

Annapolis - Fall 2009

Convocation Address

Welcome especially to our new Graduate Institute students; welcome also to friends and family, returning students, colleagues.

Today you new students become members of the St. John's community, a community dedicated to liberal education in its most profound sense, that is, an education truly freeing—from preconceptions and illusions, from hasty answers to the deepest questions of human existence, from the limitations of a too-narrow perspective. Your entry into our community proceeds today through the portal of either the Literature segment or the Mathematics and Natural Science segment. Often in our society, the liberal arts are seen as antithetical to the technical, scientific disciplines; a chasm even wider than the ravines separating individual academic fields separates the humanities-oriented part of liberal arts from such "hard" sciences as physics, chemistry, even mathematics. Here at St. John's we do not sanction such compartmentalization of the world of study; our organization of the Graduate Institute program into segments reflects the pressure of practical constraints rather than an assumption about valid categories of knowledge. For that reason, I'd like to use this occasion to make a beginning toward liberating us from a too-constricting notion of science.

As with the question "What is virtue?" in the dialogue *Meno*, the question "What is science?" tends to elicit a whole "swarm" of responses. During the course of your readings in the Mathematics & Natural Science seminar, you will encounter many interpretations of science—from Lucretius' epic poetry distilling all things into void and atoms, to Bacon's reconstruction of science on experimental foundations, to Newton's axiomatic system. Some versions will call themselves physics, some versions will assume the title of natural science, or natural history, or natural philosophy. These varied denominations reveal a significant reason that we should suspend our faith in the boundary lines of academia and return to the sources; we may thus begin to see both science and the world through clearer eyes.

As an example of this challenging activity, I will here consider Plato's dialogue, *Timaeus*. In it, the title character responds to Socrates' expressed desire to see his utopian republic in action by telling a story of the origin of the cosmos, a creation myth if you will, what Timaeus himself calls a "likely story." I will leave it to you in your seminars to figure out how a creation myth may be an animation of Socrates' political "city

in speech.” I would like to examine in the rest of this talk the way in which science and story might be linked (rather than relegated to two separate segments, say).

Timaeus’ preface to his story exhibits his own trepidation and uncertainty about his task. He feels the need to pray for the gods’ approval of a discourse concerning how the universe was created, “or perhaps is not created” (27c). He explicitly recognizes that his task is different from the task of philosophy. Philosophy studies that which is “apprehensible with the aid of reasoning since it is ever uniformly existent.” But the cosmos “is visible and tangible and possessed of a body.” Thus, it is only apprehensible through “opinion with the aid of sensation” (28c). Timaeus must explicate the world of becoming, things which come into being and pass away, the world of change. This is a good description of the arena we generally concede to science. Timaeus immediately makes us conscious that this world is susceptible only of opinion. We moderns rush headlong to use the word “knowledge” for the latest chemical and cosmological and medical theories (even if scientists themselves are sometimes more circumspect about the hypothetical character of their assumptions); then we reserve the word “opinion” for the realms of politics and religion and literature.

Timaeus, in the face of the instability and ephemerality of the world confronting us, does not lose heart. Instead, he invokes ourselves as well as the gods, gathers up his courage, and begins clarifying the limits attending the project of describing the birth of the world. These are:

1. **We must assume a cause of the cosmos.**
2. **We must assume the cosmos has come into being, since it is material and physical and our experience of physical things is that they are generated.**
3. **The cause of its coming into being, the architect, is good, and wanted the Cosmos to be beautiful, so he kept his eye fixed upon a perfectly stable, unchanging paradigm when he constructed this fluid, evershifting, pulsing- with-life being of the cosmos.**

Now, these three assumptions are all dubious. But let me point out: though their expression may be unfamiliar, they themselves are not wholly unfamiliar. The first is reminiscent of our own scientific trust in the world of causes, specifically of what we call efficient causes. We need to look for a mover of anything that is moved—a shove or a push or a force. The second emphasizes, as science usually does, the material character of what we are studying and the perceptual way we imbibe it, even if the logic positing a necessary beginning for the whole of such stuff transcends perception. The third, an assumption Timaeus himself recognizes as pious, may, in its appeal to beauty and goodness, involve more than mere

lawfulness—but science’s assertion of lawfulness can never simply be deduced (and sometimes rests on such grounds). Timaeus’ overt appeal to piety legitimately calls such faith in lawfulness to our attention.

After his preliminary laying out of assumptions, Timaeus makes his surprising—at least to us—turn towards story-telling. He cautions Socrates that he will be unable to give a perfectly consistent and precise account (the Greek word is “logos”—connected to reason as well as speech). Instead we will all have to be satisfied with something he calls a “likely story.” I suspect that, when you read it, the tale that Timaeus subsequently recounts may strike you all as whimsical and eccentric rather than scientific. Nonetheless, Timaeus does give an explanation of the origin and nature of the cosmos. From the motions of the planets to the functioning of the liver, Timaeus elucidates various causes, drawing heavily on mathematics—the ratios underpinning the musical scale, the figures constituting the geometrical solids, and the circles used in astronomical predictions. But Timaeus depicts himself as designing a story rather than as giving a reasoned proof.

For many years I’ve intended to formulate more precisely the meaning of his puzzling phrase “likely story,” each word of which is provocative. The Greek word for story here is indeed “mythos.” And Timaeus’ account is certainly a creation myth, involving a demiurge building an entire world from scratch. But “mythos” has a broader range of meaning in Greek than we tend to give “myth.” I think we always use that word with a soupçon of contempt—“that’s just a myth” we say; especially in the context of science, we indicate our superiority by calling something a myth. The word “story,” unlike “myth,” evokes affection and warmth in us. The *Canterbury Tales* are not myths to us; they are romances steeped in reality, distillations of the human experience resonating within us. Would we ever allow a story to be a vehicle for science, or even science itself?

Surely, one reason we glow at the prospect of a story is that we expect to be entertained. From the time we cuddle in our mother’s laps, ears expectantly open, eager for adventure in thought, we associate new worlds, new visions, and new friends with stories. We are accustomed to allowing ourselves to live and breathe the air of some new world, to tread companionably along with strange characters, to thrill to new horizons. I balk a bit at describing this receptivity as passive; yet, I think I must admit that part of the pleasure of a story resides in the feeling that we need only step on board to be carried somewhere fresh and exciting. Someone else has charted the course and will do the navigation. Even I, with degrees in mathematics, have a very different feeling when I turn over a leaf in a book and confront a page dappled with equations; a special summoning of energy is required.

But surely the dichotomy I’ve drawn is not precisely accurate. When reading a story, I must focus my concentration as well. And any good story actively engages the intelligence. The reader must re-create

the world the author has discovered in his own imagination and shine the interior light of his experience on the winding trail marked off by the author. While Homer may, in his first twenty lines, circumscribe the field of our vision to the problem of Achilles' wrath, we ourselves must piece together the strange components of this almost elemental force, must analyze Achilles' reactions, must press toward an understanding of the essence of this wrath. In order to understand Achilles, we must grope towards a vision of what honor means to those indomitable warriors of the *Iliad* and clear an arena where Achilles and we can meet on common ground. Are these intellectual activities so different from those employed in understanding the physical or biological world around us?

I'm not at all sure they are. To penetrate the mediating language of mathematical symbols is a daunting and perhaps specialized enterprise, but the use of such symbols seems secondary to the goal of understanding the world around us. Scientific works do often present themselves as treatises and highlight the deductive character of the thinking involved. But stories too sometimes require us to make arguments from premises, perhaps premises of character types rather than definitions of motion—but arguments nonetheless.

Moreover, upon reading that most deductive of all great books, Euclid's *Elements*, we tutors frequently assign a paper at the end of Book I asking students to "tell the story of Book I." We are not asking students to do a creative writing piece when we make this assignment. Rather, we recognize that Euclid's work focuses our attention on certain themes or issues, acquaints us with the characters and qualities of various entities, and develops relationships through surprising connections and interactions that can ultimately be fit into a whole. On the other hand, making this assignment of re-casting Book I as a story indicates that we recognize the need for the student to unearth an arc of events for himself. The series of logical deductions is more patently obvious; however, the thematic connections are an integral, if subtler, part of Euclid's project. Deduction and story-telling may be inextricably bound up with the task of all human understanding—receiving different emphasis in different endeavors or from different authors, but both necessary if we are to understand at all.

I believe Timaeus aspires to this full and diverse use of intelligence when he constructs the edifice of his "likely story." The Greek word translated as "likely" has its origin in the word for image or likeness. Though there is some connection to probability and likelihood, I think Plato means us to hear the connection to imagination and similarity predominating. The true power of science as story is thus brought home, for both the scientific account and the story ought reflect actuality. Just as Odysseus' tales of carefree lotus-eaters and lawless Cyclops convey the deepest truths about temptations to be overcome on a journey back home to one's most rooted self, so may Timaeus' account of the cosmos as a living, breathing

organism capture more essential aspects of the world around us than the most statistically verified of equations.

Likeliness in this sense inheres in the transcendent vision provided by imagination. Now imagination is a faculty not highly regarded by scientists today. We prefer judging our current theories by their predictive power. But when pressed regarding the absolute truth of a theory, most scientists will characterize their work as model-construction rather than truth-seeking. Surely this is an admission that, like Timaeus, they live in the world of opinion and trust. Model-building is not exclusively deductive; some genius of insight must penetrate to first principles, must extract the intelligible from perception. Experiments cannot substitute for this mysterious but very human talent. Like good story-tellers, scientists must weave together disparate, unpliant strands of material, hoping to achieve some precision of focus, to animate a dramatic insight, to gain subtlety of perception. You may be interested to know that the word “theory” has its (Greek) roots in seeing/ beholding—in contemplation to be sure, but also in theater. Whether we engage in science or literature, we seek an epiphany.

But how will we judge the likeliness of a story if not, or not simply, by predictive power? I’m not sure there is a method for discovering how much truth a story has. As with the *Canterbury Tales* and Homer’s epics, we must consult ourselves. We must “recollect,” aided by the questioning and discussion of other wise beings, whether, for example, Timaeus’ version of space as a nurse and receptacle embodies the essential characteristics of space better than a Cartesian grid with three axes and the capacity for measurement. We must gauge the story’s explanatory power and probe the concreteness, integrity, and clarity of the resulting vision.

Such probing carries us beyond and out of the world of the story. The danger of stories, of course, is that we will simply allow ourselves to be seduced and entertained by them rather than doing such probing. We must not allow ourselves to accede to Timaeus when he pleads:

You must remember that I who speak and you my judges have human nature. So, in order to receive the likely story about these things, it is fitting not to search beyond this. (29c4-d3)

Instead, we must press beyond the confines of each page, whether the pages are Platonic or Newtonian or Homeric. Whether the author frankly tells us, as Timaeus does, that his imitation is merely imitation, or presents his fictional insights as a veiled and disembodied author, we must glut our greed for the truth. We must have a passion for wisdom. To this extent everything we do—math, science, literature, philosophy—in the classroom or in our lives—ought be truly philosophic. Only then will our education be liberal and liberating.

By Marilyn Higuera, Director