

# FRANCIS BACON: THE THEOLOGICAL FOUNDATIONS OF NATURAL PHILOSOPHY

## FRANCIS BACON: FUNDAMENTELE TEOLOGICE ALE FILOSOFIEI NATURALE

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### Abstract

*In this paper I attempt to show that Bacon's interpretation of the scriptural stories of the Creation and Fall of man provides the conditions of possibility for the knowledge of nature. I will show that Bacon's references to these Biblical narratives unveil important philosophical assumptions related to what kind of universe is out there and what type of knowledge of the world the human agent can experience.*

**Key-words:** Francis Bacon, theological foundations, epistemology, Valerius Terminus.

**Cuvinte cheie:** Francis Bacon, fundamente teologice, epistemologie, Valerius Terminus.

### Introduction

The relation between science and religion has been intensely studied by Baconian scholars, yet no academic consensus has been reached so far and the subject is still considered controversial. This statement might seem quite puzzling for the Baconian scholars who are convinced that Bacon's project for a thorough reformation of learning implied a separation between matters of faith and natural philosophy. Many of them have read Bacon's requirement to make a distinction between the two realms, stipulated in some often quoted passages from the *New Organon* (1620) or *The Advancement of Learning* (1605), as a foretelling of the beginning of secularizing science. Thus, Bacon's method has been portrayed as a crystal-clear image of modern scientific thinking. In *Francis Bacon: The theological Foundations of Valerius Terminus*, Benjamin Miller [1] provides an account of the relation between science and religion somewhat similar to the abovementioned one. Accepting that Bacon was involved in the religious debates of the time, Milner stresses that the gradual estrangement from Calvinist thinking of the English philosopher implied the very secularization of his natural philosophy. Thus, for Milner, the unfinished and unpublished work of *Valerius Terminus* (1603) – in which Bacon appears to underline the basic ideas for his project of the interpretation of nature, to be found later on in the *Advancement of Learning* and then in the revised Latin version, *De Augmentis Scientiarum* (1623) – was an attempt to establish natural philosophy on theological assumptions. Later on, following his departure from Calvinist thinking, Bacon ended up believing, according to Milner, that the need to master nature and to advance natural philosophy was in fact a human attempt rather than a foreordained plan of God, and therefore abandoned his initial attempt to set natural philosophy upon theological foundations. In Milner's reading, Bacon thought that natural philosophy was still important for theology because the knowledge of nature by means of secondary causes was a glorification of the divine creation, but theology ceased to be fundamental for natural philosophy.

A more recent approach to the relation between science and religion has been proposed by Peter Harrison in his work *The Fall of Man and the Foundations of Science*. [2] According to Harrison, the central debate of the sixteenth and seventeenth century was related to a view of the human nature inspired by Augustine, for whom man had inherited sensorial and cognitive

deficiencies, as a consequence of the original sin. Thus, for the postlapsarian man, the process of knowing nature is difficult and minute, because the limitations of both mind and senses impair knowledge. This widespread interest for the human nature was to be reflected in a continuous attempt to develop strategies to counteract the human limitation and attempt to restore the privileged condition man had prior to the Fall. Thus, for Harrison, the Baconian experimental method of natural philosophy was envisaged as one of the techniques meant to deal with these innate deficiencies. But, although theological anthropology is relevant in framing the method of knowledge production, with Bacon, the method in itself begins to be freed from any theological foundations.

In this paper, I shall try to propose a new interpretation of the relation between science and religion in the Baconian philosophy. I will argue that Bacon derives the conditions of possibility of knowledge from his interpretation/reading of the myths of Creation and Fall. Thus, while Harrison argues that Bacon proposes a method for knowledge production which is autonomous, free of any theological assumptions, the point of this paper is that the Baconian method is, in fact, highly dependent on his religious beliefs and on a 'religiously' constructed cosmology. If the hypothesis of this paper is legitimate, the attempt to separate the activity and method of knowledge production from religion in the Baconian philosophic system is not appropriate, because the very construction of the project rests upon a world view and a possibility to know nature that is justified in a theological manner.

The premises of the paper are that, although it is undeniable that Bacon did point out in some passages of his works [3] that the mixture of faith and natural philosophy is undesirable [4], for him such a separation cannot be seen as a complete divorce. To Bacon, the "book of nature" should not be read by appeal to divine causes, in the sense of a constant direct divine intervention in natural agency, as most of the Calvinists believed [5]. The truths of the Bible tell something about God's will, which can only be "revealed" to man, whereas the truth of nature can and should be investigated by means of secondary causes, because it is proof not of God's will, but of God's power. Knowledge of God's will was prohibited from the very beginning. Had it been possible for God's will to be known by any created being, it would have implied that the divine creation would match the level of cognoscibility of the Creator himself, a fact which is impossible since God must be of a different order (eternal and infinite) when compared to his creation. On the other hand, the knowledge of all that can be intelligibly known about the divine creation was accessible to man in the pre-lapsarian state. If the cause of man's Fall was not the possession of knowledge itself, then the attempt to understand the groundwork of nature and to disclose the principles which are at work in nature cannot be regarded as a challenge to the divine will. Moreover, Bacon thought that religion and natural philosophy are reconcilable because the underpinnings of the "book of nature" are commanded by divine power and the divine power was meant, even before the actual Creation took place, to be acknowledged and contemplated.

### **The Conditions of Possibility of Knowledge**

Bacon dedicated most of his philosophical writings to the reorganization, reevaluation and reformation of the traditional system of learning. Not much was to be kept of what he evaluated as the state of knowledge of his time; instead, he proposed a new system constructed with the help of a method known as the interpretation of nature, whose product should have been the discovery of "forms". If the possibility to construct and implement a project that reforms knowledge and leads the way to certain and secure explanations of the "book of nature" is admitted, then knowledge itself must be possible. Is there knowledge of nature? Can people know and, if they can, how do they know? These are core questions of any epistemological quest. This article attempts to show that, in order to explain the problem of the conditions of possibility of knowledge, Bacon resorted to a specific reading of two biblical stories: the Creation of the universe and the Fall of man.

The problem of what knowledge is and what the conditions of its possibility are is one which almost all philosophers of both the ancient and the modern world have asked and are still asking. Bacon makes no exception. But Bacon did not fear to accept unjustifiable and non-testable hypotheses of a profoundly subjective religious character. The answers to the abovementioned questions emerged out of a deep conviction that the Bible contains the divine truth, and that it is a legitimate task to individually try to grasp the meaning of the words of the Bible. The Baconian writings abound with references to religious texts and religious teachings. Thus, the very quantity of the biblical references can make us doubt the fact that this was only a convention in the style of writing which had absolutely no influence, relevance or direct impact upon the Baconian project of instaurating a natural philosophy. If one wants to disclose Bacon's religious conviction and establish whether those beliefs had an influence on his program of the reformation of learning and, if so, in what sense they did, the religious writings and the first chapter of *Valerius Terminus: of the Interpretation of Nature with the Annotations of Hermes Stella* seem a good point to start. *Valerius Terminus* is a sketch of some of his most influential philosophical ideas: the fundamental errors and impediments of the system of learning of the time, the causes of those errors and their possible remedies, a sketch of his project for instituting a new method for knowledge production, the interpretation of nature and the conditions of possibility of this method. Yet, the most striking and the most relevant feature of this early writing, is the heavy reliance upon Bacon's religious beliefs which were briefly but densely sketched in *A Confession of Faith* (1602?), a ten-page work which seems to strengthen the belief that the project to establish a new and true philosophy depends on the interpretations of the two key biblical stories – the Creation and Fall.

The interpretation of the biblical stories helps Bacon to design some primary principles without which he could not have given meaning to his project of constructing a natural philosophy. The Biblical stories are crucial in order to justify several implicit assumptions entailed by the mere acceptance of the possibility of the knowledge (discovery) of nature: if natural philosophy can unveil forms, then the universe must have a structure/must be ordered, this structure must have moments or instances of relative stability which shall ensure that experiments can be repeated and the results trusted [6], and the cognitive agent must have a mental disposition or ability enabling him to attain the knowledge of nature.

### **The ordered Creation**

In order to justify the three assumptions mentioned above, Bacon resorts to religious convictions. To him, God is the creator of a system. That nature involves order is a tacit assumption upon which the very possibility of explaining a fact is built; all forms of science rely upon the principle of the order of things, a principle that Bacon explicitly adopted and justified in his religious writings. In *A Confession of Faith*, in which personal convictions and interpretations of the Bible are outlined, Bacon wrote: "He created heaven and earth, and all their armies and generations, and gave unto them *constant and everlasting laws*, which we call *Nature*, which is *nothing but the laws of the creation* which laws nevertheless have had three changes or times, and are to have a fourth and last." [7].

Thus, we are told that God's creation is structured/ ordered and its actual visible shape is not the result of a direct continuous intervening action of God. Instead, this action is performed "by compass; not violating Nature, which is his own law upon the creature" [8], by means of an arrangement of forms resulting from the action of a set of principles/laws acting in nature. This means two things: on the one hand, one does not need God in order to be able to understand/explain nature. Natural philosophy should be done by means of secondary causes, since this is the path chosen by God to work upon nature. Although God is behind all actions which were and which shall ever exist, uncovering the principles at work is enough not only to understand, but also to control nature. On the other hand, we are told that this structured/ordered nature is a predictable

system, whose laws are not changing; they are constant and atemporal. And yet, immediately afterwards, we are told that these laws have suffered three changes and are to suffer a fourth one: “The first, when the matter of heaven and earth was created without forms: the second, the interim of every day’s work: the third, by the curse, which notwithstanding was no new creation, but a privation of part of the virtue of the first creation: and the last, at the end of the world, the manner whereof is not yet revealed” [9].

The first change is the creation of matter itself; this is prior to the beginning of the work of the six days of Creation and, more importantly, this moment is envisaged as being outside of time itself. The creation of matter implies the creation of time; therefore God’s will and power do not have succession in time [10]. The lack of succession in time, coupled with the attribute of perfect reason, implies that the divine mind foreknows and thus has foreordained the Fall of man and his attempts for redemption; but foreknowing does not necessarily mean determining an action, causally generating it, therefore the liberty of choice was a genuinely human attribute protected against God’s absolute character. Bacon’s conviction that matter was created before the very act of creation in his religious writings is consistent with his theory of matter, sketched in *On principles and Origins, according to the fables of Cupid and Coelum*, where we are told that: “This chaos then, which was contemporary with Cupid, signified the rude mass or congregation of matter... Now of this primary matter and the proper virtue and action thereof there can be no cause in nature (...), for nothing was before it” [11].

Moreover, the very fact that the existence of matter cannot be put or should not be put under philosophical investigation and that it has to be seen as a principle in itself, can also be linked with the biblical story of creation and with the fact that in this story, it is revealed to us that only the workings of nature – expressions of matter – are submitted to experiment and not the “un-formed” matter – the chaos – which existed prior to the plan of creation itself. [12]

The second change comprises the very days of Creation when matter is shaped/takes form; the laws of nature are put in action generating forms in perfect combinations according to specific rules. This perfect configuration of matter is the state of the Edenic existence of God’s creation; at this point, time and matter themselves – as “forms” similar to the “forms of time and matter” known to man – come into existence. From this point on, the workings of nature are cognizable to man. At this stage everything is put into perfect order and perfect manifestation, after God ceased to create and rested. “For there seem to be three things with regard to this subject which we know by faith. First, that matter was created from nothing. Secondly, that the development of a system was by the word of Omnipotence... Thirdly, that this *configuration (before the Fall)* was the best of which *matter (as it has been created) was susceptible*”. [13]

The third stage encompasses the biblical moment of the Fall and the entire subsequent history of a creation deprived of its initial virtue, but which the human agent can still know and experience, since he sinned by temptation and not by innate malice. The fourth and last stage evoked by Bacon is the end of the world, a stage whose reference is unknown: what the end shall look like no one can say, but there is hope for a retrieval of the Edenic conditions. The last stage also tells us that to Bacon the universe is not eternal, is finite in time, whereas matter, which existed prior to Creation itself, is eternal and infinite.

As paradoxical as it seems, this periodization or alteration of the laws involves no contradiction with their proclaimed constancy. Bacon invokes two very different realms: the divine, which manifested itself throughout the Edenic existence of matter and man, when the laws of nature were generated and combined in the best forms possible, and the realm of the reality known to man – the natural – where, as a result of the original sin, the laws might express themselves in all possible combinations, admitting error and monstrous deviations. The changes evoked above do not occur in the nature of the laws themselves since the laws of nature are the laws of the divine creation, but only in their expression; it is as if, with the Fall, the laws of nature remained subordinated to God’s power but were divorced from God’s will – in the sense that the action of matter does not directly

depend on God's will, but it is left to itself. This inviolability of the laws of nature is a condition of possibility for any form of natural philosophy; in order to know nature, the nature can continuously change and be reshaped, but some rules of change must have a minimal stability for the subject to possess knowledge of them – repeated experiments imply the assumption that things conserve properties. This picture can be paralleled with the metaphor of the alphabet of nature [14]:, the simple motions of nature appear to be as the letters of the alphabet: “as the words or terms of all languages, in an immense variety, are composed of a few simple letters, so all the actions and powers of things are formed by a few natures and original elements of simple motions”. [15]

A difference must be kept in mind: although the number of combinations of matter, resulting in the known species, is limited in number, since the quantity of matter is infinite and the rules of combination stable, there are many more potential forms that could come into being; the possibility or impossibility of being is the acknowledgement of its potentiality or non-potentiality. [16] The quest for the knowledge of nature means to trace the rules according to which the laws combine, as well as the laws themselves – the letters of the alphabet and the rules of the alphabet.

Once the creation is complete, something else happens: God stops intervening directly in nature because the laws of nature are left to exercise their unrestrained motions. Consistent with his system of the interpretation of the Bible, but unjustifiable in form, the assumption that God does intervene in nature in a mediate fashion, through the laws of matter, provides a solution to the need to reconcile the fact that man was endowed with free will while God is the ultimate controller. Free will, in itself, is not a problem for the Baconian system, because God need not be the cause of evil acts; [17] thus the conflict between the idea of a virtuous God and the existence of the free will is eliminated. How does saying that God acts in nature through secondary causes, in a mediated manner, absolve Him of having caused the evil acts happening in nature and how does it allow for genuine free will?

The subject of free will is connected to the subject of the omniscient God and of the very important distinction between God's power and God's will. All there is – things and actions – and all that shall ever be cannot go beyond God's power, cannot exercise its existence apart or outside the divine power. God is the ultimate cause, but his power in the world is reflected by the mechanism of secondary causes. For Bacon, an action of God through secondary causes is compulsory; [18] in order for experience itself to exist and for man to have an intelligible account of God's creation, the ultimate law of nature, God, cannot interfere causally with the natural processes. If God's power were to devolve directly, the creation should have been a perfect match to the divine mind and the divine mind was kept hidden from man even in the Garden of Eden. God is the ultimate creator of everything, but does not directly cause all actions. An evil act is a result of the intention of the human agent, not of God's will. Although it is in God's power to know all evil deeds, God choose not to interfere in the agent's action, since the causal interference of God in nature would mean breaking the ultimate principle of His Creation.

Bacon also needs this mediated action of God in order to justify the alleged control that man has over nature, ultimately expressed in the form of its manipulation, a humanly controlled combination of the laws of nature. [19] Man has imprinted in his nature the possibility to reach complete knowledge of what there is, but this complete knowledge shall always be bound to time, space and matter: the absolute character of those concepts is comprehensible only to the mind of God, since the mind of God does not obey succession in time [20] and it is not bound to matter. In a mediated action of causation, God allows access to man to the divine plan; that is the principles and rules of Creation. Yet, since matter itself is not a result of the actual Creation, it existed prior to the six days of creation, can be known only in its combinations and its possible forms of existence, but not as “matter unformed”, matter in state of chaos. Bacon reminds us that nature can be found in three different conditions of existence: “She is either free, and follows her ordinary course of development; as in the heavens, in the vegetable and animal creation, and in the general array of the universe; or she is driven out of her ordinary course by the perverseness, insolence, and

forwardness of matter, and violence of impediments; as in the case of monsters; or lastly, she is put in constraint, molded, and made as it were new by art and the hand of man; as in things artificial”. [21]

We can say that free nature is the state of nature made up of combinations set by the divine creation, wild nature is the state of error, when nature brings to life unwanted combinations, while the third state of nature, constrained by man’s will, implies processes such as the experimentation of nature and the actualization of possible combinations of its laws, the creation of artifacts. If God were to act directly in nature and be the cause of all forms of action (natural and human), then man would completely lose the free will; this capacity is the ultimate and most precious verification of the knowledge that man has of the causes which are at work in nature. Yet, the manipulation of nature can only come after the underlying cause(s) has/have been understood, because only in this way can the accidental or chance discovery be avoided. That man controls nature means not that man can change the rules by which combinations occur or the essence of the laws, but only that he possesses a precise and exact understanding of them; that he can put them to use. This point is important because it can be brought as an argument against accusation of utilitarianism. In the *Novum Organum*, Bacon states: “Truth and utility are here the very same things: and works themselves are of greater value as pledges of truth than as contributing to the comforts of life”. [22]

Therefore, the production and reproduction of effects is not an aim per se of the human attempt to acquire knowledge. Something true is utile and its utility is a consequence of it being true, therefore evaluating the utility of something is the ultimate means to verify the correctness, the exactness and the true character of the underlying law.

### **Man can know nature**

Even if nature has order and is stable, another assumption has to be made in order to justify the possibility to produce knowledge: that the subject has the natural capacity to know things. Generally, Bacon was thought to be pessimistic about the capacity of man to grasp the underpinnings of the world, which resulted in the great amount of techniques of observation, experimentation or data ordering meant to replace the innate deficiencies. But the fact that he lacks confidence in the capacity of an unassisted mind to know nature means not that he thinks that man is incapable of unveiling the hidden aspects of nature; he can do that, but only if the human mind is assisted. Man is connected with nature through experience; experience is made possible by the senses and rendered intelligible with the help of the human mind. If this be the case, some internal mechanisms or some assumptions about human nature should be constitutive conditions for the possibility of knowledge. The stories of both Creation and Fall and the doctrine of the rational soul seem to offer information about why and in what conditions can man have certain and clear knowledge of nature. According to the words of Scripture, man had a privileged place among God’s creatures, as that creature which “God created (...) in his image, in a reasonable soul, in innocency, in free will and in sovereignty”. [23] With the original sin, which has led to the emergence of a human moral sense, man lost the innocence and sovereignty: “For man by the fall fell at the same time from his state of innocency and from his dominion over creation. Both of these losses, however, can even in this life be in some part repaired; the former by religion and faith, the latter by arts and sciences”. [24]

Innocence was lost because in itself sin is the breakage of the virtuous man, the man who knows that evil exists, but is not equipped to know the underlying exercise of evil and cannot perform evil acts. Sovereignty is lost because nature evades man’s control and instead begins a more accelerated and chaotic dance, wherein error and accident are expressions of the motions of matter; error and accident are both known and experienced by man. The humankind must work to restore this two attributes man possessed prior to sin and this cannot be done by acquiring knowledge alone. While the restoration of the dominion over nature must be done “by the sweat of

the brow”, or the work of the arts and sciences, the restoration of innocence is left to faith, but it is also connected to a psychological therapy, “a thoughtful prudence to guard against” [25] idols.

On the other hand, the reasonable (rational) soul was not affected by man’s Fall and thus the capacity to know the creation of God cannot be thought to have been lost, but merely impaired. This point admits a caveat. In *A Confession of Faith*, referring to the rational soul, which is the seat of knowledge, Bacon wrote: “That at the first the soul of Man was not produced by heaven or earth, but was breathed immediately from God; so that the ways and proceedings of God with spirits are not included in Nature, that is, in the laws of heaven and earth; but are reserved to the law of his secret will and grace: wherein God worketh still, and resteth not from the work of redemption, as he resteth from the work of creation : but continueth working till the end of the world”. [26]

The abovementioned fragment tells us that the rational soul is not submitted to the laws of nature. The ultimate instrument of knowledge is the rational soul, whose divine nature must have been kept untouched. With the Fall, the human capacity to know was not impaired *per se*, it got affected because all workings of nature escaped man’s control. Man, excepting the rational soul, is entirely material and with this immersion in a rebellious nature, man lost control over his corporeal parts. Man’s mechanisms of experience, external and internal, those which took out information from the external world, the senses, and the faculties of imagining and organizing the respective information were impaired and the innate “idols” of the mind were born.

But, although the actual mental capacity to know nature and the liberty of choice (free will) have not been lost, the actual knowledge of nature does not come naturally any longer; it is made possible only as a consequence of a set of practical activities meant to mend the human senses and the human mental faculties. After the Fall, one can aspire to know nature as a result of a specific illuminating mental state. But, this – let’s call it – ‘state of knowledge’ is a result of two constant activities: the application of the new inductive method – the New Organon – and the cultivation of the mind. If induction is needed to keep the mind still and not to rush for conclusions, the cultivation of the mind is required for curing it.

Prior to the Fall, man had complete information: he could call all existing things by their true names and natures, thus not needing to exercise human-like choice. In my view, choice and change are consequences of situations with incomplete or imperfect information; and this is the exact state in which we find both nature and man after the original sin. But choice is conditional upon the intention of the agent. And it was this intention, “that he should be like unto God”, which brought sin to man. Man’s Fall is not the result of the action of eating from the tree of knowledge, which was the means to effect the sin, but Adam’s intention and desire to compare with God: “the aspiring desire to attain to that part of moral knowledge which defineth of good and evil, whereby to dispute God’s commandments and not to depend upon the revelation of his will, which was the original temptation”. [27]

If the Fall was caused because man selfishly wanted to rupture his dependency on God, after the Fall, human intention becomes the measure of evil or good deeds. For Bacon, an individual’s reason is a cause for action; thus, the cognitive processes are dependent on the goal – the structure of the intention – which makes action possible. If this be the case, then we can assume that the motion of the rational soul coupled to the mental faculties shall differ according to what the initial purpose of its activation was. Thus, only a finite set of motivational forces can activate a cognitive arousal compatible to a correct extraction of forms from the organized observations and experiments. In the preface to *The Great Instauration* we are told that: “The Art which I introduce with this view is a kind of logic... though the difference between it and the ordinary logic is great; indeed, immense. For the ordinary logic professes to contrive and prepare helps and guards for the understanding, as mine does; and in this one point they agree. But mine differs from it in three points especially; viz. *in the end aimed at*; in the order of demonstration; and in the starting point of the inquiry”. [28]

This explains the persistent interest that Bacon manifested for the problem of the end of knowledge. For Bacon, cognition is not separated from the emotional or the motivational part of the mind. If the intention that motivates an action shapes the movements of the mind and the interpretation of nature requires a purged and virtuous mind, then it is legitimate to say that only some/or one motivational factor(s) facilitate(s) the extraction of axioms. The method of the interpretation of nature seems to be correlated with one motivational factor: the restoration of the human condition by the invention of arts – translated in religious summons to follow God’s words, to put in motion the rational soul and to inhibit the uncontrolled animal movements of the sensible soul. Since “Human Power and Human Knowledge meet in one; for where the cause is not known, the effect cannot be produced. Nature to be commanded must be obeyed, and that which in contemplation is as the cause, in the operation is as the rule” [29] it becomes clear that the end of knowledge must be the control of nature that restores the sovereignty of man and thus, reflecting the true and legitimate knowledge, that will “build in the human understanding a true model of the world, such as it is in fact, not such as a man’s own reason would have it to be”, which shall happen if the purpose of knowledge is misguided. In *Valerius Terminus*, we are also told: “And therefore it is not the pleasure of curiosity, nor the quiet of resolution, nor the raising of the spirit, nor victory of wit, nor faculty of speech, nor lucre of profession, nor ambition of honor of fame, nor inablement of business, that are the true ends of knowledge; some of these being more worthy than other, though all inferior and degenerate: but it is the restitution and reinvesting (in great part) of man to sovereignty and power...which he had in the first state of creation”. [30]

It becomes obvious that the end of knowledge should be the attempt to restore the condition held by man prior to Fall. This quest for a useful kind of knowledge entails a moral aspect: if the end of knowledge is directed towards the relief of man’s estate and not for natural curiosity or fame, then the hidden virtue behind the action of searching knowledge is charity, the greatest virtue of all. For Bacon, there is more hope for the restoration of his sovereignty over nature, and thus for the disclosure of nature’s mechanisms, than it is for the restoration of the virtuous man. [31] Thus, the quest for knowledge also becomes a measure of the virtuosity of the individual; therefore it is the constant and genuine attempt to staunchly do this work of restoration that shall bring salvation and not the actual recovery of the Edenic state. Bacon makes use of the concepts of “benefit” and “use” in two ways: one is epistemological, since the ultimate criterion to verify truth is practicality of knowledge; the other one is narrative, since they are constant reminders of the initial condition of knowledge, when there was a “happy marriage” between the mind and the nature of things, a marriage which must be the scope of knowledge if the interpretation of nature were to work.

The Baconian project of the reformation of knowledge is built upon another assumption: to Bacon, man is the only creature of God which is and shall ever be capable of understanding the logic of creation: “declaring not obscurely that god hath framed the mind of man as a glass capable of the image of the universal world, joyning to receive the signature thereof as the eye is of light, yea not only satisfied in beholding the variety of things and vicissitude of times, but raised also to find out and discern those ordinances and decrees which throughout all these changes are infallibly observed”. [32]

Thus, understanding implies the capacity to acknowledge and contemplate the knowledge that one possesses of the world; it does not mean that animals do not extract information from the world, but this information is only perceptual for an animal; it is empty of meaning, whereas to man the information extracted from the world with the help of the senses is value-laden, it has meaning. This capacity with which God has endowed man allows him to have a special position among the species which God decided to create: man is the ultimate creature of God because it can contemplate nature. This anthropocentric character of Bacon’s conviction is rather a common view in theology. Yet, the way Bacon believes this anthropocentrism should manifest itself becomes vital for his philosophical ‘spider web’ and deserves reflection; its justification is also to be found as a result of the interpretation of the myth of creation. At the moment of Creation, man appears to have

been a privileged creature of God, a creature which received the divine inspiration in the form of the rational soul, which “was not extracted from the natural world, and so it is not subject to the laws of nature”. [33]

Although Bacon realizes that the chore of discovering the forms cannot be accomplished by a single man – “I am but a trumpeter, and not a combat” – and therefore a collective effort is needed, he is also confident that only a few, the chosen, will ever be able to enter the territory of the interpretation of nature: “and amongst the generations of men, elected a small flock, in whom (by the participation of himself) he purposed to express the riches of his glory”. [34]

The question then is how come the new method is restricted to only a few? How come any other goal in the pursuit of the workings of nature jeopardizes the possibility of knowledge itself? The method for the interpretation of nature is not a mere logical technique; attached to it is a psychological dimension, the “georgics of the mind”, brought about by a specific ethics of behavior. If we take into consideration the interpretation that Bacon had of the story of man’s Fall and the fact that the original cause of the Fall was the temptation of moral knowledge, it seems easier to understand why Bacon believed that the portrait of a virtuous natural philosopher can boost the purging of the mind.

With the incarnation of God’s Son in the body of man, man gains a superior place within creation. The rationale is that man must possess a specific property making it worthy of the Son of God who was incarnated in precisely this form and not in another: the rational soul. The anthropocentrism of the universe could have been accidental, in the sense that God might have chosen another creature to reflect his creation, but by necessity the creature chosen must have had the ability to know nature, must have been imbued with the light of the rational soul, because even before creation God foreordained a contemplator of His work. With this kind of interpretation, anthropocentrism becomes a fact. Prior to the Fall, man is envisaged as a creature that stepped out of nature and contemplated the design rather than being a part submitted to it. Bacon explicitly points out that, in the beginning, man was endowed by God with a complete and pure knowledge of the world structure and categories, but yielding to sin has altered man’s mind, and the desire to know, thus including also the knowledge of nature and the workings of God, ended up being nothing more than a human drive, nurturing curiosity and rushing the mind to conclusions with no support. The desire to know nature is not shared by all people, but the desire to know, to give meaning, to ask questions is a human drive directly reflecting the wandering character of the humankind, a consequence of the Fall.

According to the biblical myth of Adam’s Eden, all the works of God (organic and inorganic) were created to serve man; in this initial state, nature was a servant to man. This gave man in Eden absolute knowledge of the structure of the Universe and of the workings of God. In Book 1 of the *Advancement of Learning*, Bacon writes: “that is, when the end of work is but for exercise and experiment, not for necessity; for there being then no reluctance of the creature, nor sweat of the brow, man’s employment must of consequence have been a matter of delight in the experiment, and not matter of labour for the use. Again, the first act which man performed in Paradise consisted of the two summary parts of knowledge: the view of creatures, and the imposition of names”. [35]

Man was a contemplator of a known world, endowed with sinless knowledge and possessing an error-free understanding of both the mechanisms underlying the world structures and of the categories that build up the world. Notions, be they abstract (e.g. dense, rare etc.) or concrete (e.g. oak, eagle etc.), were the direct mental correspondence of their distribution and of the relations they formed in the world. The human mind was designed to observe and understand the universe. In the initial state, understanding was an act of recognition of the things which were and, in this way, man was allowed to access, through knowledge, the divine power.

The act of the imposition of names, Adam’s main activity prior to the Fall, is similar with the activity that the natural philosopher should engage in: to know nature means to distinguish

things by their properties, functions, internal structure, and possibility of use, mainly to have a correct discrimination among the things which are. This complete awareness of the real structure of God's creation and of the individual bodies created gave man control upon nature, upon the functions that each individual body performed. It was this initial and perfect activity that man performed in Eden that became the inspiration for the doctrine "knowledge is power": the production of effects became a measure of the knowledge of causes in virtue of the light offered by this original activity of naming things according to their nature. To produce an effect means to put to use the cause(s), therefore to replicate the activity of contemplation that Adam performed in the Edenic garden. But if this activity was effortless and natural to the Edenic man and thus suited to be called contemplation, in the post-lapsarian state the same activity, of proper naming, implies effort, caution, the avoidance of error and the continuous experimentation and the technique of the interpretation of nature. Although it was a natural state of man, after the Biblical Fall, contemplation cannot do the work of knowledge production; in a post-lapsarian state, contemplation is an unstable and dangerous activity because it does not use the information of experience cautiously. At many times, the activity of contemplating nature takes a different course: instead of focusing upon nature, the instinctive tendency of the human mind to rush to conclusions or to build phantasms takes place. Therefore, contemplation must be replaced with a new kind of activity which keeps the human mind steady and dry: experimental natural philosophy. This is an active attempt to read the "book of nature", in the sense of constantly putting nature at work and keeping the mind at work upon nature and not upon itself. The instauration of an experimental and not a contemplative form of philosophy is necessary because with the Fall, nature becomes reluctant and the reluctance of nature to the dispositions of man brings about a "chasm ...between the spirit of man and the spirit of nature" [36]; nature is no longer obedient to man's orders; it deceives him and obscures its secrets and continuously suffers deteriorations of its combinations. The purpose of the interpretation of nature is to provide definitions or to form notions in a correct fashion – conceptual clarification. The path to correct notions is assured by the new and certain induction: its logical aspects – the natural philosopher must restrain from generalizing prematurely, must develop lower-level notions extracted from the observations arranged in tables and then must attempt to proceed towards higher-level notions – supplemented by a certain, specific path of reason, a motion of a purged mind matching the motion of matter. The second component is a more intricate part of induction because it requires psychological and ethical dimensions so that the philosopher could hope to grasp the "true and certain" interpretation. Certain need not be synonym with objective, but rather in harmony with nature.

Although man was the sovereign of the divine creation, he was also created material, "from the dust of the earth", as any other creature. His body and even a great deal of his mind is material. This material stuff can be equated with the body plus sensible soul which man shares with all animals and which can be held responsible for the drives and passions exerted upon man. The non-material part of the mind, the rational soul, is of divine inspiration; therefore it is a different kind of substance. Thus, whereas the sensible soul is the result of God's work from the dust and the waters of the earth, the rational one is considered divine in nature and is brought into being by the breath of God [37], which means that the main difference between the rational soul and the sensible soul is in kind and not in degree. Bacon thus believed that there is a difference in kind between the intellectual and animal behavior and that whereas the rational soul is the component of the human agent which makes possible the real and true knowledge of the world, the passions and instincts of the sensible soul obstruct our possibility of knowledge. The sensible soul or the animal spirit is the instrument of the rational soul. It operates at the level of senses translation or at the level of the processes that generate passions and emotions; basically, it is the only reactor to any sort of stimuli, because the two doctrines concerned with the sensible soul are the voluntary motion and the one concerned with the sense. [38] This peculiarity of the sensible soul is also present in all other

animated bodies – animate implies that they are capable of perceptions, reactions to stimuli – with a major difference acknowledged between man and animal.

Since animals are not endowed by nature with any other kind of spirits but the sensible (animal) ones, they react directly in a kind of input-output pattern: “the irrational soul, which we have in common with all brutes...this soul in brutes, is their principal soul, whereof their body is the organ”. [39] The internal reactions are reflected in the bodily movements, so the behavior of the animal is quantifiable and predictable. In the case of men, who have a rational soul coupled to an animal spirit, the response is not immediate, because the activity of the rational soul redirects responses in accordance with the states of the mental faculties. This is important because it can explain how come man’s senses and even mind got affected: after the Fall, Bacon tells us that nature became reluctant to man’s orders; therefore, with the loss of the control upon nature, man lost control also upon his very own material components. This reluctant character that nature had acquired after the Fall justifies the easiness with which Bacon accepts the deceitful character of the senses and the malfunctioning of the human mind, reported in the theory of the idols.

In Bacon’s view, after the Fall we deal with a new concept of man. Man ceases to be somehow seen as outside nature, as a puppeteer of nature, and becomes immersed, stretched and played with by nature. This means that the human mind is now characterized by an increased activity of the sensible soul which made imagination extremely active and prone to generate generalized information out of the immediate experience. The bias towards consent gave sciences their anticipative and uncertain character: “For the winning of assent, indeed, anticipations are far more powerful than interpretations; because being collected from a few instances, and those for the most part of familiar occurrence, they straightaway touch the understanding and fill the imagination”. [40]

Truth was no longer the direct representation of the information individuals received from the senses, not only because the senses themselves were no longer able to generate the correct knowledge, since passions and appetites altered their nature, but also because our capacity of interpreting the information received from the senses had altered. This is one of the most important points Bacon makes. He acknowledges that, in fact, the subject’s reading of nature implies also an interpretative element, and that the unassisted interpretations are doomed to error because man categorizes the world improperly (as a result of the presence of the idols). But, on the other hand, he believes that this ability that God has endowed man with is not completely lost, but is malfunctioning because man, having altered its moral dimension and being subservient to passions and motions of matter, is frail in the face of error.

Bacon hopes to provide a project for the reconstruction of the sciences and human knowledge upon proper foundations. Therefore, the possibility to acquire knowledge is presupposed. Although we are invited to find out the impediments and the deficiencies of a system of knowledge, the positive sentiment of its possibility is constantly felt throughout his major philosophical works. It couldn’t have been otherwise since knowledge itself was not thought to be the cause of the Fall. Bacon, without questioning the truth of the Bible, but allowing himself to interpret the meaning of its content, admits that the cause of sin was not the desire of knowledge in itself, but pride, manifested in the desire to know good and evil, to attain moral knowledge. In the first chapter of *Valerius Terminus*, Bacon states: “Man on the other side, when he was tempted before he fell, had offered unto him this suggestion, that he should *be like unto God*. But how? Not simply, but in this part, *knowing good and evil*. For being in his creation invested with sovereignty of all inferior creatures, he was not needy of power or dominion; but again, being a spirit newly inclosed in a body of earth, he was fittest to be allured with appetite of light and liberty of knowledge”. [41]

That the cause of man’s Fall is of moral nature is also reminded in Part 1 of *The Advancement of Learning*: “As for the knowledge which induced the fall, it was, as was touched before, not the natural knowledge of creatures, but the moral knowledge of good and evil; What

drove man to decay was his *desire to experience* the moral knowledge, “wherein the supposition was, that God's commandments or prohibitions were not the originals of good and evil, but that they had other beginnings, which man aspired to know, to the end to make a total defection from God and to depend wholly upon himself”. [42]

The sin left man in a ripped space with collapsed knowledge. The desire to know the difference between good and evil experientially had as an immediate consequence the invasion of man's mind by passions and corruptions; his privileged nature, of reflecting the image of God, collapsed [43]. The collapse of the complete picture of the world generated an accelerate motion of the intellect, with animal instincts and passions constantly hindering the “drive” of the rational soul to recover its control over the rest of the parts of the mind and restore the initial privileged condition. According to Matthews, the interpretation of the Biblical story of man's Fall distances Bacon from the Puritans' interpretation of the Bible, but it is not unique; in fact, it seems to be fairly inspired by Lancelot Andrewes's theology, for whom it was impossible for knowledge itself to have been the cause of the Fall, because knowledge had been created by God, and thus must have been good. [44] Whether Matthews traces the intellectual sources of Bacon's interpretations of the Scripture correctly or not is of little relevance for the purpose of this paper; what counts is the fact that Bacon rejects the interpretation according to which knowledge (a desire for more knowledge) could have been the cause of the Fall, since, in the Edenic state, man had complete and unrestrained control and dominion over all workings of nature, upon all that reflected God's power. Since man knew all that was intellectually possible to be known, the idea that man could have been tempted by over-knowledge becomes nonsensical. What God kept away from man was not the logic, the internal workings and the results of Creation, but His divine will, and it was this desire to know the underlying principles of good and evil that brought man to sin. This interpretation of the myth of man's Fall retains the possibility to produce knowledge, but it does not transform it in the aim of man's life. Striving to recover the prelapsarian state, when man was the sovereign of nature, is a natural desire since the dominion of man over nature is part of God's plan with man. But this is not an epistemic quest, but a kind of moral duty of repairing the initial error that disabled the natural state of creation. The sovereignty of man upon nature meant nothing else than possessing exact knowledge of what there was; therefore knowledge becomes the main path to accomplish this end, toward which all men should head.

## Conclusion

The religious stories of the universal Creation and the Fall of man gave Bacon a source of legitimacy for some of the “first principles” which his project for the instauration of a new natural philosophy comprises: the fact that, in order to be studied experimentally, the world must have a structure, that this structure can, and in fact, should yield to investigation; that the repeated observations of a fact done by a large number of observers, if done correctly, shall convey the same information, and thus, that the world has, at least to some degree, a stable structure; and that the human agent has the capacity to know nature, not in the sense that their observations are by necessity objective, but in the sense that the human nature was equipped with a mental ability to understand and to match with nature. Moreover, the core idea of this study, that the Baconian epistemology is intimately dependent upon religious beliefs, goes against the attempt to interpret Bacon's natural philosophy as pioneering the secularization of modern thought.

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