

Thomas Hobbes (1588-1679)

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Biography

Among the figures who were conscious of developing a new science in the seventeenth century, the Englishman Hobbes stands out as an innovator in ethics, politics and psychology. He was active in a number of other fields, notably geometry, ballistics and optics, and seems to have shown considerable acumen as a theorist of light. His contemporaries, especially in Continental Europe, regarded him as a major intellectual figure. Yet he did not earn a living as a scientist or a writer on politics. In 1608 he entered the service of Henry Cavendish, First Earl of Devonshire, and maintained his connections with the family for more than seventy years, working as tutor, translator, travelling companion, business agent and political counsellor. The royalist sympathies of his employers and their circle determined Hobbes' allegiances in the period preceding and during the English Civil War. Hobbes' first political treatise, *The Elements of Law* (1640), was not intended for publication but was meant as a sort of long briefing paper that royalists in parliament could use to justify actions by the king. Even *Leviathan* (1651), which is often read as if it is concerned with the perennial questions of political philosophy, betrays its origins in the disputes of the pre-Civil War period in England.

For much of his life the aristocrats who employed Hobbes brought him into contact with the intellectual life of Continental Europe. He found not just the ideas but also the spokesmen congenial. Perhaps as early as 1630 he met Marin Mersenne, then at the centre of a Parisian network of scientists, mathematicians and theologians that included Descartes as a corresponding member. It was to this group that Hobbes attached himself in 1640 when political events in England seemed to him to threaten his safety, causing him to flee to France. He stayed for ten years and succeeded in making a name for himself, particularly as a figure who managed to bring geometrical demonstration into the field of ethics and politics. His *De cive*, a treatise that has much in common with the *Elements of Law*, had a very favourable reception in Paris in 1642.

By the time *De cive* appeared, Hobbes had taught himself enough natural philosophy and mathematics to be taken seriously as a savant in his own right. He had also conceived the plan of producing a large-scale exposition of the 'elements' of philosophy as a whole – from first philosophy, geometry and mechanics through to ethics and politics. *De cive* would be the third volume of a trilogy entitled *The Elements of Philosophy*. These books present Hobbes' considered views in metaphysics, physics and psychology against the background of a preferred scheme of science.

Metaphysics, or first philosophy, is primarily a definitional enterprise for Hobbes. It selects the terms whose significations need to be grasped if the principles of the rest of the sciences are to be taught or demonstrated. Foremost among the terms that Hobbes regards as central are 'body' and 'motion'. According to Hobbes, the whole array of natural sciences can be organized according to how each treats of motion. Geometry is the first of these sciences in the 'order of

demonstration' – that is, the science whose truths are the most general and on which the truths of all the other natural sciences somehow depend. Mechanics is next in the preferred order of the sciences. It considers 'what effects one body moved worketh upon another'. Physics is the science of sense and the effects of the parts of bodies on sense. Moral philosophy or 'the science of the motions of the mind' comes next, and is informed by physics. It studies such passions as anger, hope and fear, and in doing so informs civil philosophy. Starting from the human emotional make up, civil philosophy works out what agreements between individuals will form commonwealths, and what behaviour is required within commonwealths to make them last.

The behaviour required of the public in order to maintain a commonwealth is absolute submission to a sovereign power. In practice this means abiding by whatever a sovereign declares as law, even if those laws appear to be exacting. Law-abiding behaviour is required so long as, in return, subjects can reasonably expect effective action from the sovereign to secure their safety and wellbeing. With minor variations, this is the theme of all three of Hobbes' political treatises – the Elements of Law, De cive and Leviathan. Government is created through a transfer of right by the many to the one or the few, in whom an unlimited power is vested. The laws of the sovereign power may seem intrusive and restrictive, but what is the alternative to compliance? Hobbes' answer is famous: a life that is solitary, poor, nasty, brutish and short. This conception of life without government is not based on the assumption that human beings are selfish and aggressive but, rather, on the idea that if each is their own judge of what is best, there is no assurance that one's safety and one's possessions will not be at the mercy of other people – a selfish few, a vainglorious minority or even members of a moderate majority who think they have to take pre-emptive action against a vainglorious or selfish few. It is the general condition of uncertainty, in conditions where people can do anything they like to pursue their wellbeing and secure their safety, that Hobbes calls 'war'.

1. Life

Hobbes was born in Westport, a parish of the town of Malmesbury in Wiltshire, England. His mother came from a yeoman family; his father was a poorly educated vicar who seems to have left his parish in disgrace, deserting his family after having come to blows with another clergyman early in Hobbes' childhood. Hobbes' uncle subsequently supported the family, and it was he who paid for Hobbes' university education. Hobbes was lucky to receive good schooling locally, and he showed an early talent for the classical languages.

In 1602 or 1603, Hobbes began study towards an arts degree at Magdalen Hall, Oxford. From his criticisms of the universities in his published writings, it is sometimes inferred that he disliked his college days, or at least that he disliked the scholasticism of Oxford at that time.

(Scholasticism – the fusion of Christian with ancient Greek thought, especially the thought of Aristotle – dominated the curricula of the schools and universities of Europe in the sixteenth and early seventeenth centuries – see Medieval philosophy.) Certainly he disliked the university curriculum in retrospect, as chapter 46 of Leviathan (1651) makes clear.

Hobbes completed his degree in 1608, and entered the service of William Cavendish, First Earl of Devonshire, as companion and tutor to his son. Although Hobbes was about the same age as

the young Cavendish, he was put in charge of his purse as well as his education. He was the earl's representative at meetings of the Virginia Company, in which the Devonshire family had a considerable financial stake. He also accompanied the earl's son on a grand tour of the Continent in 1610, which allowed Hobbes to improve his command of French and Italian. According to some accounts, he also became acquainted then with criticisms of scholasticism current among Continental intellectuals.

It is unclear how long this grand tour lasted, but Hobbes had returned to England by 1615. At some point during these travels Hobbes seems to have met Fulgenzio Micanzio, the friend and personal assistant of the Venetian writer and politician Paolo Sarpi. He must also have met Marc Antonio de Dominis, who was involved in the translation of Bacon's writings into Italian and who also had connections with Sarpi (see Bacon, F.). Hobbes' own contact with Bacon may have had its stimulus in the requests of the newly befriended Venetians for more details of the Baconian philosophy. The young Cavendish began a correspondence with Micanzio after returning to England in 1615. Hobbes translated this correspondence and through it would have been exposed to Sarpi's theory of the supremacy of temporal rulers rather than spiritual authorities. The theory went against the Papal interdict of 1606, which asserted Rome's right to overrule the decisions of local monarchs and which had encountered much criticism in England. There are apparently strong echoes of this anti-Papal line in Hobbes' own writings.

During his first twenty years of service to the Devonshires, Hobbes seems to have spent his free time immersed in classical poetry and history. His employers had a good library, and Hobbes made use of it. The first fruit of this regrounding in the classics was a translation into English of Thucydides' History of the Peloponnesian Wars, published in 1628. Hobbes believed that Thucydides had lessons for those who overvalued democracy and did not see the strengths of monarchy, and it may have been the Petition of Right of 1628 that led to the publication of the translation. The Petition called on Charles I not to levy taxes without the consent of Parliament, not to imprison subjects without due cause, not to billet soldiers in private homes and not to put civilians under martial law. This sort of challenge to the prerogatives of a monarch is opposed in all of Hobbes' political writings, and the opposition is foreshadowed in the translation of Thucydides.

In 1628 Hobbes chose history as the medium for a political message. Later, in writings like *Leviathan*, he thought science or philosophy was the better vehicle. In writing history it is possible for the conventions of the genre to interfere with the communication of wisdom; in writing science, he came to believe, the communication of wisdom is assured, if the audience is prepared to pay attention and able to follow a demonstration. He struggled throughout his intellectual life with the problem of combining political rhetoric with political science, and some of his best writings are experimental solutions to this problem. The translation of Thucydides is important as the first of many such experiments.

The year 1628 was a kind of turning-point in Hobbes' career. Apart from publishing the translation of Thucydides, he had to contend with the death of the second earl at the age of 43, resulting in his loss of employment with the Devonshires. Hobbes took up a new post in the house of Sir Gervase Clifton, not far from Hardwick Hall, the home of the Devonshires. Once

again he was engaged as a companion on a grand tour, this one lasting from 1629 to 1631. During this journey Hobbes looked for the first time at Euclid's Elements, and fell in love with geometry. There is plenty of evidence in Hobbes' writings that he regarded Euclid's book as one of the supreme examples of a scientific presentation of a subject. Perhaps also during this second journey to the Continent Hobbes was present at a discussion among some well-educated gentlemen about the nature of sense-perception, in which it emerged that none of the participants could say what sense-perception was. Both episodes are significant, because they seem to mark the beginning of Hobbes' transformation from man of letters to man of science.

Perhaps the stimulus for the change was not the second grand tour alone. After his return, Hobbes went back into the service of the Devonshires and became tutor to the young third earl. At about the same time, he came into contact with a branch of his master's family who lived at Welbeck, near Hardwick Hall. The Welbeck Cavendishes were interested in science. The Earl of Newcastle is known to have sent Hobbes on an errand to London to find a book of Galileo's in the early 1630s. The earl's younger brother, Charles, had an even greater interest in science: he acted as something of a patron and distributor of scientific writings. Hobbes was one of those who looked at and gave his opinion of these writings. Charles Cavendish also had contacts among Continental scientists, including Marin Mersenne, a friar in Paris who was at the centre of a circle of scientists and philosophers that included Descartes.

Hobbes' scientific development continued when he embarked with the third earl on yet another grand tour from 1634 to 1636. During this journey he is supposed to have met Galileo in Italy, as well as Mersenne and some members of his circle in Paris in 1636. Hobbes had probably become acquainted with Mersenne five years earlier on the second tour. It is said that on the third grand tour Hobbes was much preoccupied with the nature and effects of motion, and that he started to see for the first time how many natural phenomena depended upon it.

On his return to England, Hobbes kept up with some of the scientific work being produced in Mersenne's circle. Descartes' Discourse and Essays were published in 1637. Hobbes was sent a copy and seems to have made a careful study of the first of the Essays – on optics – perhaps taking time to write something of his own on the same subject. He was not keeping abreast solely of scientific ideas. Through his association with a circle of clergy, lawyers and aristocrats at Great Tew, near Oxford, he was able to follow the continuing debates surrounding the troubles of Charles I. In 1634 the king started to raise funds for a navy by a ship-money tax levied county by county. This tax-raising met opposition, particularly in non-coastal counties. Besides the ship-money dispute, Charles I had to reckon with the consequences of trying, in 1637, to bring the Scottish Presbyterian prayer book into line with its Anglican counterpart. This provoked a National Covenant in Scotland expressing wholesale opposition to ecclesiastical innovations from England. In 1639 and 1640 the Scots raised armies to back up their opposition, and Charles was forced to recall a parliament he was used to ruling without, and which was extremely hostile to him. When Parliament acted against Stafford, a minister of the King associated with the Earl of Newcastle, Hobbes worked on arguments that could support the royalist position in parliamentary debates. The arguments were produced in a treatise, The Elements of Law (1640), not intended for publication but which, in fact, contains much of the doctrine of Hobbes'

political philosophy. Fearing that he would be prosecuted for giving the royalists their arguments, he fled to Paris and joined the circle of philosophers and scientists around Mersenne.

Some years after 1640 Hobbes wrote that he had recently conceived a plan for expounding, in three parts, the elements of philosophy or science in general. His exposition would begin with the nature of body and the elements of what we now call physics. It would go on to discuss human nature, in particular perception and motivation, and the third part would be a discussion of moral and civic duty. Perhaps he had already drawn up this plan, and even executed some of it, by the time he reached Paris. What *is* certain, however, is that the first part of the exposition to be published was the last of the three in his outline – the part on morals and politics. Hobbes called this part of his exposition *De cive* and published a very limited edition of it in Latin in 1642.

Hobbes seems to have enjoyed good relations with most of Mersenne's circle. He was at odds with Descartes, however, whose *Meditations* he criticized in a set of 'Objections' – the anonymous 'Third Set' (see Descartes, R. §§4, 6). From 1641 until Mersenne's death in 1648, Hobbes applied himself to the composition of the rest of his three-part exposition of the elements of science. He produced some of the material for the first part of the exposition – on body, the part published in 1655 as *De corpore* – and took up topics that would later occupy the middle part of the exposition. In 1643 he wrote a critical commentary on *De Mundo*, a treatise written by Thomas White (another Englishman in Paris at that time) which was sympathetic to scholasticism. In 1646 Hobbes composed some arguments about the respects in which freedom is compatible with causal necessitation in nature, arguing once more on this occasion against scholastic positions. He suffered a serious illness in 1647 and almost died. While on his sickbed he rebuffed an attempt by Mersenne to convert him to Roman Catholicism.

In 1648 Mersenne died and the philosophical and scientific activity that had gone on around him ceased to have a focal point. Hobbes now had a place among the royalists in exile, but he was on poor terms with churchmen around the exiled Charles II in Paris and was receiving his pay rather irregularly. By the autumn of 1649 he seems to have formed the intention of going home.

Leviathan, in which Hobbes attempted to derive from his now well-worked-out political principles the right relation of Church to state, was written at the end of the 1640s, when church government in England began to run on lines of which he approved and at a time when the influence of bishops in the English royal court-in-exile in Paris was, in Hobbes' eyes, too great. In any case, the fact that the theory in the book vindicated Cromwell's policy on church government does not mean that it was a partisan work in favour of Cromwell, calculated to ease Hobbes' return to England. If that had been so, Hobbes would not have made a special presentation copy for the future Charles II. Instead, it seems that the doctrine in *Leviathan* favoured the concentration of all authority in any *de facto* sovereign power, whether republican or royal. To the Paris royalists, mostly strong Anglicans in favour of political powers for bishops, the new book was highly offensive.

By the end of 1651 Hobbes was back in London and all three statements of his political philosophy were available in some form in English. These political works were widely known

before his exposition of the elements of science was complete. Even though *De cive* had been planned to complete a sequence of three treatises on these elements, it did not depend on the other treatises in order to be understood, and it has always had a readership of its own. When the other two works in the sequence appeared in the 1650s, they did not match *De cive* in quality. The treatise on which Hobbes had been working longest was the opening work of the sequence, *De corpore*, published in 1655. In it Hobbes tried to show how the mature sciences of geometry, mechanics and physics were concerned with the effects of different kinds of motion in matter. Politically motivated critics soon exposed the weaknesses in the mathematical sections of the book, and Hobbes' attempt to vindicate his work involved him in years of fruitless polemic. *De homine*, the second volume of his *Elements* and undoubtedly the least well-integrated of the three, was published in 1658. It was never widely read, and a modern English translation of it has only recently appeared.

In 1660 the monarchy was re-established in England, and on the coat-tails of Charles II there returned to political power many who regarded Hobbes as a traitor to the royalist cause. Charles himself was not hostile, however, and other influential people were also well-disposed towards him. Nevertheless, in 1666 and 1667, Parliament came close to passing a bill outlawing Christian heresy and atheism, and *Leviathan* was specifically investigated as a source of heretical and atheistic views. The danger of imprisonment and exile did not dissipate until the end of the decade. The threats to Hobbes were reflected in additions that he made to a Latin edition of his works published in Holland in 1668. He argued that punishment for heresy was illegal under English law and that his materialism was compatible with Christian faith. Two significant works from the 1660s were applications of his political philosophy. There was a history of the English Civil War, *Behemoth* (1668), and the *Dialogue between a Philosopher and a Student of the Common Laws of England*. By the time these works were composed, Hobbes was not permitted to publish, and though he busied himself with some translations of the classics and a few other minor writings of his own in the 1670s, he had come almost to the end of his working life.

In his ninetieth year, Hobbes returned to physics. His *Decameron Physiologicum* (1678) restates some of the methodology and principal results of the physical sections of *De corpore*. For the preceding three years Hobbes had divided his time between the two Devonshire houses of Chatsworth and Hardwick Hall. In December 1679 he died of a urinary complaint. His remains are buried in a small parish church near Hardwick Hall.

2. Science and human improvement

Hobbes' writings are those of an advocate and practitioner of a new science, a system of knowledge of causes that could, as he believed, greatly benefit human life. Yet he formed his ideas during a period when human intellectual powers, including the ability to develop science, were commonly thought to be limited. According to some theories prevalent in the late sixteenth and early seventeenth centuries, the whole human race was involved in a quite general and unstoppable process of natural decay, so that all the best achievements of human beings belonged to a long-lost golden age. It was a way of understanding things that was consistent with, if not inspired by, the Biblical story of the Fall of Adam and Eve, and the loss of paradise. According to some understandings of that story, Adam's expulsion from paradise cost him not

only a life of ease in harmony with God and the rest of nature, but also the gift of a natural insight into the natures of all the things he could name. Regaining the knowledge of those natures might never be possible. In France, in the late sixteenth and early seventeenth centuries, recently popularized Greek sceptical arguments against dogmatism reinforced the view that human intellectual possibilities were limited (see Scepticism, Renaissance §§1, 4). The arguments were directed not only against the traditional learning of the schools but against the idea that any human learning – even untraditional or anti-traditional learning – could amount to a system of genuine knowledge. Hobbes' philosophy of science stands in opposition to much of this gloomy theorizing. It stands in opposition to philosophical scepticism, to the theory of the decay of nature as applied to the human intellect and, to a lesser extent, to pessimistic interpretations of the intellectual costs of the Fall.

Although Hobbes had close friends and intellectual influences among French thinkers who took sceptical arguments seriously, there is little if any solid evidence in his own writing that he studied these arguments closely or took their conclusions to heart. He seems never to have doubted the soundness or scientific status of Euclid's geometry, and he was an early enthusiast for the applied mathematics of Copernicus, Kepler and Galileo. He was also proud of the judgment of some early readers of *De cive* that this book ushered in a demonstrative science of ethics. Hobbes called himself the inventor of civil science and thought that his politics deserved a place alongside Galileo's mechanics. The newly founded natural and moral sciences he regarded not only as great intellectual achievements, but as distinctively modern ones. Contrary to the theory of the decay of nature as applied to the human intellect, natural and civil science had not ceased with the ancients, but had only properly begun with the work of the mathematical astronomers and his own work in *De cive*. However, Hobbes also held that human beings were badly adapted by nature to do science of this kind, and that they had to work very hard to be capable of it. He thus disagrees both with the Cartesian idea that God benignly creates us with the ingredients of science latent in our minds *and* with the Aristotelian idea that knowledge of the natures of things is the unforced and inevitable by-product of repeatedly looking and seeing. To a very significant extent, according to Hobbes, our capacities for natural science are made by us rather than given to us. This position concedes something to both scepticism and the theory that life will always be difficult for Fallen Man. Although according to Hobbes sceptics are wrong to claim that we are incapable of science, they are right in insisting that we lack native scientific ability. They are also right to doubt that human beings are capable of an exalted sort of knowledge, the knowledge of what necessitates effects. For Hobbes, the scientific knowledge of which we are capable rarely rises to the level of knowledge of how effects *must* have been brought about, and it is not taken to extend to all effects. Again, although Hobbes believed that the scientific achievements of his contemporaries and himself were important, and that the then nascent sciences of nature and politics would develop further, he did not, with Descartes, suppose that we might one day complete science. Finally, while he claimed that even in their undeveloped state the sciences had delivered considerable benefits, Hobbes did not expect a more developed science to be the answer to all our problems. Like Bacon he believed that science could not entirely repair the Fall, that it could only act to relieve some of what was bad in human existence. Whatever one did, life would continue to have 'incommodities', but with the development of science life would contain fewer of them.

Science is not, then, for Hobbes, a means of regaining Eden. At best, it is our only way of cutting the costs of losing Eden. In paradise, Adam enjoyed the gift of immortality in conditions of ready abundance. Everything he could properly want was there for the taking. Punished for eating from the tree of knowledge Adam lost his immortality. He lived, as Hobbes puts it in *Leviathan*, under a death sentence ([1651] 1839 III: 438). Adam also lost the abundance of Eden. Banished to a place outside paradise, he had for the first time to work for a living, and to do so in a relatively inhospitable environment. Had they stayed in Eden, Adam and Eve would not have reproduced their kind continually or perhaps at all ([1651] 1839 III: 440). When they left they came under a necessity to multiply that worsened the life of their kind still further. Adam's descendants, the rest of humanity, inherit from him not only their mortality but also life outside Paradise. Thanks to Adam's transgression, human beings in general live in a world that demands ingenuity and hard work for survival. And thanks to human carnality, Adam's descendants have to eke out a living in the company of, and often in competition with, many others of their own kind. These facts of life do not make it easy to do well. In order to flourish in a sometimes harsh physical environment people have to know which effects they observe are beneficial and which are harmful, and they have to learn to reproduce the beneficial ones and prevent, or at least avoid, the harmful ones. In order to flourish in a heavily populated environment people have to know how to co-operate with one another. Moreover, these problems have to be coped with simultaneously.

As things naturally are, however, the problems are too great for creatures like us. For, being descended from Adam, human beings inherit the cognitive and conative capacities of someone designed to live in paradise, not the harsh world outside. If things had gone according to God's plan, Adam would not have needed to get causal knowledge of nature; he could have satisfied himself with contemplating the diversity and order in nature. Adam would not have had to make nature supply his needs. He would not have had to cope with overpopulation and the demands of co-operation. Made for a life without problems, Adam lacked the means – that is, the science – to solve problems. As Hobbes points out in *Leviathan*, there is no evidence in scripture that Adam had the vocabulary to do science ([1651] 1839 III: 19), and yet without the vocabulary to do science we should be no better off than savages or beasts (1640 pt I, ch. 5: iv; 1658 ch. 10: ii, iii). Either people reconcile themselves to living at the mercy of the elements and of one another – Hobbes thought that this was the course taken by Native Americans – or else they take the long and difficult road to a better life through science. Neither the better life nor the means to it are out of bounds to human beings, but both involve a kind of human reform. To get access to the degrees and varieties of motion that are required to understand nature, human beings need to acquire concepts more general and universal than those for everyday experience, and they need to apply principles involving these concepts in tasks of measurement and manufacture. To solve the problems of peaceful co-operation they need to be able to recognize the consequences of everyone's trying to get what they want. This means more than knowing what moral precepts to follow. It means being able to see what overall good the moral precepts promote – something revealed by Hobbes' civil science – and adjusting one's practical reasoning to the pursuit of that good rather than something nearer and more gratifying.

Although human beings cannot live well without science, science does not come naturally to them. Science depends on the ability to impose names aptly, to join names into propositions, and to join propositions into syllogisms, but not even these prescientific linguistic skills are natural to people. People come into the world being able at most to form sensory representations of things, and to learn from experience. But experience is a far cry from science. In its raw state experience is either a disorganized stream of representations or else a coherent sequence. If it is a coherent sequence, then, according to Leviathan, it is 'regulated' by some design or plan, or by curiosity about an observed body's effects ([1651] 1839 III: 13). Regulated in either way, a train of experience is only regulated as past experience allows it to be. Going by its past associations of observed phenomena, the mind will focus on a means to some goal or purpose in hand, or will suggest properties it is accustomed to conjoin with other properties it is now curious about. Once there are words for the things of which the mind has conceptions – words that can be used to signify the elements of experience – the possible ways of juxtaposing the words significantly, of analysing them and drawing consequences, introduce ways of ordering the elements that are not foreshadowed in previous experience.

New ways of regulating thought become possible because, for one thing, it is not necessary for a body spoken about to be present or remembered in order for a train of thought about it to be created. The train of thought can be generated instead by exploiting logical relations or analytic truths to get from one speech or thought to another. Reasoning can thus introduce new possibilities of combining things given separately in experience; it can also introduce ways of taking apart or separating things confounded in experience. Nor are the possibilities confined to the powers of one man's reasoning. Speech enables investigation and reasoning to be carried on co-operatively, and allows one person's explanations to be tested for clarity and coherence by others. The reasonings or explanations of one person can be preserved over time and made the model for those of many other people. A method can even be extracted from the findings of the most successful or conclusive pieces of reasoning, so that conclusive reasonings and explanations – in a word, science – can deepen and spread.

Hobbes believed that science as a whole could be divided into two principal parts, one concerned with natural bodies, the other with bodies politic. Each part of science arrives by reasoning at the causes of the properties of its subject matter; and demonstrates effects, with a view to making the relevant subject matter useful and beneficial to human beings. But the two types of bodies are very different from one another, and pose different scientific problems. Natural bodies are not made by us, and so the causes of their properties have to be worked out by reasoning from the appearances they present. Since the maker of natural bodies, God, is omnipotent and able to bring about effects in more ways than can be dreamed of in our explanations, only possible causes can be assigned to the appearances they present. Bodies politic are made by us – they are human artefacts and so at least in principle we can be certain of the causes of *their* properties. But the philosophical challenge they present is not primarily that of knowing their causes: it is that of knowing how they should be designed so that they last. This means setting out rules by which those involved in the commonwealth – those in government on the one hand and those subject to government on the other – can conduct themselves so that civil peace is ensured. It is doubtful whether the statement of these rules is really a science of a kind of body, as is natural

science, and probably the differences between natural and civil science are to be taken more seriously than the supposed analogies. Hobbes claims that civil science is not only more certain, but more widely needed, and more accessible than natural science. On the other hand, natural science is the more fundamental of the two parts of science: its explanatory concepts are more general than those of civil science and are needed if a scientific understanding of the passions and actions of agents in civil life is to be acquired from the 'first and few' elements of science as a whole.

3. The elements of philosophy: logic and metaphysics

The relative positions of the two parts of science – natural and civil – are reflected in the organization of Hobbes' trilogy on the elements of philosophy. The first volume, *De corpore*, expounds first philosophy, geometry, mechanics and physics. It is followed by *De homine*, which is half optics and half psychology; this volume in turn is supposed to prepare the ground for the exposition of the elements of ethics and politics in *De cive*.

The account of the 'elements' of science starts in *De corpore* with chapters on the ways in which philosophy depends on names, propositions and methods of reasoning. For Hobbes, logic is nothing more than the right ordering and joining of significant propositions into chains of reasoning. Propositions in turn are no more than coherent concatenations of names with significations of different extents. A name signifies an idea – whatever idea it conveys in the context of a speech to a hearer. But the idea is not what the name refers to or stands for: it refers to or stands for an object. To make a proposition, names have to be put together coherently, and coherent concatenations are concatenations of the same category of name – names of bodies with names of bodies, names of names with names of names. The 'extent' of the signification of a name has a bearing on the truth of propositions. The signification of a proper name will extend to an individual, that of a universal name – 'man', 'horse', 'tree' – to each of a plurality of individuals. In the propositions of natural science, names are universal names of bodies. Truth in the propositions of natural sciences is a matter of the inclusion of the extent of a universal subject-term within the extent of a universal predicate-term. Demonstrations are chains of syllogisms, and syllogisms are the stringing together of trios of propositions that share appropriate subjects and predicates. In a sense, then, logic is a technique for working out the consequences of relations between the significations of universal names or their extents. There are also methods belonging to logic for analysing the significations of names, and for arriving at the most general of these significations from a starting point in everyday universal names. Logical analysis of this kind is what is required to locate the terms fundamental to the various branches of science; it also has a role in making scientific questions amenable to resolution. Metaphysics or first philosophy sets out, ideally by means of definitions, the concepts necessary for conducting fruitful enquiries concerning natural bodies and for communicating the results. The relevant concepts include those of body, motion, time, place, cause and effect.

Hobbes composed no full-scale treatise on logic, and no work of his is concerned with metaphysics alone. *De corpore* contains the nearest approximation to a full first philosophy, and even here he is not entirely clear about the borderline between that 'prior' science and geometry. There is a chapter on 'syllogism', but it is not comprehensive and its relation to traditional

sylogistic is never spelled out. As for the chapters on first philosophy, they are more significant for what they deny than for what they affirm. They deny that it makes sense to study 'being' in the abstract; they deny that species or genera are things; they deny that 'substance' can mean something very different from 'body'; and they deny that other predicables are more than varieties of sensory appearance caused by bodies. In short, they deny much standard Aristotelian doctrine, including the doctrine defining the subject matter of metaphysics itself – the doctrine that metaphysics studies being *quabeing*. As will become clear, the chapters on first philosophy can also be understood to register disagreements between Hobbes and some of the *moderns* – Descartes and Gassendi, among others.

Hobbes' first philosophy starts with a thought experiment. He imagines that the external world has been annihilated – all that remains is a single thinker and the traces in memory of the world he previously sensed and perceived. Hobbes claims that the disappearance of the external world would not take away conditions for thought or reasoning, even about the physical world. The annihilation of the world would not even *alter* conditions for such thought and reasoning, since the medium of thought and reasoning is never things themselves but only appearances or phantasms. Hobbes thinks that the annihilation of the external world leaves only the mind and its phantasms in existence. There is no third world of things that exist outside the mind but outside the physical world as well. So Hobbes denies that there exist without the mind abstract natures such as Descartes claims to discover in Meditation V; and, contrary to Gassendi in the *Syntagma*, he does not think that space and time are real independently of the mind. He derives the idea of space from the memory images or phantasms presenting things as if from outside the mind. He derives the idea of time from imagined motion, from succession without existence. He derives the idea of an existing thing from the imagination of an empty space suddenly getting an occupant. Existence is thus restricted to existence in space, which is in turn identified with corporeal existence. These resources allow for only a straitened conception of cause or power, and certainly not for an Aristotelian conception. There are no forms or purposes in nature; but the makings of a conception of efficient cause are available, and that is the only sense of 'cause' recognized by Hobbes' first philosophy.

Most of the concepts that Hobbes thinks are needed for natural science have now been indicated. In Part Two of *De corpore*, after defining 'time' and 'place', he thinks he is in a position to define 'body' and its most general accidents. He then deals with magnitude or real space-occupation, and the spatial relations of continuity and contiguity. Against this background he defines 'motion', and in terms of motion the ideas of length, depth and breadth. After the three spatial dimensions are explicated, he defines quantitative identity and difference for motions and bodies, and then discusses the conditions of qualitative difference between bodies over time. He goes on to consider the causes of qualitative change, concluding with a demonstration of the thesis that all change is motion, that motion is the only cause of motion, and that power (*potentia*) is nothing but motion in so far as it is a cause of motion.

Definitions dominate Hobbes' first philosophy and, officially at least, their purpose is to fix ideas necessary for the business of science proper. Hobbes thought that the mark of a prescientific branch of learning was controversy, and he traced controversy to a failure to define terms and to

proceed in orderly fashion from definitions to conclusions. The task of first philosophy is to provide insurance against controversy. It does not do this by coming up with substantive truths that command assent. Instead, Hobbes describes first philosophy as a necessary *preliminary* to the demonstration of substantive truths, where demonstrator and learner are put on one another's wavelength and attach the same significations to their terms, but where their agreement is terminological rather than doctrinal. As Hobbes puts it in the Six Lessons, 'he that telleth you in what sense you are to take the appellations of those things which he nameth in his discourse, teacheth you but his language, that afterwards he may teach you his art. But teaching of language is not mathematic, nor logic, nor physic' ([1656b] 1839 VII: 225).

That 'the teaching of language' underdescribes what Hobbes does in practice in stating his first philosophy, and that it suppresses entirely the revisionary character of some of his definitions when compared with Aristotelian ones (and so the controversial nature of the devices that are supposed to pre-empt controversy), should already be clear. But, up to a point, Hobbes' first philosophy is genuinely unassuming. It takes for granted no exotic powers or substances, God included, and it postulates no exotic human capacities for acquiring the concepts that are the key to natural science. The point is not just that Hobbes keeps the relevant concepts to a small number, so that he is economical in the concepts he uses and also in his assumptions about the types of real things there have to be for these concepts to be applicable. Hobbes' first philosophy is also *naturalistic*. Nothing supernatural is assumed to exist in order for natural science to be acquired; indeed, nothing besides matter in motion is postulated. What remains after the annihilation of the world in Hobbes' thought experiment is not the immaterial self of Descartes, but the corporeal body or perhaps the brain, and the motions conserved in its internal parts from past impacts of the external world on the sense-organs.

The denial of immaterialism in Hobbes' first philosophy is anticipated in his Objections to Descartes' Meditations. An objection that Hobbes directs at Meditation II sets the tone (see Descartes, R. §5). He accepts that from the fact that I am thinking it follows that I exist, but he wonders whether Descartes can properly conclude, as a corollary, that the I is a mind or an intelligence or a thinking thing. For all the *Cogito* shows, Hobbes says, the I could be corporeal. And not only does the *Cogito* leave open the possibility of the I being corporeal, he goes on, the later wax argument actually *shows* that the I is corporeal:

We cannot conceive of jumping without a jumper, or knowing without a knower, or of thinking without a thinker.

It seems to follow from this that a thinking thing is something corporeal. For it seems that the subject of any act can be understood only in terms of something corporeal or in terms of matter, as the author himself shows later [in] his example of the wax: the wax, despite the changes in its colour, hardness, shape and other acts, is still understood to be the same thing, that is, the same matter is the subject of all of these changes.

(Hobbes [1641] 1985 vol. 2: 122)

Descartes' reply concedes that acts need subjects, that it is a *thing* that is hard, changes shape and so on, and also a *thing* that thinks, but he insists that 'thing' in this sense is neutral between the

corporeal and the spiritual. He insists, too, that he is non-committal about the nature of the thing that thinks in Meditation II, a claim borne out by his responding agnostically in Meditation II to the question of whether he might be a structure of limbs or a thin vapour. If Hobbes misses that, it may be because he misunderstands the rules of the method of doubt. While implementing the method of doubt, Descartes does assume rather than prove that there is no body for the thinking thing to be or for the thought to inhere in. But this is not a case of begging the question, for the belief in the existence of bodies is reinstated in Meditation VI, and with that the question of whether the subject is essentially immaterial or material.

Hobbes comes at Descartes' immaterialism from another, more revealing direction when he tries to suggest that it is not needed to underpin the distinction between imagination and conception by the mind. In his fourth objection, Hobbes equates imagination in Descartes' sense with having an idea of a thing, and conception in Descartes' sense with reasoning to the conclusion that something exists. Descartes already agrees that imagination is a partly corporeal process resulting from action on the sense organs, but his text suggests that conception by the mind is an altogether different operation. Hobbes puts forward a suggestion that allows the explanation of conception and imagination to be linked, without the postulation of immaterial things. He proposes that reasoning is the process in which labels attached to various things are concatenated into sentences according to conventions agreed by humans.

Reasoning will depend on names, names will depend on the imagination, and imagination will depend (as I believe it does) merely on the motions of our bodily organs; and so the mind will be nothing more than motion occurring in various parts of an organic body.

(Hobbes [1641] 1985 vol. 2: 126)

The compatibility of this proposal with mechanistic explanation appeals to Hobbes; but Descartes raises some powerful doubts about Hobbes' idea that names alone come into reasoning. Contrary to Hobbes, Descartes takes it that reasoning is a matter of linking together the significations of names, not just the names themselves, and also that the significations of some names cannot be imaged.

As in the case of his objection concerning the subject of the thinking, which seems to overlook the constraints of the method of doubt, Hobbes' objection to Descartes on imagination and conception seems to miss the point. Descartes is not trying to explain the workings of the faculties that result in science, only to find that he has to explain them on immaterialistic principles. He is trying to show that science is possible, that real knowledge of the physical world is possible, because not all of our faculties can coherently be held to be unreliable. Conception by the mind is a case in point. It cannot be held to be unreliable, because it is autonomous and independent of unreliable sense-perception. Hobbes does not see that it is the objectivity of conception rather than the process of conception that Descartes is concerned with. And doubting the objectivity of conception himself, Hobbes does not seek to reconstruct conception as reasoning that might be guaranteed to lead to true conclusions; he wants only to reconstruct it in ways that will not multiply entities beyond those required by mechanistic explanation. The point is that a proof of the objectivity of the conceptions arrived at by science

may legitimately be demanded of a metaphysics, and Hobbes' metaphysics does little if anything to meet the demand. The metaphysical economy of materialism will not impress someone who is sceptical of the existence of the external world: the undeniability of the *Cogito* might. One cost of Hobbes' naturalistic approach is that it never attempts the task of legitimizing the scientific enterprise in general, and is probably incapable of doing so.

4. Geometry, optics and physics

First philosophy is a preliminary to natural science proper, and the first of the natural sciences is geometry. Geometry is a natural science for Hobbes, because it studies the effects of moving bodies. It studies the properties of straight lines, for instance, and straight lines are the effects of the motion of a small material thing – a point. He rejects the idea that the geometrical point is an abstraction distinct from some small material mark or other. Being a body, a geometrical point is divisible and not, as Euclid had it, 'that which hath no part'. A point could no more lack quantity than a line could lack breadth and be constructed by motion. The bodies whose motions geometry studies may not have much quantity, and the quantity may not be relevant to what is being demonstrated of them, but they are bodies all the same. Though geometry is a science of bodies, it is also in a sense an a priori certain science, as physics is not, for the effects are produced by us, and we know in advance by what means they are produced. In this, Hobbes believed, geometry is like politics. In a sense, too, geometry is a very basic science – basic not in the sense that the objects it studies are higher or more real than those in nature, but in the sense that it studies bodies and motion at a very high level of generality, with much that is specific about the bodies left out of account. Hobbes thinks that geometry is also basic in another sense, for its methods of demonstration and analysis are the inspiration for the methods of the other demonstrative sciences.

Hobbes was self-taught in mathematics, and his friend and biographer, John Aubrey, says he did not encounter Euclid until he was middle-aged. Nevertheless, he was taken seriously by very able geometers in Mersenne's circle, and is even credited with inspiring a proof by Roberval of the equality of arcs of a parabola and an 'Archimedean' spiral. He is much better known, however, as a mathematical failure whose attempts at expounding geometry in *De corpore* were ridiculed by the English mathematician John Wallis. Wallis' attack was motivated by a wish to discredit the anticlerical passages in *Leviathan*, and its attack on the universities. In correspondence with Huygens, Wallis said that Hobbes 'took his courage' from mathematics, and so it 'seemed necessary for some mathematician to show him how little he understands'. Wallis' attack succeeded – it focused on Hobbes' doomed enterprise of producing a quadrature of the circle – and was made the more effective by Hobbes' persistent refusal to concede errors.

Although the geometrical parts of *De corpore* were supposed to present some new results, Hobbes did not claim any great stature for himself in geometry. In optics, on the other hand, he regarded himself as a major figure. It was certainly a subject he turned to early in his transformation from man of letters to man of science. As early as 1636, optical questions were featuring in his correspondence with the Earl of Newcastle, and the treatment of the sensible qualities was mechanical: 'whereas I use the phrases, the light passes, or the colour passes or diffuseth itselfe, my meaning is that the motion is onely in the medium, and light and colour are

but the effects of that motion in the brayne'. Perhaps more accurately, these effects were supposed to be the effects of the motion of the medium transmitted to the animal spirits in the brain.

Exactly how early Hobbes arrived at his conception of the workings of light is not entirely clear. A short treatise dated to 1630 and originally attributed to Hobbes has been claimed by some scholars to be the work of someone else in the Cavendish circle. It contains doctrines different from writings that are more certainly ascribed to Hobbes, and which probably belong to the 1640s: the *Tractatus Opticus* I and II. It also contains as 'principles' formulations that these later optical writings present as mere hypotheses. Whether the writings of the 1640s represent only a change of mind or whether they are Hobbes' first extended publications in optics, they show him adopting a mediumistic theory of the propagation of light based on the idea of continuously expanding and contracting light sources. These displace contiguous parts of an ethereal medium of uniform density and set up a chain reaction to the eye. A resistance in the eye caused by a countervailing motion from the brain produces a phantasm of a luminous object – that is, in Hobbes' terminology, light. Light is propagated instantaneously, as both luminous object and medium expand simultaneously. The account does without the postulation of an emission by luminous objects of species or replicas of themselves which subsequently inform the senses and permit perception. Instead, luminous objects illuminate by radiation: they, so to speak, send out rays or, more precisely, displace the medium along paths called 'rays'. In their passage from luminous objects to the eye, rays are supposed to describe parallelograms. Hobbes used the properties of other geometrical figures described by rays of light passing through different densities to account for refraction. Colour he regarded as light perturbed by the internal motions of rough or coarse bodies on its way to the eye. The differences between the colours on the spectrum from blue to red he accounts for as the product of refraction plus restraint or reinforcement of the lateral motion of rays of light that goes with refraction.

At no point in the process that starts with the motion of the luminous objects and ends in the production of the phantasm does Hobbes depart from a mechanical model of the causes of sense-perception. His mature theory of optics is through and through an account in terms of matter and motion. But between the *Tractatus Opticus* I and the *Tractatus Opticus* II, he seems to have revised his ideas about the organs of sensory perception. Phantasms are said to come from the heart, rather than to result from the clash of incoming motions with motions from the brain. By 1646, when Hobbes produced *A Minute or First Draught of the Optiques*, the most polished of his optical treatises, the main lines of his doctrine were settled. In addition to material on light and its propagation, refraction and reflection, there are accounts of various kinds of sensory error.

Physics, understood as the theory of the causes of appearances to sense and of the nature of the objects of sense, is in part an offshoot of optics. It is expounded at the end of *De corpore*. By an 'object' of sense Hobbes means an external body that registers in experience as being the subject of certain qualities, and that sets off the process culminating in an 'act of sense'. The object of sense is not an idea or a sense-datum or a mental image, though such a thing may be the medium in which the object of sense is registered. The greatest of the objects of sense is the world itself, as registered from some point within it. But only a few intelligible questions can be asked about

the world, and these cannot be conclusively answered. One can ask whether it is of finite or infinite magnitude, whether it is full or contains empty space, and how long it has lasted. Only the second of these questions is open to a scientific answer, and even then only to a probable conclusion, while the others are for lawfully appointed churchmen to discuss. Hobbes thinks that probably there is no vacuum, that the world is full, but that some of the bodies that make it up are invisible: thus the ether and 'the small atoms disseminated through the whole space between the earth and the stars'. He adopts Copernican and Galilean hypotheses in chapter 26 of *De corpore* to explain the order, motion and relative position of the planets. He also infers explanations of, among other things, the passage of the seasons, the succession of day and night and 'the monthly simple motion of the moon'.

Hobbes goes on to consider the bodies between the earth and the stars. Foremost among these is 'the most fluid ether', which he proposes to regard as if it were first matter. He supposes that its parts only receive motion from bodies that float in them, and impart none of their own. The bodies in the ether are supposed to have some degree of cohesion or hardness and to differ from one another in shape, figure and consistency. Any more specific hypotheses about them Hobbes adopted only to explain particular phenomena. He is, however, willing to venture that many such bodies are 'unspeakably little' or minute, since God's infinite power includes a power infinitely to diminish matter. Assumptions about intersidereal bodies inform his theories of the phantasms appropriate to the different senses, not only light but also heat, sound and odour.

5. Ethics

After *physics*, Hobbes writes in chapter 6 of *De corpore*, 'we must come to *moral philosophy*; in which we are to consider the motions of the mind, namely, *appetite, aversion, love, benevolence, hope, fear, anger, emulation, envy &c*; what causes they have and of what they be causes' ([1655] 1839 I: 72). The use of the term 'moral philosophy' for the doctrine of the motions of the mind is unfortunate; elsewhere Hobbes says that the precepts of his natural law doctrine add up to a moral philosophy. 'Ethics' is another label he sometimes uses, and it is preferable. The reason ethics comes after physics is that the motions of the mind 'have their causes in sense and imagination, which are the subjects of physical contemplation'. What Hobbes means is that when a body registers in a sensory representation – when, for example, a person sees something – the thing imparts motion to the innermost part of the organ of sight. One effect of the motion is to set up an outward reaction which produces visual experience. But there can be a further after-effect. As Hobbes puts it in chapter 8 of *Elements of Law*, the 'motion and agitation of the brain which we call conception' can be 'continued to the heart, and there be called passion'. The heart governs 'vital motion' in the body, that is the circulation of the blood. In general, when motion derived from an act of sense encourages vital motion, the sentient creature experiences pleasure at the sight, smell or taste of the object and is disposed to move its body so as to prolong or intensify the pleasure. If the object of the pleasure is at a distance, then the creature will typically move towards it. There is a symmetrical account of displeasure. This is an after-effect of the act of sense consisting of a hindrance of vital motion. A creature experiencing a hindrance of vital motion will try to counteract it, typically by retreating from the

object of sense. Aversion consists of the small inner movements that initiate the evasive action, just as 'appetite' names the internal beginnings of approach behaviour.

The pursuit of pleasure and the avoidance of pain are the basic drives recognized by Hobbes' psychology, and they determine the systems of valuation of different individuals. The individual takes as good what it has learned to pursue and regards as bad what it has learned to avoid. In developing a system of valuation, a creature is not discovering an objective distinction in nature between things that are good and things that are bad. Nothing is good or bad independently of its effects on creatures, and the effects may vary from creature to creature. At most, things are good or bad *to* individuals, not good or bad 'simply and absolutely'. In the same vein, Hobbes denies that in the sphere of good and bad things there is one that is the highest and whose attainment constitutes happiness. Instead, there are many different goods for many different individuals. Becoming happy in life is not a matter of being successful in the pursuit of one favoured good, but of being continually successful in the pursuit of many.

Hobbes' account of the constraints on the pursuit of human happiness is the connecting link between his theory of the motions of the mind and his moral and political philosophy proper. To attain happiness, people need to know what goods to pursue and how to pursue them. But in the absence of a science of good and evil, pleasure is their main criterion of the good, displeasure the main criterion of bad. Both pain and pleasure, however, are unreliable guides to the good and bad. A person may find a thing pleasant on one occasion and call it 'good', only to change their mind later. Two people can react differently to the same thing, so that it produces pleasure in one and pain in the other, and is called 'good' and 'not good' simultaneously. Pleasure biases judgment in favour of the nearer and more intense good, even if the cost of pursuing this good is displeasure later, and so on. Part of the correction to these distortions is to judge the good of various things not by how they feel when they are enjoyed or shunned, but by the consequences of enjoying or shunning them. If the costs of the consequences outweigh the present benefits, then a supposed good may be merely an apparent good. Again, if someone detached from the pursuit or avoidance of a thing can judge it good or bad, then it may really be so; while if no-one else can see the attraction or repugnance, it may be illusory. Hobbes thinks only science can supply knowledge of the consequences of actions needed to counterbalance valuations derived from pain and pleasure; and he thinks science does not come naturally to people. Abiding by the value judgments of arbitrators does not come easily either, since people are attached to their valuations and unwilling to lose face by deferring to the judgments of others.

6. Politics: the state of nature

Despite the inconsistency in individual value judgments over time, and between the value judgments of different people at the same time, Hobbes thinks that there are some evils that are so large, and that interfere so markedly with everyone's pursuit of happiness, that practically no-one would knowingly pursue a course of action that resulted in them. War is such an evil, and Hobbes thinks he can show that if everyone makes themselves their own judge of what to pursue in the name of happiness, everyone will be involved in war. His argument to this conclusion is at the same time an argument for people to be guided by a judgment other than their own about what is best for them, the judgment of an existing civil power if they live in an existing

commonwealth, the judgment of an as-yet-to-be designated civil power if they live outside any commonwealth.

The argument for the inevitability of war starts with assumptions about what is useful to the achievement of any goal. What is useful, no matter what good is being pursued, no matter whether the good is real or merely apparent, is power – that is, present means to future ends. ‘Power’ covers the physical capacities of individual agents, and also friends, riches and reputation. Not only is power in any form useful, but there can never be, according to Hobbes, too much power at the disposal of an agent in the nature of things. The reason is not that each agent naturally has an insatiable hunger for power, but that each agent is in competition with other agents for other goods, and any advantage one competitor temporarily has over another can, in principle, be overcome. The naturally strong can be toppled by a number of weak people who join forces; the man who has no enemies can be made into an object of hate with a well-judged campaign of character assassination; the wealthy can be robbed or swindled of their riches, and so on. Not only is it useful to acquire more and more power, but people cannot be blamed for doing so if all that organizes their activity in life is the pursuit of felicity.

Felicity is continual success in one’s undertakings, whatever they may be. If what one undertakes is to do down one’s competitors, then any means that helps to achieve it will be permissible. Or if, as is more likely, one aims at something else, doing down one’s competitors can still often promote one’s goal. Even the moderate man who wants only a small share of the good life can have reason to resort to foul means if he thinks he will lose everything by playing fair with rivals. And he cannot be sure he does not risk losing everything if he plays fair. In general, the goal of felicity requires one to try to get an advantage and keep it. Disabling others is a means of keeping the advantage; the outright elimination of competitors is even surer. Because these facts can be discovered by everyone, everyone who pursues felicity must bargain for severe insecurity and even worry about survival. Struggling for survival is far removed from felicity, but the pursuit of felicity, no holds barred, can quickly turn into a struggle for survival. Or to put it Hobbes’ way, in the state of nature, people who pursue felicity are in a condition of war.

The argument does not depend on the idea that every human being is naturally selfish. It is true that in *De cive* Hobbes paints an unflattering picture of ordinary human behaviour, emphasizing the tendency of people to look out for themselves, to say one thing to other people’s faces and another thing behind their backs, the tendency to think very well of their own opinions, but poorly of the views of others, and to fight over trivialities. This is all ordinary human behaviour, but it is not the behaviour of absolutely every human being. That it is so ordinary is enough, in Hobbes’ view, to overturn the Aristotelian idea that human beings are by nature fit for society, but he is not claiming that human beings are uniform, or that their behaviour is uniformly antisocial. Hobbes recognizes a variety of temperaments in human beings, and his state of nature encompasses the vainglorious as well as the moderate. The vainglorious will seek to dispossess others because having more than anyone else is an end in itself. Moderates will go on to the attack because they want only a little and fear that the greedy will take even that. Others again will be at odds because they want something that cannot be shared. Whatever the cause, the general effect will be insecurity, and with insecurity goes many unattractive things – not only

feelings of fear, but loss of society, loss of production, loss of technology, loss of art, loss of everything that enables human beings to rise above a life of bare subsistence and savagery. Life in the state of war is, in Hobbes' famous phrase, 'solitary, poor, nasty, brutish, and short'.

Is there no such thing as virtue to keep people from pursuing felicity ruthlessly? Hobbes thinks that precepts enjoining the moral virtues – what he calls 'the laws of nature' – are discoverable even in the state of nature, but people are not morally obliged to act on them if they run the risk of dying as a result: the most basic law of nature is to preserve oneself, and there is an inalienable 'right of nature' to be one's own judge of how to secure one's own preservation and wellbeing. This right may be laid down in the interest of self-preservation, but never at the cost of self-preservation. So if one has reason to think that others will take advantage of one's keeping agreements, or of showing gratitude, of not being judge in one's own cause, of being forgiving and so on through the rest of the virtues, one is not obliged to behave in those ways. One is not obliged to act in a way which will advertise one's vulnerability to the unscrupulous. It is enough that one is willing to behave virtuously if it is not too dangerous.

7. Politics: the commonwealth

The answer to the problems of life in the state of nature is an agreement by most in it to delegate their right of nature to a person, or body of persons, empowered to secure the many against physical attack and against the severe deprivations of the state of nature. That person or body of persons is empowered by a collective submission of the wills of the many to the will of the one or few. The many agree to be guided in their behaviour by the laws of a sovereign, on the understanding that this is a more effective way of securing their safety than individual action in the state of nature. The many lend their wills to the sovereign both as potential enforcers of the law against lawbreakers and as an army of defence against foreign invasion. They lend their wills by doing only what is permitted by the sovereign's law and refraining from what the law prohibits. The law in turn expresses the sovereign's judgment regarding who should own what, who should teach what, how trade may be conducted, how wars should be waged, who should be punished and by what method of punishment, and who should be rewarded and the scale of the reward given.

The sovereign's judgment prevails because it, uniquely in the commonwealth, is still allied to a right of nature. Everyone who is subject to the sovereign thereby delegates their right of nature to the sovereign, but not in return for any forfeit or transfer of right by the sovereign himself. It is true that the commonwealth dissolves—that the obligation not to retract the right of nature lapses – if the sovereign is not able to secure the many against life-threatening incursion. But short of a reversion to the state of nature, the state in the person of the sovereign has a claim to expect the compliance of the many. The many owe it to one another to comply, because they agree between themselves to be law-abiding in return for safety if everyone else is law-abiding. They also owe it to the sovereign, at least for the time that he succeeds in making and keeping the peace, because they voluntarily and publicly submit to the sovereign, signifying to him that they will do what he decrees should be done for their safety.

Hobbes' idea that the sovereign's law can justly reach into every sector of public life had clear application to the questions being debated during the Civil War period in England. Those who complained that it was wrong for Charles I to appropriate property, to billet troops at will, to raise taxes without the consent of parliament, were given a theory that legitimized those actions. According to the theory, the limitations on a king's powers indicate that a state of nature, with its potential for open war, still prevails. Either the powers of government are separated (in which case the contention between, say, king and parliament reproduces the contention between individuals in the pre-political condition), or else the powers of government are not separated, but are limited by the rights of the subjects (in which case the right of nature has not really been transferred, and people are still liable to prefer their own judgment about what is best for them to the judgment that they have agreed to be guided by, with the same potential for slaughter).

Hobbes' theory permits the sovereign to regulate public life very stringently, but his message to sovereigns – there is no doubt that *Leviathan* in particular was intended to be read by heads of state – was not that it was *wise* to regulate public life very stringently. To begin with, there were limits to what laws could do: belief could not be commanded, so a certain tolerance of freedom of thought was inevitable. Again, people could not be expected to risk their lives in order to obey the law, as that would leave them no better off in the state than outside it. So laws that impoverished people to such an extent that they were starving, having to steal in order to live, were ill-conceived. Likewise forced military service, if it were likely to lead to death, might reasonably be seen as unacceptable according to the terms of Hobbes' social contract. Even a regime of law that secured most people from theft and common assault, but that confiscated all income above a measly minimum, could be seen as a failure by the sovereign to come up with what the many bargained for in entering the state. What the many bargain for is safety and, as Hobbes explains in chapter 30 of *Leviathan*, 'safety' signifies more than a 'bare preservation': it means a modicum of wellbeing over and above survival.

The arguments from prudence against overregulation by the sovereign are also arguments against iniquitous practice by the sovereign. Hobbes distinguishes between iniquity and injustice. The sovereign does no injustice to his subjects if he decides to claim as his own all the land in a particular county or all the houses in a village: in creating the sovereign, his subjects give him the power to decree who is the owner of what. For all that, the sovereign may act iniquitously in the sense that he allows his own appetites and interests to count for more than those of anyone else, and so makes himself, for selfish reasons, the owner of more land than anyone else. There is a law of nature against iniquity, and therefore a law that decrees that the sovereign has to *try* to be equitable. But efforts are one thing; actual behaviour is another. The law of nature is not binding on the sovereign's behaviour, since he retains the right of nature and is authoritative about what to do for the best. If, in his opinion, it is for the best to behave iniquitously, then no other free agent, still less one of his subjects, can blame him for behaving accordingly. But the fact that his iniquitous acts are in this sense blameless does not mean that they are wise. If appropriating everyone's land makes people rebellious, albeit unjustly rebellious, then appropriating other people's land may have greater costs than benefits: it is subversive of the sovereign's power, which depends on the willingness of others to obey him.

Regarding the practice of religion, the relationship between church and state is a central preoccupation of Leviathan. Hobbes insists there that it is for the sovereign to decide whether people can join together for purposes of worship – that is, whether a given church can lawfully exist in the commonwealth. And he appears not to have been in favour of the establishment of a plurality of churches:

But seeing a Common-wealth is but one Person, it ought also to exhibite to God but one Worship; which then it doth, when it commandeth it to be exhibited by Private men, Publiquely. And this is Publique Worship; the property whereof, is to be Uniforme: For those actions that are done differently, by different men, cannot be said to be a Publique Worship. And therefore, where many sorts of Worship be allowed, proceeding from the different Religions of Private men, it cannot be said there is any Publique Worship, nor that the Commonwealth is of any Religion at all.

(Hobbes [1651] 1839 III: 354)

He goes on to say that ‘whereas there be an infinite number of Actions and Gestures, of an indifferent nature; such of them as the Common-wealth shall ordain to be Publiquely and Universally in use, as signes of Honour, and part of Gods Worship, are to be taken and used for such by the Subjects’. It is hard to gather from these passages even tacit approval for a pluralistic form of national religious life. On the contrary, it is strongly implied that unless all members of the commonwealth worship in the same way, it will be doubtful not merely which religion the commonwealth observes but whether it observes any. It is as if Hobbes thinks that in a babble of different religious rites there will be no clear sign of honour from the commonwealth to God. For a clear signal to be sent, the same thing must be transmitted by everyone in the commonwealth. This ‘clear-signal’ justification for uniformity is not as anti-tolerationist as a justification that holds that all but the appointed religious rites are idolatrous, but it lends support all the same to a highly restrictive form of public religious worship.

As chapter 12 of Leviathan shows, Hobbes was aware that people living together but worshipping differently could ridicule or belittle one another’s ceremonies and come into conflict. This is another reason for the secular authority to regulate public worship. It is also a reason for worshippers to take religious ceremony out of the public arena altogether, and preserve their differences in private. Hobbes has no quarrel with this sort of privatization of religious practice, so long as it is thoroughgoing: driving it out of the public arena means driving it well out. To obviate regulation, worship must be not only be private (that is, practised openly by a private person) but practised by a private person in secret. As Hobbes says in chapter 31 of Leviathan, private worship ‘when secret, is Free; but in the sight of the multitude, it is never without some restraint, either from the Laws, or the opinion of men, which is contrary to the nature of Liberty’.

Not only actions required by religious rites can be driven underground if they might disturb the peace; freedom of action in matters indifferent to religion can also be open to regulation, as chapter 31 of Leviathan makes clear. Arguably it is indifferent whether prayers are said in Latin or in English; arguably it is indifferent whether services are conducted by married or by celibate

men; but notoriously, these are things that people look askance at or insist upon, and about which they can come to blows. For this reason, if for no other, there is a reason for the sovereign to declare what the language shall be, and who shall preside at services.

What is in the sight of the multitude and in the control of the religious is one thing; what is out of sight and uncontrollable is another: 'Internal faith is in its own nature invisible, and consequently exempted from all humane jurisdiction', Hobbes says in chapter 42 of *Leviathan*. Humane jurisdiction is not just secular jurisdiction, but also that of a body charged by a church with the inquisition of believers. Beliefs in general are not subject to the will he says in *De Politico Corpore*, a pirated edition of part two of the *Elements of Law* (1839 IV: 339). And although salvation depends on believing some things and not others, it is hard to be sure which things have to be believed beyond an uncontroversial minimum. For all of these reasons Hobbes is against the policing of religious belief, and against preferment for any one creed. It is in connection with the policing of belief rather than religious practice that his views come close to those of Independents, who in seventeenth-century England favoured a relatively loose, relatively tolerant organization of religious life, in particular a life outside a unitary Church of England. For when he appears in *Leviathan* (chapter 47) to side with the Independents in the Primitive church it is over each person deciding whose preaching to follow, not over many different religions being openly practised ([1651] 1839 III: 695). And in countenancing a variety of religious persuasions Hobbes is not so much showing tolerance as denying the importance to civil order of what goes on below the threshold of visible action.

8. Problems with Hobbes' political theory

In order to legitimize the powers of sovereigns, Hobbes invites his readers to think of sovereigns and states as the creations of free, self-interested people. The condition of subjection to a sovereign, even if it is not entered into by an original contract, can nevertheless be freely endorsed by each subject, since there is a good argument from self-interest for the condition. The argument says that the alternative to subjection is a dangerous chaos, which is infinitely worse than an intrusive but protective civil power. This is the argument directed against people who are already subjects; is the same argument effective when directed at people who do not yet belong to a state, who are in a state of nature? The issue can be sharpened by pointing out that the process of trading the state of nature for the commonwealth involves each person giving something now for the sake of a benefit later. Each person agrees to lay down their right of nature if everyone else will do likewise for the sake of peace. Granting that the condition of peace is better for each than the condition of war, is it not even better for anyone who can get away with it, to retain their right of nature while others give away theirs? Is it not better to pretend to lay down that right and then to take advantage of those who genuinely do so? If the answer to this question is 'Yes', how can the best outcome, from the point of self-interest, be one in which everyone performs and lays down their right of nature?

The question is taken up in a famous passage in chapter 15 of *Leviathan* where Hobbes replies to the fool who pretends that there is no such thing as justice. Commentators have likened it to the question posed by 'prisoners' dilemmas' where, for example, the outcome that would be best for each of two prisoners is for the other to confess and solely take a punishment for a crime, but

where it turns out to be rational for each to confess and receive a punishment less severe than the maximum. The question is how this ‘lesser’ outcome can be the better one. In the case of the opportunistic non-performer of covenants discussed by Hobbes, the answer is that there is more security in the performance than in the non-performance of covenants. Someone who takes advantage of another’s laying down the right of nature can only do so once and expect to get away with it. And the temporary advantage they gain may in any case not counterbalance what they will lose by being opposed by all those whose trust is threatened or betrayed.

Another problem with Hobbes’ theory turns on the supposed moral urgency of each person’s laying down the right of nature. Hobbes thinks that the biggest threat to the stability of states is the existence of too much scope for private judgment. The more each person is entitled to think for themselves in matters of wellbeing, the worse it turns out for everyone. This implication is supported in Hobbes’ theory by a supposedly scientific understanding of the diversity of the passions and the way that the passions get the better of judgment in human beings. By delegating their power of judgment to someone who is not affected by the individual passions of the people ruled over, people actually get access to a more effective (because more dispassionate) means of securing themselves than their own individual judgments. But, by the same token, they forgo any intellectual contribution to public life. They function in the state not as citizens in the full sense but as subjects only: political life for the many consists solely of submission to law. It is by their passivity rather than by the application of their powers of judgment that people promote the public good. This may have seemed persuasive in a time when the Biblical example of Adam and Eve would have been widely understood to illustrate the dangers of private judgment of good and evil, but to contemporary sensibility it verges on the paranoid. In fact, Hobbes’ point is not quite that the judgments of human beings about their wellbeing can never be trusted, but rather that their *prescientific* judgments cannot be trusted. Prescientifically, people are moved by their feelings of pleasure and displeasure to call things ‘good’ and ‘bad’ – few have either the resources or the circumstances to be taught any better. But there is a better conception to be inculcated: Hobbes indicates that it consists of showing how things that are genuinely good, as opposed to pleasant, promote peace or self-preservation, while things that are genuinely bad, as opposed to unpleasant, are conducive to war and self-destruction.

Hobbes’ moral and political philosophy impresses some people because it reconstructs the reasons there are for doing what morality tells us to do as reasons of self-interest. Such reasons are sometimes thought to give a more compelling answer to the question ‘Why be moral?’ than accounts which connect moral motivation to the recognition of transcendent Forms or to the rationally unobjectionable, or to a category of what is acceptable under conditions of ignorance of biasing considerations. Philosophers who call themselves Hobbesians in our own day sometimes cite this power of basing moral motivation on non-utopian and non-metaphysical types of reasoning as Hobbes’ main contribution to moral philosophy. For these philosophers, notably David Gauthier (see Gauthier 1986), Hobbes anticipates a kind of scepticism about the pretensions of moral philosophy to find rationally unignorably and inescapable reasons for doing what it tells us to do. The most that moral philosophy can show us, according to this interpretation, is that many of the things that morality asks us to do are in our interest if we care about ourselves, or more about ourselves than others (see MORAL MOTIVATION).

9. The scientific status of Hobbes' ethics and politics

The main lines of Hobbes' political philosophy include the idea that the commonwealth is a solution to the ever-present threat of war in the passionate make-up of human beings, and that the commonwealth is made by delegating the right of nature to a sovereign power with unlimited power. This summarizes a theory worked out in very great detail, a theory Hobbes always regarded as ushering in the scientific treatment of morals and politics. What made the theory scientific? A number of answers get support from Hobbes' writings. The scientific status of politics is sometimes said to be owed to its derivation, in some sense, from Hobbes' natural science. Again, Hobbes' use in civil philosophy of a method applicable to natural bodies and bodies politic alike is sometimes thought to be crucial to its scientific status. These answers are consistent with some texts but sit uneasily with others. First, although Hobbes thought that there was a way of approaching the principles of morals and politics from a starting point in the workings of sense and imagination (which were treated of by physics), he consistently denied that civil science *had* to be approached by way of physics. In chapter 6 of *De corpore* he says that people entirely innocent of physics, but who enjoy introspective access to their own passionate states, are able to see in themselves evidence for the truth of the theory of human nature in the civil science. Something similar is said in the Introduction to *Leviathan*. In the same vein there is the explanation of his having been able to publish *De cive*, the third volume in his trilogy, without having first expounded the principles of parts of philosophy that were prior to politics. Hobbes said that this was possible because civil philosophy depended on principles of its own. What ties together all of these remarks is a belief in the autonomy of civil science, a belief that is not seriously called into question by his saying that the two principal parts of civil philosophy were alike in applying a certain sort of method to the investigation of bodies – bodies politic on the one hand and natural bodies on the other.

When Hobbes says that each part of philosophy deals with bodies, he makes clear that the two kinds of bodies are 'very different' from one another. And there is no evidence that 'body', when applied in the phrase 'body politic', is supposed to mean 'space-occupying thing existing without the mind'. In other words, there is no evidence that bodies politic are bodies in any more than a metaphorical sense. Finally, it is not clear that Hobbes thought that the scientific status of his politics was made more credible by an analogy between bodies politic and natural bodies. It is not as if he thought that natural bodies were well-understood scientifically, and that bodies politic might in principle be as well understood if the methods of physics were applied to them. On the contrary, Hobbes always thought that the properties of human artefacts, such as bodies politic, were much better understood than the properties of natural bodies, which had God's inscrutable will behind them.

It would be a mistake, however, to think that civil science for Hobbes was primarily an exercise in the investigation of the properties of bodies. It was an exercise in putting our judgments about what we ought to do on grounds that were far more solid than pleasure and pain. Good and bad were a matter of what conduced or interfered with self-preservation or peace, not how it felt to do or get this or that. The core of Hobbes' civil science is an attempt to recast the precepts of morality – the laws of nature – as instruments of peace, and to show how the ingredients of war

are latent in any project for the pursuit of happiness. The scientific status of the doctrine of the laws of nature – the ground of its claim to be called moral philosophy – was its conforming to the pattern of a deductive system, based on two fundamental laws of nature and the rest derivative. Similarly with the deduction of the rights of sovereigns from the goal of peace. The scientific status of the argument for the inevitability of war consisted in its proceeding from principles about the passions. But these principles were by no means the property of physics or physicists; they were available in each person's introspective self-knowledge.

The deductive character of scientific demonstration was often claimed by Hobbes to interfere with its comprehensibility and its persuasiveness. But by the time of *Leviathan* Hobbes thought that he had finally managed to achieve the best of both worlds. In the third and last version of his political philosophy, persuasiveness and scientific understanding were finally married to his satisfaction. The Review and Conclusion of *Leviathan* says as much. Commentators have tried to chart Hobbes' attempts from 1640 to 1651 to balance reason and rhetoric in his political science, and it remains a controversial question whether this is managed in one way before the appearance of *Leviathan*, and managed in a different way in *Leviathan* itself.

According to a recent interpretation, due to Quentin Skinner (see Skinner 1996), Hobbes constructed his civil science with a special awareness of two humanist assumptions: that there were always two sides to any question, and that arguments over what was just and unjust were never more than probable. In connection with the belief in two sides to every question, Hobbes was alive to the dangers of *paradiastole*, the rhetorical figure by which actions of an apparently vicious character are re-described as instances of a neighbouring virtue, and actions of a noble character are re-described unflatteringly. At first, in *Elements of Law* and *De cive*, Hobbes railed against humanism by arguing that 'science' in a preferred sense put certain conclusions *beyond* controversy. Questions within the scope of science would thus *not* have two sides. More, questions of justice lay squarely within the scope of science. That is, according to both *Elements of Law* and *De cive*, they could be settled by syllogistic reasoning from the definition of justice as sticking to the covenants one enters into, in particular, sticking to the covenant that one will abide by the sovereign's laws or commands. Questions about whether actions were expressions of certain other virtues could also be settled definitively, by establishing whether those actions contributed to peace or the preservation of civil order. For all virtues were means to the establishment or preservation of peace, the maintenance of the covenant establishing the commonwealth pre-eminently so. With a science of the virtues – a science deducing precepts corresponding to the virtues from an overarching requirement of seeking peace, Hobbes had a basis for showing which uses of *paradiastole* led to erroneous moral evaluations.

So much for the early response to *paradiastole*. The later response is distinguished by new background assumptions about the human capacity of reason. *Leviathan* (ch. 5) stresses that human beings are not born with the ability to reason in a way that will produce science. Nor are they likely to acquire this ability easily or recognize it in others. Again, a standard human audience cannot be counted upon to be receptive to the sort of reasoning recommended in *Elements of Law* and *De cive*. Not only does it strain attention, but when it is followed, it does

not necessarily compel belief. People need to be *willing* to heed its message, and they are unwilling to do so where it goes against or *seems* to go against their interest. Eloquence or rhetoric is needed to catch the attention, keep it and neutralize the resistance of interest to its conclusions. Hobbes is not only supposed to have dropped some of his earlier strictures on rhetoric by the time he wrote *Leviathan*, but actually to have practised the techniques of Cicero and Quintilian in works composed after 1650.

Hobbes probably *did* change his mind about the uses of rhetoric, but the response to paradiastole is not as central to Hobbes' civil science as the interpretation we are considering suggests, and there is more of a separation in Hobbes between the task of a moral science and the production of conclusive-seeming moral and political conclusions for non-philosophers.

Turning first to paradiastole, let us consider the passage from chapter 15 of *Leviathan* that, according to the interpretation we are considering, is central to the understanding of the point of Hobbes' moral science:

Good, and Evill, are names that signifie our Appetites and Aversions, which in different tempers, customes and doctrines of men, are different. And divers men differ not onely in their Judgement, on the senses of what is pleasant and unpleasant to the taste, smell, hearing, touch and sight; but also of what is conformable, or disagreeable, to Reason, in the actions of common life. Nay, the same man, in divers times, differs from himselfe; and one time praiseth, that is, calleth Good, what at another time he disperaiseth, and calleth Evil.

What is crucial here is the idea that evaluative terms in each man's mouth signify appetites or aversions – psychological dispositions to pursue or avoid things – and that these appetites and aversions can vary from person to person. Evaluative terms can accordingly also vary in signification, depending on whose mouth they come from, and what that person's circumstances and history are. Although a given pattern of appetite and aversion in one person need not be idiosyncratic – people can agree in appetites and aversions if their constitutions and experiences are similar – the things that naturally determine the pattern of appetite and aversion are inconstant, and so, if evaluations are dictated by appetites and aversions, there need be no firm distinction between good and evil either, and no firm distinction between people's judgements of what they should do and what they should not do. So it is sheer luck if people do not disagree over good and evil or if they do not disagree so heatedly that they come to blows. There is incipient war, in other words, in the facts of how individual appetites and aversions are naturally formed.

Now although the redescription of vicious actions as virtuous and virtuous actions as vicious is undoubtedly one source of inconstancy and possible disagreement in valuations leading to war, it is only one among others. So the question arises why any linguistic device, let alone any so specific as paradiastolic redescription, should have central importance. Why is not any source of inconstancy in evaluations – linguistic *or* psychological *or* physical – as much a concern of Hobbes' moral science as any other? And why is not ambiguity – the fact of a term's having more than one meaning – the politically dangerous linguistic phenomenon *par excellence* rather than paradiastolic redescription? This suggestion certainly agrees with Hobbes' identification

after 1650 of the chief defect of moral philosophy before his own – that it told people to do right without setting out a ‘certain rule and measure of right’ (De corpore, ch. 1, vii). It certainly agrees with his repeated denunciations of the use of each person’s judgement – private judgement – as the measure of right and wrong.

List of works

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