

# St. Macrina the Younger on Science and Technology



St. Gregory of Nyssa (335-395) records an interesting fourth-century discourse on how human beings use observation, calculation, and reasoning to study the natural world and to develop technology. The person who delivers this discourse is his older sister, St. Macrina the Younger (330-379), who Gregory calls The Teacher. Macrina’s discourse is part of a dialogue between the two of them, which Gregory relates in his *On the Soul and the Resurrection*.

The dialogue begins with Gregory journeying to see Macrina. Their brother, St. Basil the Great (329-379), had died, and his death had greatly disturbed Gregory. Gregory is hoping to find some comfort in Macrina’s company, but when he reaches Macrina, he finds that she too is gravely ill and approaching death, and is being watched over by a physician and others. Macrina seeks to console Gregory, noting the words of the Apostle Paul regarding not being “grieved for them that sleep”, because only “men without hope” have such feelings. Gregory objects, pointing out how repulsive death is, and providing examples of all the things people do to avoid it. Macrina asks him whether the thing that is bothering him is the thought that the soul, rather than being immortal, instead ceases to exist when the body dies.

Gregory asks her how we are to have a firm and unmovable belief in the soul’s immortality. Indeed, he says,

*...[T]he Divine utterances seemed to me like mere commands compelling us to believe that the soul lasts for ever; not, however, that we were led by them to this belief by any reasoning. Our mind within us appears slavishly to accept the opinion enforced, but not to acquiesce with a spontaneous impulse. Hence our sorrow over the departed is all the more grievous; we do not exactly know whether this vivifying principle is anything by itself; where it is, or how it is; whether, in fact, it exists in any way at all anywhere. This uncertainty about the real state of the case balances the opinions on either side; many adopt the one view, many the other; and indeed there are certain persons, of no small philosophical reputation among the Greeks, who have held and maintained this which I have just said.*

At this point Macrina leads Gregory to consider how the study of nature and the development of technology points toward the existence of both God and the human soul.

Macrina's discussion is based on fourth-century science, so she refers to things such as the "four elements" theory (which said that all material things are composed of the elements of earth, water, air, and fire), the idea of an immobile Earth, and so forth, but her general arguments can still be followed by the modern reader. Likewise, Macrina makes reference to those who in the fourth century were known to deny the existence of God and of the immortal soul, such as the Stoics and Epicureans. Here we will pick up their dialogue, with Macrina stating that—

*While the sight of a garment suggests to any one the weaver of it, and the thought of the shipwright comes at the sight of the ship, and the hand of the builder is brought to the mind of him who sees the building, these little souls gaze upon the world, but their eyes are blind to Him whom all this that we see around us makes manifest; and so they propound their clever and pungent doctrines about the soul's evanishment;— body from elements, and elements from body, and, besides, the impossibility of the soul's self-existence (if it is not to be one of these elements, or lodged in one); for if these opponents suppose that by virtue of the soul not being akin to the elements it is nowhere after death, they must propound, to begin with, the absence of the soul from the fleshly life as well, seeing that the body itself is nothing but a concourse of those elements; and so they must not tell us that the soul is to be found there either, independently vivifying their compound. If it is not possible for the soul to exist **after** death, though the elements do, then, I say, according to this teaching our life as well is proved to be nothing else but death. But if on the other hand they do not make the existence of the soul now in the body a question for doubt, how can they maintain its evanishment when the body is resolved into its elements? Then, secondly, they must employ an equal audacity against the God in this Nature too. For how can they assert that the intelligible and immaterial Unseen can be dissolved and diffused into the wet and the soft, as also into the hot and the dry, and so hold together the universe in existence through being, though not of a kindred nature with the things which it penetrates, yet not thereby incapable of so penetrating them? Let them, therefore, remove from their system the very Deity Who upholds the world.*

*That is the very point, I [Gregory] said, upon which our adversaries cannot fail to have doubts; viz. that all things depend on God and are encompassed by Him, or, that there is any divinity at all transcending the physical world.*

*It would be more fitting, she [Macrina, The Teacher] cried, to be silent about such doubts, and not to deign to make any answer to such foolish and wicked propositions; for there is a Divine precept forbidding us to answer a fool in his folly; and he must be a fool, as the Prophet declares, who says that there is no God. But since one needs must speak, I will urge upon you an argument which is not mine nor that of any human being (for it would then be of small value,*

*whosoever spoke it), but an argument which the whole Creation enunciates by the medium of its wonders to the audience of the eye, with a skilful and artistic utterance that reaches the heart. The Creation proclaims outright the Creator; for the very heavens, as the Prophet says, declare the glory of God with their unutterable words. We see the universal harmony in the wondrous sky and on the wondrous earth; how elements essentially opposed to each other are all woven together in an ineffable union to serve one common end, each contributing its particular force to maintain the whole; how the unmingling and mutually repellent do not fly apart from each other by virtue of their peculiarities, any more than they are destroyed, when compounded, by such contrariety; how those elements which are naturally buoyant move downwards, the heat of the sun, for instance, descending in the rays, while the bodies which possess weight are lifted by becoming rarefied in vapour, so that water contrary to its nature ascends, being conveyed through the air to the upper regions; how too that fire of the firmament so penetrates the earth that even its abysses feel the heat; how the moisture of the rain infused into the soil generates, one though it be by nature, myriads of differing germs, and animates in due proportion each subject of its influence; how very swiftly the polar sphere [the starry sky] revolves, how the orbits within it move the contrary way, with all the eclipses, and conjunctions, and measured intervals of the planets. We see all this with the piercing eyes of mind, nor can we fail to be taught by means of such a spectacle that a Divine power, working with skill and method, is manifesting itself in this actual world, and, penetrating each portion, combines those portions with the whole and completes the whole by the portions, and encompasses the universe with a single all-controlling force, self-centred and self-contained, never ceasing from its motion, yet never altering the position which it holds.*

*And pray how, I asked, does this belief in the existence of God prove along with it the existence of the human soul? For God, surely, is not the same thing as the soul, so that, if the one were believed in, the other must necessarily be believed in.... [I]t may be very possible to infer a wisdom transcending the universe from the skilful and artistic designs observable in this harmonized fabric of physical nature; but, as regards the soul, what knowledge is possible to those who would trace, from any indications the body has to give, the unknown through the known?... What then... is the soul? Perhaps there may be some possible means of delineating its nature; so that we may have some comprehension of this subject, in the way of a sketch.*

*Its definition, the Teacher replied, has been attempted in different ways by different writers, each according to his own bent; but the following is our opinion about it. The soul is an essence created, and living, and intellectual, transmitting*

*from itself to an organized and sentient body the power of living and of grasping objects of sense, as long as a natural constitution capable of this holds together.*

*Saying this she pointed to the physician who was sitting to watch her state, and said: There is a proof of what I say close by us. How, I ask, does this man, by putting his fingers to feel the pulse, hear in a manner, through this sense of touch, Nature calling loudly to him and telling him of her peculiar pain; in fact, that the disease in the body is an inflammatory one, and that the malady originates in this or that internal organ; and that there is such and such a degree of fever? How too is he taught by the agency of the eye other facts of this kind, when he looks to see the posture of the patient and watches the wasting of the flesh? As, too, the state of the complexion, pale somewhat and bilious, and the gaze of the eyes, as is the case with those in pain, involuntarily inclining to sadness, indicate the internal condition, so the ear gives information of the like, ascertaining the nature of the malady by the shortness of the breathing and by the groan that comes with it. One might say that even the sense of smell in the expert is not incapable of detecting the kind of disorder, but that it notices the secret suffering of the vitals in the particular quality of the breath. Could this be so if there were not a certain force of intelligence present in each organ of the senses? What would our hand have taught us of itself, without thought conducting it from feeling to understanding the subject before it? What would the ear, as separate from mind, or the eye or the nostril or any other organ have helped towards the settling of the question, all by themselves? Verily, it is most true what one of heathen culture is recorded to have said, that it is the mind that sees and the mind that hears. Else, if you will not allow this to be true, you must tell me why, when you look at the sun, as you have been trained by your instructor to look at him, you assert that he is not in the breadth of his disc of the size he appears to the many, but that he exceeds by many times the measure of the entire earth. Do you not confidently maintain that it is so, because you have arrived by reasoning through phenomena at the conception of such and such a movement, of such distances of time and space, of such causes of eclipse? And when you look at the waning and waxing moon you are taught other truths by the visible figure of that heavenly body, viz. that it is in itself devoid of light, and that it revolves in the circle nearest to the earth, and that it is lit by light from the sun;.... Those who see this, but do not examine it, think that the light comes from the moon herself.... You see what the eye does teach; and yet it would never of itself have afforded this insight, without something that looks through the eyes and uses the data of the senses as mere guides to penetrate from the apparent to the unseen. It is needless to add the methods of geometry that lead us step by step through visible delineations to truths that lie out of sight, and countless other instances which all prove that apprehension is the work of an intellectual essence deeply seated in our nature, acting through the operation of our bodily senses.*

At this point Gregory asks Macrina whether such apparent intellectual insights and operations might not be a natural action of the elements that comprise the body. After all, he says, people have produced technology that mechanically mimics human actions. As an example, Gregory brings up a water-driven mechanism that has the figure of a person and that produces a sound like a human voice (apparently a sort of fourth-century robot), but that of course has no mind. Gregory continues—

*Suppose, I say, we were to affirm that all this was produced as well in the organic machine of our natural bodies, without any intermixture of a special thinking substance, but owing simply to an inherent motive power of the elements within us accomplishing by itself these operations... would not then the fact stand proved of the absolute nonexistence of that intellectual and impalpable Being, the soul, which you talk of?*

*Your instance, she replied, and your reasoning upon it, though belonging to the counter-argument, may both of them be made allies of our statement, and will contribute not a little to the confirmation of its truth.*

*Why, how can you say that?*

*Because, you see, so to understand, manipulate, and dispose the soulless matter, that the art which is stored away in such mechanisms becomes almost like a soul to this material, in all the various ways in which it mocks movement, and figure, and voice, and so on, may be turned into a proof of there being something in man whereby he shows an innate fitness to think out within himself, through the contemplative and inventive faculties, such thoughts, and having prepared such mechanisms in theory, to put them into practice by manual skill, and exhibit in matter the product of his mind. First, for instance, he saw, by dint of thinking, that to produce any sound there is need of some wind; and then, with a view to produce wind in the mechanism, he previously ascertained by a course of reasoning and close observation of the nature of elements, that there is no vacuum at all in the world, but that the lighter is to be considered a vacuum only by comparison with the heavier; seeing that the air itself, taken as a separate subsistence, is crowded quite full. It is by an abuse of language that a jar is said to be “empty”; for when it is empty of any liquid it is none the less, even in this state, full, in the eyes of the experienced. A proof of this is that a jar when put into a pool of water is not immediately filled, but at first floats on the surface, because the air it contains helps to buoy up its rounded sides; till at last the hand of the drawer of the water forces it down to the bottom, and, when there, it takes in water by its neck; during which process it is shown not to have been empty even before the water came; for there is the spectacle of a sort of combat going on in the neck between the two elements, the water being forced by its weight into the interior, and therefore*

*streaming in; the imprisoned air on the other hand being straitened for room by the gush of the water along the neck, and so rushing in the contrary direction; thus the water is checked by the strong current of air, and gurgles and bubbles against it. Men observed this, and devised in accordance with this property of the two elements a way of introducing air to work their mechanism. They made a kind of cavity of some hard stuff, and prevented the air in it from escaping in any direction; and then introduced water into this cavity through its mouth, apportioning the quantity of water according to requirement; next they allowed an exit in the opposite direction to the air, so that it passed into a pipe placed ready to hand, and in so doing, being violently constrained by the water, became a blast; and this, playing on the structure of the pipe, produced a note. Is it not clearly proved by such visible results that there is a mind of some kind in man, something other than that which is visible, which, by virtue of an invisible thinking nature of its own, first prepares by inward invention such devices, and then, when they have been so matured, brings them to the light and exhibits them in the subservient matter? For if it were possible to ascribe such wonders, as the theory of our opponents does, to the actual constitution of the elements, we should have these mechanisms building themselves spontaneously; the bronze would not wait for the artist, to be made into the likeness of a man, but would become such by an innate force; the air would not require the pipe, to make a note, but would sound spontaneously by its own fortuitous flux and motion; and the jet of the water upwards would not be, as it now is, the result of an artificial pressure forcing it to move in an unnatural direction, but the water would rise into the mechanism of its own accord, finding in that direction a natural channel. But if none of these results are produced spontaneously by elemental force, but, on the contrary, each element is employed at will by artifice; and if artifice is a kind of movement and activity of mind, will not the very consequences of what has been urged by way of objection show us Mind as something other than the thing perceived?*

These selections are taken from pages 430-436 of the translation by William Moore and Henry Austin Wilson of "On the Soul and the Resurrection" found in *A Select Library of Nicene and Post-Nicene Fathers of the Christian Church (second series), Vol. 5—Gregory of Nyssa: Dogmatic Treatises, etc.*, Philip Schaff and Henry Wace, eds. (New York: Charles Scribner's Sons, 1917), pages 430-468.