Dr. Robert Bennett Comments on Neil deGrasse Tyson's

View of Einstein and Darwin

It seems Neil Tyson – and Brian Greene – have stepped into the shoes vacated by Carl Sagan. The logic of some of Neil Tyson's statements seem more like they originated from Mike Tyson.

Like the diatribe of any mainstream pop-science promoter, no matter what the topic – Galileo's scientific triumph over the Church is sure to be present….. and sometimes even G. Bruno's sad demise at the hands of the Church.

Einstein and Darwin: A tale of two theories

Q&A with 'Origins' astronomer Neil deGrasse Tyson

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http://www.msnbc.msn.com/id/7490426/ns/technology_and_science-science/#.T11CYnl9uuI

One scientist came up with a new way of explaining how biology works. A generation later, the other one came up with a new way of explaining how physics works.

Today, after a century of scrutiny, both explanations still pretty much hold up. But in popular culture, physicist Albert Einstein is idolized, while biologist Charles Darwin's legacy is clouded with controversy.

Why do Darwin's theories on the origin of species, put forth in 1859, hold a status so different from that of Einstein's theories on relativity, published between 1905 and 1916? Astrophysicist Neil deGrasse Tyson, director of New York's Hayden Planetarium and co-author of the book "Origins: Fourteen Billion Years of Cosmic Evolution," reflected on that question during a recent interview at the University of Washington.

Here's an edited question-and-answer transcript of the interview:

[MSNBC] Einstein and Darwin seem to hold two different places in our society. One is virtually a pop culture icon, while some people almost want to take down the other guy's statues. Why is that we have two different approaches to these people, even though they developed theories that are in very similar states of evidence?

[Neil deGrasse Tyson] While they were both scientists, Einstein was the first very public scientist who was visibly active in social causes as well as political causes. I don't know

that the same was true with Darwin. I know he was well known in his day. I know his book, "On the Origin of Species," was a best seller. But I don't know that he was active in politics, influencing governments. I don't know that he was approached by a sovereign nation and was asked to be its president, as Einstein was with the new state of Israel, for example.

Putting Einstein to the test As a citizen, as a public scientist, I can tell you that Einstein essentially overturned a so strongly established paradigm of science, whereas Darwin didn't really overturn a science paradigm. There was a paradigm there, but it was a gradual process: "Does evolution work as Lamarck said, with the inheritance of acquired traits? No, it doesn't" … You can see the evolution of an idea there, settling on what works, whereas Einstein took Newtonian physics and said this is incomplete, which is something that was unimaginable for the hundreds of years that we were doing Newtonian physics.

My read of history is that people wanted to get opinions on *everything* from someone who was so widely recognized as being so smart.

[MSNBC] It's kind of like the situation with rock stars today: You want to know what Bono thinks about global hunger, even though he made his money as a musician.

[Neil deGrasse Tyson] Exactly. So Einstein is not necessarily an expert in these other fields. Not even necessarily informed in these other fields. But people know that he's a deep thinker. So what are his deep thoughts about Jews and Arabs, and the civil rights movement, and the bomb, and Nazi Germany? He became this sounding board for people to try to get some point of view from someone they implicitly trust, from a smart person.

[MSNBC] David Friedman / MSNBC.com

Neil deGrasse Tyson, director of the Hayden Planetarium and co-author of the book "Origins," says it's simply a matter of time before the fundamentals of evolutionary biology are as widely accepted as the fundamentals of relativistic physics.

[Neil deGrasse Tyson] So there's that factor that distinguishes Einstein from Darwin. But I think there's a stronger factor: There is no science in this world like physics. Nothing comes close to the precision with which physics enables you to understand the world around you.

[Bennett] It's technology that's precise- the instrumentation. The high-level establishment science of 20th century physics is pure lunacy….. questionable metaphysics, faulty logic and scientific method ignored.

[Neil deGrasse Tyson] It's the laws of physics that allow us to say exactly what time the sun is going to rise. What time the eclipse is going to begin. What time the eclipse is going to end. What time the meteor is going to hit.

[Bennett] But the slight differences between mainstream science and empirical results lead us to a totally different world-view that turns current beliefs upside-down. For example, Newton's bucket, Sagnac…

[Neil deGrasse Tyson] Do you remember when David Levy and Carolyn and Gene Shoemaker discovered a comet, and they had a few measurements of it, and they said, 'The next time around, it's going to slam into Jupiter.' And what's remarkable is that no one questions that. Because they know it is the powers of understanding, derived from the fundamentals of physics, that give you that capacity to basically predict the future with high precision.

Biology doesn't do that. Chemistry doesn't do that. You can predict reactions, yes. You can get an understanding of how things work, yes. Darwin's theory of evolution is a framework by which we understand the diversity of life on Earth.

[Bennett] Modern biology does no more than Aristotle – catalog and classify biota according to arbitrary standards of form, function or genetics. There's no macro-evolution observed and no universal definition of species to justify classification. Forcing unnatural environments on plants and fruit flies famously failed to produce new 'species'.

[Neil deGrasse Tyson] But there is no equation sitting there in Darwin's "Origin of Species" that you apply and say, "What is this species going to look like in 100 years or 1,000 years?" Biology isn't there yet with that kind of predictive precision.

[Bennett] And never will be. Right now Darwinists tell us that species will change by natural selection. But they can't point to anything macro-evolving now, and can only speculate about untestable changes in the past.

[Neil deGrasse Tyson] So, when we speak of the theory of relativity, and the theory of evolution, they are each extremely important ways of understanding the world. But the tool kit that comes with the relativity theory, that comes with any physics theory, has a level of precision that puts it just in another category. It's not simply an organizing principle.

[Bennett] Mainstream physics is a patchwork of contradictions that is bound to fall in time. Precision is a false criterion of knowledge, when a large set of adjustable parameters is permitted to match a given physical event, like the Big Bang.

[Neil deGrasse Tyson] When you predict that the sun is going to rise at 7:22 tomorrow morning, and someone wants to debate you … you're going to be wasting your time

having that conversation. Just walk away from it, because you know in advance what's going to happen.

For that reason, Darwin's theory of evolution, because it's a theory of biology, because biology is a different kind of science from physics, it looks to the outsider as if you can just jump in and claim that things are just not what the biologist sees them to be. Now of course that's false, but I'm just submitting to you that when you have your tool kit of predictive powers, that's kind of like an armor at the perimeter. You're not going to get past that to say that somehow that equation is wrong. The equation is demonstrably correct, so go home.

[Bennett] An equation can yield correct results, but be based on false metaphysics or logic.

Adding 1 = 2 and 2 = 1 gives 3 = 3.

[Neil deGrasse Tyson] The trouble with evolution
Since evolution is an organizing principle of biology that allows you to understand phenomena, there are people who resist it.

Now the way I see it, that level of resistance is not fundamentally different from the resistance that prevailed when Copernicus and Galileo demonstrated that Earth goes around the sun and not vice versa.

[Bennett] Ah, the mandated analogy makes a delayed appearance….

[Neil deGrasse Tyson] We didn't have Newtonian gravity back then. You couldn't predict, with high precision, the clockwork solar system.

[Bennett] Whoa… you were limited by medieval technology. The ephemeris were within equipment error….

[Neil deGrasse Tyson] That would have been a new word back then: "solar system," implying that the sun is at the center of things.

Back then, you had religious types arguing this, saying that it was against scripture, against God, against God's way, God's will. Back then, of course, the church was very powerful. They were basically the state in Italy. So there was the power to enforce a point of view, which made it bad for your health to espouse views that were different from people's interpretation of scripture.

[Bennett] Neil, are you sure you're not talking about modern intimidation of dissident freethinkers by establishment high priests? Seems that we can substitute MS for Church and thereby define modern practice of science.

[Neil deGrasse Tyson] Today, I'm happy to report that they don't burn people at the stake if they claim that Earth goes around the sun, or that there are other stars that might have other planets that themselves could have life.

[Bennett] No, now the science regime squelches freedom of expression in the scientific journals via peer review, uses economic and social sanctions to suppress dissent and enforce compliance, and controls public opinion through the pop-science media.

[Neil deGrasse Tyson] It's statements like that that got Giordano Bruno burned at the stake in 1600, just 10 years before Galileo really came on the scene with his "Starry Messenger," reporting that Jupiter had moons, which made Jupiter the center of that motion, and not Earth.

[Bennett] It was not for heliocentrism that Bruno got burned, but for saying the universe was infinite, attributing to a created thing an attribute that only God possesses. Bruno was more than a heretic – a heresiarch, who created scandal as he publicly preached blasphemy, refused to recant, and sought converts.

And Earth is the center of motion for Jupiter….

Neil really should get up to speed on the neo-Tychonian model…. or hierarchical worldviews in general. A planetarium director should be aware of alternate cosmic architectures – especially one four centuries old.

[Neil deGrasse Tyson] So things were changing rapidly back then, from burning Bruno at the stake, to putting Galileo under house arrest, to modern days, with the Catholic Church issuing statements saying evolution's OK.

[Bennett] Why is it never said that the Catholic <u>Magisterium</u> said this?

[Neil deGrasse Tyson] So history has shown that some theistically based belief systems have been able to adapt to the prevailing discoveries of science.

[Bennett] Some theistic evolutionary believers – yes – but not without inconsistencies, like the errancy of Revelation.

Apoc 3:16 But because thou art lukewarm and neither cold nor hot, I will begin to vomit thee out of my mouth.

Should we coin a neologism – theistic heliocentrism … or theistic relativity?

[Neil deGrasse Tyson] Those that don't will be left behind. And if you're left behind, you become disenfranchised from the forces that control emerging economies.

[Bennett] Oooh…. A threat. I did mention MS intimidation a while back.

> **[Neil deGrasse Tyson]** We're in the 21st century. The emerging economies are going to be scientifically and technologically driven. We're not agrarian anymore.

[Bennett] Is this the pride that cometh before the fall? Once the technical infrastructure collapses, we'll be back to the Stone Age. It will be interesting to see how the modern intellectuals cope with survival in primitive conditions.

> **[Neil deGrasse Tyson]** What were the consequences in the mid-1800s of saying you didn't believe Darwin? There weren't any, really. But today, with biotech companies, there is no understanding of biology without the theory of evolution.

[Bennett] How so? Biology can be understood without any macro-evolution. Special creation plus natural selection …within kinds …explains all observations.

> **[Neil deGrasse Tyson]** And so if you say, 'I don't believe the theory of evolution, I think we were all specially created,' you must understand the consequences of it to your own employability.

[Bennett] Ah… another subliminal threat. Economic reprisals await a faith-based scientist.

> **[Neil deGrasse Tyson]** Now if you don't want to become a scientist, then maybe it doesn't matter. Fine. There are plenty of professions that do not involve scientists. But as I said, the emergent economies are going to be scientifically and technologically driven, with biotech front and center.

[Bennett] Objection: this economy is politically and ideologically driven…. How do science and technology help us with a madman in charge of the economy, Neil?

> **[Neil deGrasse Tyson]** If you're coming in saying that there was Adam and Eve, you're not going to get past the front door.

[Bennett] Is this what you think separation of Church and state means?

If the true faith and science really conflict, there's only one conclusion….. the science is in error!

> **[Neil deGrasse Tyson]** Because they can't use your knowledge base to invent the next vaccine, the next medicine, the next cure for cancer.

[Bennett]What? Are faith, and inventive and creative ability, mutually exclusive? When faith and science clash on moral grounds, what standing does natural science have?

[Neil deGrasse Tyson] That knowledge base does not track into discoveries we know are awaiting us in the halls of biotech firms.

[Bennett] No doubt … discoveries that invite our descent into the abyss of reproductive immorality.

[MSNBC] You're saying that your perspective on those theories affects the pace of innovation?

[Neil deGrasse Tyson] Yes. And I would add this, just to nip this argument over "theories" in the bud: Until Einstein, all tested, confirmed physical theories were labeled laws. There's Newton's three *laws* of motion … the *laws* of gravity … the *laws* of thermodynamics. When Einstein came along, he showed that Newton was incomplete — not wrong, but incomplete, describing just a subset of reality. Einstein showed that a deeper understanding was required to account for this reality.

[Bennett] How can the contradictions of relativity contribute to an understanding of reality?

[Neil deGrasse Tyson] At that point, physicists – I think not even consciously, just sort of subconsciously – stopped calling things "laws."

There are no "laws" of physics in the 20th century.

[Bennett] Finally, we agree….. Relativity, quantum mechanics, Big Bang cosmology… all science fiction.

[Neil deGrasse Tyson] It's quantum *theory* … the *theory* of relativity … you just look in the books, they all use the term "theory." I think it's a recognition that someone who comes after you may achieve an even deeper understanding of how things work.

[Bennett] May? Science has always evolved to new theories, but now the new is worse than the old… much worse.

[Neil deGrasse Tyson] But "deeper" doesn't mean that what you did is no longer valid. It just means that there's a larger sphere of understanding that awaits you, in which what you just learned is embedded.

It's like the old classical Venn diagram: *Here's* the Newton universe. The Einstein universe is now *that*, enclosing Newton.

[Bennett] …but the Einstein universe includes inconsistent/illogical premises; Newton's doesn't.

[Neil deGrasse Tyson] Einstein's equations look like Newton's equations, when you put in low gravity and low speeds. They all reduce, and they're identical to Newton's equations. Because Newton's equations work: They don't suddenly fail to work in the regime in which they were demonstrated to work. They don't become undone. They're still there.

So now we know that general relativity is incomplete, because it doesn't marry with quantum mechanics.

[Bennett] No, GR is inconsistent, and an inconsistent system is worse than being incomplete… it's worse than being wrong.

[Neil deGrasse Tyson] They don't talk to each other. We know that already. So now we are asserting that there's yet an even bigger circle out there, that would include quantum mechanics with general relativity. And this is what the string theorists are doing. That's what drives them. They're not driven by some whim.

[Bennett] Neil is now a psychologist?

[MSNBC] Right. It's not a mere desire to come up with something esoteric.

[Neil deGrasse Tyson] They're not doing this just for the hell of it. No. There's a gap there. And that deeper understanding, like I said, is an understanding that encloses the previous understandings because they've already been demonstrated to work.

[Bennett] String theory is driven by mathephilia and speculation; even the inability to test against reality - contrary to the scientific method – does not stop the mathematicians who have hijacked modern physics.

[Neil deGrasse Tyson] But the change in vocabulary is not received the same way by the public. They hear the word "theory" and they say, "Well, it's *only* a theory. Tomorrow it could be different."

Well, if it's different tomorrow, it's because we've found something that's even more powerful than this. It's not because we looked and found something completely different over *here*.

[Bennett] Neil, we found something completely different over here…. Geocentrism and a viable aether theory…. Come and see…. Jn 1:39

[Neil deGrasse Tyson] Now, the word "theory" is also used to describe ideas that are very tentative. That's true. So now we're stuck with a problem: We've got evolutionary theory, quantum theory, all very well tested and very well established

[Bennett] Evol well-tested??….. not with the scientific method.

Quantum theory has some issues with logic… like causality and user-generated instantiation.

> **[Neil deGrasse Tyson]** – and now we've got somebody's theory on the frontier of the science, that will probably be shown to be wrong, because most fresh theories are wrong. But they keep you investigating. You're hacking through the brush and bramble, trying to make a clearing where you understand what's going on. There's an unfortunate mismatch in the way scientists use the word "theory" and the public's interpretation of the word, as applied to these century-old understandings of the world.
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> So that's unfortunate. But what the public needs to understand is, there is nothing more powerful than successful theories. They organize ideas in ways that grant you a power of understanding that is without equal in any system of human thought that has ever come before.

[Bennett] Careful… this is almost religiously dogmatic.. a return to Gnostic pride.

> **[MSNBC] Do you expect that there would be a test down the line that would enable the confidence in Darwin's theory to be solidified to the point that the Copernican view of the solar system holds today?**

[Bennett] What a contradiction …both 'theories' are as empty as Obama's promises.

> **[MSNBC] Are there tests that can be done to show that kind of precision that we have for planetary motion nowadays?**
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> **[Neil deGrasse Tyson]** There are two issues there: Let me unpack them to make them separate. The issue of precision simply distinguishes Einstein from Darwin. I think that alone is not what accounts for the resistance that we see in the various communities.
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> Most of what Einstein said and did has no direct impact on what anybody reads in the Bible.

[Bennett] The loss of any Absolute reference has no impact on faith?

> **[Neil deGrasse Tyson]** Special relativity, his work in quantum mechanics, nobody even knows or cares. Where Einstein really affects the Bible is the fact that general relativity is the organizing principle for the Big Bang. That's where it affects origin science, and then you have the religious community reacting to that.
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> Going back to the analogue with Copernican systems, I think it's a matter of time. The world fully accepted the heliocentric model long before Newton came out with his laws

of gravity and laws of motion. Copernicus' book was 1543. Newton was 1687, OK? That's 130 years.

Now it's been 130 years since Darwin. So you have to ask, what is your measure of this resistance? Is it most of the world? No, it's not most of the world that's resisting this. It's a small subset of the world. One might even say the holdouts. But they need to understand that their counterparts in the past were no less passionate about their objection to a scientific discovery as people objecting to the sun going around the earth or vice versa.

[Bennett] God bless the 'holdouts'…

And yet another allusion to Copernican success – in case we missed the first time.

[Neil deGrasse Tyson] They were no less passionate in the invention of the microscope, the discovery of germs: that when you got sick, it wasn't because God made you sick, it was because you exposed yourself to these microorganisms. And I can hand you these microorganisms and you'll come down with all these symptoms. That discovery removed God from many equations that people had going in their head for why you got sick.

[Bennett] If that's what people thought, they were sick …in the head.

[Neil deGrasse Tyson] There's a famous statement about venereal disease… when penicillin was demonstrated to cure venereal disease, there was some bishop who at the time said that this medicine was the work of the devil, because it allows you to fornicate and not face God's punishment. And you still see a little bit of that with the AIDS virus. But by and large, people are not thinking that germs are handed off by supernatural powers.

[Bennett] Where does Neil get his religious models…. aboriginal pagans?

[Neil deGrasse Tyson] So I think it's a matter of time. There's an old saying about the evolution of every great truth: First, people say they don't believe it; then, they say it contradicts the Bible; and third, they say they've known it all along.

[Bennett] Nice try… the adage of paradigm shifts actually goes like this:

1) the new paradigm theory is ignored,

2) then it's ridiculed,

3) then it's accepted as if it's always been obvious.

[Neil deGrasse Tyson] So just give them a little more time. They might warm up to it.

[MSNBC] On the other hand, Einstein's work was inspired by the incompleteness of past theories – how some experiments showed that the way scientists thought the world worked in the late 1800s was just plain wrong.

[Neil deGrasse Tyson] There were some gaps in physics, and if you did not have foresight, you might think, "Oh, they will just resolve themselves. Add a little decimal place, and they'll fix themselves." But they were not fixable by themselves. It took someone like Einstein, and the other forward-thinkers around him, to figure it out.

[MSNBC] Would you say that the analog for the present age are the discoveries about the accelerating universe?

[Neil deGrasse Tyson] Yeah, we've got gaps today. We don't know what dark matter is. We don't know what dark energy is. We don't know what was around before the Big Bang. We don't know what's going on at the center of a black hole. We don't know how gravity can merge with quantum mechanics. We don't know how galaxies formed. There are major areas of the unknown that remain today. But that's the nature of science.

[Bennett] Lots of things we don't know, Neil.

Worst of all: we don't know what we think we know.

[MSNBC] And are those the sorts of things that could spark the sort of inspiration that Einstein had?

[Neil deGrasse Tyson] I would hope. What you really want out of this is to have someone come up with an explanation of, let's say, dark matter — and just as part of the accoutrements of the theory, it explains 10 other things.

[BENNETT] Aether fits the bill…but in 1905 big Al E. said aether is irrelevant.

The master has spoken.

Oh, wait…. In 1916 he said if you call aether 'spacetime', then it's OK.

[Neil deGrasse Tyson] That's what happened with relativity.

Einstein said, 'Well, here's the speed of light,' and so on, and all of a sudden general relativity explained Mercury's precession around the sun, it explained the bending of starlight, it explained all this stuff.

[Bennett] With its variable speed of light General Relativity contradicts Special Relativity, SR itself in turn being inconsistent in its premises. Karl Popper believed that inconsistent systems must be quarantined until repaired.

Until made logically consistent – relativity can explain NOTHING.

> **[Neil deGrasse Tyson]** He didn't start the day with that objective, but that's what gives you that much more confidence in the theory. If you start the day wanting to explain something, then you'd wonder whether somebody made something up just to account for it. ...

[Bennett] Bingo… that's what Albert did.

> **[Neil deGrasse Tyson]** Einstein was explaining stuff for free.

[Bennett] ..and that's what contradictions are worth .

> **[Neil deGrasse Tyson]** And that power of understanding led to extreme confidence that he was on the right track, and was deeply plugged into how nature worked.

[Bennett] Well, Al's been derailed and unplugged…. But the mainstream dreamers haven't got the message yet.