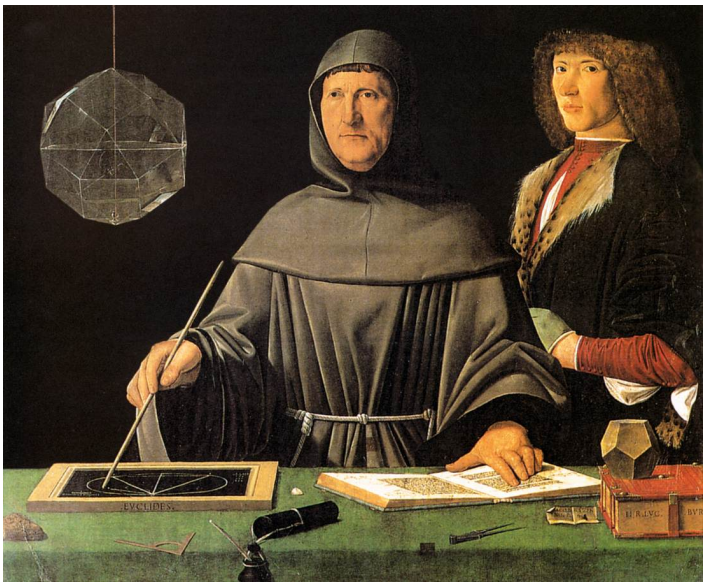

MATHEMATICS AND MORALITY

Posted on February 1, 2021 by Brother Francis Maluf, M.I.C.M.

Nothing could be more distinctive of the age in which we live than the overpowering prominence of mathematics. All through the Catholic centuries, arithmetic and geometry constituted all the mathematics that an educated Christian was asked to learn. Even these two subjects were treated from a more contemplative point of view, which made them far more harmonious with other liberal studies. Arithmetic consisted in the study of the properties of numbers; geometry in the study of shapes and figures. When not overdone, and when counterbalanced by the proper correctives from the other types of knowledge, geometry and arithmetic, as they used to be taught, cultivated a few desirable virtues of the mind like clarity and precision, and sharpened the mind for the perception of harmony, rhythm, and pattern in the study of nature and of Holy Scripture. But even then, many saints and sages warned against the excessive preoccupation with such studies, and especially against the seductive clarity of mathematics; for it is not enough for the mind to be accurate and clear; we are bound to ask "accurate and clear about what?" Since in mathematics accuracy and clarity are achieved at the price of the reality and the goodness of the object, it is a danger of the mathematical mind to continue to sacrifice reality and goodness for the sake of clarity in every other field in which man must seek and find the truth.

But in our time, education is overwhelmed by mathematics and on more than one score. For, while a contemplative interest in the properties of shapes and numbers is almost completely extinct, an illiberal and utterly inhuman form of mathematics dominates the years of learning of our boys and girls, almost completely from the very first year of the primary school to the very last year of college. In place of arithmetic and geometry, whose relation to reality is definite and understandable, there is now an indefinite confusion of branches which go by the name of mathematics, the nature of whose objects nobody understands! Such topics as topology, non-Eudidean geometry, Boolean algebra, transfinite numbers, projective geometry; not to speak of other more recognizable subjects like algebra, trigonometry, integral calculus, vector analysis and the theory of equations. These new subjects are not only more confusing but much more difficult to acquire, and therefore much less likely to leave the mind at leisure for other liberal studies. But the predominance of mathematics today is not restricted to those courses which go by its name, because mathematics, in some form or other, in matter or in method, has crept into every other corner of the curriculum. According to the modern positivistic conception, mathematics and not wisdom is considered as the prototype of science. In subjects ranging from physics to education, covering every field of human learning, there is an evident tendency to assimilate all knowledge to mathematical knowledge and to resolve all realities into mathematical formulas. This trend reaches its apex in the development of symbolic logic, in which guise mathematics invades even the field of philosophy, to distort all the basic conceptions of the mind, and to deflect all

the activities of thought from attaining their fulfillment in true wisdom which consists in knowledge about God, by keeping them whirling endlessly around the nihilistic circle of sheer mathematical emptiness.

Now in an attempt to determine the influence of mathematics on the mind of a Christian, it would be folly to ignore the fact that after twenty centuries of Christian living, it is impossible to name one single patron saint for mathematics. There are Catholics indeed who occupied themselves considerably with mathematics and as far as we know kept the faith; but I know of no mathematician whose faith burned so brilliantly as to earn him a place among the stars of sanctity. Nor is this a mere coincidence, for any one of us can look into his own mind to find that there is no other kind of human knowledge or human experience which offers less in terms of value for the Christian message than mathematics. Almost all that one needs in the way of mathematics in order to learn all of Holy Scripture and all the Doctors of the Church, does not exceed the ability to count up to a thousand and to distinguish between a vertical and a horizontal line. Whatever it is you talk about in mathematics, it is never anything you can carry over to your meditations, or employ in your prayers; it gives you no courage in your moments of despair, and no consolation in your loneliness.

In the field of philosophy, mathematics has always been fertile grounds for sophistry. There is hardly any other intellectual interest which has contributed more to confuse men about fundamental truths regarding God, man, and the universe, than mathematics. Just to mention the names of Thales, Pythagoras, Plato, Descartes, Spinoza, Whitehead and Russell, would suffice to convince one even slightly acquainted with the history of thought about the great number of minds that were deceived by the mirage of mathematics, and misled to accept fraudulent substitutes for the saving truth. I believe that an unprejudiced consideration of the nature of mathematics and of the nature of its objects would reveal clearly that all these charges leveled against the mathematical mind are rooted in the very nature and essence of things.

But what kind of a science is mathematics? Is it a practical science which envisages the achievement of a good, or a speculative science which envisages the attainment of truth? A practical science, like medicine or ethics, would be eliminated by the elimination of the corresponding good. For example, if men were indifferent to health and its opposite there would be no criterion for distinguishing between a right prescription and a wrong one, and consequently, medicine would cease to be a science. In a similar way, if men per absurdum were suddenly to become neutral to the attainment of happiness or its opposite, that would be the end of ethics. But what good, if ceasing, would determine the end of

mathematics? None whatever, for the simple reason that mathematics prescinds from all good and all value. Mathematics talks the language of a speculative science. It utters propositions which must be either true or false. Now a proposition is true or false depending on whether it is or is not in conformity with reality. Just as a practical science envisages a good to be achieved, which good functions as the criterion for right and wrong precepts in that science, so a speculative science considers some part or aspect of reality, which stands as the measure of truth and falsehood in that science. If there were no stars there would be no astronomy; and theology would be sheer nonsense if God did not exist. But what part of reality would destroy mathematics by being eliminated? What does the mathematician talk about? Is the object of mathematics a creature or a creator? Is it a substance or an accident? Is it something actual or merely potential? Is it changing or changeless? Temporal or eternal? Material or spiritual? Tangible or intangible? If one were to compose an inventory of all the subsisting realities of the whole universe, including God, the angels, men, animals, plants and minerals, would the objects of mathematics be on this list?

Am I asking too many questions? Well, here are a few answers whose reasons will either be supplied later, or be left to the reader to discover for himself. Mathematics is a speculative science whose value can only be in the practical order. It has no speculative value, because it does not convey any essential knowledge about any subsisting reality. It is not contemplative knowledge and therefore not essentially good for man, because it occupies the intellect with objects which the will cannot love. It is knowledge which does not proceed from understanding nor does it resolve in wisdom. It does not proceed from understanding, because the mathematical expression of any reality, never conveys any understanding of it. It may however convey the means for the control of that reality. You are not one inch closer to the penetration of the mystery of light and color when you know the number of Angstroms in each of the colors of the spectrum; nor about the nature, cause, or purpose of gravity when you resolve its laws into mathematical formulas. And it does not resolve in wisdom, because neither is mathematics concerned with the First Cause, nor does it lead to the First Cause. The manner by which mathematics deals with its objects abstracts completely from any dependence upon God, and as a matter of fact, attributes to these objects a species of eternity and turns them into quasi divinities completely independent in themselves. This explains the autonomous nature of mathematics, according to which, left to itself, it never leads to anything non-mathematical. A mathematician might be led to think about God by an accidental non-mathematical reason, but never from the very needs of mathematics.

As for the object of mathematics, it is not a physical entity but a mental entity; it is not real but ideal. There is nowhere in the world, outside of the mind of a mathematician, a point without dimensions, a line without width or thickness, or a square root of minus one. But these fictions of the mind are

founded on reality, and their foundation consists of the accident of quantity and its properties and relations. Arithmetic is founded on discontinuous quantities or multitudes; geometry on continuous quantities or magnitudes; while algebra is founded on abstract quantity considered generically, prescinding from whether it is number or magnitude and therefore potentially capable both of an arithmetical as well as of a geometrical interpretation. Other mathematical objects, more distantly removed from this real foundation of mathematics, are rooted in these simpler elements and in the relations which hold among them. Having experienced the three dimensions of bodies in space and having represented these three dimensions by the three variables of an algebraical equation, nothing prevents the mind from creating the fiction of a space corresponding to an algebraical equation of four variables – hence four-dimensional space.

But what do we know about this accident of quantity, on which is founded, proximately or remotely every object of mathematics? We learn from philosophy that quantity is an accident of material substances, and that in contrast with the accident of quality, quantity manifests the material and not the formal aspect of these substances. Therefore the real foundation of mathematics is found in the material aspect of material things. Further, an accident when conceived as an accident always brings you back to its substance; but in mathematics the accident of quantity is conceived as if it were a substance. Further, a material substance concretely considered, has a nature through which this substance moves to the attainment of an end, but the mathematician considers quantity as a substantialized material accident devoid of any principle of change and abstracted from any movement to attain an end. The concrete material substance manifests itself through its sensible qualities by means of which it is known, but the object of mathematics, without being a spiritual substance like an angel, prescinds from all sensible qualities and can be known only by the intellect and not by the senses. Hence we have the apparent paradox that while the only foundation for the mathematical object is the material aspect of material things, still mathematics represents its object such as matter could neither be nor be known. For matter is nothing but a principle of change, while mathematics prescinds from change; and matter can only be known through the senses while mathematics prescinds from sensibility.

The object of mathematics is therefore an accident parading as a substance, a material reality pretending to be immaterial, an ideal entity which poses for something real. At the basis of all these antinomies is the fact that mathematics arises only when an intellectual mind, directs the light of its spiritual intelligence, not for the purpose of contemplating being, but for the purpose of controlling potency. The mathematical object is the shadow that matter casts on spirit. For when spirit knows spirit, there is not even the foundation for mathematics; when material cognition (sensation) knows material

things, the objects of mathematics cannot arise; even when a spiritual being knows matter contemplatively it understands a material substance through its form and its qualities. It is only when a spiritual being concerns itself with matter and for the purpose of sheer control that mathematics finally finds its grounds.

But how about the truth in mathematics? If the objects of mathematics are mental entities (entia rationis) what is it that determines the truth or falsehood of a mathematical proposition? What reality stands as the measure to the judgment of the mind? In the classical branches, arithmetic and geometry, the foundation in reality was close enough to preclude any statements that are not justified by the real properties of multitudes and magnitudes. But as mathematics branches out and develops into newer mathematics, and higher mathematics, and purer mathematics, that control becomes less and less until finally the mind remains its own measure. Consistency and not conformity becomes the touchstone of validity.

Apart from mathematics, there used to be three other distinct types of knowledge: physical, logical, and ethical. All three led ultimately to God – the physical sciences under the aspect of Ultimate Cause; the logical sciences by way of the Prime Truth; and the ethical sciences by way of the Supreme Good. But in mathematics, the mind reigns supreme, lord of all it surveys. The mind finds in itself a sufficient cause for the kind of being the mathematical entity enjoys. It is the only ultimate measure for the truth of its judgments. It prescinds completely from the aspect of goodness. Of all the intellectual pursuits, mathematics alone does not lead to God.

It is like the web of a spider, it proceeds from the very substance of the spider and ends up being its own jail. It gets more involved and more intricate the more it is extended, and finally, when the web is intricate enough, the new threads do not have to measure up to any real independent distances of walls or furniture, for when the new-thrown thread fails to meet a point of support, it sticks on another thread of the same fabric.

From the spider of mathematics, may God deliver us.

Brother Francis Maluf was born in Lebanon in 1913 and held a PhD in philosophy. Along with Father Leonard Feeney, he was a founding, in 1949, of the Slaves of the Immaculate Heart of Mary, a religious Order. Brother Francis went to his heavenly reward in 2009. This article appears courtesy of Catholicism.org.

The featured image shows a "Portrait of Luca Pacioli," attributed to Jacopo de' Barbari, painted before 1516.