The following are the notes Chris Clemens (Chair of Physics & Astronomy) made for himself for the presentation he gave at the Faith & Science meeting held on UNC's campus on February 1, 2013.

(Thank Hank)

My name is Dr. Chris Clemens, and I am an astrophysicist for Jesus.

It shocks many of my fellow astrophysicists to hear this.
It shocks many of my fellow Catholics and Christians to hear this.
And I know it shocks many of my esteemed faculty colleagues here in Chapel Hill to hear this.

The question is "why"? Why is it a surprise that someone whose chosen profession is the scientific study of the universe should confess the creed of the One, Holy, Catholic and Apostolic Church? In other words…why is the "Astrophysicists for Jesus" club too small even to have its own t-shirt?

That's the main question I want to address today. Why is there a division or at least a perceived division between science and religion? Is it intrinsic to the business of science that it be "at odds" with religion? Or is the difference more cultural? Was it ever any different? Can the two things ever be reconciled?

Part of this will be very personal---about how I combine my faith and my work--- and part of it will be—and here I apologize--- highly technical. Now, as my lovely wife Georgie will tell you, I am much happier when I can stay on the technical side of things, and have even been known to run in fear upon hearing the words "faith sharing". But really this lunch is all about what we Vatican II Catholics call

Faith Sharing and our Protestant brothers and sisters call “fellowship” (which is a much better word, so don’t get rid of it).

“Scientific Mythology”

One of the defects of our modern culture is the unhealthy and undeserved reverence we show toward scientists. The public imagines scientists are too smart to disagree with, too objective to be swayed by emotion or bias, and experts on every subject they talk about. None of these things is true of course, and the unquestioning acceptance of these notions in our culture does great damage. When the Physicist Stephen Hawking says that his theories show that the universe has no cause, but simply “is”, or when the biologist Richard Dawkins rails against religion as a “virus” that should be eradicated, we give their words too much weight. They are the great minds of our time, our culture supposes, and we are not smart enough even to disagree. That is why it is of vital importance that the counterweight to these ideas lives inside the University, and not run to the cloister as is often my own temptation.

In truth, scientists are anything but authorities on subjects philosophical, and have strayed very far from their own scientific method when they make these kinds of pronouncements. The question of why their words carry so much weight is an interesting one, and may be an interesting subject for a future talk. Today I want to explore the ways that famous and outspoken scientists set themselves against religion in general and Christianity in particular. What I hope to show you is that while scientists might be very good at what they do, their thinking on the subject of religion is not always objective and clearheaded.

To begin, I need to introduce a topic that sounds like an oxymoron itself: (and that is) “Scientific Mythology”. The great majority of agnostic or atheist scientists, while criticizing Christians for their “superstitions”, arrange their own world view around a kind of mythology, with scientists themselves as the mythic heroes. The enemy (or more romantically, the “dragon”) of their mythology, is anything that stands in the way of “free inquiry” or “the advancement of knowledge”. In other words their enemy is “dogma”, and they will have none of it.

These same scientists do not see that holding “the advancement of knowledge” or “free inquiry” as the supreme good is itself a kind of dogma. And this should help us realize that scientists are not always impeccable in their logic.

Anyway, the typical story in scientific mythology has as its hero an individual with a new idea, and the story works best if the idea can be described as “heretical”, which is an adjective scientists use to confer honor. In the course of the story, the hero encounters a “dogmatic” villain, preferably an immensely powerful one, and is often vanquished in body and spirit, but never in mind, and at the climax of the story he may mutter under his breath, “it moves nonetheless” or some other phrase to tell us that he has not given up his idea. The punch-line is always the same: today we know the “heretical” idea is correct, and we can scoff at the dogmatic villain who was powerful but wrong and we can honor the freethinking hero who was weak but right.

Many scientists are deeply wedded to this kind of mythology, so much that it warps their view of history, compromises their honesty, and adversely affects their scientific work. These are serious

charges I am making, the most serious ones you can level against a scientist, but I base them on close experience. Let me tell a story that will show I am not exaggerating.

When I was a graduate student at the University of Texas, most of the professors there taught a scientific myth about the Crab Nebula and the Supernova of 1054. The Crab Nebula is a wispy cloud of gas and dust visible in the northern skies. Astronomers believe it is the remnant of an exploding star called a supernova. Based on the distance to the nebula, and the rate that material in the nebula is expanding outward, we can calculate the year the supernova would have appeared in the sky and how bright it would have been. As it happens, in that year, Chinese and Japanese astronomers recorded the presence of a new star, bright enough to be seen even in the day, which is what we expect. However, there is no record that the event was seen in Europe.

From this absence of recorded evidence grew the myth taught by many of the UT astronomy faculty, (which I have now traced back at least as far as the Feynman Lectures on Physics). The supernova of 1054, they taught, was not reported in Europe because the Europeans were in the grip of the Dark Ages, and the powerful and dogmatic Catholic Church enforced Aristotle's view that the stars were unchanging. This Church was so effective at suppressing the observations that none survived in all of Europe.

Now this myth has the basic elements of a scientific myth magnified many times. The supposedly heretical idea, that a new star could appear, was accessible to anyone who had eyes to see. The dogmatic villain was so powerful, that it could convince the poor ignorant masses of a whole continent

that they could not believe what they saw with their eyes. A dark age indeed! Thank Newton we live in better times!

There's just one problem with the story, it's completely ridiculous. Anyone who can read the Gospels will have the first clue as to what's wrong:

""Where is the newborn king of the Jews? We observed his star at it's rising and have come to pay him homage."

It is difficult to reconcile the Christmas star with a dogmatic position that the heavens are unchangeable. Or are we supposed to believe that Aristotle held a position higher even than the Gospels?

Well, it really doesn't matter, because the troubles don't end there. Anyone who knows Western History, that increasingly esoteric and unpopular subject, will see a bigger problem. The ideas of Aristotle were nearly completely unknown in Latin Europe in 1054. Not until the 13th century did St. Thomas Aquinas and the other scholastics attempt to adapt Aristotelian thought to the foundations of Christian Theology, and this was greeted with suspicion at first.

To continue the story, near the end of my graduate studies at UT, I spent a lot of time working in the library, and I came across a book, I believe it was called "The Historical Supernovae", and read an account of the supernova of 1006. This one was brighter than the supernova of 1054, though a little further south, and it was also reported in China and Japan, and in the records of a European monastery. At this point, I had had enough.

I copied the page from the book and brought it to one of our weekly group lunches. At the end of the meeting, I showed this to my thesis advisor, whom I had heard teach the "mythological" version. He was a man whose scientific integrity I respected. I told him that he and many of the professors were teaching an error in the introductory astronomy classes. I explained exactly what I have explained to you, ending with an emphatic flourish:

"and so, unless you have a convincing theory that some radical dogmatic change occurred in the 48 year span between 1006 and 1054, then you should probably change what you teach about the supernova of 1054."

What do you suppose he said?

He answered with a single line:

"I'm still going to teach it the way I always have."

His myth was more important to him than the truth.

And he's not the only one. I have found lots of interesting references to the myth of the Supernova of 1054. The most interesting is from a 1998 issue of Natural History magazine and was written by the director of the Hayden Planetarium (this is Neil deGrasse Tyson), in an article, ironically enough, about the importance of checking the evidence before you believe something. I quote:

In scientific investigations of the natural world, the only thing worse than a blind believer is a seeing denier. In A.D. 1054, a star in the constellation Taurus abruptly increased in brightness by a factor of one million. Chinese astronomers wrote about it. Middle Eastern astronomers wrote about it. Native Americans in what is now the southwestern United States made rock engravings of it. The star became bright enough to be seen in the daytime sky for weeks, and it continued to be visible in the night sky for months. Yet we have no record of anybody in all of Europe documenting the event.

His explanation, quoting again:

(But) Aristotle had said the stars don't change. The Church, with its unmatched authority, promulgated the idea. People accepted it, believed it: a collective delusion that was stronger than their own powers of observation.

Later in the same article, referring to some of the commonly held misconceptions about astronomy, the author laments:

One would think that in our modern and enlightened culture, people would be immune to believing falsehoods that are easily testable. But we are not.

What can I say except, one would think, indeed.

Now you get one guess where this astronomer conducted his graduate studies….The University of Texas (I know this because I went to school with him). Thus the erroneous Scientific Mythology is now passed on to the next generation, except that the size of the forum is quite a lot larger.

In a final irony on this topic, I found a 1999 article that claims to have found evidence that the supernova *was* reported in European records. But even then the article cannot let go of the mythological version so easily. It ends by noting that Europeans never reported seeing the supernova in the morning, as the Asians did, and then speculates that the Roman church may have supressed only the morning observations.

Right, or maybe they just slept later in Europe …

There are other examples of Scientific Mythology I could cite. The case of Galileo for instance, which involves real abuse of authority and real injustice, though not as clear cut as in the mythological version. As an example of how distorted the story of Galileo has become, consider the following item that many historians and scientists forget to mention: the evidence Galileo presented for the motion of the Earth in his "*Dialogue Concerning the Two Chief World Systems"* had to do with ocean tides, and is completely and utterly wrong. Not his conclusion mind you, the Earth does move, but the evidence he presented for his conclusion. So his critics in the Church were right to insist on better proof before taking his advice about re-interpereting scripture in light of his heliocentric theory.

But I don't want to spend any more time on "Scientific Mythology", because though it is an unfair distortion of history, it is often innocent and rather juvenile. Sometimes, though, it is coupled with a more serious pathology, which is the idea that science and Christianity are in fundamental opposition.

This usually takes the form of a "Scientific Triumphalism", in which science completely displaces theology, philosophy and everything else as the tool for understanding our existence.

Scientific Triumphalism:

Scientific Triumphalism is very dangerous both to science and to Christianity, and so full of subtle errors that I'm sure I haven't worked them out fully. So let me again proceed with examples. The first one I will borrow from Stephen Hawking, Lucasian Chair of Mathematics at Cambridge University. This is the chair that Newton held, so Hawking follows illustrious company. (One of the more interesting written comments I received on my course evaluation forms was from a student who said "You should write a book or something, you are more articulate than Stephen Hawking." Of course Stephen Hawking can't speak at all, he uses a machine voice, so this is a rather backhanded compliment.)

In a 2002 article from his 60th birthday symposium, he describes the situation in theoretical cosmology at the beginning of his career:

(Stephen Hawking in http://plus.maths.org/issue18/features/hawking/)

The big question in cosmology in the early 60's was, did the universe have a beginning? Many scientists were instinctively opposed to the idea, because they felt that a point of creation would be a place where science broke down. One would have to appeal to religion and the hand of God, to determine how the universe would start off.

Though his honesty is admirable, the situation he describes is a serious problem for science. Rather than weigh all possible alternatives equally, many scientists opposed *a priori* any theory that suggested the universe might have a beginning, because that would suggest creation.

This widespread bias that the universe has no beginning or end grew out of the materialist philosophies of the 19th century, and by 1917 it held such sway that Einstein himself was afflicted with it. When Einstein refined Newton's theory of gravity, and used it to construct the gravitational equation governing the universe, he found that there was no static solution, that is, the equations suggested that a universe dominated by gravity would either expand or contract. This idea was so philosophically repugnant (his word) to him that he added a constant, a fudge factor if you like, to the equations to balance them out. In effect he forced the equations to describe an eternal Universe. He later called this "cosmological constant" his "biggest blunder". The consequence of his blunder was that he failed to predict the universal expansion that Hubble would measure in 1929.

As it happened, there was a less dogmatic hero in this story, who accepted that the equations meant the universe must be expanding. Does anyone know who he was?

His story falls so far outside the standard Scientific Mythology that you seldom hear it. He is the Belgian Catholic priest Georges Lemaitre. He used Einstein's Equations to construct the theory that later became known as the Big Bang, and to predict the expansion of the universe 2 years before Edwin Hubble measured it. Here's what he had to say about science and religion in his life…

("There were two ways of arriving at the truth. I decided to follow them both…")

"Nothing in my working life, nothing I ever learned in my studies of either science or religion has ever caused me to change that opinion. I have no conflict to reconcile. Science has not shaken my faith in religion and religion has never caused me to question the conclusions I reached by scientific methods."

To continue Lemaitre's story, the initial response to his theory of an expanding universe with a finite age was derision. Fred Hoyle, another Cambridge astronomer, and an atheist, applied the name "Big Bang" to the theory as mockery. Hoyle hated the idea of a Universe with a beginning, and even after Edwin Hubble's discovery of the expansion of the universe, Hoyle did not believe the question was settled, but proposed that along with the expansion, new matter appeared to fill the void, so the Universe could still be eternal. He was happier with the spontaneous unobserved generation of new matter than he was with a beginning to the universe.

Fortunately, one of the great qualities of scientific inquiry, and the thing I love about it, is that it relies upon observations of the universe itself to correct any bias in the theorists might have, and that is what happened in the case of the "Big Bang" theory. In 1965, when radiation from the "primordial fireball" of Lemaitre's theory was observed by Bell Labs engineers Arno Penzias and Robert Wilson, even the diehard skeptics were convinced, and now the Big Bang is the standard model astronomers use to think about the universe. And almost all of them agree it had some kind of beginning very different from the conditions we see now.

More recently, in only the past 5 years, the question of the future of the Universe has apparently also been addressed observationally. Measurements show that the rate of expansion of the universe is increasing, meaning that if this continues it will expand and cool forever, eventually unable to sustain any kind of life.

In other words, the Universe, like each of our lives, is a one shot deal.

This has precipitated another kind of philosophical crisis within the Scientific Triumphalist school. It appears to physicists now that the behavior of all matter and energy can be described using handful of principles and a few fundamental constants, like ratio of the size of the electric force to the size of the gravitational force. Martin Rees, yet another Cambridge astronomer, places the number of fundamental constants at only six, and has written a book called "Just Six Numbers". The exact values of these numbers we know only from measurements, and their values appear to be arbitrary, by which I mean we have found no fundamental reason for them to have the values they do.

With so few fundamental numbers, and no reason to leave them alone, Martin Rees and others have indulged the perennial temptation of the theorist, which is to speculate. "What would happen", they wonder, "if one or more of the numbers were slightly different? The answer, apparently, is that even small changes would make it impossible for us to exist, and unlikely that any kind of intelligent life could inhabit the universe. That is, the numbers have to be very finely tuned to allow the interactions we rely upon for our existence. Fred Hoyle found this fine tuning to be the greatest challenge to his faith in atheism. He said it appeared to him that as though some super-intellect had monkeyed with physics, and with chemistry too.

The fine tuning problem is especially difficult for atheists if the Universe is a one shot deal, so, predictably, a common response to this observation has been to theorize that there must be many "universes". I am going to resist the temptation to criticize the one true oxymoron of this talk, these "multiple universes", and just say that cosmologists have concocted an idea they call the "multi-verse". They describe it as a kind of cosmic foam in which an infinitude of universes spontaneously appear, with random values of the fundamental constants. If any of these universes has just the right mix, then life will appear in those universes only, and speculate about its existence. So naturally, its not simply expected but demanded that we live in one of those universes that accidentally allows us to exist… So my body is an amalgam of atoms and molecules accidentally arranged into an astronomer, and my soul is an accidental biological epiphenomenon.

Some of you probably suspect me of making this up, but I'm not. Just go get Martin Rees's book.

Among the problems with the multi-verse theory is that it cannot be observationally tested, because all of these other imagined universes are, by definition, completely disconnected from ours and forever unobservable. This is a scientifically untenable situation… a theory that cannot be tested, even in principle, by observations. The adherents of the theory know this, but it is the last place to run from God, and so you will find huddled around this dim fire a crowd of astrophysicists who dogmatically insist that science is the only valid method for understanding our existence.

One last item and I will move on. Evolution. (You knew it was coming, didn't you.)

(It's Charles Darwin's Birthday today, by the way, he would be 196, or 588 in monkey years.)

Evolution by natural selection is an elegant, though incomplete theory, and a theory I enjoy thinking about very much. As a scientific theory, it is no more problematic for religion than the study of fetal development. If I tell my children in one moment that they were made by God, and in the next I explain how they grew in their mother's womb from a single cell through a set of magnificently orchestrated chemical reactions, I do not commit any theological or scientific error.

Ladies and Gentlemen, no laws of physics were broken in the creation of this human being you see here before you. This strikes me as an economical way to create. As the great Jesuit theologian Francisco Suarez put it:

"God does not interfere directly with the natural order, where secondary causes suffice to produce the intended effect"

Of course fetal development is not only economical, it is also marvelous, wonderful, and, if you have ever tried to build anything remotely complicated, awe-inspiring.

Before applying the same logic to evolution, it is important to be clear about the meaning of the word. To evolve in the literal sense of the word is to "unfold". If the unfolding of the first man and woman was through natural selection acting on the well-regulated natural interactions of matter, then what is there in that to threaten our faith? Since I tread on dangerous theological ground here, and am no

theologian, allow me to invoke a theologian who understood these ideas very well. Not just a theologian, but as the Medieval scholastics would say "The Theologian", St. Augustine himself.

(By the way, our youngest son is Samuel Augustine, and I think his mother is going to have to pray like St. Monica to keep him out of mischief)

Writing in his work "On the Literal Interpretation of Genesis" in the fourth century he says:

"But from the beginning of the ages, when day was made, the world is said to have been formed, and in its elements at the same time there were laid away the creatures that would later spring forth with the passage of time, plants and animals, each according to its kind. . . . In all these things, beings already created received at their own proper time their manner of being and acting, which developed into visible forms and natures from the hidden and invisible reasons which are latent in creation as causes. . ."

That is about as good an anticipation of Darwin as one could imagine. So why then is evolution so controversial and problematic, and why do so many Catholics feel a pit in their stomachs when eminent biologists teach and defend the theory? Probably because these biologists are like the astronomers I have been describing. Many of them are not so interested in teaching us about evolution as they are in telling us what it means…their materialism-inspired, triumphalist version of what it means. Which usually translates into "God is dead at last."

For example, Jacques Monod, molecular biologist and 1965 Nobel Laureate in Medicine, argues in his book "Chance and Necessity" that because we arise from a process involving chance events, we cannot be the result of any foresight, nor can we be the fulfillment of any purpose, divine or otherwise. "Destiny", he writes, "is written concurrently with the event, not prior to it." Richard Dawkins, the most effective popularizer of Evolutionary theory, is more blunt: "All appearances to the contrary, the only watchmaker in nature is the blind forces of physics… Natural selection has no purpose in mind, it has no mind and no mind's eye. It has no vision, no foresight, no sight at all." Along with their presentation of evolutionary theory, both of these atheists present, as a logical conclusion of the theory, that we cannot be the result of any design.

My first response to this is that it is a logical fallacy. The presence of randomness in a process might just as much be evidence for design as against. In recent years, a whole new field of computational physics has emerged that relies upon the same principles we find in evolutionary theory. In this new field programmers construct "genetic algorithms", which breed and randomly mutate solutions to complex equations, and then they use these algorithms to explore the properties of physical systems. It turns out that they are the most efficient way to explore solutions to some complicated problems, and yet they rely on randomness and selection based on fitness. If we came upon a computer running one of these algorithms, we would not be able to discern its purpose simply by observing it in operation, but we would err if we supposed from its use of random mutation that it had no purpose or design.

For the more poetic, a different analogy: just as dust sprinkled randomly on a surface can reveal the prints left by a hand, so could the random exploration of physical forms reveal latent creatures laid down by God's design. So it's just possible that when Sir Martin Rees's six numbers were set down, our

design was complete. I don't pretend to be proving that this is true, only showing that the randomness and selection by fitness intrinsic to evolutionary theory is not *prima facie* evidence against God, no matter what eminent biologists may say.

Finally, I point out, that in the interval of history between Isaac Newton and Werner Heisenberg, materialists told us God was dead because the laws of physics were deterministic. Once the initial conditions were fixed, the universe played out without the chance for free will. At best we could have Deism, where God winds things up and then sits back to watch. But it wouldn't be a very interesting show since the end was fixed at the beginning.

Now we know better, we know that all interactions in nature are pervaded with intrinsic randomness, including the interactions of beings like us. And what do the scientists tell us this means? That God is, well, … dead.

I'm trying to take this seriously, really I am, but (like any other accidental biological epiphenomenon), I have my limits. So let's leave the subject of scientists and their curious dogmas and move on to some personal reflection on science and Western culture.

"Compassion for the Weak is not a principle of Science"

Science as we know and practice it is a product of a Western Christian culture. In the service of that culture, it has done great good. But in an increasingly secularized West, science as a methodology for solving problems is in regular danger of pulling loose from its Christian moorings.

Whenever this happens, the result is disaster. In ethics and in morality science cannot provide for itself. There are two things in particular it has to borrow from elsewhere, and these are "compassion" and "hope". Concerning compassion let me put it this way:

"Compassion for the weak is not a principle of science."

The more you think about that the more frightening it becomes. To be fair, all of the atheist scientists I have known, who claimed to live by science alone, actually had quite a lot of compassion for the weak. Whether this arose from the law written in their hearts by God or from breathing what is left of the increasingly rarefied Christian atmosphere of our culture I cannot say, but this compassion was certainly not an outgrowth of their scientific materialism. I have always been simultaneously puzzled by and grateful for the compassion of atheists, but I never inquire too deeply about it, out of fear I might trigger a recognition of what I have just told you:

"Compassion for the weak is not a principle of science."

In fact, compassion for the weak is the virtue science most easily forgets. The flirtation with eugenics in the last century was an attempt to improve the human race by eliminating the so-called weak. In this country it resulted in forced sterilizations, in Europe millions died. In the future, when we have constructed clear enough genetic maps to choose precisely between the weak and the strong, how many millions will die? The machinery is already in place, and our culture has already declared its willingness

to cooperate in such an “improvement project” by assenting to the abortion of over one million babies every year.

As I said, “Compassion for the weak is not a principle of science.” And this is chilling.

“In Science there is no Hope”

In addition to “compassion for the weak” science lacks the route to another important virtue, and that is “hope”. From observation we know not only that each of us will die, but that in the distant future our planet will undergo the same fate. Barring any catastrophic asteroid collision that wipes out all life sooner, in 5 billion years or so the sun will grow into a red giant star, boil away the earth’s oceans and atmosphere and leave a lifeless rock. Everything we have ever created or will create will be lost forever. Even if we can move elsewhere, the increasing expansion of the universe will eventually mean energy is to dilute to sustain life.

You see “In science there is no hope”.

And the loss of hope has become a serious problem in the secular world. More serious than war. Why do I say this? What is the leading cause of violent death worldwide? Is it war, or homicide?

It’s neither. According to the World Health Organizations, the leading cause of violent deaths is suicide, accounting for 42% of violent deaths (850,000). In many ways we live in our own dark ages, an era of despair. Never have so many, with so much, been so unhappy.

Science can show us how to live longer, but it cannot show us that we ought to live.

So what should we as Christians do? That's the last subject I want to talk about, our mission as Christians on Earth.

"Be people of compassion and hope"

In his book, Crossing the Threshold of Hope, Pope John Paul the Second writes:

"I would like to sum up by stressing that *the young are searching for God,* they are searching for the meaning of life, they are searching for definitive answers: "What must I do to inherit eternal life?" (Lk 10:25). In this search, they cannot help but encounter the Church. *And the Church also cannot help but encounter the young."* As a teacher of young people, I can confirm that they are searching for God. In the Good Friday liturgy we pray:

"Almighty and eternal God, you created mankind so that all might long to find you and have peace when you are found."

Each Fall I used to walk into a class of 150 freshman eager to know the truth. But it's an astronomy class, and they leave unfulfilled, not because it's false but because it's insufficient. So I made a new course that leans closer to truth, and try not to avoid the display of Christian symbols.

But often I wonder, would the students guess I was a Christian without it?

Our first priority as Christians must be to bring the hope and the love of Jesus Christ to everything we do. Theological discourse is fine, but our first witness is how we live. If our lives are not a radical witness to the truth, then our words are wasted.

The other thing we can do is be excellent at what we do. Which sometimes just means not grumbling about our work. As Sister Gabriella use to say "offer it up". If our work is not a means of sanctification, we are not doing it right.

This is easy for me to say, because I'm convinced I have the best job in the world. But I have frustrating days, and sometimes in the middle of it all I wonder why I'm studying the properties of some little obscure detail of the universe that most people never heard about (if its one thing I've learned, God is detail oriented). Anyway, at those moments I like to think about something I learned from my 5 year old son Jack, so I'll finish by "sharing" this story with you.

Just before Christmas, it was quiet in the house, which is a potential sign of trouble with (then) four kids. So I went to check on them and found Jack alone in a bedroom, staring into a glass snow ball with the Holy Family inside. He looked up sheepishly, like I had caught him in some mischief. I asked him what he was doing, and he said "I was singing to God." I asked him what he was singing, but he wouldn't tell me. I guess only he and God will ever know.

I used to answer people who asked me why I was a scientist with a long explanation about the importance of fundamental research and the frontiers of knowledge, but now thanks to Jack, I have discovered a better answer. I'm singing to God. My prayer for all of you today is that your work be the same.

Thank you very much for listening to me so patiently and now I'll stop for questions and discussion.

Introduction to Fides et Ratio:

Faith and reason are like two wings on which the human spirit rises to the contemplation of truth; and God has placed in the human heart a desire to know the truth—in a word, to know himself—so that, by knowing and loving God, men and women may also come to the fullness of truth about themselves.