handbook of Descartes and Cartesianism*, ed. Steven Nadler, Tad Schmaltz, and Delphine Antoine-Mahut (Oxford: Oxford University Press, 2019), 275. As it was for others, like Gilles de Roberval, the epistemic demotion of natural philosophy was an effect of Mersenne's commitments to mathematicized science.

Causal discourse in *The Elements of Law*

To Hobbes's credit, he did cordon off suppositions and conjecture about causes,[252] even if not always consistently. Specifically, he used conjectural language to level down the epistemic status of an explanation, indicating to his reader instances where an explanation bent toward less-certain speculation. For example, in the eighth chapter of *The Elements*, Hobbes uses the language of supposition to highlight the tentativeness of his reflections on how motion ping-pongs around the body, creating conceptions and passions as it goes. He notes that in "the precedent chapter" the idea that "motion and agitation of the brain which we call conception, to be continued to the heart, and there to be called passion" is "presupposed."[253] However, the number of instances where Hobbes uses hedging language (like "I conjecture"[254]) is exceeded by the use of causal language and causal explanation.

Causal discourse acted as scaffolding for Hobbes's claims about politics and the law. He quietly acknowledged the embeddedness of "knowledge of causes" in *The Elements* in the first sentence of the first chapter of the text. There, he explains the "explication" of "laws, natural and politic" offered by *The Elements* "dependeth upon knowledge of what is human nature, what is a body politic, and what it is we call law."[255] As Hobbes makes clear throughout *The*

[252] Hobbes, *The Elements of Law*, 25 [8.1, 8.2], 38 [10.3].

[253] Ibid, 25 [8.1].

[254] Ibid, 25 [8.2].

[255] Ibid, 1 [1.1].

Elements, "knowledge of human nature" involves schematizing human nature as well as positing its underlying causes.

Hobbes's political analysis emerged from such knowledge, specifically an understanding of the diverse operations of human passions, having offered an explanation of human passions sensitive to the role of motion in their generation. He explains, "imagination of men proceedeth from the action of external objects upon the brain, or some internal substance of the head; and…the passions proceed from the alteration there made, and continue to the heart," and Hobbes took it upon himself to "declare what other causes may produce such odds, and excess of capacity, as we daily observe in one man or another."[256] "[W]e see by experience," he continues, that "joy and grief proceed not in all men from the same causes, and that men differ much in constitution of body…that…helpeth…vital constitution in one" is "delightful, hindereth and crosseth it in another, and causeth grief."[257]

The explications of human passions Hobbes gives in the lines above are the theoretical set-up for a later discussion of the state of nature. Hobbes observes that "considering the great difference there is in men, from the diversity of their passions" there ultimately "proceed[s] a general diffidence in mankind, and mutual fear one of another."[258] This mutual fear, in turn, sets off a cycle of escalating tensions and domination that produces the all-out war of the state of nature.

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[256] Ibid, 37 [10.1].

[257] Ibid, 37-38 [10.2].

[258] Ibid, 54 [14.3].

It is also possible to conscript Hobbes's remarks concerning the variability of human passions ("joy and grief proceed not in all men from the same causes"), itself a symptom of fundamental differences of biology ("men differ much in constitution of body"), into an account of the mechanico-biological underpinnings of the universal experience of all human passions. Specifically, the account of the production of passions supplied in *The Elements* supports the notion that, although not always pointed in the same direction, humans experience the same base passions – that there are emotional states that are universally experienced, like "joy" and "grief," and the panoply of other passions specified in the text. Put differently, Hobbes tells a causal story, anchored in an analysis of motion and human biology, that supports the notion[259] that all human emotional states and psychological drives are truly universal. As the point was later perfected in *Leviathan*, although there may be a lack of "similitude" with respect to "the *objects* of Passions…for these are the constitution individual, and particular education may vary," "whosoever looketh into himself and consider what he doth, when he does *think*, *opine*, *reason*, *hope*, *fear*, &c…shall thereby read and know, what are the Passions of all other men."[260]

It is true that Hobbes was attentive to the difference between more speculative, cause-oriented branches of natural philosophy and syllogistic science. However, the treatments Hobbes delivered in *The Elements* do not

[259] More than an implication, this was Hobbes's view; see ibid, 24 [8.1].

[260] Thomas Hobbes, *Leviathan* vol. II, ed. Noel Malcolm (Oxford: Clarendon Press, 2012), 18.

consistently maintain the boundary. Causal analysis was part of the structure of Hobbes's political theory – an essential element, which gave the project a distinct texture as well as a deeper, more empirical purchase. Despite methodological proscriptions, Hobbes, throughout *The Elements*, eagerly dug into and aspired to reveal the inner nature and causes of things. This was particularly true of human passions, which, as Hobbes reflected upon in his introduction to his translation of Thucydides, if "penetrate[d] into…without much meditation, we are not to expect a man should understand them at the first speaking."[261]

d. Conclusion

In *The Elements of Law* the different strands that make up a long history of Hobbes's philosophical tendencies come together. This is not to deny shifts in tendencies. Hobbes's imagination was pulled in different directions at different times. As he became more ensconced in the world of the Cavendish brothers, Mersenne, and Galileo, his ideas about science and truth evolved, became sharper, more firm, and inflected with the discursive elements, precepts, and epistemological orientation of that world. As Hobbes's use of the discourse of universal experience shows, these specific elements helped to shape the content of his ideas.

Yet, however much *The Elements of Law* may owe to the Welbeck group and friends on the Continent, the way in which Hobbes absorbed new ideas was shaped by habits of mind with a longer, further-reaching arch. While *The*

[261] Hobbes, "Of the Life and History of Thucydides," xxix.

Elements owes much to the tide of enthusiasm for geometry, geometricized science, and motion that swept up his friends and patron, it is also an expression of the same empirical, concrete thinking that guided Hobbes as a young man. In it, we find Hobbes eagerly probing at the world around him, as he did in the Peak District, searching for reliable, cognizable answers to the empirical phenomena "as we daily observe."[262]

[262] Hobbes, *The Elements of Law*, 37 [10.1].

CHAPTER III

DE CIVE AND THE POLITICAL ELEMENTS OF THOMAS HOBBES'S PHILOSOPHY

Not long after completing *The Elements of Law* (1640) Hobbes did something unexpected. He chopped up the text and published it in an altered form, under a new title, *De cive*[263] (1642). The decision to unstitch, respool, and retitle *The Elements*, thereby making it into a passably new edition, was a curious one. Hobbes's own contemporaneous characterizations of *The Elements* suggest he was pleased with it. In the text's epistle dedicatory he compared its argument to an "inexpungible" "whole," and boasted the treatment to have been erected upon the "true and only foundation of such science."[264] Yet, while converting *The Elements* into a new text Hobbes monkeyed around with these foundations and, more shocking, jettisoned the empirical material on human nature that made up Part I of that work and lent material support to *The Elements*' political analysis.

The alterations necessitated a change in Hobbes's approach to empirical explanation. Whereas *The Elements* is illustrative of a wide-ranging empirical

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[263] The full title given to the work, *Elementorum Philosophiae Sectio Tertia De Cive* ("The Third Section of the Elements of Philosophy, On the Citizen"), framed it within a larger series, the texts in which would, in combination, articulate the elements of Hobbes's philosophy.

[264] Hobbes, *The Elements of Law*, vii ["The Epistle Dedicatory"]. The full quotation reads, "To reduce this doctrine to the rules and infallibility of reason, there is no way, but first to put such principles down for a foundation, as passion not mistrusting, may not seek to displace; and afterward to build thereon the truth of cases in the law of nature (which hitherto have been built in the air) by degrees, till the whole be inexpungable. Now (my Lord) the principles fit for such a foundation, are those which I have heretofore acquainted your Lordship withal in private discourse, and which by your command I have here put into method. To examine cases thereby between sovereign and sovereign, or between sovereign and subject, I leave to them that shall find leisure and encouragement thereto. For my part, I present this to your Lordship for the true and only foundation of such science," ibid.

curiosity, combining causal analysis with different forms of observation, *De cive* is illustrative of how Hobbes's empiricism evolved to meet emergent challenges imposed by shifting circumstances and a new philosophical project. Put differently, both the first and second editions of *De cive* testify to the issues Hobbes had with drawing together an empirically plausible version of the argument proffered by *The Elements*, without the probing empirical analysis and underpinnings that prop up *The Elements*' political conclusions. Compensating for the missing empirical content entailed that Hobbes locate a new material starting point for his political theory and develop new (or adapted) sets of empirical strategies to address the shift.

In the first edition of *De cive*, Hobbes solved the analytical and empirical puzzle with the concept of universal experience. Universal experience, often in the form of "right reason," became the new foundation for Hobbes's political theory. Nevertheless, Hobbes found the revised argument featured in the first *De cive* difficult to defend, and reviewers of the text gainsaid the new approach. The republication of *De cive* in 1647 encouraged him to modify the approach by dropping the concept of "right reason," while also offering an opportunity to recast his political project in new terms, which better reflected the philosophical posture into which he settled between 1640, when *The Elements* was completed, and 1647. The second edition of *De cive*, in particular, illustrates the development of Hobbes's empiricism in the direction of the concept of universal experience, a concept that, eventually, became cemented into and centered in his designs for a civil science.

This chapter has five sections, outlined below.

(i) The first section sketches the circumstances under which Hobbes developed *De cive*, contemplates his motivations for doing so, and compares the text with its predecessor, *The Elements of Law*, while noting important excisions of and adaptations to empirical content. The section also features a revised chronology of the development of the *Elementa Philosophiae* ("The Elements of Philosophy"), Hobbes's plan to publish a series of philosophical texts, which, together, would elaborate the elements of his philosophy.

(ii) The second section zooms in on the adaptations to empirical content between *The Elements* and *De cive* and considers the empirical premises to which the political theory of *De cive* is ostensibly moored. Made the linchpin of Hobbes's theorizations in the text, he grappled with how best to establish the empirical force of the premises. One solution, already discussed in the preceding chapter, entailed invocations of universal experience and the use of personal, but nevertheless common experience. A second, related, solution involved remaking the moral concept of "right reason" into a cognate concept of universal experience, using it to express and establish the empirical postulates of universal experience. The conversion of "right reason" into an idea with the conceptual purchase of universal experience is the focus of section three.

(iii) The third section shows that Hobbes used the inherited moral discourse of "right reason" to lend empirical credibility to the text's analysis. In particular, he specified that the empirical reasoning

featured in *De cive* was an example of "right reason," a concept Hobbes filled with the content of universal experience.

(iv) The subject of section four is the second edition of *De cive*. It shows that although Hobbes stepped back from the earlier commitment to "right reason" he became wedded to the notion that his politics could, empirically, stand on its own principles, as "known by experience."[265] The edition features a growing reliance on personal, but nevertheless common experience.

(v) In a brief conclusion, I note that the preface to the second edition recast Hobbes's political theory in terms that gave the book a posture that reflected the changes that took place to his philosophical plans and projects between 1640 and 1647.

I. The Elements of Law*,* De cive*, and the* Elementa Philosophiae *plan*

[265] The relevant line is mistranslated in Richard Tuck's and Michael Silverthorne's edition of *De cive*, *On the Citizen*, eds. Richard Tuck and Michael Silverthorne (Cambridge: Cambridge University Press, 1998), 13 [Preface to the Readers 19]. In the edition, the pair give the noun *experientia* the meaning "reason" rather than "experience," thereby mis-rendering the line, and misrepresenting Hobbes's point. Hobbes does not, in the passage, articulate the existence of principles "known by reason," even if he would not have found the conclusion philosophically disagreeable. The original Latin text of the second edition is clear in its use of *experientia*, indicating *praesertim cum eam principiis propriis experientia cognitis innixam, praecedentibus indigere non viderem* ("especially as I could not see a need for the preceding, insofar as it rested upon its own principles known by experience"), "Præfatio ad Lectores," in *Elementa Philosophica de Cive* (Amsterdam: Elsevier, 1647). In the notes that follow, like notes in the preceding chapters, most references to the Cambridge edition, *On the Citizen*, edited and translated by Tuck and Silverthorne, will comprise three elements: (i) a page number and (ii) a chapter and (iii) paragraph number. (ii) and (iii) are presented together in brackets. References to *De cive*'s epistle dedicatory or preface to the readers include a paragraph number, also set in brackets. However, unlike the paragraph numbers featured in the chapters of the text, paragraph numbers were later added to the epistle dedicatory and preface by Howard Warrender. The paragraph numbers introduced into the text by Warrender were retained in the Cambridge edition.

With *The Elements of Law* Hobbes had associated himself with a strand of partisan political thinking that was under increasing attack in England.[266] Sensing a shift in political winds, he fled England and arrived in Paris in the fall of 1640. While unplanned for, the departure was fortuitous. Hobbes is best known for his political theory; however, he maintained an eager, unflagging interest in the study of nature, and specifically optics, the only area of scientific inquiry – apart from civil science – to which he ever claimed to make pathbreaking contributions.[267] An exile in Paris, spent in the company of Marin Mersenne, created an opportunity for Hobbes to pursue non-political inquiries in the absence of distraction, with material (and moral) support from Paris' scientific coterie.[268]

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[266] Hobbes observes in his prose autobiography that it was around this time that "the Scots, who had deposed their bishops, favoring certain English ministers of religion who are called Presbyterians, took up arms against the King. Then the most notorious Parliament was summoned in England. Its sessions began on the 3rd November 1640. He understood, having consulted with some of those who were of the Parliament during the first three or four days of the session, that civil war was unavoidable. Fearing for his safety, he returned to France," "The Prose Life," 247. Noel Malcolm notes the specific impetus, explaining, "What finally prompted him to leave England was a debate on 7 November in the newly convened Long Parliament, in which John Pym and other anti-royalists attacked 'Preaching for absolute monarchy that the king may do what he list,'" *Aspects of Hobbes*, 16. The political landscape was moving beneath Hobbes's feet. The change in political environment is best seen in the impeachment of political allies. Deborah Baumgold notes, "In the closing months of 1640, Parliament impeached Strafford and Laud; both were subsequently executed (although not until 1645 in Laud's case)," "Editor's Introduction," in *Three-Text Edition of Thomas Hobbes's Political Theory*: The Elements of Law, De Cive, *and* Leviathan, ed. Deborah Baumgold (Cambridge: Cambridge University Press, 2017), xii.

[267] The claim appears the final paragraph of "A Minute or First Draught of the Optiques:" "How doe I feare that y^e^ attentive reader will find that which I have delivered concerning y^e^ *Optiques* fit to bee cast out as rubbish among the rest. If hee doe, hee will recede from y^e^ authoritie of experience, which confirmeth all I have said. Butt if it bee found true doctrine, (though yet it wanteth polishing), I shall deserve the reputation of having been y^e^ first to lay the grounds of two sciences: this of *Optiques*, y^e^ most curious, and y^t^ other of *Natural Justice*, which I have done in my booke DE CIVE, y^e^ most profitable of all other," *The English Works of Thomas Hobbes* vol. VII, ed. Sir William Molesworth (London: Longman, Brown, Green, and Longmans, 1845), 471.

[268] As Daniel Garber describes, "Mersenne, of course, was central to the new mathematical approach to nature in Paris in the 1630s and 1640s. Intellectually, he was one of the most

It was in specific service to the interest in optics that Hobbes began, through Mersenne, a trail of correspondence with René Decartes about the latter's *Dioptrique*, an essay on optics that was packaged together with Descartes's *Discourse on Method* (1637). The first letter in the exchange, from Hobbes, was sent before his departure.[269] In a response, Descartes dismissed Hobbes, straight off, as an interloping, know-nothing philosophical

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enthusiastic practitioners of that program, and published a number of influential books in those important decades. In addition, he was at the center of the intellectual network that put thinkers from all over Europe sympathetic to the new science in touch with one another. His rooms at the Minim Convent near the Place Royale were the meeting place for scientific and mathematical Paris. His network of correspondence was, in essence, both a scientific society and a scientific journal that linked thinkers one to another. And finally, in his books he diffused the works of such eminent contemporaries as Galileo, Hobbes, and Roberval, as well as some of the otherwise unpublished thoughts of Descartes," "On the Frontlines of the Scientific Revolution: How Mersenne Learned to Love Galileo," 136. Also see the previous chapter, footnote 98. Tom Sorell writes in a similar vein, when he raises the possibility that "Mersenne had a wide range of interests in the new science," and so "encouraged work of all kinds in the new science for their own sake, and that the more rigorous pieces of this work, whether done with a view to refuting skepticism or not, were sometimes used by Mersenne himself as evidence of the weakness of skepticism about the mathematical sciences. According to this view, the purely scientific findings reported by members of Mersenne's circle would have been grist for Mersenne's antiskeptical mill. In other words, certain pieces of science…were open to appropriate by Mersenne as proof against the skeptics that real science is possible; but the pieces of science would not necessarily have been produced with anti-skeptical purposes in mind. In particular, Hobbes may have developed scientific material on topics that were interesting to him in their own right, only to have them seized upon by Mersenne to further the arguments of *La verité des sceinces*. Thus, when Mersenne pressed Hobbes's *De cive* on Samuel Sorbiére to get him to reconsider his skepticism, he may have been appropriating work not written with antiskeptical intentions," "Hobbes's Objections and Hobbes's System," in *Descartes and His Contemporaries: Meditations, Objects, and Replies*, eds. Roger Ariew and Marjorie Greene (Chicago: University of Chicago Press, 1995), 94.

[269] Although, as Malcolm observes, "Hobbes's letter has not survived," the letter, as Descartes's reply to Mersenne indicates, was sent from England. Thus, it is reasonable to infer that, inasmuch as Descartes's reply is dated January 1641, Hobbes's letter was sent and transmitted in the fall of 1641, "Letter 29: René Descartes to Marin Mersenne for Hobbes, from Leiden [11/] 21 January 1641," in *The Correspondence of Thomas Hobbes* vol. I, ed. and trans. Noel Malcolm (Oxford: Clarendon Press, 1997), 57, 60 n. 1. Malcolm confirms the inference in the "Textual Introduction" to *The Correspondence*, explaining, "Although the date of it [the letter] is not mentioned there, it is known to have been preserved in a bound volume of Mersenne correspondence after Mersenne's death…This volume, consisting mainly of letters from Pierre Fermat to Mersenne, disappeared some time in the late eighteenth or early nineteenth centuries, but not before the mathematician Louis-François Arbogast (1759-1803) had listed its contents, including 'a long letter from Thomas Hobbes, addressed to Mersenne, dated 5 November 1640, 56 folio pages,'" "Textual Introduction," in *The Correspondence of Thomas Hobbes* vol. I, ed. Noel Malcolm (Oxford: Clarendon Press, 1997), lii-liii.

mountebank. He wrote, with impatience, that he "was very surprised by the fact that, although the style in which it is written make its author [Hobbes] look clever and learned, he seems to stray from the truth in every single claim which he advances as his own."[270] The letter represented a high-water mark for Hobbes's and Descartes's early relationship. Thereafter Descartes openly scorned Hobbes's work,[271] penned dismissive replies to his objections to the *Meditations on First Philosophy* (1641),[272] accused Hobbes of plagiarism,[273] and

[270] Decartes, "Letter 29: René Descartes to Marin Mersenne for Hobbes, from Leiden [11/] 21 January 1641," 57.

[271] For example, in the process of demolishing Hobbes's criticisms, Descartes writes, "He is no more felicitous on the subject of refraction, when he distinguishes between the refraction which takes place when the moved body itself passes through media, and the refraction which takes place when it does not; for in both cases, if the bodies are of the same kind, they will be refracted in the same direction. *Nor has he sufficiently understood what I wrote on the subject*," "Letter 29: René Descartes to Marin Mersenne for Hobbes, from Leiden [11/] 21 January 1641," 58 (emphasis added).

[272] Descartes's contempt for the objections levelled by Hobbes becomes visible in his reply to Hobbes's twelfth objection, in the middle of which he laments, "I am surprised that I have so far found not one valid argument in these objections," "Third Set of Objections with Replies," in *The Philosophical Writings of Descartes* volume II, trans. John Cottingham, Robert Stoothoff, and Dugald Murdock (Cambridge: Cambridge University Press, 1984), 134. Descartes's frustration is, once again, visible in his reply to Hobbes's fifth objection: "I cannot possibly satisfy those who prefer to attribute a different sense to my words than the one I intended," he fumes, ibid, 128.

[273] Descartes, René, "Letter 33: René Descartes to Marin Mersenne for Hobbes, from Leiden [22 February/] 4 March 1641," in *The Correspondence of Thomas Hobbes* vol. I, ed. and trans. Noel Malcolm (Oxford: Clarendon Press, 1997), 97; for Hobbes's reply, see "Letter 34: Hobbes to Marin Mersenne, from Paris [20/] 30 March 1641," 107-108. Of the episode, Sorell writes, "The striking thing about [Hobbes's] Latin Optical MS [likely produced after Hobbes had relocated to Paris]…was the fact that so much of it took the form of a running critique of Descartes's 'Dioptrique.' This was the short treatise on optics (in particular, refraction) that had been published as one of the essays accompanying Descartes's *Discours de la methode* in 1637 (Hobbes had been sent a copy of the book by Sir Kenelm Digby soon after its publication). Descartes's work had an unsettling effect on Hobbes, for two reasons. First, Descartes's mechanistic physics, and his assumption that perception is caused by physical motions or pressures that have no intrinsic similarity to the qualities (redness, heat, etc.) that are perceived, corresponded very closely to Hobbes's own theories. Although neither Descartes nor Hobbes was the first to have such ideas (they had been preceded by Isaac Beeckman and Galileo), this was still very much the frontier of modern thinking, and it must have been galling for Hobbes to see some of his own research preempted in print. In 1640-1 an exchange of letters between Hobbes and Descartes on optics and physics turned (at Descartes's prompting) into an acrimonious dispute about who had preempted - or even plagiarized – whom," "Hobbes's

finally, in April 1641, sarcastically threw down a gauntlet: "If his [Hobbes's] philosophical system is such that he is afraid of other people stealing it from him," Descartes mocked, "let him publish it."[274]

By the early part of 1641, Hobbes was without anything close to resembling a philosophical system. There is an absence of evidence to suggest that *The Elements of Law* was, in inception, formulated as part of a larger project. From the beginning, *The Elements* was designed to suit the philosophical whims of Hobbes's patron, the Earl of Newcastle.[275] A letter sent to Newcastle in the summer of 1635 supplies evidence to support the conclusion. Hobbes had been made aware that Walter Warner was, then, planning a tract on "y^{e} facultyes & passions."[276] However, as noted in the previous chapter, Hobbes's opinion of Warner was dim. He remarked that "For

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Scheme of the Sciences," in *The Cambridge Companion to Hobbes*, ed. Tom Sorell (Cambridge: Cambridge University Press, 1996), 26.

[274] Descartes, "Letter 36: René Descartes to Marin Mersenne for Hobbes, from Endegeest [11/] 21 April or [18/] 28 April 1641," 118.

[275] The text's epistle dedicatory notes that the work was, as "A Minute or First Draught of the Optiques" would be, produced, surely in part, at the behest of Newcastle: "Now (my Lord) the principles fit for such a foundation, are those which I have heretofore acquainted your Lordship withal in private discourse, and which by your command I have here put into method," *The Elements of Law*, xvii [Epistle Dedicatory]. It is possible that the content of the "private discourse" is summarized in a letter to Descartes, which recounts how "that doctrine of the nature and production of light, sound, and all phantasms or ideas, which M. Descartes now rejects, was explained by me in the presence of those most excellent brothers William Earl of Newcastle and Sir Charles Cavendish…in the year 1630," "Letter 34: Hobbes to Marin Mersenne, from Paris [20/] 30 March 1641," 108. Hobbes refers to the episode again in the epistle dedicatory to "A Minute or First Draught of the Optiques:" "That which I have written of it, is grounded especially upon that which about 16 years since I affirmed to your Lord at Welbeck, that Light is a fancy in the minde, caused by motion in the braine, which motion againe is caused by the motion of the parts of such bodies…," "Thomas Hobbes's *A Minute or First Draught of the Optiques: A Critical Edition*, ed. Elaine Stroud (Ph.D. dissertation, The University of Wisconsin-Madison, 1983), 76-77.

[276] Hobbes, "Letter 16: Hobbes to William Cavendish, Earl of Newcastle, from Paris 15/25 August 1635," in *The Correspondence of Thomas Hobbes* vol. I, ed. Noel Malcolm (Oxford: Clarendon Press, 1997), 29.

y^{e} soule I know he [Warner] has nothinge to giue yo^{r} Lo^{p}," while boasting, "if he can not I hope to be y^{e} first."[277]

It is likely that Hobbes began to work on *The Elements of Law* not long thereafter. With an emphasis on motion and an analysis of the law informed by Grotian antecedents,[278] *The Elements* is emblematic of interests that Hobbes cultivated and refined in the mid-1630s.[279] Furthermore, correspondence evidence exists that indicates he may have begun producing some components of *The Elements* by the winter of 1636/37. In the early winter of 1637 Hobbes received a letter from Kenelm Digby, a Briton living in Paris whom Hobbes met while on the Continent in the mid-1630s. In the letter, Digby offers notes upon a proposed Hobbesian tract on "Logicke," writing

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[277] Ibid.

[278] Baumgold establishes the relationship and how Grotian patterns of analysis were adapted by Hobbes in "Hobbes and Grotius: *The Elements of Law* and *De Jure Belli ac Pacis*" (unpublished manuscript, 2020), typescript.

[279] In the verse autobiography, Hobbes recalls of his third Continental tour that "whether on ship, or coach, or horse-back, my mind constantly pondered the nature of things; and it seemed to me that in the whole world only one thing is real, falsified though it be in many ways. One thing only is real, but it forms the basis of the things we falsely claim to be something, though they are only like the fugitive shapes of dreams or like the images I can multiply at will by mirrors; fantasies, creatures of our brains and nothing more, the only inner reality of which is motion. This is the reason why anyone who wishes to learn natural philosophy must first master the laws of motion. So I turned my thoughts to matter and the varieties of motion, and in this way I beguiled the idle time of our progress through Italy. I wrote nothing, I made no notes; for the Mistress who instructed me was ever present. We left Italy and returned to the lofty walls of noble buildings of Paris. Here I got to know Mersenne, and I communicated to him my mediations on the motion of things. He approved and recommended me to many others. From that time I began to be numbered among the philosophers," "The Autobiography of Thomas Hobbes," 25-26. Of the Grotian components of the text, Baumgold cautions that, though "the evidence does not support a broad generalization about the Grotian character of Hobbesian theory overall," "the evidence also contradicts the broad generalization that Hobbes conceived political theory within the frame of unified science. That generalization blinds us from appreciating what the first of his works in the field plainly, on its surface, *is*: a treatise on law. And, appreciating this, we arrive at the narrower conclusion that *The Elements of Law* is a treatise influenced by and responsive to *De Jure Belli ac Pacis*. The work is Grotian: its author was under the influence of Grotius during a few – crucial – years in his intellectual development," "Hobbes and Grotius: *The Elements of Law* and *De Jure Belli ac Pacis*," 29-30.

> In your Logicke, before you can manage men's conceptions, you must shew a way how to apprehend them rightly: and herein j would gladly know whither you work vpon the generall notions and apprehensions that all men (the vulgar as well as the learned) frame of all things that occurred unto them; or whither you make your ground to be definitions collected out of deep insight into the things themseues.[280]

The remark "your Logicke" has been taken to refer to an early draft of Hobbes's *De corpore*.[281] Published in 1655, *De corpore* was the first section in a

[280] Sir Kenelm Digby, "Letter 25: Sir Kenelm Digby to Hobbes, from Paris 17[/27] January 1637," in *The Correspondence of Thomas Hobbes* vol. I, ed. Noel Malcolm (Oxford: Clarendon Press, 1997), 42-43.

[281] As Baumgold notes in an article on the composition of *The Elements of Law*, it is in Jean Jacquot's and Harold Whitmore Jones's introduction to their edition of the commentary on *De mundo* that the association is made. Baumgold writes, "Scholars think this probably refers to an early version of Hobbes's *De corpore*, which was eventually to be published in 1655. The opening section of *De corpore* is headed 'Pars prima or Logica,' and there exists a manuscript of a rudimentary version of the work with the title 'Logica, ex. T.H.'" However, Baumgold rightly adds that "Nonetheless, although Digby seems to be referring to a different work, the method he discusses is on display in *The Elements of Law*. The work is framed in deductive fashion as a series of definitions of basic concepts, which appear in black gothic script in the manuscripts," "The Composition of Hobbes's 'Elements of Law,'" 21. Also see: the "Introduction" in *Critique Du* De Mundo *De Thomas White*, eds. Jean Jacquot and Harold Whitmore Jones (Paris: Vrin, 1972), 16. Like the others, Malcolm thinks it probable that the note may refer to an early draft of the *De corpore*. However, Malcolm makes an association not made by the others, noting that the "Logicke" Digby references is "Probably an early version of the first part of *De corpore*; possibly to be identified with the notes 'De principiis' (National Library of Wales MS 5297)...," *The Correspondence of Thomas Hobbes*, 49 n. 2. Although there exists redoubtable textual proof that NLW MS 5297 was a part of a body of materials or notes that would eventually feed the *De corpore* project, there is a comparative lack of evidence that the manuscript is the tract Digby names (beyond the mere fact that the manuscript opens with a consideration of "the mind of man" which is a "mirror capable of receiving the representation and image of all the world"), "Of *knowledge* and the *power cognitive* in general," in *Critique Du* De Mundo *De Thomas White*, eds. Jean Jacquot and Harold Whitmore Jones (Paris: Vrin, 1972), 449. It is obvious that there is a genetic link between the manuscript and *The Elements of Law*, both having been composed around the same time. However, the characterization of ratiocination supplied in the manuscript presents the possibility that it was composed *after The Elements of Law*. The tract gives the following analysis of naming and ratiocination: "And therefore upon these he would 10 *impose names*, 20 *he would subtract and compound*, 30 *and divide and multiply*, 40 he would consider, 50 *he would compute. And in truth upon a diligent advertence of what we do when we reason or of the act of ratiocination (things standing or being) we compute nothing else but our phantasms or ideas*...," ibid, 449-450. The formulation and description have no antecedent in *The Elements of Law*, and signal that, by the time that the manuscript was composed, Hobbes had begun to mathematize his conception of ratiocination, conceptualizing reason as a form of computation. Such a conception first appears (among the materials available to us) in the commentary on *De mundo*: "Again, the 'reason' is nothing but the faculty of syllogizing, reasoning being merely a continuous linking of propositions, or their gathering under one head, or (to put it more briefly) 'the calculating of names,'" *Thomas Hobbes: Thomas White's* De Mundo *Examined*, 377 [30.22]. There is no evidence that Hobbes's thinking had begun to evolve in this direction as he was composing *De cive*.

trio of texts, discussed in greater detail below, that comprised Hobbes's *Elementa Philosophiae* ("Elements of Philosophy"). However, there are reasons to doubt the association of "your Logicke" with *De coropore*. First, the presumption that "your Logicke" refers to an early draft of *De corpore* relies on a weak nominal similarity between "Logicke," the title given by Digby, and the title given to a manuscript resembling Charles Cavendish's early notes on *De corpore*. The manuscript, titled "Logica ex T.H.," was written in the mid-1640s, almost a full decade after Hobbes's exchange with Digby.[282]

Second, if read closely, the content of Digby's remarks points in another direction, away from *De corpore* and toward the possible conclusion that the tract on "Logicke" may have been an early component part of what would become the analysis of *The Elements of Law*, on which, it is likely, Hobbes was then working. In the quotation, Digby addresses what would have been a fundamental, epistemological question: what is a legitimate basis for knowing? How is it possible to know that one's conceptions are correct or "right?" Is it sufficient, he poses, to rely upon "generall notions and apprehensions that all men" – including "vulgar," ordinary men – use to "frame…all things that occurred unto them" or must one be more systematic and ordered, making the "ground" of knowledge "definitions collected out of deep insights into the things themseues?"[283]

[282] Chapter 5 discusses both the evolution of Hobbes's methodological views and where the manuscript fits in this evolution. Also see Malcolm, *Aspects of Hobbes*, 154.

[283] Digby, "Letter 25: Sir Kenelm Digby to Hobbes, from Paris 17[/27] January 1637," 43.

Hobbes touches on the question in *The Elements*, using a distinction reminiscent of the one deployed by Digby. *The Elements* weighs and contrasts two kinds of knowledge, similar to Digby's "generall notions" and "definitions." Hobbes, as Digby seems to have, thought "knowledge original,"[284] the simple conceptions engendered by different forms of sense experience, inferior to knowledge begot through ratiocination: syllogistic reasoning, which relies on definitions. "[T]here be two sorts of knowledge, whereof the one is nothing else but sense, or knowledge original…and remembrance of the same; the other is called science or knowledge of the truth of propositions, and how things are called, and is derived from understanding."[285] The pivotal question for Hobbes was not whether, or by what means conceptions can be "rightly" "apprehended," but rather, whether the words we use, and in turn the propositions of science, are tied to our conceptions. Thus, while failing to lay out strict protocol for "apprehend[ing] conceptions," he did address the thrust of Digby's query, by delineating steps that can be taken to convert sense-generated conceptions into demonstratively certain, usable scientific knowledge.[286]

The Digby letter is no smoking-gun. The highlighted similarities between Digby's description of the work, likely as described to him by Hobbes

[284] Hobbes, *The Elements of Law*, 18-19 [6.1].

[285] Ibid.

[286] Ibid, 20 [6.4].

either in person or in a previous letter,[287] and *The Elements* are not sufficient to demonstrate that Digby's "Logicke" *was* an early draft of *The Elements of Law* (even if Digby does seem to remark upon how Hobbes ordered the chapters of the work).[288] However, neither does Digby's letter supply affirmative evidence that *The Elements* was part of a larger philosophical edifice, a series of texts comprising a "philosophical system," or that such an edifice was, at that time, in the works.

Likewise, the text of *The Elements* gives no indication of the existence of an *Elementa Philosophiae* tripartite plan. In fact, *The Elements* includes language that militates against the speculative conclusion that the plan predated or was developed in conjunction with *The Elements of Law*. As Richard Tuck points out,[289] after having decided to compose the *Elementa*

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[287] As Digby notes in a letter sent several months later, "I summon you of your promise; which is that as soon as you haue done any piece of your Logicke, you will let me see it," "Letter 26: Sir Kenelm Digby to Hobbes, from London 11[/21] September 1637," in *The Correspondence of Thomas Hobbes* vol. I, ed. Noel Malcolm (Oxford: Clarendon Press, 1997), 50. Based on this, it is reasonable to conclude that Digby, in the earlier note, was responding to a description of the tract's contents, as provided by Hobbes.

[288] It is notable that Hobbes's treatment of method and science is delivered later in the exposition, in the sixth chapter, the final chapter in the first cluster of chapters, grouped under the header "Of the faculties discretive," *The Elements of Law*, xv. The organization was retained in *De corpore*, whose first part, like *The Elements*', ends with a chapter (chapter 6) on method. It is possible that Hobbes made the decisions vis-à-vis chapter organization under the influence of the German systematics. Helen Hattab explains, "Although the systematics oppose the Ramists, by reinstating the traditional elements of Aristotelian logic, the systematics retain Ramist influences in their treatises on logic by including a final part devoted to method. Conversely, traditional Scholastic Aristotelian logic texts omit this final part. Not unlike the English followers of Keckermann, Hobbes appears to yield to the influence of the emergent German systematic logic, as he concludes the first part of his *De Corpore* on Logic, with a chapter on method," "Hobbes's and Zabarella's Methods: A Missing Link," *Journal of the History of Philosophy* 52, no. 3 (2014), 480. The Hardwick catalogue includes multiple works by Keckermann, Talaska, Richard, *The Hardwick Library and Hobbes's Early Intellectual Development* (Charlottesville: Philosophy Documentation Center, 2013), 92-93.

[289] Tuck correctly points out that "Hobbes always used the term *section* with care." However, the remarks that follow are lacking in analytical and factual precision. He continues, "[Hobbes] reserved it for the three great divisions of his universal philosophy, known from their final titles (which were clearly adumbrated in 1642) as *De Corpore*, *De Homine*, and *De Cive*. In many of

Philosophiae, Hobbes was careful and selective in his use of the word "section," a term he consistently used to refer to each of the trio of texts that make up the *Elementa Philosophiae*.[290] In *The Elements of Law*, "section" is used in a non-technical way, to refer to the numbered paragraphs that make up each chapter. Thus, Tuck is incorrect in the assessment that *The Elements* is among those texts in which Hobbes never "referred to…subdivisions as *sectiones*."[291] The term is equally distributed across the text, appearing in chapters 2, 4, 5, 7, 8, 9, 13, 17, 18, 20, 21, 23, 26, 27, 28, and often multiple times per chapter.[292] Deborah Baumgold demonstrates that *The Elements* was finished in a hurry in 1640, and raises the possibility that the latter, political, chapters of *The Elements* were drafted just before the manuscript was finished.[293] Thus, it is reasonable to infer

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his works (including *The Elements of Law*, *De Corpore*, *De Cive*, and *Leviathan*) he subdivided his text; but never referred to those subdivisions as *sectiones*. In *De Corpore*, *The Elements*, and *Leviathan*, they are partes or parts, in *De cive* they are simply given specific titles. Moreover, in all his works (except for *The Elements*), even where subdivisions are employed, the chapters run in continuous numerical sequence from the beginning to the end of the work," "Hobbes and Descartes," 20. First, Hobbes did not "adumbrate" the "final titles" of the three sections that comprise the *Elementa Philosophiae* in 1642. Although the first edition of *De cive* is not without references to precedent sections, the title of the work, "The Third Section of the Elements of Philosophy, On the Citizen," simply implies that the *Elementa Philosophiae* would comprise *at least* three parts. To my knowledge, there is no evidence to suggest that Hobbes had, at the time, settled on the titles of either section one or section two. Tuck supplies no citation to support the remark. Second, Tuck is incorrect in his assessment of *The Elements*. Subdivisions, at the paragraph level, were characterized as "sections." The word "section" appears 25 times in the text, on the following pages, and in the following chapters and paragraphs: 4 [2.5]; 13 [4.11]; 18 [5.14]; 21 [7.1]; 24 [8.1]; twice on 33 [9.16]; 36 [9.20]; twice on 51 [13.4]; 69 [17.2]; 69 [17.3]; 76 [18.11]; 83 [20.1]; 88 [20.14]; 89 [20.16]; 93 [21.3]; 94 [21.7]; 95 [21.8]; 96 [21.10]; 102 [23.1]; 104 [23.4]; 132 [26.10]; 136 [27.6]; 142 [28.1].

[290] The care with which Hobbes deployed the word is especially visible in *Leviathan*, on whose pages the term appears nowhere.

[291] The full quotation and citation are given above, in footnote 289.

[292] For a full list of pages and chapters, see footnote 289.

[293] Specifically, Baumgold raises three possibilities with respect to the composition timeline of *The Elements*. First, it is possible that "six chapters in Part II" were "hurriedly drafted in the spring of 1640 – Chapters 2 and 5, comparing forms of government; 7, which continues the religious cause for political obedience; 8, on the causes of rebellion; 9, on the duties of rulers;

that, by the time that Hobbes finished the text in May 1640, the term "section" had yet to take on the special, technical meaning Tuck describes – the tripartite plan was not yet fully settled in his mind.

An absence of evidence is not evidence of absence. However, what the emerging chronology indicates is that it was likely not until *after* he had finished *The Elements of Law* in May 1640, and perhaps not until he had fled to Paris that fall, that Hobbes settled upon the production of a trilogy of "sections" that would set out the elements of his philosophy. Indeed, thereafter, the evidence shows that the *Elementa Philosophiae* plan coalesced, in part, as the result of a dialectical engagement with Descartes's *Dioptrique*. As Hobbes's correspondence with Mersenne show, it was this essay upon which he was fixated during the period that he relocated to Paris. At some time during the same period, it is possible by the winter of 1641 or later,[294] Hobbes consolidated

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and Chapter 10, the single chapter on the theme of law," "The Composition of Hobbes's 'Elements of Law'," 32. Second, "Focusing on Hobbes's argument yields a more conservative estimate. There are three chapters in the second part of *The Elements of Law* whose content is curious in ways that suggest they were written hurriedly: Chapter 2, which defends unconditional sovereignty using the claim that all governments have democratic foundations; 8, which employs Bodin's *Republique* in defense of absolute sovereignty; and 10, the scanty final chapter on the subject of law. At a minimum, these chapters appear to have been drafted in the spring of 1640," ibid, 32-33. Baumgold also allows that "It is possible that Hobbes had outlined the sequence of chapters of the work as a whole before starting to write and so, in the spring of 1640, had the task of hurriedly filling in the final pages," however, notes that she is "skeptical of this last possibility because the intellectual and physical evidence suggests a more uneven process of composition," ibid, 33.

[294] Relying on correspondence evidence, Franco Guidice reckons that Hobbes began writing the tract in the winter of 1641: "we can read a key letter that Hobbes sent to Sir Charles Cavendish on 29 January/8February 1641, when he probably began writing his *Tractatus opticus II* [i.e., the "Latin Optical Manuscript]," "Optics in Hobbes's Natural Philosophy," *Hobbes Studies* 29, no. 1 (2016), 96. I am less confident about this *datation*. However, it is very likely that the tract was started, and even more likely completed, in Paris. Timothy Raylor supplies the relevant evidence, explaining that an inspection of the manuscript contradicts Tuck's and Malcolm's conclusions vis-à-vis date, as the physical evidence "and the Hobbes Papers at Chatsworth suggests that the transcriptions of the Latin Optical Manuscript was made after, rather than just before, Hobbes's arrival in Paris. We cannot say exactly how long after, but the evidence points to a period soon after his arrival: Mersenne sent Sir Charles the copy of the 'Receuil' on 1

his criticisms of Descartes's optics (and the optics of the "Short Tract") into a systematic treatise.[295] It is in the tract, the so-called "Latin Optical Manuscript," that the first affirmative evidence of an ambition to create a philosophical series, comprising multiple "sections," appears.[296]

Thus, it was not until several months after Descartes's provocation, and a year and a half after having completed *The Elements*, that Hobbes announced a plan to publish the *Elementa Philosophiae* series. The series, like the "Short Tract,"[297] would comprise at least three "sections," on first principles and

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March 1641; and the vellum *De cive* is dated 1641. The evidence therefore seems to suggest that Hobbes was still working on his Latin Optical Manuscript at a later point than that proposed by Noel Malcolm and Richard Tuck," "The Date and Script of Hobbes's Latin Optical Manuscript," in *English Manuscript Studies* vol. 12, ed. Peter Beal and A.S.G. Edwards (London: The British Library, 2005), 208.

[295] Stroud explains that "Following this debate with Descartes in 1641, Hobbes…proceeded to write an optical treatise directed more specifically against the Cartesian theories: *Tractatus Opticus II. Tractatus Opticus II*, the Latin optical manuscript, reveals the depth of Hobbes's involvement with problems of vision and optics. Where *Tractatus Opticus I* outlined the theory of light, *Tractatus Opticus II* explains Hobbes's position in great detail. Hobbes begins this latin [sic] manuscript with a statement of the principles of light propagation, and then proceeds to a careful analysis of reflection, refraction, and vision in terms of the physical principles of propagation. [Frithiof] Brandt's analysis of Hobbes's motivation for writing *Tractatus Opticus II* explains why we find direct reference to Descartes in this treatise. Throughout the manuscript we see Hobbes grappling with very complex issues that were being addressed simultaneously by his contemporaries," "Background," In "Thomas Hobbes's *A Minute or First Draught of the Optiques*: A Critical Edition" (Ph.D. Dissertation, The University of Wisconsin-Madison, 1983), 19.

[296] However, the references to antecedent sections that appear in the tract merely gesture to a previous section in which very general concepts and propositions (like "all action, [is] local motion in an agent" (*Et quia demonstratum est in sectione antecedente omnem actionem, esse motum localem in agente…"*) and so on are explicated, "Thomas Hobbes: Tractatus Opticus (Harley Mss. 6796, ff. 193-266)," ed. Franco Alessio, *Rivista Critica di Storia della Filosofia* 18, no. 2 (1963), 148. Thus, the references, in themselves, do not persuasively demonstrate that Hobbes had an antecedent section in hand.

[297] J.W.N. Watkins points out the parallel, writing, "The *Tract* is a condensed, preliminary statement of Hobbes's cosmology, psychology and ethics. With one exception, its ideas survived, essentially unaltered, into his later philosophical and political writings," *Hobbes's System of Ideas* (London: Hutchinson University Library, 1965), 42. Raylor draws the same conclusion while rejecting the attribution of the tract to Hobbes, musing, "It seems possible therefore that the value of *A short tract on first principles* has been mislocated. Rather than preserving Hobbes's first attempt to expound a full-scale mechanist theory of reality, it perhaps preserves [Robert] Payne's failure to do so; this failure may have prompted Hobbes to begin

natural philosophy (section one), optics and human nature (section two), and moral (and political) philosophy (section three). Whether spurred by Descartes's words or work, or eager to make an impression on the members of the Paris circle[298] (or both), Hobbes clearly both felt some pressure to publish and endeavored to make a philosophical splash.

However, he had only a limited stock of publishable material available to him. It is unclear at what point the "Latin Optical Manuscript" was completed. And, what is more, Hobbes made no move to publish the tract on it was in hand. In fact, he did not produce a full, preliminary draft manuscript of his optics, titled "A first or minute draught on the optiques," until 1646, and only then at the probable behest of Newcastle.[299] He waited almost another decade to publish the material (albeit in a revised, condensed form). Thus, in the early 1640s, with the material on optics and human nature not yet ripe for public

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work on a Section by Section response that eventually grew into the great *Elementa philosophiae: De corpore*, *De homine*, and *De cive*," "Hobbes, Payne, and "A Short Tract on First Principles," 56. The final inference pushes further than the relevant data allows. Though, as others point out, a rough draft of the second section of the series engages with the "Short Tract," as noted above, it was conceived, at least in part, in response to the work of Descartes.

[298] In a recent essay, Baumgold and I contend, "Once back in Paris in 1640, it must have occurred to [Hobbes] that a good way to make his ideas accessible to Mersenne's circle and build his reputation was to use the existing manuscript [*The Elements of Law*] as the basis for a work in the lingua franca of Continental philosophers and to frame the new work in the 'Elements of Philosophy' scheme," "Excavating *On the Citizen*," in *On the Citizen: A Critical* Guide, eds. Robin Douglass and Johan Olsthoorn (Cambridge: Cambridge University Press, 2020), 15.

[299] The epistle dedicatory, addressed to Newcastle, notes, "All that I shall be ever able to adde to it, is polishing, for being the first draught it could not bee so perfect as I hope hereafter to make it in latine. Butt as it is, it will sufficiently give your Lordship satisfaction, in those quares you were pleased to make concerning this subject, I am content that it passe, in respect of some drosse that yet cleaves to it, for ore, (which is much better than old onds [sic] raked out of the kennel of Sophistors bookes) and for such I commend it to your Lord, and myself to your accustomed good Opinion, which hath been hitherto so greate honour to mee, as I am nott knowne to the world by anything so much as being," "Thomas Hobbes's *A Minute or First Draught of the Optiques*: A Critical Edition," 77.

consumption, Hobbes's only option was to publish material that was well in hand: his political theory.[300]

By November 1641, a year after having arrived in Paris, Hobbes had penned the preface for the new work, framed in terms that would have grabbed the attention of his Parisian contacts, including Mersenne (who supported the publication), and Digby, who both supplied financing for the project[301] and had

[300] Hobbes does give different reasons in the preface to the second edition of *De cive*, explaining, "While I was filling it [the *Elementa Philosophiae* series] out, and putting it in order, writing slowly and painfully (for I was thinking it through not composing a rhetorical exercise), it happened that my country, some years before the civil war broke out, was already seething with questions of the right of Government and of the due obedience of citizens, forerunners of the approaching war. That was the reason why I put the rest aside and hurried on the completion of this third part," *On the Citizen*, 13. It bears observing that, in outlines, the chronology Hobbes offers is plausible. The evidence supports the possibility that Hobbes turned to optics during the transitional period, as he relocated to Paris. Furthermore, it is equally plausible that the "approaching war" was *an* impetus for the edition, however, as expounded above, it is entirely unlikely that it was the only reason, or, perhaps, given the details of the first edition's publication, even the principal one. That said, there is evidence in the text itself that Hobbes was composing some parts of the text with a narrow set of English readers in mind. For example, the volume is dedicated to William Cavendish, Earl of Devonshire, and at least twice, he uses metaphors and language that would have been appealing to members of the Welbeck group (Newcastle and Payne especially). For example, *De cive* features a new equestrian analogy in chapter 13, "The Duties of Those with Sovereign Power." Newcastle, who was close to the Crown and at one point entrusted with responsibility of the education of Prince Charles, and, renowned for his love of horses and riding, surely would have found the analogy pleasing. Hobbes writes, "It does sometimes happen that just as one must coax a horse because he is fierce, so one must conciliate a defiant citizen because he is powerful," *On the Citizen*, 149 [13.2]. Likewise, just a few paragraphs earlier, Hobbes relies on a metaphor that sits at square odds with his philosophy; however, the metaphor would have been received warmly by Newcastle (and probably Payne). Remarking on the collection of intelligence, Hobbes analogizes, "Reliable *intelligence agents* are to those who exercise sovereign power as rays of light to the human soul; and it is more correct to say of political sight than of natural sight that the perceptible and intelligible appearances of things are carried invisibly through the air to the soul (that is, to those who exercise the sovereign power of the commonwealth)," ibid, 145 [13.7]. The quotation, as rendered by Tuck and Silverthorne, contains an error of translation. The Latin makes it clear that it is the "species of external things" [*species rerum externarum*] that are being "carried invisibly through the air to the soul," *Elementorum Philosophiae Sectio Tertia De Cive*, 143 [13.7]. In his correspondence and written works, Hobbes flatly rejected the existence of "species." However, it is an idea that was embraced by Newcastle and possibly Payne.

[301] Howard Warrender writes, "It appears, moreover, that *De Cive* was published in part at least under the auspices of Sir Kenelm Digby, a friend of Hobbes, who was in Paris at the time, and that Digby financed the printing," "Editor's Introduction," in De Cive: *The Latin Version*, ed. Howard Warrender (Oxford: Clarendon Press, 1983) 6.

sent a copy of Descartes's *Discourse on Method* (and *Dioptrique*) to Hobbes in 1637.[302] Titled *Elementa Philosophiae Sectio Tertia De Cive* ("The Third Section of the Elements of Philosophy, On the Citizen") the new work by Hobbes expressed an orientation and an ambition that reflected the geometrical bearing of many in the Paris circle, and specifically, the programmatic vision outlined in Descartes's *Discourse on Method*. That vision, as Descartes explains in the *Discourse*, was tied up with the idea of geometricizing science, and as such, establishing a new basis for and system of philosophy:

> Those long chains composed of very simple and easy reasonings, which geometers customarily use to arrive at their most difficult demonstrations, had given me occasion to suppose that all the things which can fall under human knowledge are interconnected in the same way. And I thought that, provided we refrain from accepting anything as true which is not, and always keep to the order required for deducing one thing from another, there can be nothing too remote to be reached in the end or too well hidden to be discovered.[303]

Hobbes intended the philosophical series to be comprised of "long chains…of simple and easy reasonings," à la geometry, whose parts were set in some form of deductive order.[304] The Cartesian-esque posture of the plan, and of *De cive*

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[302] From Digby in October 1637: "I come now with this to make good w^{t} j promise to you in my last: which is to putt Monsieur des Cartes (whom Mydorge so much admireth) his book into your hands," "Letter 26: Sir Kenelm Digby to Hobbes, from London 11[/21] 1637," 51.

[303] René Descartes, "Discourse on the Method," in *The Philosophical Writings of Descartes* vol. I, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch (Cambridge: Cambridge University Press, 1985), 15.

[304] William Sacksteder argues that it is entirely possible that mistaken notions of deductivity misrepresent the nature of the relationship between the parts of Hobbes philosophy, contending, "This succession is an order of *dependence* of posterior science on prior science [not unlike, if I may interject, a logic of subalternation]. It does not follow that it is an order of 'derivation' or even demonstration solely. The most virulent of the textbook orthodoxies I oppose is that Hobbes's philosophic scheme is 'deductive' in such a way that each posterior science may be deduced from that which precedes, and all of them, from one some 'primary science,'" "Hobbes's Science of Human Nature," *Hobbes Studies* 3 (1990), 38. (The argument is discussed at some length in chapter 5.) Similarly, Tom Sorell argues, "What is more, [Hobbes] did not suppose that the links between the closely related sciences of geometry, mechanics, and

specifically, was obvious to some of Hobbes's contemporaries. One, Samuel Sorbière, initially misidentified the volume, remarking in a letter to a friend that he thought it of Cartesian origin.[305]

Yet, however new and on trend the privately published volume may have appeared to the small handful of Continental readers privileged enough to secure a copy,[306] *De cive* was nothing more than a minimally re-organized,

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physics, were 'deductive' in the Cartesian sense. That is, he did not suppose that the sciences could all be ranged in a series that the mind could take in as it takes in a geometrical demonstration. All that Hobbes ever claims is that someone interested in getting as much knowledge as he can by the shortest route ought to acquire the sciences in the order he prescribes. He does not think that the results of the science that is last in the order of demonstration, i.e., the rules of behavior given in the sciences of politics, are remote consequences of the axioms of geometry. If there is a unifying principle to Hobbes's ordering of sciences it is that motion is responsible for every class of natural effect. It is this principle that informs even Hobbes's philosophy of mind, offending against Descartes's categorical distinction between the theories of material and immaterial. But it is primarily a principle about what is common to the causes assigned by the sciences, not a principle about the structure of the sciences," "Descartes, Hobbes and the Body of Natural Science," *The Monist* 71, no. 4 (1988), 520.

[305] Of his encounter with the text (facilitated by Mersenne) Sorbière reports in a letter sent in early 1643 to Thomas de Martel, "The very little that we were able to read hastily in a quarter of an hour affected our minds remarkably," and hypothesized, "I suspected that Descartes was the author," only to learn from Descartes that "he would never publish anything on Morals," while adding, "whoever be the Father, he is certainly not to the vulgar taste," "Sorbière to Martel. Sluys, Flanders. 1 February 1643," in De Cive: *The Latin Version*, ed. Howard Warrender (Oxford: Clarendon Press, 1983), 300.

[306] Of the publication history of the first edition, Johann Sommerville notes, "The evidence of the printing and early reception of *On the Citizen* strongly suggests that from the first it was seen as a dangerous work which might bring trouble upon those concerned in its publication. Typically, authors and printers like to advertise and sell their books. In the case of the original printing of Hobbes's work, the names of the writer and printer were concealed. We often read that *On the Citizen* was first published in Paris. We also read that it was privately printed. It was not published in the usual sense of the term. That is to say, it was circulated among some of Hobbes's learned friends, not made available to the public. It was printed in Paris in 1642, but lacked the standard official license authorizing publication. The book – which is now very rare – appeared without the author's name (though the dedication epistle to Devonshire was subscribed 'T.H.') and without the name of the printer. It also contained no information about how or where the readers might procure copies. Hugo Grotius reported in April 1643 that he thought the book was not for sale," "*On the Citizen* and Church-State Relations," in On the Citizen: *A Critical Guide*, eds. Robin Douglass and Johan Olsthoorn (Cambridge: Cambridge University Press, 2020), 213-214. Sommerville goes on to add that, "Thomas de Martel wrote to Samuel Sorbière informing him that there had appeared in Paris 'not indeed among the common sort, but among the choicer spirits' a book *On the Citizen* 'by an anonymous author.' He observed that 'it contains many paradoxes about the state and Religion' and asserted that therefore it 'is not available to everyone,'" ibid, 214. It is unclear to what extent Martel's remarks

lightly revised, and in some areas, expanded edition of *The Elements of Law*.[307] At the same time, the genetic link between the two texts should not be allowed to overshadow differences. Notably, the new plan for a philosophical series pressed Hobbes to adapt *The Elements of Law* and reshape it to accommodate a new mold. Doing this entailed making adjustments to its scope, and, in particular, removing any content that belonged in another section of the philosophical series (i.e., in sections one or two).

The Elements of Law opens with an outline of the text's contents. At the time of its writing, Hobbes determined that the manuscript's chapters could be grouped together under three broad headings and divided into two parts, with the first group of chapters in part one, the second two in part two. Part I of the text, organized under the header "Concerning men as persons natural,"

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should be allowed to inform assessments of the reasons for which the volume was printed privately, with the hallmarks Sommerville highlights. It was not uncommon, nor even for Hobbes, to publish works anonymously. Indeed, he had anonymously published a digest of Aristotle's *Rhetoric* in the mid-1630s. As regards the choice to print a small number of the volumes privately, it is possible, too, that the arrangement offered a middle path between scribal publication (*The Elements of Law* having been circulated as a manuscript) and a full printing. Similarly, Hobbes may have been reluctant to properly publish the third work of his philosophical trilogy first. That Hobbes, ultimately, thought it appropriate to publish a second edition of the work in 1647 suggests that he was not made entirely uncomfortable by the prospect of the wide, public circulation of his ideas. It is interesting that, in the period before the second edition was published, Hobbes grew paranoid, as his concerns turned not to the prospect of being filleted for publishing a controversial text, but rather, to possible interference from Descartes: "Furthermore, if M. Descartes hears of suspects that a book of mine (this or any other) is being assessed for publication, I know for certain that he will stop it if he can. Please believe me on this one thing, for I do know. I leave all the other precautions to you, as I am fully aware of both your prudence and your goodwill towards me," "Letter 40: Hobbes to Samuel Sorbière, from Paris [6/] 16 May 1646," in *The Correspondence of Thomas Hobbes* vol. I, ed. and trans. Noel Malcolm (Oxford: Clarendon Press, 1997), 127.

[307] Baumgold records that "By November 1641, [Hobbes] had completed a revised, expanded and translated adaptation of the 1640 manuscript, giving it the title *De Cive*. In transforming the *Elements* into *De Cive*, Hobbes put the arguments into Latin, omitted the initial thirteen chapters on psychology and epistemology, and expanded two chapters on religion into an entire section," "Editors Introduction," in *Three-Text Edition of Thomas Hobbes's Political Theory*, ed. Deborah Baumgold (Cambridge: Cambridge University Press, 2017), xii.

includes chapters 1-19. In the set are a diverse range of chapters, including ones addressing, *inter alias*, human imagination and evaluative faculties (chapters 1-6), including sense, imagination, mental discourse, reasoning, knowledge; "motive" faculties (chapters 7-9), including "delight and pain," "good and evil," "the pleasures of sense," honor, "the passions of mind;" the idiosyncratic workings of human imagination (chapter 10), knowledge of God (chapter 11), deliberation (chapter 12), human discourse (chapter 13); "the condition of men in mere nature" (chapters 14-15); "natural laws" (chapters 16-18); and finally, "the necessity and definition of a body politic" (chapter 19). The final chapter of Part I of the text, on "the necessity and definition of a body politic," introduces Part II and the chapter set that follows, which address the themes of the "body politic" (its origins, nature, and the causes of its dissolution) and the "nature and kinds of laws."[308]

Adapting *The Elements of Law* to the *Elementa Philosophiae* plan forced Hobbes to carve up the text and abandon the scheme and rubrics that originally organized it. The strategy he settled upon involved preserving the content on human nature – Part I, chapters 1-13 – for another yet-unnamed volume and using what remained[309] – viz., Part I, chapters 14-19, and nearly all of Part II – as the basis for the third, political, section of the *Elementa Philosophiae* series. *De cive*'s index reflects the change in approach. The text

[308] Hobbes, *The Elements of Law*, xv-xvi.

[309] The first edition includes a handful of references that suggestively nod at the second section. As noted in the paragraph that follows, the first substantive paragraph of the work begins, "In the previous section the whole of human nature has been described, comprising the faculties of both body and mind," Hobbes, *On the Citizen*, 21 n. 1.

proceeds with a new organizational scheme, its chapters now grouped under three thematically differentiated headers, addressing the broad subjects of liberty, government, and religion.[310]

However, the expository shift exacted a heavy price. The excision of (roughly) the first thirteen chapters of *The Elements of Law* from the chapter outline of *De cive* emaciated the argument and analysis. As Hobbes notes in *The Elements of Law*, the state of nature deduction, located in chapter 14 of the text (later re-presented as chapter 1 of *De cive*), presupposes support from "precedent chapters" wherein "the whole nature of man" was "set forth." He explains, "In the precedent chapters hath been set forth the whole nature of man consisting in the powers natural of his body and mind, and may all be comprehended in these four: strength of body, experience, reason, and passion."[311] The line, copied verbatim, opens *De cive*;[312] but, unlike in *The Elements of Law*, the presupposed empirical material appears nowhere in the book. Hobbes's revisions reveal a sensitivity to the loss of substantive anchoring.

II. The empirical foundations of De cive

[310] Ibid, 17.

[311] Hobbes, *The Elements of Law*, 53 [14.1].

[312] The sentences of the first paragraph of the first chapter of the first edition read, "In the previous section the whole of human nature has been described, comprising the faculties of both body and mind; they may all be reduced to four *kinds*; which are, Physical force, Experience, Reason and Passion. We shall begin the present section with a consideration of the human condition, namely, what attitude men have towards each other, being gifted with these natural endowments," Hobbes, *On the Citizen*, 21 n. 1.

Accounting for the excision of empirical content demanded that Hobbes adapt the analysis to hold its own weight. The new-found concern for the empirical durability of the political analysis delivered in *De cive* is apparent, we will see, in the framing of the text and embeds some of *De cive*'s most visible features and elements of exposition, including its epistle dedicatory and a new(ish) first chapter.[313] The concern also motivated other revisions, having pushed Hobbes to re-couch fine analytical judgments and experiment with different solutions that could address the loss of empirical content.

While building on themes presented in *The Elements of Law*'s thirteenth chapter, the content of *De cive*'s epistle dedicatory is mostly new and bespeaks a key difference between the two texts. Whereas the political theory advanced in *The Elements of Law* depends, at least in part, on an analysis human "discretive" and "motive"[314] faculties that draws influence from the principle of motion, the epistle dedicatory of *De cive* puts that text on different footing. Hamstrung by the *Elementa Philosophiae* plan, Hobbes used the epistle dedicatory to frame the political theory of *De cive* as originating in principles plausibly sturdy enough to stand without the empirical analysis given in *The Elements of Law*.[315] The political theory of *De cive*, Hobbes's epistle dedicatory

[313] See the precis outline comparing the two texts in Baumgold's *Three-Text Edition of Thomas Hobbes's Political Theory*, 127-128.

[314] Hobbes, *The Elements of Law*, xv.

[315] Writing in a way that is reminiscent of the analytical "mood" so characteristic of Descartes's work (for more on this, see the chapter on *De corpore*), the *Meditations on First Philosophy* specifically, Hobbes, in the epistle dedicatory, recounts, "*And so when I turned my thoughts to the inquiry about natural justice I was alerted by the very name of justice (by which is meant a constant will to give every man* his right) *to ask first how it is that anyone ever spoke of something as* his own *rather than* another's; *and when it was clear that it did not originate in nature but in human agreement (for human beings have been distributed what nature had placed*

impresses, emerges from "two absolutely certain postulates of human nature." The first is "the postulate of human greed by which each man insists upon his own private use of common property; the other, the postulate of natural reason, by which each man strives to avoid violent death as the supreme evil in nature."[316]

Without the material from *The Elements of Law* to lean on, *De cive*, by necessity, put the postulates at the center of the analysis. The adjustment is most visible with respect to the place of the postulate of natural avarice (*cupiditas hominis naturalis*)[317] in *De cive*'s first chapter. The content for the chapter was reworked and expanded to position Hobbes's theory of human nature against Aristotelian or neo-Stoic alternatives. Specifically, he chides that "previous writers on public Affairs"[318] had held a "superficial view of human nature"[319] and used the wrongheaded premise that "Man is an animal…born fit for Society"[320] as ballast for their theory of society formation.[321] On the contrary,

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in common), I was led from there to another question, namely, for whose benefit and under what necessity, when all things belonged to all men, they preferred that each man should have things that belonged to himself alone. And I saw that war and every kind of calamity must necessarily follow from community in things, as men came into violent conflict over their use; a thing all seek by nature to avoid. Thus I obtained two absolutely certain postulates of human nature, one, the postulate of human greed by which each man insists upon his own private use of common property; the other, the postulate of natural reason, by which each man strives to avoid violent death as the supreme evil in nature," *On the Citizen*, 5-6 [Epistle Dedicatory 9-10].

[316] Ibid, 6 [Epistle Dedicatory 10].

[317] Hobbes, *Elementorum Philosophiae Sectio Tertia De Cive*, 7 [1.7].

[318] Hobbes, *On the Citizen*, 21 [1.2].

[319] Ibid, 22 [1.2].

[320] Ibid, 21-22 [1.2].

[321] For an extended treatment of the argument, juxtaposed with the work of one of its intended targets (Aristotle), see Nicholas Gooding and Kinch Hoekstra's "Hobbes and Aristotle on the

Hobbes judges, "the origin of large and lasting societies lay not in mutual human benevolence but in men's mutual fear"[322] – in the psychological states and "dangers" that emanate from "men's natural cupidity."[323] As he writes later in the chapter, "Amid so many dangers therefore from men's natural cupidity, that threaten every man every day, we cannot be blamed for looking out for ourselves; we cannot will to do otherwise."[324] In other words, the postulate was made into an empirical anchor for Hobbes's political theory, his ideas about the tenability of human relations in the state of nature, where property is held in common,[325] in particular.

The table below parallels the relevant quotation from *De cive* with its precursor in *The Elements of Law* to illustrate Hobbes's process of adaptation. As the parallels show, Hobbes refined and honed the argument from *The*

Foundation of Political Science," in On the Citizen*: A Critical Guide*, eds. Robin Douglass and Johan Olsthoorn (Cambridge: Cambridge University Press, 2020), 31-50.

[322] Hobbes, *On the Citizen*, 24 [1.2].

[323] Ibid, 27 [1.7].

[324] Ibid.

[325] These ideas plausibly offer an alternative to Hugo Grotius's, a possibility Gooding and Hoekstra may reject, when they argue, "careful scholars have concluded that Hobbes's purported disagreement with Aristotle involves a basic misunderstanding or a careless or deliberate distortion; or (more charitably) that Hobbes's real target was not Aristotle himself, but some scholastic or neo-Stoic permutation," "Hobbes and Aristotle on the Foundation of Political Science," 32. Working forward from the premise that humans, naturally chummy, clump together to create societies, Grotius promoted the strong impression that natural law would compel human action, even in nature. For example, natural law would compel the abstention "from that which is another's, the restoration to another of anything of his which he may have, together with any gain which we may receive from it," *De Jure Belli ac Pacis Libri Tres* vol. II, trans. Francis W. Kelsey (Oxford: Clarendon Press, 1925), 5-6. He also believed that strong forms of accountability would obtain by virtue of natural law, such as "the obligation to fulfil promises, the making good of a loss incurred through our fault, and the inflicting of penalties upon men according to their deserts," ibid. In other words, Grotius populated "the state of nature with a comprehensive system of rights and duties," that, in design and content, "are extraordinarily robust," Straumann, Benjamin, *Roman Law in the State of Nature: The Classical Foundations of Hugo Grotius' Natural Law* (Cambridge: Cambridge University Press, 2015), 136.

Elements of Law and, as he did so, explicitly marked out and centered the postulate of natural cupidity, making it into a fundamental piece of his analysis of the circumstances that precipitate the war of all against all in the state of nature.

Table 3.1: A Comparison of *The Elements of Law*, 16.4 and *De cive*, 1.7

The Elements of Law, 14.6[326]	*De cive*, 1.7[327]
And forasmuch as necessity of nature maketh men to will and desire *bonum sibi*, that which is good for themselves, and to avoid that which is hurtful; but most of all that terrible enemy of nature, death, for whom we expect both the loss of all power, and also the greatest of bodily pains in the losing; it is not against reason that a man doth all he can to preserve his own body and limbs, both from death and pain. And that which is not against reason, men call RIGHT, or *jus*, or blameless liberty of using our own natural power and ability. It is therefore a *right of nature*: that every man may preserve his own life and limbs, with all the power he hath.	Amid so many dangers therefore from men's natural cupidity, that threaten every man every day, we cannot be blamed for looking out for ourselves; we cannot will to do otherwise. For each man is drawn to desire that which is Good for him and to Avoid what is bad for him, and most of all the greatest of natural evils, which is death; this happens by a real necessity of nature as powerful as that by which a stone falls downward. It is not therefore absurd, nor reprehensible, nor contrary to right reason, if one makes every effort to defend his body and limbs from death and to preserve them. And what is not contrary to right reason, all agree is done justly and *of Right*. For precisely what is meant by the term *Right* is the liberty each man has of using his natural faculties in accordance with right reason. Therefore the first foundation of natural *Right* is that *each man protect his life and limbs as much as he can*.

Hamstrung by the avowedly political scope of the work, the premise of natural cupidity was amplified, and made to bear the considerable weight of Hobbes's political theory. If applied to *De cive*, the assessment that Hobbes

[326] Hobbes, *The Elements of Law*, 54.

[327] Hobbes, *On the Citizen*, 27.

strained to "secure the logical independence of his ethics from his moral psychology"[328] gets Hobbes's aims backward. He did not aim to "secure the logical independence of his ethics from his moral psychology." Instead, he endeavored for the opposite, having sought to empirically ground his ethics in his moral psychology, without furnishing a full treatment of it.

Yet, however sturdy Hobbes considered the two "absolutely certain"[329] postulates of natural avarice and self-preservation to be, he was aware of how the missing chapter set from *The Elements of Law* empirically compromised the argument featured in *De cive*. The excisions, coupled with the knowledge that the second volume of the *Elementa Philosophiae* series was not yet in hand, put Hobbes on the horns of a dilemma, faced with a puzzle for which there was no easy solution. How would he compose the third section of the *Elementa Philosophiae* without the second?

Hobbes squared the circle with "indubitable introspectables."[330] He used universal experience, statements of how the world is, combined with invocations of personal (and often common) experience to substantiate the statements, to bridge or fill in the gap left open by the excised material. As a result, the concept of universal experience became integral to his political

[328] John Deigh writes, "The definitivist interpretation takes seriously Hobbes's express understanding of ethics as a science and his conception of science as proceeding by deductive inferences from definitions. The understanding and conception secure the logical independence of his ethics from his moral psychology, given Hobbes's view as to what makes a definition correct. His ethics is logically independent in that its theorems have no other ground than the definition on which it is based." The conclusion, drawn in the paragraph above, suggests that the assessment, as applied by Deigh to *Leviathan*, may be untenable, "Reason and Ethics in Hobbes's *Leviathan*," 59.

[329] Hobbes, *On the Citizen*, 6 [Epistle Dedicatory 10].

[330] Lloyd, *Morality in the Philosophy of Thomas Hobbes: Cases in the Law of Nature*, 212.

theory, and a more prominent feature of his political methodology. Put differently, the absence of the extended (causal) analysis of human nature found in *The Elements* required a change in how Hobbes went about empirically grounding the political analysis of *De cive*. To solve the problem, he used universal experience (in the form of the "indubitable introspectables" of natural cupidity, and especially, self-preservation) as a substantive substitute for the missing material. And, in many instances, personal (and often common) evidence and observations were used to demonstrate the universality and empirical integrity of the two premises – to demonstrate to his reader that both are evidently true, sufficiently universally experienced as to make them unimpeachably, ineluctably correct.

Specifically, Hobbes used vivid examples, drawn from personal (presumably common) experience to empirically substantiate the universally true premises feeding his political analysis. Thus, he, similar to Hugo Grotius, relied on a mix of *a priori* and *a posteriori* reasoning, a method and approach to argumentation that corresponds with the prescriptions of Ciceronian (and Aristotelian) rhetoric.[331] However, as discussed in the previous chapter,

[331] Straumann writes, "The bifurcation of his argument that Grotius undertook in Prolegomena 40 with his reference to the consensus among various 'testimonies,' on the one hand, and to 'certain principles' (*notiones certae*), on the other, is not remarkable simply because Grotius here connected two different rhetorical lines of argument in an exceptionally intricate way. It corresponds to a dichotomy in rhetoric of the type suggested by Quintilian, following Cicero and most Greek rhetoricians: induction and reasoning (*ratiocinatio*). In the first chapter of the first book of *De iure belli ac pacis*, a chapter dedicated to identifying natural law, in a paragraph bearing the heading 'How the Law of Nature may be proved'…Grotius provided a more detailed discussion of the two fundamentally different proofs of natural law, which in his view supplemented one another." He continues in the paragraph that follows, "Deviating terminologically from the methodological passages in the Prolegomena cited above, the two main types of natural law proofs are described here as a priori, on the one hand, and a posteriori, on the other. The a priori proof of natural law apparently corresponds to a method, introduced by Grotius in the Prolegomena and just explained, involving deduction of things belonging to natural law from *notiones certae* or self-evident principles through valid

Hobbes's invocations of universal experience put him closer to scientific works with which he would have been, then, engaging. He used universal experience as a way to flag analytical judgments as so empirically evident as not to require sustained defense.

Hobbes also relied on the inherited moral discourse of "right reason" to establish the empirical tenability of the second postulate – self-preservation – and deductions ostensibly predicated thereon. Put another way, Hobbes converted "right reason" into a cognate of universal experience, using it to express the principles (or content) of universal experience. This section concludes with a discussion of Hobbes's invocations of universal and personal (or common) experience; the section that follows offers an analysis of Hobbes's generous use of the concept of "right reason," a feature that distinguishes *De cive* from every other text in the Hobbesian *oeuvre*.[332]

Without a cache of empirical material to buttress key pieces of analysis that make up the political theory of *The Elements of Law*, Hobbes, in *De cive*, pivoted to different kinds of experience. The conclusion is borne out by the first chapter of the text. In the chapter is found wholly new exposition, a new

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argumentation…This in turn corresponds to the rhetorical method of logical substantiation and reasoning…Essentially, the distinction made by Grotius between the more compelling a priori and the more popular a posteriori reasoning harks back to Quintilian, and originally to the two forms of dialectical method described by Aristotle – specifically, the description of the dialectical syllogism and induction (*epagoge*) in the *Topica*, with which Grotius was familiar," *Roman Law in the State of Nature: The Classical Foundations of Hugo Grotius's Natural Law*, 67.

[332] Robert Greene counts that the phrase "occurs just four times in *The Elements of Law*, forty-three times as *recta ratio* or a variant in *De cive*, a work one and one half times longer, and is largely abandoned in the English *Leviathan*, appearing only ten times, seven of which are on a single page, in a volume rightly called 'prodigious' by a contemporary reader. It was more than three times the length of either previous book," "Thomas Hobbes and the Term 'Right Reason:' Participation to Calculation," *History of European Ideas* 41, no. 8 (2015), 1000.

expanse of analysis used to set up and elaborate key principles and judgments that feed into his explanations of the state of nature and society formation. Just as in the larger text, [333] the analysis is threaded with observations that draw on personal (and presumably common) experiences and includes an invocation of universal experience. Both are used as a buttress, to prop up and lend empirical credibility to the analysis.

The crucial passage lays out undergirding material that supports conclusions Hobbes draws about moral reasoning, the mechanics of human desire, and the conditions that drive individuals to create social and political order. In the passage he is intent on knocking down the premise of "natural sociability," and asks his reader to consider what happens when groups of people sit down to "swap stories." What follows, he writes, is not attentive, empathetic listening. Rather, the interlocutors listen only for the purpose of engaging in an accelerating game of one-upmanship – what is sought, he explains, is "advantage." Hobbes analyzes,

> And if people happen to be sitting around swapping stories, and someone produces one about himself, every one of the others also talks

[333] The observations address a range of subjects; examples include asymmetrical warfare, hypocrisy, inflated self-assessments, restraint in interstate conflict, the unity of sovereign power, and frivolous competition between men of leisure, Hobbes, *On the Citizen*, 29 [1.12], 33 [2.1], 49 [3.13], 69 [5.2], 82 [6.13], 138 [12.10]. The text also uses empirical examples and tropes as an analogical device to prove points, as when Hobbes expounds "each man is drawn to desire that which is Good for him and to Avoid what is bad for him, and most of all the greatest of natural evils, which is death; this happens by a real necessity of nature as powerful as that by which a stone falls downward," ibid, 27 [1.7]; "one has to realize that when men enter into society there are differences of opinion among them which spring from the diversity of their passions…like differences among stones collected for construction, which arise from their differences of material and shape. A stone of rough and irregular shape takes more space from the others than it falls itself, it cannot be compressed or cut because it is so hard, but it prevents the structure from being fitted together, so it is thrown away as unsuitable," ibid, 48 [3.9]; "LIBERTY (to define it) is simply the *absence of obstacles to motion*; as water contained in a vessel is not *free*, because the vessel is an obstacle to its flowing away, and it is *freed* by breaking the vessel," 111 [9.9].

> very eagerly about himself; if one of them says something sensational, the others bring out sensations too, if they have any; if not, they make them up…**So clear is it from experience** to anyone who gives any serious attention to human behavior, that every voluntary encounter is a product either of mutual need or of pursuit of glory; hence when people meet, what they are anxious to get is either an advantage for themselves…which is reputation and honor among their companions. **Reason reaches the same conclusions from the actual definitions of *Will, Good, Honor* and *Interest* [as "derived from the previous section"**[334]**].** For since a society is a voluntary arrangement, what is sought in every society is an Object of will, i.e. something which seems to each one of the members to be Good for himself…All society…exists for the sake either of advantage or of glory, i.e. it is a product of love of self, not love of friends.

The purpose of the invocation of universal experience (the first of two bolded phrases), and the extended description of people "sitting around swapping stories," was to close in gaps in the analysis left open by the excision of material from *The Elements of Law*. The second bolded sentence, beginning with the word "Reason," tells the story. By necessity, "Reason," Hobbes writes, "reaches the same conclusions" as universal experience, but "from the actual definitions of *Will*, *Good*, *Honor*, and *Interest*." In the first edition of the *De cive* Hobbes notes that the definition of each term – will, good, honor, and interest – were "derived" from a "previous section," i.e., from the chapters excluded from *De cive*. In other words, the absence of a full treatment examining the nature of "*Will*, *Good*, *Honor*, *Interest*" – as of the kind that was delivered in *The Elements of Law* – pushed Hobbes to marshal personal (but nevertheless

[334] The reference to a previous section, which I have interpolated into the passage, appears in the first, but not the second edition of *De cive*; the translation, as "derived from a previous section," is Howard Warrender's, De Cive: *English Version* (Oxford: Clarendon Press, 1983), 43 n. b. While plausibly giving defensible meaning to Hobbes's words (*superior sectione traditis*), Warrender's translation of *traditis* can be reworked to better comport with Hobbes's philosophical intent. The participle, *traditis*, might also be translated as "delivered" (as in a demonstration), a translation that better accords with the pedagogical point Hobbes draws in the text's epistle dedicatory.

common) observations ("people…sitting around swapping stories") to prop up statements of universal experience: arguments about the conditions that engender society, and the states of mind and features of human nature that precipitate those conditions.

III. The role of "right reason" in De cive

Among the differences between *The Elements of Law* and *De cive*, there is one that represents a source of enduring friction between the two texts. In *The Elements of Law* Hobbes maligned the moral concept of "right reason." Such a "common," unimpeachable moral "measure," Hobbes mocked, "is not existent" nor "found or known *in rerum natura* [in the nature of things]."[335] In *De cive* Hobbes changed his tune, having executed a stunning *volte-face*. The shift is registered straight off in the text's epistle dedicatory, which notes that "*True Wisdom is simply the knowledge of truth in every subject*," it is a matter of "*right Reason, i.e. of Philosophy*."[336] The persistent use of the language of "right reason" in *De cive* represents a principal point of differentiation, distinguishing the text from most other Hobbesian works.[337]

Although, on the whole, Hobbes's works used the concept sparingly, "right reason" features frequently in early modern discourse.[338] It is also a term

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[335] Hobbes, *The Elements of Law*, 150 [29.8].

[336] Hobbes, *On the Citizen*, 4 [Epistle Dedicatory 4].

[337] See footnote 332 for a tally of the number of instances of the phrase in each major Hobbesian work.

[338] Robert Hoopes, tracing the trajectory of "right reason" through the relevant periods, remarks, "'The meanings of 'reason' in the seventeenth century,' as Douglas Bush has remarked, 'admit a wide solution,' and if this study were to undertake to examine all of those meanings its solution – to risk a pun – would be a muddy one at best. So far as right reason is concerned, although its adversaries multiply [among whom Hobbes would have been counted one], it is

with significant theoretical purchase in intellectual traditions upon which Hobbes's work built,[339] the traditions of Ciceronian, Thomist, and neo-Stoic natural jurisprudence in particular. These traditions of natural jurisprudence gave "right reason" a meaning that nods at ancient Greek antecedents, building on a view of "reason" as a "human and a divine property…which judges not only the truth and falsity of a proposition, but," critically, "the rightness and wrongness of an act as well."[340] In typical conceptualizations of "right reason" can be found elements of the ancient Greek view. Right reason often combines "truth" and "right," knowledge and virtue, "the ratiocinative and syllogistic faculty" with "an ethical and rational conscience," rooted in nature and the divine, which "makes one…a better and wiser human being."[341] As a faculty, "right reason" makes possible practical judgements that are, simultaneously, epistemically and morally sound.

Robert Greene notes it is likely Hobbes encountered "right reason" at Oxford.[342] There, the concept had utility as both a pedagogical and heuristic-

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actually reaffirmed during the first two thirds of the century with greater vitality and precision than ever before," *Right Reason in the English Renaissance* (Cambridge: Harvard University Press, 1962), 160.

[339] In "Roman and Thomistic natural jurisprudence" specifically, Baumgold and Harding, "Excavating *On the Citizen*," 24.

[340] Hoopes, *Right Reason in the English Renaissance*, 31.

[341] Richard Arnold, *Logic of the Fall: Right Reason and [Im]pure Reason in Milton's* Paradise Lost (New York: Peter Lang, 2006), 3.

[342] In his article, Robert Greene explores the use of "right reason" as a pedagogical tool and a common curricular feature, writing, "Students at Oxford and Cambridge in the first half of the seventeenth century, including Hobbes, learned about right reason in three languages in their study of prescribed classical and medieval authors. Linked with the natural law, it was a primary component of the study of moral philosophy. Students were also encouraged in expected to exercise it in their personal moral conduct, as an historian of Oxford University has recently confirmed: 'Morality was understood in terms of the capacity of the individual to will

moral tool. It comprised a "primary component of the study of moral philosophy" and was also incorporated into the code of conduct by which students, like Hobbes, were bound: "Students were…encouraged and expected to exercise [right reason] in their personal moral conduct," notes Greene.[343]

The concept was also a visible feature of Hobbes's discursive environment. In *The religion of protestants a safe vvay to salvation* (1638), William Chillingworth, a famous English ecclesiastic and occasional associate[344] of Hobbes's, relied on the theoretical force of "right reason" to defend the capacity of conscience to correctly steer individuals toward divine "principles of nature." "[R]ight reason," he explains, is "grounded on Divine revelation and common notions, written by God in the hearts of all men," from which they "deduc[e], according to the never failing rules of Logick, consequent deductions from them."[345]

In the work of Francisco Suárez the "principles of nature" Chillingworth describes are marked out as precepts of natural law, a concept Suárez packaged

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that which conformed to the dictates of right reason; by extension within such a framework, moral philosophy was viewed as a direct and necessary corollary of right reason,'" "Thomas Hobbes and the Term 'Right Reason:' Participation to Calculation," 1021.

[343] Ibid.

[344] As A.P. Martinich notes, Chillingworth was not an unfamiliar figure to Hobbes, having been a member of the Great Tew circle: "From about 1634 until the beginning of the Short Parliament, a group of young men used to meet to discuss a variety of intellectual subjects. They are known as the Great Tew circle because they met at the Oxfordshire estate of Great Tew, owned by the de facto leader of the group, Lucius Cary, Viscount Falkland," *Hobbes: A Biography*, 102-103. The circle comprised a vast range of familiar figures, among whom was Chillingworth: "William Chillingworth wrote his famous *Religious of Protestants* (1638) there. Anthony Wood reported that Hobbes said that Chillingworth was like 'a lusty fighting fellow that did drive his enemies before him, but would often give his own part smart back blows,'" ibid, 104.

[345] Chillingworth, William, *The Religion of Protestants a Safe VVway to Salvation* (1638), 9-10.

together with "right reason." Suárez's description of "right reason" was typical. It is represented as a moral and epistemic power that facilitates access to the perfect moral propositions of natural law. He theorizes circularly that "[N]atural law cannot be corrected, as it is posited by right reason, which cannot deviate from the truth, for if it does deviate, it is not right reason."[346]

As Suárez did and many others had done,[347] Hugo Grotius linked "right reason" with natural law. In *De jure belli ac pacis* (1625), Grotius defines the "law of nature" as "a dictate of right reason, which points out that an act, according as it is or is not in conformity with rational nature, has in it a quality of moral baseness or moral necessity…such an act is either forbidden or enjoined by the author of nature, God."[348]

At a glance, Hobbes's deployments of the term encompass a full range of available meanings. As noted by others,[349] the definition of natural law given in *De cive*, which portrays natural law as a "Dictate of right reason,"[350] finds

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[346] The quotation is reproduced, as present in James Gordley's "Suárez and Natural Law," in *The Philosophy of Francisco Suárez*, eds. Benjamin Hill and Henrik Lagerlund (Oxford: Oxford University Press, 2012), 217.

[347] Sommerville writes, "The idea that right reason tells us the contents of the law of nature was utterly conventional. Though the practices of nations might be a helpful guide to natural law, said Grotius, right reason was the ultimate ground for establishing that some practice was in fact according to the law of nature. 'The law of nature,' he said, 'is the dictate of right reason, showing the moral necessity or moral baseness of any act according to its agreement or disagreement with rational nature.' In the opinion of Hooker, 'the lawes of well doing are the dictates of right reason.' The law of nature, said Donne, is 'but *Dictatem retae* rationis' (the dictate of right reason). Suarez said much the same thing. The notion was, indeed, a scholastic commonplace," *Thomas Hobbes: Political Ideas in Historical Context*, 45.

[348] Hugo Grotius, *Hugo Grotius: On the Law of War and Peace (Student Edition)*, ed. Stephen C. Neff (Cambridge: Cambridge University Press, 2012), 28-29.

[349] See Sommerville's analysis, and conclusion that "The notion was…a scholastic commonplace" in footnote 347.

[350] Hobbes, *On the Citizen*, 33 [2.1].

correspondence in Grotius's. Like Suárez, Hobbes makes right reason synonymous with truth, writing, "*True Wisdom is simply the knowledge of truth in every subject…it is not a matter of momentary flashes of penetrating insight, but of right Reason, i.e. of Philosophy.*"[351] And like Chillingworth, who contended that "[R]ight reason" is "grounded on Divine revelation and common notions, written by God in the hearts of all men," from which they "deduc[e], according to the never failing rules of Logick, consequent deductions from them," Hobbes asserts both that "divine law lies in right reason" – remarking that "*reason*, which is the *law of nature* itself, has been given to each and every man directly by God as a Rule for his actions" – and that right reason entails the derivation of "some truth reached by correct [syllogistic[352]] reasoning from true principles."

In sum, Hobbes took advantage of the different, but overlapping resonances of "right reason," a term that, in *De cive*, refers to the working out of moral-practical rules by means of philosophical-scientific – that is, syllogistic – reasoning. As William Frankena outlines, "from Aristotle to modern times, the operation of the ethical faculty, or of reason or intellect qua practical matters of what ought to be done, involved three things." First, "some kind of grasp of general first principles or premises to start from." Second, "a deduction from those secondary principles." And, finally, third, "an application of principles in determining what to do in particular cases."[353] Hobbes's various uses and his

[351] Ibid, 4 [Epistle Dedicatory 4].

[352] Ibid, 232 [17.28].

[353] William Frankena, "The Ethics of Right Reason," *The Monist* 66, no. 1 (1983), 8.

conception of "right reason" approximate the general features of right-reason discourse, as delineated by Frankena.

However, Hobbes's was not a rote or mechanical reproduction of a common discourse. "Right reason" was remade and recombined with new, novel elements to serve the singular analytical and theoretical needs that accompanied production of *De cive*. In particular, Hobbes took the traditional concept of "right reason" and imported new, substantive content into it: the content of universal experience. "Right reason" was used to validate the empirical tenability of reasoning on the basis of self-preservation, to establish self-preservation as an evident, true principle of universal experience. In other words, the concept of "right reason" became conceptually bound up with, and an extension of the concept of universal experience. It was a solution, of a piece with explicit invocations of universal experience, to demonstrate self-preservation as a fundamental human drive, so finely and extensively wired into human nature, as to make it indubitable.

Hobbes's embrace of "right reason" to promote claims of universal experience is not an interpretive position with a direct precedent in the secondary literature. Although small, the literature treating Hobbes's use of "right reason" does posit a variety of rationales for the embrace. The first category includes interpreters who are squarely interested in explicating the meaning of "right reason" as a moral concept – not, strictly speaking, Hobbes's embrace of it. Members of the group see the use of right reason as inextricably linked to the theoretical terrain over which *De cive* works, moral philosophy, and, as such, specify right reason as: "correct prudential reasoning about

interpersonal behavior;"[354] "the law, which for [the individuals who "covenant to set up a sovereign"] is the infallible rule of moral goodness;"[355] evidence that "Hobbes agrees with Kant on the 'imperative' character of the moral law;"[356] an "ethics and politics" "*grounded* in a radically subjectivist thesis concerning the nature of value;"[357] and so on. While the individual specifications can be debated, the descriptive point endorsed by the work of this set of scholars – that, for Hobbes, "right reason" was a concept with moral purchase, used within the context of adumbrating a moral philosophy – cannot be. At the same time, the descriptive point overlooks important dimensions of Hobbes's use of the concept, ignoring how it was used to address a real, knotty empirical issue that resulted from a change in his philosophical plans.

In the second category is Andrea Bardin. Bardin connects the turn to "right reason" to the changing architecture of Hobbes's political theory. Bardin distinguishes *The Elements of Law* from *De cive* by focusing on the way in which *The Elements* posits a political theory, conception of reason and science, and so on, borne of Hobbes's interest in rendering a politics anchored in a physical explanation of the effects of motion on the human mind, modeled on optics. Thus, Bardin argues that whereas the political theory and science of *The Elements* is anchored in ontological explanation (i.e., in the physics of human

[354] Gregory Kavka, "Right Reason and Natural Law in Hobbes's Ethics," *The Monist* 66, no. 1 (1983), 121.

[355] David Gauthier, "Hobbes: The Laws of Nature," *Pacific Philosophical Quarterly* 82 (2001), 271.

[356] A.E. Taylor, "The Ethical Doctrine of Hobbes," *Philosophy* 13, no. 52 (1938), 409.

[357] Stephen Hudson, "Right Reason and Mortal Gods," *The Monist* 66, no. 1 (1983), 136.

mind), the vision elaborated in *De cive* is markedly epistemological, based in natural-law principles[358] instead of a substantive diagnosis of human powers (à la natural philosophy).[359] It is possible to "argue," says Bardin, "that in *The Elements of Law* the attribution of a 'motive power' to reason and science [i.e., that reason and science are "powers and acts of the mind"[360]] is strictly related to the claim of an ontological homogeneity between the objects of civil and natural philosophy,"[361] Hobbes having believed that it is possible to "reduce all epistemological questions to a physics of sensation, and, ultimately, to the optical model of a theory of light."[362]

Bardin claims that Hobbes fell short of his aim of "providing" a durable "ontological description of the body politic:" "he had failed to provide a complete geometrical 'deduction' of the body politic and its knowledge from the mechanical knowledge of matter in motion."[363] It was in response to the failure, Bardin argues, that Hobbes sought out new, epistemological foundations for his political theory. "In *The Elements of Law* he had assumed that mechanical understanding and geometrical deduction of the body politic

[358] Andrea Bardin, "Materialism and Right Reason in Hobbes's Political Treatises: A Troubled Foundation for Civil Science," 94.

[359] Ibid, 90.

[360] Ibid, 91.

[361] Ibid.

[362] Ibid, 96.

[363] Ibid, 93.

would correspond and even overlap, following the example provided by optics;"[364] however, in

> *De cive* [*De cive*] he was attacking the same problem on entirely different grounds, by developing the third part of a philosophical system in which every science…had to be grounded on general principles, definitions and terminology established by first philosophy according with the model of geometry.[365]

It is to this programmatic shift in philosophy and methodology that Bardin connects Hobbes's sudden reliance on "right reason." Bardin notes that "Although it sometimes functions as a rhetorical device, in the work [*De cive*] right reason generally corresponds to the ideal of a perfect science of natural law independent of any powers, including political power."[366] Thus, "right reason" is construed as a symptom of a deeper, wider shift in thinking about what the foundations of science, including a civil science, should be.

Yet, there is reason to doubt that any such shift took place. That Hobbes felt "he had failed to provide a complete geometrical 'deduction' of the body politic and its knowledge from the mechanical knowledge of matter in motion" is not supported by contemporaneous texts, and is a conclusion against which the text of *De cive* itself militates. Recall: *De cive* begins with an acknowledgement, which grants as true the content of the missing chapters from *The Elements of Law*. In the first sentence of the *De cive*, taken over from *The Elements*, Hobbes notes that "In the previous section the whole of human

[364] Ibid.

[365] Ibid.

[366] Ibid, 102.

nature has been described, comprising the faculties of both body and mind; they may all be reduced to four *kinds*; which are, Physical force, Experience, Reason and Passion." To this, Hobbes adds, "We shall begin the present section with a consideration of the human condition, namely, what attitude men have towards each other, being gifted with these natural endowments."[367] The statement contains no indication of failure, that Hobbes believed "he had failed to provide a complete geometrical 'deduction' of the body politic and its knowledge from the mechanical knowledge of matter in motion." Instead, in *De cive*, the rest of the "geometrical 'deduction' of the body politic…from the mechanical knowledge of matter in motion" operates as shadow scaffolding, invisible to the reader, but nevertheless present, supporting the exposition. And on occasion the reader is even clued in on the existence of this invisible scaffolding, as when the text draws the reader's attention to the existence of a "previous section"[368] in which certain concepts and explanations are laid bare.

The third pattern of interpretation explores a possibility at which Bardin quickly nods: that "right reason" is (possibly cynical) rhetorical window-dressing, employed either in response to considerations vis-à-vis audience or, as Michael LeBuffe contends, "insincerely," to "mak[e] an abbreviated and

[367] Hobbes, *On the Citizen*, 21 n. 1.

[368] Warrender records four instances in which Hobbes nods thusly; see: De Cive: *English Version*, 41 n. b-b, 43 n. b, 54 n. a, 85 n. a-a. Also see *Elementorum Philosophiae Sectio Tertia De Cive*, 2 [1.1], 4 [1.2], 15 [2.7], 52 [5.1]. Warrender indicates (43 n. b) that the reference to a preceding section originally found in 1.2 (see footnote 334) was retained in the second edition of *De cive*. It was not. See: *Elementa Philosopihca de Cive*, 5 [1.2].

hastily prepared version of his argument seem plausible."[369] The first explanation is floated by Robert Greene,[370] who offers that the "commitment" to the discourse of "right reason" "may well have had its roots in his [Hobbes's] decision to write in Latin,"[371] which was "motivated by his residence in Paris at the time, his inclusion in the Mersenne circle, and his intention to address its members, unfamiliar with the English language, as well as a university-educated English and European readership."[372] Greene adds that "The 'extremely limited' distribution of the 1642 printing of *De cive* may have been in his mind when he chose this rhetorical strategy."[373]

LeBuffe, like Greene, develops an interpretation that builds to a rhetorical point. But, unlike Greene, LeBuffe, as I do in this chapter, gives an explanation for Hobbes's surprising embrace of "right reason" in which

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[369] Michael LeBuffe, "Motivation, Reason, and the Good in *On the Citizen*," in On the Citizen*: A Critical Guide*, eds. Robin Douglass and Johan Olsthoorn (Cambridge: Cambridge University Press, 2020), 89.

[370] It deserves noting that Greene's analysis of the concept has many more dimensions than this, and is not, in its principal dimensions, concerned with the rhetorical point; this element makes up only a small piece of Greene's (very fine) treatment. The typology used to organize this literature review encourages placing Greene into this third group; however, he fits in equally well among the scholars discussed in the first group, as the primary object of his article is to explicate and track the shifting resonances of "right reason" across Hobbes's works, beginning with *The Elements of Law*. Greene points out that, in *De cive*, Hobbes adopted a kaleidoscopic view of "right reason," using it in different contexts to mean different, but not always inconsistent, things. Greene explains, "in *De cive* Hobbes identifies *recta ratio* [right reason]…as: 'correct reasoning [*Ratiocinatio recta*] from true principles,' prominently and repeatedly as the rational agent in discovering the universal precepts of philosophy, which are identical to true wisdom; the arbiter of what is done justly and of right, those actions that accord with the dictates of natural law; and the rule or measure of the ultimate good of self-preservation, the justice of actions, and the nature of right and wrong," "Thomas Hobbes and the Term 'Right Reason:' Participation to Calculation," 1012.

[371] Greene, "Thomas Hobbes and the Term 'Right Reason:' Participation to Calculation," 1021.

[372] Ibid, 1021-1022.

[373] Ibid, 1016.

considerations related to composition loom large. Specifically, LeBuffe notes that it is because "a detailed, naturalistic account of reason in human psychology was not available to him in this fragmentary presentation of his doctrine" – that is, in *De cive* – "he rushed to incorporate something [right reason] that would serve in its place."[374] LeBuffe further contends that Hobbes's use of the concept was a cynical rhetorical one – that is, "not sincere." "It seems, then," he writes, "that…Hobbes altered the arguments of *The Elements of Law* by inserting right reason into relevant areas of his argument."[375]

Greene and LeBuffe may be right. Hobbes's turn to "right reason" may, in part, be construed as a shift in rhetoric. However, "right reason" was not *mere* rhetoric. Green and LeBuffe elide the substantive, empirical reasons for Hobbes's alterations to the exposition of *De cive* and the integration of "right reason." Just as he used different forms of experience as a means by which to address a shortage of empirical material, so too, he used "right reason" to solve

[374] LeBuffe, "Motivation, Reason, and the Good in *On the Citizen*," 105. As Baumgold points out, components of *The Elements of Law*, if not the whole treatise, were likely rushed (see footnote 293). Baumgold explains, "The bulk of the *Elements* appears to have been composed deliberately and systematically, and therefore was probably completed before the political crisis of the spring of 1640. However, the organization breaks down in later chapters. There are six chapters at the end of the work that depart from the prior manuscript, in form or content, in ways that suggest they may have been hurriedly written. A significant example is the odd claim, in the second part of Part II, that democracy is the original form of all government. It was hardly a position one would have expected to find in a work defending absolute monarchy, especially a work written in the context of the pre-War controversies between parliamentarians and the king over their respective powers. Hobbes, in fact, would jettison 'democracy first' from the revised theory presented in *De Cive* and *Leviathan*, presumably due to the argument's unfortunate implication that England had once upon a time had a popular government," "The Composition of Hobbes's 'Elements of Law,'" 17. There is a comparative absence of textual (or biographical or correspondence) evidence that suggests the same vis-à-vis *De cive*. As noted, Hobbes may have felt some (social) pressure to publish, but that pressure was likely of a different kind than the pressure he faced in the spring of 1640.

[375] LeBuffe, "Motivation, Reason, and the Good in *On the Citizen*," 105.

the empirical bind in which the new *Elementa Philosophiae* scheme had placed him.

Thus, "right reason" was not, as LeBuffe contends, used "insincerely." What LeBuffe's account leaves out are the sincerely held philosophical commitments that would have made the deployment of "right reason" (as a stand-in for universal experience) philosophically possible, and intellectually defensible. That is, Hobbes's use of "right reason" was not a cynical exercise in rhetoric, a concept employed insincerely, like a lure, used to hook otherwise skeptical readers. In the process of weaving the language of "right reason" into the work's prose, Hobbes invested the concept with new philosophical meaning and content, making it into additional means by which to impress the ineluctable, evident universality of the twin premises Hobbes highlights at the work's beginning, the principle of self-preservation specifically.

At the same time, LeBuffe is correct that Hobbes slotted the language of "right reason" into the pre-fabricated arguments of *The Elements of Law* – "that" he "altered the arguments of *The Elements of Law* by inserting right reason into relevant areas of his argument."[376] LeBuffe is also correct in his conclusion that Hobbes's use of "right reason" can be connected to the fact that "a detailed, naturalistic account of reason in human psychology was not available to him in" the "fragmentary presentation of his doctrine"[377] offered in *De cive*. However, Hobbes's concerns were also narrower and more specific than

[376] Ibid.

[377] Ibid.

LeBuffe's characterization admits. Hobbes leveraged the concept of "right reason" specifically to lend empirical force, credibility, and to establish the universality of the premise of self-preservation. That is, "right reason" was used as rebar to reinforce *De cive*'s empirical foundations. Hobbes imported empirical content, the premise of "self-preservation," a premise putatively known to be universal and "indubitable" through experience, into "right reason."

The narrowness of Hobbes's concern is revealed by close inspection of how and where Hobbes "insert[ed] right reason in relevant areas of his argument." Consider the first "area" and its *Elements* parallel. In addition to conferring added solidity to the argument, "right reason" (in bold) is inserted to specifically buttress an empirical postulate of universal experience (underlined).

Thereafter, Hobbes further fused "right reason" with the premise of self-preservation, making both an anchor for his analysis. For example, he punctuates the explanation of natural law with a reference to "right reason," packaged together with the premise: "The *Natural Law* therefore (to define it) is the dictate of right reason (*) about what should be done or not done for the longest possible preservation of life and limb."[378] In the next paragraph, he, likewise, reinterprets self-preservation as a natural impulse to seek peace or self-defense, and makes both an effect of "right reason," noting, "The first *law of nature* (the foundation) is: *to seek peace when it can be had; when it cannot, to*

[378] Ibid, 33 [2.1].

Table 3.2: A Comparison of *The Elements of Law*, 14.6 and *De cive*, 1.7

The Elements of Law, 14.6[379]	*De cive*, 1.7[380]
And forasmuch as necessity of nature maketh men to will and desire *bonum sibi*, that which is good for themselves, and to avoid that which is hurtful; but most of all that terrible enemy of nature, death, for whom we expect both the loss of all power, and also the greatest of bodily pains in the losing; it is not against reason that a man doth all he can to preserve his own body and limbs, both from death and pain. And that which is not against reason, men call RIGHT, or *jus*, or blameless liberty of using our own natural power and ability. It is therefore a *right of nature*: that every man may preserve his own life and limbs, with all the power he hath.	Amid so many dangers therefore from men's natural cupidity, that threaten every man every day, we cannot be blamed for looking out for ourselves; we cannot will to do otherwise. For each man is drawn to desire that which is Good for him and to Avoid what is bad for him, and most of all the greatest of natural evils, which is death; this happens by a real necessity of nature as powerful as that by which a stone falls downward. It is not therefore absurd, nor reprehensible, **nor contrary to right reason**, if one makes every effort <u>to defend his body and limbs from death and to preserve them</u>. And what is not contrary to right reason, all agree is done justly and *of Right*. For precisely what is meant by the term *Right* is the liberty each man has of using his natural faculties in accordance with right reason. Therefore the first foundation of natural *Right* is that *each man protect his life and limbs as much as he can*.

look for aid in war," and then clarifying, "In the final article of the last chapter" – presented with its parallel above – "we showed that this precept is a dictate of right reason; and we have just defined natural laws as dictates of right reason. It is the first law, because the rest are derived from it; they are instructions on the means of securing either peace or self-defense."[381]

[379] Hobbes, *The Elements of Law*, 54-55.

[380] Hobbes, *On the Citizen*, 27.

[381] Ibid, 34 [2.2].

Hobbes integrated the two – "right reason" and self-preservation – so effectively as to make them synonymous, coextensive, in the discussions that follow. "Drunkenness," Hobbes writes, is a "violation of *natural Law* because it impedes the use of [right] reason [*rectae rationis*];[382] holy scripture forbids it for the same reason."[383] In other words, Hobbes found drunkenness anathema not because it makes humans into loud-talking yobs. He found drunkenness morally objectionable because it is an impediment to making self-preserving calculations: "it impedes the use of [right] reason." Hobbes also made clear that the sovereign, no less than the subject, is affected by the natural impulse. Cribbing Cicero, Hobbes posits, "All the duties of sovereigns are implicit in this one phrase: *the safety of the people is the supreme law*." However, he adds: "For although those who hold sovereign power among men cannot be subject to laws properly so called…because sovereignty and subjection are contradictory, it is nevertheless their *duty* to obey right reason in all things so far as they can; right reason is the natural, moral, and divine law."[384] While the source of human law, the sovereign, just like a subject, is bound by a natural duty to obey "right reason" to the extent possible – to preserve themself.

[382] The Tuck and Silverthorne translation elides the *recta*, indicating, "drunkenness…impedes the use of reason," 64 [4.19]. Inspection of the second edition of the text reveals the error. In the original Latin, Hobbes unequivocally holds that "drunkenness…impedes the use of *right* reason" (*Ebrietas…quia rectæ rationis impedit*), *Elementa Philosophica de Cive*, 75 [4.19] (emphasis added). Likewise, the first edition of the text contains the selfsame formulation, *Elementorum Philosophiae Sectio Tertia De Cive*, 48 [4.28].

[383] Hobbes, *On the Citizen*, 64 [4.19].

[384] Ibid, 143 [13.2].

In sum, Hobbes envisaged his naturalistic-cum-normative analysis as satisfying the conditions for "right" reason*ing*: "if he [some person] reasons rightly (that is, starting from the most evident principles he weaves a seamless discourse of necessary consequences), he will go the straightest way."[385] And he contended this "most evident principle" – the empirical principle with which *De cive* begins, and the principle to which he tethered the concept of "right reason" – to be self-preservation. With "right reason" and the principle, Hobbes sought to render a philosophical explication that, as he demands in *De cive*, "fits to the nature of things"[386] and "expounds things as they are"[387] – an explication that is empirically tenable and which conforms to principles as made "indubitable by experience."[388]

However, Hobbes did not merely slot the language of "right reason" into preexisting prose. The uses of "right reason" highlighted above have no

[385] Ibid, 162 [14.16].

[386] Ibid, 123 [10.11]. Hobbes writes, "For this is what persuasion is; and however much reasoning they put into it, they do not begin from true principles but from…commonly accepted opinions, which are for the most part usually false, and they do not try to make their discourse correspond to the nature of things [*naturæ rerum*] but to the passions of men's hearts." For the Latin, see: Hobbes, *Elementorum Philosophiae Sectio Tertia De Cive*, 115 [10.11].

[387] Ibid, 240 [12.12]. In the passage, Hobbes, again, takes aim at *dogmatici*, whom, he excoriates, "render their hearers insane (who were merely stupid before); to make men believe that a bad situation is worse than it is, and that a good situation is bad; to exaggerate hopes and to minimize risks beyond reason, is due to eloquence; not the eloquence which expounds things as they are, but the other eloquence, which by communicating the excitement of the speaker to the minds of others makes everything appear as he had seen it in his own excited mind." Similarly, the thirteenth chapter notes, "For as everyday exposure has given current acceptance to propositions which are false and no more intelligible than if you took words by lot from an urn and strung them together, how much more would men imbibe true doctrines conforming to their own understanding and to the nature of things [*intellectui suo & rerum naturæ conformes*], if they were similarly exposed to them," 147 [13.9]. For the Latin, see: Hobbes, *Elementorum Philosophiae Sectio Tertia De Cive*, 146 [13.9].

[388] Hobbes, *The Elements of Law*, 17 [5.12].

corresponding parallel in *The Elements of Law*.[389] He built out and expanded his analysis using the concept. Thus, "right reason" was more than rhetorical window-dressing. Its appearance portended a wider, deeper shift and pivot to universal experience as an empirical strategy in Hobbes's political philosophy, which was then in transition, as he coped with how best to suture *De cive*'s exposition and compensate for the loss of empirical material from *The Elements of Law*.

In *De cive*, Hobbes's use and reliance on the concept of "right reason," remade into an empirical and scientific concept, was proportionate to the loss suffered as a result of the implementation of the *Elementa Philosophiae* plan. No mere rhetoric, he employed "right reason" to mount a robust defense of the empirical force of his analysis, and in particular, the principles of universal experience, viz. self-preservation, upon which he claimed to have erected much of the edifice of *De cive*.

IV. "Right reason," experience, and Hobbes's political theory after the first edition of De cive

Following publication of *De cive*, Hobbes's position on "right reason" changed, but not all at once. His commentary on Thomas White's *De mundo*, completed a year or two after the publication of *De cive*,[390] carries ambiguous

[389] Deborah Baumgold, *Three-Text Edition of Thomas Hobbes's Political Theory*: The Elements of Law, De Cive *and* Leviathan, ed. Deborah Baumgold (Cambridge: Cambridge University Press, 2017), 145, 193, 344.

[390] The manuscript was completed, at the very earliest, in the spring of 1643. Jacquot and Jones write, "Tout ce qu'on peut dire en fin de compte c'est qu'en mars 1643, quelques mois après la publication du *De mundo*, l'ouvrage critique de Hobbes était en bonne voie, et qu'il se tatache étroitement à l'actualité scientifique et philosophique," "Introduction," in *Critique Du De Mundo De Thomas White*, 45.

remarks on the matter, which give an unclear picture as to the extent of an enduring commitment to the idea, and in turn, the concept of universal experience. The relevant passage appears in the thirtieth chapter of the commentary. Turning his attention to the specification of reason, Hobbes explains, just as he had in *The Elements of Law* and *De cive*, that "'reason' is nothing but the faculty of syllogizing…" The discussion of reason sets up another, on the feasibility of "right reasoning." Given the definition of reason, "right reasoning," he indicates, entails consistently right – that is, correct – syllogistic reasoning. "'Right reasoning' is that reasoning which, commencing with an accurate explanation of names, proceeds by means of the syllogism, or through an unbroken linking of propositions that are true." However, Hobbes adds that "'right reason' (if such exist) is the potential to do, or the faculty of doing, this as often as we please…it is doubtful whether the reasoning of any man can always be right, but everyone thinks that his alone is."[391]

Thus, Hobbes expressed a reasonable, pragmatic skepticism about the faculty of "right reason," understood as a capacity to consistently build up syllogistic structures that are impenetrable to attack – to "always be right." The passage itself gives no indications as to what encouraged the skepticism. However, it does not appear Hobbes was overwhelmed by skepticism. In the remark, what he offers is a frank general assessment of the epistemic boundaries or limits of human reasoning. Thus, it is possible to read the

[391] Hobbes, *Thomas White's* De Mundo *Examined*, 377 [30.22].

statement as a narrow rejection of the general concept, instead of a broad rejection of the notion that one can ever reason correctly.

In addition, embedded in the remarks are indications of a further change, this one concerning the concept of universal experience and its role in "right reason" and, by extension, all science. The commentary on *De mundo* presents a formulation of "right reason" that appears to be shifted away from the concept of universal experience. Whereas "right reasoning," a perfect, exemplary form of reason, proceeds from an "accurate explanation of names," *De cive* offers a stronger formulation of the concept, by tying "right reason" to universal experience, and specifying that "right reason" must proceed from "absolutely certain postulates,"[392] "evident principles,"[393] or as in *The Elements of Law*, "principles that are found to be indubitable by experience."[394] While slight, the shift signals a transition with respect to the role of "evident principles" in Hobbes's conception of "right reason," and, as the ideal model of reasoning, science and philosophy in general. In sum, in the process of backing away from the concept of "right reason," Hobbes also specified what it means to reason correctly, and in so doing, appears to have wavered on the question of the place of universal experience, or "evident principles," in philosophical inquiry in general.

[392] Hobbes, *On the Citizen*, 6 [Epistle Dedicatory 10].

[393] Ibid, 162 [14.16].

[394] Hobbes, *The Elements of Law*, 17 [5.12].

The second edition of *De cive*, like the commentary on *De mundo*, is explicitly critical of "right reason." In this way, the second edition is continuous with the commentary on *De mundo*. It is most plausible that Hobbes found the concept difficult to defend against interlocutors. The conclusion is borne out by a note attached to the second edition of *De cive*, in which he, likely pressed by reviewers, clarifies his position. In the note he explains that "*By right reason in men's natural state, I mean, not, as many do, an infallible Faculty, but the act of reasoning…a man's own true Reasoning about actions of his which may conduce to his advantage or other men's loss*."[395] The annotation attests a reluctance to mark out an objective moral standard and is a restatement of the position delineated earlier, in *The Elements of Law*.[396]

Yet, the question of whether Hobbes's commitments *actually* changed remains somewhat open. The same note contains an admission that, whereas there exists no "*infallible Faculty*" of "right reason," "*true reason*" is not idiosyncratic and subjective, but is universal, and as such, can be used as a device to generate objective truths. Thus, while rejecting the idea of an "*infallible Faculty*," Hobbes pursued a new terminological tack, presenting "*true* reason" as a cognate of universal experience – a concept bound up with the empirical postulates of universal experience, self-preservation specifically. "*By true reasoning I mean reasoning that draws conclusions from true principles correctly stated*," he wrote. "*For every violation of Natural Laws consists in false*

[395] Hobbes, *On the Citizen*, 33.

[396] Hobbes, *The Elements of Law*, 149-150 [29.8].

reasoning or in stupidity, when men fail to see what duties towards other men are necessary to their preservation."[397] Thus, even while abandoning the concept of "right reason," Hobbes refused to retreat from the earlier empirical claims and, in some sense, "right reason" as it was used in the first edition.

The second edition of *De cive* also cements the role of universal experience in moral and political philosophy, having used it as a substitute for the missing empirical material from *The Elements of Law*. With "right reason" fading from the pages of his work, and prospects for the publication of the other sections of *Elementa Philosophiae* series dimming, Hobbes relied, even more, on universal experience to establish the empirical force of his analysis. For example, a reference to a previous section was replaced with the language of "self-evident" – a way to mark off the affected statement as disclosing information that is so experientially obvious as to be evident. In the first edition of the text he wrote, "It has been shown in the previous section that men's actions spring from the will, and the will from hope and fear."[398] In an effort to scrub all references to the omnibus *Elementa Philosophiae* project from the edition while maintaining the empirical force of the point, the sentence was revised to indicate "It is *self-evident* that men's actions proceed from their wills and their wills from their hopes and fears."[399]

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[397] Hobbes, *On the Citizen*, 33-34.

[398] *Ostensum est præcedente sectione, actiones hominum, a voluntate, voluntatem a spe & metu proficisci*, *Elementorum Philosophiae Sectio Tertia De Cive*, 52 [5.1].

[399] Hobbes, *On the Citizen*, 69 [5.1] (emphasis added).

Likewise, the emphasis on personal (presumably common) experience, and a clear concern with defending the empirical foundations of *De cive*, strengthened in the second edition. Responding, explicitly, to an objection about the tenability of the principle of "mutual fear"[400] Hobbes retorted with an (undoubtedly) first-hand, but common experience:

> *In my view, not only flight, but also distrust, suspicion, precaution and provision against fear are all characteristic of men who are afraid. On going to bed, men lock their doors; when going on a journey, they arm themselves because they are afraid of robbers. Countries guard their frontiers with fortresses, their cities with walls, through fear of neighboring countries…*[401]

A mix of personal (or common) and universal experience provided Hobbes with a means by which to clean up the wreckage that resulted from the implementation of the *Elementa Philosophiae* plan. Having been published without its companion sections, *De cive*, as the preface to the second edition points out, contends to rely on "experience" alone, on

> a Principle well known to all men by experience and which everyone admits, that men's natural Disposition is such that if they are not restrained by fear of a common power, they will distrust and fear each other, and each man rightly may, and necessarily will, look out for himself from his own resources.[402]

With this invocation of universal experience, combined with the use of other forms of experience, Hobbes believed himself to have solved the empirical puzzle that resulted from the loss of content from *The Elements of Laws*.

[400] Ibid, 24 [2.2].

[401] Ibid, 25.

[402] Ibid, 10 [Preface to the Readers 10].

V. Conclusion

Hobbes did not, in the first instance, set out to posit a political theory, unsupported by a substantive treatment of human nature.[403] Nevertheless, social pressures, changes in his philosophical project, and, as he claimed in the second edition, an encroaching Civil War,[404] conspired to create a circumstance that necessitated the shift. It forced a change in the way that he talked and even thought about his political theory. In the second edition of *De cive*, the shift was cemented into his method. He wrote that although "that part which was last in order has come out first," the out-of-order publication of the third section of his series, *De cive*, posed no problems, as "I saw that it did not need the preceding parts, since it rests upon its own principles known by [experience] [*principiis…experientia cognitis*][405]."[406] Thus, Hobbes's later intention – of a third philosophical section, held to be fundamentally apart from the second – came to overwrite the earlier one, expressed in *The Elements of Law*, of an "explication of the elements of laws, natural and politic" which

[403] However, it should come as no surprise that Hobbes, at the outset of *The Elements of Law*, issues the blanket disclaimer that although he can "err no less" than those who have written on the same subject, he nevertheless asks that readers "not to take any principle on trust," having be presented with "what they know already, or may know by their own experience," *The Elements of Law*, 1 [1.1]. As noted above, the reorganization of his political theory demanded that Hobbes push the claim and the concept of universal experience in new directions in *De cive*, using it to *specifically* address the loss of empirical material from *The Elements*, and to support and substantiate the empirical postulates of natural cupidity and self-preservation in particular. That is, universal experience was used to plug a hole that opened up as a result of a seismic reworking of his philosophy in response to new organizational strictures imposed by the *Elementa Philosophiae* plan.

[404] See footnote 300.

[405] Hobbes, *Elementa Philosophica de Cive*.

[406] Hobbes, *On the Citizen*, 13 [Preface to the Readers 13].

"dependeth," in its beginnings, "upon the knowledge of what is human nature."[407]

[407] Hobbes, *The Elements of Law*, 1 [1.1]. The full quotation reads: "The true and perspicuous explication of the elements of law, natural and politic, which is my present scope, depedeth upon the knowledge of what is human nature, what is a body politic, and what it is we call a law."

CHAPTER IV

LEVIATHAN

Unmissable in the opening pages of *The Elements of Law* and *De cive* are allusions to geometrical method and Hobbes's eager use of the newly trendy rhetoric of mathematicized science. It is notable that the references to method and the mathematical rhetoric featured in *The Elements* and *De cive* are absent from the opening pages of *Leviathan*. Many 20th century readers of *Leviathan* failed to take notice. These readers made method a core component of their interpretations of *Leviathan*, portraying method as a *sine qua non* of Hobbes's philosophy, seeing the philosophy of *Leviathan* as an outcome of a particular application of method or otherwise centering method in their investigations of the text.

A *specimen* of the impulse is found in C.B. Macpherson's introduction to his edition of *Leviathan*. In *Leviathan*, he writes, can be seen Hobbes's answer to a methodological quandary about the scientific study of politics.[408] The quandary, Macpherson contends, was resolved through an application of ostensibly[409] Galilean method. He notes that, "as applied" to Hobbes's "political

[408] Motivated to "construct a political science which would show men how to attain civil peace and commodious living," Macpherson observes that Hobbes was in search for "a hypothesis more specific than the general one about motion, and he needed a method more inclusive than the deductive method of geometry," "Introduction," in *Leviathan*, ed. C.B. Macpherson (London: Penguin, 1968), 25.

[409] The link between Galileo's work and the specifically Zabarellan methods of resolution and composition was established in the work of John Randall. The conclusion was reproduced throughout the century *ad nauseam*, and, eventually, the linkage was extended to Hobbes. For a discussion of Zabarellan *regressus*, the context and *milieu* in which Randall's study came together, and a straightforward, textual evaluation of the conclusion, see Paolo Palmieri's "On *Scientia* and *Regressus*," in *Routledge Companion to Sixteenth-Century Philosophy*, ed. Henrik Lagerlund and Benjamin Hill (New York: Routledge, 2017), 319-349. For conflicting assessments of the relationship between the method delineated in Hobbes's *De corpore* and Zabarellan

science," "...the resolutive stage of the Galilean method...consisted in resolving political society into the motions of its parts – individual human beings – and resolving their motions in turn into imagined or hypothetical simple forces which, compounded, could be shown to explain them."[410]

Macpherson, like many other interpreters, was unaware of the significant risks that accompany a methodological interpretation of *Leviathan*, and in particular, one that emphasizes resolutive-compositive (or analytical-synthetical) methods and their offshoots. At issue is how interpreters, like Macpherson, use remarks about methodology from a later work, *De corpore*, as a loadstar to inform and guide their interpretations. As detailed in the next chapter, the methodological prescripts set down in *De corpore*, published in 1655, reflect the philosophical posture into which Hobbes had settled in the mid-to-late 1640s, *after* he had composed *Leviathan*'s antecedents, *De cive* (1642) and before that, *The Elements of Law* (1640).[411] As the next chapter also details, the methodological prescripts delineated in *De corpore* are ambiguous, vague, and even inconsistent to an extent that makes them untrustworthy and unreliable guides to understanding and interpreting Hobbes's political theory.

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regressus see (for the negative view) Jan Prins's "Hobbes and the School of Padua: Two Incompatible Approaches of Science,"*Archiv für Geschichte der Philosophie* (1990): 26-46, and (for the positive view, and a critique of Prins's position) Stewart Duncan's "Hobbes: Metaphysics and Method" (Ph.D. dissertation, Rutgers, 2003), 83-113.

[410] Macpherson, "Introduction," 27.

[411] Parsing Hobbes's methodological pronouncements and substantive work, from 1636 to 1651, reveals that his ideas and practice of science, and his approach to political theory evolved and varied over time, often in response to different varieties of issues and problems, some related to constraints stemming from compositional practices, others resulting from demands imposed by shifting philosophical projects (the implementation of the *Elementa Philosophiae* plan in particular) and epistemic commitments.

Nevertheless, method, and often the methods of resolution and composition, loom large in discussions of Hobbes's political theory, *Leviathan* in particular. Like Macpherson, scholars have centered method in their interpretations of *Leviathan*, arguing, whether explicitly or by implication, that the text's organization and the broad lineaments of Hobbesian political theory are symptomatic of a particular kind of methodological commitment, whether resolutive-compositive, "a priori,"[412] or other. Examples illustrating the interpretive impulse abound across time and space. In his famous text on the system of Hobbes's ideas, J.W.N. Watkins writes, "Hobbes's method determined the shape of his civil philosophy,"[413] explaining that "Part II of *Leviathan* tells the compositive story – gives a compressed and rationalized history of the way 'by which the parts of this body politic' are 'set together and united.'"[414] Similarly, Marshall Missner would, later, open the essay "Hobbes's

[412] It deserves noting that not all resolutive-compositive accounts of Hobbes's political theory incorporate "a priori" reasoning in the sense the phrase refers to here, relating to the application of the concept of maker's knowledge to the production of civil science. See: Patrick Craig's "The A Priori Nature of the Political: Democracy and Scientific Method in Thomas Hobbes" (Ph.D. dissertation, Duquesne University, 2014), and relatedly, Noel Malcolm's essay "Hobbes's Science of Politics and his Theory of Science," in *Aspects of Hobbes* (Oxford: Oxford University Press, 2002), 155; Douglas Jesseph's "*Scientia* in Hobbes," in Scientia *in Early Modern Philosophy: Seventeenth-Century Thinkers of Demonstrative Knowledge from First Principles*, eds. Tom Sorell, G.A.J. Rogers, and Jill Kraye (New York: Springer, 2010), 124-125; and Ted Miller's *Mortal Gods*, 50, and, relatedly, Arthur Child's classic interpretation in "Making and Knowing in Hobbes, Vico, and Dewey," *University of California Publications in Philosophy* 16, no. 3 (Berkeley: University of California Press, 1953): 271-310. For a textual appraisal of the interpretation, which hunts for bits of text and elements of exposition that anticipate the position Hobbes would later mark out vis-à-vis the relationship between geometry and civil science in *Six Lessons* and *De homine*, see David Gauthier's "Hobbes on Demonstration and Construction," *Journal of the History of Philosophy* 35, no. 4 (1997): 509-521. For a quick-moving appraisal of the "a priori" position, see chapter 6.

[413] Watkins, *Hobbes's System of Ideas*, 66.

[414] Ibid, 73.

Method in *Leviathan*," by asking, "What method did Hobbes use to arrive at the theory of human nature he presents in *Leviathan*?"[415]

The question and the presupposition about the role and explanatory power of method in *Leviathan* was hardly out of place in the literature. In *Ideals as Interests*, S.A. Lloyd offers an intricate and interpretively inventive reading of how the methods of resolution and composition organize *Leviathan*'s parts and were used to render its content.[416] In her study of *Leviathan*, Jean Hampton, writing with the current of the prevailing literature, points out that "Hobbes's political and philosophical beliefs were designed to form a unified integrated system."[417] The idea also surfaces in the work of A.P. Martinich, who just recently observed that parts III and IV of *Leviathan* stand apart from the methodologically and scientifically unified parts of the text, parts I and II: "the method and the content of the second half of Leviathan are substantially different from those of the first. The first half aspires to science; the second does not."[418] The friction Martinich senses between parts I and II and parts III and IV of *Leviathan* is an artifact of what is, now, an interpretive tradition – a

[415] Missner, Marshall, "Hobbes's Method in *Leviathan*," Journal of the History of Ideas 38, no. 4 (1977), 607.

[416] S.A. Lloyd, *Ideals as Interests in Hobbes's* Leviathan: *The Power of Mind Over Matter* (Cambridge: Cambridge University Press, 1992).

[417] Jean Hampton, *Hobbes and the Social Contract Tradition* (Cambridge: Cambridge University Press, 1986), 6.

[418] A.P. Martinich, "Hobbes's Political-Philosophical Project: Science and Subversion," in *Interpreting Hobbes's Political Philosophy*, ed. S.A. Lloyd (Cambridge: Cambridge University Press, 2019), 42.

style of interpreting *Leviathan* that foregrounds method and Hobbes's putative systematizing-methodological ambitions.

This chapter pits itself against the view that *Leviathan* is a puzzle that can be solved methodologically. Instead, it argues that motivating *Leviathan* are a set of substantive or empirical concerns that neither reduce to method nor can be revealed by looking at *Leviathan* through the correct methodological lens. In other words, understanding what makes *Leviathan* distinctive in its aims involves looking beyond method.

As Hobbes himself noted, *Leviathan* was meant to delineate a curriculum of (re)education.[419] He hoped that if read and taught, *Leviathan* would inoculate those who came into contact with it against doctrines and beliefs of the kind he blamed for England's civil wars. The course of instruction he prescribed responded to a pair of concerns. First, Hobbes was concerned about the ramifying social and political effects of unempirical thinking. He aimed to use *Leviathan* to set the empirical record straight – to bring its readers back to the same empirical baseline and to instill an understanding of the world that is empirically correct. The second concern is related to the first:

[419] While certainly complementary in a great variety of dimensions, the interpretation offered here stands apart, in terms of analytical set-up and substantive orientation, from other studies, focused on Hobbes's curricular ambitions; see e.g.: David Johnston's *The Rhetoric of* Leviathan*: Thomas Hobbes and the Politics of Cultural Transformation*, 114-133; S.A. Lloyd's *Ideals as Interests in Hobbes's* Leviathan (Cambridge: Cambridge University Press, 1992), in particular its second and third parts; Mary Dietz's "Hobbes's Subject as Citizen," in *Thomas Hobbes and Political Theory*, ed. Mary Dietz (Lawrence: University of Kansas Press, 1990), 91-119; and especially Teresa Bejan's "Teaching the *Leviathan*: Thomas Hobbes on Education," *Oxford Review of Education* 36, no. 5 (2010): 607-626. Specifically, I follow a different tack than do some of these other studies, with a narrow focus on the ways in which Hobbes's substantive empirical concerns ramify through the text and helped to inform decisions about the adaptation of *The Elements of Law* and *De cive* into *Leviathan*. Furthermore, the argument is positioned against the explicit methodological framing of some studies, like Lloyd's.

Hobbes worried about causal myopia, ignorance or the misreckoning of cause and effect. As with unempirical thinking, he viewed causal myopia as a scourge to good political order. To make correct decisions, Hobbes believed, people must be capable of "big picture" causal thinking, having the capacity to see how individual decisions ripple out, and affect the world around them. The two concerns have a particular significance. They, at once, reveal Hobbes's enduring commitment to a strong form of empiricism and can be leveraged to develop a fuller understanding of how, and to what end *Leviathan* was made.

The framing of this chapter could be read as an endorsement of the view that method is wholly irrelevant to the task of interpreting *Leviathan*. But the view would be untenable. Hobbes saw method, in its various dimensions, as a weapon to wield in the war against political tumult – a tool that could be used to clear away unempirical claptrap and fill in gaps in causal understanding. He considered scientific methodology as a handy weapon to attack empirical problems. Unempirical thinking was to be attacked with geometry. Hobbes believed scientific method adapted from geometry was a machete that could be used to cut through the nonsense and absurdity in which Britons had become entangled.[420] As *Leviathan* contends, "The Light of humane minds is Perspicuous Words, but by exact definitions first snuffed, and purged from

[420] The metaphor is adapted from one used by Jon Parkin in "Thomas Hobbes and the Problem of Self-Censorship" (paper presented at the 2007 Morrell Conference on the subject of self-censorship, York, UK). Parkin writes, "Hobbes's nominalism and his materialism are put to work together, and their cutting effect, like that of a pair of scissors, derives from their mutual interaction. Everything is body, and the names we give to bodies tell us only how we think of them; which opens the possibility that we could learn to think differently about them. Together, Hobbes's materialism and his nominalism cut through a whole range of putatively authoritative claims made about the self by his predecessors," 17.

ambiguity…"[421] Causal myopia was to be met with accurate causal thinking. *Leviathan* elaborates that science also entails "the knowledge of Consequences, and dependance of one fact upon another…."[422] Having embraced a causal conception of science in the mid-1640s,[423] Hobbes, by the time that he composed *Leviathan*, was firm in the belief that the *raison d'état* of science is to delineate chains of cause and effect,[424] as to extend the vision of humanity and bring into focus the "remote causes"[425] of its own wellbeing.

However, the methodological dicta, on their own, carry no instructions as to which specific facets of the world they should be applied. Instead, Hobbes made determinations about how to deploy method in response to concerns about the politically and socially destabilizing effects of unempirical thinking and flawed causal reasoning. Put differently, he used *Leviathan* to interrogate facets of his world which, for him, had become sources of concern.[426] Of foremost concern was how the everyday thinking and decision-making of

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[421] Thomas Hobbes, *Leviathan*, ed. Noel Malcolm, vol. II-III (Oxford: Clarendon Press, 2012), 74.

[422] Ibid, 72.

[423] The shift in conception is recorded in "Logica. Cap 1. Ex T.H.," an early draft of Hobbes's *De corpore*, whose content bears similarity to notes written out in the hand of Charles Cavendish in 1645, "Logica. Cap. 1. Ex T.H.," 463. For a quick-moving overview, describing the change, see Malcolm, *Aspects of Hobbes*, 154.

[424] Hobbes, *Leviathan*, 72. "*Science* is the knowledge of Consequences, and dependance of one fact upon another: by which, out of that we can presently do, we know how to do something else when we will, or the like, another time: Because when we see how anything thing comes about, upon what causes, and by what manner; when the like causes some into our power, wee see how to make it produce the like effects."

[425] Ibid, 160.

[426] This is a point on which Lloyd and I agree. However, *pace* Lloyd, I contend that Hobbes did not use the method delineated in *De corpore* to identify what these facets were. Cf. Lloyd's *Ideals as Interests*, 310-311.

Britons had become encumbered and distorted by unempirical gibberish and causal miscalculation.

The chapter proceeds in five sections. The first finds textual support for the view that Hobbes's concerns about unempirical thinking and causal myopia were sufficiently deep as to shape the content of *Leviathan*. Hobbes's practice of serial composition[427] guaranteed material would be carried over from *The Elements of Law* and *De cive* into *Leviathan*. However, this continuity cloaks the originality of *Leviathan*. More than double the length of either antecedent, much of *Leviathan* is new and novel. Hobbes's empirical concerns, and his empiricism, shine through in the new material. The second, third, and fourth sections show how these concerns manifest in the exposition of *Leviathan*. I focus on four types of exposition in which the concerns appear: explanations of nature (section two); critiques of religious concepts and phenomena, and Christian theologies (section three); descriptions of political formations and political concepts, and Hobbes's explication of crime and punishment (section four).

The fifth section concludes the chapter. It briefly addresses Hobbes's method, and asserts that, rather than the *sine qua non* of *Leviathan*, Hobbes used method instrumentally, in the working out of substantive treatments

[427] Deborah Baumgold, "The Difficulties of Hobbes Interpretation," *Political Theory* 36, no. 6 (2008): 827-855; Deborah Baumgold, "UnParadoxical Hobbes: In Reply to Springborg," *Political Theory* 37, no. 5 (2009): 689-693; Deborah Baumgold, "Editors Introduction," ix-xi. In the "Editors Introduction," Baumgold explains, "serial composition was common in the period as a legacy of the transition from scribal to print publication, both methods of publication employed by Hobbes. It was accepted that new texts were often composed by revising and expanding existing ones and therefore cannot be regarded as discrete entities," x.

connected to his empirical concerns. Section five also delivers an appraisal of the character of the political theory of *Leviathan* from the perspective of Hobbes's empiricism.

I. Hobbes's empirical concerns and Leviathan

Leviathan was a project that coalesced very suddenly. That Hobbes wrote *Leviathan* at all is surprising. His primary intellectual interest throughout the 1640s was not politics,[428] but natural philosophy. After finishing a commentary on Thomas White's *De mundo*, possibly in 1643,[429] Hobbes completed a voluminous manuscript on optics in 1646,[430] and throughout the 1640s worked to develop another text on first philosophy and physics, which he hoped to finish by 1649 or, more likely, the early 1650s.[431] He missed the

[428] This is not to suggest that Hobbes, during the period, was wholly dis-engaged from political work. Though minimally revised, he published a second edition of *De cive* in 1647. The revisions are limited to small adjustments (e.g., scrubbing *De cive* of language pointing to the larger *Elementa Philosophiae* project), and the inclusion of a new preface and a handful of clarifying annotations. During the period, motivated, perhaps, by the politics at the court in Paris, he also penned a critique of Bellarmine, later imported into *Leviathan*, as noted by Karl Schuhmann, "*Leviathan* and *De Cive*," in Leviathan *After 350 Years*, ed. Tom Sorell and Luc Foisneau (Oxford: Clarendon Press, 2004), 20-21. Hobbes appears to address the tract in the verse autobiography, writing, "I could not endure that so many monstrous crimes should be put down to the commands of God. I made up my mind to write at once a work on the laws of God. For a long time, little by little, and filled with anxiety I labored at this task," "The Autobiography of Thomas Hobbes," 27.

[429] Jean Jacquot and Harold Whitmore Jones, "Introduction," 45.

[430] See Elaine Stroud's "Background," in "Thomas's Hobbes's 'A Minute or First Draught of the Optiques: A Critical Edition" (Ph.D. dissertation, The University of Wisconsin-Madison, 1983), 5.

[431] Thomas Hobbes, "Letter 61: Hobbes to Samuel Sorbiére, from Paris [4/] 14 June 1649," in *The Correspondence of Thomas Hobbes* vol. I, ed. Noel Malcolm (Oxford: Clarendon Press, 1997), 176-177. The letter contains no hint that, by then, Hobbes was working full steam on *Leviathan*, or that *Leviathan* had become a principal preoccupation.

deadline. To the surprise of even close friends,[432] he spent much of 1649 and 1650 writing *Leviathan*.

On the one hand, *Leviathan* is an extension of Hobbes's previous political projects. His use of serial composition, the practice of converting old texts into "new(ish)"[433] volumes, guaranteed a certain level of continuity between *The Elements of Law* (1640), the first (1642) and second (1647) editions of *De cive*, and *Leviathan* (1651). As was custom, Hobbes pillaged previous texts, including his commentary on White's *De mundo*, for content that could be recycled and adapted in the new volume.

On the other hand, *Leviathan* was completed almost a decade after Hobbes finished *De cive* in 1641-42. Thus, it stands apart, in time and space, from its antecedents. During the period a civil war was waged and then waned. Hobbes watched, eventually from the court in Paris, as religious, political, and politico-religious divisions proliferated, crystallized and Britons divided up into different warring camps. He watched as battles in broadsheets and pamphlets set the stage for actual battlefield conflict. He observed a regicide, Parliament's ascendence, and, eventually, the collapse of the *ancien régime*. *Leviathan* bears the imprint of all of these things.

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[432] As Malcolm notes in the "General Introduction" to the Clarendon edition of *Leviathan*, Robert Payne, in a May 1650 letter, indicated the change in projects was news to him: "I sent notice to M^{r} Hobbes, y^{t} his booke de Cive was translated into English, & desird him to prevent y^{t} translation by one of his owne. but he sends me word he hath an other taske in hand, w^{ch} is Politiques, in English; of w^{ch} he hath finished 37 chapters…," in *Leviathan*, vol I (Oxford: Clarendon Press, 2012), 1-2.

[433] Deborah Baumgold and Ryan Harding, "Excavating *De cive*," 12.

Yet, little is known about what, specifically, impelled Hobbes to write *Leviathan*. What is concretely known is that he used the text to address multiple audiences. The content of the text indicates that he presumed it would be read by a sovereign, likely Charles II,[434] Hobbes's former pupil. Charles received a manuscript copy of the book not long after he returned to the royalist outpost in Paris in 1651,[435] where Hobbes was still in exile. At the same time, the text also addresses Britons whose minds had been or were at risk of being soiled by the false and malicious religious and political doctrines to which Hobbes attributed England's civil wars.[436] He pointedly decided to write and publish a text in "plaine English" in "prose that was simple and direct."[437] *Leviathan* was not a text written for Hobbes's Parisian contacts.[438] He desired

[434] Lisa Sarasohn, "Was *Leviathan* a Patronage Artifact?" *History of Political Thought* 21 no. 4 (2000): 606-631; Miller, *Moral Gods*, 115-136; Malcolm "General Introduction," 51-60.

[435] First-hand inspection of the manuscript reveals a peculiar feature: the absence of physical evidence indicating it contained an epistle dedicatory. For the contrary view, which can be attributed to a misidentification of one of the manuscript's unusual physical characteristics, see Malcolm, Noel, "Textual Introduction," in *Leviathan* vol. I (Oxford: Clarendon Press, 2012), 198.

[436] David Johnston, *The Rhetoric of Leviathan*, 91, 119; C.W. Schoneveld, "'Insinuations of the Will': Hobbes's Style and Intention in *Leviathan* Compared to Earlier Political Works," in *Hobbes's 'Science of Natural Justice'* ed. C. Walton and P.J. Johnson (Dordrecht: Martinus Nijhoff Publishers, 1987), 118; Geoffrey Vaughan, "The Audience of *Leviathan* and the Audience of Hobbes's Political Philosophy," *History of Political Thought* 22, no. 3, 457.

[437] Hobbes, "The Prose Life," 250.

[438] This is not to suggest that the text does not bear their influence. See, e.g., Gianni Paginini's "Hobbes, the 'Natural Seeds' of Religion and French Libertine Discourse," *Hobbes Studies* 32, no. 2 (2019): 125-158; and, for a more sweeping, piercing analysis and contrasting view, see Patricia Springborg's "A Very British Hobbes, or a More European Hobbes?," *British Journal for the History of Philosophy* 22, no. 2 (2014): 368-386. Of Malcolm's edition of *Leviathan*, Springborg objects, "But the apparatus to this edition is missing the wide-ranging work of Yves Charles Zarka, Franck Lessay and Luc Foisneau, to mention just some of the most prominent French Hobbes scholars; the work of Italian scholars like Arrigo Pacchi, Gianni Paganini and Agostino Lupoli on Hobbes's indebtedness to the Epicureans; the many works of Paganini, on the indebtedness of Leviathan to Lorenzo Valla (particularly on points of Biblical exegesis), and Renaissance sceptics; the many works of Karl Schuhmann, the German Hobbes scholar, and all but one of the essays of his Dutch student, Cees Leijenhorst, on Hobbes's indebtedness to Aristotle and to Renaissance Italian philosophers and new scientists; as well as the works of

that *Leviathan* be accessible and taught in universities, believing the book "may be profitably printed, and more profitably taught in the Universities," understanding that "the Universities are the Fountains of Civill, Morall Doctrine, from whence the Preachers, and the Gentry, drawing such water as they find, use to sprinkle the same (both from the Pulpit, and in their Conversation) upon the people…."[439] He viewed the book as an antidote to "that subtile liquor, wherewith ["Preachers," "Lawyers, and others" promoting "doctrine" "against the Soveraign Power of the King"] were first seasoned, against the Civill Authority."[440]

This antidote was synthesized to neutralize two sources of social and political conflict. First, Hobbes endeavored to rid his world of unempirical thought, and more narrowly, linguistic absurdity and nonsense – unempirical speech.[441] Absurdity, *Leviathan* specifies, is "a generall assertation" that is

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almost of all the continental scholars included in my Cambridge Companion to Hobbes's *Leviathan*, many of whom represent long European traditions of Hobbes scholarship. In a critical edition of Leviathan that will be canonical for decades if not centuries to come, this is a great lack. Without it we do not have a complete, or even a credible, picture of how Hobbes accomplished this extraordinary feat of producing in *Leviathan* both an advice book for his prince, and a philosophical treatise of great standing – his playbook and Folio edition rolled into one! His point of reference was local but his audience was European-wide and, by now, more or less universal," ibid, 385-386.

[439] Hobbes, Leviathan, *1140*.

[440] Ibid, 532.

[441] The characterization, at a glance, appears in tension with some of the most distinctive features of Hobbes's epistemic views, in particular his embrace of the subjectivity of secondary qualities and his supposed endorsement of a conventionalist theory of truth. Subjected to additional scrutiny, the tension dissolves. Remarking upon the phenomenalist dimensions of Hobbes's theory of truth, Cees Leijenhorst notes in "'Insignificant Speech': Thomas Hobbes and Late Aristotelianism on Words, Concepts and Things" that "Conventionalism…has its limits. The choice of labels may be arbitrary, but what these labels signify, viz. our concepts, is not…Stated otherwise, Hobbes's theory of truth has a phenomenalist as well as a conventionalist character," while adding that the definitions of Hobbesian science "do not signify the essence of a thing itself, as Aristotle has it, but rather our conception of that thing. Thus, we see another phenomenlist redefinition of an Aristotelian ontological definition, in this

"unconceivable," a descriptor that attaches to "any words whereby we conceive nothing but the sound."[442] They are words that have no firm anchor in imagination, and therefore the world.[443] Such words "are those we call *Absurd, Insignificant*, and *Non-sense*."[444]

The problem of the plague of absurd speech grew in Hobbes's mind and became a better-defined concern between 1640, when he finished *The Elements of Law*, and 1651, the year of *Leviathan*'s publication. In 1640 he simply defined absurdity as a conclusion derived by means of "good ratiocination" that "is contradictory to any evident truth whatsoever"[445] and devoted minimal energy to the concept's explication. By 1651 he had developed a typology of absurdities

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case one concerning the definition itself," 362, 363. Karl Schuhmann adds that "In Hobbes all conceptions or representations are entirely phenomenal, i.e. they are nothing but (outwarded directed) motions in our body. To call a representation veridical or illusory is to affirm the presence or absence of a causal link. It entertains with some external body: something only reason can do. The senses are always confined to the circle of immanence. Hobbes's philosophy has by rights been termed since the second half of the nineteenth century to be phenomenalist...," "Thomas Hobbes: The Unity of Scientific and Moral Wisdom by Gary B. Herbert," *The Journal of the British Society of Phenomenology* 26 (1995), 111. Or as Hobbes so neatly puts it in his commentary on *De mundo*, "Just as what is apparent differs from every real thing outside the mind, so it presupposes an inner reality, since if there were nothing, there would be no appearance," and thusly, no conception, *Thomas Hobbes: Thomas White's* De Mundo *Examined*, 339. Or, as Hobbes complained in a letter to Mersenne in 1648, "This little book [Étienne Noël's *Le Plein du vuide*] also contains some expressions which do not produce any mental images of things [*nulla sequitur rerum imaginatio*]: for example, 'moving lightness', 'effective weight', and 'spirits of fire,'" "Letter 57: Hobbes to Marin Mersenne, from Saint-Germain [7/] 17 February 1648," in *The Correspondence of Thomas Hobbes* vol. I, ed. and trans. Noel Malcolm (Oxford: Clarendon Press, 1997), 167.

[442] Hobbes, *Leviathan*, 68.

[443] See footnote 441

[444] Ibid.

[445] Hobbes, *The Elements of Law*, 17 [5.12]. The word "absurdity" (its cognates) appears 13 times in *The Elements* (17 [5.12], 20 [6.12], 20 [6.6], 32 [9.13], 43 [11.5], 48 [12.5], 63-64 [16.2]), and 44 times in the exposition of *Leviathan* (26, 30, 46, 56, 60, 62, 68, 70, 72, 74, 80, 100, 122, 174, 184, 202, 280, 286, 328, 570, 1016, 1042, 1060, 1082, 1084, 1090). Likewise, the word "insignificant" – as related to speech – appears only once in *The Elements* (48 [12.5]), but 12 times in the body of *Leviathan* (24, 60, 68, 122, 176, 510, 1058, 1082, 1098).

and fleshed out and enlarged the concept. In *Leviathan*, his discussion of absurdity extends across twelve connected paragraphs, in which he delineates seven types of absurdity, all centered on the misapplication and misuse of names to create meaningless, un-cognizable, and therefore unempirical speech, propositions, and systems of thinking. His concern? "…Metaphors, and senseless and ambiguous words are like *ignes fatui* [will-o'-the-wisps]." "[R]easoning upon them," he worries, "is wandering amongst innumerable absurdities; and their end, contention, and sedition, or contempt."[446]

Thus, unempirical, absurd speech, he believed, was a contagion that had wrecked Britain. It caused distemper and drove its carriers to make decisions on the basis of specious fears, delusions, and outright nonsense. For Hobbes, the stakes of straightening out this morass and reworking language to make it responsive to "good" true "principles" [447] could not have been greater. For it was "so many contradictions and absurdities," disseminated by "Schoole-men" which "enclined people to revolt" in the first instance.[448]

Throughout the chapter I use the language of "unempirical speech," "unempirical fears," "unempirical thought" and "unempirical thinking," and "unempirical ideas" interchangeably, to point to a selfsame phenomenon: how senseless words, ambiguous speech, and absurdity become will-o'-the-wisps, leading people into a dangerous wilderness, encouraging ways of being in the

[446] Hobbes, *Leviathan*, 74.

[447] Ibid, 74.

[448] Ibid, 184.

world inimical to forms of real, empirical understanding that can support social and political order.

From the perspective of Hobbesian philosophy, the phrases "unempirical thought," "unempirical thinking," and "unempirical ideas" are, themselves, absurdities, not unlike the paradigmatic example Hobbes gives, "incorporeal bodies."[449] Strictly speaking, it is not possible for unempirical, senseless speech, of the kind Hobbes describes, to provoke or arouse positive thought, conceptions. He believed most words of this kind to be unmoored from human experience, and thus incapable of engendering thought of any kind. They are empty words for which there exists no corresponding, sense-generated conceptive content.

Yet, the language of "unempirical thought" has interpretive and analytical value. The analysis of the chapter shows that, although forbidden by his philosophy of language, Hobbes harbored a concern about patterns of thinking, ways being in and responding to the world, shaped and structured by ersatz ideas and words – both nonsense, "contentless" ideas and words, and more broadly, ideas and words without clear antecedents in sense experience. "Unempirical thought" gets at and encapsulates the concern, even if it, at times, fails to square with the apparently rigid, formal strictures of Hobbesian philosophy.

Second, Hobbes fixed his attention on the turmoil wrecked by causal myopia and worried about peoples' capacity to correctly apprehend causes and

[449] Hobbes, *The Elements of Law*, 43 [11.5].

effects. However, he believed that it was better to be wholly "ignorant of causes" than to misreckon them. "For ignorance of causes," he contends, "does not set men so farre out of their way, as relying on false rules, and taking for causes of what they aspire to, those that are not so, but rather causes of the contrary."[450] For Hobbes, misunderstanding the relation between cause and effect was more than a philosophical abstraction, a matter without bearing on the world he inhabited. Within the context of practical political decision-making, miscalculations of cause and effect, "taking for causes of what" one means to do the "causes of the contrary,"[451] could result in the compounding miseries of disobedience, lawlessness, and ultimately, civil war. It was precisely with reference to this concern that Hobbes justified his work, pitying those "destitute of those prospective glasses, (namely Morall and Civill Science,) to see a farre off the miseries that hang over them, and cannot without such payments be avoided."[452]

At the same time, Hobbes considered the failure to "enquire" about cause and effect a scourge, and attributed various political ills to a failure to inject everyday decision-making with "generall Rules" worked out through the targeted application of science to the world.[453] In *Leviathan* he frets that in the absence of such causal understanding about the "originall constitution of Right,

[450] Hobbes, *Leviathan*, 74.

[451] Ibid.

[452] Ibid, 282.

[453] Ibid, 74.

Equity, Law, and Justice" individuals will instead rely upon "Custome and Example," shabby, unreliable, and mutable conventions, as "the rule of [their] action."[454] He further specifies that without an understanding of reliable rules about consequences, the ignorant are susceptible to "credulity"[455] and, worst of all, estranged from the true "Causes of peace."[456]

Hobbes found estrangement from the true causes of peace particularly troubling. He believed it was important for individuals to have the capacity to engage in "big picture" causal reasoning about factors that would affect their wellbeing, the determinants of peace in particular. He actively worried about those unable to understand and see how the downstream consequences of their actions would or would not support the social and political project of peace in the long term. As he points out, "Ignorance of remote causes" will dispose "men to" wrongly "attribute all events, to the causes immediate and Instrumental,"[457] and thereby make choices at cross-purposes to their real interests (peace).

The concern about the facility to engage in "big picture" causal thinking extended, in principal, to two populations of readers. The first were sovereign readers. As he wrote *Leviathan*, England's was a political and social order in flux, as old routines and institutions were reworked and reimagined or scrapped altogether. That is, Hobbes's was a world of constant churn and

[454] Ibid, 158.

[455] Ibid, 160.

[456] Ibid.

[457] Ibid.

becoming. *Leviathan* was composed, in part, for a transitional moment in which many, or most things were up in the air. He meant for the sovereign to have what was needed to navigate the moment and this change. And what rulers needed most were hard-and-fast empirical rules: an understanding of how discrete decisions would ripple out and change and affect the political and social landscape. As Hobbes memorably puts it, from "Negligent government of Princes" naturally follows "Rebellion."[458] Dressed up in the language of our time, *Leviathan* can be characterized as a white paper, something to be used by political leaders for the purpose of making smart, empirical policy decisions informed by a long-view analysis. As noted, it is likely Hobbes presumed the book would be read by a sovereign, most likely Charles II. However, the balance of evidence contradicts the stronger thesis that the book was exclusively written for a sovereign, whether his former pupil or someone else.

Leviathan presumes another principal audience. Hobbes hoped to remake the public imaginary, as to facilitate individuals to make choices informed by correct causal calculus. To do this, the ideas would need to suffuse the different strata of society. Aristocrats needed a course correction as much as ordinary folks. And he viewed the university as the mechanism for deployment. Recall his belief that "the Universities are the Fountains of Civill, Morall Doctrine, from whence the Preachers, and the Gentry, drawing such water as they find, use to sprinkle the same (both from the Pulpit, and in their Conversation) upon the people…." Both groups needed the capacity to think in

[458] Ibid, 572.

real, empirical, causal terms. In other words, Hobbes viewed peace as a collective project, and "ignorance of causes" as at odds with the project of peace.

Thus, Hobbes saw myopia as corrosive to a well-ordered society. He blamed short-sighted thinking and "ignorance of the Causes of Peace" for the proliferation of "men that are grieved with payments to the Publique," who "discharge their anger upon the Publicans, that is to say, Farmers, Collectors, and other Officers of the pulique Revenue…adhere to such as find fault with the publike Government" and who ultimately "fall…upon the Supreme Authority."[459] What follows from ignorance of causes, Hobbes is saying, is a kind of social combustibility that is dangerous and deleterious to political order. "From ignorance of the Causes of Peace," the text's marginalia summarizes, follows "Adhaerence to private men" [460] – to specious opinion, not true causal calculus.

Hobbes took it upon himself to specify these causes. He "sif[ted] to the bottom, and with exact reason weig[hed] the causes, and nature of Common-wealths" for those who "suffer daily those miseries, that proceed from ignorance thereof…."[461] This orientation – Hobbes's concern about both causal myopia and unempirical speech – is encoded into the text's exposition and appears in a variety of locales, including discussions of nature, theology, politics, and crime and punishment.

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[459] Ibid, 160.

[460] Ibid.

[461] Ibid, 320.

II. Nature, human mind, and the specter of false doctrine

Leviathan, like *The Elements of Law*, opens with a highly memorable discussion of human sense experience and the human mind. However, it would be wrong to conclude that the discussion serves the same programmatic ends in both texts. The rationale provided for the study of human nature changed from *The Elements* to *Leviathan*. Put differently, though *Leviathan* retains *The Elements*' distinctive organizational scheme, with a thick set of chapters on human nature and human psychology, followed by additional sets on the state of nature, the composition of political formations, and the law, it would be wrong to take the similarity of organizational set-up as indicative of a deeper selfsame programmatic-philosophical ambition.

The Elements of Law, as originally conceived, was an expression of Hobbes's early enthusiasm for motion and newly trendy Continental-style approaches to science. The signal conceit of *The Elements* was to bring this knowledge, and way of knowing, to bear on the study of politics and law, setting Hobbes's work apart from other recent contributions to the field, including (and especially) Hugo Grotius's *De jure belli ac pacis* and John Selden's *Mare clausum* (itself a response to Grotius's *Mare liberum*). That is, *The Elements*' chapters on human nature putatively served a philosophical ambition to develop a political science undergirded by natural-philosophical treatment. Specifically, Hobbes justified the inclusion of the chapters by noting their importance to the study of politics. He wrote that political analysis should be grounded, in part, in the study natural human bodies. "The true and perspicuous explication of the elements of laws, natural and politic…dependeth

upon the knowledge of what is human nature, what is a body politic, and what it is we call a law."[462]

It is notable that the opening paragraphs of the first chapter of *Leviathan* no longer tout knowledge of human nature, the workings of human sense experience in particular, as a prerequisite for understanding political systems and political bodies. By the time that he began composing *Leviathan*, Hobbes had embraced the view (discussed in the previous chapter) that it is possible to know the rudiments of civic duty without first having knowledge of human nature, believing "To know the naturall cause of Sense, is not very necessary to the business now in hand." He nevertheless thought the explication of sense a necessary inclusion as it "fill[ed] each part of" his "present method,"[463] by satisfying the plan outlined in *Leviathan*'s introduction, which calls for a consideration of "the *Matter*" that makes up the commonwealth: man.[464]

However, *Leviathan*'s analysis gives another reason for the inclusion of the chapters on human nature. The reason serves a new, distinct set of epistemological and political ends. Hobbes repurposed the discussion and used it to identify nugatory theories of sensation and, in turn, neutralize senseless speech. Thus, the discussion was not mechanically included to merely "fill" in of "each part of" the "present method." He used the discussion of sense to correct mistaken empirical claims about the origins and operations of "naturall

[462] Hobbes, *The Elements of Law*, 2 [2.1].

[463] Hobbes, *Leviathan*, 22.

[464] Ibid, 18.

sense," and in so doing, to sound alarms bells about the need to combat the "insignificant Speech"[465] being promulgated by England's universities.

Put differently, Hobbes aimed *Leviathan*'s discussion of sense at the end of revealing and eradicating insignificant speech, rather than strictly to the end of developing a deductive political science. He may have viewed knowledge of the "naturall cause of Sense" as "not very necessary to the business now at hand" and unneeded to comprehend the basic principles of his politics. However, *Leviathan*'s first chapter on sense was necessary to put into relief doctrines and patterns of thinking, beamed into the minds of students of England's universities, which he judged capable of feeding social and political tumult.

A comparison of the discussion of sense in the first chapter of *Leviathan* with its antecedents, from *The Elements of Law*, elucidates the shift. In *The Elements* the discussion of sense operates as an expository device, used to demonstrate a pair of linked epistemic and ontological propositions. The first proposition is about the subjectivity of secondary qualities; the second, in turn, addresses the principle of motion. That is, "whatsoever accidents or qualities our senses make us think there be in the world, they are not there, but are seemings and apparitions only [proposition one] [466]. The things that are really

[465] Ibid, 24.

[466] Hobbes, *The Elements of Law*, 3 [2.4].

in the world without us, are those motions by which these seemings are caused [proposition two][467]."[468]

Leviathan conscripts the analysis of the mechanics of human sense into a broader critique of unempirical speech. Hobbes begins by importing and repeating *The Elements*' account of the physics of sense.[469] However, *Leviathan* moves on to explicitly position the account against the wrongheaded theories of sensation that had been spread around by "Philosophy-schooles."[470] Circulated in some of the philosophical circles in which Hobbes ran,[471] these theories made sensation the result of the emanation and flow of "species" – a mysterious, and by Hobbes's lights, obviously made-up kind of physical particle – from an object to the organs of human sense. By his account, a species-view of sensation posits that an object, say an apple, emits species, which when received by the eye, are registered and facilitate a particular type of sense experience: the experience of seeing that apple, as it really exists. *Leviathan* chastises "all the Universities of Christendome" for having taught the "doctrine" of species to explain all manner of sense experiences, including "*visible species*"

[467] Ibid.

[468] Ibid, 6 [2.10].

[469] As in *The Elements of Law*, *Leviathan* notes how all dimensions of sensing, at root, are caused by the effects of motion: an interaction between an "External Body, or Object" and "the organ proper to each Sense," which are "presse[d]" on "diversely" by the "many several motions of the matter," 22. Also see: Baumgold, *Three-Text Edition of Thomas Hobbes's Political Theory*, 5-9.

[470] Hobbes, *Leviathan*, 24.

[471] See the essay "Robert Payne, the Hobbes Manuscripts, and the 'Short Tract'," in Malcolm's *Aspects of Hobbes*, 114-115; and Timothy Raylor's, "Hobbes, Payne, and 'A Short Tract on First Principles,'" 49-50.

(for seeing), "*Audible species*" (for hearing), and even "*intelligible species*" (for understanding).[472]

The purpose of the discussion is not to supply philosophical underpinnings sufficient to prop up the superstructure of Hobbes's political theory. Rather, Hobbes reframed the chapter on sense to make it responsive to a growing concern about unempirical speech and its effects. The extended treatment of a species theory of sense was intended to offer an object example of "insignificant Speech," disseminated by "Universities," which needs to be "amended."[473]

At a first glance, a species-based theory of sense may appear to be nothing more than benign hokum. However, Hobbes considered this and other kinds of unempirical explanation to be socially and politically dangerous hokum. Belief in unreal things and unempirical thinking, he worried, sets the stage for misunderstandings of a more fundamental and consequential kind, creating the conditions for social strife and political upheaval.

Hobbes used *Leviathan*'s inquiry into imagination as a vehicle to connect the dots, showing how ostensibly benign unempirical hokum creates the conditions for destructive forms of misunderstanding. The discussion of imagination follows the pattern established in the first chapter of the text.[474] The inquiry, imported from *The Elements*, was remade to serve a new political

[472] Hobbes, *Leviathan*, 24.

[473] Ibid.

[474] Baumgold, *Three-Text Edition of Thomas Hobbes's Political Theory*, 10-16.

point. Specifically, the inquiry drives a wedge between two forms of mental experiences, pure fancies, unmoored from sensible reality and internal motions of the mind prompted by "Vision and Sense."[475] Hobbes contends that were the cognitive capacity to distinguish between the two short-circuited things could go very wrong in a hurry. What will result is a culture saturated by unreal, unempirical belief. "From" the "ignorance of how to distinguish Dreams, and other strong Fancies, from Vision and Sense, did arise" the worship of "Satyres, Fawnes, Nymphs, and the like." So too, "now adayes the opinion that rude people have of Fayries, Ghosts, and Goblins; and of the power of Witches."[476] What follows from superstition, Hobbes believed, is a country of dupes, easily stirred into action by the unreal specters aroused by "evill men."[477] More precisely, the text explains that what follows from superstition and the unempirical fears that accompany it is credulity – a willingness to put one's belief in and act for "evill men" who "under pretext that God can do any thing, are so bold as to say any thing when it serves their turn."[478]

Thus, the discussion of imagination serves Hobbes's empirical concern. It is used to demonstrate how neutralizing the inclination to embrace forms of subterfuge and superstition associated with Catholicism,[479] and in so doing,

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[475] Hobbes, *Leviathan*, 34.

[476] Ibid.

[477] ibid.

[478] ibid.

[479] As Peter Elmer notes "Catholicism and witchcraft had long gone hand in hand in the mental outlook of Protestant Englishmen, so much so that by the 1650s countless authorities could be cited to support the equation of witches with papists. The civil war itself, and the religious and political turmoil which it engendered, were commonly ascribed to the machinations of the

restoring a person's capacity to parse what is real from what is not, would produce subjects more suited to civil order. "If this superstitious fear of Spirits were taken away, and with it, Prognostiques from Dreams, false Prophecies, and many other things depending thereon…men would be much more fitted than they are for civill Obedience."[480] In other words, Hobbes worried that, without a solid understanding of nature and the world, people would unthinkingly accept "insignificant speech" and bunk metaphysics as true, and in turn lack the cognitive capacity to distinguish what is real from what is unreal. In particular, people would be inclined to religious superstition, fear of unreal spirits, mistake the content of dreams for reality, and, in general, think in patterns at odds with political order and Hobbes's own austere Protestantism.

Likewise, *Leviathan*'s account of mental discourse, human memory, and understanding was remade and used to mount an empirical attack on the political problem of prophecy. The account, like the others in the early chapters of *Leviathan*, is mostly rehashed, taken over and adapted from *The Elements*.

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papacy which continued into the 1650s with the attempt to undermine the godly commonwealth of the Republic," "'Saints or sorcerers:' Quakerism, Demonology and the Decline of Witchcraft in Seventeenth-Century England," in *Witchcraft in Early Modern England: Studies in Culture and Belief*," eds. Jonathan Barry, Marianne Hester, and Gareth Roberts (Cambridge: Cambridge University Press, 1996), 160. Likewise, Frederick Valletta explains, "although it may not have been the case that witches were prosecuted because they were papists, the imagery used by demonologists to describe such phenomena undoubtedly resulted in developing belief amongst many that the devil, demons and witchcraft were associated with such views." He adds, "It would appear…that Catholicism was strongly linked to the practice of witchcraft, and that its followers were often in danger of being accused of witchcraft. This seems to have been especially prevalent during the English Civil War, when the issues were adapted to accuse Royalist supporters of witchcraft and vice versa," *Witchcraft, Magic and Superstition in England, 1640-70* (New York: Ashgate, 2000), 22-23.

[480] Hobbes, *Leviathan*, 34.

However, to the account *Leviathan* adds quick asides that turn a previously innocuous discussion of memory and conjecture against the politically consequential concept of prophecy. What results is a deflationary account of prophecy that remakes it into an empirical concept and phenomenon. *Leviathan* indicates that only God is capable of supplying providence, "For the foresight of things to come, which is Providence, belongs onely to him [God] by whose will they are to come. From him onely, and supernaturally, proceeds Prophecy."[481] It follows that true providence cannot originate in humans. Human "prophecy," Hobbes minimizes, is equivalent to mean guesswork. "The best Prophet naturally is the best guesser," he wrote, "and the best guesser, he that is most versed and studied in the matters he guesses at…"[482] The discussion of prophecy draws clear lines around what is real or not, what is empirical and certain and what is not. The analysis of the operations and kinds of human thought Hobbes delivered? Real, reliable. Human-generated, super-natural prophecy? Impossible. The discussion, like others, demolished unempirical claims and reflexive, rote patterns of understanding that failed to square with Hobbes's empiricism.

In place of prophecy *Leviathan* offers empirical insight and exalts a form of causal-cum-geometrical reasoning capable of generating rules about and descriptions of the causes of things in the world superior to the mean guesswork of prudence-peddling prophets. Hobbes was no prophet. Rather

[481] Ibid, 44.

[482] Ibid.

than focused on what will be, he endeavored to spell out what is. He did this by holding his world – full of superstition, misunderstandings about nature, and the true capacities of the human mind – up to an empiricizing mirror. He sought to encourage changes in the "Appetites" of readers by mapping out "long chain[s] of consequences," something "which very seldome any man is able to see the end."[483] He observed that "he who hath by Experience, or Reason, the greatest and surest prospect of Consequences, Deliberates best himself; and is able when he will, to give the best counsell unto others."[484] The substance of *Leviathan* shows that Hobbes reckoned himself to have had this capacity.

Thus, while owing material to *The Elements*, *Leviathan*'s opening chapters are calibrated in part to the project of bringing this philosophical material to bear on problematic features of the world as observed by Hobbes. Repeatedly, he uses discussions of nature, the human mind, and the human experience as a staging ground to mark out and correct different forms and patterns of unempirical thought, and to call out its promulgators. Put differently, *Leviathan* gives the material from *The Elements* on nature and epistemology a more prominent political edge. And the chapters that follow continue in the established vein, supplying content to replace ersatz, unempirical ideas while delineating sets of rules that can be used to clean up everyday discourse and purge it of empirically hollow speech. In addition to supplying an empirical corrective intended to point out errors in thinking

[483] Ibid, 94.

[484] Ibid.

about nature and the human mind, the chapters aim Hobbes's empiricizing mirror at a variety of other features of his world, correcting mistakes in reasoning about religious ideas and doctrines, the nature and purpose of political formations, and crime and punishment, themes the sections that follow pick up and address in turn.

III. Religious nonsense

Concerned about the way in which religious doctrine and ideas imperil and color decision-making, *Leviathan*'s discussions of imagination,[485] mental discourse,[486] reason and science,[487] and the passions,[488] mount attacks on a range of explicitly religious positions and concepts, subjecting each to hard-nosed empirical scrutiny. The same empiricism is visible in the attacks that immediately follow, on the nature of enthusiasm, the work of Francisco Suárez, the natural origins of religion, and the prospect of "eternall rewards" after death. In addition, the selfsame orientation, and use of empirical critique, is on display in parts III and IV of the text. That is, the orientation, and method of critique, appears in all parts of *Leviathan*, something elided by Martinich's assessment that parts III and IV of the text are distinct in terms of "method and…content," and thus "substantially different" from the first two parts.[489]

[485] Ibid, 34.

[486] ibid., 44, 46.

[487] Ibid, 68.

[488] Ibid, 86, 96, 114.

[489] Martinich, "Hobbes's Political-Philosophical Project: Science and Subversion," 42.

Hobbes found the idea of enthusiasm, the idea that humans can serve as vessels for divine spirit, empirically and scripturally implausible. He demolished the concept by subjecting it to a rigorous form of scriptural-cum-empirical analysis, noting that there is an absence of scriptural precedent to support the idea that "prophecy by possession of Spirit"[490] is possible, and writing that God communicated to the prophets of the Bible through the senses. "Neither did the other Prophets of the old Testament pretend Enthusiasme; or, that God spake in them; but to them by Voyce, Vision, or Dream; and the *Burthen of the Lord*, was not Possession, but Command."[491] Hobbes believed that God communicates in ways that are empirically cognizable, "by Voyce, Vision," and less verifiable but nonetheless explicable, through "Dream[s]." Such an empirical account of the *modus operandi* by which God transmits divine command precludes the possibility of possession and the in-dwelling of spirit. Instead, Hobbes supplied an alternative explanation of "possession of Spirit," one rooted in the operations of human anatomy and the passions. "Enthusiasme" was held to be passion-driven madness, a psychological state that results from a "stronger…more vehement Passio[n] for anything."[492] Enthusiasm, he believed, is a kind of delusion, driven by an overwhelming surfeit of passion for something.

Similar empirical assessment follows in Hobbes's evaluation of Francisco Suárez, an avatar of both scholasticism and Catholicism. As he did to the notion

[490] Ibid, 116.

[491] Ibid, 118.

[492] Ibid, 110.

of enthusiasm, Hobbes took an empirical sledgehammer to ideas associated with Francisco Suárez, in whose and others' work Hobbes found willful, self-serving obfuscation. Empirical assessment of the concept of transubstantiation for example, reveals it and similar concepts promoted by thinkers like Suárez to be meaningless claptrap. Their "words," Hobbes writes, "are without any thing correspondent to them in the mind,"[493] and thus anything in the world. He saw in defective thinking, as of the sort encouraged by Suárez, the germ of a disease capable of ravaging a body politic. Suárez and his ilk, all chronic absurdity-peddlers, were either mad or "intend to make others so."[494] Hobbes labeled the inclination to abuse words and traffic in absurdity a form of madness, not unlike enthusiasm, driven by "by clear Thoughts of…worldly lust."[495]

The empirical theme continues in a new standalone treatment of natural religion, which discovers the origins of religion in the natural human impulse to speculate about causes. The anthropology highlights the depth of Hobbes's concern about the extent to which the human mind is naturally vulnerable to empirically misleading religious ideas. These ideas, whether well informed by genuine scripture or, as with Francisco's, "without any thing correspondent to them in mind," are an expression of a real, ineradicable human impulse. Hobbes assesses that religion, "an opinion of a Diety, and Powers invisible, and supernaturall…can never be abolished out of human nature, but that new

[493] Ibid, 122.

[494] ibid.

[495] ibid.

Religions may againe be made to spring out of them, by the culture of such men, as for such purpose are in reputation."[496]

It is this concern about the human natural impulse to fill in gaps in understanding with speculative, supernatural causes that haunts Hobbes's discussion of eternal rewards, the eager search to "attai[n]" knowledge of the means to "eternall felicity after death." [497] People in Hobbes's world were especially vulnerable to alluring notions of "eternall felicity after death." His response was to hold the idea of foreknowledge of eternal rewards up to empirical scrutiny. He argued that, while the causes of peace on earth are known and fully cognizable, "there is no natural knowledge of mans estate after death; much lesse of the reward that is then to be given to breach of Faith…"[498] However much we may probe around for answers about the afterlife, there exists no positive empirical evidence to support speculation about "eternall felicity after death."

The larger point lurking within the discussion of eternal rewards is that introducing speculative notions into the causal calculus that governs decision-making works against precepts of reason, which are verifiable and specify the empirically true causes whereby "the preservation of mans life on earth" is secured. Hobbes persistently worried about how particular ideas concerning "eternall felicity after death" could serve as justification for all manner of horrible

[496] Ibid, 180.

[497] Ibid, 226.

[498] Ibid.

acts, including rebellion, leading people to believe "it a work of merit to kill, depose, or rebell against, the Soveraigne Power constituted over them by their own consent."[499]

In the third and fourth parts of *Leviathan* can be found the same analytical-empirical posture. That is, in parts three and four are areas of exposition illustrative of Hobbes's deepened empirical concerns, in which method is used as a means to work through and substantively address elements of his world, features of common discourse and different patterns of thinking, that he found worrisome. Such a portrait of the relation between the four parts of *Leviathan* sits in tension with the characterization of the relation proffered by a major Hobbes interpreter, A.P. Martinich.

In a recent essay, Martinich explains "the method and the content of the second half of *Leviathan* are substantially different from those of the first. The first half aspires to science; the second does not."[500] Martinich does note that, throughout all parts, Hobbes maintains his trademark, communicative style, the "ideals of clarity and precision."[501] Martinich also recognizes that the "second half of *Leviathan*" targets "False and nonsensical language in religion," which "caused contention and sedition."[502] However, what his analysis overlooks is how this focus is characteristic of the project of *Leviathan* – how, throughout, Hobbes

[499] Ibid.

[500] Martinich, "Hobbes's Political-Philosophical Project: Science and Subversion," 42.

[501] Ibid.

[502] Ibid.

used the text to mark out and correct patterns of unempirical thought, making method into a device that serves or is subsumed under the substantive, empirical concerns that make *Leviathan* distinctive.[503] That is, I argue that Martinich misdiagnoses the relation between concern and method in the text, and in so doing, misunderstands the role of method in *Leviathan* and the ends it serves. Rather than divergent, the two "halves" of *Leviathan* are, in important and appreciable ways, substantially similar, and speak to a common project.

An illustrative example from part III of *Leviathan* that elucidates the continuity between the different parts of the text is found in Hobbes's discussion of "*the Signification of SPIRIT, ANGEL, and INSPIRATION in the Books of the Holy Scripture.*"[504] The discussion, in important respects, mirrors *Leviathan*'s account of human sense, which was imported from *The Elements of Law*,[505] and as already noted, adapted, expanded, and remade to serve the substantive ends that orientate the new text. In addition to revising and expanding the explanation of

[503] Although plausibly motivated by a set of concerns and motivations altogether different from the ones that are the focus of this chapter, Hobbes may have nevertheless used method in a similar way in the latter (mostly new) chapters of *De cive*. Nevertheless, and interestingly, Martinich's characterization may gain some traction within the context of a study of the religious chapters of *De cive*. Alison McQueen detects a change in scriptural strategy between *The Elements of Law* and *De cive*, as Hobbes pivoted to address the conscription of Old Testament material to serve Parliamentarian designs, "'A Rhapsody of Heresies:' The Scriptural Politics of *On the Citizen*," in *Hobbes's* On the Citizen: *A Critical Guide*, eds. Robin Douglass and Johan Oslthoorn (Cambridge: Cambridge University Press, 2020), 193-196. The largely new chapter set divaricates not just thematically, but, in some elements of exposition, with respect to analytical strategy (see, e.g., the sweeping historical analysis in *De cive*'s sixteenth chapter). For more on the "drift" of Hobbes's political texts, and how a need to respond to and address contemporaneous events and changes in his world may have plausibly resulted in forms and patterns of analysis that transgress the strictures of Hobbesian methodology and complicate notions vis-à-vis the systematicity of Hobbesian political theory, see the conclusion to chapter 5.

[504] Hobbes, *Leviathan*, 610.

[505] Baumgold, *Three-Text Edition of Thomas Hobbes's Political Theory*, 105-106.

sense given in *The Elements, Leviathan* conscripts the account into a project of education reform and the eradication of insignificant speech, as shown in Table 4.1 below. The pertinent additions are bolded.

Table 4.1, which puts the relevant passages on sense from *The Elements* and *Leviathan* in parallel, is intended to supply a reference point against which to compare the pattern of adaptation between the discussion of the signification of spirit set out in *The Elements* versus *Leviathan*. Similar to its account of sense, *Leviathan*'s discussion of spirit pulls inspiration from a companion discussion from *The Elements*. The relevant passage in *The Elements* is compact and limited to simply distinguishing between two significations of the word "spirit," as (i) "a body natural, but of such subtilty that it worketh not on the senses" and (ii) the commonplace understanding of spirits as "substance without dimension." Hobbes rejected the second signification, as "substance" and "without dimension" cannot be copulated to produce meaning since they "flatly contradict one another."[506]

The parallel discussion in *Leviathan* was set up to bring the full de-ambiguating, methodological might of "true Ratiocination" to bear on the question of how to signify the term. It transforms the short discussion from *The Elements* into a sprawling, empirical explication of the words "SPIRIT" and "BODY" calibrated to the explicit purpose of stamping out "the language" promulgated by "the Schools."[507] An excerpt from *Leviathan*'s discussion of spirit

[506] Hobbes, *The Elements of Law*, 42 [11.4].

[507] Hobbes, *Leviathan*, 610.

Table 4.1: A Comparison of *The Elements of Law*, Chapter 2, Paragraph 9 and *Leviathan*, Chapter 1, Paragraphs 4-5

The Elements of Law, Chapter 2, Paragraph 9[508]	*Leviathan*, Chapter 1, Paragraphs 4-5[509]
9. As colour is not inherent in the object, but an effect thereof upon us, caused by such motion in the object, as hath been described: so neither is sound in the thing we hear, but in ourselves. One manifest sign thereof is: that as a many may see, so also he may hear double or treble, by multiplication of echoes, which echoes are sounds as well as the original; and not being in one and the same place, cannot be inherent in the body that maketh them. Nothing can make anything in itself: the clapper hath no sound in it, but motion, and maketh motion in the internal parts of the bell; so the bell hath motion, and not sound. That imparteth motion to the air; and the air hath motion, but not sound. The air imparteth motion by the ear and nerves to the brain; and the brain hath motion but not sound. From the brain it reboudeth back into the nerves outward, and thence it becometh an apparition without, which we call sound…That as in conception by vision, so also in the conception that arise from other senses, the subject of their inherence is not the object, but the sentient.	4. The cause of Sense, is the externall Body, or Object, which preseeth the organ proper to each Sense, either immediately, as in the Tast 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, 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. And this *seeming*, or *fancy*, is that which men call *Sense*…So that Sense in all cases, is nothing els but originall fancy, caused (as I have said) by the pressure, that is, by the motion, of externall things upon our Eyes, Eares, and other organs thereunto ordained. 5. But the Philosophy-schooles, through all the Universities of Christendome, ground upon certain Texts of *Aristotle*, teach another doctrine [viz. a species-based theory of sense]…**I say not this, as dispproving of the use of Universities; but because I am to speak hereafter of their office in the Common-wealth, I must let you see on all occasions by the way, what things would be amended in them; amongst which the frequency of insignificant Speech is one**.

[508] Hobbes, *The Elements of Law*, 5-6.

[509] Hobbes, *Leviathan*, 22, 24.

is paired, below, with its antecedent from *The Elements*. As in Table 4.1, the key adaptation – which shows how Hobbes conscripted the discussion into a project of education reform and the eradication of insignificant speech – is in bold. Put differently, Table 4.2 shows how the explication of the word "spirit" imported from *The Elements* was turned against the "Schools" and used to highlight commonplace uses of the word that traffic in "Idols" – apparitional phenomena, that are, properly speaking, "nothing."

The full discussion of spirit in *Leviathan* has more heft than *The Elements*', having been expanded into a multi-paragraph treatment that opens with an indictment of unempirical specifications of the term. In ordinary language, *Leviathan* points out, the word is understood to be synonymous with material, cognizable phenomena, like "*Wind*, or *Breath*." However, the term also attaches to

> …those Idols of the brain, which represent Bodies to us, where they are not, as in a Looking-glasse, in a Dream, or to a Distempered brain waking, they are…nothing, Nothing at all, I say, there where they seem to bee; and in the brain it self, nothing but tumult, proceeding either from the action of the objects, or from the disorderly agitation of the Organs of our Sense. And men, that are otherwise imployed, then to search into their causes, know not of themselves, what to call them; and may therefore easily be perswaded, by those whose knowledge they much reverence, some call them *Bodies*, and think them made of aire compacted by a power supernaturall, because the sight judges them corporeall; and some to call them *Spirits*, because the sense of Touch discerneth nothing in the place where they appear, to resist their fingers: So the proper signification of *Spirit* in common speech, is either a subtile, fluid, and invisible Body, or a Ghost, or other Idol or Phantasme of the Imagination.[510]

Hobbes used the discussion of "body" and "spirit" to purge the theological

[510] Ibid, 612.

Table 4.2: A Comparison of *The Elements of Law*, Chapter 11, Paragraph 4 and *Leviathan*, Chapter 34, Paragraphs 1 & 3

The Elements of Law, Chapter 11, Paragraph 4[511]	*Leviathan*, Chapter 34, Paragraphs 1 & 3[512]
4. By the name of spirit we understand a body natural, but of such subtilty that it worketh not on the senses; but that filleth up the place which the image of a visible body might fill up. Our conception therefore of spirit consisteth of figure without colour; and in figure is understood dimension: and consequently, to conceive a spirit, is to conceive something that hath dimension. But spirits supernatural commonly signify some substance without dimension; which two words do flatly contradict one another. And therefore when we attribute the name of spirit unto God, we attribute it, not as a name of anything we conceive, no more than when we ascribe unto him sense and understanding; but as a signification of our reverence, who desire to abstract from him all corporal grossness.	1. Seeing the foundation of all true Ratiocination, is the constant Signification of words; which in the Doctrine following, dependeth not (as in natural science) on the Will of the Writer, nor (as in common conversation) on vulgar use, but on the sense they carry in the Scripture; **It is necessary, before I proceed any further, to detemerine**, out of the Bible, **the meaning of such words, as by their ambiguity**, may render what I am to inferre upon them, obscure, or disputable. **I will begin with the words BODY, and SPIRIT, which in the language of Schools are termed, *Substance*, *Corporeall*, and *Incorporeall***. 3. ...Therefore in the common language of men, *Aire*, and *aeriall substances*, use not to be taken for *Bodies*, but (as often as men are sensible of their effects) are called *Wind*, or *Breath*, or (because the same are called in the Latine *Spiritus*) *Spirits*; as when they call that aeriall substance, which in the body of any living creatures, gives it life and motion, *Vitall* and *Animall spirits*. **But for those Idols of the brain, which represent Bodies to us, where they are not**, as in a Looking-glasse, in a Dream, or to a Distempered brain waking, **they are (as the Apostle saith generally of all Idols) nothing; Nothing at all, I say, there where they seem to bee**; and in the brain it self, nothing but tumult, proceeding either from the action of

[511] Hobbes, *The Elements of Law*, 42.

[512] Hobbes, *Leviathan*, 610, 612.

Table 4.2, continued

The Elements of Law, Chapter 11, Paragraph 4	*Leviathan*, Chapter 34, Paragraphs 1 & 3
	the objects, or from the disorderly agitation of the Organs of Sense…So that the proper signification of *Spirit* in common speech, is either a subtile, fluid, and invisible Body, or a Ghost, or other Idol or Phantasme of the Imagination….

imaginary of unreal specters, semantic associations that are "Nothing at all," but which, if internalized, would make people available to be "perswaded, by those whose knowledge they much reverence." In other words, seeing how patterns of unreal or unempirical thought could kickstart and then feed the machinery of rebellion, *Leviathan*'s discussion of the signification of the word "spirit" aims to cut the term free from meanings that could neither be substantiated scripturally, nor just as important, empirically. And Biblical exegeses, Hobbes contends, supports an empirical understanding of the term. "How we came to translate *Spirits*, by the word *Ghosts*, which signifieth nothing, neither in heaven, nor earth, but the Imaginary inhabitants of mans brain, I examine not; but either properly a real *substance*, or Metaphorically, some extraordinary *ability* or *affection* of the Mind, or of the body."[513] Scripturally informed signification supports the idea that the term ought refer to empirical things – real substances or states of mind – not "Idols."

Thus, Hobbes altered the semantic purchase of the term, draining it of offending content. After all, what he was worried about were will-o'-the-wisps.

[513] Ibid, 618.

He was concerned that folks, both aristocrats and ordinary folks, would get tripped up on or entangled in unempirical snares. As noted in the introduction, he viewed the geometrical practice of definition – cleansing words of ambiguity and cutting them free from ersatz meanings – as a machete that could slice through the snares of unempirical thought. In the relevant passage, he wields this machete to diminish and demolish certain ordinary language understandings of the word "spirit." The commonplace signification of the term, as "*Ghosts*," represented a form signification Hobbes could not abide.

The empirical concern is also woven into the wholly new part IV of the text, including Hobbes's discussion of the second of the Ten Commandments, the proscription that "*they* [the Israelites] *should not make to themselves any Image to Worship, of their own Invention*."[514] In its thrust, the discussion corrects misimpressions about what an "*Image*" is. To do this, *Leviathan* uses a quotation from Paul, that "*We know that an Idol is Nothing*,"[515] as a lever to displace misunderstandings around the issue of religious images and idol worship. The exegesis offers that it is not that Paul "thought that an Image of Metall, Stone, or Wood, was nothing," but rather, more sensibly, "that the thing which they honored, or feared in the Image, and held for God, was a meer Figment, without place, habitation, motion, or existence, but in the motions of the Brain."[516] The point of the discussion is to banish religious practices that rely on "meer

[514] Ibid, 1026.

[515] Ibid, 1024.

[516] Ibid, 1026.

Figment[s]" – an "Image" that, empirically speaking, attaches to nothing (an imaginary figment that cannot properly be said to exist). So determined was Hobbes to pull the empirical point out of the words of Paul, and to turn his words against the agitating specters about which he was worried, that he imputed to the Paul his own ambition of explaining "*an Idol*" as nothing more than mere "motions in the Brain."

Recall that Hobbes assessed unempirical hokum, like species-based theories of sense, to be socially and politically dangerous, encouraging patterns of misapprehension which could snowball into forms of thinking and being in the world inimical to political and social order. So too, he concluded honoring and fearing a "meer Figment" was not an offense without wide social and political ramifications. "[I]f the people had been permitted to worship, and pray to Images (which are Representations of their own Fancies,) they had had no farther dependence on the true God, of whom there can be no similitude." What is more, "nor" did the "people" have dependence on "prime Ministers, Moses, and the High Priests; but every man had governed himself according to his own appetite, to the utter eversion of the Common-wealth, and their own destruction for want of Union."[517] The text points out that the social and political costs that accompany image worship are of a particularly acute kind, and entail a circumstance in which people are prevented from engaging in the kind of accurate, "big picture" causal thinking necessary to create peace. Instead, the worship of idols – "meer Figment[s]" – would bring about the *summum malum*:

[517] Ibid.

a state of insecurity and perpetual war, the "utter eversion of the Common-wealth."

The technique used in the passage on idol worship and the Second Commandment is the same technique wielded across *Leviathan*. In new additions to the text, Hobbes often aimed to clarify nonsense speech, misleading boasts (like prophecy), or ersatz rites and practices, in empirical terms, all in an attempt to bring his reader back to planet earth. In the discussion of the Second Commandment, a crude empirical hermeneutics is at work, enacted in response to concerns about ideas and practices common to his world which, he thought, would lead people astray. Misunderstandings about what an image is within the context of divine worship would engender an end-of-days-style breakdown in political order and society.

IV. Political concepts as empirical concepts

A concern for causal myopia in political decision-making also appears in Hobbes's defense of the indivisibility of sovereignty. *The Elements of Law* and *De cive* marshal an argument in support of absolute sovereignty that focuses on the general hallmarks and underpinning logics of the concept. The corresponding eighteenth chapter of *Leviathan* treats the same subject, however, in so doing, adds arguments and material that tack in a more concrete, empirical direction.

Specifically, Hobbes endeavored to make his reader understand more clearly the real-world effects that follow from ostensibly small compromises vis-à-vis unified sovereignty. A comparison of the sixteenth paragraph of the chapter, with its antecedents from *The Elements* and *De cive*, puts the point in

high relief.[518] In *The Elements of Law*, the relevant passage addresses what Hobbes terms the "marks" of "absolute sovereignty."[519] The discussion highlights a few key hallmarks, all inferred from his analysis of sovereignty, including impunity vis-à-vis punishment; the unilateral creation of laws (and their abrogation); the "appoint[ment] of magistrates, judges, counsellors, and other ministers of state;" and last, unlimited, complete discretion in all things – one's ability to "do any act, which another of the same commonwealth may not."[520] Similarly, in *De cive*, the emphasis of the discussion is on the near-limitlessness of sovereign power, the indefeasibility of sovereign right, and the general hallmarks of sovereignty.[521]

Hobbes fills out the analysis in *Leviathan*, putting greater stress on the real-world turmoil that would result from imperfect crystallizations of or challenges to unified sovereign power. "[I]f [the sovereign] grant away the Power of raising Mony" he explains, "the *Militia* is in vain." Likewise, he writes, "if he give away the government of Doctrines, men will be frighted into rebellion with fear of Spirits." Without these rights, Hobbes indicates, the others a sovereign continues to "hold" will produce "no effect," that is, no real-world effect "in the conservation of Peace and Justice, the end for which all Common-wealths are Instituted…"[522] There is nothing probabilistic about

[518] Baumgold, *Three-Text Edition of Thomas Hobbes's Political Theory*, 230.

[519] Hobbes, *The Elements of Law*, 91 [20.19].

[520] Ibid, 91-92 [20.19].

[521] Hobbes, *On the Citizen*, 88 [6.18].

[522] Hobbes, *Leviathan*, 278.

Hobbes's reasoning. He was not engaged in an *ex hypothesi* inquiry into the possible effects of "grant[ing] away the Power of raising Mony" or "giv[ing] away the government of Doctrines." Nor was he, merely, mapping the concept of sovereignty and tracing its theoretical limits. He thought himself to have witnessed the effects of both "grant[ing] away the Power of raising Mony" and "giv[ing] away the government of Doctrines." These *are* the effects Hobbes was saying to his reader – reason accordingly.

Other new additions made to the analysis of sovereign right in *Leviathan* reveal a complementary concern. Specifically, Hobbes tacked on new analyses focused on the entailments that accompany covenanting;[523] the process by which titles of honor are conferred, as to address misunderstandings that produce "Emulation, Quarrells, Factions, and at last Warre;"[524] the limited practical, binding effects of "words" to compel or restrict action, or to protect individuals from harm;[525] and the actual conditions under which sovereign power is relinquished.[526]

Similarly, he pivoted to the empirical[527] in his treatment of the "dual sovereigns" problem. As he showed in his analysis of indivisible sovereignty, the

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[523] Ibid, 264-266.

[524] Ibid, 276.

[525] Ibid, 268.

[526] Ibid, 280.

[527] So too, Hobbes inserted the word "Consequences" into the discussion of "*Dominion* PATERNALL, *and* DESPOTICALL" in the twentieth chapter of *Leviathan*, as to square the discussion with the definition of science presented in the fifth chapter, and relatedly, but more important, to put an empirical point on an otherwise abstract explication of the rights of sovereignty, ibid, 306, 314.

unity of sovereignty is not merely a logical necessity or a conceptual conceit – it is an empirical reality. The "dual sovereigns" problem describes a situation wherein indivisible sovereignty comes under threat when a people claim to be represented by a second sovereign. Hobbes explained that such an arrangement is not tenable or sustainable in practice. "For that were to erect two Soveraigns," he writes, "and every man to have his person represented by two Actors, that by opposing one another, must needs divide that Power, which (if men will live in Peace) is indivisible."[528] Again, no conceptual matter, the "dual sovereigns" problem corresponds to a reality Hobbes had witnessed, and Britons had lived, beginning in 1642, after Hobbes had already completed the prose for *The Elements of Law* and *De cive*. The idea of a second sovereign, Hobbes now took pains to point out, is empirical nonsense.[529] To solidify the empirical point, and underscore the absurdity of the proposition, Hobbes presented his reader with a quick-and-dirty overview of the history of England's monarchy. "I know now how this so manifest a truth, should of late be so little observed," he laments, "that in Monarchy, he that had the Soveraignty from a descent of 600 years, was alone called Soveraign…and was unquestionably taken by them for their King."[530] To suggest otherwise, Hobbes meant to show, is to traffic in meaningless, unempirical talk.

[528] Ibid, 286.

[529] Hobbes pondered, "And I know not how this so manifest a truth, should of late be so little observed," ibid.

[530] Ibid.

Hobbes's empirical concerns also sit at the top of an explication of crime and punishment in an analysis that, like the others, is new to *Leviathan*. Chapter twenty-seven introduces a new standalone treatment of "CRIMES, EXCUSES, *and* EXTENUATIONS."[531] Early in the chapter, crime is traced to three "sources:" "some defect of Understanding; or some errour of Reasoning; or some sudden force of the Passions."[532] In other words, crime is the byproduct of "*Ignorance*," "*Erroneous Opinion*," or a swell of dangerous passionate energies.[533] And Hobbes's analysis of crime, as well as the chapter on punishment that follows it, is calibrated to fill in these gaps of understanding, while helping his reader to appreciate the causal determinants of crime as well as the deleterious outcomes that flow from misreckoning.

What Hobbes does throughout *Leviathan*'s discussion of crime and punishment is draw distinctions, but not for the sake of drawing distinctions. Rather the legal distinctions Hobbes draws have an empirical purchase. One simple representative example, illustrative of the tack Hobbes follows in the analysis, is the discussion of *ex post facto* laws. He specifies that "No Law, made after a Fact done, can make it a Crime."[534] His description of *ex post facto* laws is pedestrian – and uninteresting – in all dimensions. However, the dullness of the explanation is what makes it the perfect illustration of the point. The

[531] Ibid, 452.

[532] Ibid, 454.

[533] Ibid.

[534] Ibid, 458.

purpose of the passage, like the passages around it, is not to abstractly map the law and its substrates, or to engage in heady philosophical contemplation, rarified legal theorizing, or the mechanical development of legal typologies. The point of the discussion of *ex post facto* law is to correct deficits in understanding and supply readers with information that can be relied upon to inform the causal calculus in which they engage as they move through the world.

In the absence of information about which kinds of undertakings are criminal and which are not, people make mistakes, whether due to sheer ignorance or a fundamental misunderstanding of what the effects of actions will be. It is this understanding that informs Hobbes's discussion of the various "defect[s] of reasoning" that make "men prone to violate the Lawes."[535] It colors his adjudication of crime and sin, wherein he draws an easy to follow, commonsense line between the two, noting that "till it [intention] appear by some thing done, or said, by which the intention may be argued by a human Judge, it hath not the name of Crime."[536] The understanding also informs the prescription that laws be publicly, widely declared, as, he signals, without such a declaration it is unreasonable to hold a person to account with respect to a standard they could not have known.[537]

[535] Ibid.

[536] Ibid, 452, 454.

[537] Ibid, 456.

The selfsame concern for practical decision-making and practical cause-effect assessments is at work in *Leviathan*'s analysis of self-defense, which supplies the reader with a set of decision rules that can be used to discriminate between circumstances in which extraordinary, otherwise criminal action is warranted, and those in which it is not, as when one suffers a small injury or experiences petty contempt.[538] The concern is also at work when *Leviathan* takes up the timely and relevant matter of whether fear of "Invisible Spirits" is an excuse sufficient in weight as to offset criminal liability. Rather than carve out an exemption for criminal acts perpetrated in response to persecutory delusions, he reminds his reader of the empirical analysis given in the early chapters of the text, which reveals "strange Dreams and Visions" to have no existence beyond the imagination that renders them.[539] In all instances, Hobbes thought it critical that subjects have the capacity and requisite information to engage in correct causal evaluation. Indeed, he believed "The want of means to know the Law, totally Excuseth."[540]

Hobbes also worried deeply about the spread of "Vain-glory," a passion that prevents individuals from conducting accurate, empirical assessments of the world and their own capacities. He viewed "Vain-glory" as an impediment to good causal calculus, and balked at the notion that criminal activities undertaken by the vain-glorious are informed by a full understanding of what

[538] Ibid, 464.

[539] Ibid, 466.

[540] Ibid, 468.

the effects of those crimes will be. Indeed, it is for the benefit of presumably vain-glorious readers that Hobbes drew out and listed the long-term effects of vain-glory. "For of them that are the first movers in the disturbance of Common-wealth [among whom the vain-glorious are prominent]…very few are left alive long enough," he explains, "to see their new Designes established: so that the benefit of their Crimes, redoundeth to Posterity, and such as would least have wished it." Consequently, the vain-glorious are "not so wise, as they thought they were." What the passage impresses is that the effects of vain-glorious behavior cut against the interests of the vain-glorious. By tracing through the chain of cause and effect of this behavior, Hobbes wanted to shake his reader out of "false opinion of their own Wisdome,"[541] and put into bold the true, unintended costs of causal miscalculation.

The point is further borne out by Hobbes's discussion of natural punishments, seemingly placed in the text to benefit sovereign and subject alike. The discussion appears in chapter 31, "*Of the* KINGDOME OF GOD BY NATURE," which, although the concluding chapter of part II, serves as a bridge, connecting parts II (Of COMMON-WEALTH) and III (Of A CHRISTIAN COMMON-WEALTH), *Leviathan*'s "political" and "religious" parts. In typical fashion, the statement about natural punishments was tacked onto the end of a discussion of the natural kingdom of God, whose substance, in no small part, was taken over from *De cive*.[542] Hobbes himself remarked on the novelty of the passage, indicating,

[541] Ibid, 462.

[542] Baumgold, *Three-Text Edition of Thomas Hobbes's Political Theory*, 410-415.

> …I will adde onely to this Chapter a short declaration of his [God's] Natural Punishments. There is no action of man in this life, that is not the beginning of so long a chain of Consequences, as no humane Providence, is high enough, to give a man a prospect to the end. And in this Chayn, there are linked together body pleasing and unpleasing events; in such manner, as he that will do anything thing for his pleasure, must engage himself to suffer all the pains annexed to it; and these pains, are the Naturall Punishments of those actions, which are the beginning of more Harme than Good. And hereby it comes to passe, that Intemperance, is naturally punished with Diseases; Rashnesse, with Mischances; Injustice, with the Violence of Enemies; Pride, with Ruine; Cowardise, with Oppression; Negligent[543] government of Princes, with Rebellion; and Rebellion with Slaughter. For seeing Punishments are consequent to the breach of Lawes; Naturall Punishments must be naturally consequent to the breach of the Lawes of Nature; and therefore follow them as their natural, not arbitrary effects.[544]

In the passage, Hobbes does not occupy the position of disinterested social scientist or social theorist. The purpose of the passage is to trace through a chain of causal relationships, and in so doing, to put before his readers' eyes a roadmap embedded with the aim of helping them to understand how fine misjudgments in practical decision-making will throw off harmful, long-term effects. Put differently, Hobbes is relating a common-sense judgment, known to him as a physical scientist, long before Newton posited the third law of motion: the force of an action will produce a proportionate reaction. From "Intemperance," he writes, "Diseases" will follow; from "Rashnesse" comes "Mischances;" from "Injustice," violent responses by "Enemies;" "Pride" will lead to "Ruine;" Cowardise…Oppression;" and most shocking, from "Negligent" governance naturally follows "Rebellion." It is easy to mistake the final remark

[543] The assessment is of a piece with the explanation of punishments, and the effects of unlawful, negligent punishment, proffered in chapter 28, *Leviathan*, 484.

[544] Hobbes, *Leviathan*, 572.

for incipient support of a people, qua nature, in rebellion. However, the purpose of the remark about rebellion is to map out a causal relationship, and in so doing, expand his readers' scope of vision. The statement is a corrective lens, used to right near-sighted (mis)assessments of cause and effect.

V. Conclusion: Method, empiricism, and the political theory of Leviathan

For Hobbes, as for modern social scientists, method was a tool that could be wielded in a variety of directions. However, understanding *Leviathan*, and what makes it distinctive and of its time, involves looking beyond method, to the substantive, empirical concerns that shaped the text and helped to determine the trajectory of its exposition, including its final two parts on religion, both, in part, devoted to the cause of stamping out unempirical thinking.

Furthermore, an emphasis on the way in which substantive, empirical concerns helped to define *Leviathan*'s scope and exposition throws another methodological bias into doubt: the idea that Hobbes was a "system builder,"[545] or as Jean Hampton put it, "Hobbes's political and philosophical beliefs were designed to form a unified integrated system."[546] It is, in part, an assumption about systematicity that is operative in Martinich's observation that the first two parts of *Leviathan* fail to square with the second two parts. The characterization of Hobbes qua "system builder," as extended to *Leviathan*, mispresents the work in two ways.

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[545] Though the metaphor abounds, I take the quotation from Malcolm's "General Introduction," in *The Correspondence of Thomas Hobbes* vol. I (Oxford: Clarendon Press, 1997), xxix.

[546] Hampton, *Hobbes and the Social Contract Tradition*, 6.

First, the characterization suggests that, as he composed *Leviathan*, Hobbes harbored grand, architectonic ambitions. There is no denying that his ambitions were grand. However, as the chapter shows, rather than focused on architectonics, Hobbes's tendency was to think at a smaller scale, his attention often fixed on the explication of discrete, empirical topics that spoke to immediate, emergent concerns. In other words, as Deborah Baumgold and I note in a recent paper, when composing, Hobbes "operated at the level of arguments rather than of the edifice as a whole."[547]

Second, the characterization portrays Hobbes as an ideal theorist in the mold of a Thomas More,[548] aiming for a degree of systematicity and rigor that typifies some of the most-studied works of ideal political theory in the Western intellectual tradition. Hobbes did not aim to idealize his world, nor did he use reason as a sieve to strain out its impurities, leaving behind something pure and perfect. In *Leviathan*, Hobbes aimed to write of and for the world he inhabited. *Leviathan* does not show the world as it *should* be. It aims to show what the world is, why it is as it is, and to put in bold the elements of that world Hobbes found concerning. *Leviathan* is not the image of a world as reflected back in an idealizing mirror. It was composed to reveal the world, as it really existed, to Hobbes's readers. In sum, the political theory of *Leviathan*

[547] Baumgold and Harding, "Excavating *De cive*," 21.

[548] Echoes of Johnston's *The Rhetoric of* Leviathan are heard in Richard Tuck's contention that "The appropriate comparison here is partly (again) Rousseau, but it is also More, the founder of the modern utopian tradition, in whose narrative Senecan or Stoic wise men, purged of their harmful passions by a combination of reflections and discipline, maintain 'the best state,'" "The Utopianism of *Leviathan*," in Leviathan *After 350 Years*, eds. Tom Sorell and Luc Foisneau (Oxford: Clarendon Press, 2004), 136.

does not form an ideal system. It is empirical. It is genealogical. But most of all, the analysis that fills *Leviathan* is varied, bending toward Hobbes's changing concerns.

CHAPTER V

DE CORPORE, THE METHODS OF SYNTHESIS AND ANALYSIS, AND HOBBES INTERPRETATION

Rarely remarked upon is the note that concludes *Leviathan*. In it, Hobbes acknowledges the text as an intellectual nuisance, an emergent distraction that had slowed down the more serious work on natural philosophy he had been engaged in throughout the 1640s. Consequently, it was with more than a modicum of wistfulness that he expressed a desire to "return to my interrupted Speculation of Bodies Naturall; wherein, (if God give me health to finish it,) I hope the Novelty will as much please, as in the Doctrine of this Aritificall Body it useth to offend."[549] God granted Hobbes's prayer. He published *De corpore* in Latin in 1655, and in 1656 an English translation of the work appeared in print.[550] Had God not granted Hobbes's prayer, and had his

[549] Hobbes, *Leviathan*, 1141.

[550] Hobbes, Thomas, *The Elements of Philosophy, The First Section Concerning Body* (London: R. & W. Leybourn, for Andrew Crocke, 1656). The history of the English version of the text deserves some explanation, as it diverges, in some dimensions, from the Latin text. Noel Malcolm explains that "Within months of the publication of *De corpore*, Hobbes seems to have been contemplating a second edition, in which further alterations would also have been made. Reasons for making such changes included the evolution of his own thinking, and the suggestions and criticisms he received from his friends; but the most powerful reason emerged in the final months of 1655, when John Wallis published his scathingly polemical attack on the mathematical contents of the work, *Elenchus geometriae hobbanae*. Whatever Hobbes may have hoped for, the second edition of the original Latin text of *De corpore* was not in the offing: we may presume, that, at this stage, Andrew Crooke still had plenty of unsold copies. But Crooke was preparing to publish an English translation of it (by an unnamed translator): Hobbes was given the opportunity to go through the manuscript of this translation carefully, and to provide completely new versions of some sections of the text. The translation, *Elements of Philosophy, the First Section, Concerning Body*, was published in June 1656; here too, the author was still making changes at the last minute, with a new leaf substituted for one cut out of the printed sheets. Hobbes took this opportunity to issue a separate polemical reply to Wallis (and to Wallis's colleague, now also a public critic of Hobbes, Seth Ward), entitled *Six Lessons to the Professors of Mathematicks*: this work, separately paginated and with its own titlepage, was bound with the main text, *Concerning Body*, and was also mentioned on the titlepage of that text," "The Printing and Editing of Hobbes's 'De Corpore:' A Review of Karl Schuhmann's Edition," *Rivista di Storia della Filosofia* 59, no. 1 (2004), 332.

health failed (as it very well could have[551]), much of the contemporary scholarship on the science of Hobbes's political theory would, today, have a different complexion and bent.

Before *De corpore* Hobbes had only supplied simple summaries of his scientific agenda and, similarly, simple explanations of method. In *The Elements of Law* he explicitly refused to offer a more comprehensive account of syllogistic ratiocination, implying that the stuff of such an account would be too "dry" for his readers. "All this that hath been said of names or propositions, though necessary, is but dry discourse." *The Elements of Law* was "not" the "place" "for the whole art of logic."[552] It was in *De corpore* that Hobbes finally delivered a large dose of this dry stuff. The text delivers a first-of-its-kind, in-depth examination of science and method, and even names methodological concepts that are named nowhere else in the work Hobbes produced between 1634[553] and 1655. It is due to the paucity of clear, filled-out explanations delineating the method of Hobbes's political theory that scholars have

[551] Hobbes experienced many serious bouts of illness throughout his life, including in the 1640s, when, faced with a real prospect of death, he invited a priest to pray with him, administer communion, and hear his confession. As A.P. Martinich relates, "In August and part of September 1647, Hobbes was seriously ill. At times he was delirious and unable to recognize anyone. But he was lucid when Mersenne came to visit and tried to get him to convert to Roman Catholicism. Hobbes declined to abandon the church into which he had been born and told Mersenne that he had considered the differences between Protestant and Roman Catholic churches very carefully and was comfortable with his belief in the Church of England…A few days later, John Cosin, a protégé of William Laud and future bishop of Durham, visited in order to pray with him. He asked Hobbes whether he wanted to receive communion. Hobbes was grateful for the offer. 'Yes,' he said, 'if you will do it according to the rites of the Church of England.' For the care of his soul, so to speak, Hobbes also confessed to John Pierson," *Hobbes: A Biography*, 208.

[552] Hobbes, *The Elements of Law*, 16-17 [5.11].

[553] The date is associated with Hobbes's completion of a treatment of refraction, given the title "M^{r} Hobbes Analogy." The tract is discussed in some length in chapter 2.

understandably used *De corpore* to answer questions about its method. Scholars treat the explanations he gives in the text as authoritative and incorporate them into their interpretations of his political texts, *De cive*[554]

[554] As Malcolm notes, "The classic text for this line of interpretation [promoted by, e.g., Maurice Goldsmith, that Hobbes's natural philosophy and civil science share a common method] is the passage in the Preface to the second edition of *De cive*, where Hobbes argues that 'every thing is best understood by its constitutive causes,' and compares the analysis of the body political to taking apart a watch," *Aspects of Hobbes*, 148. Or, as Goldsmith, using the methodological prescripts set down in *De corpore* as a lodestar, himself posits, "On Hobbes's own terms, a political science or philosophy has to be similar to natural science. Hobbes's natural science and his political science both begin with the imaginary annihilation, by analysis, of the phenomena to be explained. A conceptual apparatus is then elaborated by definition and deduction. In political science, human nature, the state of nature, natural right, the laws of nature, the construction of society, and the powers of the sovereign must all be elaborated. Finally the conceptual tools must be used to explain the phenomena. Natural science is used to give explanations of the observed phenomena of nature. If Hobbes's political theory is scientific, it too must explain the observed phenomena – the experiences of men in society," *Hobbes's Science of Politics* (New York: Columbia University Press, 1966), 229. Alan Carter makes the point more clearly, specifically with reference to the preface to the second edition of *De cive*, writing that "the method" Hobbes "chose purported to be scientific in so far as it mirrored the approach taken by the School of Padua – namely, the resolutive/compositive method…This consisted in a two-part procedure: if one wishes to understand how something works, first of all, take it to pieces (the way of resolution), have a good look at its parts, and then put them back together again (the way of composition), taking note of how the various parts fit with one another…As Hobbes thought the motion of human beings in society was, in its fundamentals, little different from mechanical motion – everything, in his view, moves because of attraction and repulsion – then society could be understood in an analogous way. Thus, the first step in understanding society is to break it up, in some way or other, into its component parts. And this is precisely what Hobbes's state of nature consists of – namely, isolated human individuals. The second step is to bring those individuals back together in such a way that they form a stable political order." Carter argues "That Hobbes believed himself to be following such a method seems to be abundantly clear from the Preface to his earlier political treatise, *De Cive*," "The Method in Hobbes's Madness," *Hobbes Studies* 12 (1999), 73. Later in the article, Carter adds, "There is no good reason, then, for doubting that Hobbes *does* advocate a form of the resolutive/compositive method for understanding both 'political bodies' and 'natural bodies.' In other words, there is no good reason for simply dismissing the account he provides of his method in *De Cive*," ibid, 87. The interpretive tack Carter follows, which uses the preface to the second edition (discussed at some length below) to project the methods of analysis and synthesis (as later understood by Hobbes) back onto the text of the first edition of *De cive*, is familiar and common. For a more detailed and reliable description of the Paduan approach, see J. Prins' "Hobbes and the School of Padua: Two Incompatible Approaches of Science;" Stewart Duncan's "Hobbes: Metaphysics and Method;" and Helen Hattab's "Hobbes's and Zabarella's Methods: A Missing Link," 462-467. Likewise, John Danford incorporates the methods into his interpretation *De cive*, as when he writes, "The greatest example of the application of this method, of course, is in Hobbes's own early work *De Cive*, which was written prior to, and independently of, the sections of his philosophical system which in principle should have preceded it. Forthright and unidealistic observation of the political world, according to Hobbes, quickly teaches one that the central fact of politics is competition and the struggle of each individual to further his own interest. This much had been claimed many times before, from the time of the earliest political thinking. But what Hobbes adds, or believes he adds, is a method whereby that opinion is transformed into knowledge. Societies are simply

and *Leviathan*[555] in particular.

This chapter raises objections to the common presumption that the methods outlined in *De corpore* offer practicable guidelines that can be used as bases for interpretations of Hobbes's political works. It presents Hobbes scholars with a pair of reasons to doubt the presumption.

(1) Hobbes's methodological remarks in *De corpore*, in particular those regarding how the methods he delineates apply to the study of moral and political theory, are abbreviated and even vague, lacking in both depth and detail. In other words, Hobbes's explicit discussion of the application of scientific method to moral and political theory is unspecific to an extent that makes it impossible to know precisely if or how the methods would have been used in the development of his work on natural right and civil duties.

(2) Hobbes's vision of science and scientific method evolved in different directions over the relevant period, from before 1640 to 1655. It is implausible that Hobbes designed his political theory, beginning with *The Elements of Law* in 1640, with reference to methodological prescripts he did not explicitly endorse until 1655. In fact, Hobbes openly eschewed these prescripts, and explicitly denied their relevance in the production of scientific knowledge in his commentary on Thomas White's *De*

aggregations of individual atomic men, each motivated by his own passions. To understand politics, then, one must begin by resolving the commonwealth into its parts, and these, further, into their elements," "The Problem of Language in Hobbes's Political Science," 126.

[555] See, e.g., the introduction to chapter 4.

mundo, finished not long after the first edition of *De cive* was published (1642).

Examination of points (1) and (2) leave unanswered the question of what the method of Hobbes's political theory *was*. The conclusion offers the conservative assessment that, although, as chapter 4 shows, Hobbes's political works are not without methodological dimensions, it may not be possible to develop a full appreciation of how and to what extent methodology is deployed in the works. Two factors, in particular, complicate, and may ultimately frustrate the development of a fully satisfying, complete methodological interpretation of Hobbes's political works. First, Hobbes's practice of serial composition produces a variety of difficulties with respect to the task of Hobbes interpretation.[556] On the methodology question, the practice inclined Hobbes to project new philosophical commitments characteristic of later works *back* onto earlier versions of texts. That these retrojections comprise the bulk of what is known about the method of Hobbes's moral and political theory will frustrate the task of diagnosing the method of his political works. Second, Hobbes's commitment to the empirical study of politics complicates the task,

[556] Deborah Baumgold offers three principles that should inform interpretive praxis: "textual plausibility," "textual specificity," and "textual archeology." Of "textual plausibility," she writes, "Interpreters need to be careful, in the first instance, that claims about and characterizations of Hobbes's political theory are plausible in terms of the facts of composition and chronology. For example, a strong claim that Hobbes's 'political theory is fundamentally religious' is implausible, given the sparing treatment of religion in the *Elements*." Second is "textual specificity," which she characterizes as "an antidote to the radical sceptic's worry about the instability – the 'openness' – of the textual embodiment of Hobbes's political theory…*Specificity* pertains to claims about Hobbes's intentions as well as descriptions of his theory. McKenzie cautions us that the practice of serial composition, especially when it results in layered, complex works, makes general statements about intentionality inherently suspect." Last is "textual archaeology:" that "the study of the process of composition" must be "a necessary aspect of interpretive work," "The Difficulties of Hobbes Interpretation," 846-847.

as, it is reasonable to conclude, Hobbes's empirical interests and concerns extended beyond, and did not obey the rigid strictures of a particular methodological regime. Put simply, not unlike many modern political scientists, it is possible, and likely, that Hobbes saw and aspired to explain more than narrow methodological prescripts, whatever their nature, could accommodate.

I. The methods of moral and civil philosophy

Hobbes produced three different versions of his political theory between 1640 and 1651. However, neither *The Elements of Law*, either edition of *De cive*, nor *Leviathan* elaborates, in detail, how scientific method applies[557] specifically to the study of natural right and civil duties (i.e., Hobbes's political theory). This all changed in *De corpore*. In the text Hobbes, finally, took up the task of specifying in more substantive detail how scientific method applies to the study of moral and civil philosophy. *De corpore* specifies that it is possible to render insights about natural right and civil duties using either of the two methods delineated in the book's sixth chapter, "On Method."

First is the method of *synthesis*. It is possible to get at the "Causes and the Necessity of constituting Common-wealths"[558] *synthetically*. Synthesis involves beginning with "very first principles of philosophy" and building up,

[557] Although the third, *Leviathan*, contains a clearer statement of Hobbes's methodological views c. 1651, all, but especially the first two, contain milquetoast, unspecific methodological statements. For *The Elements*, see: xvii [Epistle Dedicatory], 17 [5.11-5.12], 18-21 [6.1, 6.2, 6.3, 6.4, 6.8], 34 [9.18], 50-51 [13.3-13.4], 139-140 [27.13]. For *De cive*, see: 4-6 [Epistle Dedicatory 3-4, 8-10], 10 [Preface to the Readers 9], 13 [Preface to the Readers 18], 13 [2.1], 74 [5.12], 123 [10.11], 139 [12.12], 147 [13.9], 162 [14.16], 215 [17.12], 232 [17.28], 237-238 [18.4]. In *Leviathan*, discussions of science and philosophy are principally located in chapters 5, 9, and 46.

[558] Hobbes, *Concerning Method*, 54 [6.7].

layer by layer,[559] from universal principles[560] to a workable account of "Knowledge of what is Naturall Right, and what are Civill Duties."[561] However,

[559] Tom Sorell argues that "It is often claimed that the unified science expounded in the trilogy is a continuous deduction. The principles of morals and politics, which are placed last in the order of demonstration, physics from those of mechanics, and the truths of mechanics from those of geometry. But Hobbes himself never puts it this way. It is true that he regarded natural philosophy as the 'first part' of philosophy and geometry as the 'first part of natural philosophy.' It is true, too, that he prescribed an order for passing from the first to the last part of natural philosophy: mechanics was to be studied after geometry, and after mechanics the two 'parts' of physics: first the doctrine of sense, next the doctrine of sensible qualities and changes." Sorell adds, "Hobbes does not say that the truths of mechanics are to be deduced *from* those of geometry, only that they are to be deduced *after* those of geometry. He does not say that physics is to be demonstrated from, only after mechanics," thus, "In a similar way someone might now hold that linear algebra has to be understood before certain parts of economic theory can be understood: such a person would not be committed to holding that parts of economic theory are deducible from linear algebra," *Hobbes*, 5-6.

[560] Richard Talaska notes, with others, that, for Hobbes, the structure and form of (what he understood to be) Aristotle's philosophy was considered paradigmatic. Talaska explains, "As regards the form or structure of Aristotelian philosophy, Hobbes views Aristotelian science as a single edifice with its foundations in metaphysics. He views Aristotelian science as a system which gives and defines its most basic concepts at the start in metaphysics and then proceeds to use them throughout all the other sciences which depended on metaphysics in such a way that without metaphysics, the other sciences could not be understood. In this understanding, the other sciences have no integrity apart from metaphysics. The doctrine of metaphysics is the starting point both as regards investigation and as regards nature or reality." However, "This Hobbesian interpretation of the structure of traditional philosophy has not been seriously questioned. It has, in fact, been suggested that Hobbes models the structure of his own philosophy of that of Aristotelianism, and that only the content is new, thus implying that Hobbes's interpretation of the traditional ordering of sciences is traditional." This characterization, Talaska argues, has resulted in elision: it "has led to a lack of appreciation of the specifically modern character of Hobbes's own systematic ordering of philosophy," "Aristotelian 'Order' and 'Form' According to Hobbes," *Rivista di Storia della Filosophia* 43, no. 1 (1988), 8-9. In sum, Talaska argues, Hobbes's "system must be understood partly as a function of what he thought he was rejecting. Hobbes substituted a strict materialism for what he thought was gross, nonscientific spiritualism," ibid, 10. Nevertheless, the portrait of Hobbes's characterization of Aristotelianism is correct, finding support in Hobbes's description of the "system" of Aristotle's philosophy in the commentary on Thomas White's *De mundo*: "When Aristotle was about to deal with the nature of the heavens and of the elements; with coming- and ceasing-to-be; and with the rest of the things in nature, he first published certain books, which he called *Lectures on physics*, and in which he argued about matter, form, place, time, motion, and the other questions pertaining to body in general, i.e. to all bodies whatsoever. Unless one knew this beforehand one could not approach the book *On the Heavens* or the rest of his books on physics…Realizing, then, that all the most common things must be investigated before anything less common is examined…he considered that the knowledge of being must be the first to be gained; from this, he thought, one should then come to the special kinds of being, such as heaven, earth, animal, etc. So he wrote several books in which he took being as his subject; this knowledge he called *sophia*, wisdom, for this science embraces all sciences, just as his subject, being includes all subjects. The same knowledge he called *Philosophia prima* because, if anyone wishes to philosophize correctly, he must commence with this. Here, therefore, [Aristotle] defined the notions or those names which are the commonest of all [kinds of] being and of the essences such as substance, *accidens*, quantity, number, unity, time, place and motion; and he deals with many others that he had written about earlier…Those books on

Hobbes notes that there is a methodological shortcut. There exists an easier way to generate the same insights that does not involve the intellectually burdensome task of developing an account of natural right and civil duties from first, universal principles.

The selfsame insights can be generated using the method of *analysis*. Analysis is synthesis flipped on its head, or rather, reversed.[562] Rather than beginning with first principles, analysis begins with effects, sense experience,

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Philosophia prima, i.e. on the elements of philosophy, came to be called the *Metaphysics*," *Thomas Hobbes: Thomas White's* De Mundo *Examined*, 111-112 [9.16]. Thus, it may be proposed that, in the same way that Francis Bacon claimed to have improved on the Aristotelian *Organon*, with *Novum Organon*, Hobbes may have come to understand his project in a similar light, having meant to replace Aristotle's "books on *Philosophia prima*, i.e. on the elements of philosophy," with his own *Elementa Philosophiae*.

[561] Hobbes, *Concerning Body*, 54 [6.7].

[562] In noting that "it is manifest by what has been said, that the Method of Philosophy to such as seek Science simply, without propounding to themselves the Solution of any Particular question, is partly *Analyticall*, and partly *Syntheticall*; namely, that which proceeds from sense to the invention of Principles, *Analyticall*; and the rest *Synthetically*," Hobbes both reproduced the rudiments of commonplace understandings of *regressus*. Nevertheless, the outlines of *regressus* are visible in Hobbes's description of the process by which the method of analysis is applied within the context of the study of moral and civil philosophy. R.W. Serjeantson explains, "Medieval discussions of method focused upon scientific proof by means of the so-called demonstrative regress, or *regressus*. This involved finding a cause from its effect by induction and then demonstrating that effect back from its cause in order to obtain causal – and hence scientific – knowledge of a phenomenon. Accounts of *methodus* by Renaissance philosophers retained this preoccupation with causal demonstration while increasingly bringing philological discoveries to bear upon it. The basic context for accounts of demonstration in sixteenth century academic natural philosophy remained, however, Aristotelian logic, and specifically the account of scientific demonstration in Aristotle's *Posterior Analytics*, II.13. This text, commentaries upon it, and redactions of it in textbooks and lecture courses encouraged the widespread view among early modern Aristotelians that a proof qualified as 'scientific' only if it was derived from premises that were universal. This was to be achieved by means of a syllogism, the middle term of which expressed the operative cause. The purpose of this form of scientific demonstration was to acquire certain knowledge of phenomena through 'absolute demonstration' (*demonstratio potissima*). This characteristically consisted of four stages: (1) observation, which provided 'accidental' knowledge of an effect; (2) induction, which allowed demonstration of the cause from the effect (*demonstratio quia*); (3) *consideratio* (or *negotiatio* or *meditatio*), by means of which the mind came to grasp the necessary association of the proximate cause with the effect; and (4) demonstration of the effect from the cause (*demonstration propter quid*), which finally provided certain knowledge (*scientia*) of the phenomenon," "Proof and Persuasion," in *The Cambridge History of Science: Volume 3: Early Modern Science*, eds. Katharine Park and Lorraine Datson (Cambridge: Cambridge University Press, 2006), 140-141.

and works backwards from sense experience to fundamental principles. By reasoning from the information fed to us by the senses, Hobbes writes that it is possible to know the generative causes of the commonwealth. He writes that "but even they" unphilosophical folk[563] who "have not learned the first part of Philosophy, namely *Geometry* and *Physiques*, may notwithstanding attain the Principles of Civill Philosophy, by the *Analyticall Method*."[564] Hobbes points out that "Knowledge of what is Naturall Right, and what are Civill Duties" as well as an understanding of the underpinning "Causes and Necessity of constituting

[563] Sorell expounds, "Hobbes's remarks suggest that civil philosophy is a part of science, and yet teachable and learnable in isolation from the rest of science. There is a good idea here…The good idea is that while there can be something better than mere intuition or opinion about moral and political matters, while there can be such a thing as knowledge of science concerning the good and the just, it is not esoteric knowledge or science. It can be acquired by anyone with ordinary intellectual capacities, and it presupposes no special training. Plato had held that a genuine science of the good and of the just was possible, but that it was not accessible to everyone; Aristotle had held that practical wisdom could be acquired by most people but that there was not real (i.e. exact and systematic) science of the good and the just; Hobbes contrives to have it both ways. He holds that there can be a science of the good and the just, and that it can be made available to practically everyone, rulers and ruled alike," *Hobbes*, 7. The practicability of Hobbes's "good idea" is considered later, in the text of the chapter.

[564] Hobbes, *Concerning Body*, 54 [6.7].

Common-wealths" "may be known…by any mans experience,[565] that will but examine his owne Mind[566]."[567]

Notice that Hobbes's claims about the use of analysis push beyond the banal, tautological observation that first-hand experience of civil duties furnishes knowledge of those duties. Rather, what he points out is that because we have an intimate knowledge of the motions of the mind, the things that move us, it is possible to excavate information about the genesis and purpose of political order.[568] This information is imprinted in us and is accessible to him who "will but examine his owne Mind."

[565] For an analysis of the role of universal experience in Hobbes's political theory, see chapter 3.

[566] The turn of phrase calls to mind the introduction of *Leviathan*, in which Hobbes makes a similar appeal and remark, indicating, "But to teach us, that for the similitude of the thoughts, and Passions of one man, to the thoughts, and Passions of another, whosoever looketh into himself, and considereth that he doth, when he does *think*, *opine*, *reason*, *hope*, *feare*, &c, and upon what grounds, he shall thereby read and know, what are the thoughts, and Passions of all other men, upon the like occasion," *Leviathan*, 18. Mary Poovey, following Quentin Skinner, argues that, in the passage, Hobbes deploys a well-tried Aristotelian rhetorical technique, explaining, "As Quentin Skinner has argued, phrases that alluded to common experience were staples of classic rhetoric; Aristotle had pointed out in book 3 of *The Art of Rhetoric* that 'it conferres also to perswasion very much to use these ordinary forms of speaking, *All men know*; *'Tis confessed by all*; *No man will deny* and the like.' What is noteworthy about Hobbes's adaption of this device, however, is that whereas Aristotle could simply *assume* that 'all men' would know, confess to, or agree on certain things, Hobbes had to create a position that would *confer* commonality and that would do so by appealing to the *self*. Hobbes conferred commonality on his readers by identifying himself as the representative of 'all men;' he appealed to self-interest by identifying the interests of the commonwealth with the interests of every (identical) reader," *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society* (Chicago: University of Chicago Press, 1998), 106-107. See chapter 2 for an opposing view, which contradicts the central premise that this "commonality" was a contrivance, something Hobbes labored to "create," unlike Aristotle, who "could simply *assume* that 'all men' would know."

[567] Hobbes, *Concerning Body*, 54 [6.7].

[568] Thus, in this way, there is a continuity between the first edition of *De cive*, in which the concept of universal experience became a core feature of Hobbes's political theory and his political methodology, and *De corpore*.

At a glance, Hobbes's description of analysis, like the characterization of synthesis, has coherence. Both appear to offer a reasonably clear nuts-and-bolts overview of how each is applied to generate the principles that fill Hobbes's moral and civil philosophy. However, closer scrutiny of the remarks reveals that neither offers a clear roadmap, detailing how the methods work at the relevant point of application, elucidating the "Causes and Necessity of constituting Common-wealths."

a. Synthesis

Recall the earlier description of how synthetic method is used to generate moral and political knowledge. Hobbes explains that "by the *Syntheticall Method* and from the very first Principles of Philosophy," it is possible "by proceeding in the same way"[569] to "come to the Causes and Necessity of constituting Common-wealths, and to get the Knowledge of what is Naturall Right, and what are Civill Duties."[570] The description echoes others. For example, in *De corpore*'s first chapter Hobbes notes that there exist two "principall parts" of philosophy, corresponding to the two different kinds of

[569] It may be reasonably presumed that what Hobbes has in mind is the method of synthesis, which, in this context, *may* entail, as Talaska puts it, "the means of generating connectedness, that is, of producing series of demonstrations. Science is a series of many connected propositions. The many propositions of a whole science are connected into series only by means of many demonstrative syllogisms. The connections of many demonstrations into a connected whole is brought about by method. 'The whole method, therefore, of demonstration, is *synthetical*, consisting in that order of speech which begins from primary or most universal propositions, which are manifest of themselves, and proceeds by a perpetual composition of propositions into syllogisms, till at last the learner understand the truth of the conclusion sought after,'" "Analytic and Synthetic Method According to Hobbes," *Journal of the History of Philosophy* 26, no. 2 (1988), 209-210. Nevertheless, as elaborated below, it is unclear, based on the formulation, what the nature of the connection between the different sections of the *Elementa Philosophiae* series was or was intended to be.

[570] Hobbes, *Concerning Body*, 54 [6.7].

bodies[571] philosophers assay: "*Naturall* and *Civill*."[572] While Hobbes points out that each body can be discriminated from the other in terms of "Generation & Properties,"[573] knowledge of the "Properties of a Commonwealth" demands some understanding of the "Affections and Manners of men,"[574] and thus, natural bodies. Therefore, Hobbes indicates a proper, complete philosophical inquiry into civil bodies will begin with first philosophy and "*Bodies Naturall*," proceed to the "*Dispositions and Manners of men*," and finish with a demonstration of "the *Civill Duties of Subjects*."[575] Or as he puts it elsewhere,

> he that Teaches or Demonstrates any thing, proceed in the same Method by which he found it out; namely, that in the first place those things be demonstrated which immediately succeed to Universal Definitions (in which is contained that part of Philosophy which is called *Philosophia Prima*.) Next, those things which may be demonstrated by Simple Motion (in which Geometry consists.) After Geometry, such things as may be taught or shewed by manifest Action, that is, by Thrusting from, or Pulling towards. And after these, the Motion or Mutation of the invisible parts of Things, and the Doctrine of Sense & Imagination & of the internal Passions, especially those of Men, in which are comprehended the Grounds of Civil Duties, or Civil Philosophy; which takes up the last place.[576]

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[571] The typology dates, at least, to *The Elements of Law*, which comprises three parts, the first "Concerning men as persons natural," the second "Concerning men as a body politic," and the third "Of the nature and kinds of laws," xv-xvi. It is repeated in the manuscript "Logica…Ex T.H.," which notes *Philosophiae partes principles 2 (pro duobus corporum generibus summis) naturalis and civilis* ("The 2 principal parts of philosophy (as the two principal kinds of body) natural and civil"), 463-464 [1.4].

[572] Hobbes, *Concerning Body*, 8 [1.9].

[573] Ibid.

[574] Ibid.

[575] Ibid.

[576] Ibid, 63 [6.17].

Hobbes's description of the application of the method of synthesis conforms to popular depictions of the relation between his texts on first philosophy, geometry and physics (the subject of *De corpore*); human nature (the subject of *De homine*); and natural right and civil duties (the subject of *De cive*). It is widely acknowledged that, as Hobbes himself indicates, it was his intent to develop a series of philosophical works that bore some degree of internal connection, as *De corpore*, *De homine*, and *De cive* all ostensibly do.[577] Yet, the remarks highlighted above, like others peppered throughout the Hobbesian *oeuvre*, are unclear about the nature of the connection. Hobbes relies on opaque turns of phrase and vague statements to gesture at a connection. "[F]rom the very first principles of Philosophy," Hobbes writes, it is possible "by proceeding in the same way" to eventually "come to the Causes and Necessity of constituting Common-wealths." Note how Hobbes's methodological remarks give the outlines of a general ambition, however, offer little to nothing as to how, precisely, the method of synthesis was implemented, such that (as Hobbes would later put it) the "whole argument

[577] Martinich contends that the view articulated by proponents of the idea of autonomous civil philosophy, like Sorell, who argue that *De cive* "cannot depend on either of the first two" sections of the *Elementa Philosophiae*, "confus[e] the order of exposition with the order of deduction. *De cive* begins with the conception of human beings in the state of nature, and according to Hobbes's official method, with definitions that include a definition of 'man' or 'human being.' And 'man' is the topic of the second part of his science, *De homine*. If the conclusions that he draws about 'man' in *De homine* were inconsistent with his definition of 'man' in *De cive*, the parts of his philosophy would not be logically independent, but inconsistent with each other…The reason that Hobbes could have given for how he was able to present *De cive* first, and could have presented *De homine* first, is that each part of his science begins with definitions and he can define the basic terms of each part of science in a way that is identical with the theorems of the logically prior sciences," *Hobbes*, 172-173. The view puts Martinich in the camp of William Sacksteder and Noel Malcolm, whose answers to the "unity of science" question are considered below.

might have the permanence of a strong chain."[578] As any blacksmith might point out, there are different kinds of chains, and different means of forging and connecting the links that comprise them.

In the absence of concrete direction, scholars have eagerly filled in the gaps in Hobbes's methodological remarks. For example, consider A.E. Taylor, an avatar for a group of scholars who presuppose Hobbes's commitment to a program of strict deductivism. Taylor assumed Hobbes to have aspired to create a system, on the supposed model of axiomatic-deductive geometry, that was fully deductive, with each segment of philosophical inquiry connecting directly to the next, all segments having been derived from a few foundational axioms. Taylor contends that Hobbes envisaged "[a] true system of Philosophy," a unity "in which the principles of morals and politics should be rigorously deduced from the fundamental axioms of science…"[579] It was against this deductive ambition to create a unified science that Taylor, and the trail of deductivist interpreters that followed, evaluated Hobbes's philosophical work, finding that Hobbes failed to realize his ambition of creating a "true system of Philosophy" or a theory of politics that originates in the "the fundamental axioms of science," most notably, motion.

In the century since Taylor authored his slim book on Hobbes, many have similarly asserted some knowledge of how the different elements of his philosophy do or do not connect. Donald Hanson, like William Sacksteder,

[578] Hobbes, "The Autobiography of Thomas Hobbes," 26.

[579] A.E. Taylor, *Thomas Hobbes* (London: A. Constable & Co., 1908), 30.

takes aim of the premise of "deductivism,"[580] something Taylor and like-minded interpreters take for granted. Both Hanson and Sacksteder claim, in different ways, that Hobbes never intended to fashion a continuous deduction.

Hanson accuses deductivists of having committed two cardinal sins of interpretation: atextualism and anachronism. Plain and simple, he writes, the view is not supported by what Hobbes *wrote* or *thought*. Hanson contends that "when Hobbes says that he thinks he has demonstrated the elements of civil science…he did not mean that he had deduced them in any modern sense of 'deduce', much less that his system as a whole either is or tries to be a continuous deduction."[581] Rather, Hanson argues that Hobbes "never made a claim of this latter sort, and it would surely have been inconsistent with his

[580] Similarly, Sorell notes, "It is a measure of Hobbes's considerable success in projecting himself as a practitioner of the deductive philosophy he so admired, that this work is often seen (mistakenly, in my view) as a continuous derivation of politics and morals from psychology, of psychology from physics, and of physics from mechanics and geometry. That there is no book or sequence of books by Hobbes in which anything like a *derivation* takes him from the beginning of natural philosophy to the end of civil philosophy; that there is no book or sequence of books in which connections between these branches of sciences are presented as connections between *Hobbes's* science, are facts that are regularly ignored. To the extent that Hobbes's writings contain an overarching system, it is a system of science full-stop, not a system of *his* science. The 'elements' of the system are openly drawn from a lot of different scientists, including Euclid, Galileo, Kepler, and Harvey. On the other hand, to the extent that any elements of the systematized science are *Hobbesian* – its optics, perhaps or the doctrine in *De cive* – they do not form a system. It is true that Hobbes is a systematic philosopher: one sees how the parts of most of his books hang together, and one knows from Aubrey's report of his working practices that he gave a lot of thought to organizing and digesting his material; the actual system, however, is a little elusive. Yet books continue to dwell on the system and its architecture. The system can be studied in context, as it has famously been studied by Watkins, but it more often attracts the interest of ahistorical analysts," "Hobbes Overcontextualised?," *The Seventeenth Century* vol. 16 no. 1 (2001), 143-4. The claim condenses the one made in Sorell's "Hobbes's Scheme of the Sciences," in *The Cambridge Companion to Hobbes*, ed. Tom Sorell (Cambridge: Cambridge University Press, 1996), 45-61.

[581] Donald W. Hanson, "The Meaning of 'Demonstration' in Hobbes's Science," *History of Political Thought* 11, no. 4 (1990), 588.

repeated skeptical emphasis on the non-demonstrable character[582] of the several parts of natural philosophy."[583]

Similarly, Sacksteder finds deductivism to be "[t]he most virulent of the textbook orthodoxies," and swipes at the idea that "Hobbes's philosophic scheme is 'deductive' in such a way that each posterior science may be deduced from that which precedes, and all of them, from some one 'primary' science."[584] Such a scheme, Sacksteder opposes, is philosophically and logically unworkable: it is neither possible to derive the full content of a science from a single set of axiomatic principles nor is it possible to deduce all of the principles of a posterior science from a prior one.

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[582] Marcus Adams may disagree with the formulation, perhaps pointing to *De homine* 10.5 as evidence. In the passage Hobbes claims "And since one cannot proceed in reasoning about natural things that are brought about by motion from the effects to the causes without a knowledge of those things that follow from that kind of motion; and since one cannot proceed to the consequences of motions without a knowledge of quantity, which is geometry; nothing can be demonstrated by physics without something also being demonstrate *a priori*. Therefore physics (I mean true physics), that depends on geometry, is usually numbered among the mixed mathematics. For those sciences are usually called mathematical that are learned not from use and experience, but from teachers and rules. Therefore those mathematics are pure which (like geometry and arithmetic) revolve around quantities in the abstract so that work in the subject requires no knowledge of fact; those mathematics are mixed, in truth, which in their reasoning also consider any quality of the subject, as is the case with astronomy, music, physics, and the parts of physics that can vary on account of the variety of species and the parts of the universe," *On Man*, in *Man and Citizen*, trans. Charles T. Wood, T.S.K. Scott-Craig, and Bernard Gert ed. Bernard Gert (Indianapolis: Hackett Publishing Company, 1998), 43 [10.5]. Of the passage, Adams argues, "The connection between geometry and maker's knowledge influences how we should understand Hobbes's claims about 'true physics' in…*De homine* 10.5. To reason from the effects to causes in natural philosophy, one must know already what the causes may be. If we understand *a priori* to be 'from the causes' for Hobbes, then we are able to demonstrate 'from the causes' when prior to a natural-philosophical investigation we already possess geometrical causal principles," "Hobbes on Natural Philosophy as 'True Physics' and Mixed Mathematics," *Studies in History and Philosophy of Science* 56 (2016), 46.

[583] Hanson, "The Meaning of 'Demonstration' in Hobbes's Science," 588.

[584] Sacksteder, William, "Hobbes's Science of Human Nature," 38.

Sacksteder, like the deductivists, fills in the gaps left open by Hobbes's methodological remarks.[585] However, he claims that the deductivists got it wrong, having badly mis-conceptualized the relation between the parts of Hobbes's philosophy. Rather than bolting together to create a single solid "geometric" deduction, all derived from "fundamental axioms of science," Sacksteder asserts that a posterior science merely "depends"[586] on the science antecedent to it.[587] In concrete application, what this means is that, borrowing Sacksteder's paradigmatic example, Hobbes's science of human nature depends on physics in the sense that Hobbes's physics fill out the key presuppositions upon which his science of human nature is reliant.[588] Though Sacksteder

[585] This is not to suggest that the implications Sacksteder draws from the general principles are not, themselves, interpretively plausible. Nevertheless, there exists a paucity of textual material, from both *De corpore* and *De homine*, to which to tie his observations; see, for example, ibid, 40-42.

[586] As Sacksteder holds, "I note some systematic implications from the order he [Hobbes] protests often for the tripartite division of his philosophy. Even in violating it, Hobbes insists that proper understanding or scientific exposition ought properly move from prior to posterior inquiries. That is, the sequence, *De Corpore*, Moral and Human Philosophy and Civil Philosophy is an order of dependence. He also announces that all of philosophy or strict science is completed in principle by the trio of headings named. They are all there can be," ibid, 38. Although Sacksteder does not indicate either way, the impressions that guide the interpretation appear to have been drawn from *De corpore* 6.6, where Hobbes explains, "After *Physiques* we must come to *Morall Philosophy*, in which we are to consider the Motions of the Mind, *Appetite, Aversion, Love, Benevolence, Hope, Fear, Anger, Emulation, Envy, &c.* what Causes they have, and of what they be Causes. And the reason why these are to be considered after *Physiques*, is, that they have their Causes in Sense and Imagination, which are the subject of *Physicall* Contemplation," *Concerning Body*, 53 [6.6]. Sorell, as already noted, comes to a similar conclusion, writing, "Hobbes does not say that the truths of mechanics are to be deduced *from* those of geometry, only that they are to be deduced *after* those of geometry. He does not say that physics is to be demonstrated from, only after mechanics," thus, "In a similar way someone might now hold that linear algebra has to be understood before certain parts of economic theory can be understood: such a person would not be committed to holding that parts of economic theory are deducible from linear algebra," *Hobbes*, 5-6.

[587] Sacksteder, "Hobbes's Science of Human Nature," 38.

[588] Although in agreement in broad lines, Sacksteder rejects Talaska's use of the language of "deduction" in how he characterizes the nature of the relation between the different parts of Hobbes's philosophy. The comparison helps to clarify Sacksteder's own position. Sacksteder writes, "Talaska draws near the end of his paper: 'The sciences exist in a specific order of

acknowledges there will be principles that are wholly unique to a particular science, he points out that "all its other principles or effective definitions, can be taken over only as givens understood" or "borrowed" "from [a] prior science."[589] That is, the two sciences, physics and the science of human nature, are at once overlapping and separate and distinct. On the one hand, the one – physics – erects conceptual scaffolding that supports the other, the science of human nature. On the other hand, the content of the science of human nature is plainly non-reducible to the content of physics. Thus, Sacksteder explains, "Prior sciences set conditions necessary but never sufficient for posterior ones."[590]

Sacksteder's conclusions are echoed in the work of Noel Malcolm. Malcolm imagines the different parts of Hobbes's science as levels that are at once connected and distinct. The view chimes well with Sacksteder's on the necessary philosophical relation that obtains between Hobbes's anterior and posterior sciences. Malcolm writes that were we to "attempt[t] to follow Hobbes's 'method' through, ascending from one level of knowledge to the next, we would find that each new level required the introduction of concepts that

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deductive dependency.' I think this flatly wrong. Even the nearly sound gloss on it, 'the less general science cannot be understood without the prior development of the more general science,' overlooks Hobbes's claim that moral and civil philosophy can be expounded without prior sciences. The villain here is the word *deductive*. Hobbes is very sparing in his use of it and its correlatives, and always, I believe, he uses them comparing a minute local argument – one locally proof-like only and not traced to all its principles or supported by analytic method. Subsequent sciences are *never* 'deducible' from prior sciences, nor is it correct to say Hobbes's intention is to expound a completely 'deductive' or 'geometrical' system as a whole, a mistake often encouraged by misinterpreting Spinoza or Descartes," "Hobbes and Talaska on the Order of the Sciences," *Journal of the History of Philosophy* 26, no. 4 (1988), 645.

[589] Sacksteder, "Hobbes's Science of Human Nature," 39.

[590] Sacksteder, "Hobbes and Talaska on the Order of the Sciences," 646.

were simply not contained in the subject-matter of the previous level."[591] Malcolm's point is that the content of one level of knowledge cannot be derived, soup to nuts, from the level previous (prior) to[592] (or higher than) it. While some ideas, concepts, definitions, may carry over from the one to the other, not all will.

The work of Sacksteder and, especially, Malcolm, set the stage for a new, more recent crop of interpreters, including Zvi Biener[593] and Marcus Adams,[594] who argue that Hobbes used mixed mathematics, more specifically the idea of subalternate sciences, as a model for his philosophy. Such an idea of mixed mathematics (*mathematica media* or *scientiae mediae*[595]) originates with

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[591] Malcolm, *Aspects of Hobbes*, 147. Glen Newey is skeptical of the view, for reasons that are entirely textualist in nature: "It is not clear that Hobbes believed in any such distinction of levels, let alone that he held that the relevant concepts of one level were irreducible to those at another," *Routledge Philosophy GuideBook to Hobbes and* Leviathan (London: Routledge, 2008), 72.

[592] Malcolm traces the view out, arguing "Physics will give us the concepts of 'motion towards' or 'motion away from;' but only psychology will provide the concepts of 'desire' or 'fear,'" *Aspects of Hobbes*, 147.

[593] Biener notes "Malcolm's view is consonant with the mixed-mathematical view. In fact, I take the mixed-mathematical view defended in this paper to provide a concrete model by which to articulate the introduction of new concepts at different levels of Hobbes's system," "Hobbes on the Order of Sciences: A Partial Defense of the Mathematicization Thesis," *The Southern Journal of Philosophy* 54, no. 3 (2016), 319 n. 15.

[594] Adams clarifies the nature of the relation between his article and Biener's in his article's acknowledgements, writing, "Zvi Biener and I have independently been working on understanding Hobbesian natural philosophy, and more generally Hobbes's system, in terms of mixed mathematics," "Hobbes on Natural Philosophy as 'True Physics' and Mixed Mathematics," 50. Unlike Biener's, Adams's essay does not cite Malcolm.

[595] Although there exists evidence to suggest that Hobbes attempted to push the two together, in so doing, he was contravening old disciplinary boundaries, as natural-philosophical inquiry and mixed mathematics were conventionally held apart. Katharine Park and Lorraine Datson note, "The *scientiae mediae* (or *mathematica media*, "mixed mathematics") differed from natural philosophy in that they dealt with matter considered solely from the standpoint of quantity, without respect to causes. In addition to the pure mathematical disciplines of arithmetic and geometry, mathematics included astronomy and astrology (the two terms were often used interchangeably), optics, harmonics, and mechanics. These disciplines were in turn distinct from the 'mechanical arts,' which would have included practical applications of

Aristotle, for whom different kinds of science were distinct in terms of scope and undergirding principles.[596] He believed that "a true science (*episteme*) should be founded on its own proper principles unique to that science."[597] However, this idea of science did not hold universally. Aristotle posited that there are some areas of study that "d[raw] on the results of pure mathematics (arithmetic and geometry) to apply to something other than pure quantity" like "celestial motions [as in astronomy] and sounds [as in music]."[598] To the 21st

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mathematical knowledge in fields such as architecture, navigation, clockmaking, and engineering," Park, Katherine and Lorraine Datson, "Introduction: The Age of the New," in *The Cambridge History of Science: Volume 3: Early Modern Science*, eds. Katharine Park and Lorraine Datson (Cambridge: Cambridge University Press, 2006), 4.

[596] cf. Hobbes's own remarks, related in footnote 560 above, on Aristotle's philosophy in his commentary on Thomas White's *De mundo*.

[597] Dear, "The Meaning of Experience," 120. In the sentences that follow, Dear adds, "Subject matters were thus distributed into distinct sciences according to the content of their principles, so that the principles of a science would always be of the same genus as its subject matter. The requirement thus served to ensure the possibility of a formal deductive link between premises and conclusions. However, disciplines such as astronomy and music apparently violated this rule: They drew on the results of pure mathematics (arithmetic and geometry) to apply them to something other than pure quantity, in this case celestial motions and sounds. Consequently, Aristotle made a special accommodation for them by classifying them as *subordinate* to higher disciplines."

[598] Ibid. It is a matter of fact that, as one would expect, Hobbes was familiar with mixed mathematics; the familiarity is highlighted in *The Elements of Law*, which maps out the relation between pure mathematics and mixed-mathematical subjects, all in service to the program of colonialism: "For those men who have taken in hand to consider nothing else but the comparison of magnitudes, numbers, times, and motions, and their proportions to one another, have thereby been the authors of all those excellences, wherein we differ from such savage people are now the inhabitants of divers places in America…For from these studies of these men hath proceeded, whatsoever cometh to us for ornament by navigation; and whatsoever we have beneficial to human society by the division, distinction, and portraying of the face of the earth; whatsoever also we have by the account of times, and foresight of the course of heaven; whatsoever by measuring distances, planes, and solids of all sorts; and whatsoever either elegant or defensible in building: all which supposed away, what do we differ from wildest of the Indians?," 50 [13.3]. Karl Schuhmann posits, not unreasonably, that Hobbes "may be supposed to have known Dee's famous 'Mathematical Preface' prefixed to Billingsley's English edition of Euclid…This Preface contains, to begin with, a detailed classification of the sciences that could call to mind Hobbes' own classification in chapter 9 of the *Leviathan*. Dee also gives ample praise to geometry – of a sort not uncommon in Renaissance time – lauding its usefulness in optics, architecture, fortification, cartography and navigation. This Renaissance theme of geometry as an art, rather than a pure theoretical science, is omnipresent also in Hobbes, as is also Dee's somewhat Pythagorean view of the excellence of mathematics above all other sciences. In addition to Dee's published work, Hobbes might have read also an

century reader the idea of mixed mathematics is a familiar one, as we take for granted the premise that, e.g., mathematics can be used to *explain* a vast range of natural and other phenomena, from black holes to musical harmonies.

Adams contends that Hobbes carried over the Aristotelian idea that "for sciences such as optics the 'that' [i.e., the material being explicated] will come from one science while the 'why' [i.e., an understanding its causes] will come from a science which is 'above' it."[599] However, it is Biener who relies on the idea to explain the relation between all of the elements of Hobbes's philosophy. Biener argues that

> the various fissures between physics and physiology, or physiology and psychology, do not invalidate Hobbes's project as broadly geometrical. Such fissures were part and parcel of mixed-geometry and were caused by the addition of conditions at each transition from a subalternating to a subalternated science.[600]

Yet, as with Sacksteder's account, textual evidence showing that this was Hobbes's *intent* is not suitably robust to support the sweeping conclusion.[601] It

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unpublished and now lost manuscript, in which Dee had given a peculiar explanation of the appearance of the Nova Cassiopeiae of 1572. As a matter of fact, Hobbes in the *Anti-White* offered the same rather uncommon cause of its appearance (this star could have moved on a straight path towards the earth, thus becoming visible, and afterwards have withdrawn along the same line, thus vanishing again)," "Hobbes and Renaissance Philosophy," in *Hobbes Oggi*, eds. A. Napoli and G. Canziani (Milano: Franco Angeli Editore, 1990), 337-338.

[599] Adams, "Hobbes on Natural Philosophy as 'True Physics' and Mixed Mathematics," 44.

[600] Biener, "Hobbes on the Order of Sciences: A Partial Defense of the Mathematization Thesis," 325.

[601] One of the best textual cases to have been mounted to support the subalternate point is found in Talaska's "Analytic and Synthetic Method According to Hobbes," which, among others, suggests the view finds strongest support in "the Latin *Leviathan*, Chapter 9, and in the first Dialogue of the *Examinatio*, and even in the chapter on method in *De corpore*," 236. Hobbes's remarks in the Latin *Leviathan* are no less ambiguous than the ones found in *De corpore*, especially 6.6 and 6.17. Biener ("Hobbes on the Order of Sciences: A Partial Defense of the Mathematization Thesis," 231) attends, specifically, to the latter (6.17), which prescribes, "he that Teaches or Demonstrates any thing, proceed in the same Method by which he found it out; namely, that in the first place those things be demonstrated which immediately succeed to Universal Definitions (in which is contained that part of Philosophy which is called *Philosophia*

is nevertheless possible that Sacksteder and the new crop of interpreters may be correct in their characterization of some of the (un-articulated) practical details of Hobbes's work. However, it is unclear whether any correctly captures the meaning of synthesis, and how Hobbes would have, if at all, envisaged applying the method to produce a theory of politics from first principles.

At the same time, Sacksteder's interpretation, like the others, tacks in plausible directions. However, what, in part, makes his and the other accounts interpretively plausible is the vagueness of the material being interpreted. Hobbes's methodological remarks, because of their opaqueness, operate like an ink-blot test. They are broad enough as to accommodate a variety of interpretations, which, like an ink-blot test, often may say more about the interpreter than the object undergoing interpretation. Taylor, Sacksteder, and the new interpreters do add specificity to Hobbes's general remarks about his use of synthetic method and the relation between the different parts of his philosophy.[602] Yet, the sophistication and novelty of their theorizations cannot make up for a fundamental lack in Hobbes's descriptions of how the "the very

Prima.) Next, those things which may be demonstrated by Simple Motion (in which Geometry consists.) After Geometry, such things as may be taught or shewed by manifest Action, that is, by Thrusting from, or Pulling towards. And after these, the Motion or Mutation of the invisible parts of Things, and the Doctrine of Sense & Imagination & of the internal Passions, especially those of Men, in which are comprehended the Grounds of Civil Duties, or Civil Philosophy; which takes up the last place. And that this Method ought to be kept in all sorts of Philosophy, is evident from hence, that such things as I have said are to be taught last cannot be demonstrated, till such as are propounded to be first treated of, be fully understood. Of which Method, no other Example can be given, but that Treatise of the Elements of Philosophy, which I shall begin in the next Chapter, and continue to the end of the worke," *Concerning Body*, 63-64 [6.17]. In addition, Talska's use of a specific proof from the *Examinatio* demonstrates nothing as to the general relation between the different sections of Hobbes's *Elementa Philosophiae*.

[602] See, especially, Sacksteder, "Hobbes's Science of Human Nature," 42-53; and Adams, "Hobbes, Definitions, and Simplest Conceptions," 37-41.

first Principles of Philosophy" were envisaged as "proceeding" to "the Causes and Necessity of constituting Commonwealths…the Knowledge of what is Naturall Right, and what are Civill Duties."[603]

What are offered are historical (Adams, Biener), philosophical (Sacksteder, Malcolm), or potentially anachronistic[604] (Taylor) solutions to a problem that cannot be fully resolved through contextualization, philosophical reconstruction, or, and especially, a misattribution of intent. That each simultaneously relies upon, and thinks it necessary to reach beyond the strict content of Hobbes's methodological pronouncements admits the limited analytical and interpretive value of the statements.

b. Analysis

As remarked earlier, Hobbes did not believe the method of synthesis to be the sole means by which to secure the rudiments of moral and civil philosophy. As already explained, he notes there is another, simpler way: the method of analysis. Recall Hobbes's claim that the underpinning "Causes and Necessity of constituting Common-wealths" "may be known…by any mans experience, that will but examine his owne Mind."[605] In *De corpore*, Hobbes does offer an example intended to show how analysis works in practice.

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[603] Hobbes, *Concerning Body*, 54 [6.7].

[604] Sacksteder points out that "Hobbes is very sparing in his use of it [the language of deduction] and its correlatives, and always, I believe, he uses them concerning a minute local argument – one locally proof-like only and not traced to all its principles or supported by the analytic method," "Hobbes and Talaska and the Order of Science," 645. The general point requires no reformulation. However, Sacksteder runs the risk of *under*stating the frequency with which the language of deduction appears in Hobbes's works.

[605] Hobbes, *Concerning Method*, 54 [6.7].

However, the example he gives of how analytic derivation would work within the context of a study of natural right and civil duties is less instructive than he surely hoped it would be.

To discover the generative causes of the commonwealth using the method of analysis one would begin with a simple question: "*Whether such an Action be Just or Uniust*." Having posed the question, Hobbes indicates that one should next dissect the question and explicate its key terms. For example, "*Uniust*" can be "resolved into *Fact against the law*," and from there, the "notion of *Law*" resolved "into the *Command* of him or them that have *Coercive Power*." Next, Hobbes explicates "*Coercive Power*." He writes that "*Power*" is "derived from the *Wills of* Men" who erect political authority to "live in Peace." Having secured this proposition, he continues with the chain of inferences, noting that in the absence of "some Power" the "Appetites of Men and the Passions of their Minds" will overwhelm them, and unless "restrained by some Power," fuel *omnium bellum contra omnēs*: a war of all against all. Thus we arrive at the cause and necessity of the commonwealth: the "Appetites" and "Passions" "of Men" are such that, in the absence of a common, coercive power, they will be driven into a perpetual state of war. Having arrived at this principle, Hobbes claims that one may then build up again "by Compounding, to the determination of the Justice or Injustice of any propounded Action."[606]

In its full form, the example Hobbes gives begins with the admission that

[606] Ibid.

> …but even they also that have not learned the first part of Philosophy, namely *Geometry* and *Physiques,* may notwithstanding attain the Principles of Civill Philosophy, by the *Analyticall Method.* For if a Question be propounded, as *Whether such an Action be Just or Uniust;* if that *Uniust* be resolved into *Fact against Law,* and that notion of *Law* into the *Command* of him or them that have *Coercive Power;* and that *Power* be derived from the *Wills* of Men that constitute such Power to the end they may live in Peace, they may at last come to this, that the Appetites of Men and the Passions of their Minds are such, that unlesse they be restrained by some Power, they will alwayes be making warre upon one another; which may be known to be so by any mans experience, that will but examine his owne Mind. And therefore from hence he may proceed by Compounding, to the determination of the Justice or Injustice of any propounded Action.

Some modern interpreters have uncritically reproduced the claims about the analytic derivation of civil science featured in the quotation.[607] However, they are wrong to do so. Hobbes's illustration, and his remarks, fail to offer a

[607] For a classic, if typical, example see Richard Peters's *Hobbes* (London: Penguin, 1656), 75-76. However, Sorell and S.A. Lloyd are best known for strong advocacy of the position. Sorell is famous for having asserted the "autonomy" of Hobbes's civil philosophy, largely on the basis of the passage, combined with a version of the preface to the second edition of *De cive* that had been imperfectly translated; the imperfections seeped into and helped to structure and spoil some elements of Sorell's interpretive treatment, *Hobbes*, 17-24. For a discussion of the translation problem see Malcolm's *Aspect of Hobbes*, 149. Lloyd holds to a similar line, writing, "That Hobbes is serious about the resolutive component of his method, and correspondingly that it is an error to dismiss this component as a fancy way of saying that we start from fundamental human nature and derive a necessary form of political organization from that, can be quite clearly seen by examining the chart of the sciences Hobbes presents in Chapter 9 of *Leviathan*. According to the chart, civil philosophy, that is, the science of politics, is a distinct branch of philosophy *not connected* to the study of bodies, including men, and their natural properties. Civil philosophy is not a branch of, nor is it deducible from, the philosophy of human nature. Rather, the political rights and duties of subjects and sovereigns are implications of the institution of states, and this must reflect the essential properties of commonwealths…Political philosophy proceeds form an analysis of the essential properties of commonwealths, and an analysis of the ways in which existing practice does or does not respect these properties, to the disposition of socially formed individual persons, to superior social practices that can, taking into account known human dispositions, preserve the integrity and stability of commonwealths," *Ideals as Interests: The Power of Mind Over Matter*, 237. As noted in footnote 571, it was a commonplace, from the beginning, for Hobbes to distinguish between the study of natural human bodies and political ones. In the earliest formulation of his political theory, *The Elements of Law*, the distinction does not operate in the way that Lloyd suggests, hiving off "the science of politics" as "a distinct branch of philosophy *not connected* to the study of bodies, including men, and their natural properties." Hobbes separated the two only after having taken up the project of composing *De cive*, and only then in response to demands exerted by the organizational scheme of the *Elementa Philosophiae* plan.

consistent picture of how the method was, or should be applied. The remarks fail to supply consistent sets of methodological guidelines that can be reliably used by interpreters in their interpretations of Hobbesian texts.

Consider Hobbes's illustration of analytic method. He begins by isolating the key terms that comprise the question "*Whether such an Action be Just or Uniust*."[608] The terms are then specified, and the terms that result from the specification themselves specified. For example, we can isolate and extract the term "*Uniust*," which resolves into "*Fact against the law*," and then extract "*law*," which Hobbes defines as "the *Command* of him or them that have *Coercive Power*."[609] However, it is at this point that the logic of the method he is illustrating shifts from simple definition to generative explanation. That is, rather than *define* power, his next move is to lay out the *generative process* by which coercive power is created and ratified. He notes that such power is "derived from the *Wills of* Men" for the purpose of "liv[ing] in Peace."[610] The logic of derivation then shifts yet again, with Hobbes simply stipulating that the "Appetites of Men and the Passions of their Minds are such…that they will alwayes be making warre upon one another."[611] Put differently, he sneaks in and takes for granted the premise that human appetites are such that, in the absence of some terrestrial power capable of restraining them, their ceaseless,

[608] Hobbes, *Concerning Body*, 54 [6.7].

[609] Ibid.

[610] Ibid.

[611] Ibid.

erratic operation will engender a state in which people "will alwayes be making warre upon one another." How does one know this? To answer, Hobbes invokes universal experience, noting that it is "known to be so by any mans experience."[612] In other words, he answers the question with a tautology: the premise is true because it is true.

In its outlines, the example traces the principal lineaments of Hobbes's political theory, a theory that uses a state of nature in which there "will alwayes be [men] making warre upon one another" to justify a transfer of natural right by individuals to set up a coercive power capable of checking the deleterious impulses that drive them. However, the mix of logics – and the shoddy logic – at work in the example only further muddles our understanding of analytic method, and how (or whether) it was used by Hobbes. In other words, the example Hobbes gives is poorly conceived and worked out. It fails to illustrate, with sufficient detail, how the method was applied. Second, the example fails to fully delineate the process by which Hobbes came up with the inferences he elaborates, for example, that "Appetites of Men and the Passions of their Minds are such…that they will alwayes be making warre upon one another." To address the question, Hobbes, as he did in *De cive*, pivots to universal experience to substantiate the empirical premise, rather than give a substantive description of human nature.

[612] Ibid.

That Hobbes's description of the method of analysis is unworkable finds support in recent work critiquing Tom Sorell,[613] who, as others have done, makes the method a centrepiece of his interpretation of Hobbes's civil science. Sorell has labored to show that Hobbes's civil science is "autonomous" and capable of standing on its own. Civil science is "autonomous" insofar Hobbes's "remarks" about analysis "suggest that civil philosophy is part of science, and yet teachable and learnable in isolation from the rest of science."[614] In other words, Sorell attests, with Hobbes, that it "can be acquired by anyone with ordinary intellectual capacities, and it presupposes no special training."[615] Therefore, Sorell holds that "Civil philosophy *can* be acquired with no preliminaries," while allowing that "approaching" civil philosophy "by way of prior sciences," i.e., synthetically, does "make it more intelligible."[616]

Alexandra Chadwick takes the opposite view, arguing that civil philosophy, whatever Hobbes's discussion of analysis may suggest, cannot be acquired *without* preliminaries. Chadwick shows that there are hidden premises at work in Hobbes's discussion of analysis. For example, she explains that "In order to accept Hobbes's particular definitions one will already have to have discarded…other" contrary or incompatible "premises about the nature of the commonwealth and political power, and about the nature of human

[613] See: Alexandra Chadwick's "The Nature of Man and the Nature of Politics" (paper presented at the 2019 European Hobbes Society Mini-Workshop on the Philosophy of Thomas Hobbes, University of Amsterdam, Amsterdam, The Netherlands).

[614] Sorell, *Hobbes*, 7.

[615] Ibid.

[616] Ibid, 26.

beings."[617] Chadwick points out that Hobbes's conceit that "even they also that have not learnd the first part of Philosophy…may…attain the Principles of Civill Philosophy, by the *Analyticall Method*"[618] is just that: a conceit. Rather, what Chadwick demonstrates is that "accepting Hobbes['s] particular definitions" turns on one's having *already* accepted his "materialist psychology…since it rules out incompatible explanations of human nature."[619]

The genealogy of *De cive* presented in the third chapter fills out Chadwick's findings. The discord Chadwick highlights, between Hobbes's appraisal of analysis and how it operates (or fails to operate) in practice, is a by-product of Hobbes's implementation of the *Elementa Philosophiae* plan, which, combined with other factors, encouraged Hobbes to divide up an apparently cohesive work (*The Elements of Law*), and present part of it as a standalone volume (*De cive*). Although he used different forms of experience to shore up the work and buttress its foundations, the solution he posed to address the quandary fell short of the actual need. What Chadwick points out is that Hobbes's account of political power and the commonwealth were so indebted to the substantive treatment of human nature presented in *The Elements of Law* as to make the two inextricable. As noted previously, the missing empirical material became a shadow scaffolding, helping to support the exposition of *De cive*. Put differently, the solution of using different forms of experience as a

[617] Chadwick, "The Nature of Man and the Nature of Politics," 14.

[618] Hobbes, *Concerning Body*, 54 [6.7].

[619] Chadwick, "The Nature of Man and the Nature of Politics," 14.

tourniquet, to preserve the body and material of *De cive*, after having been severed from *The Elements of Law*, failed.

In sum, Hobbes's discussion of analysis is incomplete and, by virtue of its short length, sweeps much under the rug. In addition, as shown, the discussion is uneven in its logic and, like his discussion of synthesis, fails to supply methodological precepts clear enough as to be made a reliable basis for an interpretation of his political theory, in no small part because Hobbes put himself in a position, with the implementation of the *Elementa Philosophiae* plan and the out-of-order publication of *De cive*, that necessitated an imperfectly executed shift in political-theoretical practice. It is for these reasons that there exists a super-abundance of theories about how Hobbes did (or did not) use the methods in the derivation of his political theory. And it is for this same reason that Hobbes's methodological remarks should be read with a heightened sense of caution, understanding that they lack in consistency and specificity.

Yet, there exists another reason to question Hobbes's use of the methods, as delineated in *De corpore*, in the development of his political theory: his vision of science and scientific method shifted between 1640, when he finished *The Elements of Law*, and 1655, when he published *De corpore*. Even more critical is that Hobbes, in or around 1643, understood "analysis" and "synthesis" in terms quite different from, and even inconsistent with the understanding elaborated in *De corpore*. As both his commentary on Thomas White's *De mundo* (c. 1643) and his preface (1644) to Marin Mersenne's *Ballistica* attest, he did not originally associate analysis and synthesis with the

production of science. In fact, Hobbes drew a clear, bold distinction in both works between analytic-synthetic logics and the *organon* of science: syllogistic reason.

II. Science and the methods of synthesis and analysis before 1655

In Renaissance and early modern contexts, the terms analysis (or, in Latinized form, *resolutio*, resolution) and synthesis (or its Latinized equivalent, *compositio*, composition) were used variably.[620] Borrowing from the argot on Laclauian discourses analysis, the terms were empty or "floating" signifiers: "signs that different discourses struggle to invest with meaning," over whose meaning there exists an "ongoing struggle between different discourses to

[620] Neal Gilbert describes a complicated semiotic process of resignification, recombination, and remaking, all within the context of "the usual Humanist emphasis on recovery of the [mathematical] sources – in this case exclusively Greek – of the discipline…" Gilbert writes, "Such a recovery presupposed a knowledge of the Greek language as well as of mathematics, and this linguistic sophistication was the contribution of Humanism. In addition, mathematics in the educational programs of the day received an impetus from the Humanist reevaluation of the arts curriculum, which tended to emphasize mathematics at the expense of logic. For methodology this emergence of the Greek sources of mathematics created a need to distinguish clearly between mathematical and nonmathematical senses of 'analysis.' Because analysis was one of the traditional four Platonic methods of dialectic, and the root of Aristotle's *Analytics* as well, the Greek commentators…brought the geometrical version into their discussions of these topics. The geometrical sense of 'analysis' had been incorporated into traditional methodology at least as early as the second century, and it continued to appear, although not without transformation, in the methodology of later commentators, Peripatetic and Platonic, until Byzantine times. Both Arab and Latin commentators and philosophers took over this tradition, the Latins using the terms *resolutio* and *compositio* for the two methods. But these medieval Latin versions were so distinct from their mathematical origin, and so bound up with metaphysical and even theological ideas, that they can scarcely be regarded as keeping alive the spirit of Greek geometry. It was not until the detailed description given by Pappus was published, in the Latin translation made by Federigo Commandino, that we can again speak of the influence of Greek geometry upon general philosophical methodology…The geometrical sense of the terms 'analysis' and 'synthesis' began to gain currency, replacing the medieval *resolutio* and *compositio* used by Commandino to translate them. In fact, the very replacement of these Latin words by the Greek in subsequent philosophical and scientific usage is unquestionably due to the fact that the Greek words were now associated very precisely with their geometrical usage, and thus were considered superior to the medieval Latin terms, with their more extensive yet vaguer connotations," *Renaissance Concepts of Method* (New York: Columbia University Press, 1960), 81-83.

fix…"[621] Consider the word "body." It is a "sign" that "does not acquire detailed meaning until it is inserted in a particular discourse."[622] So too with analysis (or resolution) and synthesis (or composition). In different discursive contexts, the terms carried different meanings, were fixed with different valences, and had different (often overlapping) etymologies.

Lisa Jardine explains that, in the Renaissance, authors who filled out the methods of analysis and synthesis (occasionally associated with the second century physician Galen),[623] "collat[ed]" material from a variety of passages in Galen's works with Averroës's writings, producing "interpretation[s]" that "varie[d]"

[621] Marianna Jorgensen and Louise J. Phillips, *Discourse Analysis as Theory and Method* (London: Sage Publication, 2002), 28.

[622] Ibid.

[623] Given the somewhat idiosyncratic content of Galen's view and his use of the terms, both distinct from their use in geometrical contexts (see Gilbert, *Renaissance Concepts of Method*, 16), the association requires explanation. N. Jardine traces the points of connection, how Galen's ideas were picked up and transformed. Jardine writes, "Another factor which contributed to the sixteenth century obsession with *demonstratio propter quid* and *quia* is yet more complex. At the beginning of the *Ars Parva* (*Microtegni*) Galen lists three ways of teaching medicine: the analytic, which proceeds towards some intended goal; the synthetic, which proceeds conversely, starting with what is discovered by analysis; and the Platonic method of division, which he uses as his own method of presentation in the rest of the book. This cryptic passage puzzled Galen's commentators. In 'Ali ibn Ridwan's exposition on the *Ars Parva*, which became available in Latin around 1300, Galen's analytic and synthetic teaching methods are identified with Aristotle's *demonstratio quia* ["demonstration that"] and *proper quid* ["because of which, what"], and the analytic method is further identified with the method of analysis practiced by geometers. Pietro d'Abano, in his immensely influential *Conciliator differentiarum philosophorum* (written about 1310), compounded this confusion by conflating these methods, on the authority of Averroës, with the two methods of presentation which Aristotle mentions in the introduction to the *Physics*, the one observed motions of the stars was taken by several fifteenth century from the universal to the particular. Abano uses the term *regressus* to describe the relation between two procedures, the one of which retraces the steps of the other. In this context *regressus* means 'reversal' or 'turning back,' as in the axiom of Aristotelian physics, *in punctu regressus mediat quies* ('at the point of reversal of motion there is rest'). This kind of confusion continues to be prevalent amongst Galen commentators well into the seventeenth century," "Galileo's Road to Truth and the Demonstrative Regress," *Studies in the History and Philosophy of Science* 7, no. 4 (1976), 285-286.

> widely according to their particular selection of sources. Some authors related Galen's methods of analysis and synthesis to the corresponding methods of geometrical demonstration; others equated them with syllogistic arguments from effect to cause and cause to effect; and yet others with methods of presentation, the one proceeding from the complex and particular to the simple and general and the other proceeding conversely.[624]

Some authors, notably the sixteenth century Italian methodologist Jacopo Zabarella, reasoned about the methods[625] with reference to all three contexts, often with explicit reference to Aristotle,[626] Averroës,[627] Euclid,[628] and Galen.[629]

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[624] Lisa Jardine, *Francis Bacon: Discovery and the Art of Discourse* (Cambridge: Cambridge University Press, 1974), 40.

[625] It bears noting that, as Jan Prins and Helen Hattab point out, Zabarella draws a distinction between "*ordo doctrinae*" and "*via doctrinae*," the "order of doctrine" and the "way of doctrine, that is, method in the strict sense of the word," Prins, "Hobbes and the School of Padua: Two Incompatible Approaches of Science," 32. Prins explains, "The distinction he makes between *ordo* and *via* and between the different ways of ordering material, is closely related to the metaphysical foundations of his methodology. Science is nothing but an ordered collection of statements. The order however is not arbitrary. Only if the statements are ordered from the known to the unknown and if the unknown is a logical consequence of the known such a collection bears the character of science," ibid, 33. Or as Hattab puts it more tangibly, for Zabarella, "method and order does not cause us to infer one thing from another, but rather arranges (*disponere*) the things to be treated, as when the order of teaching demands that we first discuss the heavens and the elements. In other words, it arranges the parts of a discipline. Order takes precedence because one must divide a discipline into parts before one can articulate the method that will lead us from the known to the unknown that is sought within each part. For example, one must first treat of living things in general, then each individual species of living thing; and finally seek methods to treat what is common to animals, to understand the nature of an animal (if such is hidden) and its accidents," "Hobbes's and Zabarella's Methods: A Missing Link," 464-465. In addition, Hattab notes that "Zabarella follows Averröes, claiming that the procedure for ordering the sciences and all disciplines is found not in the essence of the objects sought, but in the manner of knowing things that is best or easiest for us. When a science is ordered in one way rather than some other, it is so ordered because it shall be learned more easily and effectively this way, not because of a natural order that exists outside the mind," ibid, 465. In the pages referenced in the footnotes below, Zabarella is principally concerned with working out the proper approach to order (*ordo*), rather than method properly speaking.

[626] For examples, see: Jacopo Zabarella, *On Methods* vol. I, ed. and trans. John P. McCaskey (London: Harvard University Press, 2013), 17, 27-28, 31, 35, 37, 39, 41, 55, 57, 63, 73, 75, 77, 79, 91, 93, 95, 97, 99, 101, 103.

[627] For examples, see: ibid, 27, 49, 55, 65, 73, 87.

[628] For examples, see: ibid, 77, 79, 87, 89, 91.

[629] For examples, see: ibid, 3, 17, 23, 25, 31.

Zabarella used the terms to, at once, refer to geometrical demonstration,[630] the practice of syllogistic reasoning from cause to effect and effect to cause,[631] and reasoning from universals to composites and composites back to universals.[632]

Hobbes's peers, Marin Mersenne in particular, associated the language of analysis and synthesis with geometric demonstration, and specifically the work of Pappus (a fourth century geometer whose work was translated into Latin in 1588).[633] Given Hobbes's proximity to Mersenne, and others in the Mersenne circle (like René Descartes) who understood the terms in roughly the

[630] For examples, see: 31, 79, 87, 89, 91.

[631] An example is found here: ibid, 51. As Prins notes, "the syllogism" was, for Zabarella, "considered the prototype of a scientific collection of statements, and science as a chain of syllogisms or as a collection of premisses and conclusions," "Hobbes and the School of Padua: Two Incompatible Approaches of Science," 33. Hanson summarizes Zabarellan *regressus* this way: "*regressus* is a three part procedure. First one formulates a resolutive syllogism from effect to cause, but by itself this produces only an unclear cognition (*cognition confuse*), which has to be transformed into a 'distinct' one by 'mental consideration.' It is this which enables the turning around which is *demonstratio propter quid*," "The Meaning of 'Demonstration' in Hobbes's Science," 606. Also see Stewart Duncan's excellent primer of the method in "Hobbes: Metaphysics and Method," 85-92. For a discussion of how the Aristotelian method became integrated into the prototype method of *regressus*, see footnote 623.

[632] For examples, see: Zabarella, *On Methods*, 27, 28, 31, 73, 75, 77, 81.

[633] "In 1588," writes Daniele Cozzoli, "Guidobaldo Del Monte published Fergio Commandino's Latin translation of Pappus' *Mathematical collection*. After Commandino's translation, mathematicians started working towards reconstructing ancient analysis. Marin Mersenne in *La verité des sciences* (1625) described the recovery of ancient analysis as one of the most important enterprises of his time. Commandino, who was properly following Francesco Barozzi's translation of Proclus' *Commontary to the First Book of Euclid's Elements*, translated analysis and synthesis as *resolutio* and *compositio* respectively. His translation led him to identify Aristotle's *demonstratio quia* and *demonstratio propter quid* with Pappus' analysis and synthesis. It must be stressed that the two mathematical ways of proving did not imply any commitment towards Aristotle's notion of logical consequence," "Beyond Mixed Mathematics: How a Translation Changed the Story of Descartes's Philosophy of Mathematics," in *Beyond Borders: Fresh Perspectives in History of Science*, eds. Josep Simon and Néstor Herran, with Tayra Lanuza-Navarro, Pedro Ruiz-Castell and Ximo Guillem-Llobat (Newcastle: Cambridge Scholars Publishing, 2008), 47. As Cozzoli points out, the confusion and conflation features in Hobbes's own methodological prescripts: "This is at least true, for all the scholars who accepted Aristotle's notion of logical consequence in terms of a causal relations such as Hobbes, who in *De Corpore* (1655), identified the geometrical mode of reasoning of analysis and synthesis with Aristotle's two kinds of proof," as did Peirre Gassendi, ibid. For a more fulsome presentation of Pappus's view, see Hanson, "The Meaning of 'Demonstration in Hobbes's Science," 602-603.

same geometrical way, the expectation is that Hobbes would have held a similar, strict geometric-scientific understanding of analysis and synthesis.

a. 1640-1642: The Method of Synthesis in *The Elements of Law* and *De cive*

Testing the expectation is a difficult interpretative matter. Neither method is named in *The Elements of Law* – or in *De cive*. At the same time, it would be foolish to doubt that Hobbes, as a practitioner of geometricized science, was familiar with either method, or that he aimed, especially, to replicate the method of synthesis (demonstration) in some aspects of his work. In his early work, Hobbes theorized in patterns that were reminiscent of the geometric method of synthesis, writing in *The Elements of Law* that there is "no way, but first to put such principles down for a foundation…and afterward build thereon the truth of cases in the law of nature…by degrees, till the whole be inexpungable,"[634] and in *De cive* that the production of "truth" entails "correct reasoning from true principles."[635] Both descriptions of the *organon* of science or philosophy approximate the description of synthesis Mersenne adduces in his objections to René Descartes's *Meditations on First Principles* (1641). Mersenne held that philosophy should take the form of a demonstration, offering to Descartes that "it would be worthwhile if you set out the entire argument in geometrical fashion, starting from a number of definitions, postulates, and axioms."[636]

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[634] Hobbes, *The Elements of Law*, viii [Epistle Dedicatory].

[635] Hobbes, *On the Citizen*, 33 [2.1].

[636] Mersenne, Marin, "Second Set of Objections," in *The Philosophical Writings of Descartes* vol. II, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch (Cambridge: Cambridge University Press, 1984), 91-92.

Before proceeding to evidence of analysis in Hobbes's early political works, it bears noting that the presence of language in *The Elements* and *De cive* that approximates or appears to endorse the methodological ideal of synthesis (as related by Mersenne) should not be taken as support for the view that there exists a continuity between the seeming application of synthesis in *The Elements* and *De cive* and how it is applied to the study of politics in *De corpore*. Recall that *De corpore* specifies, narrowly, that a synthetic derivation of "civil philosophy" entails starting from "the very first Principles of Philosophy ["namely *Geometry* and *Physiques*"[637]]" and "proceeding in the same way" to, eventually, "the Causes and Necessity of constituting Common-wealths."[638] Although *The Elements* and *De cive* may bespeak a broad, general aspiration to practice (geometricized) synthesis, in neither work is found evidence to suggest that Hobbes, from the beginning, aspired to practice synthesis in the narrower sense specified in *De corpore*. A chronology of the development of the *Elementa Philosophiae* plan (as given in chapter 3) militates against the conclusion that *The Elements* was conceived as part of a larger philosophical series. Similarly, it is likely that, by the time *De cive* was completed, Hobbes had, at most, a rough sketch of his "*Geometry*" and "*Physiques*."[639]

b. 1642: The Method of Analysis in *De cive*

There exists only ambiguous evidence, in *De cive*, of how Hobbes might have used the method of analysis during this early period. Identification of the

[637] Hobbes, *Concerning Body*, 54 [6.7].

[638] Ibid.

[639] Ibid.

method in *De cive* is easiest when considered through the lens of a debate between Descartes and Mersenne about the use of analysis as a means of philosophical demonstration. In his objections to Descartes's *Meditations*, Mersenne (gently) criticized Descartes's use of the method of analysis. At the heart of Mersenne's objection was a strong view of what form philosophy should take. Mersenne held that philosophy should be synthetic and demonstrative (proceeding from exactingly specified axioms and postulates), rather than analytic, i.e., an interrogative inquiry and process of discovery, which reasons backward from sense to first principles.

Descartes disagreed with the assessment. His *Meditations* are, in part, memorable for having been written in an analytic "mood." In the work, Descartes punctiliously separates out and interrogates experience, painstakingly walking his reader through the process of inquiry that led him to the first principles of philosophy. Descartes posits that analysis, just as much as synthesis, is a "method of demonstration." "Analysis," he writes,

> shows the true way by means of which the thing in question was discovered methodically and as it were *a priori*, so that if the reader is willing to follow it and give attention to all points, he will make the thing his own and understand it just as perfectly as if he had discovered it for himself. But this method contains nothing to compel belief in an argumentative or inattentive reader; for if he fails to attend even to the smallest point, he will not see the necessity of the conclusions…Now it is analysis which is the best and truest method of instruction, and it was this method alone which I employed in my *Meditations*.[640]

[640] René Descartes, "Author's Replies to the Second Set of Objections," in *The Philosophical Writings of Descartes* vol. II, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch (Cambridge: Cambridge University Press, 1984), 110-111.

Inquiries into metaphysics, Descartes held, are best executed by means of analysis. Using the language of "a priori" in a way that is neither "modern" and "post-Leibnizian" nor "Thomist," the *Meditations* begins with "what is epistemically prior, i.e. from what is prior in the 'order of discovery' followed by the mediator."[641]

In a passage in *De cive* that is reminiscent of the illustration of analysis supplied in *De corpore*, Hobbes uses something *like* analysis as an expository tool. The epistle dedicatory of *De cive* guides readers through a short, backward-moving inquiry from "what is epistemically prior" (or what is already known or known to us) to the certain postulates that anchor the political philosophy of *De cive*. Hobbes explains to his readers that

> *when I turned my thoughts to the inquiry about natural justice I was alerted by the very name of justice (by which is meant a constant will to give every man* his right*) to ask first how it is that anyone can ever spoke of something as* his own *rather than* another's*; and when it was clear that it did not originate in nature but in human agreement (for human beings have distributed what nature had placed in common), I was led from there to another question, namely, for those whose benefit and under what necessity, when all things belonged to all men, they preferred that each man should have things that belonged to himself alone. And I saw that war and every kind of calamity must necessarily follow from community in things, as men came into violent conflict over their use; a thing all seek by nature to avoid. Thus I obtained two absolutely certain postulates of human nature, one, the postulate of human greed…the other, the postulate of natural reason, by which each man strives to avoid violent death as the supreme evil in nature. From these starting points I believe I have demonstrated by the most evident [logical conclusion][642] in this little*

[641] John Cottingham, Robert Stoothoff, and Dugald Murdoch, *The Philosophical Writings of Descartes* vol. II (Cambridge: Cambridge University Press, 1984), 110 n. 2.

[642] Richard Tuck and Michael Silverthorne's translation reads, "From these starting points I believe *I have demonstrated by the most evident inference…*," *On the Citizen*, 6 [Epistle Dedicatory 10]. However, the Latin points in another direction. Hobbes uses the adjective-noun pair, *euidentisima connexione*, *Elementorum Philosophiae Sectio Tertia De Cive*. In the context, a better translation of *connexione* (i.e., the third declension noun *conexio*) is "logical conclusion," Traupman, John, *The New College Latin & English Dictionary* (New York: Amsco School Publications, 1994), 109.

> *work that necessity of agreements and of keeping faith, and thence the Elements of moral virtue and civil duties*.[643]

In the passage, Hobbes claims to have derived the "certain postulates" that are the "starting point" for his "demonstration" by means of a process of inquiry that launches from what is already known: the meaning of "justice." That is, the remarks walk the reader through the steps in the interrogative process by which the "absolutely certainly postulates" Hobbes delineates were discovered.

Situated against Descartes's reply to Mersenne's objection, it is possible to see lines of analytic reasoning in Hobbes's remarks. However, the lines are faint. Question marks hang over the passage. First, it is not clear that the remarks relate the actual process by which Hobbes derived the premises he identifies. *The Elements of Law*, from which much of the content of *De cive* was cribbed or adapted, features no similar admission or analysis-style explanation. Rather than an honest accounting of his process of discovery, the remarks appear calibrated to establish the postulates Hobbes sets out as evident and certain. That is, the remarks operate as a justificatory device to buttress the empirical postulates of natural cupidity and fear of violent death (i.e., self-preservation). Thus, the remarks have an expository function, unique to *De cive*, as they were used, in Sorell's words, to establish the "autonomy" of the work. Second, like the illustration of analysis featured in *De corpore*, the remarks cannot be systematized into a cohesive method, for many of the same reasons that the illustration of analysis from *De corpore* cannot be. Last, it is

[643] Hobbes, *On the Citizen*, 5-6 [Epistle Dedicatory 9-10].

simply impossible, on the basis of this passage alone, to make a reliable interpretive judgment as to Hobbes's method, or whether the passage is illustrative of his understanding of analysis.

c. 1643-1644: Synthesis and analysis in the commentary on *De mundo* and Hobbes's preface to *Ballistica*

Written on the heels of *De cive* (1642), the commentary on Thomas White's *De mundo* (c. 1643)[644] is the first surviving piece of Hobbesian writing that mentions analysis and synthesis. What the commentary articulates is a conception and understanding of analysis and synthesis that is wholly unlike Mersenne's. The commentary characterizes the logics as both unremarkable and unscientific, painting analysis and synthesis as unscientific causal recollection, as of the sort that all animals, human and beast alike, engage in regularly (if to different "degree[s]" and in different "speed[s]").[645]

Specifically, Hobbes describes the first logic, synthesis, as composition, a "'collecting-together.'"[646] To illustrate the concept, he gives the example of someone "visualiz[ing] a building[647] according to an order [of events] from the

[644] See chapter 3, footnote 390 for a discussion of the date of Hobbes's commentary on *De mundo*.

[645] Hobbes, *Thomas Hobbes: Thomas White's* De Mundo *Examined*, 369 [30.10].

[646] Ibid. In fact, Harold Jones's hand can be seen in the translation. In the Latin, Hobbes uses the standard methodological terminology, *compositio*, *Critique du* De Mundo *de Thomas White*, 353 [30.10]. However, I have retained Jones's translation of the term, as it fits with Hobbes's description of the process of *compositio*.

[647] It appears the building example was a commonplace, perhaps taken over from Galen. Gilbert indicates, "Galen decides that medicine belongs to the productive arts, and he compares it to the building of houses or architecture (Galen's father was an architect). Just as by *analysis* and *dialysis* (a term which Galen uses utmost as a synonym for analysis) we understand the finished house, so by anatomy we understand the body of a man, which is the subject matter of the healing art," *Renaissance Concept of Method*, 17. The metaphor is reproduced in Zabarella's *De methodis*. He writes, "Just as, if the art of building is to be conveyed, the first beginning-principle of the art to be learned will be the prior knowledge of the end, that is, the definition

material to the form of the house they propose bringing into being."[648] Our imagination "moves from the material to its transportation and from there to the foundations, thence to the walls and from there to the roof."[649] Accordingly, Hobbes makes synthesis a causal imaginative act whereby a person collects together, or recalls, the parts out of which an observed whole (e.g., a house) was or was likely made. One imagines the sequence whereby the discrete components Hobbes names – material, foundations, walls, a roof –were or might have been combined to create "the form of" a "house."

Whereas Hobbes sees synthesis as a "collecting-together," he views analysis as resolution, an "unloosing." "An instance of 'unloosing' [or resolution] among men," he writes, "is when the thought advances from the form of a house to that of a site where it is to be built" and from there to "the material that has been brought together in that place; then of the actual transportation; and then of the place it is got from."[650] Thus, analysis, unlike synthesis, entails a causal imaginative act whereby a person breaks down an

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of the house to be built. From this, passage is made to the foundation, walls, roof, and from these finally to stones, tiles, mortar, and wood; these [last] are the first and simplest elements of the art. In them the art as taught ends, and from them the art as practiced afterward begins," *On Methods*, 31. The metaphor also features in the work of the medieval physician Ugo Benzi, who, while expounding Galen's *De compositione*, calls up the example "of the builder who, with the object of building a house, by *doctrina resolutiva* breaks the house down into its parts, roof, walls, foundations, even the smallest parts, and then that of the physician whose goal is to cause and maintain health," Lawn, Brian, *The Rise & Decline of the Scholastic 'Quæstio Disputata:' With Special Emphasis on its Use in the Teaching of Medicine & Science* (Leiden: Brill, 1993), 79. In the analysis, Benzi associates the methods with Aristotelian methods. It is impossible to know whether Hobbes relied upon the metaphor because it was a commonplace (plausibly Galenic in origin), or rather meant to wield it as a cudgel.

[648] Hobbes, *Thomas Hobbes: Thomas White's* De Mundo *Examined*, 369 [30.10].

[649] Ibid.

[650] Ibid.

observed whole (like a house) into discrete, causal parts, imagining backward, causal bit by causal bit, the sequence by which the whole was or might have been created.

The characterization of the logics given in Hobbes's commentary on *De mundo* denies analysis and synthesis the opportunity to be used within the context of the production of certain, scientific knowledge.[651] Rather, Hobbes uses synthesis and analysis to describe the quotidian forms of recollection upon which humans (and animals) rely when conjecturing about causes. He reasons that neither form of causal recollection, nor *any* kind of causal thinking[652] could produce certain, non-prudential (scientific) knowledge, something he equates with syllogistic reasoning,[653] not speculative-causal recollection or other forms of causal analysis.

Not long after Hobbes completed the commentary on *De mundo* the claim about synthesis and analysis was repeated in his preface to Marin Mersenne's *Ballistica* of 1644, a Galilean-inspired essay on ballistics in Mersenne's sprawling *Cogitata Physico-Mathematica*. Hobbes's prefatory

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[651] Robin Bunce draws the same conclusion, however, with respect to Hobbes's remarks in his preface to Mersenne's *Ballistica*, *Thomas Hobbes* (New York: Continuum, 2009), 29. Although not something to which Bunce draws attention, comparison reveals the remarks to have been cribbed or otherwise adapted from Hobbes commentary on *De mundo*.

[652] Ibid, 371 [30.13]. Hobbes does, somewhat inexplicably, use the language of *scientia causarum* in the relevant passage, without pausing to explicate the phrase, *Critique du* De Mundo *de Thomas White*, 353 [30.10]. Jones translates phrase to mean "science of causes," *Thomas Hobbes: Thomas White's* De Mundo *Examined*, 369 [30.10]. It is plausible, given the context and the discussion that follows that, here, Hobbes is, not unreasonably, using *scientia* to mean, more generically, "knowledge." Cf. *Sapientia vera nihil aliud est quam in omni materia veritatis scientia* ("True wisdom is nothing other [or more] than the knowledge of truth in every matter [or, per Tuck and Silverthorne, "subject"]), *Elementorum Philosophiae Sectio Tertia De Cive* [Epistle Dedicatory].

[653] Hobbes, *Thomas Hobbes: Thomas White's* De Mundo *Examined*, 375 [30.19].

remarks echo the earlier point made in the commentary. He writes that synthetic and analytic causal conjecture, progressing from "imagined causes to imagined effects" (synthesis) or "effects to causes" (analysis), is "but…remembrance"[654] – i.e., not science.

d. 1645: Synthesis and analysis in "Logica ex T.H."

By 1645[655] Hobbes's methodological outlook and conception of science changed radically. His thinking vis-à-vis the possibility of causal science had shifted,[656] as an early draft copy of *De corpore*, dated to the mid-1640s, records. The sentences that open the draft register the change. Philosophy now entails acquiring knowledge of the properties of bodies from either (i) conceiving of the process by which a body is generated (i.e., reasoning from cause to effect) or (ii) reasoning backward from a body's properties to the process by which it might have been generated (i.e., reasoning from effect to cause).[657]

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[654] *Si processu fiat ab imaginatione cause ad imaginationem, effectus versus finem, qui semper est effectus vltimus, dicitur…compositio; si ab effectu ad causam & ita deinceps versus priora…resolutio: est autem vtraque reminiscentia* ("If [we] advance from an imagined cause to an imagined effect, turned in the direction of an end, which is always the final effect, it is called…composition; if [we proceed] from effect to cause & thus follow [in succession] towards the former cause…[it is called] resolution: both however is remembrance [or, "but both is remembrance"]," "Præfatio Vtilis in Ballisticam ad Lectorem," in *Cognitata Physico-Mathematica*, composed by Marin Mersenne (Paris, 1644). Bunce, in the first of two paragraphs summarizing Hobbes's shifting stance on the relationship between the methods of analysis and synthesis and science, offers the following translation of the same passage: "If we proceed from imagined causes to imaged effects towards a goal which is always the final effect, this is called…*composition*; if [we work] from effects to causes and thus in a regular order towards the previous causes this is…*resolution*. Each however is but memory," *Thomas Hobbes*, 28.

[655] As Malcolm notes, the change is first registered "in the notes on Hobbes's philosophy made by Sir Charles Cavendish in 1645, and in the undated manuscript at Chatsworth, the 'Logica ex T.H.,' which closely resembles Cavendish's notes and represents a draft of the early chapters of *De corpore*," *Aspects of Hobbes*, 154.

[656] Malcolm also clocks the shift, noting, "After a few years in Paris in the 1640s…Hobbes began to include the knowledge of causes in his definitions of science," ibid.

[657] *Philosophia est corporum proprietatum ex conceptis eorum generationibus, et rursus generationum, quae esse possunt, ex cognitis proprietatibus, per rectam ratiocinationem*

Despite the pivot to a causal-generative conception of science, the language of *neither* analysis nor synthesis, resolution nor composition, make an appearance in the draft. However, both methods, as delineated in Hobbes's commentary on *De mundo* and the preface to *Ballistica*, appear in the substance of the text, in Hobbes's new conception of philosophy specifically. The first prong of the definition, marked (i), corresponds to synthesis, reasoning from cause to effect, specifying the process by which some thing (like a house) comes into being. The second prong of the definition, marked (ii), corresponds to synthesis, reasoning from effect back to cause, imagining the causal sequence that might have produced observed effects.

e. 1646: Synthesis and analysis in the second edition of *De cive*

The new vision of science and accompanying changes in Hobbes's methodological commitments appear in the 1646 preface he prepared for the second edition of *De cive*, published in 1647. Just as in the draft copy of *De corpore*, there is no mention of analysis or synthesis in the preface to the second edition of *De cive*. Yet, within Hobbes's description of method can be seen the new conception of science as well as the example of analysis and synthesis given in Hobbes's commentary on *De mundo*. In the commentary, Hobbes offered the example of a person whose mind "range[s] from a building

acquisita cognito ("Philosophy is the knowledge of the properties of bodies having been acquired through right [or "correct"] reason from a conception of their generations, and turned back, of possible generations acquired from properties known [by experience]"), "Logica. Cap. 1 Ex T.H.," 463 [1.2]. Malcolm offers the following translation of the same lines: "'Philosophy…is the knowledge of the properties of bodies, acquired by correct reasoning from the notions of their generations; and conversely the knowledge of possible generations, acquired by correct reasoning from known properties,'" *Aspects of Hobbes*, 154.

through all the means [of constructing it] to the place where the building-material can be got, and then back again to the [form of a] building"[658] as an example of analysis and synthesis. In the preface to *De cive*, Hobbes discusses the *ex hypothesi* deconstruction and re-composition of a commonwealth in a way that is reminiscent of the building example. In particular, and as with the building example, there is an emphasis on the final form of the commonwealth and the matter from which it is made. He writes,

> As far as my Method is concerned, I decided that the conventional structure of rhetorical discourse, though clear, would not suffice by itself. Rather I should begin with the matter of which a commonwealth is made and go on to how it comes into being and the form it takes, and to the first origin of justice. For a thing is best known from its constituents. As in an automatic Clock or other fairly complex device, one cannot get to know the function of each part and wheel unless one takes it apart, and examines separately the material, shape and motion of the parts, so in investigating the right of a commonwealth and the duties of its citizens, there is a need, not indeed to take the commonwealth apart, but to view it as taken apart, i.e. to understand correctly what human nature is like, and in what features it is suitable and in what unsuitable to construct a commonwealth, and how men who want to grow together must be connected.[659]

The preface reflects how Hobbes's views on science and method evolved after first publishing *De cive* in 1642. In the first edition of *De cive* Hobbes specified philosophy as the practice of deriving, by logic, consequences "by reasoning…from our starting point in experience,"[660] i.e., from "true principles."[661] Right reason, Hobbes indicated then, begins "from the most

[658] Hobbes, *Thomas Hobbes: Thomas White's* De Mundo *Examined*, 371 [30.10].

[659] Hobbes, *On the Citizen*, 10 [Preface to the Readers 9].

[660] Ibid, 215 [17.12].

[661] Ibid, 33 [2.1].

evident principles" and entails "weav[ing] a seamless discourse of necessary consequences."[662] It did not begin with causal analysis, much less an examination of material and formal causes. It was not calibrated to the goal of mapping generative-causal processes. In other words, in 1642 Hobbes remained very much attached to the project of syllogistic science, a science of necessary truths, where "*Truth* is the same as [a] *true*" categorical "*proposition*."[663] By 1646 his orientation had changed. He was now a proponent of a "Science of Causes" (as he would later put it).[664]

The preface to the second edition registers the change. It gives his work a new frame, one that better comports with the philosophical posture he had fallen into by 1646. Method now entailed an unloosing and a collecting-together. It involved the unloosing of the commonwealth into the material that makes it and, in turn, the recombination or collecting-together of those material elements into a sequence, specifying how a commonwealth might[665] come into being.

Hobbes took the opportunity afforded by publishing a new edition of *De cive* to put a new spin on his political theory, using terms more congruent with his new, emergent methodological commitments. It was not the first or the last

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[662] Ibid, 162 [14.16].

[663] Ibid, 237 [18.4].

[664] Hobbes, *Concerning Body*, 49 [6.1].

[665] It is clear, in the Latin of the second edition, that Hobbes proposed a hypothetical analysis of the process by which commonwealths might be made: *non quidem ut dissolvatur civitatis, sed tame ut tanquam dissolute consideretur*, *Elementa Philosophica de Cive* [Preface to the Readers]. "…not indeed to take the commonwealth apart, but to view it as taken apart," *On the Citizen*, 10 [Preface to the Readers 9].

time Hobbes did this. For him, it was a common practice, which went hand-in-hand with his use of serial composition, a method of writing texts carried over from scribal publication. Hobbes relied upon serial composition when developing the different versions of his political theory as well as other philosophical works. The method entailed a "process of producing multiple, progressively expanded versions of a text made possible by the adaptation of works for different audiences and the rapid production of new(ish) volumes."[666]

Throughout the process of developing and expanding his texts, Hobbes tinkered with individual arguments and made more macro-level adjustments to the organization of his works. In the process, Hobbes also adapted old texts to new ends, imbuing them with revolving *raisons d'être*. As this chapter shows, re-interpretation of earlier works went hand in hand with Hobbes's use of serial composition. The fluidity and nature of his compositional process enabled him to reimagine earlier materials in terms of newly adopted epistemological positions and corresponding methodological commitments. And he did this without worry about misleading readers, for the texts he wrote and his understanding of them was always changing. Put differently, adopting serial composition as a compositional *modus operandi* furnished Hobbes with notions about what a text is that are discordant with the modern view. His texts were open and unfinished, allowing his vision of them to shift and evolve with time.

[666] Baumgold and Harding, "Excavating *On the Citizen*," 12.

III. Conclusion

a. Methodological interpretations of Hobbes and serial composition

Hobbes's reliance on serial composition introduces perils for interpreters hoping to use descriptions of his project found in later works, like *De corpore*, as methodological cyphers. Hobbes used the discussion of the method of moral and civil philosophy, as in the second edition of *De cive* and in *De corpore*, not to clarify the root method of his political theory, but to re-describe and re-frame earlier work in terms more amenable to emergent viewpoints about the nature of scientific knowledge and how to obtain it. Thus, challenges abound for interpreters, like Tom Sorell, who make the methodological prescripts articulated in *De corpore* a centerpiece of their interpretations. Sorell must not only contend with the muddled and internally inconsistent methodological guidelines articulated in *De corpore*, but with the question of whether Hobbes was actively practicing the method of analysis in the construction any one of the versions of his political theory.

As the previous chapter shows, the language and the methods of analysis and synthesis would have been available to Hobbes as he wrote *The Elements of Law* (1640) and, as Mersenne's dispute with Descartes shows, were available as he re-engineered *The Elements* into *De cive* (1642). Nonetheless, it remains an open question as to what role either method played in Hobbes's early works. What is more certain is that, by 1643, he, unlike members of the Mersenne circle, chose to associate the methods with causal knowledge. Thereafter, Hobbes introduced the methods into his own work, but only after having turned to a generative-causal conception of science. They made their first

appearance in Hobbesian prose, but in substance only, in an early draft of *De corpore* and again in the preface to the second edition of *De cive* (1646). After, they reappeared by name in *De corpore* (1655), [667] but without a coherent description of how either is applied to the study of moral and civil philosophy. This chronology, and examples showing how Hobbes constructed and then creatively reconstructed progressive iterations of his political texts, should give interpreters like Sorell pause. At a minimum, both should encourage interpretive restraint, a recognition that making the statements from *De corpore*, or even the first or second editions of *De cive*, a basis for interpretations of Hobbes's political theory is a fraught and doubt-laden enterprise.

In general, Hobbes's interpreters have devoted too much time to the study of the methodological bearings purportedly guiding his work, with the implicit hope that their study might reveal hidden philosophical dimensions in or the inner structure of Hobbes's political theory. It is true that Hobbes may have, throughout, composed his works in a quasi-geometrical style. In *The Elements of Law* this simply entailed a commitment to the expository principles of linear and transparent reasoning and the specification of key terms.[668]

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[667] Also see Hobbes's seemingly non-standard application and use of the terms in *Leviathan*'s forty-seventh chapter; the explicit reference to the methods in chapter 47 is unique, as they appear nowhere else in *Leviathan*. In the relevant passage, Hobbes portrays analysis and synthesis as nearly synonymous with historical analysis, as tools by which to render an historical account of the "Construction of the Pontificall Power," *Leviathan*, 1114.

[668] As Baumgold points outs, "The bulk of the work – four-fifths of the chapters, to be precise – is fleshed out on a skeleton of defined terms, which appear highlighted in black gothic script in the manuscript. This method of exposition corresponds to the geometrical method – of proceeding by way of axiomatic definitions…," "The Composition of the 'Elements of Law,'" 27.

However, his understanding of what the commitment entailed changed with time, as his understanding of the nature of geometry[669] and science changed.

As shown, Hobbes, time and again, reframed his political theory to better reflect the scientific method *de jour*. This happened again in 1656, a year after *De corpore*'s publication. By then, and while in the process of working up a second, revised edition of *De corpore*,[670] he realized that, in the same way that geometers have a perfect, maker's understanding of the "lines and figures" they create, so too do we have maker's knowledge of a commonwealth, something, he reasoned, we make ourselves. "Geometry therefore is demonstrable for the lines and figures from which we reason are drawn and described by ourselves." Analogously, he wrote, "civil philosophy is demonstrable because we make the commonwealth ourselves."[671] It is not possible to know what brought about the

[669] See footnote 673 below.

[670] In a review of Karl Schuhmann's edition of *De corpore*, Noel Malcolm recounts that "Within months of the publication of *De corpore*, Hobbes seems to have been contemplating a second edition, in which further alterations would also have been made. Reasons for making such changes included the evolution of his own thinking, and the suggestions and criticisms he received from his friends; but the most powerful reason emerged in the final months of 1655, when John Wallis published his scathingly polemical attack on the mathematical contents of the work, *Elenchus geometriae hobbanae*. Whatever Hobbes may have hoped for, the second edition of the original Latin text of *De corpore* was not in the offing: we may presume, that, at this stage, Andrew Crooke still had plenty of unsold copies. But Crooke was preparing to publish an English translation of it (by an unnamed translator): Hobbes was given the opportunity to go through the manuscript of this translation carefully, and to provide completely new versions of some sections of the text. The translation, *Elements of Philosophy, the First Section, Concerning Body*, was published in June 1656; here too, the author was still making changes at the last minute, with a new leaf substituted for one cut out of the printed sheets. Hobbes took this opportunity to issue a separate polemical reply to Wallis (and to Wallis's colleague, now also a public critic of Hobbes, Seth Ward), entitled *Six Lessons to the Professors of Mathematicks*: this work, separately paginated and with its own titlepage, was bound with the main text, *Concerning Body*, and was also mentioned on the titlepage of that text," "The Printing and Editing of Hobbes's 'De Corpore:' A Review of Karl Schuhmann's Edition," 332. The excerpt from Malcolm's review is also found in footnote 550.

[671] Hobbes, Thomas, "Six Lessons to the Professors of Mathematics, One of Geometry, the Other of Astronomy, in the Chairs Set up by the Noble and Learned Sir Henry Savile, in the University of Oxford," in *The English Works of Thomas Hobbes of Malmesbury* vol. VII, ed. Sir William Molesworth (London: Longman, Brown, Green, and Longmans, 1845), 184.

realization; perhaps it was the collapse and then the intentional remaking of England's political institutions. However, what is knowable is that this idea about civil philosophy and maker's knowledge, put in this way, had not occurred to Hobbes before 1656.[672] It especially had not occurred to him while writing *The Elements of Law* or *De cive*, since it presumes an understanding of geometry and science that definitively postdates both. [673] As a result, such an

[672] See footnote 673 below.

[673] Indeed, on numerous occasions, Hobbes reasoned in patterns and presented formulations of his ideas that appear to have anticipated the view, as when, for example, he notes in *De cive* a direct parallel between the construction of mathematical and political precepts: "it may be proposed that *two and three are five*, and one may recall the order of the number words, and it has been determined by the common consent of speakers of the same language (as by a kind of agreement necessary for human society) that Five is the name for as many units as are contained in Two and Three taken together; if one then assents that it is therefore true that *2* and *3* together are the same as *5*, that assent will be called *knowledge*. To know that truth is simply to recognize that it was made by ourselves. For those who made the decision and the rule of language that the number ** is called *Two*, *** *Three*, and ***** *Five*, are also responsible for the fact that the proposition, *Two* and *three* taken together make *Five* is true. Likewise, if we remember what it is that is called *Theft* and *wrong*, we shall *know*, from the words themselves whether it is true that *Theft is a wrong*, or not," *On the Citizen*, 237 [18.4]. However, Hobbes's later insights vis-à-vis makers knowledge seem not to have sprung from observations about naming and the wholesale construction of mathematical and political concepts. Instead, the germ of the turn to makers knowledge in Hobbes's work appears to have been a pivot to a generative understanding of geometry, consonant with Gilles Personne de Roberval's. Although, *pace* Malcolm, the lines of influence are impossible to disentangle, Malcolm is correct in the remark that the new understanding was "characteristi[c]" of a turn toward understanding "geometrical figures" as "products of the motion of a point," *Aspects of Hobbes*, 154. Hobbes's pivot to causal science, and incorporation of physics (as conceptualized in the "Latin Optical Manuscript") into the body of philosophy, was concomitant to the shift in mathematical understanding. In the "Latin Optical Manuscript," likely composed in the early 1640s (see chapter 2 for a discussion of the tract), Hobbes specifies that "hypotheses" (*hypotheses*) about possible effects, whether perfectly correct or not, "are in no small way serviceable to human use, as much as if they [the causes about which we hypothesize] may be known and demonstrated" (*ita ut non minus humano usui inserviant, quam si essent cognitae et demonstratae*), "Thomas Hobbes: Tractatus Opticus," 147. The turn, and incorporation of "physics" into Hobbes's conception of science, can be seen in *Leviathan*, in which he maintains the scientific knowledge produces that "by which, out of that we can presently do, we know how to do something else when we will, or the like, another time: Because when we see how any thing comes about, upon what causes, and by what manner; when the like causes come into our power, we see how to make it produce the like effects," *Leviathan*, 72. David Gauthier attempts to locate the incipient elements of the position vis-à-vis makers knowledge and civil science in *Leviathan*. However, the account is unpersuasive as to show that Hobbes had made the connection between geometry and civil philosophy by 1651. The most compelling piece of textual evidence Gauthier cites is from chapter 21 of *Leviathan*, wherein, he notes, "Hobbes tells us," "true liberties…are 'the things which, though commanded by the sovereign, he [the subject] may nevertheless without injustice refuse to do so.' And to determine these, 'we are to consider

insight, like the methodological insights elaborated in *De cive*, may be, and likely are untrustworthy guides for understanding the layers of Hobbes's political theory.

b. Empirical Hobbes

The real truth is this: Hobbes practiced political theory in a way that was neither as neat, systematic, or methodologically unified as later impressions of his work suggest. Instead, Hobbes's political texts are a tangle of old and new material. As Hobbes adapted *The Elements of Law* into different texts, he tacked on and slotted in material that addressed emergent empirical insights and concerns.

It is not a single method or scientific intent that unifies Hobbes's political theory. What "unifies" or connects Hobbes's works of political theory is an orientation – a way of being in and responding to the world. From the beginning, he aspired to bring the world into his work, and relied on a changing set of tools to do this. As Hobbes's world changed, so did the political theory he was writing. Hobbes was in the habit of using political texts to treat, capture, and explain emergent aspects of his world. Similarly, changes in his world, life, and empirical project *also* created obstacles that necessitated changes to his texts. This "drift"[674] resulted in complicated expositions, texts

what rights we pass away, when we make the commonwealth,'" "Hobbes on Demonstration and Construction," 519. Tellingly, the point vis-à-vis makers knowledge, although staked out in *Six Lessons* and subsequently in *De homine*, makes no appearance in *De corpore*.

[674] Alison McQueen offers an alternative, if plausibly complementary account of this drift (or some elements of it) in an extraordinarily valuable article on Hobbes's use of convergent argumentation, "Hobbes's Strategy of Convergence," *Hobbes Studies* 33, no. 2 (2020): 135-152. The subject also receives attention in McQueen's "'A Rhapsody of Heresies,'" 189-190.

that address a range of subjects, using a range of means, with each text supplying a snapshot of who and where Hobbes was, what he thought or on which features of his world he was focused at that particular moment.

I offer that the fissures and breaks between or plausibly within Hobbes's works are a byproduct of this drift. In the same way that methodological unity fails to obtain across his works of political theory (or, potentially, within single works of political theory), Hobbes's other philosophical works (especially *De corpore*, *De homine*, and *De cive*) fail to add up to a single whole for the simple, proven, reason that he frequently changed his mind, often in response to changes in his world and in his own life. However, this is no shortcoming. Nor does this mean that Hobbes's political theory and broader philosophy fails. Instead, it is this "drift," and the empirical character of Hobbes's texts, that make them interesting and deserving of continued rumination.

REFERENCES CITED

Abizadeh, Arash. "The Absence of Reference in Hobbes' Philosophy of Language." *Philosophers' Imprint* 15, no. 22 (2015): 1-17.

Adams, Marcus. "Hobbes, Definitions, and Simplest Conceptions." *Hobbes Studies* 27 (2014): 35-60.

Adams, Marcus. "Hobbes on Natural Philosophy as 'True Physics' and Mixed Mathematics." *Studies in History and Philosophy of Science* 56 (2016): 43-51.

Anonymous. "A Short Tract on First Principles." In *The Elements of Law, Natural & Politic*. Edited by Ferdinand Tönnies, 152-167. Cambridge: Cambridge University Press, 1928.

Arnold, Richard. *Logic of the Fall: Right Reason and [Im]pure Reason in Milton's* Paradise Lost. New York: Peter Lang, 2006.

Aubrey, John. *"Brief Lives," Chiefly of Contemporaries, Set Down by John Aubrey, Between the Years 1669 & 1696*. Volume I. Edited by Andrew Clark. Oxford: Clarendon Press, 1898.

Bacon, Francis. *Sylva Sylvarum OR A NATURAL HISTORY, IN TEN CENTURIES*. London: J.R., 1670.

Ball, Terence. "Hobbes' Linguistic Turn." *Polity* 17, no. 4 (1985): 739-760.

Bardin, Andrea. "Materialism and Right Reason in Hobbes's Political Treatises: A Troubled Foundation for Civil Science." *History of Political Thought* 30, no. 1 (2019): 85-110.

Baumgold, Deborah. "Editor's Introduction." In *Three-Text Edition of Thomas Hobbes's Political Theory:* The Elements of Law, De Cive, *and* Leviathan. Edited by Deborah Baumgold, ix - xxi. Cambridge: Cambridge University Press, 2017.

Baumgold, Deborah. "Hobbes and Grotius: *The Elements of Law* and *De Jure Belli ac Pacis*." Unpublished manuscript, 2020, typescript.

Baumgold, Deborah. "The Composition of Hobbes's 'Elements of Law'." *History of Political Thought* 25, no. 1 (2004): 16-43.

Baumgold, Deborah. "The Difficulties of Hobbes Interpretation." *Political Theory* 36, no. 6 (2008): 827-855.

Baumgold, Deborah. *Three-Text Edition of Thomas Hobbes's Political Theory*: The Elements of Law, De Cive *and* Leviathan. Edited by Deborah Baumgold. Cambridge: Cambridge University Press, 2017.

Baumgold, Deborah. "UnParadoxical Hobbes: In Reply to Springborg." *Political Theory* 37, no. 5 (2009): 689-693.

Baumgold, Deborah, and Ryan Harding. "Excavating *On the Citizen*." In *Hobbes's* On the Citizen*: A Critical* Guide, 12-30. Edited by Robin Douglass and Johan Olsthoorn. Cambridge: Cambridge University Press, 2020.

Bejan, Teresa. "Teaching the *Leviathan*: Thomas Hobbes on Education." *Oxford Review of Education* 36, no. 5 (2010): 607-626.

Biener, Zvi. "Hobbes on the Order of Sciences: A Partial Defense of the Mathematicization Thesis." *The Southern Journal of Philosophy* 54, no. 3 (2016): 312-332.

Boonin-Vail, David. *Thomas Hobbes and the Science of Moral Virtue*. Cambridge: Cambridge University Press, 1994.

Borot, Luc. "History in Hobbes's Thought." In *The Cambridge Companion to Hobbes*. Edited by Tom Sorell, 305-328. Cambridge: Cambridge University Press, 1996.

Brandt, Frithiof. *Thomas Hobbes' Mechanical Conception of Nature*. Copenhagen: Levin & Munksgaard, 1927.

Buccolini, Claudio. "Mersenne: Questioning Descartes." In *The Oxford Handbook of Descartes and Cartesianism*. Edited by Steven Nadler, Tad Schmaltz, and Delphine Antoine-Mahut, 271-286. Oxford: Oxford University Press, 2019.

Bunce, Robin. "Hobbes' Forgotten Natural Histories." *Hobbes Studies* 19 (2006): 77-101.

Bunce, Robin. *Thomas Hobbes*. New York: Continuum, 2009.

Bunce, Robin. "Thomas Hobbes's Relationship with Francis Bacon - an Introduction." *Hobbes Studies* 16 (2003): 41-83.

Carter, Alan. "The Method in Hobbes's Madness." *Hobbes Studies* 12 (1999): 72-89.

Cozzoli, Daniele. "Beyond Mixed Mathematics: How a Translation Changed the Story of Descartes's Philosophy of Mathematics." In *Beyond Borders: Fresh Perspectives in History of Science*. Edited by Josep Simon and Néstor Herran, with Tayra Lanuza-Navarro, Pedro Ruiz-Castell and Ximo Guillem-Llobat, 35-60. Newcastle: Cambridge Scholars Publishing, 2008.

Chadwick, Alexandra. "The Nature of Man and the Nature of Politics." Paper Presented at the European Hobbes Society Mini-Workshop on the Philosophy of Thomas Hobbes, University of Amsterdam, Amsterdam, The Netherlands, 2019.

Child, Arthur. "Making and Knowing in Hobbes, Vico, and Dewey." In *University of California Publications in Philosophy* 16, no. 3: 271-310. Berkeley: University of California Press, 1953.

Chillingworth, William. *The Religion of Protestants a Safe VVway to Salvation.* 1638.

Cottingham, John, Robert Stoothoff, and Dugald Murdoch. *The Philosophical Writings of Descartes.* Volume II. Cambridge: Cambridge University Press, 1984.

Craig, Patrick. "The A Priori Nature of the Political: Democracy and Scientific Method in Thomas Hobbes." Ph.D. Dissertation, Duquesne University, 2014.

Cromartie, Alan. "*The Elements* and Hobbesian Moral Thinking." *History of Political Thought* 32, no. 1 (2011): 21-47.

Danford, John W. "The Problem of Language in Hobbes's Political Science." *The Journal of Politics* 42, no. 1 (1980): 102-134.

Dear, Peter. *Discipline and Experience: The Mathematical Way in the Scientific Revolution.* Chicago: Chicago University Press, 1995.

Dear, Peter. *Mersenne and the Learning of the Schools*. Ithaca: Cornell University Press, 1988.

Dear, Peter. "The Meanings of Experience." In *The Cambridge History of Science: Early Modern Science*. Volume III. Edited by Katharine Park and Lorraine Datson, 106-131. Cambridge: Cambridge University Press, 2006.

Deigh, John. "Reason and Ethics in Hobbes's *Leviathan*." *Journal of the History of Philosophy* 34, no. 1 (1996): 33-60.

Descartes, René. "Author's Replies to the Second Set of Objections." In *The Philosophical Writings of Descartes*. Volume II. Translated by John Cottingham, Robert Stoothoff, and Dugald Murdoch, 93-120. Cambridge: Cambridge University Press, 1984.

Descartes, René. "Author's Replies to the Third Set of Objections." In *The Philosophical Writings of Descartes*. Volume II. Translated by John Cottingham, Robert Stoothoff, and Dugald Murdoch, 121-137. Cambridge: Cambridge University Press, 1984.

Descartes, René. "Discourse on the Method." In *The Philosophical Writings of Descartes*. Volume I. Translated by John Cottingham, Robert Stoothoff, and Dugald Murdoch, 11-151. Cambridge: Cambridge University Press, 1985.

Descartes, René. "Letter 29: René Descartes to Marin Mersenne for Hobbes, from Leiden [11/] 21 January 1641." In *The Correspondence of Thomas Hobbes*. Volume I. Edited and translated by Noel Malcolm, 54-60. Oxford: Clarendon Press, 1997.

Descartes, René. "Letter 33: René Descartes to Marin Mersenne for Hobbes, from Leiden [22 February/] 4 March 1641." In *The Correspondence of Thomas Hobbes*. Volume I. Edited and translated by Noel Malcolm, 94-100. Oxford: Clarendon Press, 1997.

Descartes, René. "Letter 36: René Descartes to Marin Mersenne for Hobbes, from Endegeest [11/] 21 April or [18/] 28 April 1641." In *The Correspondence of Thomas Hobbes*. Volume I. Edited and translated by Noel Malcolm, 116-119. Oxford: Clarendon Press, 1997.

Dietz, Mary. "Hobbes's Subject as Citizen." In *Thomas Hobbes and Political Theory*. Edited by Mary Dietz, 91-119. Lawrence: University of Kansas Press, 1990.

Digby, Sir Kenelm. "Letter 25: Sir Kenelm Digby to Hobbes, from Paris 17[/27] January 1637." In *The Correspondence of Thomas Hobbes*. Volume I. Edited by Noel Malcolm, 42-43. Oxford: Clarendon Press, 1997.

Digby, Sir Kenelm. "Letter 26: Sir Kenelm Digby to Hobbes, from London 11[/21] September 1637." In *The Correspondence of Thomas Hobbes*. Volume I. Edited by Noel Malcolm, 50-51. Oxford: Clarendon Press, 1997.

Duncan, Stewart. "Hobbes: Metaphysics and Method." Ph.D. Dissertation, Rutgers, 2003.

Duncan, Stewart. "Hobbes, Signification, and Insignificant Names." *Hobbes Studies* 24 (2011): 158-178.

Edwards, Jess. "Thomas Hobbes, Charles Cotten and the 'Wonders' of the Derbyshire Peak." *Studies in Travel Writing* 16, no. 1 (2012): 1-15.

Elmer, Peter. "'Saints or sorcerers:' Quakerism, Demonology and the Decline of Witchcraft in Seventeenth-Century England." In *Witchcraft in Early Modern England: Studies in Culture and Belief*. Edited by Jonathan Barry, Marianne Hester, and Gareth Roberts, 145-180. Cambridge: Cambridge University Press, 1996.

Everest, James. "Practical Optics and Polemical Purposes in Seventeenth-Century England." Ph.D. Dissertation, University College London, 2017.

Evrigenis, Ioannis. *Images of Anarchy: The Rhetoric and Science in Hobbes's State of Nature*. Cambridge: Cambridge University Press, 2014.

Forset, Edward. *A Comparative Discourse of the Bodies of Natural and Politique*. London: John Bill, 1606.

Frankena, William. "The Ethics of Right Reason." *The Monist* 66, no. 1 (1983): 2-25.

Galileo, Galilei. *Galileo on the World Systems: A New Abridged Translation and Guide*. Edited and translated by Maurice A. Finnocchiaro. Berkeley: University of California Press, 1997.

Gauthier, David. "Hobbes on Demonstration and Construction." *Journal of the History of Philosophy* 35, no. 4 (1997): 509-521.

Gauthier, David. "Hobbes: The Laws of Nature." *Pacific Philosophical Quarterly* 82 (2001): 258-284.

Gilbert, Neal. *Renaissance Concepts of Method.* New York: Columbia University Press, 1960.

Goldsmith, M.M. *Hobbes's Science of Politics.* New York: Columbia University Press, 1966.

Gooding, Nicholas, and Kinch Hoekstra. "Hobbes and Aristotle on the Foundation of Political Science." In *Hobbes's* On the Citizen*: A Critical Guide*. Edited by Robin Douglass and Johan Olsthoorn, 31-50. Cambridge: Cambridge University Press, 2020.

Gordley, James. "Suárez and Natural Law." In *The Philosophy of Francisco Suárez*. Edited by Benjamin Hill and Henrik Lagerlund, 209-229. Oxford: Oxford University Press, 2012.

Garber, Daniel. "On the Frontlines of the Scientific Revolution: Hobbes Mersenne Learned to Love Galileo." *Perspectives on Science* 12, no. 2 (2004): 135-163.

Grant, Hardy. "Geometry and Politics: Mathematics in the Thoughts of Thomas Hobbes." *Mathematics Magazine* 63, no. 3 (1990): 147-157.

Greene, Robert. "Thomas Hobbes and the Term 'Right Reason:' Participation to Calculation." *History of European Ideas* 41, no. 8 (2015): 997-1028.

Grotius, Hugo. *De Jure Belli ac Pacis Libri Tres.* Volume II. Translated by Francis W. Kelsey. Oxford: Clarendon Press, 1925.

Grotius, Hugo. *Hugo Grotius: On the Law of War and Peace (Student Edition).* Edited by Stephen C. Neff. Cambridge: Cambridge University Press, 2012.

Guidice, Franco. "Optics in Hobbes's Natural Philosophy." *Hobbes Studies* 29, no. 1 (2016): 86-102.

Guidice, Franco. "Those Most Curious of Science: Hobbes's Optics." In *The Oxford Handbook of Hobbes*. Edited by A.P. Martinich and Kinch Hoekstra, 149-168. Oxford: Oxford University Press, 2016.

Hampton, Jean. *Hobbes and the Social Contract Tradition*. Cambridge: Cambridge University Press, 1986.

Hattab, Helen. "Hobbes's and Zabarell's Methods: A Missing Link." *Journal of the History of Philosophy* 52, no. 3 (2014): 461-485.

Hansen, Lene. *Security as Practice: Discourse Analysis and the Bosnian War*. London: Routledge, 2006.

Hanson, Donald W. "The Meaning of 'Demonstration' in Hobbes's Science." *History of Political Thought* 11, no. 4 (1990): 578-626.

Hobbes, Thomas. "A Minute or First Draught of the Optiques." In "Thomas Hobbes's *A Minute or First Draught of the Optiques: A Ciritcal Edition*." Edited by Elaine Stroud, 76-622. Ph.D. Dissertation, The University of Wisconsin-Madison, 1983.

Hobbes, Thomas. *De Mirabilibus Pecci: BEING THE VVONDERS OF THE PEAK IN DARBY-SHIRE, Commonly Called The Devil's Arse of Peak*. London: William Crook, 1678.

Hobbes, Thomas. *Eight Bookes of the Peloponnesian Warre Written by Thucydides the Sonne of Olorus. Interpreted with Faith and Diligence Immediately Out of the Greeke by Thomas Hobbes Secretary to Ye Late Earle of Deuonshire*. Translated by Thomas Hobbes. London: Eliot Court Press, 1629.

Hobbes, Thomas. *Elementa Philosophica de Cive*. Amsterdam: Elsevier, 1647.

Hobbes, Thomas. *Elementorum Philosophiae Sectio Tertia De Cive*. Paris, 1642.

Hobbes, Thomas. "Letter 10: Hobbes to William Cavendish, Earl of Newcastle, from London 26 January [/5 February] 1634]." In *The Correspondence of Thomas Hobbes*. Volume I. Edited by Noel Malcolm, 19-20. Oxford: Clarendon Press, 1997.

Hobbes, Thomas. "Letter 16: Hobbes to William Cavendish, Earl of Newcastle, from Paris 15/25 August 1635." In *The Correspondence of Thomas Hobbes*. Volume I. Edited by Noel Malcolm, 28-29. Oxford: Clarendon Press, 1997.

Hobbes, Thomas. "Letter 19: Hobbes to William Cavendish, Earl of Newcastle, from Paris 29 July/8 August 1636." In *The Correspondence of Thomas Hobbes*. Volume I. Edited by Noel Malcolm, 33-34. Oxford: Clarendon Press, 1997.

Hobbes, Thomas. "Letter 28: Hobbes to the Hon. Charles Cavendish, from Chatsworth 22 August [/1 September] 1638." In *The Correspondence of Thomas Hobbes*. Volume I. Edited by Noel Malcolm, 52-53. Oxford: Clarendon Press, 1997.

Hobbes, Thomas. "Letter 34: Hobbes to Marin Mersenne, from Paris [20/] 30 March 1641." In *The Correspondence of Thomas Hobbes*. Volume I. Edited and translated by Noel Malcolm, 102-113. Oxford: Clarendon Press, 1997.

Hobbes, Thomas. "Letter 57: Hobbes to Marin Mersenne, from Saint-Germain [7/] 17 February 1648." In *The Correspondence of Thomas Hobbes*. Volume I. Edited and translated by Noel Malcolm, 165-168. Oxford: Clarendon Press, 1997.

Hobbes, Thomas. "Letter 61: Hobbes to Samuel Sorbiére, from Paris [4/] 14 June 1649." In *The Correspondence of Thomas Hobbes*. Volume I. Edited and translated by Noel Malcolm, 176-177. Oxford: Clarendon Press, 1997.

Hobbes, Thomas. *Leviathan*. Volume II-III. Edited by Noel Malcolm. Oxford: Clarendon Press, 2012.

Hobbes, Thomas. "Logica. Cap. 1. Ex T.H." In *Critique De* De Mundo *De Thomas White*. Edited by Jean Jacquot and Harold Whitmore Jones, 463-513. Paris: Vrin, 1972.

Hobbes, Thomas, "Of *knowledge* and the *power cognitive* in general." In *Critique Du* De Mundo *De Thomas White*. Edited by Jean Jacquot and Harold Whitmore Jones, 449-460. Paris: Vrin, 1972.

Hobbes, Thomas. *On Man*. In *Man and Citizen (*De Homine *and* De Cive*)*. Translated by Charles T. Wood, T.S.K. Scott-Craig, and Bernard Gert and edited by Bernard Gert, 33-85. Indianapolis: Hackett Publishing Company, 1998.

Hobbes, Thomas. *On the Citizen*. Edited and translated by Richard Tuck and Michael Silverthorne. Cambridge: Cambridge University Press, 1998.

Hobbes, Thomas. "Of the Life and History of Thucydides." In *The English Works of Thomas Hobbes of Malmesbury*. Volume VIII. Edited by Sir William Molesworth, xiii-xxxxii. London: Richards, 1843.

Hobbes, Thomas. "Præfatio Vtilis in Ballisticam ad Lectorem." In *Cognitata Physico-Mathematica.* Composed by Marin Mersenne. Paris, 1644.

Hobbes, Thomas. "Six Lessons to the Professors of Mathematics, One of Geometry, the Other of Astronomy, in the Chairs Set up by the Noble and Learned Sir Henry Savile, in the University of Oxford." In *The English Works of Thomas Hobbes of Malmesbury*. Volume VII. Edited by Sir William Molesworth, 181-356. London: Longman, Brown, Green, and Longmans, 1845.

Hobbes, Thomas. "The Autobiography of Thomas Hobbes." Translated by Benjamin Farrington. *The Rationalist Annual* (1958): 22-31.

Hobbes, Thomas. *The Correspondence of Thomas Hobbes*. Volume I. Edited by Noel Malcolm. Oxford: Clarendon Press, 1997.

Hobbes, Thomas. *The Elements of Law Natural and Politic*. Edited by Ferdinand Tönnies. Cambridge: Cambridge University Press, 1928.

Hobbes, Thomas. *The Elements of Philosophy, The First Section Concerning Body.* London: R. & W. Leybourn, for Andrew Crocke, 1656.

Hobbes, Thomas. *The English Works of Thomas Hobbes*. Volume VII. Edited by Sir William Molesworth. London: Longman, Brown, Green, and Longmans, 1845.

Hobbes, Thomas. "The Prose Life." In *The Elements of Law Natural and Politic, Part I Human Nature, Part II De Corpore Politico, with Three Lives*, edited by J.C.A. Gaskin, 245-253. Oxford: Oxford University Press, 1999.

Hobbes, Thomas. *Thomæ Hobbes Malmesburiensis Opera Philosophica*. Volume I. Edited by William Molesworth. London: John Bohn, 1839.

Hobbes, Thomas. *Thomas Hobbes: Thomas White's* De Mundo *Examined*. Translated by Harold Whitmore Jones. Crosby: Bradford University Press, 1976.

Hobbes, Thomas. "Thomas Hobbes: Tractatus Opticus (Harley Mss. 6796, ff. 193-266)." Edited by Franco Alessio. *Rivista Critica di Storia della Filosofia* 18, no. 2 (1963): 147-228.

Hoekstra, Kinch. "II* - The end of Philosophy (The Case of Hobbes)." *Proceedings of the Aristotelian Society* 106, no. 1 (2007): 25-62.

Höffe, Otfried. *Thomas Hobbes*. Translated by Nicholas Walker. Albany: SUNY Press, 2015.

Hoopes, Robert. *Right Reason in the English Renaissance.* Cambridge: Harvard University Press, 1962.

Hudson, Stephen. "Right Reason and Mortal Gods." *The Monist* 66, no. 1 (1983): 134-145.

Jacoby, E.G. "Thomas Hobbes in Europe." *Journal of European Studies* 4 (1974): 57-65.

Jacquot, Jean and Harold Whitmore Jones. "Introduction." In *Critique Du* De Mundo *De Thomas White*. Edited by Jean Jacquot and Harold Whitmore Jones, 1-102. Paris: Vrin, 1972.

James, Susan. "Certain and Less Certain Knowledge." *Proceedings of the Aristotelian Society* 87 (1986-1987): 227-242

Jardine, Lisa. *Francis Bacon: Discovery and the Art of Discourse.* Cambridge: Cambridge University Press, 1974.

Jardine, N. "Galileo's Road to Truth and the Demonstrative Regress." *Studies in the History and Philosophy of Science* 7, no. 4 (1976): 277-218.

Jesseph, Douglas. "Galileo, Hobbes, and the Book of Nature." *Perspectives on Science* 12, no. 2 (2004): 191-211.

Jesseph, Douglas. "Hobbes and the Syllogism." In *The Aftermath of the Syllogism: Aristotelian Logical Argument from Avicenna to Hegel*. Edited by Marco Sgarbi and Matteo Cosci, 67-82. London: Bloomsbury, 2018.

Jesseph, Douglas. "*Scientia* in Hobbes." In Scientia *in Early Modern Philosophy: Seventeenth-Century Thinkers of Demonstrative Knowledge from First Principles*. Edited by Tom Sorell, G.A.J. Rogers, and Jill Kraye, 117-128. New York: Springer, 2010.

Johnston, David. *The Rhetoric of* Leviathan: *Thomas Hobbes and the Politics of Cultural Transformation.* Princeton: Princeton University Press, 1992.

Jorgensen, Marianna, and Louise J. Phillips. *Discourse Analysis as Theory and Method*. London: Sage Publication, 2002.

Kahn, Victoria. "Hobbes and the Science of Metaphor." In *Scientific Statesmanship, Governance, and the History of Political Philosophy*. Edited by Kyriakos N. Demetrious and Antis Loizides, 85-100. New York: Routledge, 2015.

Kavka, Gregory. *Hobbesian Moral and Political Theory*. Princeton: Princeton University Press, 1986.

Kavka, Gregory. "Right Reason and Natural Law in Hobbes's Ethics." *The Monist* 66, no. 1 (1983): 120-133.

Kuhn, Thomas. "What are Scientific Revolutions?" In *The Road Since Structure: Philosophical Essays, 1970-1993, with an Autobiographical Interview*. Edited by James Conant and John Haugeland, 13-32. Chicago: The University of Chicago Press, 2000.

Lawn, Brian. *The Rise & Decline of the Scholastic 'Quæstio Disputata:' With Special Emphasis on its Use in the Teaching of Medicine & Science*. Leiden: Brill, 1993.

LeBuffe, Michael. "Motivation, Reason, and the Good in *On the Citizen*." In *Hobbes's* On the Citizen*: A Critical Guide*. Edited by Robin Douglass and Johan Olsthoorn, 89-107. Cambridge: Cambridge University Press, 2020.

Leijenhorst, Cees. "Insignificant Speech: Thomas Hobbes and Late Aristotelianism on Words, Concepts, and Things." In Res et Verba *in the Renaissance*. Edited by I. Maclean and E. Kessler, 337-368. Wiebaden: Harrasowitz, 2002.

Leijenhorst, Cees. "Sense and Nonsense about Sense: Hobbes and the Aristotelians on Sense Perception and Imagination." In *The Cambridge Companion to Hobbes's* Leviathan, edited by Patricia Springborg, 82-108. Cambridge: Cambridge University Press, 2007.

Leijenhorst, Cees. *The Mechanisation of Aristotelianism: The Late Aristotelian Setting of Thomas Hobbes' Natural Philosophy*. Leiden: Brill, 2002.

Lloyd, S.A. *Ideals as Interests in Hobbes's* Leviathan: *The Power of Mind Over Matter*. Cambridge: Cambridge University Press, 1992.

Lloyd, S.A. *Morality in the Philosophy of Thomas Hobbes: Cases in the Law of Nature*. Cambridge: Cambridge University Press, 2009.

Macpherson, C.B. "Introduction." In *Leviathan*. Edited by C.B. Macpherson, 9-63. London: Penguin, 1658.

Malcolm, Noel. *Aspects of Hobbes*. Oxford: Oxford University Press, 2002.

Malcolm, Noel. "General Introduction." In *Leviathan.* Volume 1. Edited by Noel Malcolm, 1-195. Oxford: Clarendon Press, 2012.

Malcolm, Noel. "General Introduction." In *The Correspondence of Thomas Hobbes*. Volume I. Edited by Noel Malcolm, xxi-xli. Oxford: Clarendon Press, 1997.

Malcolm, Noel. *Reason of State, Propaganda, and the Thirty Years' War: An Unknown Translation by Thomas Hobbes*. Oxford: Clarendon Press, 2007.

Malcolm, Noel. "Textual Introduction." In *Leviathan*. Volume I. Edited by Noel Malcolm, 197-331. Oxford: Clarendon Press, 2012.

Malcolm, Noel. "Textual Introduction." In *The Correspondence of Thomas Hobbes*. Volume I. Edited by Noel Malcolm, xlii-lxxii. Oxford: Clarendon Press, 1997.

Malcolm, Noel. *The Correspondence of Thomas Hobbes*. Volume I. Edited by Noel Malcolm. Oxford: Clarendon Press, 1997.

Malcolm, Noel. "The Printing and Editing of Hobbes's 'De Corpore:' A Review of Karl Schuhmann's Edition." *Rivista di Storia della Filosofia* 59, no. 1 (2004): 239-257.

Malet, Antoni. "The Power of Images: Mathematics and Metaphysics in Hobbes's Optics." *Studies and the History and Philosophy of Science* 32, no. 2 (2001): 303-333.

Mancosu, Paolo. *Philosophy of Mathematics and Mathematical Practice in the Seventeenth Century*. Oxford: Oxford University Press, 1996.

Martinich, A.P. *Hobbes*. Routledge: New York, 2005.

Martinich, A.P. *Hobbes: A Biography*. Cambridge: Cambridge University Press, 1999.

Martinich, A.P. "Hobbes's Political-Philosophical Project: Science and Subversion." In *Interpreting Hobbes's Political Philosophy*. Edited by S.A. Lloyd, 29-49. Cambridge: Cambridge University Press, 2019.

McQueen, Alison. "'A Rhapsody of Heresies:' The Scriptural Politics of *On the Citizen*." In *Hobbes's* On the Citizen: *A Critical Guide*. Edited by Robin Douglass and Johan Oslthoorn, 180-198. Cambridge: Cambridge University Press, 2020.

McQueen, Alison. "Hobbes's Strategy of Convergence." *Hobbes Studies* 33, no. 2: 135-152.

Médina, José. "Hobbes's Geometrical Optics." *Hobbes Studies* 29 (2016): 39-65.

Melanchthon, Philip. *Philip Melanchthon: Orations on Philosophy and Education*. Edited by Sachiko Kusukawa and translated by Christine F. Salazar. Cambridge: Cambridge University Press, 1999.

Mersenne, Marin. *Harmonie Universelle: The Books on Instruments*. Translated by Roger E. Chapman. The Hague: Martinus Nijhoff, 1957.

Mersenne, Marin. "Second Set of Objection." In *The Philosophical Writings of Descartes*. Volume II. Translated by John Cottingham, Robert Stoothoff, and Dugald Murdoch, 87-92. Cambridge: Cambridge University Press, 1984.

Miller, Ted. *Mortal Gods: Science, Politics, and the Humanist Ambitions of Thomas Hobbes.* University Park: Pennsylvania State University Press, 2011.

Missner, Marshall. "Hobbes's Method in *Leviathan*." *Journal of the History of Ideas* 38, no. 4 (1977): 607-621.

Newey, Glen. *Routledge Philosophy GuideBook to Hobbes and* Leviathan. London: Routledge, 2008.

Paginini, Gianni. "Hobbes, the 'Natural Seeds' of Religion and French Libertine Discourse." *Hobbes Studies* 32, no. 2 (2019): 125-158.

Palmieri, Paolo. "On *Scientia* and *Regressus*." In *Routledge Companion to Sixteenth-Century Philosophy*. Edited by Henrik Lagerlund and Benjamin Hill, 319-349. New York: Routledge, 2017.

Park, Katherine and Lorraine Datson. "Introduction: The Age of the New." In *The Cambridge History of Science: Volume 3: Early Modern Science*. Edited by Katharine Park and Lorraine Datson, 1-17. Cambridge: Cambridge University Press, 2006.

Parkin, Jon. "Thomas Hobbes and the Problem of Self-Censorship." Paper presented at the Morrell Conference on the subject of self-censorship, York, UK, 2007.

Peters, Richard. *Hobbes*. London: Penguin, 1656.

Poovey, Mary. *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society*. Chicago: University of Chicago Press, 1998.

Popkin, Richard H. *The History of Scepticism: From Savonarola to Bayle*. Oxford: Oxford University Press, 2003.

Prins, Jan. "Hobbes and the School of Padua: Two Incompatible Approaches of Science." *Archiv für Geschichte der Philosophie* (1990): 26-46.

Prins, Jan. "The Influence of Agricola and Melanchthon on Hobbes' Early Philosophy of Science." In *Rodolphus Agricola Phrisius 1444-1485: Proceedings of the International Conference at the University of Groningen 28-30 October 1985*. Edited by F. Akkerman and A.J. Vanderjagt, 293-301. Leiden: Brill, 1988.

Raylor, Timothy. "Hobbes, Payne, and 'A Short Tract on First Principles.'" *The Historical Journal* 44, no. 1 (2001): 29-58.

Raylor, Timothy. "Newcastle's Ghosts: Robert Payne, Ben Jonson, and the 'Cavendish Circle.'" In *Literary Circles and Cultural Communities in Renaissance England*. Edited by Claude J. Summers and Ted-Larry Pebworth, 92-114. Columbia: University of Missouri Press, 2000.

Raylor, Timothy. *Philosophy, Rhetoric, and Thomas Hobbes*. Oxford: Oxford University Press, 2018.

Raylor, Timothy. "The Date and Script of Hobbes's Latin Optical Manuscript." In *English Manuscript Studies*. Volume 12. Edited by Peter Beal and A.S.G. Edwards, 201-209. London: The British Library, 2005.

Reik, Miriam M. *The Golden Lands of Thomas Hobbes*. Detroit: Wayne State University Press, 1977.

Sacksteder, William. "Hobbes and Talaska on the Order of the Sciences." *Journal of the History of Philosophy* 26, no. 4 (1988): 643-647.

Sacksteder, William. "Hobbes's Science of Human Nature." *Hobbes Studies* 3 (1990): 35-53.

Sarasohn, Lisa. "Was *Leviathan* a Patronage Artifact?" *History of Political Thought* 21, no. 4 (2000): 606-631.

Shapiro, Alan. "Kinematic Optics: A Study of the Wave Theory of Light in the Seventeenth Century." *Archive for the History of Exact Sciences* 11, no. 2/3 (1973): 134-266.

Schmitt, Charles. *John Case and Aristotelianism in Renaissance England*. Kingston: McGill-Queen's University Press, 1982.

Schoneveld, C.W. "'Insinuations of the Will': Hobbes's Style and Intention in *Leviathan* Compared to Earlier Political Works." In *Hobbes's "Science of Natural Justice."* Edited by C. Walton and P.J. Johnson, 111-119. Dordrecht: Martinus Nijhoff Publishers, 1987.

Schuhmann, Karl. "Hobbes and Renaissance Philosophy." In *Hobbes Oggi*. Edited by A. Napoli and G. Canziani, 331-349. Milano: Franco Angeli Editore, 1990.

Schuhmann, Karl. "Hobbes's Concept of History." In *Hobbes and History*, edited by G.A.J. Rogers and Tom Sorell, 3-23. London: Routledge, 2000.

Schuhmann, Karl. "*Leviathan* and *De cive*." In Leviathan *After 350 Years*. Edited by Tom Sorell and Luc Foisneau,13-32. Oxford: Clarendon Press, 2004.
Schuhmann, Karl. "Le Short Tract, première œuvre philosophique de Hobbes." *Hobbes Studies* 8 (1995): 3-36.

Schuhmann, Karl. "Thomas Hobbes" The Unity of Scientific and Moral Wisdom by Gary B. Herbert." *The Journal of the British Society of Phenomenology* 26 (1995): 108-112.

Serjeantson, R.W. "Proof and Persuasion." In *The Cambridge History of Science: Volume 3: Early Modern Science*. Edited by Katharine Park and Lorraine Datson, 132-175. Cambridge: Cambridge University Press, 2006.

Skinner, Quentin. "Hobbes and the Classical Theory of Laughter." In *Visions of Politics: Hobbes and Civil Science*. Volume III, 142-176. Cambridge: Cambridge University Press, 2004.

Skinner, Quentin. "Hobbes and the *studia humanitatis*." In *Visions of Politics: Hobbes and Civil Science*. Volume III, 38-65. Cambridge: Cambridge University Press, 2004.

Skinner, Quentin. "Hobbes's Life in Philosophy." In *Visions of Politics: Hobbes and Civil Science*. Volume III, 1-37. Cambridge: Cambridge University Press, 2004.

Sommerville, Johann. "*On the Citizen* and Church-State Relations." In *Hobbes's* On the Citizen: *A Critical Guide*. Edited by Robin Douglass and Johan Olsthoorn, 199-216. Cambridge: Cambridge University Press, 2020.

Sommerville, Johann. *Thomas Hobbes: Political Ideas in Historical Context*. New York: St. Martin's Press, 1992.

Sorbière, Samuel. "Letter 40: Hobbes to Samuel Sorbière, from Paris [6/] 16 May 1646." In *The Correspondence of Thomas Hobbes*. Volume I. Edited and translated by Noel Malcolm, 125-127. Oxford: Clarendon Press, 1997.

Sorbière, Samuel. "Sorbière to Martel. Sluys, Flanders. 1 February 1643." In De Cive: *The Latin Version*. Edited by Howard Warrender, 300. Oxford: Clarendon Press, 1983.

Sorell, Tom. "Appeals to Experience in Hobbes' Science of Politics." In *Experiment, Speculation and Religion in Early Modern Philosophy*. Edited by Alberto Vanzo and Peter R. Anstey, 81-100. New York: Routledge, 2019.

Sorell, Tom. "Descartes, Hobbes and the Body of Natural Science." *The Monist* 71, no. 4 (1988): 515-525.

Sorell, Tom. *Hobbes.* London: Routledge & Kegan Paul, 1986.

Sorell, Tom. "Hobbes's Objections and Hobbes's System." In *Descartes and His Contemporaries: Meditations, Objects, and Replies*. Edited by Roger Ariew and Marjorie Greene, 83-96. Chicago: University of Chicago Press, 1995.

Sorell, Tom. "Hobbes's Scheme of the Sciences." In *The Cambridge Companion to Hobbes*. Edited by Tom Sorell, 13-44. Cambridge: Cambridge University Press, 1996.

Sorell, Tom. "Hobbes Overcontextualised?" *The Seventeenth Century* vol. 16 no. 1 (2001): 123-146.

Spragens, Thomas. *The Politics of Motion: The World of Thomas Hobbes*. Lexington: The University Press of Kentucky, 1973.

Springborg, Patricia. "A Very British Hobbes, or a More European Hobbes?" *British Journal for the History of Philosophy* 22, no. 2 (2014): 368-386.

Springborg, Patricia. "Quentin Skinner and Hobbes's Artificial Person of the State Redux." *Global Intellectual History* (2019): 1-47.

Straumann, Benjamin. *Roman Law in the State of Nature: The Classical Foundations of Hugo Grotius' Natural Law.* Cambridge: Cambridge University Press, 2015.

Stroud, Elaine. "Background." In "Thomas Hobbes's *A Minute or First Draught of the Optiques*: A Critical Edition," 2-71. Ph.D. Dissertation, The University of Wisconsin – Madison, 1983.

Talaska, Richard. "Analytic and Synthetic Method According to Hobbes." *Journal of the History of Philosophy* 26, no. 2 (1988): 207-237.Talaska, Richard. "'Aristotelian 'Order' and 'Form' According to Hobbes." *Rivista di Storia della Filosophia* 43, no. 1 (1988): 5-43.

Talaska, Richard. *The Hardwick Library and Hobbes's Early Intellectual Development*. Charlottesville: Philosophy Documentation Center, 2013.

Taylor, A.E. "The Ethical Doctrine of Hobbes." *Philosophy* 13, no. 52 (1938): 406-424.

Taylor, A.E. *Thomas Hobbes.* London: A. Constable & Co., 1908.

Traupman, John. *The New College Latin & English Dictionary*. New York: Amsco School Publications, 1994.

Tuck, Richard. "Hobbes and Descartes." In *Perspectives on Thomas Hobbes*, edited by G.A.J. Rogers and Alan Ryan, 11-41. Oxford: Clarendon Press, 1988.

Tuck, Richard. "The Utopianism of *Leviathan*." In Leviathan *After 350 Years*. Edited by Tom Sorell and Luc Foisneau,13-32 . Oxford: Clarendon Press, 2004.

Valetta, Frederick. *Witchcraft, Magic and Superstition in England, 1640-70*. New York: Ashgate, 2000.

van Leeuwen, Henry G. *The Problem of Certainty in English Thought* 1630-1690. The Hague: Spring, 1963.

Vaughan, Geoffrey. "The Audience of *Leviathan* and the Audience of Hobbes's Political Philosophy." *History of Political Thought* 22, no. 3 (2001): 448-471.

Warrender, Howard. De cive: *English Version*. Oxford: Clarendon Press, 1983.

Warrender, Howard. "Editor's Introduction." In De Cive: *The Latin Version*. Edited by Howard Warrender, 1-67. Oxford: Clarendon Press, 1983.

Watkins, J.W.N. *Hobbes's System of Ideas*. London: Hutchinson University Library, 1965.

Zabarella, Jacopo. *On Methods*. Volume I. Edited and translated by John P. McCaskey. London: Harvard University Press, 2013.

Zagorin, Perez. "Hobbes's Early Philosophical Development." *Journal of the History of Ideas* 54, no. 3 (1993): 505-518.