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FRANCIS BACON

The New Organon

EDITED BY

LISA JARDINE

Queen Mary and Westfield College, University of London

MICHAEL SILVERTHORNE

McGill University

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XXXIX

There are four kinds of *illusions* which block men's minds. For instruction's sake, we have given them the following names: the first kind are called *idols of the tribe*; the second *idols of the cave*; the third *idols of the marketplace*; the fourth *idols of the theatre*.⁹

⁹ It has seemed better to accept the time-honoured translations of the four classes of *idola*, as given in this aphorism. We have however sometimes chosen to translate *idola* itself, apart from these four phrases, as 'illusions'.



XL

Formation of notions and axioms by means of true *induction* is certainly an appropriate way to banish *idols* and get rid of them; but it is also very useful to identify the *idols*. Instruction about *idols* has the same relation to the *interpretation of nature* as teaching the *sophistic refutations* has to ordinary logic.



XLI

The *idols of the tribe* are founded in human nature itself and in the very tribe or race of mankind. The assertion that the human senses are the measure of things is false; to the contrary, all perceptions, both of sense and mind, are relative to man, not to the universe. The human understanding is like an uneven mirror receiving rays from things and merging its own nature with the nature of things, which thus distorts and corrupts it.



XLII

The *idols of the cave* are the illusions of the individual man. For (apart from the aberrations of human nature in general) each man has a kind of individual cave or cavern which fragments and distorts the light of nature. This may happen either because of the unique and particular nature of each man; or because of his upbringing and the company he keeps; or because of his reading of books and the authority of those whom he respects and admires; or because of the different impressions things make on different minds, preoccupied and prejudiced perhaps, or calm and detached, and so on. The evident consequence is that the human spirit (in its different dispositions in different men) is a variable thing, quite irregular, almost haphazard. Heraclitus¹⁰ well said that men seek knowledge in lesser, private worlds, not in the great or common world.

XLIII

There are also *illusions* which seem to arise by agreement and from men's association with each other, which we call *idols of the marketplace*; we take

¹⁰ Heraclitus, fr. 2. A Greek philosopher of the late sixth century, Heraclitus of Ephesus is one of the early Greek philosophers whom as a group Bacon much admired. See 1.68.

the name from human exchange and community. Men associate through talk; and words are chosen to suit the understanding of the common people. And thus a poor and unskilful code of words incredibly obstructs the understanding. The definitions and explanations with which learned men have been accustomed to protect and in some way liberate themselves, do not restore the situation at all. Plainly words do violence to the understanding, and confuse everything; and betray men into countless empty disputes and fictions.

XLIV

Finally there are the *illusions* which have made their homes in men's minds from the various dogmas of different philosophies, and even from mistaken rules of demonstration. These I call *idols of the theatre*, for all the philosophies that men have learned or devised are, in our opinion, so many plays produced and performed which have created false and fictitious worlds. We are not speaking only of the philosophies and sects now in vogue or even of the ancient ones; many other such plays could be composed and concocted, seeing that the causes of their very different errors have a great deal in common. And we do not mean this only of the universal philosophies, but also of many principles and axioms of the sciences which have grown strong from tradition, belief and inertia. But we must speak at greater length and separately of each different kind of *idol*, to give warning to the human understanding.

XLV

The human understanding from its own peculiar nature willingly supposes a greater order and regularity in things than it finds, and though there are many things in nature which are unique and full of disparities, it invents parallels and correspondences and non-existent connections. Hence those false notions that *in the heavens all things move in perfect circles* and the total rejection of spiral lines and dragons (except in name). Hence the element of fire and its orbit have been introduced to make a quaternion with the other three elements, which are accessible to the senses. Also a ratio of ten to one is arbitrarily imposed on the elements (as they call them), which is the ratio of their respective rarities; and other such nonsense. This vanity prevails not only in dogmas but also in simple notions.

XLVI

Once a man's understanding has settled on something (either because it is an accepted belief or because it pleases him), it draws everything else also to support and agree with it. And if it encounters a larger number of more powerful countervailing examples, it either fails to notice them, or disregards them, or makes fine distinctions to dismiss and reject them, and all this with much dangerous prejudice, to preserve the authority of its first conceptions. So when someone was shown a votive tablet in a temple dedicated, in fulfilment of a vow, by some men who had escaped the danger of shipwreck, and was pressed to say whether he would now recognise the divinity of the gods, he made a good reply when he retorted: 'Where are the offerings of those who made vows and perished?'¹¹ The same method is found perhaps in every superstition, like astrology, dreams, omens, divine judgements and so on: people who take pleasure in such vanities notice the results when they are fulfilled, but ignore and overlook them when they fail, though they do fail more often than not. This failing finds its way into the sciences and philosophies in a much more subtle way, in that once something has been settled, it infects everything else (even things that are much more certain and powerful), and brings them under its control. And even apart from the pleasure and vanity we mentioned, it is an innate and constant mistake in the human understanding to be much more moved and excited by affirmatives than by negatives, when rightly and properly it should make itself equally open to both; and in fact, to the contrary, in the formation of any true axiom, there is superior force in a negative instance.



XLVII

The human understanding is most affected by things which have the ability to strike and enter the mind all at once and suddenly, and to fill and expand the imagination. It pretends and supposes that in some admittedly imperceptible way, everything else is just like the few things that took the mind by storm. The understanding is very slow and ill adapted to make the long journey to those remote and heterogeneous instances which test axioms as in a fire, unless it is made to do so by harsh rules and the force of authority.



¹¹ This story is told of Diagoras the Atheist at Cicero, *On the Nature of the Gods*, 111.37, and of Diogenes the Cynic at Diogenes Laertius, *Lives of Eminent Philosophers*, vi.59.

XLVIII

The human understanding is ceaselessly active, and cannot stop or rest, and seeks to go further; but in vain. Therefore it is unthinkable that there is some boundary or farthest point of the world; it always appears, almost by necessity, that there is something beyond. Again it cannot be conceived how eternity has come down to this day; since the distinction which is commonly accepted that there is *an infinity of the past and an infinity of the future* can no way stand, because it would follow that there is one infinity which is greater than another infinity, and that infinity is being consumed and tends towards the finite. There is a similar subtlety about ever divisible lines, from thought's lack of restraint. This indiscipline of the mind works with greater damage on the discovery of causes: for though the most universal things in nature must be brute facts,¹² which are just as they are found, and are not themselves truly causable, the human understanding, not knowing how to rest, still seeks things better known.¹³ And then as it strives to go further, it falls back on things that are more familiar, namely final causes, which are plainly derived from the nature of man rather than of the universe, and from this origin have wonderfully corrupted philosophy. It is as much a mark of an inept and superficial thinker to look for a cause in the most universal cases as not to feel the need of a cause in subordinate and derivative cases.



XLIX

The human understanding is not composed of dry light,¹⁴ but is subject to influence from the will and the emotions, a fact that creates fanciful knowledge; man prefers to believe what he wants to be true. He rejects what is difficult because he is too impatient to make the investigation; he rejects sensible ideas, because they limit his hopes; he rejects the deeper truths of nature because of superstition; he rejects the light of experience, because he is arrogant and fastidious, believing that the mind should not be seen to be spending its time on mean, unstable things; and he rejects anything unorthodox because of common opinion. In short, emotion marks and

¹² *positiva*: cf. II.48 (14) on some things which 'should be accepted on the basis of experience and as brute facts'.

¹³ *notiora*, perhaps equivalent to *natura notiora*, 'better known in nature'.

¹⁴ Cf. Heraclitus, fr. 118.

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stains the understanding in countless ways which are sometimes impossible to perceive.

L

But much the greatest obstacle and distortion of human understanding comes from the dullness, limitations and deceptions of the senses; so that things that strike the senses have greater influence than even powerful things which do not directly strike the senses. And therefore thought virtually stops at sight; so that there is little or no notice taken of things that cannot be seen. And so all operation of spirits enclosed in tangible bodies remains hidden and escapes men's notice. And all the more subtle structural change¹⁵ in the parts of dense objects (which is commonly called alteration, although in truth it is movement of particles) is similarly hidden. Yet unless the two things mentioned are investigated and brought to the light, nothing important can be done in nature as far as results are concerned. Again, the very nature of the common air and of all the bodies which surpass air in rarity (of which there are many) is virtually unknown. For by itself sense is weak and prone to error, nor do instruments for amplifying and sharpening the senses do very much. And yet every interpretation of nature which has a chance to be true is achieved by instances, and suitable and relevant experiments, in which sense only gives a judgement on the experiment, while the experiment gives a judgement on nature and the thing itself.

LI



The human understanding is carried away to abstractions by its own nature, and pretends that things which are in flux are unchanging. But it is better to dissect nature than to abstract; as the school of Democritus¹⁶ did, which penetrated more deeply into nature than the others. We should study matter, and its structure (*schematismus*), and structural change (*meta-schematismus*), and pure act, and the law of act or motion; for *forms* are figments of the human mind, unless one chooses to give the name of *forms* to these laws of act.

¹⁵ *meta-schematismus*

¹⁶ Democritus of Abdera, Greek atomist philosopher of the fifth century BC.

LII

Such then are the *illusions* that we call *idols of the tribe*, which have their origin either in the regularity of the substance of the human spirit; or in its prejudices; or in its limitations; or in its restless movement; or in the influence of the emotions; or in the limited powers of the senses; or in the mode of impression.

LIII

Idols of the cave have their origin in the individual nature of each man's mind and body; and also in his education, way of life and chance events. This category is varied and complex, and we shall enumerate the cases in which there is the greatest danger and which do most to spoil the clarity of the understanding.

LIV

Men fall in love with particular pieces of knowledge and thoughts: either because they believe themselves to be their authors and inventors; or because they have put a great deal of labour into them, and have got very used to them. If such men betake themselves to philosophy and universal speculation, they distort and corrupt them to suit their prior fancies. This is seen most conspicuously in Aristotle,¹⁷ who utterly enslaved his natural philosophy to his logic, and made it a matter of disputation and almost useless. Chemists as a group have built up a fantastic philosophy out of a few experiments at the furnace, which has a very limited range; and Gilbert¹⁸ too, after his strenuous researches on the magnet, immediately concocted a philosophy in conformity with the thing that had the dominating influence over him.

LV

The biggest, and radical, difference between minds as far as philosophy and the sciences is concerned, is this: that some minds are more effective

¹⁷ The great Greek philosopher, 384–322 BC, Bacon's particular target in *The New Organon*. See 1.63 and 67, and *Introduction*, pp. 7–8.

¹⁸ William Gilbert (1544–1603), scientist and physician. Court physician to Elizabeth I and James I. Best known for his studies of magnetism, he published *De magnete* in 1600.



and more suited to noticing the differences between things, others to noticing their similarities. For sharp and steady minds can fix their attention, and concentrate for long periods on every subtle difference; but sublime and discursive minds discern even the slightest and most general similarities in things, and bring them into relationship; both minds easily go to extremes by grasping at degrees of things or at shadows.

LVI

There are some minds which are devoted to admiration for antiquity, others to the love and embrace of novelty, and few have the temperament to keep to the mean without criticising the true achievements of the ancients or despising the real contributions of the moderns. This is a great loss to the sciences and to philosophy, since these are not judgements but enthusiasm for antiquity or modernity; and truth is not to be sought from the felicity of a particular time, which is a variable thing, but from the light of nature, which is eternal. We must reject these enthusiasms, and ensure that the understanding is not diverted into compliance with them.



LVII

Observation of nature and of bodies in their simple parts fractures and diminishes the understanding; observation of nature and of bodies in their composition and complex structure stupefies and confounds the understanding. This is best seen in a comparison of the school of Leucippus and Democritus¹⁹ with the other philosophies. It is so concerned with the particles of things that it almost forgets their structures; while the others are so astonished by beholding the structures that they do not penetrate to the simple parts of nature. These kinds of observation therefore need to be alternated and taken in turn, so that the understanding may be rendered both penetrating and comprehensive; and the defects we mentioned avoided, with the illusions they generate.



LVIII

Let such be the care in observation which will banish and get rid of *idols of the cave*, which mostly have their origin in a dominance or excess of

¹⁹ Greek atomists. See n. 16 above.

composition and division, or in partiality for historical periods, or in the large and minute objects. And in general every student of nature must hold in suspicion whatever most captures and holds his understanding; and this warning needs to be all the more applied in issues of this kind, to keep the understanding clear and balanced.

LIX

But the *idols of the marketplace*²⁰ are the biggest nuisance of all, because they have stolen into the understanding from the covenant²¹ on words and names. For men believe that their reason controls words. But it is also true that words retort and turn their force back upon the understanding; and this has rendered philosophy and the sciences sophistic and unproductive. And words are mostly bestowed to suit the capacity of the common man, and they dissect things along the lines most obvious to the common understanding. And when a sharper understanding, or more careful observation, attempts to draw those lines more in accordance with nature, words resist. Hence it happens that the great and solemn controversies of learned men often end in disputes about words and names. But it would be wiser (in the prudent manner of the mathematicians) to begin with them, and to reduce them to order by means of definitions. However, in the things of nature and matter, these definitions cannot cure this fault. For the definitions themselves consist of words, and words beget words, so that it is necessary to have recourse to particular instances and their sequences and orders; as we shall explain soon when we deal with the method and manner of forming notions and axioms.

LX

The *illusions* which are imposed on the understanding by words are of two kinds. They are either names of things that do not exist (for as there are things that lack names because they have not been observed, so there are also names that lack things because they have been imaginatively assumed), or they are the names of things which exist but are

²⁰ We have retained the traditional translation of this phrase because it is so familiar. However, 'marketplace' has quite the wrong connotation in suggesting some economic notion. A better rendering of 'forum' would be 'townsquare'; it is the place where men meet and talk and reinforce each others' 'idols', or 'illusions'. On 'idols' see 'Plan of the Work', n. 13.

²¹ *foedus*: for agreement as the origin of the meaning of words, see above, I.43.

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confused and badly defined, being abstracted from things rashly and unevenly. Of the former sort are fortune, the first mover, the orbs of the planets, the element of fire and fictions of that kind, which owe their origin to false and groundless theories. *Idols* of this kind are easily got rid of; they can be eradicated by constantly rejecting and outdating the theories.

But the other kind of *idol* is complex and deep-seated, being caused by poor and unskilful abstraction. For example, let us take a word ('wet' if you like) and see how the things signified by this word go together; it will be found that the word 'wet' is simply an indiscriminating token for different actions which have no constancy or common denominator. For it signifies both what is easily poured around another object; and what is without its own boundaries and unstable; and what easily gives way all round; and what easily divides and disperses; and what easily combines and comes together; and what easily flows and is set in motion; and what easily adheres to another body and makes it wet; and what is easily reduced to a liquid, or liquefies, from a previous solid state. Hence when it comes to predicating and applying this word, if you take it one way, a flame is wet; if in another, air is not wet; if in another, a speck of dust is wet; if in another, glass is wet; it is easily seen that this notion has been rashly abstracted from water and common and ordinary liquids only, without any proper verification.

There are various degrees of deficiency and error in words. Least faulty is the class of names of particular substances, especially the lowest, well-derived species (e.g. the notions of chalk and mud are good, of earth bad); next is the class of names of actions, such as 'generate', 'corrupt', 'alter'; the faultiest class is of the names of qualities (with the exception of direct objects of sense), such as 'heavy', 'light', 'rare', 'dense' etc.; but in all classes, inevitably, some notions are a little better than others, depending on the number of each that come to the notice of the human senses.

LXI

Idols of the theatre are not innate or stealthily slipped into the understanding; they are openly introduced and accepted on the basis of fairytale theories and mistaken rules of proof. It is not at all consistent with our argument to attempt or undertake to refute them.

There is no possibility of argument, since we do not agree either about

the principles or about the proofs.²² It is a happy consequence that the ancients may keep their reputation. I take nothing from them, since the question is simply about the way. As the saying goes, a lame man on the right road beats the runner who misses his way. It is absolutely clear that if you run the wrong way, the better and faster you are, the more you go astray.

Our method of discovery in the sciences is designed not to leave much to the sharpness and strength of the individual talent; it more or less equalises talents and intellects. In drawing a straight line or a perfect circle, a good deal depends on the steadiness and practice of the hand, but little or nothing if a ruler or a compass is used. Our method is exactly the same. But though there is no point in specific refutations, something must be said about the sects and kinds of such theories; and then of the external signs that the situation is bad; and lastly of the reasons for so much failure, and such persistent and general agreement in error; so that there may be easier access to true things, and the human understanding may be more willing to cleanse itself and dismiss its *idols*.

LXII

There are many *idols of the theatre*, or theories, and there could be many more, and perhaps one day there will be. For if men's minds had not been preoccupied for so many centuries now with religion and theology, and if also civil governments (especially monarchies) had not been hostile to such novelties even in thought, so that men could not get involved in them without danger and damage to their fortunes, and would not only be deprived of reward but exposed to contempt and envy, without doubt a number of other philosophical and theoretical sects would have been introduced, like those which once flourished in great variety in ancient Greece. For just as several accounts of the heavens can be fashioned from the *phenomena* of the air, so, and much more, various dogmas can be based and constructed upon the phenomena of philosophy. And the stories of this kind of *theatre* have something else in common with the dramatist's theatre, that narratives made up for the stage are neater and more elegant than true stories from history, and are the sort of thing people prefer.

In general, for the content of philosophy, either much is made of little or

²² This is a legal maxim which Bacon adapts to his method.

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little is made of much, so that in both cases philosophy is built upon an excessively narrow basis of experience and natural history, and bases its statements on fewer instances than is proper. Philosophers of the rational type are diverted from experience by the variety of common phenomena, which have not been certainly understood or carefully examined and considered; they depend for the rest on reflection and intellectual exercise.

There are also philosophers of another type who have laboured carefully and faithfully over a few experiments, and have had the temerity to tease out their philosophies from them and build them up; the rest they twist to fit that pattern in wonderful ways.

There is also a third type, who from faith and respect mingle theology and traditions; some of them have been unfortunately misled by vanity to try to derive sciences from Spirits and Genii. And so the root of errors and false philosophy is of three kinds: Sophistic, Empirical and Superstitious.

LXIII

The most obvious example of the first type is Aristotle, who spoils natural philosophy with his dialectic. He constructed the world of categories; he attributed to the human soul the noblest substance, a genus based on words of second intention; he transformed the interaction of *dense* and *rare*, by which bodies occupy greater and smaller dimensions or spaces, into the unilluminating distinction between act and potentiality; he insisted that each individual body has a unique and specific motion, and if they participate in some other motion, that motion is due to a different reason; and he imposed innumerable other things on nature at his own whim. He was always more concerned with how one might explain oneself in replying, and to giving some positive response in words, than of the internal truth of things; and this shows up best if we compare his philosophy with other philosophies in repute among the Greeks. The 'similar substances'²³ of Anaxagoras, the atoms of Leucippus and Democritus, the earth and sky of Parmenides, the strife and friendship of Empedocles, the dissolution of bodies into the undifferentiated nature of fire and their return to solidity in Heraclitus, all have something of natural philosophy in them, and have the feel of nature and experience and bodies;²⁴ whereas Aristotle's physics too often sound like mere terms of dialectic, which he rehashed under a



²³ *homoiomera*

²⁴ These are all pre-Socratic Greek philosophers of the late sixth and the fifth centuries BC.

more solemn name in his metaphysics, claiming to be more of a realist, not a nominalist. And no one should be impressed because in his books *On Animals* and in his *Problems* and other treatises there is often discussion of experiments. He had in fact made up his mind beforehand, and did not properly consult experience as the basis of his decisions and axioms; after making his decisions arbitrarily, he parades experience around, distorted to suit his opinions, a captive. Hence on this ground too he is guiltier than his modern followers (the scholastic philosophers) who have wholly abandoned experience.

LXIV

The *empirical* brand of philosophy generates more deformed and freakish dogmas than the *sophistic* or rational kind, because it is not founded on the light of common notions (which though weak and superficial, is somehow universal and relevant to many things) but on the narrow and unilluminating basis of a handful of experiments. Such a philosophy seems probable and almost certain to those who are engaged every day in experiments of this kind and have corrupted their imagination with them; to others it seems unbelievable and empty. There is a notable example of this among the chemists and their dogmas; otherwise it scarcely exists at this time, except perhaps in the philosophy of Gilbert. However, we should not fail to give a warning about such philosophies. We already conceive and foresee that, if ever men take heed of our advice and seriously devote themselves to experience (having said goodbye to the sophistic doctrines), then this philosophy will at last be genuinely dangerous, because of the mind's premature and precipitate haste, and its leaping or flying to general statements and the principles of things; even now we should be facing this problem.



LXV

The corruption of philosophy from *superstition* and a dash of theology is much more widely evident, and causes a very great deal of harm either to entire philosophies or to their parts. For the human mind is no less liable to the impressions of fantasy than to impressions from common notions. The disputatious and *sophistical* kind of philosophy catches the understanding in a trap, but the other kind, the fantastic, high-blown, semi-

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poetical philosophy, seduces it. There is in man a kind of ambition of the intellect no less than of the will, especially in lofty, high-minded characters.

A conspicuous example of this occurs among the Greeks in Pythagoras, where it is combined with a rather crass and cumbrous *superstition*, and in a more perilous and subtle form in Plato and his school. This kind of evil also occurs in parts of other philosophies by the introduction of abstract forms and final causes and first causes, and by frequent omission of intermediate causes and so on. We must give the strongest warning here. For the worst thing is the *apotheosis of error*; respect for foolish notions has to be regarded as a disease of the intellect. Some of the moderns have, with extreme frivolity, been so lenient to such foolishness that they have tried to base natural philosophy on Genesis and the Book of Job and other sacred Scriptures, *seeking the dead among the living*.²⁵ This folly needs to be checked and stifled all the more vigorously because heretical religion as well as fanciful philosophy derives from the unhealthy mingling of divine and human. And therefore it is very salutary, in all sobriety, to give to faith only what belongs to faith.

²⁵ Luke 24:5.

CXXIX

It remains to say a few things about the excellence of the Purpose. If we had said these things before, they would have seemed like mere wishes, but now that hope has been given, and unwarranted prejudices removed, they will perhaps have more weight. And if we had completed and quite finished the whole thing, if we were not inviting others to play a part from now on and take a share in our labours, then too we would have refrained from words of this kind, in case they should be taken as a proclamation of our own merit. But since we have to excite the industry of others and stir their hearts and set them on fire, it is appropriate to recall certain things to men's minds.

First therefore, the introduction of remarkable discoveries holds by far the first place among human actions; as the ancients judged. For they ascribed divine honours to discoverers of things; but to those who had made great achievements in political matters (such as founders of cities and empires, legislators, liberators of their countries from long-standing evils, conquerors of tyrants and so on) they decreed only the honours of heroes. And anyone who duly compares them will find this judgement of antiquity correct. For the benefits of discoveries may extend to the whole human race, political benefits only to specific areas; and political benefits last no more than a few years, the benefits of discoveries for virtually all time. The improvement of a political condition usually entails violence and disturbance; but discoveries make men happy, and bring benefit without hurt or sorrow to anyone.

Again, discoveries are like new creations, and imitations of divine works; as the poet well said:

Athens, of glorious name, was once the first to give fruitful crops to men in their misery, and RECREATED their life, and made them laws.⁶⁵

And it seems worthy of note in Solomon, that though he abounded in power, gold, magnificent works, courtiers, servants, in naval power too, and

⁶⁵ Lucretius, *On the Nature of Things*, vi.1-3. In the edition of Cyril Bailey (Oxford Classical Texts, 2nd edn, Oxford, 1922) the lines are printed as 'Primae frugiparos fetus mortalibus aegris/dididerunt quondam praeclaro nomine Athenae/et recreaverunt vitam legesque rogarunt.'

the fame of his name and unparalleled human admiration, yet he selected none of these things as his glory, but declared as follows: 'the glory of God is to conceal a thing; the glory of a king is to find out a thing'.⁶⁶

Again (if you please), let anyone reflect how great is the difference between the life of men in any of the most civilised provinces of Europe and in the most savage and barbarous region of New India; and he will judge that they differ so much that deservedly it may be said that 'man is a God to man',⁶⁷ not only for help and benefit, but also in the contrast between their conditions. And this is due not to soil, climate or bodily qualities, but to Arts.

Again, it helps to notice the force, power and consequences of discoveries, which appear at their clearest in three things that were unknown to antiquity, and whose origins, though recent, are obscure and unsung: namely the art of printing, gunpowder and the nautical compass. In fact these three things have changed the face and condition of things all over the globe: the first in literature; the second in the art of war; the third in navigation; and innumerable changes have followed; so that no empire or sect or star seems to have exercised a greater power and influence on human affairs than those mechanical things.

And it would not be irrelevant to distinguish three kinds and degrees of human ambition. The first is the ambition of those who are greedy to increase their personal power in their own country; which is common and base. The second is the ambition of those who strive to extend the power and empire of their country among the human race; this surely has more dignity, but no less greed. But if anyone attempts to renew and extend the power and empire of the human race itself over the universe of things, his ambition (if it should so be called) is without a doubt both more sensible and more majestic than the others'. And the empire of man over things lies solely in the arts and sciences. For one does not have empire over nature except by obeying her.

Besides, if the usefulness of any one particular discovery has moved men to regard anyone who could confer such a benefit on the whole human race as more than a man, how much nobler will it appear to make a discovery which may speedily lead to the discovery of all other things? And yet (simply to tell the truth) just as we owe much gratitude to light, because we in turn can see by it to find our way, practise the arts, read and recognise

⁶⁶ Proverbs 25:2.

⁶⁷ A saying attributed to Caecilius Comicus.

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each other, and yet the actual seeing of light is a more excellent and finer thing than its many uses, so surely the very contemplation of things as they are, without superstition or deceit, error or confusion, is more valuable in itself than all the fruits of discoveries.

Finally, if anyone objects that the sciences and arts have been perverted to evil and luxury and such like, the objection should convince no one. The same may be said of all earthly goods, intelligence, courage, strength, beauty, wealth, the light itself and all the rest. Just let man recover the right over nature which belongs to him by God's gift, and give it scope; right reason and sound religion will govern its use.