

Religion and Science, Technology and Faith

**From the "Major Works"
series**

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I hope you find food for thought in the works that
follow.

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Preface

"Religion and science" issues are often conceived of as harmonizing religion with scientific findings. At least that is putting it in pleasant language; some of the Church fathers might offer a less flattering paraphrase: "a syncophant's task of demonstrating the compatibility of timeless religious revealed doctrine with the present state in the flux of scientific speculation, offering scientists a redundant dialogue partner."

Religion and science does not become interesting until religion can say both "Yes" **and** "No," and many of the most important boundary issues can be lost in the clamor. Origins questions are, outside of one article that de-emphasizes them; they are addressed by another volume in this series but they are not of concern here.

The works in this volume address a spectrum that encompasses both religion and science issues, and the more important (though more easily overlooked) arena of "technology and faith."

"Religion and Science" Is Not Just Intelligent Design vs. Evolution

A rude awakening

Early in one systematic theology PhD course at Fordham, the text assigned as theology opened by saying, "Theologians are scientists, and they are every bit as much scientists as people in the so-called 'hard sciences' like physics." Not content with this striking claim, the author announced that she was going to use "a term from science," *thought experiment*, which was never used to mean a *Gedanken* experiment as in physics, but instead meant: if we have an idea for how a society should run, we have to experimentally try out this thought and live with it for a while, because if we don't, we will never know what would have happened. ("*Stick your neck out! What have you got to lose?*"—"Your head?") The clumsiness in this use of "a term from science" was on par with saying that you are going to use "an expression from American English", namely *rabbit food*, and subsequently use "rabbit food" as obviously a term meaning food made with rabbit meat.

In this one article were already two things that were fingernails on a chalkboard to my ears. Empirical sciences are today's prestige disciplines, like philosophy / theology / law in bygone eras, and the claim to be a science seems to inevitably be *how to mediate prestige to oneself and one's own discipline*. When I had earlier run into claims of, "Anthropologists are scientists, and they are every bit as much scientists as people in the so-called 'hard sciences,' like physics," I had winced because the claim struck me as not only annoying and untrue, but self-demeaning. But it simply had not occurred to me that theologians would make such a claim, and when they did, I was not only shocked but embarrassed: why should theology, once acclaimed the queen of scholarly disciplines, now seek prestige by parroting the claim to be every-bit-as-much-a-science-as-the-so-called-"hard-sciences"-like-physics (where "so-called" seemed to always be part of the claim, along with the scare quotes around "hard sciences")? To make my point clearer, I drew what was meant to be a shocking analogy: the claim that theologians are "scientists, and every bit as much as people in the so-called 'hard sciences' like physics" was like trying to defend the dignity of being a woman by saying, "Women are male, and they are just as much male as people who can sire a child."

This "physics envy" looks particularly strange next to the medieval Great Chain of Being as it moved from the highest to the lowest: "God, Angels, Man, Animals, Plants, Rocks, Nothing". Theology is the study of God and Man; no discipline is given a more noble field. And however much other disciplines may have "physics envy", no other discipline looks lower than physics, the science that studies Rocks and Nothing. There may be something pathetic about an anthropologist trying to step up on the pecking order by claiming to be "just as much scientists as people in the so-called 'hard sciences' like physics." Yet on the lips of a theologian, it bears a faint hint of a CEO absurdly saying, "CEOs are janitors, and they are every bit as much janitors

as the people responsible for cleaning wastebaskets."

Furthermore, the endemic claim I saw to introduce a "term from science" was, so far as I could remember:

- *Rarely if ever used in any correct fashion.*

The *one* exception I can remember being Wolfhart Pannenberg's illustration of a point by talking about fields such as one finds in the study of electricity and magnetism: the non-scientist theologians in the room said they were having real trouble understanding the illustration conceptually, which would make it seem somewhat dubious as an *illustration* to help get a point across.

- *Always reflect an effort to claim some of science's prestige.*

I remember the "you're being quaint" smiles I got when I suggested that a point that Pannenberg was trying to make by comparing something to a field as defined in physics, seemed in fact to be a point that could have been much better made by a comparison to the Force from *Star Wars*.

Why the patronizing smiles? The job of the example from physics was to mediate prestige as well as to illustrate a concept that could have been better explained without involving a particularly slippery concept from physics.

A first response

Examples of this kind of "science" abounded, and I was perhaps not wise enough to realize that my clumsy attempts to clarify various misrepresentations of science were

perhaps not well received because I was stepping on the Dark and Shameful Secret of Not Being Scientific Enough, and reminding them of an inferiority they were trying hard to dodge. And my attempts to explain "Not being a scientist does not make you inferior" seemed to have no soil in which to grow. In an attempt to start an online discussion, I wrote a piece called "Rumor Science":

I really wish the theology students I knew would either know a lot more about science, or a lot less, and I really wouldn't consider "a lot less" to be disappointing.

Let me explain why. When I was working on my master's in math, there was one passage in particular that struck me from Ann Wilson Schaef's *Women's Reality: An Emerging Female System*. Perhaps predictably given my being a mathematician in training, it was a remark about numbers, or rather about how people interact with numbers.

The author broke people down into more or less three groups of people. The first—she mentioned artists—was people that can't count to twenty without taking off their shoes. She didn't quite say **that**, but she emphasized artists and other people where math and numbers simply aren't part of their consciousness. They don't buy into the mystique. And they can say, and sincerely mean, that numbers don't measure everything. They aren't seriously tempted to believe otherwise.

The second group—she mentioned business people—consists of people for whom math works. Even if they're not mathematicians, math works for them and does useful things, and they may say that numbers don't measure anything, but it is well nigh impossible to believe—saying and meaning that numbers don't measure everything is like saying that cars are nice but they can't get you places.

And the third group in the progression? She mentioned scientists, but what she said was that they know math in and out and know it so well that they know its limitations and therefore they can say and mean that numbers don't measure everything. And in the end, even though the "scientist" and the "artist" represent opposite extremes of mathematical competence, they both know there are things numbers can't measure while the second, middle group for mathematical competence are in a position where they expect numbers to do things that numbers can't do.

I was flattered, but I really think it stuck with me for more reasons than just the fact that she included me in one of the "good" groups. There is a sort of *Karate Kid* observation—"Karate is like a road. Know karate, safe. Don't know karate, safe. In the middle, *squash*, like a grape!"—that is relevant to theology and science. It has to do with, among other things, Gödel's Incompleteness Theorem, the question of evolution, and the like (perhaps I should mention the second law of thermodynamics). My point in this is not that there is an obligation to "know karate", that theologians need to earn degrees in the sciences before they are qualified to work as theologians, but that there is something perfectly respectable about "don't know karate."

I'd like to start by talking about Gödel's Incompleteness Theorem. Now a lot of people have heard about Gödel's Incompleteness Theorem. Not many major mathematical theorems have had a Pulitzer prize-winning book written around them (and by the way, *Gödel, Escher, Bach* has been one of my favorite books). Nor do many theorems get summarized in Newsweek as an important theorem which demonstrates that mathematical "proofs" are not certain, but mathematical knowledge is as relative as any other knowledge.

Which is a crass error. The theological equivalent would be to say that Karl Barth's unflattering remarks about "religion" are anti-Christian, or that liberation theology's preferential option for the poor means that special concern for the poor is optional and to be dealt with according to personal preference. And saying that about liberation theology is a theological "squash like a grape," because it is better to not know liberation theology and know you don't know than believe that you understand liberation theology and "know" that the word "option" implies "optional." **It's not what you don't know that hurts you, but what you know that ain't so.**

For the record, what Gödel's Incompleteness Theorem means is that for a certain branch of mathematics, there are things that can be neither proven nor disproven—which made his theorem a shocker when there was a Tower of Babel effort to prove or disprove pretty much anything. It proves that some things can never be proven within certain systems. And it has other implications. But it does *not* mean that things that are proven in mathematics are uncertain, or that mathematical knowledge is relative. It says you can't prove everything a mathematician would want to prove. But there are still lots and lots and lots of interesting things that can be proven, and Gödel's Incompleteness Theorem does not touch these proofs, nor does it mean that mathematical knowledge is merely relative in humanities fashion.

And I'd like to mention what happens when I mention Gödel's **Completeness** Theorem:

Dead silence.

The same great mathematical logician proved another theorem, which does not have a Pulitzer prize winning book, which says that in one other branch of mathematics, besides the branch that Gödel's Incompleteness Theorem speaks to, you can have

pretty much what Gödel's Incompleteness Theorem says you can't have in the other branch. In other words, you can—mechanically, for that matter, which is a big mathematical achievement—either prove or disprove every single statement. I'm not sure it's as important as Gödel's Incompleteness Theorem, but it's a major theorem from the same mathematician and no one's heard of it.

There would seem to be obvious non-mathematical reasons for why people would want to be informed about the first theorem and not want to mention the second. I consider it telling (about non-mathematical culture). I know it may be considered a mark of sophistication to mention Gödel's Incompleteness Theorem and share how it's informed your epistemology. But it hasn't informed my epistemology and I really can't tell how my theology would be different if I hadn't heard of it. And my understanding is that other mathematicians tend not to have the highest view of people who are trying to take account of scientific discoveries that an educated person "should" know. There are other reasons for this, including goofy apologetics that make the famous theorem a proof for God. But I at least would rather talk with someone who simply hadn't heard of the theorem than a theologian who had tried to make a "responsible" effort to learn from the discovery.

And my main example is one I'm less sure how to comment on, and not only because I know less biology than math. There was one almost flippant moment in England when the curate asked if anybody had questions about the upcoming Student Evolution conference that everybody was being urged to attend. I asked, "Is this 'Student Evolution' more of a gradual process, or more a matter of 'punk eek'?" (That question brought down the house.)

Punctuated equilibrium, irreverently abbreviated

'punk eek', is a very interesting modification of Darwinian theory. Darwinian *evolution* in its early forms posits and implies a gradual process of very slow changes—almost constant over very long ("geological") time frames. And that is a beautiful theory that flatly contracts almost all known data.

As explained by my Illinois Mathematics and Science Academy biology teacher, "Evolution is like baseball. It has long stretches of boring time interrupted by brief periods of intense excitement." That's punk eek in a nutshell, and what interests me most is that it's the mirror image of saying "God created the world—through evolution!" It says, "Evolution occurred—through punctuated equilibrium!"

That's not the only problem; evolution appears to be, in Kuhnian terms (Structure of Scientific Revolutions), a theory "in crisis", which is the Kuhnian term for when a scientific theory is having serious difficulties accounting for currently given data and may well be on its way out the door. There are several ways people are trying to cope with this—preserving some semblance of a materialist explanation; there was the same kind of resistance going on before science acknowledged the Big Bang, because scientists who want a universe without cause and without beginning or creator heard something that sounded too much like "Let there be light!" They're very interesting, and intellectually dishonest.

Now I need to clarify; people seem to think you have to either be a young earth creationist or else admit evolution of some stripe. I believe in 13 billion years as the rough age of the universe, not six thousand years; I also believe in natural selection and something called "micro-evolution." (By the way, JPII's "more than a hypothesis" was in the original French "*plus qu'un hypothèse*", alternately

translatable as "more than one hypothesis", and the official Vatican translation takes this reading. One can say that micro-evolution is one of the hypothesis gathered under the heading of evolution.)

I wince when I see theologians trying their dutiful best to work out an obligation to take evolution into account as a proven fact: squash, like a grape. It's not just that science doesn't trade in proof and evolution is being treated like a revelation, as if a Pope had consulted the Pontifical Academy of the Sciences and canonized *The Origin of the Species* as a book of the Bible. Or maybe that's putting it too strongly. It would also be strong language to say that many theologians are adopting a carefully critical attitude to classic Church claims and part of their being critical means placing an embarrassingly blind faith in evolution. But that's truer than I'd want to admit.

What about the second law of thermodynamics?

I don't know what the first and third laws of thermodynamics say, and I can't say that I'm missing anything. I don't feel obligated to make the second law, which I am familiar with, a feature of my theology, but if I did, I would try to understand the first and third laws of thermodynamics, and treat it as physics in which those three laws and presumably other things fit into a system that needs to be treated as a whole. I don't know how I would incorporate that in my theology, but I'm supposing for the sake of argument that I would. I would rather avoid treating it the way people usually seem to treat it when they treat that as one of the things that educated people "should" know.

I guess that my point in all of this is that some people think there's a duty to know science and be scientific in theology, but this is a duty better shirked. My theology is—or I would like it to be—closer to that of someone who doesn't understand science, period,

than that of people who try to improve their theology by incorporating what they can grasp of difficult scientific concepts that the scientists themselves learned with difficulty.

Rumor science is worse than no science, and an ascientific theology is not a handicap. When I say that I would rather see theologians know either much more or much less science, I'm not hoping that theologians will therefore get scientific degrees. The chief merit for a theologian to know science is that it can be a source of liberation that frees people from thinking "We live in a scientific age so it would be better for theology to be scientific." I'm not sure I would be able to question that assumption if I knew much less science. *But what I believe that buys me is not a better theology than someone scientifically innocent but freedom from the perceived need to "take science into account" in my theology so I can do the same kind of theology as someone scientifically innocent.*

I'm not as sure what to say about ecological theology; I wrote "Hymn to the Creator of Heaven and Earth" without scientific reference that I remember, and I believe there are other human ways of knowing Creation besides science. But an ecological theologian who draws on scientific studies is not trying to honor a duty to understand things an educated person should know, but pursuing something materially relevant. Science has some place; religion and science boundary issues are legitimate, and I don't know I can dissuade people who think it's progressive to try to make a scientific theology—although I really wish people with that interest would get letters after their name from a science discipline, or some other form of genuinely proper scientific credentials appropriate to a genuinely scientific theology.

There are probably other exceptions, and science is interesting. But there is no obligation to go from

safely on one side of the road to a position in the middle because it is "closer" to a proper understanding of science. Perhaps liberation theologians want people to understand their cause, but it is better not to pretend to know liberation theology than to approach it in a way that leaves you "knowing" that the preferential option is optional. *It isn't what you know that hurts you, but what you know that ain't so*—and rumor science, with its accepted list of important scientific knowledge that scholars need to take into account, is one way to learn from what ain't so.

Science is the prestige discipline(s) today; you see psychology wishing for its Newton to lead it into the promised land of being a science in the fullest sense of the term. You don't see psychology pining for a Shakespeare to lead it into the promised land of being a humanity in the fullest sense of the term. And the social disciplines—I intentionally do not say social **sciences** because they are legitimate academic disciplines but not sciences—are constantly insisting that their members are scientists, but *the claim that theologians are scientists annoys me as a scientist and almost offends me as a theologian*. It should be offensive for much the same reason that it should be offensive to insist on female dignity by claiming that women are really male, and that they are just as much male as people who can sire a child.

It would be an interesting theological work to analyze today's cultural assumptions surrounding science, which are quite important and not dictated by scientific knowledge itself, and then come to almost the same freedom as someone innocent of science.

"My theology," *ewwww*. (While I was at it, why didn't I discuss plans for my own private sun and moon? I'm *not* proud of proudly discussing "my theology".) I know the text has a wart or two.

But the piece contains a suggestion: "rumor science" may be a red flag to a real problem in the place we give science.

Pondering Einstein, or at least dropping his name

That work left out the crowning jewel of scientific theories to ponder in "rumor science": Einstein's "theory of relativity." Some time later, in my science fiction short story / Socratic dialogue, "Within the Steel Orb," I wrote in fiction something that picked up what I had left out:

Art sat back. "I'd be surprised if you're not a real scientist. I imagine that in your world you know things that our scientists will not know for centuries."

Oinos sat back and sat still for a time, closing his eyes. Then he opened his eyes and said, "What have you learned from science?"

"I've spent a lot of time lately, wondering what Einstein's theory of relativity means for us today: even the 'hard' sciences are relative, and what 'reality' is, depends greatly on your own perspective. Even in the hardest sciences, it is fundamentally mistaken to be looking for absolute truth."

Oinos leaned forward, paused, and then tapped the table four different places. In front of Art appeared a gridlike object which Art recognized with a start as a scientific calculator like his son's. "Very well. Let me ask you a question. Relative to your frame of reference, an object of one kilogram rest mass is moving away from you at a speed of one tenth the speed of light. What, from your present frame of reference, is its effective mass?"

Art hesitated, and began to sit up.

Oinos said, "If you'd prefer, the table can be set to

function as any major brand of calculator you're familiar with. Or would you prefer a computer with Matlab or Mathematica? The remainder of the table's surface can be used to browse the appropriate manuals."

Art shrunk slightly towards his chair.

Oinos said, "I'll give you hints. In the theory of relativity, objects can have an effective mass of above their rest mass, but never below it. Furthermore, most calculations of this type tend to have anything that changes, change by a factor of the inverse of the square root of the quantity: one minus the square of the object's speed divided by the square of the speed of light. Do you need me to explain the buttons on the calculator?"

Art shrunk into his chair. "I don't know all of those technical details, but I have spent a lot of time thinking about relativity."

Oinos said, "If you are unable to answer that question before I started dropping hints, let alone after I gave hints, you should not pose as having contemplated what relativity means for us today. I'm not trying to humiliate you. But the first question I asked is the kind of question a teacher would put on a quiz to see if students were awake and not playing video games for most of the first lecture. I know it's fashionable in your world to drop Einstein's name as someone you have deeply pondered. It is also extraordinarily silly. I have noticed that scientists who have a good understanding of relativity often work without presenting themselves as having these deep ponderings about what Einstein means for them today. Trying to deeply ponder Einstein without learning even the basics of relativistic physics is like trying to write the next Nobel prize-winning German novel without being bothered to learn even the most rudimentary German vocabulary and grammar."

"But don't you think that relativity makes a big difference?"

"On a poetic level, I think it is an interesting development in your world's history for a breakthrough in science, Einstein's theory of relativity, to say that what is absolute is not time, but light. Space and time bend before light. There is a poetic beauty to Einstein making an unprecedented absolute out of light. But let us leave poetic appreciation of Einstein's theory aside.

"You might be interested to know that the differences predicted by Einstein's theory of relativity are so minute that decades passed between Einstein making the theory of relativity and people being able to use a sensitive enough clock to measure the microscopically small difference of the so-called 'twins paradox' by bringing an atomic clock on an airplane. The answer to the problem I gave you is that for a tenth the speed of light—which is faster than you can imagine, and well over a thousand times the top speed of the fastest supersonic vehicle your world will ever make—is one half of one percent. It's a disappointingly small increase for a rather astounding speed. If the supersonic Skylon is ever built, would you care to guess the increase in effective mass as it travels at an astounding Mach 5.5?"

"Um, I don't know..."

"Can you guess? Half its mass? The mass of a car? Or just the mass of a normal-sized adult?"

"Is this a trick question? Fifty pounds?"

"The effective mass increases above the rest mass, for that massive vehicle running at about five times the speed of sound and almost twice the top speed of the SR-71 Blackbird, is something like the mass of a mosquito."

"A *mosquito*? You're joking, right?"

"No. It's an underwhelming, *microscopic*

difference for what relativity says when the rumor mill has it that Einstein taught us that hard sciences are as fuzzy as anything else... or that perhaps, in Star Wars terms, 'Luke, you're going to find that many of the truths we cling to depend greatly on your own point of view.' Under Einstein, you will in fact **not** find that many of the observations that we cling to, depend greatly on your own frame of reference. You have to be doing something pretty exotic to have relativity make any measurable difference from the older physics at all."

"Rumor science": The tip of an iceberg?

But I would like to get on to something that is of far greater concern than "rumor science" as it treats Gödel's Incompleteness Theorem, the second law of thermodynamics, relativity, evolution, and so on. If the only problem was making a bit of a hash of some scientific theories, that would be one thing. But "rumor science" may be the tip of an iceberg, a telling clue that something may be seriously amiss in how theology has been relating to science. There is another, far more serious boundary issue.

There is something about the nature of academic theology today that may become clearer if we ask questions about the nature of knowledge and line up academic theology with Orthodoxy on the one hand and modern science on the other. The table below lists a few questions connected with knowledge, and then a comparison between Orthodox Christianity, academic theology, and modern science in their own columns:

<i>Question</i>	Orthodox Christianity	Academic Theology	Modern Science
<i>What is knowledge like?</i>	<p>"Adam knew Eve..." The primary word in the Old and New Testaments for sexual union is in fact 'know', and this is a significant clue about the intimate nature of knowledge.</p> <p>Knowledge is, at its core, the knowledge that drinks. It connects at a deepest level, and is cognate to how Orthodox say of the Holy Mysteries, "We have seen the true Light!": to receive the Eucharist is to know.</p>	<p>Knowledge is <i>critical</i>, meaning <i>detached</i>: the privileged position is of the outsider who stands clear of a situation and looks into a window. The devout believer enjoys no real advantage in grasping his religion compared to the methodical observer who remains detached—and the ordinary believer may be at a marked <i>disadvantage</i>.</p>	<p>You can't know how stars age or the limitations of the ideal gas law from direct personal experience. Science stems from a rationalism cognate to the Enlightenment, and even if one rebels against the Enlightenment, it's awfully hard to know quarks and leptons solely by the intimacy of personal experience.</p>

<i>Question</i>	Orthodox Christianity	Academic Theology	Modern Science
<i>What aspect of yourself do you know with?</i>	<p>This may not be part of the standard Western picture, but the Orthodox, non-materialist understanding of mind holds that there is a sort of "spiritual eye" which knows and which grasps spiritual realities as overflow to its central purpose of worshiping God. The center of gravity for knowing is this spiritual eye, and it is the center of a whole and integrated person. Logical and other</p>	<p>Good scholarship comes from putting all other aspects of the person in their place and enthroning the part of us that reasons logically and almost putting the logic bit on steroids. Continental philosophy may rebel against this, but it rebels after starting from this point.</p>	<p>We have a slightly more rigorous use of primarily logical reasoning and a subject domain that allows this reasoning to shine.</p>

Question	Orthodox Christianity	Academic Theology	Modern Science
	"discursive" reasoning may have a place, but the seat of this kind of reasoning is a moon next to the light of the sun which is the spiritual eye, the <i>nous</i> .		
<i>What should teachers cultivate in their students?</i>	Teachers should induce students into <i>discipleship</i> and should be exemplary disciples themselves.	They should train students who will not be content with their teachers' interpretations but push past to their own takes on the matter.	They should train students to develop experiments and theories to carefully challenge the "present working picture" in their field.
<i>What is tradition, and how does your tradition relate to knowing?</i>	One may be not so much <i>under Tradition</i> as <i>in Tradition</i> : Tradition is like one's culture or language, if a	Something of the attitude is captured in what followed the telling of an anecdote about a New Testament Greek class	As Nobel prize-winning physicist Richard Feynman observed, "You get to be part of the establishment

<i>Question</i>	Orthodox Christianity	Academic Theology	Modern Science
	<p>culture and language breathed on by the Holy Spirit of God. Though the matrix of Tradition need not be viewed with legalistic fundamentalism, it is missing something important to fail to love and revere Tradition as something of a mother.</p>	<p>where the professor had difficulties telling how to read a short text, until a classics student looked and suggested that the difficulty would evaporate if the text were read with a different set of accents from what scholars traditionally assigned it. The Greek professor's response ("Accents are not inspired!") was presented by the academic theologian retelling this story as full warrant to suggest that scholars should not view</p>	<p>by blowing up part of the establishment."</p>

<i>Question</i>	Orthodox Christianity	Academic Theology	Modern Science
<i>How much emphasis do you place on creativity?</i>	<p>It reflects some degree of fundamental confusion to measure the value of what someone says by how original it is. That which is true is not original, and that which is not true. Perhaps people may uncover new layers of meaning, but to measure someone by how many ideas he can claim as "mine" is a strange measure.</p>	<p>themselves as bound by tradition with its blind spots.</p> <p>Publish something <i>original</i>, or perish. Better to say something original but not true than not have any ideas to claim as "mine." If need be, rehabilitate Arius or Nestorius. (Or, if you are Orthodox, meet current fashions halfway and show that St. Augustine need not be a whipping boy.)</p>	<p>Continue to push the envelope. Are you an experimental physicist? If you cannot observe anything new by the layman's means of observation, pioneer new equipment or a clever experiment to push the envelope of what can be observed. Publish something <i>original</i> or perish.</p>

Question	Orthodox Christianity	Academic Theology	Modern Science
<i>Where does your discipline place its empiricism?</i>	<p>There is a very real sense of empiricism, albeit a sense that has very little directly to do with empirical science. Knowledge is what you know through the "spiritual eye" and it is a knowledge that can only be realized through direct participation. An "idle word" may be a word of that which you do not have this knowledge of, and this sin would appear to be foundational to the empiricism of science. We</p>	<p>Theologians are just as empirical as physicists, whether or not they know basic statistics. We have such quasi-scientific empiricism as can be had for the human and divine domain we cover; there is a great deal of diversity, and some of us do not place much emphasis on the empiricism of science, but some of us have enough of scientific empiricism to do history work that stands its ground when judged by secular history's standards. We</p>	<p>As much as theology's empiricism is the empiricism of a knowledge of the "spiritual eye" and the whole person, our empiricism is an empiricism of detached, careful, methodical, reasoned investigation—the investigation of the reasoning faculty on steroids. Our science exhibits professionalism and a particular vision of intellectual virtue. Our empiricism corresponds to this vision, and no one has pushed this empiricism of the reasoning faculty further, and the unique</p>

<i>Question</i>	Orthodox Christianity	Academic Theology	Modern Science
	<p>really do have an empiricism, but it might be better not to engender pointless confusion by claiming to be empirical when the empiricism known to the academy is pre-eminently that of empirical science, whether it is either actual or aspiring science.</p>		<p>technology founded on science is a testament to how far we have pushed this kind of empiricism.</p>

When they are lined up, academic theology appears to have a great many continuities with science and a real disconnect with Orthodox Christianity. Could academic theologians feel an inferiority complex about Not Being Scientific Enough? Absolutely. But the actual problem may be that they are entirely *too* scientific. I am less concerned that their theology is not sufficiently scientific than that it is not sufficiently *theological*.

Origins questions: can we dig deeper?

It is along those lines that I have taken something of the track of "join the enemy's camp to show its weaknesses from within" in exposing the blind spots of Darwinism, for instance. In the theologically driven short story "The Commentary," the issue is not really whether Darwinism is correct at all. The question is not whether we should be content with Darwinian answers, but whether we should be content with Darwinian *questions*.

Martin stepped into his house and decided to have no more distractions. He wanted to begin reading commentary, now. He opened the book on the table and sat erect in his chair:

Genesis

1:1 In the beginning God created the heavens and the earth.

1:2 The earth was without form and void, and darkness was upon the face of the deep; and the Spirit of God was moving over the face of the waters.

1:3 And God said, "Let there be light"; and there was light.

The reader is now thinking about evolution. He is wondering whether Genesis 1 is right, and evolution is simply wrong, or whether evolution is right, and Genesis 1 is a myth that may be inspiring enough but does not actually tell how the world was created.

All of this is because of a culture phenomenally influenced by scientism and

science. The theory of evolution is an attempt to map out, in terms appropriate to scientific dialogue, just what organisms occurred, when, and what mechanism led there to be new kinds of organisms that did not exist before. Therefore, nearly all Evangelicals assumed, Genesis 1 must be the Christian substitute for evolution. Its purpose must also be to map out what occurred when, to provide the same sort of mechanism. In short, if Genesis 1 is true, then it must be trying to answer the same question as evolution, only answering it differently.

Darwinian evolution is not a true answer to the question, "Why is there life as we know it?" Evolution is on philosophical grounds *not* a true answer to that question, because it is not an answer to that question at all. Even if it is true, evolution is only an answer to the question, "*How* is there life as we know it?" If someone asks, "Why is there this life that we see?" and someone answers, "Evolution," it is like someone saying, "Why is the kitchen light on?" and someone else answering, "Because the switch is in the on position, thereby closing the electrical circuit and allowing current to flow through the bulb, which grows hot and produces light."

Where the reader only sees one question, an ancient reader saw at least two other questions that are invisible to the present reader. As well as the question of "How?" that evolution addresses, there is the question of "Why?" and "What function does it serve?" These two questions are very important, and are not even considered when people are only trying to work out the antagonism between creationism and evolutionism.

Martin took a deep breath. Was the text advocating a six-day creationism? That was hard to tell. He felt uncomfortable, in a much deeper way than if Bible-thumpers were preaching to him that evolutionists would burn in Hell.

There is a hint here of why some people who do not believe in a young earth are no less concerned about young earth creationism: the concern is not exactly that it is junk science, but precisely that it is *too* scientific, assuming many of evolutionary theory's blindnesses even as it asserts the full literal truth of the Bible in answering questions on the terms of what science asks of an origins theory.

There is a Dilbert strip which goes as follows:

Pointy-haired boss: I'm sending you to Elbonia to teach a class on Cobol on Thursday.

Dilbert: But I don't know Cobol. Can't you ask Wally? He knows Cobol!

Pointy-haired boss: I already checked, and he's busy on Thursday.

Dilbert: Can't you reschedule?

Pointy-haired boss: Ok, are you free on Tuesday?

Dilbert: You're answering the wrong question!

Dilbert's mortified, "You're answering the wrong question!" has some slight relevance the issues of religion and science: in my homily, "Two Decisive Moments" I tried

to ask people to look, and aim, *higher*:

In the name of the Father, and of the Son, and of the Holy Ghost. Amen.

There is a classic Monty Python "game show": the moderator asks one of the contestants the second question: "In what year did Coventry City last win the English Cup?" The contestant looks at him with a blank stare, and then he opens the question up to the other contestants: "Anyone? In what year did Coventry City last win the English Cup?" And there is dead silence, until the moderator says, "Now, I'm not surprised that none of you got that. It is in fact a trick question. Coventry City has *never* won the English Cup."

I'd like to dig into another trick question: "When was the world created: 13.7 billion years ago, or about six thousand years ago?" The answer in fact is "Neither," but it takes some explaining to get to the point of realizing that the world was created 3:00 PM, March 25, 28 AD.

Adam fell and dragged down the whole realm of nature. God had and has every authority to repudiate Adam, to destroy him, but in fact God did something different. He called Noah, Abraham, Moses, and Elijah, and in the fullness of time he didn't just call a prophet; he sent his Son to become a prophet and more.

It's possible to say something that means more than you realize. Caiaphas, the high priest, did this when he said, "It is better that one man be killed than that the whole nation perish." (John 11:50) This also happened when Pilate sent Christ out, flogged, clothed in a purple robe, and said, "*Behold the man!*"

What does this mean? It means more than Pilate could have possibly dreamed of, and "Adam" means "man": *Behold the man! Behold Adam, but not the*

Adam who sinned against God and dragged down the Creation in his rebellion, but the second Adam, the new Adam, the last Adam, who obeyed God and exalted the whole Creation in his rising. Behold the man, Adam as he was meant to be. Behold the New Adam who is even now transforming the Old Adam's failure into glory!

Behold the man! Behold the first-born of the dead. Behold, as in the icon of the Resurrection, the man who descends to reach Adam and Eve and raise them up in his ascent. Behold the man who will enter the realm of the dead and forever crush death's power to keep people down.

*Behold the man and behold the firstborn of many brothers! You may know the great chapter on faith, chapter 11 of the book of Hebrews, and it is with good reason one of the most-loved chapters in the Bible, but it is not the only thing in Hebrews. The book of Hebrews looks at things people were caught up in, from the glory of angels to sacrifices and the Mosaic Law, and underscores how much more the Son excels above them. A little before the passage we read above, we see, "To which of the angels did he ever say, 'You are my son; today I have begotten you?'" (Hebrews 1:5) And yet in John's prologue we read, "To those who received him and believed in his name, he gave the authority to become the children of God." (John 1:9) We also read today, "To which of the angels did he ever say, 'Sit at my right hand until I have made your enemies a footstool under your feet?'" (Hebrews 1:13) And yet Paul encourages us: "The God of peace will shortly crush Satan under your feet," (Romans 16:20) and elsewhere asks bickering Christians, "Do you not know that we will judge angels?" (I Corinthians 6:3) *Behold the man! Behold the firstborn of many brothers, the Son of God who became a man so that men might become the Sons of God. Behold the One**

who became what we are that we might by grace become what he is. Behold the supreme exemplar of what it means to be Christian.

Behold the man and behold the first-born of all Creation, through whom and by whom all things were made! Behold the Uncreated Son of God who has entered the Creation and forever transformed what it means to be a creature! Behold the Saviour of the whole Creation, the Victor who will return to Heaven bearing as trophies not merely his transfigured saints but the whole Creation! Behold the One by whom and through whom all things were created! Behold the man!

Pontius Pilate spoke words that were deeper than he could have **possibly** imagined. And Christ continued walking the fateful journey before him, continued walking to the place of the Skull, Golgotha, and finally struggled to breathe, his arms stretched out as far as love would go, and barely gasped out, "It is finished."

Then and there, the entire work of Creation, which we read about from Genesis onwards, was *complete*. There and no other place the world was created, at 3:00 PM, March 25, 28 AD. *Then* the world was created.

I wince at the idea that for theologians "boundary issues" are mostly about demonstrating the compatibility of timeless revealed truths to the day's state of flux in scientific speculation. I wince that theologians so often assume that the biggest contribution they can give to the dialogue between theology and science is the rubber stamp of perennially agreeing with science. I would decisively prefer that when theologians "approach religion and science boundary issues," we do so as boundaries are understood in pop psychology—and more specifically *bad* pop psychology—which is all about you cannot meaningfully say "Yes" until

it is your practice to say "No" when you should say "No": what theology needs in its boundaries with science is not primarily a question of what else we should seek to embrace, but of where theology has ingested things toxic to its constitution.

What gets lost when theology loses track (by which I do not mean primarily rumor science, but the three columns where theology seemed a colony of science that had lost touch with Orthodox faith) is that when theology assumes the character of science, it loses the character of theology.

The research for my diploma thesis at Cambridge had me read a lot of historical-critical commentary on a relevant passage; I read everything I could find on the topic in Tyndale House's specialized library, and something became painfully obvious. When a good Protestant sermon uses historical or cultural context to illuminate a passage from Scripture, the preacher has sifted through pearls amidst sand, and the impression that cultural context offers a motherlode of gold to enrich our understanding of the Bible is quite contrary to the historical-critical commentaries I read, which read almost like phone books in their records of details I'd have to stretch to use to illuminate the passage. The pastor's discussion of context in a sermon is something like an archivist who goes into a scholar's office, pulls an unexpected book, shows that it is surprisingly careworn and dog-eared, and discusses how the three longest underlined passage illuminate the scholar's output. But the historical-critical commentary itself is like an archivist who describes in excruciating detail the furniture and ornaments in the author's office and the statistics about the size and weight among books the scholar owned in reams of (largely uninterpreted) detail.

And what is lost in this careful scholarship? Perhaps what is lost is why we have Bible scholarship in the first place: it is a divinely given book and a support to life in Christ. If historical-critical scholarship is your (quasi-scientific) approach to theology, you won't seek in your

scholarship what I sought in writing my (non-scientific)
Doxology:

How shall I praise thee, O Lord?
For naught that I might say,
Nor aught that I may do,
Compareth to thy worth.
Thou art the Father for whom every fatherhood
in Heaven and on earth is named,
The Glory for whom all glory is named,
The Treasure for whom treasures are named,
The Light for whom all light is named,
The Love for whom all love is named,
The Eternal by whom all may glimpse eternity,
The Being by whom all beings exist,

יהוה,

O ΩN.

The King of Kings and Lord of Lords,
Who art eternally praised,
Who art all that thou canst be,
Greater than aught else that may be thought,
Greater than can be thought.
In thee is light,
In thee is honour,
In thee is mercy,
In thee is wisdom, and praise, and every good
thing.
For good itself is named after thee,
God immeasurable, immortal, eternal, ever
glorious, and humble.
What mighteth compare to thee?
What praise equalleth thee?
If I be fearfully and wonderfully made,
Only can it be,
Wherewith thou art fearful and wonderful,
And ten thousand things besides,
Thou who art One,

Eternally beyond time,
 So wholly One,
 That thou mayest be called infinite,
 Timeless beyond time thou art,
 The One who is greater than infinity art thou.
 Father, Son, and Holy Spirit,
 The Three who are One,
 No more bound by numbers than by word,
 And yet the Son is called Ο ΛΟΓΟΣ,
 The Word,
 Divine ordering Reason,
 Eternal Light and Cosmic Word,
 Way pre-eminent of all things,
 Beyond all, and infinitesimally close,
 Thou transcendest transcendence itself,
 The Creator entered into his Creation,
 Sharing with us humble glory,
 Lowered by love,
 Raised to the highest,
 The Suffering Servant known,
 The King of Glory,
 Ο ΩΝ.

What tongue mighteth sing of thee?
 What noetic heart mighteth know thee,
 With the knowledge that drinketh,
 The drinking that knoweth,
 Of the νοϋς,
 The loving, enlightened spiritual eye,
 By which we may share the knowing,
 Of divinised men joining rank on rank of angel.

Thou art,
 The Hidden Transcendent God who transcendest
 transcendence itself,
 The One God who transfigurest Creation,
 The Son of God became a Man that men might

become the sons of God,
 The divine became man that man mighteth
 become divine.

Monty Python and Christian theology

I would like to start winding down with a less uplifting note. A few years back, I visited a friend who was a Christian and a big Monty Python fan and played for me a Monty Python clip:

God: Arthur! Arthur, King of the Britons! Oh, don't grovel! If there's one thing I can't stand, it's people groveling.

Arthur: Sorry—

God: And don't apologize. Every time I try to talk to someone it's 'sorry this' and 'forgive me that' and 'I'm not worthy'. What are you doing now!?

Arthur: I'm averting my eyes, O Lord.

God: Well, don't. It's like those miserable Psalms—they're so depressing. Now knock it off!

This is blasphemous, and I tried to keep my mouth shut about what my host had presented to me, I thought, for my rollicking laughter. But subsequent conversation showed I had misjudged his intent: he had not intended it to be shockingly funny.

He had, in fact, played the clip because it was something that he worried about: did God, in fact, want to give grumbling complaints about moments when my friend

cried out to him in prayer? Does prayer annoy our Lord as an unwelcome intrusion from people who should have a little dignity and leave him alone or at least quit sniveling?

This is much more disturbing than merely playing the clip because you find it funny to imagine God bitterly kvetching when King Arthur tries to show him some respect. If it is actually taken as theology, Monty Python is really sad.

And it is not the best thing to be involved in Monty Python as theology.

One can whimsically imagine an interlocutor encountering some of the theology I have seen and trying to generously receive it in the best of humor: "A book that promises scientific theology in its title and goes on for a thousand pages of trajectories for other people to follow before a conclusion that apologizes for not actually getting on to any theology? *You have a real sense of humor!* Try to avoid imposing Christianity on others and start from the common ground of what all traditions across the world have in common, that non-sectarian common ground being the Western tradition of analytic philosophy? *Roaringly funny!* Run a theological anthropology course that tells how liberationists, feminists, queer theorists, post-colonialists, and so on have to say to the Christian tradition and does not begin to investigate what the Christian tradition has to say to them? *You should have been a comedian!* Yoke St. Gregory of Nyssa together with a lesbian deconstructionist like Judith Butler to advance the feminist agenda of gender fluidity? *You're really giving Monty Python a run for their money!*" ... until it gradually dawns on our interlocutor that the lewd discussion of sexual theology is not in any sense meant as an attempt to eclipse Monty Python. (Would our interlocutor spend the night weeping for lost sheep without a shepherd?)

There are many more benign examples of academic theology; many of even the problems may be slightly less striking. But theology that gives the impression that it could

be from Monty Python is a bit of a dead (coal miner's) canary.

Scientific theology does not appear to be blame for all of these, but it is not irrelevant. Problems that are not directly tied to (oxymoronic) scientific theology are usually a complication of (oxymoronic) secular theology, and scientific theology and secular theology are deeply enough intertwined.

The question of evolution is important, and it is no error that a figure like Philip Johnson gives neo-Darwinian evolution pride of place in assessing materialist attacks on religion. But it is not an adequate remedy to merely study intelligent design. Not enough by half.

If theology could, like bad pop psychology, conceive of its "boundary issues" not just in terms of saying "Yes" but of learning to stop saying "Yes" when it should say "No", this would be a great gain. So far as I have seen, the questions about boundaries with science are primarily not scientific ideas theology needs to assimilate, but ways theology has assimilated some very deep characteristics of science that are *not* to its advantage. The question is less about what more could be added, than what more could be taken away. And the best way to do this is less the Western cottage industry of worldview construction than a journey of repentance such as one still finds preached in Eastern Christianity and a good deal of Christianity in the West.

A journey of repentance

Repentance is Heaven's best-kept secret. Repentance has been called unconditional surrender, and it has been called the ultimate experience to fear. But when you surrender what you thought was your ornament and joy, you realize, "I was holding on to a piece of Hell!" And with letting go comes hands that are free to grasp joy you never thought to ask. Forgiveness is letting go of the other person and finding it is yourself you have set free; repentance is

being terrified of letting go and then finding you have let go of needless pain. Repentance is indeed Heaven's best-kept secret; it opens doors.

I have doubt whether academic theology will open the door of repentance; it is a beginner's error to be the student who rushes in to single-handedly sort out what a number of devout Christian theologians see no way to fix. But as for theologians, the door of repentance is ever ready to open, and with it everything that the discipline of theology seeks in vain here using theories from the humanities, there trying to mediate prestige to itself science. Academic theologians who are, or who become, theologians in a more ancient sense find tremendous doors of beauty and joy open to them. The wondrous poetry of St. Ephrem the Syrian is ever open; the liturgy of the Church is open; the deifying rays of divine grace shine ever down upon those open to receiving them and upon those not yet open. The Western understanding is that the door to the Middle Ages has long since been closed and the age of the Church Fathers was closed much earlier; but Orthodox will let you become a Church Father, here now. Faithful people today submit as best they are able to the Fathers before them, as St. Maximus Confessor did ages ago. There may be problems with academic theology today, but the door to theology in the classic sense is never closed, as in the maxim that has rumbled through the ages, "A theologian is one who prays, and one who prays is a theologian." Perhaps academic theology is not the best place to be equipped to be a giant like the saintly theologians of ages past. But that does not mean that one cannot become a saintly theologian as in ages past. God can still work with us, here now.

To quote St. Dionysius (pseudo-Dionysius) in *The Mystical Theology*,

Trinity! Higher than any being,
any divinity, any goodness!
Guide of Christians

in the wisdom of Heaven!
Lead us up beyond unknowing light,
up to the farthest, highest peak
of mystic scripture,
where the mysteries of God's Word
lie simple, absolute and unchangeable
in the brilliant darkness of a hidden silence.
Amid the deepest shadow
They pour overwhelming light
on what is most manifest.
Amid the wholly unsensed and unseen
They completely fill our sightless minds
with treasures beyond all beauty.

Let us ever seek the theology of living faith!

Technonomicon: Technology, Nature, Ascesis

1. Many people are concerned today with harmony with nature. And indeed there is quite a lot to living according to nature.
2. But you will not find something that is missing by looking twice as hard in the wrong place, and it matters where one seeks harmony with nature. In monasticism, the man of virtue is the quintessential natural man. And there is something in monasticism that is behind stories of the monk who can approach boar or bear.
3. Being out of harmony with nature is not predominantly a lack of time in forests. There is a deeper root.
4. Exercising is better than living a life without exercise. But there is something missing in a sedentary life with artificially added exercise, after, for centuries, we have worked to avoid the strenuous labor that

most people have had to do.

5. It is as if people had worked for centuries to make the perfect picnic and finally found a way to have perfectly green grass at an even height, a climate controlled environment with sunlight and just the right amount of cloud, and many other things. Then people find that something is missing in the perfect picnic, and say that there might be wisdom in the saying, "No picnic is complete without ants." So they carefully engineer a colony of ants to add to the picnic.
6. An exercise program may be sought in terms of harmony with nature: by walking, running, or biking out of doors. Or it may be pursued for physical health for people who do not connect exercise with harmony of nature. But and without concern for "asceticism" (spiritual discipline) or harmony with nature, many people know that complete deliverance from physical effort has some very bad physical effects. Vigorous exercise is part and parcel to the natural condition of man.
7. Here are two different ways of seeking harmony with nature. The second might never consciously ask if life without physical toil is natural, nor whether our natural condition is how we should live, but still recognizes a problem—a little like a child who knows nothing of the medical theory of how burns are bad, but quickly withdraws his hand from a hot stove.
8. But there is a third kind of approach to harmony with nature, besides a sense that we are incomplete without a better connection to the natural world, and a knowledge that our bodies are less healthy if we live

sedentary lives, lives without reintroducing physical exertion because the perfectly engineered picnic is more satisfying if a colony of ants is engineered in.

9. This third way is asceticism, and asceticism, which is spiritual discipline or spiritual exercise, moral struggle, and mystical toil, is the natural condition of man.
10. The disciples were joyous because the demons submitted to them in Christ's name, and Christ's answer was: "Do not rejoice that the demons submit to you in my name. Rejoice instead that your names are written in Heaven." The reality of the disciples' names being written in Heaven dwarfed the reality of their power over demons, and in like manner the reality that monks can be so much in harmony with nature that they can safely approach wild bears is dwarfed by the reality that the royal road of asceticism can bring so much harmony with nature that by God's grace people work out their salvation with fear and trembling.
11. The list of spiritual disciplines is open-ended, much like the list of sacraments, but one such list of spiritual disciplines might be prayer, worship, sacrament, service, silence, living simply, fasting, and the spiritual use of hardship. If these do not seem exotic enough for what we expect of spiritual discipline, we might learn that the spiritual disciplines can free us from seeking the exotic in too shallow of a fashion.
12. The Bible was written in an age before our newest technologies, but it says much to the human use of technology, because it says much to the human use of

property. If the Sermon on the Mount says, "No man can serve two masters... you cannot serve both God and money," it is strange at best to assume that these words applied when money could buy food, clothing, and livestock but have no relevance to an age when money can also buy the computers and consumer electronics we are infatuated with. If anything, our interest in technology makes the timeless words, "No man can serve two masters" all the more needed in our day.

13. Money can buy everything money can buy and nothing money cannot buy. To seek true glory, or community, or control over all risk from money is a fundamental error, like trying to make a marble statue so lifelike that it actually comes to life. What is so often sought in money is something living, while money itself is something dead, a stone that can appear deceptively lifelike but can never hold the breath of life.
14. In the end, those who look to money to be their servant make it their master. "No man can serve two masters" is much the same truth as one Calvin and Hobbes strip:

Calvin: I had the scariest dream last night. I dreamed that machines took over and made us do their bidding.

Hobbes: That must have been scary!

Calvin: It wa—*holy*, would you look at the time? My TV show is on!

But this problem with technology has been a problem

with property and wealth for ages, and it is foolish to believe that all the Scriptural skepticism and unbelief about whether wealth is really all that beneficial to us, are simply irrelevant to modern technology.

15. There was great excitement in the past millenium when, it was believed, the Age of Pisces would draw to a close, and the Age of Aquarius would begin, and this New Age would be an exciting dawn when all we find dreary about the here and now would melt away. Then the Age of Aquarius started, at least officially, but the New Age failed to rescue us from finding the here and now to be dreary. Then there was great excitement as something like 97% of children born after a certain date were born indigo children: children whose auras are indigo rather than a more mundane color. But, unfortunately, this celebrated watershed did not stop the here and now from being miserable. Now there is great hope that in 2012, according to the Mayan "astrological" calendar, another momentous event will take place, perhaps finally delivering us from the here and now. And, presumably, when December 21, 2012 fails to satisfy us, subsequent momentous events will promise to deliver us from a here and now we find unbearable.
16. If we do not try to sate this urge with New Age, we can try to satisfy it with technology: in what seems like aeons past, the advent of radio and movies seemed to change everything and provide an escape from the here and now, an escape into a totally different world. Then, more recently, surfing the net became the ultimate drug-free trip, only it turns out that the web isn't able to save us from finding the here and now miserable after all. For that, apparently, we need SecondLife, or maybe some exciting development down the pike... or, perhaps,

we are trying to work out a way to succeed by barking up the wrong lamppost.

- 17.No technology is permanently exotic.
- 18.When a Utopian vision dreams of turning the oceans to lemonade, then we have what has been called "a Utopia of spoiled children." It is not a Utopian vision of people being supported in the difficult ascetical pursuit of virtue and ultimately God, but an aid to arrested development that forever panders to childish desires.
- 19.Technology need not have the faintest conscious connection with Utopianism, but it can pursue one of the same ends. More specifically, it can be a means to stay in arrested development. What most technology offers is, in the end, a practical way to circumvent ascesis. Technological "progress" often means that up until now, people have lived with a difficult struggle—a struggle that ultimately amounts to ascesis—but now we can simply do without the struggle.
- 20.Through the wonders of modern technology, we can eat and eat and eat candy all day and not have the candy show up on our waistline: but this does not make us any better, nobler, or wiser than if we could turn the oceans to lemonade. This is an invention from a Utopia of spoiled children.
- 21.Sweetness is a gift from God, and the sweeter fruit and honey taste, the better the nourishment they give. But there is something amiss in tearing the sweetness away from healthy food, and, not being content with this, to say, "We think that eating is a good thing, and we wish to celebrate everything that

is good about it. But, unfortunately, there is biological survival, a holdover from other days: food acts as a nutrient whether you want it or not. But through the wonders of modern science, we can celebrate the goodness of eating while making any effect on the body strictly optional. This is progress!"

22. Statistically, people who switch to artificial sweeteners gain *more* weight. Splenda accomplishes two things: it makes things sweeter without adding calories, and it offers people a way to sever the cord between enjoying sweet taste, and calories entering the body. On spiritual grounds, this is a disturbing idea of how to "support" weight loss. It is like trying to stop people from getting hurt in traffic accidents by adding special "safety" features to some roads so people can drive however they please with impunity, even if they develop habits that will get them *killed* on any other road. What is spiritually unhealthy overflows into poorer health for the body. People gain more weight eating Splenda, and there are more ways than one that Splenda is unfit for human consumption.

23. The ascesis of fasting is not intended as an ultimate extreme measure for weight loss. That may follow—or may not—but there is something fundamentally deeper going on:

Man does not live by bread alone, and if we let go of certain foods or other pleasures for a time, we are in a better position to grasp what more man lives on than mere food. When we rein in the nourishing food of the body and its delights, we may find ourselves in a better position to take in the nourishing food of the spirit and much deeper spiritual delights.

Fasting pursued wrongly can do us no good, and it is the wisdom of the Orthodox Church to undergo such asceticism under the direction of one's priest or spiritual father. But the core issue in fasting is one that matters some for the body and much more for the spirit.

24. Splenda and contraception are both body-conquering technologies that allow us to conquer part of our embodied nature: that the body takes nourishment from food, and that the greatest natural pleasure has deep fertile potential. And indeed, the technologies we call "space-conquering technologies" might more aptly be titled, "body-conquering technologies," because they are used to conquer our embodied and embedded state as God made it.

25. Today, "everybody knows" that the Orthodox Church, not exactly like the Catholic Church allowing contraceptive timing, allows contraception under certain guidelines, and the Orthodox Church has never defined a formal position on contraception above the level of one's spiritual father. This is due, among other factors, to some influential scholarly spin-doctoring, the academic equivalent of the NBC *Dateline* episode that "proved" that a certain truck had a fire hazard in a 20mph collision by filming a 30mph collision (presented as a 20mph collision) and making sure there was a fiery spectacle by also detonating explosives planted above the truck's gas tank.

26. St. John Chrysostom wrote,

Where is there murder before birth? You do not even let a prostitute remain only a prostitute,

but you make her a murderer as well... Do you see that from drunkenness comes fornication, from fornication adultery, and from adultery murder? Indeed, it is something worse than murder and do not know what to call it; for she does not kill what is formed but prevents its formation. What then? Do you despise the gift of God, and fight with his laws? What is a curse, do you seek it as though it were a blessing?... Do you teach the woman who is given to you for the procreation of offspring to perpetrate killing? In this indifference of the married men there is greater evil filth; for then poisons are prepared, not against the womb of a prostitute, but against your injured wife.

27. The Blessed Augustine devastatingly condemned Natural Family Banning: if procreation is sliced away from marital relations, Augustine says point blank, then true marriage is forbidden. There is no wife, but only a mistress, and if this is not enough, he holds that those who enjoin contraception fall under the full freight of St. Paul's blistering words about forbidding marriage:

Now, the Spirit expressly says that in the last days some will renounce the faith by paying attention to deceitful spirits and the teachings of demons, through the hypocrisy of liars whose consciences have been seared with a hot iron: for they forbid marriage and demand avoidance of foods, which God created to be received with thanksgiving by those who believe and know the truth.

Augustine absolutely did not believe that one can enjoy the good of marriage and treat the blessing of

marriage's fertility as a burden and a curse. Such an idea is strange, like trying to celebrate the good of medical care while taking measures to prevent it from improving one's health.

28. Such condemnations stem from the unanimous position of the Church Fathers on contraception.
29. Such words seem strange today, and English Bible translations seem to only refer to contraception once: when God struck Onan dead for "pull and pray." (There are also some condemnations of *pharmakeia* and *pharmakoi*—"medicine men" one would approach for a contraceptive—something that is lost in translation, unfortunately giving the impression that occult sin alone was the issue at stake.)
30. Contraception allows a marriage *à la carte*: it offers some control over pursuing a couple's hopes, together, on terms that they choose without relinquishing control altogether. And the root of this is a deeper answer to St. John Chrysostom's admonition to leave other brothers and sisters to their children as their inheritance rather than mere earthly possessions.

(This was under what would today be considered a third world standard of living, not the first world lifestyle of many people who claim today that they "simply cannot afford any more children"—which reflects not only that they cannot afford to have more children *and retain their expected (entitled?) standard of living for them and their children*, but their priorities once they realize that they may be unable to have both.)

31. Contraception is chosen because it serves a certain way of life: it is not an accident in any way, shape, or form that Planned Parenthood advertises, for both contraception, "Take control of your life!" For whether one plans two children, or four, or none, Planned Parenthood sings the siren song of having your life under your control, or at least as much under control as you can make it, where you choose the terms where you will deal with your children, if and when you want.
32. Marriage and monasticism both help people grow up by helping them to learn being out of control. Marriage may provide the asceticism of minding children and monasticism that of obedience to one's elder, but these different-sounding activities are aimed at building the same kind of spiritual virtue and power.
33. Counselors offer people, not the help that many of them seek in controlling those they struggle with, but something that is rarely asked: learning to be at peace with letting go of being in control of others, and the unexpected freedom that that brings. Marriage and monasticism, at their best, do not provide a minor adjustment that one manages and is then on top of, but an arena, a spiritual struggle, a training ground in which people live the grace and beauty of the Sermon on the Mount, and are freed from the prison chamber of seeking control and the dank dungeon of living for themselves.
34. "Do not worry about your life, what you will eat or drink, nor about your body, what you will wear. Isn't there more to life than food, and the body more than clothing? Look at the birds of the air. They neither

sow nor reap nor gather into barns, and yet your heavenly Father feeds them. Are you not much more valuable than them? And why do you worry about the lilies of the field: how they grow. They neither toil nor spin;" they have joy and peace. The height of technological progress in having pleasure without losing control—in artificial sweeteners, contraceptives and anything else—utterly pales in comparison.

35. Technology is not evil. Many technologies have a right use, but that use is a use to pursue maturity and ascesis, not an aid to living childishly.
36. Wine was created by God as good, and it has a right use. But the man who seeks in wine a way to be happy or a way to drive away his problems has already lost.
37. One classic attitude to wine was not "We forbid drinking wine," or even "It would be better not to drink wine at all, but a little bit does not do too much damage," but goes beyond saying, "The pleasure of wine was given by God as good" to saying: "Wine is an important training ground to learn the ascesis of moderation, and learn a lesson that cannot be escaped: we are not obligated to learn moderation in wine, but if we do not drink wine, we still need moderation in work, play, eating, and everything else, and many of us would do well to grow up in ascesis in the training arena of enjoying wine and be better prepared for other areas of life where the need for the ascesis of moderation, of saying 'when' and drawing limits, is not only something we *should not* dodge: it is something we *can never* escape."

38. The ascetical use of technology is like the ascetical use of wine. It is pursued out of maturity, and as a support to maturity. It is not pursued out of childishness, nor as a support to childishness. And it should never be the center of gravity in our lives. (Drinking becomes a problem more or less when it becomes the focus of a person's life and pursuits.)
39. The Harvard business study behind *Good to Great* found that the most effective companies often made pioneering use of technology, but technology was never the center of the picture: however many news stories might be printed about how they used technologies, few of the CEOs mentioned technology at all when they discussed their company's success, and none of them ascribed all that much importance to even their best technology. Transformed companies—companies selected in a study of all publicly traded U.S. companies whose astonishing stock history began to improve and then outperformed the market by something like a factor of three, sustained for fifteen years straight—didn't think technology was all that important, not even technologies their people pioneered. They focused on something more significant.
40. *Good to Great* leadership saw their companies' success in terms of people.
41. There were other finds, including that the most effective CEOs were not celebrity rockstars in the limelight, but humble servant leaders living for something beyond themselves. In a study about what best achieves what greed wants, not even one of the top executives followed a mercenary creed of ruthless greed and self-advancement.

42. If people, not technology, make businesses tremendously profitable, then perhaps people who want more than profit also need something beyond technology in order to reach the spiritual riches and treasures in Heaven that we were made for.
43. The right use of technology comes out of ascesis and is therefore according to nature.
44. In Robert Heinlein's science fiction classic *Stranger in a Strange Land*, a "man" with human genes who starts with an entirely Martian heritage as his culture and tradition, comes to say, "Happiness is a matter of functioning the way a human being was organized to function... but the words in English are a mere tautology, empty. In Martian they are a complete set of working instructions." The insight is true, but takes shape in a way that completely cuts against the grain of *Stranger in a Strange Land*.
45. One most immediate example is that the science fiction vision is of an ideal of a community of "water brothers" who painstakingly root out natural jealousy and modesty, and establish free love within their circle: such, the story would have it, provides optimal human happiness. As compellingly as it may be written into the story, one may bring up studies which sought to find out which of the sexualities they wished to promote provided the greatest pleasure and satisfaction, and found to their astonishment and chagrin that the greatest satisfaction comes, not from any creative quest for the ultimate thrill, but from something they despised as a completely unacceptable *perversion*: a husband and wife, chaste before the wedding and faithful after, working to become one for as long as they both shall live, and

perhaps even grateful for the fruitfulness of their love. Perhaps such an arrangement offers greater satisfaction than trying to "push the envelope" of adventuresome arrangements precisely *because* it is "functioning the way a human being was organized to function."

46. People only seek the ultimate exotic thrill when they are unhappy. Gnosticism is a spiritual porn whose sizzle entices people who despair: its "good news" of an escape from the miserable here and now is "good news" as misery would want it. Today's Gnosticism may rarely teach, as did earlier Gnostic honesty, that our world could not be the good creation of the ultimately good God, but holding that we need to escape our miserable world was as deep in ancient Gnostics' bones as an alcoholic experiences that our miserable world needs to be medicated by drunkenness. Baudelaire said, in the nineteenth century: "Keep getting drunk! Whether with wine, or with poetry, or with virtue, as you please, keep getting drunk," in a poem about medicating what might be a miserable existence. Today he might have said, "Keep getting drunk! Whether with New Age, or with the endless virtual realities of SecondWife, or with the ultimate Viagra-powered thrill, as you please, keep getting drunk!"
47. What SecondLife—or rather SecondWife—offers is the apparent opportunity to have an alternative to a here and now one is not satisfied with. Presumably there are merits to this alternate reality: some uses are no more a means to escape the here and now than a mainstream business's website, or phoning ahead to make a reservation at a restaurant. But SecondWife draws people with an alternative to the here and now they feel stuck in.

48. It is one thing to get drunk to blot out the misery of another's death. It is another altogether to keep getting drunk to blot out the misery of one's own life.
49. An old story from African-American lore tells of how a master and one of his slaves would compete by telling dreams they claimed they had. One time, the master said that he had a dream of African-American people's Heaven, and everything was dingy and broken—and there were lots of dirty African-Americans everywhere. His slave answered that he had dreamed of white people's Heaven, and everything was silver and gold, beautiful and in perfect order—but there wasn't a soul in the place!
50. Much of what technology seems to offer is to let people of all races enter a Heaven where there are luxuries the witty slave could never dream of, but in the end there is nothing much better than a Heaven full of gold and empty of people.
51. "Social networking" is indeed about people, but there is something about social networking's promise that is like an ambitious program to provide a tofu "virtual chicken" in every pot: there is something unambiguously social about social media, but there is also something as different from what "social" has meant for well over 99% of people as a chunk of tofu is from real chicken's meat.
52. There is a timeless way of relating to other people, and this timeless way is a large part of asceticism. This is a way of relating to people in which one learns to relate primarily to people one did not choose, in which friendship had more permanency than many today now give marriage, in which one was dependent on others

(that is, interdependent with others), in which people did not by choice say goodbye to everyone they knew at once, as one does by moving in America, and a social interaction was largely through giving one's immediate presence.

53. "Social networking" is a very different beast. You choose whom to relate to, and you can set the terms; it is both easy and common to block users, nor is this considered a drastic measure. Anonymity is possible and largely encouraged; relationships can be transactional, which is one step beyond disposable, and many people never meet others they communicate with face-to-face, and for that matter arranging such a meeting is special because of its exceptional character.
54. Social networking can have a place. Tofu can have a place. However, we would do well to take a cue to attend to cultures that have found a proper traditional place for tofu. Asian cuisines may be unashamed about using tofu, but they consume it in moderation—and *never* use it to replace meat.
55. We need traditional social "meat." The members of the youngest generation who have the most tofu in their diet may need meat the most.
56. Today the older generation seems to grouse about our younger generation. Some years ago, someone in the AARP magazine quipped about young people, "Those tight pants! Those frilly hairdos! And you should see what the girls are wearing!" Less witty complaints about the younger generation's immodest style of dress, and their rude disrespect for their elders can just as well be found from the time of

Mozart, for instance, or Socrates: and it seems that today's older generation is as apt to criticize the younger generation as their elders presumably were. But here something really *is* to be said about the younger generation.

57. The older generation kvetching about how the younger generation today has it so easy with toys their elders never dreamed of, never seem to connect their sardonic remarks with how they went to school with discipline problems like spitwads and the spoiled younger generation faced easily available street drugs, or how a well-behaved boy with an e-mail address may receive X-rated spam. "The youth these days" have luxuries their parents never even dreamed of—and temptations and dangers their parents never conceived, not in their worst nightmares.

58. Elders have traditionally complained about the young people being rude, much of which amounts to mental inattention. Part of politeless is being present in body and mind to others, and when the older generation was young, *their* elders assuredly corrected them from not paying attention in the presence of other people and themselves.

59. When they were young, the older generation's ways of being rude included zoning out and daydreaming, making faces when adults turned their back, and in class throwing paper airplanes and passing notes—and growing up meant, in part, learning to turn their back on that arsenal of temptations, much like previous generations. And many of the older generation genuinely turned their backs on those temptations, and would genuinely like to help the

younger generation learn to honor those around with more of their physical and mental *presence*.

60. Consumer electronics like the smartphone, aimed to offer something to youth, often advertise to the younger generation precisely a far better way to avoid a spiritual lesson that was hard enough for previous generations to learn without nearly the same degree of temptation. Few explains to them that a smartphone is not only very useful, but it is designed and sold as an enticing ultra-portable temptation.

61. Literature can be used to escape. But the dividing line between great and not-so-great literature is less a matter of theme, talent, or style than the question of whether the story serves to help the reader escape the world, or engage it.

62. In technology, the question of the virtuous use of technology is less a matter of how fancy the technology is, or how recent, than whether it is used to escape the world or engage it. Two friends who use cell phones to help them meet face-to-face are using technology to support, in some form, the timeless way of relating to other people. Family members who IM to ask prayer for someone who is sick also incorporate technology into the timeless way of relating to other people. This use of technology is quiet and unobtrusive, and supports a focus on something greater than technology: the life God gave us.

63. Was technology made for man, or man for technology?

64. Much of the economy holds the premise that a

culture should be optimized to produce wealth: man was made for the economy. The discipline of advertising is a discipline of influencing people without respecting them as people: the customer, apparently, exists for the benefit of the business.

65. Advertising encourages us to take shopping as a sacrament, and the best response we can give is not activism as such, but a refusal of consent.
66. Shopping is permissible, but not sacramental shopping, because sacramental shopping is an ersatz sacrament and identifying with brands an ersatz spiritual discipline. At best sacramental shopping is a distraction; more likely it is a lure and the bait for a spiritual trap.
67. We may buy a product which carries a mystique, but not the mystique itself: and buying a cool product without buying into its "cool" is hard, harder than not buying. But if we buy into the cool, we forfeit great spiritual treasure.
68. Love the Lord your God with all of your heart and all of your life and all of your mind and all of your might, love your neighbor as yourself, and use things: do not love things while using people.
69. Things can do the greatest good when we stop being infatuated with them and put first things first. The most powerful uses of technology, and the best, come from loving those whom you should love and using what you should use. We do not benefit from being infatuated with technology, nor from acting on such infatuation.

70. The Liturgy prays, "Pierce our souls with longing for Thee." Our longing for transcendence is a glory, and the deepest thing that draws us in advertisements for luxury goods, does so because of the glory we were made to seek.

71. But let us attend to living in accordance with nature. Ordinarily when a technology is hailed as "space-conquering," it is on a deep level *body-conquering*, defeating part of the limitations of our embodied nature—which is to say, defeating part of our embodied nature that is in a particular place in a particular way.

72. Technologies to pass great distance quickly, or make it easy to communicate without being near, unravel what from ancient times was an ancient social fabric. They offer something of a line-item veto on the limits of our embodied state: if they do not change our bodies directly, they make our embodied limitations less relevant.

73. A technology can conquer how the body takes nourishment from food, for instance, and therefore be body-conquering without being space-conquering. But whether celebrated or taken for granted, space-conquering technologies are called space-conquering because they make part of the limitations of our embodied nature less relevant.

74. There is almost a parody of asceticism in space-conquering technologies. Asceticism works to transcend the limited body, and space-conquering technologies seem a way to do the same. But they are opposites.

75. "The demons always fast:" such people are told to

instill that fasting has a place and a genuine use, but anyone who focuses too much on fasting, or fasts too rigidly, is well-advised to remember that every single demon outfasts every single saint. But there is something human about fasting: only a being made to eat can benefit from refraining from eating. Fasting is useful because, unlike the angels and demons, a man is not created purely a spirit, but created both spirit and body, and they are linked together. Asceticism knows better, and is more deeply attuned to nature, to attempt to work on the spirit with the body detached and ignored.

76. Even as asceticism subdues the comforts and the body, the work is not only to transfigure the spirit, and transform the body.
77. In a saint the transfiguration means that when the person has died, the body is not what horror movies see in dead bodies: it is glorified into relics.
78. This is a fundamentally different matter from circumventing the body's limitations. There may be good, ascetical uses for space-conquering technologies: but the good part of it comes from the asceticism shining through the technology.
79. The limitations of our embodied existence—aging, bodily aches and pains, betrayal, having doors closed in our face—have been recognized as spiritual stepping stones, and the mature wonder, not whether they have too many spiritual stepping stones, but whether they might need more. Many impoverished saints were concerned, not with whether their life was too hard, but whether it was too easy. Some saints have been tremendously wealthy, but they

used their wealth for other purposes than simply pandering to themselves.

80. Some might ask today, for instance, whether there might be something symbolic to the burning bush that remained unconsumed which St. Moses the Lawgiver saw. And there are many layers of spiritual meaning to the miracle—an emblem of the Theotokos's virgin birthgiving—but it is not the proper use of symbolic layers to avoid the literal layer, without which the symbolic layers do not stand. If the question is, "Isn't there something symbolic about the story of the miracle of the burning bush?", the answer is, "Yes, but it is a fundamental error to use the symbolic layers to dodge the difficulty of literally believing the miracle." In like fashion, there are many virtuous uses of technology, but it is a fundamental error to expect those uses to include using technology to avoid the difficult lessons of spiritual ascesis.

81. Living according to nature is not a luxury we add once we have taken care of necessities: part of harmony with nature is built into necessities. Our ancestors gathered from the natural world, not to seek harmony with nature, but to meet their basic needs—often with far fewer luxuries than we have—and part of living according to nature has usually meant few, if any, luxuries. Perhaps there is more harmony with nature today in driving around a city to run errands for other people, than a luxurious day out in the countryside.

82. Some of the promise the Internet seems to offer is the dream a mind-based society: a world of the human spirit where there is no distraction of external

appearance because you have no appearance save that of a handle or avatar, for instance, or a world where people need not appear male or female except as they choose. But the important question is not whether technology through the internet can deliver such a dream, but whether the dream is a dream or a nightmare.

83. To say that the Internet is much more mind-based than face-to-face interactions is partly true. But to say that a mind-based society is more fit for the human spirit than the timeless way of relating, in old-fashioned meatspace, is to correct the Creator on His mistaken notions regarding His creatures' best interests.
84. People still use the internet all the time as an adjunct to the timeless way of relating. Harmony with nature is not disrupted by technology's use as an adjunct nearly so much as when it serves as a replacement. Pushing for a mind-based society, and harmony with nature, may appeal to the same people, especially when they are considered as mystiques. But pushing for a mind-based society is pushing for a greater breach of living according to nature, widening the gulf between modern society and the ancient human of human life. There is a contradiction in pushing for our life to be both more and less according to nature.
85. There is an indirect concern for asceticism in companies and bosses that disapprove of clock watching. The concern is not an aversion to technology, or that periodically glancing at one's watch takes away all that much time from real work. The practical concern is of a spiritual state that hinders work: the employee's attention and interest are divided, and a

bad spiritual state overflows into bad work.

86. In terms of ascesis, the scattered state that cannot enjoy the present is the opposite of a spiritual condition called *nepsis* or, loosely, "watchfulness."
87. The problem that manifests itself in needing to keep getting drunk, with New Age and its hopes for, at the moment, 2012 delivering us from a miserable here and now, or needing a more and more exotic drugged-up sexual thrill, or fleeing to SecondWife, is essentially a lack of *nepsis*.
88. To be delivered by such misery is not a matter of a more radical escape. In a room filled with eye-stinging smoke, what is needed is not a more heroic way to push away the smoke, but a way of quenching the fire. Once the fire is quenched, the smoke dissipates, and with it the problem of escaping the smoke.
89. *Nepsis* is a watchfulness over one's heart, including the mind.
90. *Nepsis* is both like and unlike metacognition. It observes oneself, but it is not thinking about one's thinking, or taking analysis to the next level: analysis of normal analysis. It is more like coming to one's senses, getting back on course, and then trying to stay on course. It starts with a mindfulness of how one has not been mindful, which then flows to other areas of life.
91. The man who steps back and observes that he is seeking ways to escape the here and now, has an edge. The same goes with worrying or other passions

by which the soul is disturbed: for many of the things that trouble our soul, seduce us to answer the wrong question. This is almost invariably more pedestrian than brilliant metacognition, and does not look comfortable.

92. Metanoia, or repentance, is both unconditional surrender and waking up and smelling the coffee. It is among the most terrifying of experiences, but afterwards, one realizes, "I was holding on to a piece of Hell!"
93. Once one is past that uncomfortable recognition, one is free to grasp something better.
94. That "something better" is ultimately Christ, and a there is a big difference between a mind filled with Christ and a mind filled with material things as one is trying to flee malaise.
95. The attempt to escape a miserable here and now is doomed. We cannot escape into Eden. But we can find the joy of Eden, and the joy of Heaven, precisely in the here and now we are seduced to seek to escape.
96. Living the divine life in Christ, is a spiritual well out of which many treasures pour forth: harmony with nature, the joy of Eden and all the other things that we are given if we seek first the Kingdom of God and His perfect righteousness.
97. It was a real achievement when people pushing the envelope of technology and, with national effort and billions of dollars of resources, NASA succeeded in lifting a man to the moon.

98. But, as a monk pointed out, the Orthodox Church has known for aeons how to use no resources beyond a little bread and water, and succeed in lifting a man up to God.
99. And we miss the greatest treasures if we think that asceticism or its fruits are only for monks.
100. And there is something that lies beyond even asceticism: contemplation of the glory of God.

Plato: The Allegory of the... *Flickering Screen*?

Socrates: And now, let me give an illustration to show how far our nature is enlightened or unenlightened:—Behold! a human being in a darkened den, who has a slack jaw towards only source of light in the den; this is where he has gravitated since his childhood, and though his legs and neck are not chained or restrained any way, yet he scarcely turns round his head. In front of him are images from faroff, projected onto a flickering screen. And others whom he cannot see, from behind their walls, control the images like marionette players manipulating puppets. And there are many people in such dens, some isolated one way, some another.

Glaucon: I see.

Socrates: And do you see, I said, the flickering screen showing men, and all sorts of vessels, and statues and collectible animals made of wood and stone and various materials, and all sorts of commercial products which appear on

the screen? Some of them are talking, and there is rarely silence.

Glaucon: You have shown me a strange image, and they are strange prisoners.

Socrates: Much like us. And they see only their own images, or the images of one another, as they appear on the screen opposite them?

Glaucon: True, he said; how could they see anything but the images if they never chose to look anywhere else?

Socrates: And they would know nothing about a product they buy, except for what brand it is?

Glaucon: Yes.

Socrates: And if they were able to converse with one another, wouldn't they think that they were discussing what mattered?

Glaucon: Very true.

Socrates: And suppose further that the screen had sounds which came from its side, wouldn't they imagine that they were simply hearing what people said?

Glaucon: No question.

Socrates: To them, the truth would be literally nothing but those shadowy things we call the images.

Glaucon: That is certain.

Socrates: And now look again, and see what naturally happens next: the prisoners are released and are shown the truth. At first, when any of them is liberated and required to suddenly stand up and turn his neck around, and walk and look towards the light, he will suffer sharp pains; the glare will distress him, and he will be unable to see the realities of which in his former state he had seen the images; and then imagine someone saying to him, that what he saw before was an illusion, but that now, when he is approaching nearer to being and his eye is turned towards more real existence, he has a clearer vision, -what will be his reply? And you may further imagine that his instructor is asking him to things, not as they are captured on the screen, but in living color - will he not be perplexed? Won't he imagine that the version which he used to see on the screen are better and more real than the objects which are shown to him in real life?

Glaucon: Far better.

Socrates: And if he is compelled to look straight at the light, will he not have a pain in his eyes which will make him turn away to take and take in the objects of vision which he can see, and which he will conceive to be in reality clearer than the things which are now being shown to him?

Glaucon: True, he now will.

Socrates: And suppose once more, that he is reluctantly dragged up a steep and rugged ascent, and hindered in his self-seeking until he's forced to think about someone besides himself, is he not likely to be pained and irritated? He will find that he cannot simply live life as he sees fit, and he will not have even the illusion of finding comfort by living for himself.

Glaucon: Not all in a moment, he said.

Socrates: He will require time and practice to grow accustomed to the sight of the upper world. And first he will see the billboards best, next the product lines he has seen advertised, and then things which are not commodities; then he will talk with adults and children, and will he know greater joy in having services done to him, or will he prefer to do something for someone else?

Glaucon: Certainly.

Socrates: Last of he will be able to search for the One who is greatest, reflected in each person on earth, but he will seek him for himself, and not in another; and he will live to contemplate him.

Glaucon: Certainly.

Socrates: He will then proceed to argue that this is he who gives the season and the years, and is the guardian of all that is in the visible world, and is absolutely the cause of all things which he and his fellows have been accustomed to behold?

Glaucon: Clearly, he said, his mind would be on God and his reasoning towards those things that come from him.

Socrates: And when he remembered his old habitation, and the wisdom of the den and his fellow-prisoners, do you not suppose that he would felicitate himself on the change, and pity them?

Glaucon: Certainly, he would.

Socrates: And if they were in the habit of conferring honours among themselves on those who were quickest to observe what was happening in the world of brands and what new features were marketed, and which followed after, and which were together; and who were therefore best able to draw conclusions as to the future, do you think that he would care for such honours and glories, or envy the possessors of them? Would he not say with Homer, "Better to be the poor servant of a poor master" than to reign as king of this Hell, and to endure anything, rather than think as they do and live after their manner?

Glaucon: Yes, he said, I think that he would rather suffer anything than entertain these false notions and live in this miserable manner.

Socrates: Imagine once more, I said, such an one coming suddenly out of the sun to be replaced in his old situation; would he not be certain to have his eyes full of darkness, and seem simply not to get it?

Glaucon: To be sure.

Socrates: And in conversations, and he had to compete in one-upsmanship of knowing the coolest brands with the prisoners who had never moved out of the den, while his sight was still weak, and before his eyes had become steady (and the time which would be needed to acquire this new habit of sight might be very considerable) would he not be ridiculous? Men would say of him that up he went with his eyes and down he came without them; and that it was better not even to think of ascending; and if any one tried to loose another and lead him up to the light, let them only catch the offender, and they would give him an extremely heavy cross to bear.

Glaucon: No question. Then is the saying, "In the land of the blind, the one eyed man is king," in fact false?

Socrates: In the land of the blind, the one-eyed man is crucified. Dear Glaucon, you may now add this entire allegory to the discussion around a matter; the den arranged around a flickering screen is deeply connected to the world of living to serve your pleasures, and you will not misapprehend me if you interpret the journey upwards to be the spiritual transformation which alike may happen in the monk keeping vigil or the mother caring for children, the ascent of the soul into the world of spiritual realities according to my poor belief, which, at your desire, I have expressed whether rightly or wrongly God knows. But, whether true or false,

my opinion is that in the world of knowledge the Source of goodness appears last of all, and is seen only with an effort; and, when seen, is also inferred to be the universal author of all things beautiful and right, parent of light and of the lord of light in this visible world, and the immediate source of reason and truth in the intellectual; and that this is the power upon which he who would act rationally, either in public or private life must have his eye fixed.

Glaucon: I agree, he said, as far as I am able to understand you.

[Adapted from Plato's most famous allegory. CJSH]

Religion Within the Bounds of Amusement

On the screen appear numerous geometrical forms—prisms, cylinders, cubes — dancing, spinning, changing shape, in a very stunning computer animation. In the background sounds the pulsing beat of techno music. The forms waver, and then coalesce into letters: "Religion Within the Bounds of Amusement."

The music and image fade, to reveal a man, perfect in form and appearance, every hair in place, wearing a jet black suit and a dark, sparkling tie. He leans forward slightly, as the camera focuses in on him.

"Good morning, and I would like to extend a warm and personal welcome to each and every one of you from those of us at the Church of the Holy Television. Please sit back, relax, and turn off your brain."

Music begins to play, and the screen shows a woman holding a microphone. She is wearing a long dress of the whitest white, the color traditionally symbolic of goodness and purity, which somehow manages not to conceal her unnaturally large breasts. The camera slowly focuses in as she begins to sing.

"You got problems? That's OK. You got problems? That's OK. Not enough luxury? That's OK. Only three cars?"

That's OK. Not enough power? That's OK. Can't get your way? That's OK. Not enough for you? That's OK. Can't do it on your own? That's OK. You got problems? That's OK. You got problems? That's OK. Just call out to Jesus, and he'll make them go away. Just call out to Jesus, and he'll make them go away."

As the music fades, the camera returns to the man.

"Have you ever thought about how much God loves us? Think about the apex of progress that we are at, and how much more he has blessed us than any one else.

"The Early Christians were in a dreadful situation. They were always under persecution. Because of this, they didn't have the physical assurance of security that is the basis for spiritual growth, nor the money to buy the great libraries of books that are necessary to cultivate wisdom. It is a miracle that Christianity survived at all.

"The persecution ended, but darkness persisted for a thousand years. The medievals were satisfied with blind faith, making it the context of thought and leisure. Their concept of identity was so weak that it was entangled with obedience. The time was quite rightly called the Dark Ages.

"But then, ah, the Renaissance and the Enlightenment. Man and his mind enthroned. Religion within the bounds of reason. Then science and technology, the heart of all true progress, grew.

"And now, we sit at the apex, blessed with more and better technology than anyone else. What more could you possibly ask for? What greater blessing could there possibly be? We have the technology, and know how to enjoy it. Isn't God gracious?"

There is a dramatic pause, and then the man closes his eyes. "Father, I thank you that we have not fallen into sin; that we do not worship idols, that we do not believe lies, and that we are not like the Pharisees. I thank you that we are good, moral people; that we are Americans. I thank you, and I praise you for your wondrous power. Amen."

He opens his eyes, and turns to the camera. It focuses in

on his face, and his piercing gaze flashes out like lightning. With a thunderous voice, he boldly proclaims, "To God alone be the glory, for ever and ever!"

The image fades.

In the background can be heard the soft tones of Beethoven. A couple fades in; they are elegantly dressed, sitting at a black marble table, set with roast pheasant. The room is of Baroque fashion; marble pillars and mirrors with gilt frames adorn the walls. French windows overlook a formal garden.

The scene changes, and a sleek black sports car glides through forest, pasture, village, mountain. The music continues to play softly.

It passes into a field, and in the corner of the field a small hovel stands. The camera comes closer, and two half-naked children come into view, playing with some sticks and a broken Coca-Cola bottle. Their heads turn and follow the passing car.

A voice gently intones, "These few seconds may be the only opportunity some people ever have to know about you. What do you want them to see?"

The picture changes. Two men are walking through a field. As the camera comes closer, it is seen that they are deep in conversation.

One of them looks out at the camera with a probing gaze, and then turns to the other. "What do you mean?"

"I don't know, Jim." He draws a deep breath, and closes his eyes. "I just feel so... so empty. A life filled with nothing but shallowness. Like there's nothing inside, no purpose, no meaning. Just an everlasting nothing."

"Well, you know, John, for every real and serious problem, there is a solution which is trivial, cheap, and instantaneous." He unslings a small backpack, opening it to pull out two cans of beer, and hands one to his friend. "Shall we?"

The cans are opened.

Suddenly, the peaceful silence is destroyed by the blare

of loud rock music. The camera turns upwards to the sky, against which may be seen parachutists; it spins, and there is suddenly a large swimming pool, and a vast table replete with great pitchers and kegs of beer. The parachutists land; they are all young women, all blonde, all laughing and smiling, all wearing string bikinis, and all anorexic.

For the remaining half of the commercial, the roving camera takes a lascivious tour of the bodies of the models. Finally, the image fades, and a deep voice intones, "Can you think of a better way to spend your weekends?"

The picture changes. A luxury sedan, passing through a ghetto, stops beside a black man, clad in rags. The driver, who is white, steps out in a pristine business suit, opens his wallet, and pulls out five crisp twenty dollar bills.

"I know that you can't be happy, stealing, lying, and getting drunk all of the time. Here is a little gift to let you know that Jesus loves you." He steps back into the car without waiting to hear the man's response, and speeds off.

Soon, he is at a house. He steps out of the car, bible in hand, and rings the doorbell.

The door opens, and a man says, "Nick, how are you? Come in, do come in. Have a seat. I was just thinking of you, and it is so nice of you to visit. May I interest you in a little Martini?"

Nick sits down and says, "No, Scott. I am a Christian, and we who are Christian do not do such things."

"Aah; I see." There is a sparkle in the friend's eye as he continues, "And tell me, what did Jesus do at his first miracle?"

The thick, black, leatherbound 1611 King James bible arcs through the air, coming to rest on the back of Scott's head. There is a resounding thud.

"You must learn that the life and story of Jesus are serious matters, and not to be taken as the subject of jokes."

The screen turns white as the voice glosses, "This message has been brought to you by the Association of Concerned Christians, who would like to remind you that

you, too, can be different from the world, and can present a positive witness to Christ."

In the studio again, the man is sitting in a chair.

"Now comes a very special time in our program. You, our viewers, matter most to us. It is your support that keeps us on the air. And I hope that you do remember to send us money; when you do, God will bless you. So keep your checks rolling, and we will be able to continue this ministry, and provide answers to your questions. I am delighted to be able to hear your phone calls. Caller number one, are you there?"

"Yes, I am, and I would like to say how great you are. I sent you fifty dollars, and someone gave me an anonymous check for five hundred! I only wish I had given you more."

"That is good to hear. God is so generous. And what is your question?"

"I was wondering what God's will is for America? And what I can do to help?"

"Thank you; that's a good question.

"America is at a time of great threat now; it is crumbling because good people are not elected to office.

"The problem would be solved if Christians would all listen to Rush Limbaugh, and then go out and vote. Remember, bad people are sent to Washington by good people who don't vote. With the right men in office, the government would stop wasting its time on things like the environment, and America would become a great and shining light, to show all the world what Christ can do.

"Caller number two?"

"I have been looking for a church to go to, and having trouble. I just moved, and used to go to a church which had nonstop stories and anecdotes; the congregation was glued to the edges of their seats. Here, most of the services are either boring or have something which lasts way too long. I have found a few churches whose services I generally enjoy—the people really sing the songs—but there are just too many things that aren't amusing. For starters, the sermons

make me uncomfortable, and for another, they have a very boring time of silent meditation, and this weird mysticism about 'kiss of peace' and something to do with bread and wine. Do you have any advice for me?"

"Yes, I do. First of all, what really matters is that you have Jesus in your heart. Then you and God can conquer the world. Church is a peripheral; it doesn't really have anything to do with Jesus being in your heart. If you find a church that you like, go for it, but if there aren't any that you like, it's not your fault that they aren't doing their job.

"And the next caller?"

"Hello. I was wondering what the Song of Songs is about."

"The Song of Songs is an allegory of Christ's love for the Church. Various other interpretations have been suggested, but they are all far beyond the bounds of good taste, and read things into the text which would be entirely inappropriate in holy Scriptures. Next caller?"

"My people has a story. I know tales of years past, of soldiers come, of pillaging, of women ravaged, of villages razed to the ground and every living soul murdered by men who did not hesitate to wade through blood. Can you tell me what kind of religion could possibly decide that the Crusades were holy?"

The host, whose face had suddenly turned a deep shade of red, shifted slightly, and pulled at the side of his collar. After a few seconds, a somewhat less polished voice hastily states, "That would be a very good question to answer, and I really would like to, but I have lost track of time. It is now time for an important message from some of our sponsors."

The screen is suddenly filled by six dancing rabbits, singing about toilet paper.

A few minutes of commercials pass: a computer animated flash of color, speaking of the latest kind of candy; a family brought together and made happy by buying the right brand of vacuum cleaner; a specific kind of hamburger helping black and white, young and old to live together in

harmony. Somewhere in there, the Energizer bunny appears; one of the people in the scene tells the rabbit that he should have appeared at some time other than the commercial breaks. Finally, the host, who has regained his composure, is on the screen again.

"Well, that's all for this week. I hope you can join us next week, as we begin a four part series on people whose lives have been changed by the Church of the Holy Television. May God bless you, and may all of your life be ever filled with endless amusement!"

**AI as an Arena for
Magical Thinking Among
Skeptics**
*Artificial Intelligence, Cognitive
Science, and Eastern Orthodox
Views on Personhood*

AI as an Arena for Magical Thinking Among Skeptics

M.Phil. Dissertation

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Abstract

I explore artificial intelligence as failing in a way that is characteristic of a faulty anthropology. Artificial intelligence has had excellent funding, brilliant minds, and exponentially faster computers, which suggests that any failures present may not be due to lack of resources, but arise from an error that is manifest in anthropology and may even be cosmological. Maximus Confessor provides a genuinely different background to criticise artificial intelligence, a background which shares far fewer assumptions with the artificial intelligence movement than figures like John Searle. Throughout this dissertation, I will be looking at topics which seem to offer something interesting, even if cultural factors today often obscure their relevance. I discuss Maximus's use of the patristic distinction between 'reason' and spiritual 'intellect' as providing an interesting alternative to 'cognitive faculties.' My approach is meant to be distinctive both by reference to Greek Fathers and by studying artificial intelligence in light of the occult foundations of modern science, an important datum omitted in the broader scientific movement's self-presentation. The occult serves as a bridge easing the transition between Maximus Confessor's worldview and that of artificial intelligence. The broader goal is to make three suggestions: first, that artificial intelligence provides an experimental test of scientific materialism's picture of the human mind; second, that the outcome of the experiment suggests we might reconsider scientific materialism's I-It relationship to the world; and third, that figures like Maximus Confessor, working within an I-Thou relationship, offer more wisdom to us today than is sometimes assumed. I do not attempt to compare Maximus Confessor's Orthodoxy with other religious traditions, however I do suggest that Orthodoxy has relevant insights into personhood which the artificial intelligence community

still lacks.

Introduction

Some decades ago, one could imagine a science fiction writer asking, 'What would happen if billions of dollars, dedicated laboratories with some of the world's most advanced equipment, indeed an important academic discipline with decades of work from some of the world's most brilliant minds—what if all of these were poured into an attempt to make an artificial mind based on an understanding of personhood that came out of a framework of false assumptions?' We could wince at the waste, or wonder that after all the failures the researchers still had faith in their project. And yet exactly this philosophical experiment has been carried out, in full, and has been expanded. This philosophical experiment is the artificial intelligence movement.

What relevance does AI have to theology? Artificial intelligence assumes a particular anthropology, and failures by artificial intelligence may reflect something of interest to theological anthropology. It appears that the artificial intelligence project has failed in a substantial and characteristic way, and furthermore that it has failed as if its assumptions were false—in a way that makes sense given some form of Christian theological anthropology. I will therefore be using the failure of artificial intelligence as a point of departure for the study of theological anthropology. Beyond a negative critique, I will be exploring a positive alternative. The structure of this dissertation will open with critiques, then trace historical development from an interesting alternative to the present problematic state, and then explore that older alternative. I will thus move in the opposite of the usual direction.

For the purposes of this dissertation, *artificial intelligence* (AI) denotes the endeavour to create computer software that will be humanly intelligent, and *cognitive*

science the interdisciplinary field which seeks to understand the mind on computational terms so it can be re-implemented on a computer. Artificial intelligence is more focused on programming, whilst cognitive science includes other disciplines such as philosophy of mind, cognitive psychology, and linguistics. *Strong AI* is the classical approach which has generated chess players and theorem provers, and tries to create a disembodied mind. Other areas of artificial intelligence include the *connectionist* school, which works with neural nets,[1] and *embodied AI*, which tries to take our mind's embodiment seriously. The picture on the cover[2] is from an embodied AI website and is interesting for reasons which I will discuss below under the heading of 'Artificial Intelligence.'

Fraser Watts (2002) and John Puddfoot (1996) offer similar and straightforward pictures of AI. I will depart from them in being less optimistic about the present state of AI, and more willing to find something lurking beneath appearances. I owe my brief remarks about AI and its eschatology, under the heading of 'Artificial Intelligence' below, to a line of Watts' argument.[3]

Other critics[4] argue that artificial intelligence neglects the body as mere packaging for the mind, pointing out ways in which our intelligence is embodied. They share many of the basic assumptions of artificial intelligence but understand our minds as biologically emergent and therefore tied to the body.

There are two basic points I accept in their critiques:

First, they argue that our intelligence is an embodied intelligence, often with specific arguments that are worth attention.

Second, they often capture a quality, or flavour, to thought that beautifully illustrates what sort of thing human thought might be besides digital symbol manipulation on biological hardware.

There are two basic points where I will be departing from their line of argument:

First, they think outside the box, but may not go far enough. They are playing on the opposite team to cognitive science researchers, but they are playing the same game, by the same rules. The disagreement between proponents and critics is not whether mind may be explained in purely materialist terms, but only whether that assumption entails that minds can be re-implemented on computers.

Second, they see the mind's ties to the body, but not to the spirit, which means that they miss out on half of a spectrum of interesting critiques. I will seek to explore what, in particular, some of the other half of the spectrum might look like. As their critiques explore what it might mean to say that the mind is embodied, the discussion of reason and intellect under the heading 'Intellect and Reason' below may give some sense of what it might mean to say that the mind is spiritual. In particular, the conception of the intellects offers an interesting base characterisation of human thought that competes with cognitive faculties. Rather than saying that the critics offer false critiques, I suggest that they are too narrow and miss important arguments that are worth exploring.

I will explore failures of artificial intelligence in connection with the Greek Fathers. More specifically, I will look at the seventh century Maximus Confessor's *Mystagogia*. I will investigate the occult as a conduit between the (quasi-Patristic) medieval West and the West today. The use of Orthodox sources could be a particularly helpful light, and one that is not explored elsewhere. Artificial intelligence seems to fail along lines predictable to the patristic understanding of a spirit-soul-body unity, essentially connected with God and other creatures. The discussion becomes more interesting when one looks at the implications of the patristic distinction between 'reason' and the spiritual 'intellect.' I suggest that connections with the Orthodox doctrine of divinisation may make an interesting a direction for future enquiry. I will only make a two-way comparison between Orthodox theological

anthropology and one particular quasi-theological anthropology. This dissertation is in particular not an attempt to compare Orthodoxy with other religious traditions.

One wag said that the best book on computer programming for the layperson was *Alice's Adventures in Wonderland*, but that's just because the best book on anything for the layperson was *Alice's Adventures in Wonderland*. One lesson learned by a beginning scholar is that many things that 'everybody knows' are mistaken or half-truths, as 'everybody knows' the truth about Galileo, the Crusades, the Spanish Inquisition, and other select historical topics which we learn about by rumour. There are some things we will have trouble understanding unless we can question what 'everybody knows.' This dissertation will be challenging certain things that 'everybody knows,' such as that we're making progress towards achieving artificial intelligence, that seventh century theology belongs in a separate mental compartment from AI, or that science is a different kind of thing from magic. The result is bound to resemble a tour of Wonderland, not because I am pursuing strangeness for its own sake, but because my attempt to understand artificial intelligence has taken me to strange places. Renaissance and early modern magic is a place artificial intelligence has been, and patristic theology represents what we had to leave to get to artificial intelligence.

The artificial intelligence project as we know it has existed for perhaps half a century, but its roots reach much further back. This picture attests to something that has been a human desire for much longer than we've had digital computers. In exploring the roots of artificial intelligence, there may be reason to look at a topic that may seem strange to mention in connection with science: the Renaissance and early modern occult enterprise.

Why bring the occult into a discussion of artificial intelligence? It doesn't make sense if you accept science's

own self-portrayal and look at the past through its eyes. Yet this shows bias and insensitivity to another culture's inner logic, almost a cultural imperialism—not between two cultures today but between the present and the past. A part of what I will be trying to do in this thesis is look at things that have genuine relevance to this question, but whose relevance is obscured by cultural factors today. Our sense of a deep divide between science and magic is more cultural prejudice than considered historical judgment. We judge by the concept of scientific progress, and treating prior cultures' endeavours as more or less successful attempts to establish a scientific enterprise properly measured by our terms.

We miss how the occult turn taken by some of Western culture in the Renaissance and early modern period established lines of development that remain foundational to science today. Many chasms exist between the mediaeval perspective and our own, and there is good reason to place the decisive break between the mediaeval way of life and the Renaissance/early modern occult development, not placing mediaeval times and magic together with an exceptionalism for our science. I suggest that our main differences with the occult project are disagreements as to means, not ends—and that distinguishes the post-mediaeval West from the mediaevals. If so, there is a kinship between the occult project and our own time: we provide a variant answer to the same question as the Renaissance magus, whilst patristic and mediaeval Christians were exploring another question altogether. The occult vision has fragmented, with its dominion over the natural world becoming scientific technology, its vision for a better world becoming political ideology, and its spiritual practices becoming a private fantasy.

One way to look at historical data in a way that shows the kind of sensitivity I'm interested in, is explored by Mary Midgley in *Science as Salvation* (1992); she doesn't dwell on the occult as such, but she perceptively argues that

science is far more continuous with religion than its self-understanding would suggest. Her approach pays a certain kind of attention to things which science leads us to ignore. She looks at ways science is doing far more than falsifying hypotheses, and in so doing observes some things which are important. I hope to develop a similar argument in a different direction, arguing that science is far more continuous with the occult than its self-understanding would suggest. This thesis is intended neither to be a correction nor a refinement of her position, but development of a parallel line of enquiry.

It is as if a great island, called Magic, began to drift away from the cultural mainland. It had plans for what the mainland should be converted into, but had no wish to be associated with the mainland. As time passed, the island fragmented into smaller islands, and on all of these new islands the features hardened and became more sharply defined. One of the islands is named Ideology. The one we are interested in is Science, which is not interchangeable with the original Magic, but is even less independent: in some ways Science differs from Magic by being more like Magic than Magic itself. Science is further from the mainland than Magic was, even if its influence on the mainland is if anything greater than what Magic once held. I am interested in a scientific endeavour, and in particular a basic relationship behind scientific enquiry, which are to a substantial degree continuous with a magical endeavour and a basic relationship behind magic. These are foundationally important, and even if it is not yet clear what they may mean, I will try to substantiate these as the thesis develops. I propose the idea of Magic breaking off from a societal mainland, and sharpening and hardening into Science, as more helpful than the idea of science and magic as opposites.

There is in fact historical precedent for such a phenomenon. I suggest that a parallel with Eucharistic doctrine might illuminate the interrelationship between

Orthodoxy, Renaissance and early modern magic, and science (including artificial intelligence). When Aquinas made the Christian-Aristotelian synthesis, he changed the doctrine of the Eucharist. The Eucharist had previously been understood on Orthodox terms that used a Platonic conception of bread and wine participating in the body and blood of Christ, so that bread remained bread whilst becoming the body of Christ. One substance had two natures. Aristotelian philosophy had little room for one substance which had two natures, so one thing cannot simultaneously be bread and the body of Christ. When Aquinas subsumed real presence doctrine under an Aristotelian framework, he managed a delicate balancing act, in which bread ceased to be bread when it became the body of Christ, and it was a miracle that the accidents of bread held together after the substance had changed. I suggest that when Zwingli expunged real presence doctrine completely, he was not abolishing the Aristotelian impulse, but carrying it to its proper end. In like fashion, the scientific movement is not a repudiation of the magical impulse, but a development of it according to its own inner logic. It expunges the supernatural as Zwingli expunged the real presence, because that is where one gravitates once the journey has begun. What Aquinas and the Renaissance magus had was composed of things that did not fit together. As I will explore below under the heading 'Renaissance and Early Modern Magic,' the Renaissance magus ceased relating to society as to one's mother and began treating it as raw material; this foundational change to a depersonalised relationship would later secularise the occult and transform it into science. The parallel between medieval Christianity/magic/science and Orthodoxy/Aquinas/Zwingli seems to be fertile: real presence doctrine can be placed under an Aristotelian framework, and a sense of the supernatural can be held by someone who is stepping out of a personal kind of relationship, but in both cases it doesn't sit well, and after

two or so centuries people finished the job by subtracting the supernatural.

Without discussing the principles in Thomas Dixon's 1999 delineation of theology, anti-theology, and atheology that can be un-theological or quasi-theological, regarding when one is justified in claiming that theology is present, I adopt the following rule:

A claim is considered *quasi-theological* if it can conflict with theological claims.

Given this rule, patristic theology, Renaissance and early modern magic (hereafter 'magic' or 'the occult'), and artificial intelligence claims are all considered to be theological or quasi-theological.

I will not properly trace an historical development so much as show the distinctions between archetypal scientific, occult, and Orthodox worldviews as seen at different times, and briefly discuss their relationships with some historical remarks. Not only are there surprisingly persistent tendencies, but Lee repeats Weber's suggestion that there is real value to understand ideal types.[5]

I will be attempting to bring together pieces of a puzzle—pieces scattered across disciplines and across centuries, often hidden by today's cultural assumptions about what is and is not connected—to show their interconnections and the picture that emerges from their fit. I will be looking at features including intentionality,[6] teleology,[7] cognitive faculties,[8] the spiritual intellect,[9] cosmology, and a strange figure who wields a magic sword with which to slice through society's Gordian knots. Why? In a word, all of this connected. Cosmology is relevant if there is a cosmological error behind artificial intelligence. There are both an organic connection and a distinction between teleology and intentionality, and the shift from teleology to intentionality is an important shift; when one shifts from teleology to intentionality one becomes partly blind to what the artificial

intelligence picture is missing. Someone brought up on cognitive faculties may have trouble answering, 'How else could it be?'; the patristic understanding of the spiritual intellect gives a very interesting answer, and offers a completely different way to understand thought. And the figure with the magic sword? I'll let this figure remain mysterious for the moment, but I'll hint that without that metaphorical magic sword we would never have a literal artificial intelligence project. I do not believe I am forging new connections among these things, so much as uncovering something that was already there, overlooked but worth investigating.

This is an attempt to connect some very diverse sources, even if the different sections are meant primarily as philosophy of religion. This brings problems of coherence and disciplinary consistency, but the greater risk is tied to the possibility of greater reward. It will take more work to show connections than in a more externally focused enquiry, but if I can give a believable case for those interconnections, this will *ipso facto* be a more interesting enquiry.

All translations from French, German, Latin, and Greek are my own.

Artificial Intelligence

Artificial intelligence is not just one scientific project among others. It is a cultural manifestation of a timeless dream. It does not represent the repudiation of the occult impulse, but letting that impulse work out according to its own inner logic. Artificial intelligence is connected with a transhumanist vision for the future[10] which tries to create a science-fiction-like future of an engineered society of superior beings.[11] This artificial intelligence vision for the future is similar to the occult visions for the future we will see below. Very few members of the artificial intelligence movement embrace the full vision—but I may suggest that

its spectre is rarely absent, and that that spectre shows itself by a perennial sense of, 'We're making real breakthroughs today, and full AI is just around the corner.' Both those who embrace the fuller enthusiasm and those who are more modestly excited by current project have a hope that we are making progress towards creating something fundamentally new under the sun, of bequeathing humanity with something that has never before been available, machines that genuinely think. Indeed, this kind of hope is one of magic's most salient features. The exact content and features vary, but the sometimes heady excitement and the hope to bestow something powerful and new mark a significant point contact between the artificial intelligence and the magic that enshrouded science's birth.

There is something timeless and archetypal about the desire to create humans through artifice instead of procreation. Jewish legend tells of a rabbi who used the Kaballah to create a clay golem to defend a city against anti-semites in 1581.[12] *Frankenstein* has so marked the popular imagination that genetically modified foods are referred to as 'Frankenfoods,' and there are many (fictional) stories of scientists creating androids who rebel against and possibly destroy their creators. Robots who have artificial bodies but think and act enough like humans never to cause culture shock are a staple of science fiction. [13] There is a timeless and archetypal desire to create humans by artifice rather than procreation. Indeed, this desire has more than a little occult resonance.

We should draw a distinction between what may be called 'pretentious AI' and 'un-pretentious AI.' The artificial intelligence project has managed technical feats that are sometimes staggering, and from a computer scientist's perspective, the state of computer science is richer and more mature than if there had been no artificial intelligence project. Without making any general claim that artificial intelligence achieves nothing or achieves nothing significant, I will explore a more specific and weaker claim

that artificial intelligence does not and cannot duplicate human intelligence.

A paradigm example of un-pretentious AI is the United States Postal Service handwriting recognition system. It succeeds in reading the addresses on 85% of postal items, and the USPS annual report is justifiably proud of this achievement.[14] However, there is nothing mythic claimed for it: the USPS does not claim a major breakthrough in emulating human thought, nor does it give people the impression that artificial mail carriers are just around the corner. The handwriting recognition system is a tool—admittedly, quite an impressive tool—but it is nothing more than a tool, and no one pretends it is anything more than a tool.

For a paradigm example of pretentious AI, I will look at something different. The robot Cog represents equally impressive feats in artificial hand-eye coordination and motor control, but its creators claim something deeper, something archetypal and mythic.

The scholar places his hand on the robots' shoulder as if they had a longstanding friendship. At almost every semiotic level, this picture constitutes an implicit claim that the researcher has a deep friendship with what must be a deep being. The unfortunately blurred caption reads, '©2000 Peter Menzel / Robo sapiens.' On the Cog main website area, every picture with Cog and a person theatrically shows the person treating the robot as quite lifelike—giving the impression that the robot must be essentially human.

But how close is Cog to being human? Watts writes,

The weakness of Cog at present seems to be that it cannot actually do very much. Even its insect-like computer forebears do not seem to have had the intelligence of insects, and Cog is clearly nowhere near having human intelligence.[16]

The somewhat light-hearted frequently-asked-questions list acknowledges that the robot 'has no idea what it did two minutes ago,' answers 'Can Cog pass the Turing test?' by saying, 'No... but neither could an infant,' and interestingly answers 'Is Cog conscious?' by saying, 'We try to avoid using the c-word in our lab. For the record, no. Off the record, we have no idea what that question even means. And still, no.' The response to a very basic question is ambiguous, but it seems to joke that 'consciousness' is obscene language, and gives the impression that this is not an appropriate question to ask: a mature adult, when evaluating our AI, does not childishly frame the question in terms of consciousness. Apparently, we should accept the optimistic impression of Cog, whilst recognising that it's not fair to the robot to ask about features of human personhood that the robot can't exhibit. This smells of begging the question.

Un-pretentious AI makes an impressive technical achievement, but recognises and acknowledges that they've created a tool and not something virtually human. Pretentious AI can make equally impressive technical achievements, and it recognises that what it's created is not equivalent to human, but it does not acknowledge this. The answer to 'Is Cog conscious?' is a refusal to acknowledge something the researchers have to recognise: that Cog has no analogue to human consciousness. Is it a light-hearted way of making a serious claim of strong agnosticism about Cog's consciousness? It doesn't read much like a mature statement that 'We could never know if Cog were conscious.' The researcher in Figure 2 wrote an abstract on how to give robots a theory of other minds[17], which reads more like psychology than computer science.

There's something going on here that also goes on in the occult. In neo-paganism, practitioners find their magic to work, not exactly as an outsider would expect, by making incantations and hoping that something will happen that a skeptic would recognise as supernatural, but by doing what

they can and then interpreting reality as if the magic had worked. They create an illusion and subconsciously embrace it. This mechanism works well enough, in fact, that large segments of today's neo-paganism started as jokes and then became real, something their practitioners took quite seriously.[18] There's power in trying to place a magical incantation or a computer program (or, in programmer slang, 'incantation') to fill a transcendent hope: one finds ways that it appears to work, regardless of what an outsider's interpretation may be. This basic technique appears to be at work in magic as early as the Renaissance, and it appears to be exactly what's going on in pretentious AI. The basic factor of stepping into an illusion after you do what you can makes sense of the rhetoric quoted above and why Cog is portrayed not merely as a successful experiment in coordination but as Robo sapiens, the successful creation of a living golem. Of course we don't interpret it as magic because we assume that artificial and intelligence and magic are very different things, but the researchers' self-deception falls into a quite venerable magical tradition.

Computers seem quite logical. Are they really that far from human rationality? Computers are logical without being rational. Programming a computer is like explaining a task to someone who follows directions very well but has no judgment and no ability to recognise broader intentions in a request. It follows a list of instructions without any recognition or a sense of what is being attempted. The ability to understand a conversation, or recognise another person's intent—even with mistakes—or any of a number of things humans take for granted, belongs to rationality. A computer's behaviour is built up from logical rules that do certain precise manipulations of symbols without any sense of meaning whatsoever: it is logical without being rational. The discipline of usability is about how to write well-designed computer programs; these programs usually let the user forget that computers aren't rational. For instance, a user can undo something when the computer logically and

literally follows an instruction, and the user rationally realises that that isn't really what was intended. But even the best of this design doesn't let the computer understand what one meant to say. One frustration people have with computers stems from the fact that there is a gist to what humans say, and other people pick up that gist. Computers do not have even the most rudimentary sense of gist, only the ability to logically follow instructions. This means that the experience of bugs and debugging in programming is extremely frustrating to those learning how to program; the computer's response to what seems a correct program goes beyond nitpicking. This logicity without rationality is deceptive, for it presents something that looks very much like rationality at first glance, but produces unpleasant surprises when you treat it as rational. There's something interesting going on here. When we read rationality into a computer's logicity, we are in part creating the illusion of artificial intelligence. 'Don't anthropomorphise computers,' one tells novice programmers. 'They hate that.' A computer is logical enough that we tend to treat it as rational, and in fact if you want to believe that you've achieved artificial intelligence, you have an excellent basis to use in forming a magician's self-deception.

Artificial intelligence is a mythic attempt to create an artificial person, and it does so in a revealing way. Thought is assumed to be a private manipulation of mental representations, not something that works in terms of spirit. Embodied AI excluded, the body is assumed to be packaging, and the attempt is not just to duplicate the 'mind' in a complete sense, but our more computer-like rationality: this assumes a highly significant division of what is essential, what is packaging, and what comes along for free if you duplicate the essential bits. None of this is simply how humans have always thought, nor is it neutral. Maximus Confessor's assumptions are different enough from AI's that a comparison makes it easier to see some of AI's assumptions, and furthermore what sort of coherent

picture could deny them. I will explore how exactly he does so below under the heading 'Orthodox Anthropology in Maximus Confessor's *Mystagogia*,' More immediately, I wish to discuss a basic type of assumption shared by artificial intelligence and the occult.

The Optimality Assumption

One commonality that much of magic and science share is that broad visions often include the assumption that what they don't understand must be simple, and be easy to modify or improve. Midgley discusses Bernal's exceedingly optimistic hope for society to transform itself into a simplistically conceived scientific Utopia (if perhaps lacking most of what we value in human society);[19] I will discuss later, under various headings, how society simply works better in Thomas More's and B.F. Skinner's Utopias if only it is re-engineered according to their simple models.[20] Aren't Utopian visions satires, not prescriptions? I would argue that the satire itself has a strong prescriptive element, even if it's not literal. The connection between Utopia and AI is that the same sort of thinking feeds into what, exactly, is needed to duplicate a human mind. For instance, let us examine a sample of dialogue which Turing imagined going on in a Turing test:

Q: Please write me a sonnet on the subject of the Forth Bridge.

A: Count me out on this one. I never could write poetry.

Q: Add 34957 to 70764.

A: (Pause about 30 seconds and then give as answer) 105621.

Q: Do you play chess?

A: Yes.

Q: I have K at my K1, and no other pieces. You have only K at K6 and R at R1. It is your move. What do you play?

A: (After a pause of 15 seconds) R-R8 mate.[21]

Turing seems to assume that if you duplicate his favoured tasks of arithmetic and chess, the task of understanding natural language comes along, more or less for free. The subsequent history of artificial intelligence has not been kind to this assumption. Setting aside the fact that most people do not strike up a conversation by strangely requesting the other person to solve a chess problem and add five-digit numbers, Turing is showing an occult way of thinking by assuming there's nothing really obscure, or deep, about the human person, and that the range of cognitive tasks needed to do AI is the range of tasks that immediately present themselves to him. This optimism may be damped by subsequent setbacks which the artificial intelligence movement has experienced, but it's still present. It's hard to see an artificial intelligence researcher saying, 'The obvious problem looks hard to solve, but there are probably hidden problems which are much harder,' let alone consider whether human thought might be non-computational.

Given the difficulties they acknowledge, artificial intelligence researchers seem to assume that the problem is as easy as possible to solve. As I will discuss later, this kind of assumption has profound occult resonance. I will call this assumption the optimality assumption: with allowances and caveats, the optimality assumption states that artificial intelligence is an optimally easy problem to solve. This

doesn't mean an optimally easy problem to solve given the easiest possible world, but rather, taking into the difficulties and nuances recognised by the practitioner, the problem is then assumed to be optimally easy, and then it could be said that we live in the (believable) possible world where artificial intelligence would be easiest to implement. Anything that doesn't work like a computer is assumedly easy, or a matter of unnecessary packaging. There are variations on the theme of begging the question. One basic strategy of ensuring that computers can reach the bar of human intelligence is to lower the bar until it is already met. Another strategy is to try to duplicate human intelligence on computer-like tasks. Remember the Turing test which Turing imagined, which seemed to recognise only the cognitive tasks of writing a poem, doing arithmetic, and solving a chess problem: Turing apparently assumed that natural language understanding would come along for free by the time computers could do both arithmetic and chess. Now we have computer calculators and chess players that can beat humans, whilst natural language understanding tasks which are simple to humans represent an unscaled Everest to artificial intelligence.

We have a situation very much like the attempt to make a robot that can imitate human locomotion—if the attempt is tested by having a robot race a human athlete on a racetrack ergonomically designed for robots. Chess is about as computer-like a human skill as one could find.

Turing's script for an imagined Turing test is one manifestation of a tendency to assume that the problem is optimally easy: the optimality assumption. Furthermore, Turing sees only three tasks of composing a sonnet, adding two numbers, and making a move in chess. But in fact this leaves out a task of almost unassailable difficulty for AI: understanding and appropriately acting on natural language requests. This is part of human rationality that cannot simply be assumed to come with a computer's logicity.

Four decades after Turing imagined the above dialogue, Kurt VanLehn describes a study of problem solving that used a standard story problem.[22] The ensuing discussion is telling. Two subjects' interpretations are treated as problems to be resolved, apparently chosen for their departure from how a human 'should' think about these things. One is a nine year old girl, Cathy: '...It is apparent from [her] protocol that Cathy solves this problem by imagining the physical situation and the actions taken in it, as opposed to, say, converting the puzzle to a directed graph then finding a traversal of the graph.' The purpose of the experiment was to understand how humans solve problems, but it was approached with a tunnel vision that gave a classic kind of computer science 'graph theory' problem, wrapped up in words, and treated any other interpretation of those words as an interesting abnormality. It seems that it is not the theory's duty to approach the subject matter, but the subject matter's duty to approach the theory—a signature trait of occult projects. Is this merely VanLehn's tunnel vision? He goes on to describe the state of cognitive science itself:

For instance, one can ask a subject to draw a pretty picture... [such] Problems whose understanding is not readily represented as a problem space are called *ill-defined*. Sketching pretty pictures is an example of an ill-defined problem... There have only been a few studies of ill-defined problem solving.[23]

Foerst summarises a tradition of feminist critique:[24] AI was started by men who chose a particular kind of abstract task as the hallmark of intelligence; women might value disembodied abstraction less and might choose something like social skills. The critique may be pushed one step further than that: beyond any claim that AI researchers, when looking for a basis for computer intelligence, tacitly crystallised intelligence out of men's

activities rather than women's, it seems that their minds were so steeped in mathematics and computers that they crystallised intelligence out of human performance more in computer-like activities than anything essentially human, even in a masculine way. Turing didn't talk about making artificial car mechanics or deer hunters any more than he had plans for artificial hostesses or childminders.

Harman's 1989 account of functionalism, for instance, provides a more polished-looking version of an optimality assumption: 'According to functionalism, it does not matter what mental states and processes are made of any more than it matters what a carburetor or heart or a chess king is made of.' (832). Another suggestion may be made, not as an axiom but as an answer to the question, 'How else could it be?' This other suggestion might be called *the tip of the iceberg conception*.

A 'tip of the iceberg' conception might reply, 'Suppose for the sake of argument that it doesn't matter what an iceberg is made of, so long as it sticks up above the surface and is hard enough to sink a ship. The task is then to make an artificial iceberg. One can hire engineers to construct a hard shell to function as a surrogate iceberg. What has been left out is that these properties of something observable from the surface rest on something that lies much, much deeper than the surface. (A mere scrape with an iceberg sunk the Titanic, not only because the iceberg was hard, but because it had an iceberg's monumental inertia behind that hardness.) One can't make a functional tip of the iceberg that way, because a functional tip of an iceberg requires a functional iceberg, and we have very little idea of how to duplicate those parts of an iceberg that aren't visible from a ship. You are merely assuming that one can try hard enough to duplicate what you can see from a ship, and if you duplicate those observables, everything else will follow.' This is not a fatal objection, but it is intended to suggest what the truth could be besides the repeated assumption that intelligence is as easy as possible to duplicate in a

computer. Here again is the optimality assumption, and it is a specific example of a broader optimality assumption which will appear in occult sources discussed under the 'Renaissance and Early Modern Magic' heading below. The 'tip of the iceberg' conception is notoriously absent in occult and artificial intelligence sources alike. In occult sources, the endeavour is to create a magically sharp sword that will slice all of the Gordian knots of society's problems; in artificial intelligence the Gordian knots are not societal problems but obstacles to creating a thinking machine, and researchers may only be attempting to use razor blades to cut tangled shoelaces, but researchers are still trying to get as close to that magic sword as they believe possible.

Just Around the Corner Since 1950

The artificial intelligence movement has a number of reasonably stable features, including an abiding sense of 'Today's discoveries are a real breakthrough; artificial minds are just around the corner.' This mood may even be older than digital computers; Dreyfus writes,

In the period between the invention of the telephone relay and its apotheosis in the digital computer, the brain, always understood in terms of the latest technological inventions, was understood as a large telephone switchboard, or more recently, as an electronic computer.[25]

The discoveries and the details of the claim may change, and experience has battered some of strong AI's optimism, but in pioneers and today's embodied AI advocates alike there is a similar mood: 'What we've developed now is effacing the boundary between machine and human.' This mood is quite stable. There is a striking similarity between

the statements,

These emotions [discomfort and shock at something so human-like] might arise because in our interactions with Cog, little distinguishes us from the robot, and the differences between a machine and its human counterparts fade.[26]

and:

The reader must accept it as a fact that digital computers can be constructed, and indeed have been constructed, according to the principles we have described, and that they can in fact mimic the actions of a human computer very closely.[27]

What is interesting here is that the second was made by Turing in 1950, and the first by Foerst in 1998. As regards Turing, no one now believes 1950 computers could perform any but the most menial of mathematicians' tasks, and some of Cog's weaknesses have been discussed above ("Cog... cannot actually do very much. Even its insect-like forebears do not seem to have had the intelligence of insects..."). The more artificial intelligence changes, the more it seems to stay the same. The overall impression one receives is that for all the surface progress of the artificial intelligence, the underlying philosophy and spirit remain the same—and part of this underlying spirit is the conviction, 'We're making real breakthroughs now, and full artificial intelligence is just around the corner.' This self-deception is sustained in classically magical fashion. Artificial intelligence's self-presentation exudes novelty, a sense that today's breakthroughs are decisive—whilst its actual rate of change is much slower. The 'It's just around the corner.' rhetoric is a longstanding feature. For all the changes in processor power and greater consistency in a materialist doctrine of mind, there are salient features

which seem to repeat in 1950's and today's cognitive science. In both, the strategy to ensure that computers could jump the bar of human intelligence is by lowering the bar until it had already been jumped.

The Ghost in the Machine

It has been suggested in connection with Polanyi's understanding of tacit knowledge that behaviourists did not teach, 'There is no soul.' Rather, they draw students into a mode of enquiry where the possibility of a soul is never considered.

Modern psychology takes completely for granted that behavior and neural function are perfectly correlated, that one is completely caused by the other. There is no separate soul or lifeforce to stick a finger into the brain now and then and make neural cells do what they would not otherwise. Actually, of course, this is a working assumption only....It is quite conceivable that someday the assumption will have to be rejected. But it is important also to see that we have not reached that day yet: the working assumption is a necessary one and there is no real evidence opposed to it. Our failure to solve a problem so far does not make it insoluble. One cannot logically be a determinist in physics and biology, and a mystic in psychology.[28]

This is a balder and more provocative way of stating what writers like Turing lead the reader to never think of questioning. The assumption is that the soul, if there is one, is by nature external and separate from the body, so that any interaction between the two is a violation of the body's usual way of functioning. Thus what is denied is a 'separate soul or lifeforce to stick a finger into the brain now and then and make neural cells do what they would not do otherwise.' The Orthodox and others' doctrine of unified personhood is

very different from an affirmation of a ghost in the machine. To affirm a ghost in the machine is to assume the soul's basic externality to the body: the basic inability of a soul to interact with a body creates the problem of the ghost in the machine. By the time one attempts to solve the problem of the ghost in the machine, one is already outside of an Orthodox doctrine of personhood in which spirit, soul, and body are united and the whole unit is not an atom.

The objective here is not mainly to criticise AI, but to see what can be learned: AI seems to fail in a way that is characteristic. It does not fail because of insufficient funding or lack of technical progress, but on another plane: it is built on an erroneous quasi-theological anthropology, and its failures may suggest something about being human. The main goal is to answer the question, 'How else could it be?' in a way that is missed by critics working in materialist confines.

What can we say in summary?

First, artificial intelligence work may be divided into un-pretentious and pretentious AI. Un-pretentious AI makes tools that no one presents as anything more than tools. Pretentious AI is presented as more human than is properly warranted.

Second, there are stable features to the artificial intelligence movement, including a claim of, 'We have something essentially human. With today's discoveries, full artificial intelligence is just around the corner.' The exact form of this assertion may change, but the basic claim does not.

Third, artificial intelligence research posits a multifarious 'optimality assumption,' namely that, given the caveats recognised by the researcher, artificial intelligence is an optimally easy assumption to solve. The human mind is assumed to be the sort of thing that is optimally easy to re-create on a computer.

Fourth, artificial intelligence comes from the same kind of thinking as the ghost in the machine problem.

There is more going on in the artificial intelligence project than an attempt to produce scientific results. The persistent rhetoric of 'It's just around the corner.' is not because artificial intelligence scientists have held that sober judgment since the project began, but because there's something else going on. For reasons that I hope will become clearer in the next section, this is beginning to look like an occult project—a secularised occult project, perhaps, but 'secularised occult' is not an empty term in that you take all of the occult away if you take away spellbooks. There is much more to the occult than crystal balls, and a good deal of this 'much more' is at play even if artificial intelligence doesn't do things the *Skeptical Enquirer* would frown on.

Occult Foundations of Modern Science

With acknowledgment of the relevance of the Reformation, the wake of Aristotelianism, and the *via moderna* of nominalism,[29] I will be looking at a surprising candidate for discussion on this topic: magic. Magic was a large part of what shaped modernity, a much larger factor than one would expect from modernity's own self-portrayal, and it has been neglected for reasons besides than the disinterested pursuit of truth. It is more attractive to our culture to say that our science exists in the wake of Renaissance learning or brave Reformers than to say that science has roots in it decries as superstition. For reasons that I will discuss below under the next heading, I suggest that what we now classify as the artificial intelligence movement is a further development of some of magic's major features.

There is a major qualitative shift between Newton's development of physics being considered by some to be a diversion from his alchemical and other occult endeavours, and 'spooky' topics today being taboo for scientific research.

Yet it is still incomplete to enter a serious philosophical discussion of science without understanding the occult, as it is incomplete to enter a serious discussion of Christianity without understanding Judaism. Lewis points out that the popular understanding of modern science displacing the magic of the middle ages is at least misleading; there was very little magic in the middle ages, and then science and magic flourished at the same time, for the same reason, often in the same people: the reason science became stronger than magic is purely Darwinian: it worked better. [30] One may say that medieval religion is the matrix from which Renaissance magic departed, and early modern magic is the matrix from which science departed.

What is the relationship between the mediaeval West and patristic Christianity? In this context, the practical difference is not yet a great one. The essential difference is that certain seeds have been sown—such as nominalism and the rediscovered Aristotelianism—which in the mediaeval West would grow into something significant, but had not in much of any practical sense affected the fabric of society. People still believed that the heavens told the glory of God; people lived a life oriented towards contemplation rather than consumption; monasteries and saints were assumed so strongly that they were present even—especially—as they retreated from society. Certain seeds had been sown in the mediaeval West, but they had not grown to any significant stature. For this discussion, I will treat mediaeval and patristic Christianity as more alike than different.

Renaissance and Early Modern Magic

Magic in this context is much more than a means of casting spells or otherwise manipulating supernatural powers to obtain results. That practice is the token of an entire worldview and enterprise, something that defines

life's meaning and what one ought to seek. To illustrate this, I will look at some details of work by a characteristic figure, Leibniz. Then I will look at the distinctive way the Renaissance magus related to the world and the legacy this relationship has today. Alongside this I will look at a shift from understanding this life as a contemplative apprenticeship to Heaven, to understanding this life as something for us to make more pleasurable.

Leibniz, a 17th century mathematician and scientist who co-discovered calculus, appears to have been more than conversant with the occult memory tradition,[31] and his understanding of calculus was not, as today, a tool used by engineers to calculate volumes. Rather, it was part of an entire Utopian vision, which could encompass all knowledge and all thoughts, an apparently transcendent tool that would obviate the need for philosophical disagreements:

If we had this [calculus], there would be no more reason for disputes between philosophers than between accountants. It would be enough for them to take their quills and say, 'Let us calculate!'

Leibniz's 1690 *Ars Combinatoria* contains some material that is immediately accessible to a modern mathematician. It also contains material that is less accessible. Much of the second chapter (9-48) discusses combinations of the letters U, P, J, S, A, and N; these letters are tied to concepts ranging from philosophy to theology, jurisprudence and mathematics: another table links philosophical concepts with numbers (42-3). The apparent goal was to validly manipulate concepts through mechanical manipulations of words, but I was unable to readily tell what (mathematico-logical?) principle was supposed to make this work. (The principle is apparently unfamiliar to me.) This may reflect the influence of Ramon Lull,

thirteenth century magician and doctor of the Catholic Church who adapted a baptised Kaballah which involved manipulating combinations of (Latin) letters. Leibniz makes repeated reference to Lull (28, 31, 34, 46), and specifically mentions his occult *ars magna* (28). Like Lull, Leibniz is interested in the occult, and seeks to pioneer some new tool that will obviate the need for this world's troubles. He was an important figure in the creation of science, and his notation is still used for calculus today. Leibniz is not trying to be just another member of society, or to contribute to society's good the way members have always contributed to society's good: he stands above it, and his intended contribution is to reorder the fabric of society according to his endowed vision. Leibniz provides a characteristic glimpse of how early modern magic has left a lasting imprint.

If the person one should be in Orthodoxy is the member of Church and society, the figure in magic is the magus, a singular character who stands outside of the fabric of society and seeks to transform it. What is the difference? The member of the faithful is an integrated part of society, and lives in submission and organic connection to it. The magus, by contrast, stands above society, superior to it, having a relation to society as one whose right and perhaps duty is to tear apart and reconstruct society along better lines. We have a difference between humility and pride, between relating to society as to one's mother and treating society as raw material for one to transform. The magus is cut off from the common herd by two closely related endowments: a magic sword to cut through society's Gordian knots, and a messianic fantasy.[32] In Leibniz's case the magic sword is an artificial language which will make philosophical disagreements simply obsolete. For the artificial intelligence movement, the magic sword is artificial intelligence itself. The exact character of the sword, knot, and fantasy may differ, but their presence does not.

The character of the Renaissance magus may be seen as

as hinging on despair with the natural world. This mood seems to be woven into Hermetic texts that were held in such esteem in the Renaissance and were connected at the opening of pre-eminent Renaissance neo-Platonist Pico della Mirandola's *Oration on the Dignity of Man*.^[33] If there is good to be had, it is not met in the mundane world of the *hoi polloi*. It must be very different from their reality, something hidden that is only accessible to an elite. The sense in which this spells out an interest in the occult means far more than carrying around a rabbit's foot. The specific supernatural contact was valued because the occult was far hidden from appearances and the unwashed masses. (The Christian claim that one can simply pray to God and be heard is thus profoundly uninteresting. Supernatural as it may be, it is ordinary, humble, and accessible in a way that the magus is trying to push past.) This desire for what is hidden or very different from the ordinary means that the ideal future must be very different from the present. Therefore Thomas More, Renaissance author, canonised saint, and strong devotee of Mirandola's writing, himself writes *Utopia*. In this work, the philosophic sailor Raphael establishes his own reason as judge over the appropriateness of executing thieves,^[34] and describes a Utopia where society simply works better: there seem to be no unpleasant surprises or unintended consequences. ^[35] There is little sense of a complex inner logic to society that needs to be respected, or any kind of authority to submit to. Indeed, Raphael abhors authority and responds to the suggestion that he attach himself to a king's court by saying, 'Happier! Is that to follow a path that my soul abhors?' This Utopian vision, even if it is from a canonised Roman saint, captures something deep of the occult currents that would later feed into the development of political ideology. The content of an occult vision for constructing a better tomorrow may vary, but it is a vision that seeks to tear up the world as we now know it and reconstructs it along different lines.

Magic and science alike relate to what they are interested in via an I-It rather than an I-Thou relationship. Relating to society as to one's mother is an I-Thou relationship; treating society as raw material is an I-It relationship. An I-Thou relationship is receptive to quality. It can gain wisdom and insight. It can connect out of the whole person. The particular kind of I-It relationship that undergirds science has a powerful and narrow tool that deals in what can be mathematically represented. The difference between those two is misunderstood if one stops after saying, 'I-It can make technology available much better than I-Thou.' That is how things look through I-It eyes. But I-Thou allows a quality of relationship that does not exist with I-It. 'The fundamental word I-Thou can only be spoken with one's whole being. The fundamental word I-It can never be spoken with one's whole being.' I-Thou allows a quality-rich relationship that always has another layer of meaning. In the Romance languages there are two different words for knowledge: in French, *connaissance* and *savoir*. They both mean 'knowledge,' but in different ways: *savoir* is knowledge of fact (or know-how); one can *sait que* ('know that') something is true. *Connaissance* is the kind of knowledge of a person, a 'knowledge of' rather than a 'knowledge that' or 'knowledge how.' It can never be a complete knowledge, and one cannot *connait que* ('know-of that') something is true. It is personal in character. An I-It relationship is not just true of magic; as I will discuss below under the heading of 'Science, Psychology, and Behaviourism,' psychology seeks a baseline *savoir* of people where it might seek a *connaissance*, and its theories are meant to be abstracted from relationships with specific people. Like magic, the powers that are based on science are epiphenomenal to the relationship science is based on. Relating in an I-Thou rather than I-It fashion is not simply less like magic and science; it is richer, fuller, and more human.

In the patristic and medieval eras, the goal of living had

been contemplation and the goal of moral instruction was to conform people to reality. Now there was a shift from conforming people to reality, towards conforming reality to people.[36] This set the stage, centuries later, for a major and resource-intensive effort to create an artificial mind, a goal that would not have fit well with a society oriented to contemplation. This is not to say that there is no faith today, nor that there was no technology in the middle ages, nor that there has been no shift between the early modern period and today. Rather, it is to say that a basic trajectory was established in magic that significantly shapes science today.

The difference between the Renaissance magus and the mediaeval member of the Church casts a significant shadow today. The scientist seems to live more in the shadow of the Renaissance magus than of the member of mediaeval society. This is not to say that scientists cannot be humble and moral, nor that they cannot hold wonder at what they study. But it is to say that there are a number of points of contact between the Renaissance magus's way of relating to the world and that of a scientist and those who live in science's shadow. Governments today consult social scientists before making policy decisions: the relationship seems to be how to best deal with material rather than a relationship as to one's mother. We have more than a hint of secularised magic in which substantial fragments of Renaissance and early modern magic have long outlived some magical practices.

Under the patristic and medieval conception, this life was an apprenticeship to the life in Heaven, the beginning of an eternal glory contemplating God. Magic retained a sense of supernatural reality and a larger world, but its goal was to improve this life, understood as largely self-contained and not as beginning of the next. That was the new chief end of humanity. That shift is a shift towards the secular, magical as its beginning may be. Magic contains the seeds of its own secularisation, in other words of its

becoming scientific. The shift from contemplation of the next world to power in this world is why the occult was associated with all sorts of Utopian visions to transform the world, a legacy reflected in our political ideologies. One of the tools developed in that magical milieu was science: a tool that, for Darwinian reasons, was to eclipse all the rest. The real magic that has emerged is science.

Science, Psychology, and Behaviourism

What is the niche science has carved out for itself? I'd like to look at an academic discipline that is working hard to be a science, psychology. I will more specifically look at behaviourism, as symptomatic within the history of psychology. Is it fair to look at behaviourism, which psychology itself rejected? It seems that behaviourism offers a valuable case study by demonstrating what is more subtly present elsewhere in psychology. Behaviourism makes some basic observations about reward and punishment and people repeating behaviours, and portrays this as a comprehensive psychological theory: behaviourism does not acknowledge beliefs, for instance. Nonetheless, I suggest that behaviourism is a conceivable development in modern psychology which would have been impossible in other settings. Behaviourism may be unusual in the extreme simplicity of its vision and its refusal to recognise internal states, but not in desiring a Newton who will make psychology a full-fledged science and let psychology know its material with the same kind of knowing as physics has for its material.

Newton and his kin provided a completely de-anthropomorphised account of natural phenomena, and behaviourism provided a de-anthropomorphised account of humans. In leading behaviourist B.F. Skinner's *Walden Two* (1948), we have a Utopian vision where every part of

society seems to work better: artists raised under Skinner's conditioning produce work which is 'extraordinarily good,' the women are more beautiful,[37] and Skinner's alter ego expresses the hope of controlling the weather,[38] and compares himself with God.[39] Skinner resemble seems to resemble a Renaissance magus more than a mediaeval member: society is raw material for him to transform. Skinner is, in a real sense, a Renaissance magus whose magic has become secularised. Quite a lot of the magus survives the secularisation of Skinner's magic.

Even without these more grandiose aspirations, psychology is symptomatic of something that is difficult to discern by looking at the hard sciences. Psychological experiments try to find ways in which the human person responds in terms comparable to a physics experiment—and by nature do not relate to their subjects as human agents. These experiments study one aspect of human personhood, good literature another, and literature offers a different kind of knowing from a psychological experiment. If we assume that psychology is the best way to understand people—and that the mind is a mechanism-driven thing—then the assumed burden of proof falls on anyone saying, 'But a human mind isn't the sort of thing you can duplicate on a computer.' The cultural place of science constitutes a powerful influence on how people conceive the question of artificial intelligence.

Behaviourism offers a very simple and very sharp magic sword to cut the Gordian knot of unscientific teleology, a knot that will be discussed under the heading of 'Intentionality and Teleology' below. It removes suspicion of the reason being attached to a spiritual intellect by refusing to acknowledge reason. It removes the suspicion of emotions having a spiritual dimension by refusing to acknowledge emotions. He denies enough of the human person that even psychologists who share those goals would want to distance themselves from him. And yet Skinner does more than entertain messianic fantasies: *Walden Two*

is a Utopia, and when Skinner's alter ego compares himself with God, God ends up second best.[40] I suggest that this is no a contradiction at all, or more properly it is a blatant contradiction as far as common sense is concerned, but as far as human human phenomena go, we have two sides of the same coin. The magic sword and the messianic fantasy belong to one and the same magus.

There is in fact an intermediate step between the full-fledged magus and the mortal herd. One can be a magician's assistant, clearing away debris and performing menial tasks to support the real magi. [41] The proportion of the Western population who are scientists is enormous compared to science's founding, and the vast majority of the increase is in magician's assistants. If one meets a scientist at a social gathering, the science is in all probability not a full-fledged magus, but a magician's assistant, set midway between the magus and the commoner. The common scientist is below the magus in knowledge of science but well above most commoners. In place of a personal messianic fantasy is a more communal tendency to assume that the scientific enterprise is our best hope for the betterment of society. (Commoners may share this belief.) There is a significant difference between the magus and most assistants today. Nonetheless, the figure of the magus is alive today—secularised, in most cases, but alive and well. Paul Johnson's Augustinian account of *Intellectuals* includes such eminent twentieth century scientific figures as Bertrand Russell, Noam Chomsky, and Albert Einstein; [42] the figures one encounters in his pages are steeped in the relationship to society as to raw material instead as to one's mother, the magic sword, and the messianic fantasy.

I-Thou and Humanness

I suggest that the most interesting critiques of artificial intelligence are not obtained by looking through I-It eyes in another direction, but in using other eyes to begin with,

looking through I-Thou eyes. Let us consider Turing's 'Arguments from Various Disabilities'.[43] Perhaps the people who furnished Turing with these objections were speaking out of something deeper than they could explain:

Be kind, resourceful, beautiful, friendly, have initiative, have a sense of humour, tell right from wrong, make mistakes, fall in love, enjoy strawberries and cream, make some one fall in love with it, learn from experience, use words properly, be the subject of its own thought, have as much diversity of behaviour as a man, do something really new.

Be kind:

Kindness is listed by Paul as the fruit of the Spirit (Gal. 5:22) in other words, an outflow of a person living in the Spirit. Disregarding the question of whether all kindness is the fruit of the Spirit, in humans kindness is not merely following rules, but the outflow of a concern for the other person. Even counterfeit kindness is a counterfeit from someone who knows the genuine article. It thus uses some faculty of humanity other than the reasoning ability, which classical AI tries to duplicate and which is assumed to be the one thing necessary to duplicate human cognition.

Be resourceful:

The artificial intelligence assumption is that if something is non-deterministic, it is random, because deterministic and pseudo-random are the only options one can use in programming a computer. This leaves out a third possibility, that by non-computational faculties someone may think, not merely 'outside the box,' in a random direction, but above it. The creative spark comes neither from continuing a systematic approach, nor simply picking something random ('because I can't get my computer to turn on, I'll pour coffee on it and see if that helps'), but something that we don't know how to give a computer.

Be beautiful:

Beauty is a spiritual quality that is not perceived by scientific enquiry and, given our time's interpretation of scientific enquiry, is in principle not recognised. Why not? If we push materialist assumptions to the extreme, it is almost a category error to look at a woman and say, 'She is beautiful.' What is really being said—if one is not making a category error—is, 'I have certain emotions when I look at her.' Even if there is not a connection between physical beauty and intelligence, there seems to be some peasant shrewdness involved. It is a genuine, if misapplied, appeal to look at something that has been overlooked.

Be friendly:

True as opposed to counterfeit friendliness is a manifestation of love, which has its home in the will, especially if the will is not understood as a quasi-muscular power of domination, but part of the spirit which lets us turn towards another in love.

Remarks could easily be multiplied. What is meant to come through all this is that science is not magic, but science works in magic's wake. Among relevant features may be mentioned relating as a magus would (in many ways distilling an I-It relationship further), and seeking power over the world in this life rather living an apprenticeship to the next.

Orthodox Anthropology in Maximus Confessor's *Mystagogia*

I will begin detailed enquiry in the Greek Fathers by considering an author who is foundational to Eastern Orthodoxy, the seventh century Greek Father Maximus Confessor. Out of the existing body of literature, I will focus on one work, his *Mystagogia*,^[44] with some reference to the *Capita Gnosticae*. Maximus Confessor is a synthetic thinker, and the *Mystagogia* is an anthropological work; its

discussion of Church mystagogy is dense in theological anthropology as the training for a medical doctor is dense in human biology.

Orthodox Christians have a different cosmology from the Protestant division of nature, sin, and grace. Nature is never un-graced, and the grace that restores from sin is the same grace that provides continued existence and that created nature in the first place. That is to say, grace flows from God's generosity, and is never alien to nature. The one God inhabits the whole creation: granted, in a more special and concentrated way in a person than in a rock, but the same God is really present in both.

Already, without having seriously engaged theological *anthropology*, we have differences with how AI looks at things. Not only are the answers different, but the questions themselves are posed in a different way. 'Cold matter,' such as is assumed by scientific materialism, doesn't exist, not because matter is denied in Berkeleyan fashion but because it is part of a spiritual cosmology and affirmed to be something more. It is mistaken to think of cold matter, just as it is mistaken to think of tepid fire. Even matter has spiritual attributes and is graced. Everything that exists, from God and the spiritual creation to the material creation, from seraphim to stone, is the sort of thing one connects to in an I-Thou relationship. An I-It relationship is out of place, and from this perspective magic and science look almost the same, different signposts in the process of establishing a progressively purer I-It relationship.

Intellect and Reason

Maximus' anthropology is threefold: the person is divided into soul and body, and the soul itself is divided into a higher part, the intellect, and a lower part, the reason:[45]

[Pseudo-Dionysius] used to teach that the whole person is a synthesis of soul and body joined together,

and furthermore the soul itself can be examined by reason. (The person is an image which reflects teaching about the Holy Church.) Thus he said that the soul had an intellectual and living faculty that were essentially united, and described the moving, intellectual, authoritative power—with the living part described according its will-less nature. And again, the whole mind deals with intelligible things, with the intelligible power being called intellect, whilst the sensible power is called reason.

This passage shows a one-word translation difficulty which is symptomatic of a difference between his theology and the quasi-theological assumptions of the artificial intelligence project. The word in question, which I have rendered as 'authoritative power,' is '*exousiastikws*,' with root word '*exousia*.' The root and its associated forms could be misconstrued today as having a double meaning of 'power' and 'authority,' with 'authority' as the basic sense. In both classical and patristic usage, it seems debatable whether '*exousia*' is tied to any concept of power divorced from authority. In particular this passage's '*exousiastikws*' is most immediately translated as power rather than any kind of authority that is separate from power. Yet Maximus Confessor's whole sense of power here is one that arises from a divine authorisation to know the truth. This sense of power is teleologically oriented and has intrinsic meaning. This is not to say that Maximus could only conceive of power in terms of authority. He repeatedly uses '*dunamis*,' (*proem*.15-6, 26, 28, etc), a word for power without significant connotations of authority. However, he could conceive of power in terms of authority, and that is exactly what he does when describing the intellect's power.

What is the relationship between 'intellect'/'reason' and cognitive faculties? Which, if either, has cognitive faculties a computer can't duplicate? Here we run into another difficulty. It is hard to say that Maximus Confessor traded in

cognitive faculties. For Maximus Confessor the core sense of 'cognitive faculties' is inadequate, as it is inadequate to define an eye as something that provides nerve impulses which the brain uses to generate other nerve impulses. What is missing from this picture? This definition does not provide any sense that the eye interacts with the external world, so that under normal circumstances its nerve impulses are sent because photons strike photoreceptors in an organ resembling a camera. Even this description hides most teleology and evaluative judgment. It does not say that an eye is an organ for perceiving the external world through an image reconstructed in the brain, and may be called 'good' if it sees clearly and 'bad' if it doesn't. This may be used as a point of departure to comment on Maximus Confessor and the conception of cognitive faculties.

Maximus Confessor does not, in an amoral or self-contained fashion, see faculties that operate on mental representations. He sees an intellect that is where one meets God, and where one encounters a Truth that is no more private than the world one sees with the eye is private.

Intellect and reason compete with today's cognitive faculties, but Maximus Confessor understands the intellect in particular as something fundamentally moral, spiritual, and connected to spiritual realities. His conception of morality is itself different from today's private choice of ethical code; morality had more public and more encompassing boundaries, and included such things as Jesus' admonition not to take the place of highest honour so as not to receive public humiliation (Luke 14:7-10): it embraced practical advice for social conduct, because the moral and spiritual were not separated from the practical. It is difficult to Maximus Confessor conceiving of practicality as hampered by morality. In Maximus Confessor's day what we separate into cognitive, moral, spiritual, and practical domains were woven into a seamless tapestry.

Intellect, Principles, and Cosmology

Chapter twenty-three opens by emphasizing that contemplation is more than looking at appearances (23.1-10), and discusses the Principles of things. The concept of a *Principle* is important to his cosmology. There is a foundational difference between the assumed cosmologies of artificial intelligence and Maximus Confessor. Maximus Confessor's cosmology is not the artificial intelligence cosmology with a spiritual dimension added, as a living organism is not a machine modified to use foodstuffs as fuel.

Why do I speak of the 'artificial intelligence cosmology'? Surely one can have a long debate about artificial intelligence without adding cosmology to the discussion. This is true, but it is true because cosmology has become invisible, part of the assumed backdrop of discussion. In America, one cultural assumption is that 'culture' and 'customs' are for faroff and exotic people, not for 'us'—'we' are just being human. It doesn't occur to most Americans to think of eating Turkey on Thanksgiving Day or removing one's hat inside a building as customs, because 'custom' is a concept that only applies to exotic people. I suggest that Maximus Confessor has an interesting cosmology, not because he's exotic, but because he's human.

Artificial intelligence proponents and (most) critics do not differ on cosmology, but because that is because it is an important assumption which is not questioned even by most people who deny the possibility of artificial intelligence. Searle may disagree with Fodor about what is implied by a materialist cosmology, but not whether one should accept materialism. I suggest that some artificial intelligence critics miss the most interesting critiques of artificial intelligence because they share that project's cosmology. If AI is based on a cosmological error, then no

amount of fine-tuning within the system will rectify the error. We need to consider cosmology if we are to have any hope of correcting an error that basic. (Bad metaphysics does not create good physics.) I will describe Maximus Confessor's cosmology in this section, not because he has cosmology and AI doesn't, but because his cosmology seems to suggest a correction to the artificial intelligence cosmology.

At the base of Maximus's cosmology is God. God holds the Principles in his heart, and they share something of his reality. Concrete beings (including us) are created through the Principles, and we share something of their reality and of God. The Principles are a more concrete realisation of God, and we are a more concrete realisation of the Principles. Thought (*nohsis*) means beholding God and the Principles (*logoi*) through the eye of the intellect. Thinking of a tree means connecting with something that is more tree-like than the tree itself.

It may be easier to see what the important Principles in Maximus Confessor's cosmology if we see how they are being dismantled today. Without saying that Church Fathers simply grafted in Platonism, I believe it safe to say that Plato resembled some of Church doctrine, and at any rate Plato's one finger pointing up to God offers a closer approximation to Christianity than Aristotle's fingers pointing down. I would suggest further that looking at Plato can suggest how Christianity differs from Aristotelianism's materialistic tendencies, tendencies that are still unfolding today. Edelman describes the assumptions accompanying Darwin's evolution as the 'death blow' to the essentialism, the doctrine that there are fixed kinds of things, as taught by Plato and other idealists.[46] Edelman seems not to appreciate why so many biologists assent to punctuated equilibrium.[47] However, if we assume that there is solid evidence establishing that all life gradually evolved from a common ancestor, then this remark is both apropos and perceptive.

When we look around, we see organisms that fit neatly into different classes: human, housefly, oak. Beginning philosophy students may find it quaint to hear of Plato's Ideas, and the Ideal horse that is copied in all physical horses, but we tend to assume Platonism at least in that horses are similar 'as if' there were an Ideal horse: we don't believe in the Ideal horse any more, but we still treat its shadow as if it were the Ideal horse's shadowy copy.

Darwin's theory of evolution suggests that all organisms are connected via slow, continuous change to a common ancestor and therefore to each other. If this is true, there are dire implications for Platonism. It is as if we had pictures of wet clay pottery, and posited a sharp divide between discrete classes of plates, cups, and bowls. Then someone showed a movie of a potter deforming one and the same clay from one shape to another, so that the divisions are now shown to be arbitrary. There are no discrete classes of vessels, just one lump of clay being shaped into different things. Here we are pushing a picture to the other end of a spectrum, further away from Platonism. It is a push from tacitly assuming there is a shadow, to expunging the remnant of belief in the horse and its shadow.

But this doesn't mean we're perfect Platonists, or can effortlessly appreciate the Platonic mindset. There are things we have to understand before we can travel in the other direction. If anything, there is more work involved. We act as if the Ideas' shadows are real things, but we don't genuinely believe in the shadows *qua* shadows, let alone the Ideas. We've simply inherited the habit of treating shadows as a convenient fiction. But Maximus Confessor believed the Principles (Ideas) represented something fuller and deeper than concrete things.

This is foundational to why Maximus Confessor would not have understood thought as manipulating mental representations in the inescapable privacy of one's mind. Contemplation is not a matter of closing one's eyes and fantasising, but of opening one's eyes and beholding

something deeper and more real than reality itself. The sensible reason can perceive the external physical world through the senses, but this takes a very different light from Kant's view.

Maximus Confessor offers a genuinely interesting suggestion that we know things not only because of our power-to-know, but because of their power-to-be-known, an approach that I will explore later under the heading 'Knowledge of the Immanent.' The world is not purely transcendent, but immanent. For Kant the mind is a box that is hermetically sealed on top but has a few frustratingly small holes on the bottom: the senses. Maximus Confessor doesn't view the senses very differently, but the top of the box is open.

This means that the intellect is most basically where one meets God. Its powerful ability to know truth is connected to this, and it connects with the Principles of things, as the senses connect with mere things. Is it fair to the senses to compare the intellect's connection with Principles with the senses' experience of physical things? The real question is not that, but whether it is fair to the intellect, and the answer is 'no.' The Principles are deeper, richer, and fuller than the mere visible things, as a horse is richer than its shadow. The knowledge we have through the intellect's connection with the Principles is of a deeper and richer sort than what is merely inferred from the senses.

The Intelligible and the Sensible

Maximus Confessor lists, and connects, several linked pairs, which I have incorporated into a schema below. The first column of this schema relates to the second column along lines just illustrated: the first member of each pair is transcendent and eminent to the second, but also immanent to it.

Head Body

Heaven	Earth (3.1-6)
holy of holies	sanctuary (2.8-9)
intelligible	sensible (7.5-10)
contemplative	active (5.8-9)
intellect	reason (5.9-10)
spiritual wisdom	practical wisdom (5.13-15)
knowledge	virtue (5.58)
unforgettable knowledge	faith (5.58-60)
truth	goodness (5.58-9)
archetype	image (5.79-80)
New Testament	Old Testament (6.4-6)
spiritual meaning of a text	literal meaning of a text (6.14-5)
bishop's seating on throne	bishop's entrance into Church (8.5-6, 20-21)

Head Body

Christ's return in glory	Christ's first coming, glory veiled (8.6-7, 18)
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Maximus Confessor's cosmology sees neither a disparate collection of unconnected things, nor an undistinguished monism that denies differences. Instead, he sees a unity that sees natures (1.16-17) in which God not only limits differences, as a circle limits its radii (1.62-67), but transcends all differences. Things may be distinguished, but they are not divided. This is key to understanding both doctrine and method. He identifies the world with a person, and connects the Church with the image of God. Doctrine and method are alike synthetic, which suggests that passages about his cosmology and ecclesiology illuminate anthropology.

One recurring theme shows in his treatment of heaven and earth, the soul and the body, the intelligible (spiritual) and the sensible (material). The intelligible both transcends the sensible, and is immanent to it, present in it. The intelligible is what can be apprehended by the part of us that meets God; the sensible is what presents itself to the world of senses. (The senses are not our only connection with the world.) This is a different way of thinking about matter and spirit from the Cartesian model, which gives rise to the ghost in the machine problem. Maximus Confessor's understanding of spirit and matter does not make much room for this dilemma. Matter and spirit interpenetrate. This is true not just in us but in the cosmos, which is itself 'human': he considers '...the three people: the cosmos (let us say), the Holy Scriptures, and this is true with us' (7.40-1). The attempt to connect spirit and matter might have struck him like an attempt to forge a link between fire and heat, two things already linked.

Knowledge of the Immanent

The word which I here render 'thought' is '*nohsis*', cognate to 'intellect' ('*nous*') which has been discussed as that which is inseparably the home of thought and of meeting God. We already have a hint of a conceptual cast in which thought will be understood in terms of connection and contemplation.

In contrast to understanding thought as a process within a mind, Maximus describes thought in terms of a relationship: a thought can exist because there is a power to think of in the one thinking, and a power to be thought of in what is thought of.[48] We could no more know an absolutely transcendent creature than we could know an absolutely transcendent Creator. Even imperfect thought exists because we are dealing with something that 'holds power to be apprehended by the intellect' (I.82). We say something is purple because its manifest purpleness meets our ability to perceive purple. What about the claim that purple is a mental experience arising from a certain wavelength of light striking our retinas? One answer that might be given is that those are the mechanisms by which purple is delivered, not the nature of what purple is.[49] The distinction is important.

We may ask, what about capacity for fantasy and errors? The first response I would suggest is cultural. The birth of modernity was a major shift, and its abstraction introduced new things into the Western mind, including much of what supports our concept of fantasy (in literature, etc.). The category of fantasy is a basic category to our mindset but not to the patristic or medieval mind. Therefore, instead of speculating how Maximus Confessor would have replied to these objections, we can point out that they aren't the sort of thing that he would ever think of, or perhaps even understand.

But in fact a more positive reply can be taken. It can be said of good and evil that good is the only real substance.

Evil is not its own substance, but a blemish in good substance. This parallels error. Error is not something fundamentally new, but a blurred or distorted form of truth. Fantasy does not represent another fundamentally independent, if hypothetical, reality; it is a funhouse mirror refracting this world. We do not have a representation that exists in one's mind alone, but a dual relationship that arises both from apprehending intellect and an immanent thing. The possibility of errors and speculation make for a longer explanation but need not make us discard this basic picture.

Intentionality and Teleology

One of the basic differences in cosmology between Maximus Confessor and our own day relates to *intentionality*. As it is described in cognitive science's philosophy of mind, 'intentionality' refers to an 'about-ness' of human mental states, such as beliefs and emotions. The word 'tree' is about an object outside the mind, and even the word 'pegasus' evokes something that one could imagine existing outside of the mind, even if it does not. Intentionality does not exist in computer programs: a computer chess program manipulates symbols in an entirely self-enclosed system, so 'queen' cannot refer to any external person or carry the web of associations we assume. Intentionality presents a philosophical problem for artificial intelligence. Human mental states and symbol manipulation are about something that reach out to the external world, whilst computer symbol manipulation is purely internal. A computer may manipulate symbols that are meaningful to humans using it, but the computer has no more sense of what a webpage means than a physical book has a sense that its pages contain good or bad writing. Intentionality is a special feature of living minds, and does not exist outside of them. Something significant will be achieved if ever a computer program first embodies

intentionality outside of a living mind.

Maximus Confessor would likely have had difficulty understanding this perspective as he would have had difficulty understanding the problem of the ghost in the machine: this perspective makes intentionality a special exception as the ghost in the machine made our minds' interaction with our bodies a special exception, and to him both 'exceptions' are in fact the crowning jewel of something which permeates the cosmos.

The theory of evolution is symptomatic of a difference between the post-Enlightenment West and the patristic era. This theory is on analytic grounds not a true answer to the question, 'Why is there life as we know it?' because it does not address the question, 'Why is there life as we know it?' At best it is a true answer to the question, 'How is there life as we know it?' which people often fail to distinguish from the very different question, 'Why is there life as we know it?' The Enlightenment contributed to an effort to expunge all trace of teleology from causality, all trace of 'Why?' from 'How?' Of Aristotle's four causes, only the efficient cause[50] is familiar; a beginning philosophy student is liable to misconstrue Aristotle's final cause[51] as being an efficient cause whose effect curiously precedes the cause. The heavy teleological scent to final causation is liable to be missed at first by a student in the wake of reducing 'why' to 'how'; in Maximus Confessor, causation is not simply mechanical, but tells what purpose something serves, what it embodies, what meaning and relationships define it, and why it exists.

Strictly speaking, one should speak of 'scientific mechanisms' rather than 'scientific explanations.' Why? 'Scientific proof' is an oxymoron: science does not deal in positive proof any more than mathematics deals in experiment, so talk of 'scientific proof' ordinarily signals a speaker who has more faith in science than understanding of what science really does. 'Scientific explanation' is a less blatant contradiction in terms, but it reflects a

misunderstanding, perhaps one that is more widespread, as it often present among people who would never speak of 'scientific proof.' Talk of 'scientific explanation' is not simply careless speech; there needs to be a widespread category error before there is any reason to write a book like Mary Midgley's *Science as Salvation* (1992). Science is an enterprise which provides mechanisms and has been given the cultural place of providing explanations. This discrepancy has the effect that people searching for explanations turn to scientific mechanisms, and may not be receptive when a genuine explanation is provided, because 'explanation' to them means 'something like what science gives.' This may not be the only factor, but it casts a long shadow. The burden of proof is born by anyone who would present a non-scientific explanation as being as real as a scientific explanation. An even heavier burden of proof falls on the person who would claim that a non-scientific explanation—not just as social construction, but a real claim about the external world—offers something that science does not.

The distinction between mechanism and explanation is also relevant because the ways in which artificial intelligence has failed may reflect mechanisms made to do the work of explanations. In other words, the question of 'What is the nature of a human?' is answered by, 'We are able to discern these mental mechanisms in a human.' If this is true, the failure to duplicate a human mind in computers may be connected to researchers answering the wrong question in the first place. These are different, as the question, 'What literary devices can you find in *The Merchant of Venice*[52]?' is different from 'Why is *The Merchant of Venice* powerful drama?' The devices aren't irrelevant, but neither are they the whole picture.

Of the once great and beautiful land of teleology, a land once brimming in explanations, all has been conquered, all has been levelled, all has been razed and transformed by the power of I-It. All except two stubborn, embattled holdouts.

The first holdout is intentionality: if it is a category error to project things in the human mind onto the outer world, nonetheless we recognise that intentionality exists in the mind—but about-ness of intentionality is far less than the about-ness once believed to fill the cosmos. The second and last holdout is evolution: if there is to be no mythic story of origins that gives shape and meaning to human existence, if there cannot be an answer to 'Why is there life as we know it?' because there is no reason at all for life, because housefly, horse, and human are alike the by-product of mindless forces that did not have us in mind, nonetheless there is still an emaciated spectre, an evolutionary mechanism that does just enough work to keep away a teleological approach to origins questions. The land of teleology has been razed, but there is a similarity between these two remnants, placeholders which are granted special permission to do what even the I-It approach recognises it cannot completely remove of teleology. That is the official picture, at least. Midgley is liable to pester us with counterexamples of a teleology that is far more persistent than the official picture gives credit for: she looks at evolution doing the work of a myth instead of a placeholder that keeps myths away, for instance.[53] Let's ignore her for the moment and stick with the official version. Then looking at both intentionality and evolution can be instructive in seeing what has happened to teleology, and appreciating what teleology was and could be. Now Midgley offers us reasons why it may not be productive to pretend we can excise teleology: the examples of teleology she discusses do not seem to be improved by being driven underground and presented as non-teleological.

Maximus's picture, as well as being teleological, is moral and spiritual. As well as having intentions, we are living manifestations of a teleological, moral and spiritual Intention in God's heart. Maximus Confessor held a cosmology, and therefore an anthropology, that did not see the world in terms of disconnected and meaningless things.

He exhibited a number of traits that the Enlightenment stripped out: in particular, a pervasive teleology in both cosmology and anthropology. He believed in a threefold anthropology of intellect/spirit, reason/soul, and body, all intimately tied together. What cognitive science accounts for through cognitive faculties, manipulating mental representations, were accounted for quite differently by an intellect that sees God and the Principles of beings, and a reason that works with the truths apprehended by intellect. The differences between the respective cosmologies and anthropologies are not the differences between two alternate answers to the same question, but answers to two different questions, differently conceived. They are alike in that they can collide because they are wrestling with the same thing: where they disagree, at least one of them must be wrong. They are different in that they are looking at the same aspect of personhood from two different cultures, and Maximus Confessor seems to have enough distance to provide a genuinely interesting critique.

Conclusion

Maximus Confessor was a synthetic thinker, and I suggest that his writings, which are synthetic both in method and in doctrine, are valuable not only because he was brilliant but because synthetic enquiry can be itself valuable. I have pursued a synthetic enquiry, not out of an attempt to be like Maximus Confessor, but because I think an approach that is sensitive to connections could be productive here. I'm not the only critic who has the resources to interpret AI as floundering in a way that may be symptomatic of a cosmological error. It's not hard to see that many religious cosmologies offer inhospitable climates to machines that think: Foerst's reinterpretation of the image of God[54] seems part of an effort to avoid seeing exactly this point. The interesting task is understanding and conveying an interconnected web. So I have connected

science with magic, for instance, because although the official version is that they're completely unrelated, there is a strong historic link between them, and cultural factors today obscure the difference, and for that matter obscure several other things that interest us.

This dissertation falls under the heading of boundary issues between religion and science, and some readers may perceive me to approach boundary issues in a slightly different fashion. That perception is correct. One of the main ways that boundary issues are framed seems to be for Christian theologians to show the compatibility of their timeless doctrines with that minority of scientific theories which have already been accepted by the scientific community and which have not yet been rejected by that same community. With the question of origins, there has been a lot of work done to show that Christianity is far more compatible with evolutionary theory than a literal reading of Genesis 1 would suggest. It seems to have only been recently that gadflies within the intelligent design movement have suggested both that the scientific case for evolution is weaker than it has been made out to be, and there seems to be good reason to believe that Christianity and evolution are incompatible at a deep enough level that the literal details of Genesis 1 are almost superfluous. Nobody conceives the boundary issues to mean that theologians should demonstrate the compatibility of Christianity with that silent majority of scientific theories which have either been both accepted and discredited (like spontaneous generation) or not yet accepted (like the cognitive-theoretic model of the universe). The minority is different, but not as different as people often assume.

One of the questions which is debated is whether it is best to understand subject-matter from within or without. I am an M.Phil. student in theology with a master's and an adjunct professorship in the sciences. I have worked to understand the sciences from within, and from that base look and understand science from without as well as within.

Someone who only sees science from without may lack appreciation of certain things that come with experience of science, whilst someone who only sees science from within may not be able to question enough of science's self-portrayal. This composite view may not be available to all, nor is it needed, but I believe it has helped me in another basic rôle from showing religion's compatibility with current science: namely, serving as a critical observer and raising important questions that science is itself unlikely to raise, sometimes turning a scientific assumption on its head. Theology may have other things to offer in its discussion with science than simply offering assent: instead of solely being the recipient of claims from science, it should be an agent which adds to the conversation.

Are there reasons why the position I propose is to be preferred? Science's interpretation of the matter is deeply entrenched, enough so that it seems strange to connect science with the occult. One response is that this perspective should at least be listened to, because it is challenging a now entrenched cultural force, and it may be a cue to how we could avoid some of our own blind spots. Even if it is wrong, it could be wrong in an interesting way. A more positive response would be to say that this is by my own admission far from a complete picture, but it makes sense of part of the historical record that is meaningless if one says that modern science just happened to be born whilst a magical movement waxed strong, and some of science's founders just happened to be magicians. A more robust picture would see the early modern era as an interlocking whole that encompassed a continuing Reformation, Descartes, magic, nascent science, and the wake of the Renaissance polymath. They all interconnect, even if none is fully determined. Lack of time and space preclude me from more than mentioning what that broader picture might be. There is also another reason to question the validity of science's basic picture:

Artificial intelligence doesn't work, at least not for a working copy of human intelligence.

Billions of dollars have been expended in the pursuit of artificial intelligence, so it is difficult to say the artificial intelligence project has failed through lack of funding. The project has attracted many of the world's most brilliant minds, so it is difficult to say that the project has failed through lack of talent. Technology has improved a thousandfold or a millionfold since a giant like Turing thought computer technology was powerful enough for artificial intelligence, so it is difficult to say that today's computers are too underpowered for artificial intelligence. Computer science has matured considerably, so it's hard to say that artificial intelligence hasn't had a chance to mature. In 1950, one could have posited a number of reasons for the lack of success then, but subsequent experience has made many of these possibilities difficult to maintain. This leaves open the possibility that artificial intelligence has failed because the whole enterprise is based on a false assumption, perhaps an error so deep as to be cosmological.

The power of science-based technology is a side effect of learning something significant about the natural world, and both scientific knowledge and technology are impressive cultural achievements. Yet science is not a complete picture—and I do not mean simply that we can have our own private fantasies—and science does not capture the spiritual qualities of matter, let alone a human being. The question of whether science understands mechanical properties of physical things has been put to the test, and the outcome is a resounding yes. The question of whether science understands enough about humans to duplicate human thought is also being put to the test, and when the rubber meets the road, the answer to that question looks a lot like, 'No.' It's not definitive (it couldn't be), but the picture so far is that science is trying something that can't work. It can't work because of spiritual principles, as a perpetual motion

machine can't work because of physical principles. It's not a matter of insufficient resources available so far, or still needing to find the right approach. It doesn't seem to be the sort of thing which could work.

We miss something about the artificial intelligence project if we frame it as something that began after computer scientists saw that computers can manipulate symbols. People have been trying to make intelligent computers for half a century, but artificial intelligence is a phenomenon that has been centuries in the making. The fact that people saw the brain as a telephone switchboard, when that was the new technology, is more a symptom than a beginning. There's more than artificial intelligence's surface resemblance to alchemists' artificial person ('homunculus'). A repeated feature of the occult enterprise is that you do not have people giving to society in the ways that people have always given to society; you have exceptional figures trying to delve into unexplored recesses and forge some new creation, some new power—some new technology or method—to achieve something mythic that has simply not been achieved before. The magus is endowed with a magic sword to powerfully slice through his day's Gordian knots, and with a messianic fantasy. This is true of Leibniz's *Ars Combinatoria* and it is true of more than a little of artificial intelligence. To the reader who suggests, 'But magic doesn't really work!' I would point out that artificial intelligence also doesn't really work—although its researchers find it to work, like Renaissance magi and modern neo-pagans. The vast gap between magic and science that exists in our imagination is a cultural prejudice rather than a historical conclusion. Some puzzles which emerge from a non-historical picture of science—in particular, why a discipline with modest claims about falsifying hypotheses is held in such awe—seem to make a lot more sense if science is investigated as a historical phenomenon partly stemming from magic.

If there is one unexpected theme running through this

enquiry, it is what has emerged about relationships. The question of whether one relates to society (or the natural world) as to one's mother or as to raw material, in I-Thou or I-It fashion, first crept in as a minor clarification. The more I have thought about it, the more significant it seems. The Renaissance magus distinguished himself from his medieval predecessors by converting I-Thou relationships into I-It. How is modern science different? To start with, it is much more consistent in pursuing I-It relationships. The fact that science gives mechanisms instead of explanations is connected; an explanation is an I-Thou thing, whilst a bare mechanism is I-It: if you are going to relate to the world in I-It fashion, there is every reason to replace explanations with mechanisms. An I-Thou relationship understands in a holistic, teleological fashion: if you are going to push an I-It relationship far enough, the obvious approach is to try to expunge teleology as the Enlightenment tried. A great many things about magus and scientist alike hinge on the rejection of Orthodoxy's I-Thou relationship.

In Arthurian legend, the figure of Merlin is a figure who holds magical powers, not by spells and incantations, but by something deeper and fundamental. Merlin does not need spells and incantations because he relates to the natural world in a way that almost goes beyond I-Thou; he relates to nature as if it were human. I suggest that science provides a figure of an anti-Merlin who holds anti-magical powers, not by spells and incantations, but by something deeper and fundamental. Science does not need spells and incantations because it relates to the natural world and humans in a way that almost goes beyond I-It; it relates to even the human as if it were inanimate. In both cases, the power hinges on a relationship, and the power is epiphenomenal to that relationship.

If this is a problem, what all is to be done? Let me say what is not to be done. What is not to be done is to engineer a programme to enlist people in an I-Thou ideology. Why not? 'I-Thou ideology' is a contradiction in terms. The

standard response of starting a political programme treats society as raw material to be transformed according to one's vision—and I am not just disputing the specific content of some visions, but saying that's the wrong way to start. Many of the obvious ways of 'making a difference' that present themselves to the modern mind work through an I-It relationship, calculating how to obtain a response from people, and are therefore tainted from the start. Does that mean that nothing is to be done? No; there are many things, from a walk of faith as transforming communion with God, to learning to relate to God, people, and the entire cosmos in I-Thou fashion, to using forms of persuasion that appeal to a whole person acting in freedom. But that is another thesis to explore.

Epilogue, 2010

I look back at this piece six years later, and see both real strengths and things I wince at. This was one of my first major works after being chrismated Orthodox, and while I am enthusiastic for Orthodoxy there are misunderstandings. My focus on cosmology is just one step away from Western, and in particular scientific, roots, and such pressure to get cosmology right is not found in any good Orthodox theologian I know. That was one of several areas where I had a pretty Western way of trying to be Orthodox, and I do not blame people who raise eyebrows at my heavy use of existentialist distinction between I-Thou and I-It relationship. And the amount of time and energy spent discussing magic almost deterred me from posting it from my website; for that reason alone, I spent time debating whether the piece was fit for human consumption. And it is possibly theology in the academic sense, but not so much the Orthodox sense: lots of ideas, cleverly put together, with little invitation to worship.

But for all this, I am still posting it. The basic points it raises, and much of the terrain, are interesting. There may

be fewer true believers among scientists who still chase an artificial intelligence pot o' gold, but it remain an element of the popular imagination and belief even as people's interests turn more and more to finding a magic sword that will slice through society's Gordian knots—which is to say that there may be something relevant in this thesis besides the artificial intelligence critique.

I am posting it because I believe it is interesting and adds something to the convesation. I am also posting it in the hope that it might serve as a sort of gateway drug to some of my more recent works, and provide a contrast: this is how I approached theology just after being received into Holy Orthodoxy, and other works show what I would present as theology having had more time to steep in Orthodoxy, such as *The Arena*.

I pray that God will bless you.

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Footnotes

[1] These neural nets are modelled after biological neural

nets but are organised differently and seem to take the concept of a neuron on something of a tangent from its organisation and function in a natural brain, be it insect or human.

[2] *Cog*, <http://www.ai.mit.edu/projects/humanoid-robotics-group/cog/images/cog-rod-slinky.gif>, as seen on 11 June 2004 (enlarged).

[3] 2002, 50-1.

[4] Searle 1998, Edelman 1992, etc., including some of Dreyfus 1992. Edelman lists Jerome Brunner, Alan Gauld, Claes von Hofsten, George Lakoff, Ronald Langaker, Ruth Garrett Millikan, Hilary Putnam, John Searle, and Benny Shannon as convergent members of a realist camp (1992, 220).

[5] Lee 1987, 6.

[6] 'Intentionality' is a philosophy of mind term for the 'about-ness' of mental states.

[7] By 'teleology' I understand in a somewhat inclusive sense that branch of theology and philosophy that deals with goals, ends, and ultimate meanings.

[8] 'Cognitive faculty' is a philosophy of mind conception of a feature of the human mind that operates on mental representations to perform a specific function.

[9] The spiritual 'intellect' is a patristic concept that embraces thought, conceived on different terms from 'cognitive science,' and is inseparably the place where a person meets God. Augustine locates the image of God in the intellect (*In Euangelium Ioannis Tractatus*, III.4), and

compares the intellect to Christ as illuminating both itself and everything else (*In Euangelium Ioannis Tractatus*, XLVII, 3).

[10] Watts 2002, 57-8. See the World Transhumanist Association website at <http://www.transhumanist.org> for further information on transhumanism.

[11] C.S. Lewis critiques this project in *The Abolition of Man* (1943) and *That Hideous Strength* (1965). He does not address the question of whether this is a possible goal, but argues that it is not a desirable goal: the glorious future it heralds is in fact a horror compared to the present it so disparages.

[12] *Encyclopedia Mythica*, 'Rabbi Loeb,' http://www.pantheon.org/articles/r/rabbi_loeb.html, as seen on 26 Mar 04.

[13] Foerst 1998, 109 also brings up this archetypal tendency in her conclusion.

[14] United States Postal Service 2003 annual report, <http://www.usps.com/history/anrpto3/html/realkind.htm>, as seen on 6 May 2004.

[15] *Cog*, as seen on <http://www.ai.mit.edu/projects/humanoid-robotics-group/cog/images/scaz-cog.gif>, on 6 May 2004 (enlarged).

[16] 2002, 57.

[17] *Cog*, 'Theory of Mind for a Humanoid Robots,' <http://www.ai.mit.edu/projects/humanoid-robotics/group/cog/Abstracts2000/scaz.pdf>, as seen on 6 May 2004.

[18] Adler 1986, 319-321.

[19] 1992, 161-4.

[20] Utopias are often a satire more than a prescription literally conceived, but they are also far more prescriptive than one would gather from a simple statement that they are satire.

[21] Turing 1950.

[22] VanLehn 1989, in Posner 1989, 532.

[23] *Ibid.* in Posner 1989, 534.

[24] 1998, 101.

[25] 1992, 159.

[26] Foerst 1998, 103.

[27] Turing 1950.

[28] Hebb 1949, as quoted in the Linux 'fortune' program.

[29] Nominalism said that general categories are something in the mind drawn from real things, and not something things themselves arise from. This has profoundly shaped the course of Western culture.

[30] Lewis 1943, 46.

[31] Yates 1966, 380-382.

[32] Without submitting to the Church in the usual way, the magus is equal to its highest members (Webster 1982, 57).

[33] George Mason University's *Modern & Classical Languages*, 'Pico della Mirandola: Oratio de hominis dignitate,' <http://www.gmu.edu/departments/fld/CLASSICS/mirandola.oratio.html>, as seen on 18 May 2004. See Poim 27-9, CH7 1-2 in Bentley 1987 for texts reflecting an understanding of the world as evil and associated contempt for the *hoi polloi*.

[34] *Thomas More: Utopia, Digitale Rekonstruktion*, <http://www.ub.uni-bielefeld.de/cgi-bin/button.cgi?pfad=/diglib/more/utopia/jpeg/&seite=00000017.jpg&jump=1>, <http://www.ub.uni-bielefeld.de/cgi-bin/button.cgi?pfad=/diglib/more/utopia/jpeg/&seite=00000018.jpg&jump=1>, etc. (pp. 35-6), as seen on 2 June 2004.

[35] *Thomas More: Utopia, Digitale Rekonstruktion*, <http://www.ub.uni-bielefeld.de/cgi-bin/button.cgi?pfad=/diglib/more/utopia/jpeg/&seite=00000039.jpg&jump=1>, <http://www.ub.uni-bielefeld.de/cgi-bin/button.cgi?pfad=/diglib/more/utopia/jpeg/&seite=00000040.jpg&jump=1>, etc., (pp. 79-86), as seen on 2 June 2004. This runs through most of the book.

[36] Lewis 1943, 46.

[37] *Ibid.*, 33-35.

[38] *Ibid.*, 23-24.

[39] *Ibid.*, 295-299.

[40] *Ibid.*

[41] See Midgley, 1992, 80.

[42] 1990, 195, 197-224, 337-41.

[43] 1950.

[44] References will be to the online Greek version at *Thesaurus Linguae Graecae*, http://stephanus.tlg.uci.edu/inst/wsearch?wtitle=2892+049&uid=&GreekFont=Unicode&mode=c_search, according to chapter and line. Unless otherwise specified, references in this section will be to the *Mystagogia*.

[45] 5.1-10. 'Intellect' in particular is used as a scholarly rendering of the Greek '*nous*,' and is not equivalent to the layman's use of 'intellect,' particularly not as cognate to 'intelligence.' The 'reason' ('*logos*') is closer to today's use of the term, but not as close as you might think. This basic conceptualisation is common to other patristic and medieval authors, such as Augustine.

[46] 1992, 239.

[47] 'Punctuated equilibrium' is a variant on Darwin's theory of (gradual) evolution. It tries to retain an essentially Darwinian mechanism whilst acknowledging a fossil record and other evidence which indicate long periods of stability interrupted by the abrupt appearance and disappearance of life forms. It is called 'punk eek' by the irreverent.

[48] I.82. Material from the *Capita Gnosticae*, not available in *Thesaurus Linguae Graecae*, will be referenced by century and chapter number, i.e. I.82 abbreviates Century I, Chapter 82.

[49] See Lewis 2001, 522.

[50] What we usually mean by 'cause' today: something which mechanically brings about its effect, as time and

favourable conditions cause an acorn to grow into an oak.

[51] The 'final cause' is the goal something is progressing towards: thus a mature oak is the final cause of the acorn that would one day grow into it.

[52] As seen on the Project Gutenberg archive at <http://www.gutenberg.net/etext97/1ws1810.txt> on 15 June 2004.

[53] 1992, 147-165.

[54] 1998, 104-7.