chanics is not religion, is distinct from revelation, but it renders both credible:

> And though every true Step made in this Philosophy brings us not immediately to the knowledge of the first Cause, yet it brings us nearer to it, and on that account is to be highly valued.[11]

To Richard Bentley, the great classicist and the first of the Boyle lecturers, Newton had written some five years after the first edition of the *Principia*:

> When I wrote my treatise about our Systeme, I had an eye upon such Principles as might work with considering men for the beliefe of a Deity; and nothing can rejoice me more than to find it used for that purpose.[12]

One does significant violence to the history and the achievement of ideas, if one takes "mechanics" as a word possessing a single meaning and designating one obvious subject-matter. Isaac Newton endows mechanics with a comprehension of meaning and an extension of subject that neither Galileo or Descartes before him nor many in contemporary science would admit. For Newton, it was mechanics which both provided the foundations of geometry and also established the existence of God.

This theological interest was intrinsic to the universal mechanics for at least two reasons: the nature of its subject-matter and the progress of its method. If absolute motion entailed absolute space and time for its existence, it entailed the infinite and the eternal, the immutable and the impassible. Inevitably the question arose whether such realities were not divine, whether Newtonian mechanics were not covertly dealing with God when dealing with these absolutes. Secondly, if the mechanical method of analysis, relentlessly following the procedures indicated by the parallelogram of forces, had to resolve motions back to their aboriginal forces, and if any system could be treated in all of its complexity as such a motion demanding such a resolution, and if the Cartesian insistence upon a final resolution through mechanical principles was unwarranted and, indeed, led to the illegitimate feigning of hypotheses, then it was equally inescapable that the continuation of analysis in the calculation of motions, masses, geometrical patterns, and balances which composed the system of the world would lead "to a first cause which certainly is not mechanical."[13] I have argued this case at the Cracow Conference earlier this year against a previous article by Professor Edward Strong, and I shall not repeat my argument here. What I should like to do, however, is to build upon it.[14] I want to suggest that Newton saw mechanics not only as corroborating theology, but as serving for its foundation. Here we pass in contemporary discussions to an issue posed recently by such books as *God and the New Physics* by Professor Paul Davies and by theories such as that of the much contested anthropic principle of the past five years, associated with such distinguished names as John Barrow, Frank Tipler, and John Leslie. It is the issue of the use of science to ground religious affirmation. That issue was a live one also for Isaac Newton.

Mechanics as a Foundation for Theology

In an extraordinary paragraph, the last in the *Opticks*, Newton claims that moral philosophy will be enlarged by the methods of analysis and composition which structure mechanics or natural philosophy. How so?

> For so far as we can know by natural Philosophy what is the first Cause, what Power he has over us, and what Benefits we receive from him, so far our Duty towards him, as well as that towards one another, will appear to us by the Light of Nature.

And this, in turn, corrects the polytheism of the pagans and teaches authentic worship:

> And no doubt, if the Worship of false Gods had not blinded the Heathen, their moral Philosophy would have gone farther than to the four Cardinal virtues; and instead of teaching the Transmigration of Souls, and to worship the Sun and Moon and dead Heroes, they would have taught us to worship our true Author and Benefactor, as their Ancestors did under the Government of *Noah* and his Sons before they corrupted themselves.[15]

Religion itself, Newton had written in his *Short Scheme of the True Religion*, is "partly fundamental and immutable, partly circumstantial and mutable." This distinction obviously parallels in many ways that of absolute and relative motion, space, and time. Fundamental religion "consists of two parts, our duty towards God and our duty towards man, or piety and righteousness, which I will here call Godliness and Humanity."[16] Now these are precisely the two areas which the *Opticks* called "moral philosophy," and which the mechanical examination of the phenomena of nature was to purify or even to establish. It is not a great leap to assert that Newton saw mechanics as providing for theology what it provided for mathematics: its foundation. This does not mean that Newton collapsed any distinction between religion and mechanics. He expressly stated that they are to be kept distinct when religion is identified with revelation: "We are not to introduce divine revelations into Philosophy, nor philosophical opinions into religion."[17] But natural philosophy or mechanics could give the foundation for the credence which one extended to the objects of revelation. Mechanics could dispose of the objections of the atheist:

> Opposite to the first [Godliness] is Atheism in profession, and idolatry in practice. Atheism is so senseless and odious to mankind that it never had many professors. Can it be by accident that all birds, beasts, and men have their right side and left side alike-shaped (except in their bowels), and just two eyes and no more, [one] on either side the face, and just two ears, [one] on either side the head, and a nose with two holes and no more between the eyes, and one mouth under the nose, and either two fore-legs, or two wings, or two arms on the shoulders, and two legs on the hips, one on either side and no more? Whence arises this uniformity in all their outward shapes, but from the counsel and contrivance of an Author? Whence is it that all the