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## **The words and things of Arias Montano**

BETWEEN 1614 AND 1617, FRANCIS BACON wrote one of the most famous utopias of the seventeenth century: the *New Atlantis* (1627). History of Science traditionally has attributed to this book the role of inspiring the new scientific societies of the seventeenth century, and particularly the Royal Society of London. If the programmatic and methodological proposals of the Baconian inductivism were the starting point of modern experimental science and natural history, the House of Knowledge governed by King Salomon in the *New Atlantis* was the sketch of that which would be the first modern scientific society. Over the last decades, historians of science have intensively discussed about the political opportunism and the rhetorical elements that led the first fellows of the Royal Society to proclaim themselves heirs to the Baconian inductivism and to the model of the solomonic House of Knowledge of the *New Atlantis*. Such studies has certainly meant a clear historiographical innovation aimed to moving away from the positivistic simplifications that reduced Bacon's work to an idealized "inductivistic method". However, these studies still implicitly maintain the assumption according to which both the works of Francis Bacon and the scientific societies that proclaimed themselves inspired by his thought represented foundational and original moments in the beginnings of modern science.

More recent works have suggested a new and unexpected approach about the origins of the scientific Baconian project. This new interpretative proposal maintains that the so-called "great founder" of modern science was looking precisely to a forgotten chapter of the history of science when he was elaborating his intellectual programme for the reform of scientific learning. That forgotten chapter would be the Spanish science of sixteenth century.

Look back to the end of the sixteenth century. Spain exerted enormous power in the European context and it has been exploring and exploiting American territories for almost a century. Europe was staring at the politics, commerce and transoceanic expansion of Spain, governed by Philip II, the called King Salomon of that period. Nevertheless, the expansionistic goals of Spain, its projects for appropriating American nature, were not the results of a simple territorial invasion and the establishment of Spanish power. Spanish aim was possessing New World's riches, but for doing it Spain had promoted, from the beginnings of sixteenth century, a great machinery of scientific exploration. To dominate the New World it was necessary to know it. The Casa de Contratación and the Consejo de Indias were the main focus from which started those scientific explorations and to which arrived their results. Recently, Antonio Barrera (*Experiencing Nature. The Spanish American Empire and the Early Scientific Revolution*, University of Texas Press, 2006) has reconstructed those exploration practices. A work already done by other historians, it is true, but in this case Antonio Barrera provides us with a new interpretation about the value that those practices had in the early Scientific Revolution. The conclusion of Barrera's research is that the scientific program elaborated by Francis Bacon was, largely, the intellectual expression of the practices that Spanish science had already constructed and worked for a century. There is no doubt that there are a lot of revelling similitudes concerning strategies and devices for making a natural history and concerning the utilitarian values that characterized both the sixteenth century Spanish science and the philosophy of Bacon. In addition, it has been highlighted something that curiously has gone unnoticed in Bacon's studies: the great similitudes between the Sevillian Casa de la Contratación and the New Atlantis' House of Knowledge. It's hardly surprising that the Lord Chancellor, who was both a philosopher and a man specially concerned with English politics and commercial strategies — in a period when Spain was the most important rival of England — paid special attention to the scientific exploratory machinery with which Spain had achieve its transoceanic power.

These new studies on sixteenth century Spanish science and their influence on the work of Bacon point at a new and innovative thesis about the origins of modern science. To say it with few words,

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this thesis maintains that the true origins of modern science started with the exploratory practices of nature developed by Spain during the sixteenth century. The view of Baconianism as a central element of the Scientific Revolution still stands, but the interpretation of Bacon as an intellectual expression and result of preexisting practices in sixteenth century Spain points to the conclusion that the Spanish Renaissance science was the driving force behind the Scientific Revolution.

I share with the defenders of this interpretation the opinion about the great importance that the Spanish scientific practices had in the origins of modern science. I also believe that most probably Bacon had his gaze on those practices while he was developing his reforming project. Nevertheless, I think that we have to be very cautious about the proposal of identifying those practices with the Baconian philosophy, or even of interpreting Bacon merely as the literary expression of a preexisting reality. A history of science that pretends to reduce the scientific development to the changes in the field of scientific practices could be so much dangerous as a history of science that forgets the practices and that approaches the history of scientific changes like a pure development of ideas and concepts. The recent link made between sixteenth century Spanish science and Baconianism arises from a narrative of the history of science that conceives knowledge as a result of a set of practices, pushing into the background the analysis of theoretical, philosophical and philological elements that played a fundamental role in the origins of modern science. Interpreting Bacon as a philosopher of science exclusively interested in scientific practices would be, largely, something like returning to the methodological Bacon proper of positivistic history of science, but in this case viewing him under the lenses of a constructivist history.

Bacon's work had, undoubtedly, the capacity to give philosophical and scientific value to a series of natural exploratory and exploitation strategies already taken up and developed in the scientific Spanish context. From that work, he developed his programmatic and methodological proposal aimed to the construction of a new natural history. Nevertheless, we can't forget that the Baconian proposal was also immersed into an ocean of ideas about the relations between science and religion, about ancient philosophies, the utility of scientific knowledge for the progress and welfare of mankind, the dangerousness of humanistic philosophy for a right "interpretatio naturae", the deep critic to Neoplatonism, the problems of language and the difficulties derived from the inadequacies between the world of words and the ever more extensive world of things.

The "advancement of learning", Bacon insists, necessarily involves the recognition of the temporality and historicity of human knowledge. Real ancients — he repeatedly says — are moderns, because in the same way that the experience and knowledge of an old man is bigger than that of a child, the science of moderns is far superior to the natural philosophy of the ancients. The insistence of Bacon on this issue started from his deep discontent regarding a scholastic culture imprisoned in the authority of Aristotle and Church's Fathers. However, his discontent was equal or even more profound regarding that humanistic culture that from the fifteenth century had started a reaction against scholasticism. Here we have to note that some of the most important innovations of sixteenth century Spanish science came from the synthesis of two apparently different approaches to nature: utilitarianism and humanistic culture; a synthesis that in Spain was strongly linked with the Erasmist ideology. Bacon inherited and defended the utilitarian values and goals of science characterizing sixteenth century Spanish science, but he was an enemy of the interpretations of nature developed by humanism and Erasmism, specially those tied to Neoplatonism and philological researches. This is the reason why I consider very interesting to make a comparative study of the profoundly different attitudes of Arias Montano and Francis Bacon regarding scientific knowledge. In 1605 Bacon published his radical antihumanistic manifesto *The Advancement of Learning*. Only three years before, the *Naturae Historia* of Arias Montano had come to light, a work that was a clear compendium of that kind of learning criticized so harshly by Bacon. This comparative study takes on meaning especially if we observe the great amount of issues, questions and textual and biblical references shared by Montano and Bacon. Shared problems but conflicting answers. Reading their works — in the case of Montano specially his *Naturae Historia* — we get the impression that one of them was the negative image of the other. The Spanish sixteenth century, characterized by its innovative scientific projects and practices linked to the efforts to explore and possess the New World, ended with a literary work that proposed to relegate the empirical study of nature to a second place and to turn instead to the learning contained in the Bible. A *History of Nature* that defended the solitude of learned men as the only possible way to true knowledge and that refuted

the novelty of the American nature. Perhaps to reflect on this textual parallelisms and intellectual divergences could help us to understand the keys both of the decadence of Spanish science in seventeenth century, on the one hand, and the chronologically parallel growth of English science, on the other one.

Arias Montano, born in 1527 in a small town in Extremadura (Fregenal de la Sierra), studied at the University of Alcalá de Henares at a time when the reformist and philological humanism of Nebrija was at its height. After a trip through Italy, he spent some time in Seville, where he studied botany and medicine with the physician Francisco de Arce. His Sevillian associations lasted his entire lifetime, but in 1560 he left the city to become a member of the Order of Santiago, in this way initiating his career in ecclesiastical matters. In 1562 he formed part of the Spanish delegation in Trent, and in 1566 Phillip II appointed Montano his chaplain. However, more decisive in his intellectual development was the mission that Phillip II gave him in 1568 to go to Flanders and personally take charge of the Polyglot Bible. The effort consumed eight years in which Arias Montano took full advantage of the cultural effervescence of the Low Countries and the network of contacts that his friendship with Clusius and Plantin offered. This intellectual circle, that marked in a determinant way the philosophical and scientific personality of Arias Montano, had a big interest in scientific matters and employed in scientific speculations, researches learning, and erudition methods proper of Humanism, above all the use of philology as a fundamental tool for the sceptical critics against scholasticism. In that circle, there were some of the most relevant scientific personalities of the period, for example the physicians and botanists Clusius, Dodonaeus and Lobelius, the geographers Ortelius and Mercator and the mathematician Frisio. During his stay in Antwerp, Arias Montano promoted the exchange of seeds, scientific instruments and news between Spain and the Low Countries, demonstrating his interest in new science and natural history. From that period and from contacts with Plantin's circle it dates also an element of the intellectual personality of Arias Montano that played a fundamental role in his work: his relations with the "Familia Charitatis", or Family of Love, a kind of sect of conciliatory theological goals, guided by an strong spiritualism and curiously convinced of the inadequacies of reason to understand the Bible. This last element will be essential to understand, years later, Montano's resource to revelation as a privileged way to gain knowledge.

In 1576, Phillip II called him back to his court in El Escorial as director of his library, wishing to profit from Montano's excellent knowledge in the area of sacred scriptures. Montano reluctantly accepted, because by that time both his own peculiar interest on theological matters and his ideas about spiritual and personal retreat as the best options to reach knowledge had matured. In the court of Phillip II, intellectual and political tensions forced him to abandon his position and retire in 1584 to his residence in Peña de Alajar (Huelva) and to a new house on the outskirts of Seville. There, Montano felt free to develop a project he had begun years earlier (the *Naturae Historia*) and re-establish personal contacts with his Sevillian friends, among them the naturalists Simón de Tovar and Juan de Castañeda, the physician Francisco Sánchez de Oropesa, the surgeon and specialist in balms Francisco de Arce, etc. The influence Montano exercised over them in those years was so strong that they, clear defenders both of the Erasmist tradition and of new an empirical natural history, incorporated mystical touches and personal renewal into their naturalistic studies, undertaking their meetings, their scientific debates, and their work of observing and describing plants as a form of spiritual retreat with stoic implications and a certain contempt for the ordinary and social life. They made the "odi profanum vulgus" of Horace their own and scorned the vanity of their century. Perhaps this was an early sign of the social and intellectual crisis that would envelope Spain during the seventeenth century. What is certain is that the ordinary society, with the hustle and bustle of business mixed with natural history and intense public relationships as something necessary for the development of science, began to break down.

Arias Montano was the beneficiary of excellent training in science, beginning in his youth and continuing throughout his adult life. He had an excellent command of mathematics, astronomy, physics and natural history. In his first period in Seville he believed the New World to be an inexhaustible source of information and natural curiosities, like the bezoar stone (he studied Monardes' work on it), the minerals of Peru, and the new plants and their possible medicinal uses. It was an attitude that put him in the same camp with his naturalist friends. As his correspondence demonstrates, with the passing of the years those interests did not decline. Nevertheless, it is precisely for this reason that an examination of the content, style and objectives of his *Naturae Historia*, written in Seville in the final

period of his life, is so surprising. The work formed part of his great project, his “great work”, which was meant to be a history of the human race since Adam’s fall. It opened with verses with autobiographical tones in which there were sketched Montano’s fundamental views about the theory of knowledge, his philosophical inspirations and the role he attributed to natural history for the advancement of learning.

Perhaps the most surprising thing is that a *History of Nature* begins with verses in which the author rejected his youthful scientific studies for having led him to falsely believe that he would find knowledge there and advised men to not waste time walking that erroneous way. On reaching maturity, Montano said, only retreat and solitude could lead man to authentic knowledge. Above the first disconcerting sense that this kind of assertions could generate, the rejection of the own experience and of the learning of classic and contemporaries philosophers had become a *leit motive* proper of some of the most relevant authors of the origins of modernity. Authors who narrate their youth as a travel around the world in search of learning but in reaching the maturity they turn to the solitude because convinced of the failure of their research. Remember, for example, the *Discourse on Method* of Descartes, or the cases of J. L. Vives and Francisco Sánchez. This renounce to the own experience was, on the one hand, the metaphoric expression of the hostility toward the scholastic tradition and the plurality of philosophical opinions of contemporaries, on the other hand, it pointed to the necessary oblivion of previous learning as the only possible way to undertake a regeneration of knowledge. It was a consequence of the deep scepticism that overcame natural philosophy in the sixteenth and seventeenth centuries. However, it was just from that scepticism that arose the best proposals of philosophical and scientific renewal of those centuries, the new models for organizing scientific research, the reform of the ways of knowledge, the new interpretations of the natural principles and causes. Those thinkers wanted to forget for undertaking an authentically new intellectual life. After all, when Arias Montano renounced his youthful scientific studies and the learning of his contemporaries, he was not so much far away from the spirit that animated the cartesian call for getting free of “prejudices” before undertaking the way to knowledge. Neither he was so far from Bacon when this latter insisted in the necessary exclusion of “idols” and the effort to make *tabula rasa* as previous steps to the positive development of the study of nature. That which differentiated them was not the call for oblivion, but the different options that each of them proposed for following the way of knowledge after the crucial moment of oblivion. Some philosophers opted for renouncing to the own experience and the philosophy of the past for searching learning starting from the pure reason, as Descartes did. Others preferred to discredit the bookish culture of scholastics, to look condescendingly at past times and pledged their firm commitment to a mind free of *idols*, a mind able to study nature *cum propriis oculis* (with the true eyes of experience), as Bacon did. Finally others did not believe neither in the value of experience nor in the self-sufficiency of pure reason, they took refuge in an spiritual and Neoplatonic option that defended God’s revelation to chosen men as the way to access to the true knowledge of the world. This was the case of Arias Montano. His option came from, at a large extent, the spiritualist tendencies received from Plantin’s circle and his relations with de Family of Love, but also from his affinity with those Neoplatonic currents that have described nature as a metaphoric labyrinth plenty of secrets and symbols which occult meanings only wise chosen men could interpret. Bacon insisted in many places of his works against this quasimystical view of wisdom and learning, defending instead collaborative values among learned men and among generations, the patient, slow and meticulous study of natural things like the only valid way to knowledge.

The revival of Neoplatonism in early scientific revolution was a crucial element of the changes leading to the origins of modern science. Nevertheless, it would be very dangerous to forget the strong critics to some elements of Neoplatonism that make possible the progress of scientific knowledge during the seventeenth century. One of this critics regarded the appraisal of ancient learning, the idea that the most authentic knowledge has been reached by ancients before the adamic fall and that, consequently, the way to knowledge had to be a return to ancient times. In that Neoplatonic view of knowledge, there were no place neither for scientific progress nor for the acceptance of the “new”. In this sense, Arias Montano was far from the symbolic “Plus Ultra” represented in the Baconian *Instauratio Magna*. The deep difference between Bacon’s and Montano’s views on this matter is clearly reflected in their interpretations of the metaphor of childhood. According to Montano, the return to the pureness of childhood was the right way to get the authentic learning; it was necessary to get away from reason for letting space to revelation. Bacon, instead, views man’s infancy as a period of

ingenuity dominated by phantasy and tribe's idols. Making the philosophical metaphor between man's ages and historical periods, Montano puts the moment of the purest wisdom at the first moments of mankind's history; true knowledge pertained to the man created by God before the adamic fall. After the biblical sin, God forbade man the knowledge of nature's secrets and the power over nature, so starting the long period of the corruption of knowledge. Therefore, for returning to that original wisdom it was necessary to elaborate a regeneration of man. In fact, Montano's *Naturae Historia* was the second part of a most ambitious project which first part was entitled *Liber Generationis et Regenerationis Adam sive Historia Generis Humani* (1594). Note here how Bacon's *Instauratio Magna* also pretended to be a double restoration, both of power and of knowledge. Nevertheless, Bacon's interpretation of the adamic fall was profoundly different from that of Montano. Bacon did not believe in the existence of an original and superior mosaic knowledge before the adamic fall; he was against the traditional use of the biblical sin to forbid man the advancement of learning and the power over nature. For Bacon, the way to true knowledge is a way "toward to", not a way of return to an original point of history as Arias Montano defended. The learning of nature is the result of the critical collaboration among historical periods and the transmission of experience. Only such a view of science and history made possible the conception of the progress and advancement of learning and gave sense to the concept of the "new" in natural history and philosophy. Only this conception of learning made possible to cross over the Columns of Hercules.

The great distance that separated Arias Montano from Bacon's thought and from the new empirical natural philosophy promoted by the Lord Chancellor came from two completely different conceptions of knowledge and history directly tied to the Neoplatonism of Montano and Bacon's battle against Neoplatonism and Hermeticism. Neoplatonic philosophers refuted the radically empiricist Aristotelian maxim according to which "nihil est in intellectus quod non prius fuerit in sensu". They opted instead for recovering the Platonic cave where that which man observes with the corporal eyes is only a sign, sometimes deceptive, of the true reality, this being intelligible but not sensible. The senses, in Platonic philosophy, were only bait for arising man's curiosity for knowledge, which was truly accessible with the mind. Following this theory of knowledge, Arias Montano considered empirical knowledge as an inferior kind of approximation to truth, the only way for knowing the world that remained to mankind after the adamic fall. From that biblical moment, man had to resign himself to know causes from their effects. The equation between Aristotelianism and corruption of knowledge was clear. However, for the most of Renaissance Neoplatonic philosophers, reason alone was not able to get truth. The christianisation of Platonism taken up by Ficino, in conjunction with the Hermetic tradition, opened up to the idea of wise man expert of nature's secrets as a chosen person that get directly his wisdom from God with the study and interpretation of Holy Scriptures. To disclose the occult secrets of the book of nature was only possible in the light of truths masked in biblical words. God had written the truth on two books: that contained the sacred words and the other containing the natural things perceptible with the senses, and since truth was unique, without possibility of contradiction, the goal of wise man consisted in recovering the original identity between sacred words and natural beings. This is, precisely, the *raison d'être* of Montano's *Naturae Historia*.

In contrast with the ideal of public knowledge and communicability of learning that Bacon and the main protagonists of scientific culture of seventeenth century will defend, Arias Montano defended the biblical maxim according to which "It is the glory of God to conceal a matter" (*Prov.*, 25, 2). In contrast with the modern and profoundly Baconian ideal about the equality of the intelligences of all men, Montano still defended revelation and wisdom as a divine gift conceded to some chosen men. The message that God wanted to transmit to humanity was made of symbols which significance the wise man had to decipher. In the context of Hermetic and Neoplatonic nature, things are symbols full of significances and references to other things and others levels of the real. Such a view of nature turned the study of nature into a reading work, because nature was an authentic book, and above all, it blurred the frontiers between words and things. This will be strongly expressed in Montano's *Naturae Historia*.

In the work of Arias Montano, the identification of nature with a symbolic book, the believe in a *prisca sapientia* prior to the adamic fall, the idea that natural things and visible forms (those perceptible with corporal eyes) are symbols of the authentic invisible and occult principles (those perceptible with the spiritual eyes) were inseparable from a Neoplatonic, cabalistic and Hermetic philosophy of language. In contrast with the Aristotelian interpretation of language according to which words were human

conventional instruments, Neoplatonic philosophers defended that there was a natural correspondence between words and things. From the first centuries of Christianity it has been made an effort to conciliate this conception of language with theological principles and with the biblical account of Genesis according to which God created the world with his word. From this conciliation derived the idea that nature is a divine book that has to be interpreted, a text that has to be read. For its part, cabalistic tradition had ever maintained that language enclosed the authentic structure and essence of the real. The big difficulty that arose along centuries, but which got the highest point in sixteenth and seventeenth centuries, came from the difficulty for answering the problem put by the apparent contradiction between the plurality of languages and the uniqueness of nature. There was then when a “philological euphoria” — to use U. Eco’s expression — unleashed. That euphoria defended the primigenial and original nature of hebrew, the language with which God had directly created the world and which, consequently, was the best expression of the true nature of things. Modern languages’ inability to correctly describe and explain nature was due to the corruption of language (and therefore also of knowledge) following the adamic fall and the confusion of languages happened in the Tower of Babel. The cabalistic tradition and the believe that hebrew was the language with which God created the world were at the centre of the philosophy of Pico della Mirandola, one of the most influential authors in the thought of Arias Montano. This author of the Polyglot Bible, one of the best hebraist of his time, carried cabalistic Pico’s ideas to its logical conclusion in his *Naturae Historia*.

However, for Arias Montano the opportunity that God gave to Adam to name things not only did him able to know: with the capacity to name, the man also received the power over things, because naming things means also to have the power over them. After the adamic fall, God took man the knowledge and power over nature away. The *prisca sapientia*, identified by Montano with the mosaic wisdom, contained the authentic knowledge of nature, corrupted and lost after centuries of mankind’s decadence and scholastic culture. The starting point of those loss and decadence was the gradually drifting apart from the original hebrew language and the babelic confusion of languages. It was clear, therefore, that the “regeneration of man” and his power over nature demanded necessarily the restoration of God and Nature’s authentic language. This is just the main goal of the *Naturae Historia*. This explains also why the *Naturae Historia* was just the second part of Montano’s *Opus Magna*, which first part was the *Liber Generationis et Regenerationis Adam*. Arias Montano, firmly convinced about the original identity of words and things, decided to keep within the literality of Holy Scriptures in its original hebrew version and to consider natural things observed with corporal eyes like symbolic representations of sacred words. Only in this way can it be understood that for Montano philology and natural history were one and the same. Studying nature was, therefore, to study sacred symbolism, “to read” nature was to read the divine word. Little distance separated the philological efforts from recuperating the divine word in its original Hebrew tongue and giving true meaning to natural things. Thus, what had begun as a desire to study scientific novelties became an extension of his exegetic and philological study. Thus, a man such as Arias Montano, who was one of the most important promoters of Spanish natural history, ended his life proclaiming that the authentic natural knowledge did not proceed from the empirical study, but from the study of the Bible. Once more time, the words of Bacon seemed to be a direct critic to the attitude of Arias Montano:

To seek heaven and earth in the Word of God, whereof it is said, ‘Heaven and earth shall pass, but My word shall not pass’, is to seek temporary things amongst eternal: and as to seek divinity in philosophy is to seek the living amongst the dead, so to seek philosophy in divinity is to seek the dead amongst the livin [...] the scope or purpose of the Spirit of God is not to express matters of nature in the Scriptures, otherwise than in passage, and for application to man’s capacity and to matters moral or divine [...] To conclude therefore these two interpretations, the one by reduction or enigmatical, the other philosophical or physical, which have been received and pursued in imitation of the rabbins and cabalists, are to be confined with a *noli akryn sapere, sed time* (*Advancement of Learning*. L., L. II, cap. 25, &16).