



Man Ascends to God by Climbing the Ladder of the Universe

Address to the Plenary Session of the Academy



Pius XII affirms that the Academy had been his predecessor's 'greatest achievement'. He observes that science is the exploration of the truth to be found in the created universe and states that 'man ascends to God by climbing the ladder of the Universe'. The Church is a 'friend of Truth' and down the centuries has been the promoter of learning and culture, not least because every kind of art and science 'serves God'. Thus it is that the Church upholds freedom of scientific research. He emphasises that reason is the servant of faith and faith exalts reason: they aid each other.

It is with great joy that we are here amongst so many eminent Cardinals, members of the diplomatic corps, distinguished teachers, scientists, and mathematicians in order to open the new academic year at the Pontifical Academy of Sciences. It was in a similar meeting held in this very hall on a different occasion that you heard us convey to you the message of our incomparable predecessor Pius XI, when he was unable to come in person due to ill health. His glorious name is now written in indelible letters both in the annals of history as well as in the beginning of the life of this Academy of sciences which he founded. While its structures and name may sound new, in its nature, its intentions, and its aim, this Academy reminds us of, and brings to a more modern and universally scientific level, the old and illustrious Accademia dei Lincei, which had already been renovated by Pope Pius XI, our illustrious predecessor.

It is to Pius XI, who was present in this very hall a year ago – a hall which now contains his venerable portrait – that our thoughts, containing both sadness and reverence, now turn. We greatly admired in his mind and heart those powerful and daring elevations of the spirit, of

thoughts concerning the past, present and future. They cloaked his throne with the splendour of the highest piety, self-sacrifice and kindness, and with a great expansion of faith, ecclesiastical knowledge and the results of scientific investigations. This Academy, entrusted by him to the care of the distinguished President, Father Gemelli, is his greatest achievement. For him, it represents the conquering of a pinnacle surrounded by the great mountain range of the sciences, where truth raises high her brow above the valleys and plains which divide the various countries: where Truth, which ascends from the chasms of the earth and sea and descends from the skies so as to assemble illustrious scientists, your great researchers and their voice of wisdom, to sing the hymn of human reason to the signs left in the universe by the Creator when heaven and earth were completed with all their array.¹ As Saint Augustine tells us, God, having created the universe, did not abandon the world² but kept man's thoughts in his counsel. While maintaining the universe in existence and motion, God left it to men to dispute amongst themselves without their being able to discern God's full project.³ God has given fallen man this task of understanding this great enigma;⁴ the enigma of the unknown God working in creation, to which Paul the Apostle pointed when addressing the Epicurean and Stoic philosophers in the Athenian council of the Areopagus. Paul stated that this unknown God had created the whole human race on the entire earth so that they could find their way towards God since He is not far from any of us.⁵

The enigma of creation has for centuries stretched the intellect of all peoples; the various solutions proffered have filled the schools of the academy; volumes have filled both ancient and modern libraries; attempts to find the solution to this enigma have been the cause of disputes between wise investigators of nature, of matter, and of the spirit. These labours, these lessons, these volumes, these battles are nothing other than the searchings for the truth hidden deep in the enigma itself. Whatever else, asks the Genius of Hippo, whatever else does the human soul desire if not the truth?⁶

Yes, your souls, illustrious Academicians, crave and search for the truth, which throbs in all we see, hear, smell, taste, touch and feel in all its many ways, and follow in our thought through the maze of weights, of numbers, of measures, in the visible and invisible movements, where she stirs, transforms herself and where she both shows and conceals herself; it is here that truth challenges our acumen, our machines, our experiences and where she often threatens to elude our instruments and devices which are the marvellous product of our human resources. Such is the vigour, the allurement, the beauty and the impalpable life of truth, that she breaks free from the appearance of that immense reality which surrounds us.

Reality speaks to us and communicates her word to us through the wonderful senses of our nature moulded out of flesh and spirit. It is this reality which we seek through the immeasurable ways of the universe. We are neither responsible for creation nor are we the creators of Truth: neither our doubts, nor our opinions, nor our carelessness, nor our negations can alter it. We are not the measure of the truth of the world, nor of ourselves, nor of the high destiny to which we are called to participate. Our human investigations measure the truth found by our scientific implements and instruments and various machines; they are able to transform, capture and dominate the material offered to us by nature but they cannot create her; our minds have to remain faithful in following nature just as a disciple does with his master from whom he learns his work. When our intellect

does not conform to the reality of things or is deaf to the voice of nature, it raves in the illusions of dreams. How well did the greatest Italian poet put this:

Nature takes her course from the sublime intellect and its art ... there shalt thou discern how your art, as it best can, follows her like a pupil with his master; we may call this art of yours God's grandchild, as it were.⁷

But not only is our art God's grandchild but so is truth with regard to our intellect. Since in the ladder of the known truth it finds itself, so to speak, down here on the third descending step under nature and under God. One can find nature situated between God and us. One cannot separate the truth of nature from the infallible mind of the Creator who sustains it both in its being and in its actions and so it is able to measure the truth of things in reality. What is accidental both to nature and to things is the truth which our weak intellects attribute to them as a result of our contemplations and investigations; our minds do not, as some people once believed, possess innate ideas at birth; it is through the senses that one begins to gain knowledge of those things perceived in their external sensible accidents and qualities; so that through these external phenomena our intellect can come to an internal knowledge of things, even of those whose accidents are completely perceived through the senses.⁸ And so man's genius, when it is not blurred through prejudice and error, comes to understand that, in the same way that nature, whose truth is measured in the Divine mind, is the daughter of God, so too is the truth of our sciences, arrived at in our own minds, the grandchild of God.

Do not then be surprised if we discourage you, who are the scrutinisers of nature and of sensible things, who bring out the hidden truths lying latent in nature, according to the great principles of the Stagirite, that *cognitio nostra incipit a sensu*; it is this principle which allows us to understand the following stanza given by God to that stranger called man; a stranger to the most beautiful of created things and to the face which looks at the sky while looking after it; a stranger to the hand which feels all and holds all, which solidifies through art, and, with boldness and readiness, raises cities and knocks down mountains; a stranger too to the spirit, image of the eternal; a spirit which each of you who knows that admirable prison of muscles and bones, nerves and veins, blood and fibre, must recognise in himself that nobility and grandeur and be able to exclaim before every fallen son of Adam that, amongst the tumult of sufferings, he still conserves the traces of his former self:

Still from the summits of the divine origin do I recognise the signs in you; still beautiful and great despite your downfall.⁹

Man ascends to God by climbing the ladder of the Universe: the astronomer, when reaching the sky, footstool to the throne of God, cannot remain an unbeliever before the voice of the firmament; from beyond the suns and astral nebulae emanates the thought, followed by the love and adoration, which sails towards a sun which illuminates and gives warmth not to the clay of man but to the spirit which animates him.

Such then is the joy of knowing and learning, even a little, of the measureless sea of truth which surrounds us, we who are vagabonds in the little ship which is our life and whose only compass is our intellect. But in this intellectual cruise:

Worse than in vain does any quit this shore to fish for truth, the fisher's art unknowing – He'll not return the same man he was before.¹⁰

With the joy of knowledge, you, elected geniuses, add the art of the search of truth, and then return to your studies and laboratories, rich in the thought which is the result of having conquered an enigma, so as to add to the admirable treasure-store of science. This is the way of human progress, a difficult avenue to take, marked by the footprints of the most audacious heroes of research from Thales, Aristotle, Archimedes, Ptolemy, from Galileo to Bacon, to Leonardo da Vinci, to Copernicus, to Kepler, Newton, Voltaire, Pasteur, Curie, Hertz, Edison, Marconi and one hundred more names that one could add; and to you who, having received the flame of investigation and knowledge, will pass it on with greater brilliance to even younger heroes, who are not afraid of the stumbling blocks and the risks of the way nor are they fearful of the funereal monuments erected to the glorious souls who have died along its path. Training is father to research: 'With a small spark one achieves a great flame'. To the discoveries of your predecessors one can add, and thereby amplify and correct, the new fruits of current researchers, prodigies of the physical sciences and of pure and applied mathematics, which have the effect of both astonishing and altering our present-day world, a taste of more prodigious wonders to come. The mysteries of truth, which for centuries have been hidden and buried in the universe, are gradually unfolded by you; you hasten to penetrate the very atom in an attempt to penetrate, in a more intimate way, our knowledge of the constitution of bodies; you both awaken and reveal forces, unknown to our ancestors, and then both capture these forces and then channel them where you desire; you then spread the news throughout the world and, together with the world, you prepare yourselves to show us the true image of our brothers and the world; you challenge eagles for the kingdom of the winds and beat them in flight and height gained.

We believe that this marvellous ascension of man to the skies above city, valley, and the mountains of the world was granted by God to the genius of man in our century so as to remind him one more time that from the threshing floor, whereon fierce deeds are done,¹¹ man can ascend to God by that same way down which things descend. In this way, just as all the perfections of things descend in an orderly fashion from God, the supreme head of all beings, so, with man, starting from inferior things and then climbing step by step, he can advance in his knowledge of God, the First Cause, always greater and more noble than any of His effects. The truth which inferior things communicate to you in all their variety and diversity is not that which *odium parit*, but is the truth which rises above the divisions and disagreements of souls, and unites geniuses in fraternal accord and in a love of the truth. A truth loves another truth and, like sisters, daughters of the same mother, Divine Truth, they embrace in the presence of God. In you, perspicacious investigators of nature, our predecessor of venerable memory recognised the great friends of truth; you are bound in fraternal affection by your love of science and this makes you, in

the midst of all the battles that fill the earth with blood, an important sign of that union of peaceful intentions which does not threaten the frontiers of the mountains, rivers, seas, nor oceans. As a friend of truth, the Church both admires and encourages the advance of knowledge, together with that of the arts and of all things, and sees it as a beautiful and good thing to exalt the spirit and to promote good. Is not the Church herself the cause of divine progress in the world and the mother of the highest intellectual and moral progress of humanity and of the civilised life of the nations? She advances throughout the centuries, master of truth and virtue, fighting against errors, and not against those who err, not tearing down but building up, planting roses and lilies without uprooting olive and laurel trees. She looks after and often sanctifies both monuments and temples of Roman and Greek paganism. If in her museums there no longer exist admirers of Mars and Minerva, in her monasteries and libraries they speak still of Homer and Virgil, Demosthenes and Cicero; nor does she disdain to recognise that alongside the eagle from Hippo and the son from Aquino stand Plato and Aristotle. The pursuit of the sciences is encouraged in the universities founded by her; she calls on mathematics and astronomy to correct the ancient methods of measuring time; she calls on all the arts which are marked with the splendid sign of truth to emulate in honour of Christ the basilicas of the Caesars and to go beyond them with vertiginous domes, ornaments, pictures, and with images which will render eternal the names of their creators. Every form of art and every type of science serves God because God is *Scientiarum Dominus* and *docet hominem scientiam*.¹² Man has in his greatest school only two books. In the book of the universe the human mind searches for the truth of the good things created by God; in the book of the Bible and of the Gospels the human intellect, together with his will, search for a truth which is beyond reason, sublime as is the intimate mystery of God and only known to Him. At the school of God, philosophy meets with theology, the divine word with the science of palaeontology; light is separated from darkness, the earth¹³ during its orbit around the sun eternally fixes upon the gaze of God and of man. The goodness of God, as that of a mother, almost approximates a human language¹⁴ so as to remind man of the sublimity which He manifests to him in a school of sister truths which exalt him and make him, in the study of nature and of faith, a disciple of God. Such a school is also created by the Church in her Magisterium. Is not reason the servant of faith, which renders to her '*rationabile obsequium*'¹⁵ as a foundation and defence, which emanates from the mark of the divine likeness in order that she may be made more beautiful? And faith, in her turn, does she not exalt reason and nature, inviting all the multifarious creatures of the universe to bless the Lord, from the skies to the earth, with the canticle of the three children in the flames of Babylon? And you see the Church in her ceremonies blessing the work of human reasoning and intellect, the literary activities and libraries, the schools and laboratories, the telegraphs and railways, the sources of electricity and aeroplanes, the trucks and ships, furnaces and bridges, and all that the human mind and his ability for creation renders to the truthful and healthy progress of life and of human society.

No, it needs to be stated that the honour paid to faith does not humiliate reason but renders it honour and sublimity, since it is the greatest boast of the progress of human civilisation to facilitate the spreading of the faith throughout the world. Faith is not arrogant, she is not the tyrant of reason, nor does she contradict it; the stamp of truth is placed by God both on faith and reason. In

fact, each aids the other, since right reasoning demonstrates the basis of our faith, and, through her light, clarifies her terms, and faith defends reason from error and teaches it many things. So we have little doubt that it will only honour this Pontifical Academy of Sciences if we recall what the great Vatican Council defined when it stated:

It is therefore far remote from the truth to say that the Church opposes the study of human arts and sciences; on the contrary, she supports and promotes them in many ways. She does not ignore or despise the benefits that human life derives from them. Indeed, she confesses: as they have their origin from God who is the Lord of knowledge,¹⁶ so too, if rightly pursued, they lead to God with His grace.

To you, however, noble champions of the various disciplines of the human arts, the Church recognises your freedom of method adopted or research undertaken, a freedom upon which our immortal predecessor, Pius XI, founded this Academy, knowing full well that the same Council went on to add:

Nor does the Church in any way forbid that these sciences, each in its sphere, should make use of their own principles and of the method proper to them. While, however, acknowledging this just freedom, she seriously warns lest they fall into error by going contrary to the divine doctrine, or, stepping beyond their own limits, they enter into the sphere of faith and create confusion.¹⁷

In these words of the universal sacred senate of the Catholic Church are to be found all your rightful scientific freedoms and the highest promise for the advantages which you have brought to the life of society which the Church herself uses for her mission in the world. It is praiseworthy of the sciences and of their admirable inventions if the herald of Christ anticipates the seasons, foretells whirlwinds and storms, flies over valleys and mountains, visits both hot and cold countries at great speed, shortens the length of trips, and becomes both doctor and healer of bodies so as to give new life to souls. It is fitting praise to your incomparable colleague, the late lamented Marconi, that our paternal word and blessing is able to be heard beyond seas and oceans, bringing both our affection and hopes to distant peoples. Is therefore not science worthy of all our respect and honour?

It is this admirable and legitimate bond of the sciences with faith, this vestibule which the sciences and the arts erect at the entrance of the temple of faith, an image which already for centuries has amazed the world in the Vatican Hall of the Segnatura where science and faith face and illuminate one another in the sublime light of the thought and paint brush of the incomparable painter Raphael from Urbino. You will certainly have paused to admire the scene named after the school at Athens. In those people you will have recognised your oldest predecessors in the investigation of both matter and spirit, in the contemplation and the measurement of the skies, in the study of nature and of man, in mathematical calculations and learned discourses. The search for truth both animates and gives colour to those countenances and they seem to speak one to another of the many speculative and practical sciences, of their many late nights in study; their faces betray a

certain concentration of thought debating with itself and concluding with the realisation of how little actual truth is surrounded by so much which was believed to be true so as to create a number of different worlds, not all of which could become reality. And you see Plato in that temple of science pointing to the sky as the source of knowledge and Aristotle, on earth, the two debating among themselves and not totally satisfied with their high conclusions. They know that the infinite thirst of the human intellect to embrace everything is never satisfied; they feel that beyond our nature here below there exists and reigns a supreme power of a non-visible world. They recognise within themselves an immortal spirit which pushes them higher but they are not aware of the Spirit which vivified and which would grant them the wings to ascend.

Before this scene and assembly of 'great spirits'¹⁸ which great art has been able to offer us, we bow our heads and remain perturbed, remembering how bitter is the path of science and how dearly all of science pays for the hopes and longings of the human spirit. We are immortal beings created for another world, for a world not manifested to reason but to a world represented in the picture entitled the 'Dispute of the Sacraments' which hangs opposite to the 'School of Athens' painting. It would seem as if in the painting of the two life-like pictures the genius of Thomas Aquinas helped to guide the hand of Raphael, pointing out to him the three steps of knowledge which lead to God; the first is represented by the pursuit of the sciences through which man ascends from creatures to God with only the light of reason as an aid; the second, symbolised in the altar of the Blessed Sacrament, is both a synthesis and centre of a divine truth which transcends the human intellect and descends to us on earth through revelation; the third is revealed in the apparition of the celestial court, gathered around God, to the human mind which is raised in order to be capable of perfectly understanding the content of revelation.¹⁹ From science to faith; from faith to the intuitive vision of the First and most important Truth, Source of all Truth. It is through these schools, one higher than the other, through which, step by step, one reaches the fullest satisfaction of the human intellect. In the school of nature, whilst the skies speak of the glory of God, corporal things on earth become our teachers. They may at first conceal what is their ultimate cause but through their shape and motion they in fact reveal it to our senses; mere matter which cannot even be conscious of its need to reveal itself to us. They speak to us with their beauty, with their order and with their strength and immensity. If you were to interrogate the stars, the sun, the moon, the earth, the sea, the chasms and all living things that move, they would answer you with the words of Augustine: we are not your God; seek beyond us *Non sumus Deus tuus; quaere super nos.*²⁰ O man, lost before the world, listen to Divine wisdom and do not make some mere material left-over into an idol which needs to be secured to a wall so that it will not fall down;²¹ do not pray to a lifeless object for the health of a sick person, or for the life of someone dead; do not call on something which cannot even walk, to safeguard a journey.²² Above the school of nature one finds the school of faith wherein one discovers the infallible teacher of the God who is both present and hidden in the Blessed Sacrament; an incarnation of Divine wisdom, Word of God, whose omnipotent voice teaches both ancient and modern philosophers the origin of the universe from a void; similarly this omnipotent voice sends the Apostles to teach all peoples a science which is beyond human reasoning and which cannot be refuted by any who challenge it.²³ It is this Word of the Father Who makes alongside the great

Roman Pontiffs and the assembly of Fathers and Doctors of the Church, disciples of the greatest geniuses of poetry, of the sciences and of the arts and of the princes of the earth, the prayerful souls of the simple people of God. In that monstrosity, one finds concentrated the whole of the Christian faith; therein lies present the very same God, the Truth and the Life who is pointed to in the skies by the Doctor with his arm raised near the altar.

And in the skies Raphael sublimates his own faith by attempting, with his brush, to create a Christ who resides over and beyond the clouds of faith and is found instead in the open splendour of the eternal and living light, sitting on the throne of the celestial amphitheatre surrounded by a crown of saints and angels, together with the Father and the Holy Spirit.

That sky is the sublime divine school; that throne is the chair of the Teacher of teachers *in quo sunt omnes thesauri sapientiae et scientiae absconditi*.²⁴ He is the wisdom of all things and of every divine mystery; He is the science of all created things, because all things were created for the Word and nothing was created that was not through Him.²⁵ Oh, when will we be allowed to reach those heights and become disciples of such a Teacher, to contemplate and listen to Him; and be present at His ineffable school and bathed in His divine light, with the eye of the soul, to come to know His teaching and art, cause and effects, matter, the formation and order of all that is in the sky and on earth, of all that comprises the world and nature; and, in the volume of the infinite and eternal ideas of the Divine Word, to be able to understand at one glance more than could be understood after one thousand years of study; to achieve this better than if we possessed the acumen of all the greatest geniuses of the earth and more perfectly than if we were able to see things as they are in themselves: *Quando veniam et apparebo ante faciem Dei?*²⁶

Up there, in that most sublime and beatifying school, in the knowledge, through God, of all the human and divine sciences, man's insatiable longings to know and understand all the genera, the species and the virtues and the order of the universe will be satisfied. There the perfection of our physical nature will be combined with the perfection of our spiritual nature; in that house of Wisdom and science, which is inexhaustible and perpetual, one loses all the errors made in one's past life: as Vicar of Christ and Father to you all, we pray to God that we will all one day ascend to heaven and be granted the reward of our earthly labours. In that hall of supreme glory we will even forget the lofty depiction of Raphael's which was but a mere mortal dream and all our desires will finally be satiated. And, with the divine vision of Dante Alighieri, in his journey beyond the world to the empyrean and entering with eyes on 'that exalted light wherein, as in itself, the truth is known',²⁷ we will see in that abyss how love held bound into one volume all the leaves whose flight is scattered through the universe around.²⁸

1 Gn 2:1-2.

2 St. Augustine, *De Genesi ad Litteram*, Bk. IV, Ch. 12, n. 22; PL 34, 304.

3 Si 3:11.

4 Ibid. 1:13.

5 Ac 17:18-27.

- 6 St. Augustine, *In Ioannis Evangelium*, tract. XXVI, n. 5; *PL* 35, 1609.
- 7 *Inferno*, Canto XI, 99-105.
- 8 *Contra Gentiles*, Bk. IV, Ch. 1.
- 9 V. Monti, *La Bellezza dell'Universo*.
- 10 *Inferno*, Canto XIII, 121.
- 11 *Paradiso*, Canto XXII, 151.
- 12 *Ps* 93:10.
- 13 *Si* 1:4.
- 14 Cf. *1 Th* 2:7.
- 15 *Rm* 12:1.
- 16 Cf. *1 S* 2:3.
- 17 Vatican Council, Sess. III, Ch. 4.
- 18 *Inferno*, Canto IV, 119.
- 19 *Contra Gentiles*, Bk. IV, Ch. 1.
- 20 *Conf.*, Bk. X, Ch. 6, n. 9.
- 21 *Ws* 13:15-16.
- 22 *Ws* 13:18.
- 23 *Lk* 21:15.
- 24 *Col* 2:3.
- 25 *Jn* 1:3.
- 26 *Ps* 51:2.
- 27 *Paradiso*, Canto XXXIII, 54.
- 28 *Ibid.*, Canto XXXIII, 85-88.