Wk1: God, Einstein, Models, String, Cause, NST, Beginning, Time, Quantum, Nothing

# If God created the universe, then who created God?

## Answering the Critics

by [Jonathan Sarfati](https://creation.com/dr-jonathan-d-sarfati)

A number of skeptics ask this question. But God by definition is the uncreated creator of the universe, so the question ‘Who created God?’ is illogical, just like ‘To whom is the bachelor married?’

So, a more sophisticated questioner might ask: ‘If the universe needs a cause, then why doesn’t God need a cause? And if God doesn’t need a cause, why should the universe need a cause?’ In reply, Christians should use the following reasoning:

1. Everything **which has a beginning** has a cause.1
2. The universe has a beginning.
3. Therefore the universe has a cause.

Since God, by definition, is the creator of the whole universe, he is the creator of time.

It’s important to stress the words in **bold type**. The universe requires a cause because it had a **beginning,** as will be shown below. God, unlike the universe, had **no beginning**, so doesn’t need a cause. In addition, Einstein’s general relativity, which has much experimental support, shows that time is linked to matter and space. So time itself would have begun along with matter and space. Since God, by definition, is the creator of the whole universe, he is the creator of time. Therefore He is not limited by the time dimension He created, so has no beginning in time—God is ‘the high and lofty One that inhabiteth eternity’ ([Is. 57:15](https://biblia.com/bible/esv/Isa.%2057.15)). Therefore, He doesn’t have a cause.

In contrast, there is good evidence that the universe had a beginning. This can be shown from the Laws of Thermodynamics, the most fundamental laws of the physical sciences.

* 1st Law: The **total** amount of mass-energy in the universe is **constant**.
* 2nd Law: The amount of energy **available for work** is running out, or entropy is increasing to a maximum.

If the total amount of mass-energy is limited, and the amount of usable energy is decreasing, then the universe cannot have existed forever, otherwise it would already have exhausted all usable energy—the ‘heat death’ of the universe. For example, all radioactive atoms would have decayed, every part of the universe would be the same temperature, and no further work would be possible. So, the obvious corollary is that the universe began a finite time ago with a lot of usable energy, and is now running down.

Now, what if the questioner accepts that the universe had a beginning, but not that it needs a cause? But it is self-evident that things that begin have a cause—no-one really denies it in his heart. All science and history would collapse if this law of cause and effect were denied. So would all law enforcement, if the police didn’t think they needed to find a cause for a stabbed body or a burgled house. Also, the universe cannot be self-caused—nothing can create itself, because that would mean that it existed before it came into existence, which is a logical absurdity.

## In Summary

* The universe (including time itself) can be shown to have had a beginning.
* It is unreasonable to believe something could begin to exist without a cause.
* The universe therefore requires a cause, just as [Genesis 1:1](https://biblia.com/bible/esv/Gen%201.1) and [Romans 1:20](https://biblia.com/bible/esv/Rom%201.20) teach.
* God, as creator of time, is outside of time. Since therefore He has no beginning in time, He has always existed, so doesn’t need a cause.
* 如果上帝创造了宇宙，那么谁创造了上帝？ 回应批评者 乔纳森·萨法蒂 (Jonathan Sarfati) 许多怀疑论者提出这个问题。 但根据定义，上帝是宇宙的非受造创造者，所以“谁创造了上帝？”这个问题是不合逻辑的，就像“单身汉嫁给了谁？” 所以，一个更老练的提问者可能会问：‘如果宇宙需要一个原因，那么为什么上帝不需要一个原因？ 如果上帝不需要原因，为什么宇宙需要原因呢？作为回答，基督徒应该使用以下推理： 1. 一切有始有终。 1 2. 宇宙有一个开始。 3. 所以宇宙有因。 因为根据定义，上帝是整个宇宙的创造者，他是时间的创造者。 强调粗体字很重要。 宇宙需要一个原因，因为它有一个开始，如下所示。 与宇宙不同，上帝没有开始，因此不需要原因。 此外，得到大量实验支持的爱因斯坦广义相对论表明时间与物质和空间相关联。 所以时间本身会随着物质和空间一起开始。 因为根据定义，上帝是整个宇宙的创造者，他是时间的创造者。 因此，他不受他所创造的时间维度的限制，因此在时间上没有起点——上帝是“居于永恒的至高至高者”（赛 57:15）。 因此，他没有原因。 相反，有充分的证据表明宇宙有一个开端。 这可以从物理科学最基本的热力学定律中看出。 • 第一定律：宇宙中的质能总量是恒定的。 • 第二定律：可用于做功的能量正在耗尽，或者熵正在增加到最大值。 如果质能总量有限，可利用的能量在减少，那么宇宙不可能永远存在，否则它早就耗尽了所有可利用的能量——宇宙的“热寂”。 例如，所有放射性原子都会衰变，宇宙的每一部分都将处于相同的温度，并且无法进行进一步的工作。 因此，显而易见的推论是，宇宙在有限的时间之前开始时具有大量可用能量，现在正在耗尽。 现在，如果发问者承认宇宙有一个开始，而不是它需要一个原因呢？ 但不言而喻的是，事情的开始是有原因的——没有人真正在心里否认它。 如果否定因果法则，所有的科学和历史都会崩溃。 如果警察认为他们不需要为被刺伤的尸体或被盗的房屋寻找原因，那么所有执法部门也会这样做。 此外，宇宙不可能是自生的——没有任何东西可以创造自己，因为那意味着它在出现之前就已经存在，这是逻辑上的荒谬。 总之 • 可以证明宇宙（包括时间本身）有一个开始。 • 认为某事会无缘无故地开始存在是不合理的。 • 因此，宇宙需要一个原因，正如创世记 1:1 和罗马书 1:20 所教导的那样。 • 上帝，作为时间的创造者，在时间之外。 因此，由于他在时间上没有开始，他一直存在，所以不需要原因。

## Objections

There are only two ways to refute an argument:

1. Show that it is logically invalid
2. Show that at least one of the premises is false.

### a) Is the argument valid?

A valid argument is one where it is impossible for the premises to be true and the conclusion false. Note that validity does not depend on the truth of the premises, but on the form of the argument. The argument in this paper is valid; it is of the same form as: All whales have backbones; Moby Dick is a whale; therefore Moby Dick has a backbone. So the only hope for the skeptic is to dispute one or both of the premises.

### b) Are the premises true?

Also, there are many lines of evidence showing that there is far too little mass for gravity to stop expansion and allow cycling in the first place, i.e., the universe is ‘open’.

#### 1) Does the universe have a beginning?

Oscillating universe ideas were popularized by atheists like the late Carl Sagan and Isaac Asimov solely to avoid the notion of a beginning, with its implications of a Creator. But as shown above, the Laws of Thermodynamics undercut that argument. Even an oscillating universe cannot overcome those laws. Each one of the hypothetical cycles would exhaust more and more usable energy. This means every cycle would be larger and longer than the previous one, so looking back in time there would be smaller and smaller cycles. So the multicycle model could have an infinite future, but can only have a finite past.2

Also, there are many lines of evidence showing that there is far too little mass for gravity to stop expansion and allow cycling in the first place, i.e., the universe is ‘open’. According to the best estimates (even granting old-earth assumptions), the universe still has only about half the mass needed for re-contraction. This includes the combined total of both luminous matter and non-luminous matter (found in galactic halos), as well as any possible contribution of neutrinos to total mass.3 Some recent evidence for an ‘open’ universe comes from the number of light-bending ‘gravitational lenses’ in the sky.4 Also, analysis of Type Ia supernovae shows that the universe’s expansion rate is not slowing enough for a closed universe.5,6,7 It seems like there is only 40-80% of the required matter to cause a ‘big crunch’. Incidentally, this low mass is also a major problem for the currently fashionable ‘inflationary’ version of the ‘big bang’ theory, as this predicts a mass density just on the threshold of collapse—a ‘flat’ universe.

Finally, no known mechanism would allow a bounce back after a hypothetical ‘big crunch’.8 As the late Professor Beatrice Tinsley of Yale explained, even though the mathematics says that the universe oscillates, ‘There is no known physical mechanism to reverse a catastrophic big crunch.’ Off the paper and into the real world of physics, those models start from the Big Bang, expand, collapse, and that’s the end.9

#### 2) Denial of cause and effect

Some physicists assert that quantum mechanics violates this cause/effect principle and can produce something from nothing. For instance, Paul Davies writes:

… spacetime could appear out of nothingness as a result of a quantum transition. … Particles can appear out of nowhere without specific causation … Yet the world of quantum mechanics routinely produces something out of nothing.10

But this is a gross misapplication of quantum mechanics. Quantum mechanics never produces something out of nothing. Davies himself admitted on the previous page that his scenario ‘should not be taken too seriously.’

Theories that the universe is a quantum fluctuation must presuppose that there was something to fluctuate—their ‘quantum vacuum’ is a lot of matter-antimatter potential—not ‘nothing’. Also, I have plenty of theoretical and practical experience at quantum mechanics (QM) from my doctoral thesis work. For example, Raman spectroscopy is a QM phenomenon, but from the wavenumber and intensity of the spectral bands, we can work out the masses of the atoms and force constants of the bonds causing the bands. To help the atheist position that the universe came into existence without a cause, one would need to find Raman bands appearing without being caused by transitions in vibrational quantum states, or alpha particles appearing without pre-existing nuclei, etc. If QM was as acausal as some people think, then we should not assume that these phenomena have a cause. Then I may as well burn my Ph.D. thesis, and all the spectroscopy journals should quit, as should any nuclear physics research.

Also, if there is no cause, there is no explanation why this particular universe appeared at a particular time, nor why it was a universe and not, say, a banana or cat which appeared. This universe can’t have any properties to explain its preferential coming into existence, because it wouldn’t have any properties until it actually came into existence.

异议 反驳一个论点只有两种方法： 1.证明在逻辑上是无效的 2. 证明至少有一个前提是错误的。 a) 论证有效吗？ 一个有效的论证是前提不可能为真而结论为假的论证。 请注意，有效性不取决于前提的真实性，而是取决于论证的形式。 本文的论点是有效的； 它的形式与： 所有的鲸鱼都有脊椎骨； Moby Dick 是鲸鱼； 因此白鲸记有骨气。 所以怀疑论者唯一的希望就是对其中一个或两个前提提出异议。 b) 前提是真的吗？ 此外，有许多证据表明，引力的质量太小，无法阻止膨胀并首先允许循环，即宇宙是“开放的”。 1）宇宙有开始吗？ 振荡宇宙的想法被已故的卡尔萨根和艾萨克阿西莫夫等无神论者所普及，只是为了避免开始的概念及其对造物主的暗示。 但如上所示，热力学定律削弱了这一论点。 即使是振荡的宇宙也无法克服这些定律。 每一个假设的循环都会消耗越来越多的可用能量。 这意味着每个周期都会比前一个周期更大、更长，所以回顾过去，周期会越来越小。 因此，多周期模型可以拥有无限的未来，但只能拥有有限的过去。 2 此外，有许多证据表明，引力的质量太小，无法阻止膨胀并首先允许循环，即宇宙是“开放的”。 根据最好的估计（即使允许旧地球假设），宇宙仍然只有重新收缩所需质量的一半左右。 这包括发光物质和不发光物质（在星系晕中发现）的总和，以及中微子对总质量的任何可能贡献。3 最近一些关于“开放”宇宙的证据来自光的数量- 弯曲天空中的“引力透镜”。4 此外，对 Ia 型超新星的分析表明，宇宙的膨胀速度对于一个封闭的宇宙来说还不够慢。5,6,7 似乎只需要 40-80% 导致“大紧缩”的问题。 顺便说一下，这种低质量也是目前流行的“暴胀”版本的“大爆炸”理论的一个主要问题，因为它预测质量密度刚好处于崩溃的门槛——一个“平坦”的宇宙。 最后，没有任何已知的机制可以在假设的“大危机”之后反弹。 8 正如耶鲁大学已故教授 Beatrice Tinsley 解释的那样，即使数学表明宇宙在振荡，“没有已知的物理机制可以逆转灾难性的灾难”。 大紧缩。”离开纸面进入真实的物理世界，这些模型从大爆炸开始，膨胀，坍缩，然后就结束了。 9 2）否认因果关系 一些物理学家断言，量子力学违反了这个因果原理，可以从无到有。 例如，保罗戴维斯写道： ……由于量子跃迁，时空可能从虚无中出现。 ……粒子可以在没有特定因果关系的情况下凭空出现……然而，量子力学的世界通常会从无到有。 10 但这是对量子力学的严重误用。 量子力学永远不会无中生有。 戴维斯本人在上一页承认，他的设想“不应该太当真”。 宇宙是量子涨落的理论必须假定存在某种涨落的东西——他们的“量子真空”是大量的物质-反物质势能——而不是“无”。 此外，我在博士论文工作中积累了丰富的量子力学 (QM) 理论和实践经验。 例如，拉曼光谱是一种量子力学现象，但从光谱波段的波数和强度，我们可以计算出原子的质量和产生波段的键的力常数。 为了帮助无神论者认为宇宙无缘无故地存在，人们需要找到拉曼带的出现不是由振动量子态的跃迁引起的，或者 alpha 粒子的出现没有预先存在的原子核等。如果 QM 是无因果的 正如一些人认为的那样，我们不应该假设这些现象有原因。 那我还不如烧掉我的博士学位。 论文，所有的光谱学期刊都应该退出，任何核物理研究也应该退出。 此外，如果没有原因，就无法解释为什么这个特定的宇宙会在特定的时间出现，也无法解释为什么它是一个宇宙而不是出现的香蕉或猫。 这个宇宙不可能有任何属性来解释它的优先存在，因为它在真正存在之前不会有任何属性。

## Is creation by God rational?

A last desperate tactic by skeptics to avoid a theistic conclusion is to assert that creation in time is incoherent.

A last desperate tactic by skeptics to avoid a theistic conclusion is to assert that creation in time is incoherent. Davies correctly points out that since time itself began with the beginning of the universe, it is meaningless to talk about what happened ‘before’ the universe began. But he claims that causes must precede their effects. So if nothing happened ‘before’ the universe began, then (according to Davies) it is meaningless to discuss the cause of the universe’s beginning.

But the philosopher (and New Testament scholar) William Lane Craig, in a useful critique of Davies,11 pointed out that Davies is deficient in philosophical knowledge. Philosophers have long discussed the notion of simultaneous causation. Immanuel Kant (1724–1804) gave the example of a weight resting on a cushion simultaneously causing a depression in it. Craig says:

“The first moment of time is the moment of God’s creative act and of creation’s simultaneous coming to be.”

Marc Kay’s critique of Davies The Mind of God points out further logical and physical fallacies of Davies’ reasoning.12 Some skeptics claim that all this analysis is tentative, because that is the nature of science. So this can’t be used to prove creation by God. Of course, skeptics can’t have it both ways: saying that the Bible is wrong because science has proved it so, but if science appears consistent with the Bible, then well, science is tentative anyway.

上帝的创造是理性的吗？ 怀疑论者为避免有神论的结论而采取的最后一个孤注一掷的策略是断言时间的创造是不连贯的。 怀疑论者为避免有神论的结论而采取的最后一个孤注一掷的策略是断言时间的创造是不连贯的。 戴维斯正确地指出，由于时间本身是从宇宙的开始开始的，所以谈论宇宙开始“之前”发生的事情是没有意义的。 但他声称原因必须先于结果。 因此，如果在宇宙开始“之前”什么都没有发生，那么（根据戴维斯的说法）讨论宇宙开始的原因就毫无意义。 但是哲学家（和新约学者）威廉莱恩克雷格在对戴维斯的有用批评中，11 指出戴维斯缺乏哲学知识。 长期以来，哲学家们一直在讨论同时因果关系的概念。 Immanuel Kant (1724-1804) 举了一个例子，一个重物放在垫子上同时导致垫子凹陷。 克雷格 说： “时间的第一时刻是上帝的创造行为和创造同时出现的时刻。” 马克·凯 (Marc Kay) 对戴维斯 (Davies) 的《上帝之心》(Mind of God) 的批评进一步指出了戴维斯 (Davies) 推理的逻辑和物理谬误。 12 一些怀疑论者声称，所有这些分析都是暂时的，因为那是科学的本质。 所以这不能用来证明上帝的创造。 当然，怀疑论者不能两全其美：说圣经是错误的，因为科学已经证明了这一点，但如果科学看起来与圣经一致，那么好吧，科学无论如何都是试探性的。

# Einstein, the universe, and God

爱因斯坦、宇宙和上帝

Image wikimedia.org

by [Russell Grigg](https://creation.com/russell-grigg)

Chosen by Time magazine to be their ‘Person of the Century’,1 Albert Einstein2 is famous for many things (apart from his shaggy visage). His theories of special and general relativity and his formula for the equivalence of mass and energy, E = mc2, changed forever our views on time and space, light and gravity, matter and energy. He is somewhat less well-known for his remark ‘God does not play dice with the universe.’ But what did Einstein really mean by ‘God’? Was his ‘God’ anything like the God of the Bible?

## Childhood influences

Although born in 1879 of German-Jewish parents, Albert was not brought up in the Jewish faith. He attended a nearby Catholic elementary school in Munich and then the local high school. A rather slow and dreamy student, Albert was bored with non-scientific subjects,3 and learned little under the harsh military-style 19th century German education system. He grew up with an aversion to discipline, and a life-long suspicion of all authority.

Albert Einstein was not a Christian. He had no concept of the God of the Bible or trust in Jesus Christ as his Lord and Saviour. His views on religion and ‘God’ were evolutionary and pantheistic.

At age 11 he went through an intense religious phase during which he ate no pork and composed songs to God, which he sang to himself on the way to school.4

From age 12 Albert read popular books on science, taught himself algebra, geometry and calculus, and studied Immanuel Kant’s anti-theistic Critique of Pure Reason. Concerning this time in his life, Albert later wrote, ‘Through the reading of popular scientific books I soon reached the conviction that much in the stories of the Bible could not be true. The consequence was a positively fanatic (orgy of) [sic] freethinking coupled with the impression that youth is intentionally being deceived by the state through lies; it was a crushing impression. … It is quite clear to me that the religious paradise of youth, which was thus lost, was a first attempt to free myself from the chains of … an existence which is dominated by wishes, hopes, and primitive feelings.’4

Albert’s anti-authoritarianism, and probably also his desire to escape compulsory military service at age 17, led him to renounce his German citizenship. On January 28, 1896 he became a stateless person at the age of 16. His application for Swiss citizenship was approved February 21, 1900.

被《时代》杂志选为“世纪人物”1 的阿尔伯特·爱因斯坦 2 因许多事情而闻名（除了他蓬松的面容）。 他的狭义和广义相对论以及他的质量和能量等价公式 E = mc2 永远改变了我们对时间和空间、光和引力、物质和能量的看法。 他因“上帝不与宇宙掷骰子”这句话而不太出名。但爱因斯坦所说的“上帝”到底是什么意思呢？ 他的“上帝”是不是有点像圣经中的上帝？ 童年影响 阿尔伯特虽然出生于 1879 年，父母是德国犹太人，但他并没有在犹太信仰中长大。 他就读于慕尼黑附近的一所天主教小学，然后就读于当地的高中。 阿尔伯特是一个相当迟钝和爱做梦的学生，他厌倦了非科学科目，3 并且在 19 世纪严酷的军事式德国教育体系下学到的东西很少。 他在厌恶纪律的情况下长大，终生怀疑所有权威。 爱因斯坦不是基督徒。 他对圣经中的上帝没有概念，也不相信耶稣基督是他的主和救主。 他对宗教和“上帝”的看法是进化论和泛神论的。 11 岁时，他经历了一个强烈的宗教阶段，在此期间他不吃猪肉并为上帝创作歌曲，他在上学的路上唱给自己听。 4 从 12 岁起，Albert 就开始阅读流行的科学书籍，自学代数、几何和微积分，并研究伊曼纽尔康德的反神论的《纯粹理性批判》。 关于他生命中的这段时间，阿尔伯特后来写道：“通过阅读通俗科学书籍，我很快就确信圣经中的许多故事都不是真的。 结果是一种积极的狂热（狂欢）[sic] 自由思想，加上年轻人被国家故意通过谎言欺骗的印象； 这是一个令人震惊的印象。 ……我很清楚，因此失去的青年宗教天堂是我第一次尝试摆脱……一种被愿望、希望和原始情感支配的存在。 ”4 阿尔伯特的反独裁主义，可能还有他在 17 岁时逃避义务兵役的愿望，导致他放弃了德国公民身份。 1896 年 1 月 28 日，他在 16 岁时成为无国籍人。他的瑞士公民申请于 1900 年 2 月 21 日获得批准。

## Tertiary studies, fatherhood and marriage

## Einstein’s belief in ‘the divinity of nature’

Pantheists believe that everything is God. It means that ‘God’ just becomes another word for ‘everything’ and loses any real meaning—saying that everything is ‘zinquth’ is just as meaningful. Albert Einstein explicitly shared the pantheism of Spinoza, of whose views The Hutchinson Softback Encyclopedia, 1996, writes: ‘Mind and matter are two modes of an infinite substance that [Spinoza] called God or Nature, good and evil being relative.’ Like New Age and Eastern thought, this is a ‘monistic’ belief, which explicitly denies a Creator in the normal meaning of the word, i.e. one who pre-existed (and is thus independent of, or ‘outside’) that which was created.

From 1895 to 1900 Albert attended the Zurich Polytechnic in Switzerland,5 then the finest technical school in Europe. He seldom attended lectures, but spent much of his time doing his own experiments in the excellent physics laboratory, and reading about the latest advances in physics by Hertz, Helmholtz, and other pioneers in science. He also learned about revolutionary socialism from his friend, Friedrich Adler (who in 1918 achieved fame by assassinating the Prime Minister of Austria).

Albert fell in love with Mileva Maric, a Hungarian and the only woman student in his class who, though rather plain, afflicted with a limp, and not in the least flirtatious, knew enough physics to be able to have intelligent conversations with him. In 1901 he fathered an illegitimate child with her. He married Mileva in 1903, after he had secured a job as patent examiner at the Swiss Patent Office in Berne.6

In 1905, the prestigious Berlin journal Annalen der Physik published four papers written by Albert between March 17 and June 30 of that year in his spare time!7 The first, for which he received the Nobel Prize 16 years later, described how light could behave as both a wave and a stream of particles. The second, on the size of atoms, earned him a doctorate from Zurich University.8 The third, on Brownian motion, is the foundation of modern statistical mechanics, and the fourth became the basis for his Special Theory of Relativity. This was based on Albert’s ‘thought experiments’, such as what he might or might not see if he were in a space ship travelling at the speed of light.

高等教育、父亲身份和婚姻 爱因斯坦对“自然神性”的信仰 泛神论者认为一切都是上帝。 这意味着“上帝”只是成为“一切”的另一个词而失去了任何真正的意义——说一切都是“zinquth”同样有意义。 阿尔伯特·爱因斯坦明确赞同斯宾诺莎的泛神论，其观点哈钦森软文百科全书，1996 年，写道：“精神和物质是无限物质的两种模式，[斯宾诺莎] 称之为上帝或自然，善与恶是相对的。” 时代和东方思想，这是一种“一元论”的信仰，它明确否认该词的正常含义中的造物主，即预先存在（因此独立于或“外部”）被造物的造物主。 从 1895 年到 1900 年，阿尔伯特就读于瑞士苏黎世理工学院，5 当时是欧洲最好的技术学校。 他很少上课，但大部分时间都在一流的物理实验室里做自己的实验，阅读赫兹、亥姆霍兹和其他科学先驱的最新物理学进展。 他还从他的朋友弗里德里希·阿德勒（他在 1918 年因暗杀奥地利总理而名声大噪）那里了解到革命社会主义。 阿尔伯特爱上了匈牙利人米列娃·马里奇 (Mileva Maric)，她是他班上唯一的女学生，虽然相貌平平，患有跛行，但一点也不轻浮，但懂足够的物理学知识，可以与他进行明智的对话。 1901年，他与她生了一个私生子。 他在伯尔尼的瑞士专利局找到一份专利审查员的工作后，于 1903 年与米列娃结婚。 6 1905 年，著名的柏林物理学年鉴发表了阿尔伯特在当年 3 月 17 日至 6 月 30 日业余时间撰写的四篇论文！7 第一篇，他在 16 年后获得诺贝尔奖，描述了光的行为 既是波又是粒子流。 第二，关于原子的大小，使他获得了苏黎世大学的博士学位。8 第三，关于布朗运动，是现代统计力学的基础，第四成为他的狭义相对论的基础。 这是基于阿尔伯特的“思想实验”，例如如果他在以光速行驶的太空船中，他可能会看到或可能不会看到什么。

In 1916 Albert published ‘The Foundation of the General Theory of Relativity’. This was based on more ‘thought experiments’ that gravity and acceleration produce identical effects, and that this is a consequence of gravity warping (distorting) both space and time. Scientists were both bedazzled and bewildered. Then the theory appeared to be confirmed during an eclipse of the sun in the West Indies, on May 29, 1919.9 The world’s press started referring to Albert as ‘the greatest genius on earth’.

1916 年，阿尔伯特发表了《广义相对论基础》。 这是基于更多的“思想实验”，即重力和加速度产生相同的效果，这是重力扭曲（扭曲）空间和时间的结果。 科学家们既眼花缭乱又不知所措。 1919 年 5 月 29 日西印度群岛发生日食时，这一理论似乎得到了证实。9 世界媒体开始称阿尔伯特为“地球上最伟大的天才”。

Einstein became a wanted man when Hitler and the Nazis began a campaign against ‘Jewish science’, offering a 20,000 Mark reward for his assassination.

## Albert and Elsa

Albert and Mileva’s marriage had gradually fallen apart and in 1914 they had separated. In 1918, divorce proceedings were set in motion, based on the adultery of Albert with his divorced cousin Elsa Löwenthal,10 who had cared for him during a period of illness. The Zurich court granted the divorce on February 14, 1919, and ordered inter alia that Albert should give the monetary reward from a Nobel Prize, if and when he should receive it,11 to Mileva.12

Albert married Elsa on June 2, 1919, but again he was unfaithful.13 He wrote that he admired a deceased friend for having lived for many years in peace and ‘lasting harmony with a woman—an undertaking in which I twice failed rather disgracefully.’14

## The Nobel Prize

In 1922 Albert received official news that he had been awarded the 1921 Nobel Prize for Physics for his work in theoretical physics and his photoelectric law. Relativity, still highly controversial, was specifically excluded.15

People now wrote to Albert from all over the world; some of his answers revealed his wry sense of humour. In Berlin, he received a letter from New York asking, ‘Would it be reasonable to assume that it is while a person is standing on his head—or rather upside down—that he falls in love or does other foolish things?’ Albert wrote, ‘To fall in love is by no means the most stupid thing man does—gravitation cannot be held responsible, however.’16

On another occasion, he was asked his formula for success. He replied, ‘If A is success, I should say the formula is A = X + Y + Z, X being work and Y being play.’ ‘And what is Z?’ ‘Keeping your mouth shut.’17

当希特勒和纳粹开始反对“犹太科学”的运动时，爱因斯坦成为通缉犯，悬赏 20,000 马克悬赏暗杀他。 阿尔伯特和艾尔莎 阿尔伯特和米列娃的婚姻逐渐破裂，并于 1914 年分居。 1918 年，阿尔伯特与他在生病期间照顾他的已离婚堂兄 Elsa Löwenthal 通奸，10 离婚诉讼开始启动。 苏黎世法院于 1919 年 2 月 14 日准予离婚，并特别下令阿尔伯特应将诺贝尔奖的金钱奖励（如果他应该获得）11 交给米列娃。 12 阿尔伯特于 1919 年 6 月 2 日与艾尔莎结婚，但他又一次不忠。13 他写道，他钦佩一位已故的朋友，因为他多年来一直平静地生活，并且“与一个女人保持持久的和谐——我两次以相当可耻的方式失败了。” '14 诺贝尔奖 1922 年，阿尔伯特收到官方消息，他因在理论物理学和光电定律方面的工作而获得 1921 年诺贝尔物理学奖。 相对论，仍然备受争议，被明确排除在外。 15 人们现在从世界各地写信给艾伯特； 他的一些回答揭示了他的幽默感。 在柏林，他收到一封来自纽约的信，询问他：“假设一个人是倒立的——或者更确切地说是倒立的——他坠入爱河或做其他愚蠢的事情，这是否合理？”阿尔伯特写道 ，“坠入爱河绝不是人类所做的最愚蠢的事情——然而，万有引力是不负责任的。”16 还有一次，有人问他成功的秘诀。 他回答说，“如果 A 是成功的，我应该说公式是 A = X + Y + Z，X 是工作，Y 是娱乐。”“Z 是什么？”“闭嘴。”17

In 1933, after Adolf Hitler had come to power, the Nazis launched a campaign against ‘Jewish science’ and offered a 20,000-mark reward for Albert’s assassination.18 He emigrated to the USA and settled in Princeton, New Jersey, a scientific super-celebrity, becoming a US citizen on October 1, 1940.

## Relativity and Morality

Some people have mistakenly blamed Einstein’s theory of relativity for the decline in morality seen today. In fact, Einstein proposed a view of nature in which absolute space and time were replaced by absolute velocity of light. He preferred to call his theory the ‘invariance’ theory, but the term ‘relativity’ stuck.

The basis for morality is the absolute truth of the Word of God, which contains God’s rules for holy living. These have been undermined, not by Einstein’s theory of relativity, but by the teaching of evolution, wherein man rejects the absolute truth about God and our need to live in a right relationship with Him, and man himself decides how he wants to live.

Science can only tell us what is, not what ought to be. For example, science tells us that shooting a man in the heart will (normally) kill him, and that certain sexual practices promote the spread of AIDS, but it cannot tell us whether these actions are right or wrong. For this we need a divine Lawgiver.

## Albert and ‘the bomb’

For most of his life Albert was a gentle pacifist. However, on August 2, 1939, after learning that German scientists were working on splitting the uranium atom, he signed a letter to President F. D. Roosevelt which stated, ‘This new phenomenon would also lead to the construction of bombs,’ and urged ‘quick action’ on the part of the United States in atomic bomb research.19

The Manhattan Project, which produced the world’s first atomic bombs, got under way two years later. Albert, regarded as a security risk, was excluded from participation in this.20 After the bombs had exploded on Hiroshima and Nagasaki, he considered this letter one of his greatest mistakes.

In November 1952 Albert declined an offer by David Ben-Gurion, Prime Minister of Israel, to be that country’s president.21

For most of the last 30 years of his life, Albert tried, unsuccessfully, to establish a mathematical relationship between electromagnetic forces (such as light) and gravity. His aim was to find a single formula to explain the behaviour of everything in the universe, from electrons to stars, called a Unified Field Theory. He died in his sleep on April 18, 1955, from a ruptured defect in the main abdominal artery.

1933 年，阿道夫·希特勒上台后，纳粹发起了反对“犹太科学”的运动，悬赏 20,000 马克悬赏暗杀阿尔伯特。18 他移民美国，定居在新泽西州的普林斯顿，这是一个科学超级 名人，于 1940 年 10 月 1 日成为美国公民。 相对性和道德 有些人错误地将今天所见的道德沦丧归咎于爱因斯坦的相对论。 事实上，爱因斯坦提出了一种用绝对光速代替绝对空间和时间的自然观。 他更愿意称他的理论为“不变性”理论，但“相对性”一词却一直沿用至今。 道德的基础是上帝圣言的绝对真理，其中包含上帝对圣洁生活的规定。 这些都被破坏了，不是被爱因斯坦的相对论，而是被进化论的教义所破坏，在进化论中，人拒绝关于上帝的绝对真理以及我们与上帝建立正确关系的需要，而人自己决定他想如何生活。 科学只能告诉我们是什么，而不能告诉我们应该是什么。 例如，科学告诉我们，朝一个人的心脏开枪（通常）会杀死他，某些性行为会促进艾滋病的传播，但它无法告诉我们这些行为是对还是错。 为此，我们需要一位神圣的立法者。 阿尔伯特和“炸弹” 在他一生的大部分时间里，阿尔伯特都是一个温和的和平主义者。 然而，1939 年 8 月 2 日，在得知德国科学家正在研究铀原子分裂后，他签署了一封致 F. D. 罗斯福总统的信，信中指出，“这种新现象也将导致制造炸弹”，并敦促“尽快 美国在原子弹研究方面的行动。 19 两年后，制造出世界上第一颗原子弹的曼哈顿计划开始实施。 被视为安全隐患的阿尔伯特被排除在外。20 在广岛和长崎原子弹爆炸后，他认为这封信是他最大的错误之一。 1952 年 11 月，阿尔伯特拒绝了以色列总理大卫·本·古里安 (David Ben-Gurion) 提出的担任该国总统的提议。 21 在他生命最后 30 年的大部分时间里，阿尔伯特试图在电磁力（如光）和引力之间建立数学关系，但没有成功。 他的目标是找到一个单一的公式来解释宇宙中从电子到恒星的一切事物的行为，称为统一场论。 1955 年 4 月 18 日，他因腹主动脉破裂缺损在睡梦中去世。

## Einstein and ‘God’

Albert Einstein was not a Christian. He had no concept of the God of the Bible or trust in Jesus Christ as his Lord and Saviour. His views on religion and ‘God’ were evolutionary and pantheistic.

He wrote,

‘I cannot conceive of a God who rewards and punishes his creatures, or has a will of the kind that we experience in ourselves. Neither can I nor would I want to conceive of an individual that survives his physical death; let feeble souls, from fear or absurd egoism, cherish such thoughts.’22

‘The desire for guidance, love, and support prompts men to form the social or moral conception of God. … The man who is thoroughly convinced of the universal operation of the law of causation cannot for a moment entertain the idea of a being who interferes in the course of events. … A God who rewards and punishes is inconceivable to him … .’23

‘During the youthful period of mankind’s spiritual evolution human fantasy created gods in man’s own image. … The idea of God in the religions taught at present is a sublimation of that old concept of the gods. … In their struggle for the ethical good, teachers of religion must have the stature to give up the doctrine of a personal God … .’24

Christians who inappropriately invoke Einstein in their preaching, writing or witnessing do so to the detriment of their cause.

## Relativity and distant starlight

Einstein’s General Theory of Relativity (GR) is the most experimentally vindicated theory of gravity in existence. It has not ‘disproved’ Newton’s laws, but has absorbed them within a larger framework, being a more accurate description under certain conditions.

GR involves many counter-intuitive notions, such as black holes—regions of space with so much mass that even light rays cannot escape. Another of its implications is that gravity distorts time itself, so there is no such thing as ‘absolute time’.

A leading creationist model, by physicist Dr Russell Humphreys, of how distant starlight could reach the earth in a young universe, relies heavily on GR. This is explained in detail for the layperson (with technical appendices) in Dr Humphreys’ book, Starlight and Time.

Many ‘progressive creationists’ have strongly attacked Dr Humphreys’ work, but to date he has been able to soundly answer them. For those familiar with the book, the controversy has been documented in our [*Journal*](https://creation.com/magazines#journal) and in our Q&A section, [‘Astronomy and Astrophysics’](https://creation.com/astronomy-and-astrophysics-questions-and-answers#starlight).

Answering a Japanese scholar who asked him about ‘scientific truth’, Albert wrote,

‘Certain it is that a conviction, akin to religious feeling, of the rationality or intelligibility of the world lies behind all scientific work of a higher order. This firm belief, a belief bound up with deep feeling, in a superior mind that reveals itself in the world of experience, represents my conception of God. In common parlance this may be described as “pantheistic” (Spinoza).’25

It is thus clear that when Albert mentioned ‘God’, e.g. ‘God does not play dice with the universe’, and ‘The Lord God is subtle, but malicious he is not’,26 he was referring to something like rationality in the universe. He is recorded as saying that a ‘deeply emotional conviction of the presence of a superior reasoning power, which is revealed in the incomprehensible universe, forms my idea of God’.27 However, he certainly was not referring to anything like the God of the Bible, who is Creator, Lawgiver, Judge and Saviour.

Addressing Princeton Theological Seminary on May 19, 1939, Albert said, ‘[A] conflict arises when a religious community insists on the absolute truthfulness of all statements recorded in the Bible.’25,28

Christian apologist Dr Hugh Ross claims that, despite not believing in the biblical God, ‘Einstein held unswervingly, against enormous peer pressure, to belief in a Creator.’29 However, in the normal meaning of these terms, Einstein believed no such thing (see aside above on starlight). Thus, Christians who inappropriately invoke Einstein in their preaching, writing or witnessing do so to the detriment of their cause.



Note: As Einstein wrote his scientific papers and most of his correspondence in German, translations used above vary slightly among his biographers.

**Update, 2011:** After this article was published, physicist [Dr John Hartnett](https://creation.com/dr-john-hartnett-cv) produced another model based on Einstein’s theory, but in a refinement called Carmelian Special Relativity. Here is a summary [Has ‘dark matter’ really been proven?](https://creation.com/has-dark-matter-really-been-proven), and his book is [Starlight Time and the New Physics](https://creation.com/s/10-3-505). You can see Drs [Humphreys](https://creation.com/d-russell-humphreys-cv) and [Hartnett](https://creation.com/dr-john-hartnett) dialogue on their models in the DVD on the right.

爱因斯坦与“上帝” 爱因斯坦不是基督徒。 他对圣经中的上帝没有概念，也不相信耶稣基督是他的主和救主。 他对宗教和“上帝”的看法是进化论和泛神论的。 他写了， “我无法想象一个上帝会奖励和惩罚他的生物，或者拥有我们在自己身上体验到的那种意志。 我既不能也不想想象一个人在肉体死亡后幸存下来； 让软弱的灵魂，出于恐惧或荒谬的利己主义，珍惜这样的想法吧。 ’22 “对指导、爱和支持的渴望促使人们形成对上帝的社会或道德观念。 …… 完全相信因果律的普遍运作的人一刻也不能接受一个存在者干涉事件过程的想法。 ……一个奖赏和惩罚的上帝对他来说是不可思议的……”23 “在人类精神进化的年轻时期，人类幻想按照自己的形象创造神灵。 ……目前所教授的宗教中关于上帝的观念是旧的众神观念的升华。 ......在他们为道德利益而斗争的过程中，宗教教师必须具备放弃个人上帝教义的地位......'24 在他们的讲道、写作或见证中不恰当地援引爱因斯坦的基督徒这样做会损害他们的事业。 相对论和遥远的星光 爱因斯坦的广义相对论 (GR) 是现存最受实验证实的引力理论。 它并没有“反驳”牛顿定律，而是将它们吸收到一个更大的框架中，在某些条件下是更准确的描述。 GR 涉及许多违反直觉的概念，例如黑洞——质量如此之大以至于连光线都无法逃逸的空间区域。 它的另一个含义是引力会扭曲时间本身，因此不存在“绝对时间”这样的东西。 物理学家 Russell Humphreys 博士提出的一个领先的创造论模型在很大程度上依赖于 GR，该模型关于星光在年轻宇宙中到达地球的距离。 这在 Humphreys 博士的书《星光与时间》中为外行人（带有技术附录）进行了详细解释。 许多“进步神创论者”强烈攻击汉弗莱斯博士的工作，但迄今为止，他已经能够妥善回答这些问题。 对于那些熟悉这本书的人来说，这场争论已经记录在我们的期刊和我们的问答部分“天文学和天体物理学”中。 在回答一位日本学者向他询问“科学真理”时，阿尔伯特写道： “当然，所有更高层次的科学工作背后都有一种类似于宗教情感的信念，即对世界的合理性或可理解性的信念。 这种坚定的信念，一种与深情相结合的信念，一种在经验世界中展现自身的超凡思想中的信念，代表了我对上帝的看法。 用通俗的话来说，这可以被描述为“泛神论”（斯宾诺莎）。 ’25 因此很明显，当阿尔伯特提到“上帝”时，例如 “上帝不与宇宙掷骰子”，“主上帝是微妙的，但他不是恶意的”，26 他指的是宇宙中的理性之类的东西。 据记载，他说“在不可理解的宇宙中揭示了一种超强推理能力的存在的深刻情感信念，形成了我对上帝的看法”。 27 然而，他肯定不是指任何像宇宙之神这样的东西。 圣经，是造物主、立法者、审判者和救主。 1939 年 5 月 19 日，阿尔伯特在普林斯顿神学院发表讲话时说，“当一个宗教团体坚持圣经中所有记载的绝对真实性时，就会发生冲突。”25,28 基督教护教者休·罗斯博士声称，尽管爱因斯坦不相信圣经中的上帝，但“爱因斯坦顶着巨大的同伴压力，坚定不移地相信造物主”。29 然而，按照这些术语的正常含义，爱因斯坦不相信这样的事情（ 请参阅上面关于星光的内容）。 因此，在讲道、写作或见证中不恰当地援引爱因斯坦的基督徒这样做会损害他们的事业。 注意：由于爱因斯坦用德语撰写他的科学论文和大部分信件，因此他的传记作者在上面使用的翻译略有不同。 更新，2011 年：本文发表后，物理学家约翰·哈奈特博士根据爱因斯坦的理论提出了另一个模型，但进行了改进，称为卡密尔狭义相对论。 这是一个摘要“暗物质”真的被证明了吗？，他的书是星光时间和新物理学。 您可以在右侧的 DVD 中看到 Drs Humphreys 和 Hartnett 就他们的模型进行的对话。

# Models of the origin of the universe

by [Dr John Rankin](https://creation.com/john-r-rankin-mathematical-physics-in-six-days)

### Summary

Taken from an address to the first public meeting of the Victorian branch of the Creation Science Association. The author is Dr. John Rankin. He received a Ph. D. in mathematical physics in the field of cosmology for a thesis entitled ‘Protogalaxy Formation’.

It is human nature to be curious about how things began. Here we shall consider the question of the origin of all things, the origin of the Universe. The scale of this subject is stupendous. On this cosmological scale our floating life station, planet Earth, is totally insignificant, having a radius of only six thousand kilometers. Likewise for the Moon, the Sun, and the whole Solar System which, discounting the comets, is contained within a radius of only 6 billion kilometers. (The American ‘billion’ is used here which is a thousand million and is equivalent to the English ‘milliard’.) In considering the origin of the Universe, even objects the size of our Milky Way galaxy with its billions of stars contained within a radius of a billion billion kilometers are of insignificant size. We are considering here the origin of all the galaxies constituting the metagalaxy (i.e. the whole known universe) so it is appropriate here to reflect on the nature of the metagalaxy.

Firstly its mind-boggling size. The biggest optical telescopes reach out through the depths of space to a distance of 10 billion light years, and a radio telescope such as the Australian telescope of Parkes observes celestial objects up to one and a half times this distance. Let’s do a quick metric conversion. A light year is the distance light can travel in one year, which is about ten thousand billion kilometers. So the known Universe has a radius of 150 thousand billion billion kilometers.

Secondly, the mass of the metagalaxy is calculated to be 10 billion billion billion billion tons. Yet if this enormous mass were evenly distributed over the entire volume of the metagalaxy we would have a better vacuum than can be produced in the laboratory! This gives us some idea of the size of the Universe.

Thirdly, the known universe consists of a billion swirling galaxies each as distinctly different as the humans populating the planet Earth, and each consisting of a hundred billion stars, again each distinctly different. Now when reflecting on the magnitude of the Cosmos, we should also take into account, apart from its intricate structure and the precision of its motions, the enormous amount of information being exchanged within it. For example electromagnetic radiation (i.e. light) from stars informs us of their temperature, radius, chemical composition, motions and so forth. Pulsars, quasars, neutron stars, black holes and other exotic celestial objects emit signals at colossal power rates. There are neutrino signals and information speeding around the universe in gamma rays and gravitational radiation.

To explain where all this came from we need to put up a scientific model by which is meant a framework of ideas used to help us understand how the known scientific facts could fit into an overall time-sequence. There are two broad types of models: evolution models and creation models. Let us define these terms. The Webster dictionary definition of ‘evolution’ is: A continuous progression from unorganized simplicity to organized complexity—the development from a rudimentary to a more complex state. And ‘creation’ is defined as the act of bringing the World into existence.

So by an evolutionary model is meant the general idea that the Earth, the Universe and all things came into their present form by a slow gradual process of self-transformation—from an inchoate rudimentary chaos of elementary matter over billions and billions of years into the present complex, intricate Cosmos that we know today. Whereas by a creation model is meant the idea that the Universe was brought into being by a special completed processes as a functioning, complete and balanced whole and has since been wearing down and disintegrating into disorder. The two philosophical viewpoints are diametrically opposed; all evolutionary models say the Universe goes from chaos to cosmos, while the creation model says it goes from cosmos to chaos.

Before we start looking at the different models, we should clear up some popular misconceptions. Let us mention three commonly held myths:

宇宙起源模型 约翰·兰金博士 概括 取自创造科学协会维多利亚分会第一次公开会议的演讲。 作者是 John Rankin 博士。 他因一篇题为“原星系形成”的论文获得了宇宙学领域的数学物理学博士学位。 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 对事物的起源感到好奇是人类的天性。 这里我们要考虑万物起源的问题，宇宙的起源问题。 这个主题的规模是惊人的。 在这个宇宙尺度上，我们的漂浮生命站地球是完全微不足道的，半径只有六千公里。 月球、太阳和整个太阳系也是如此，不考虑彗星，它的半径只有 60 亿公里。 （这里使用的美式“十亿”是一千亿，相当于英语的“百万”。）在考虑宇宙的起源时，即使是我们银河系大小的物体，其数十亿颗恒星都包含在一个 十亿十亿公里的半径是微不足道的。 我们在这里考虑的是构成超星系的所有星系（即整个已知宇宙）的起源，因此在这里反思超星系的性质是合适的。 首先是它令人难以置信的尺寸。 最大的光学望远镜可以穿透太空深处达到 100 亿光年的距离，澳大利亚帕克斯望远镜等射电望远镜可以观测到这个距离的一倍半的天体。 让我们做一个快速的公制转换。 一光年是光在一年内可以传播的距离，大约是一万亿公里。 所以已知宇宙的半径是150000亿亿公里。 其次，超星系的质量被计算为100亿亿亿吨。 然而，如果这个巨大的质量均匀分布在超星系的整个体积上，我们将拥有比实验室中产生的真空更好的真空！ 这让我们对宇宙的大小有了一些了解。 第三，已知的宇宙由十亿个旋转的星系组成，每个星系都与居住在地球上的人类一样截然不同，每个星系都由一千亿颗恒星组成，每一个都截然不同。 现在，在思考宇宙的大小时，除了其复杂的结构和运动的精确性之外，我们还应该考虑到其中交换的大量信息。 例如，来自恒星的电磁辐射（即光）告诉我们它们的温度、半径、化学成分、运动等。 脉冲星、类星体、中子星、黑洞和其他奇异天体以巨大的功率速率发射信号。 中微子信号和信息以伽马射线和引力辐射的形式在宇宙中快速传播。 为了解释这一切从何而来，我们需要建立一个科学模型，即一个思想框架，用于帮助我们理解已知的科学事实如何适应整个时间序列。 有两大类模型：进化模型和创造模型。 让我们定义这些术语。 韦氏词典对“进化”的定义是：从无组织的简单性到有组织的复杂性的持续发展——从基本状态发展到更复杂的状态。 而“创造”被定义为使世界存在的行为。 因此，进化模型的意思是地球、宇宙和所有事物通过缓慢渐进的自我转化过程进入现在的形式——从数十亿年的基本物质的早期基本混沌到 呈现我们今天所知道的复杂、错综复杂的宇宙。 而创世模型的意思是宇宙是由一个特殊的完整过程产生的，作为一个功能、完整和平衡的整体，从那以后一直在磨损和瓦解成无序状态。 这两种哲学观点截然相反。 所有的进化模型都说宇宙从混沌到宇宙，而创世模型说它从宇宙到混沌。 在我们开始研究不同的模型之前，我们应该澄清一些流行的误解。 让我们提一下三个普遍存在的神话：

### Myth 1: ‘Science provides absolute truth’

Science is the body of systematic knowledge of physical phenomena obtained by the scientific method which is the research method characterized by:

1. clear definition of the problem
2. gathering of relevant data
3. induction of an hypothesis
4. empirical testing of deductions from the hypothesis

Thus the predictions of science are not absolute truth and an hypothesis stands only until it is disproved by a single fact. Science theories are always changing.

迷思一：“科学提供绝对真理” 科学是通过科学方法获得的关于物理现象的系统知识的总和，其研究方法的特点是： 1.明确问题定义 2. 相关数据的收集 3. 归纳假设 4. 假设推论的实证检验 因此，科学的预测不是绝对真理，假设只有在被单一事实推翻之前才成立。 科学理论总是在变化。

### Myth 2: ‘All scientists believe in Evolution’

This is not true for today there are thousands of scientists and educated professionals convinced that evolution is not the correct explanation of how things came to be. They insist that the facts of science looked at objectively and fairly give more support to the idea of special creation. For example, the international Creation Research Society consists of over 600 holders of a Master’s or Doctor’s degree in science, who all hold this view.

迷思二：“所有科学家都相信进化论” 这是不正确的，因为今天有成千上万的科学家和受过教育的专业人士相信进化论不是对事物如何形成的正确解释。 他们坚持认为，客观公正地看待科学事实更能支持特殊创造的想法。 例如，国际创造研究会由600多名理科硕士或博士组成，他们都持有这种观点。

### Myth 3: ‘Evolution is scientific and therefore based upon fact, whereas creation is religious, and therefore based upon blind faith’

Neither evolution nor creation can be tested as a scientific theory, so believers in evolution or creation must accept either view by faith.

The idea behind evolution is Materialism, a belief which is accepted by faith. Materialism is the view of the world which sees matter and the laws of physics as the only relevant reality. On the other hand the belief underlying creation is Theism, especially Biblical Theism. Theism is the world-view that sees an infinite personal Spirit outside of the physical realm as the source of all reality. It is clear then that evolution and creation are equally religious. Each requires faith in a basically philosophical or religious understanding of the world.

Neither evolution nor creation can be tested because nobody observed and can repeat what happened in the ancient past history of the Earth or the Universe. The data collected by observation and experiment in the present world, and advanced as support of one or other theory of origins, is circumstantial evidence. By this I mean that the meaning or interpretation given to the data depends strongly on the presuppositions of the interpreter. Furthermore any objection raised against a theory of origins can be answered by some additional assumption. This is called a secondary assumption and it detracts from the credibility of the theory. Thus theories of origins, be they evolutionary or creationist, cannot be conclusively proven false by experimental test. Therefore they are outside the realm of science proper, though scientific data can be used to lend support and credibility to one model or another.

Let us briefly consider the history of cosmogonic ideas. The ancient creation mythologies of pagan nations who did not receive the Bible are in marked contrast with the rational explanation of origins as given in the Bible. Moving on to the scientific era, numerous ‘scientific’ evolutionary hypotheses have been proposed from the 17th century on, to explain the origin of the Universe—or rather as much of it as was known at the time. But as knowledge increased and man’s conception of the Universe expanded, the models were discredited. Minor modification was insufficient usually. They had to be rejected and new models conceived. So we had the Cartesian Hypothesis, Swedeborg’s Nebular Hypothesis, Kant’s Nebular Hypothesis, Buffon’s Collision Hypothesis, Laplace’s Nebular Hypothesis, Darwin’s Tidal Hypothesis, Jean-Jeffreys Tidal Hypothesis, Von Weizsacker’s Nebular Hypothesis, Whipple’s Dust Cloud Hypothesis and so forth. It was Immanuel Kant who proudly said ‘Give me matter and I will construct a world out of it.’ His world is no longer seriously considered. In fact no system of evolutionary cosmology devised by man, once it has been given an adequate length of time to demonstrate its worth has survived. It is apparently far easier to propose an evolutionary theory than to defend it. In the final analysis the only statements on the subject of origins that has weathered the test of time are those revealed in the Word of God.

We will consider in more detail four modern evolutionary models of the origin of the Universe.

迷思 3：“进化是科学的，因此基于事实，而创造是宗教的，因此是基于盲目的信仰” 进化论和创造论都不能作为科学理论得到检验，所以相信进化论或创造论的人必须因信接受任何一种观点。 进化背后的思想是唯物主义，一种被信仰接受的信仰。 唯物主义是一种世界观，它将物质和物理定律视为唯一相关的现实。 另一方面，创造背后的信仰是有神论，尤其是圣经有神论。 有神论是一种世界观，将物质领域之外的无限个人精神视为所有现实的源泉。 很明显，进化和创造同样具有宗教性。 每个人都需要相信对世界的基本哲学或宗教理解。 进化和创造都无法检验，因为没有人观察到也无法重复地球或宇宙古老历史中发生的事情。 通过当今世界的观察和实验收集的数据，并作为一种或另一种起源理论的支持，是间接证据。 我的意思是，赋予数据的意义或解释在很大程度上取决于解释者的预设。 此外，任何针对起源理论提出的异议都可以通过一些额外的假设来回答。 这被称为次要假设，它会降低理论的可信度。 因此，起源理论，无论是进化论的还是创造论的，都不能通过实验检验最终证明是错误的。 因此，它们不属于科学本身的范畴，尽管科学数据可以用来为一种或另一种模型提供支持和可信度。 让我们简要回顾一下宇宙起源思想的历史。 未接受圣经的异教民族古老的创世神话与圣经对起源的理性解释形成鲜明对比。 进入科学时代，从 17 世纪开始，人们提出了许多“科学”进化假设，以解释宇宙的起源——或者更确切地说，解释当时已知的宇宙起源。 但是随着知识的增加和人类对宇宙的概念的扩展，这些模型变得不可信了。 微小的修改通常是不够的。 他们必须被拒绝并构思新的模型。 所以我们有了笛卡尔假说、Swedeborg 的星云假说、康德的星云假说、Buffon 的碰撞假说、拉普拉斯的星云假说、达尔文的潮汐假说、Jean-Jeffreys 潮汐假说、Von Weizsacker 的星云假说、Whipple 的尘埃云假说等等。 伊曼纽尔·康德 (Immanuel Kant) 曾自豪地说：“给我物质，我将用它构建一个世界。”他的世界不再被认真考虑。 事实上，人类设计的进化宇宙学系统，一旦被给予足够长的时间来证明其价值，就不会幸存下来。 提出一个进化论显然比捍卫它容易得多。 归根结底，唯一经受住时间考验的关于起源主题的陈述是上帝圣言中所揭示的。 我们将更详细地考虑宇宙起源的四种现代演化模型。

### Primeval Atom Hypothesis

Firstly we have the Primeval Atom Hypothesis set forth in 1927 by George Lemaitre, a Belgian Jesuit. The Lemaitre model is a special solution of the Einstein 4-dimensional curved space gravitational field equations. According to this model the Universe is the result of the radioactive disintegration of a gigantic superstar the size of the Earth’s orbit—150 million kilometers in radius. This superatom consisted only of closely packed neutrons and had a brief existence corresponding to the neutron’s half-life of 13 minutes. Following the blast there were 3 phases in the evolution of the Universe:

1. rapid expansion then
2. deceleration due to gravity to an unstable coasting phase
3. renewed expansion which we now observe in the Doppler redshifts of distant galaxies.

Lemaitre also pointed out that his model can explain the enigmatic cosmic rays as the ‘fossil rays’ which emanated from the original explosion and still ‘testify to the primeval activity of the cosmos’. Cosmic rays are however nowadays believed to be of galactic origin namely as emanations from supernovas.

This model is no longer accepted as being realistic by the scientific community. One reason being that it was hoped that the coasting period, phase (ii), would be long and stable enough to allow galaxies to form by gravitational condensation from the chaotic gases that filled the model. However it was found by complicated calculations that phase (ii) was very unstable and even the slightest proto-galaxy formation would set it off into phase (iii) in which proto-galaxies could not survive the explosive rush of gases. Furthermore Lemaitre’s model uses the hypothetical cosmological constant. It is scientifically preferable to retain the experimentally and observationally well-established laws of physics rather than modifying them with terms as yet not detectable in laboratory experiments. Also the origin of the superatom is unexplained.

### Big Bang Model

The Primeval Atom Hypothesis has been largely supplanted by the Big Bang Model put forward by George Gamow in 1947. He has written many popular books with ‘homey’ analogies to promote the theory in an effective way. Because of this the Big Bang Model probably enjoys a more widespread acceptance today than any other cosmogony of the Universe, past or present, with the exception of special creation.

The observable Universe of galaxies appears to be expanding and it implies that all the matter in the universe was in the same place about 10 billion years ago. The Big Bang Theory assumes that this was so. The primordial fireball material was called ‘ylem’ by Gamow and consisted of matter and radiation at a temperature of billions of degrees and density of 1014 g/cc (i.e. 100 trillion times the density of water). It was in a much smaller volume than Lemaitre’s superatom and the explosion was more violent. It sent hydrogen gas in every direction. The hydrogen cooled and condensed by gravitation into the galaxies then the stars we see today. The universal expansion will continue forever and eventually even the brightest galaxies will be too faint to be observed. Gamow also offers an explanation of how the ylem itself formed. The pre-ylem condition of the universe was one of contraction from eternity past—the mirror image of the post-ylem condition, and the Big Bang represented an elastic rebound between the two states. Hannes Alfven, Professor of plasma physics and a cosmologist, is vigorously opposed to the idea that the Universe could have attained such a fantastic density by virtue of a previous contraction. As particles come together in such a contraction there would be little actual contact and so little chance of them being packed into a ylem. To illustrate this point Alfven resorts to an amusing analogy set forth in the style of Gamow. He asks his readers to visualize a housefly that has been condemned by a firing squad. The hapless fly is placed in the centre of a large circle while an unusually large number of marksmen stand shoulder to shoulder around the circumference of the circle. If each man firing on a signal, can achieve perfect aim and timing, the bullets will aggregate together into one large cannonball. Such would happen in an idealized over-simplified mathematical model. But in real life the bullets will for the most part go streaking by one another without colliding. And so it is with the particles in the contraction phase of the Universe. They would fail to ‘co-operate’ in the formation of the postulated ylem.

原始原子假说 首先是比利时耶稣会士乔治勒梅特于1927年提出的原始原子假说。 勒梅特模型是爱因斯坦4维弯曲空间引力场方程的特解。 根据这个模型，宇宙是一颗与地球轨道大小——半径 1.5 亿公里——的巨型超级恒星发生放射性分解的结果。 这个超级原子仅由紧密排列的中子组成，存在时间很短，相当于中子的半衰期为 13 分钟。 爆炸之后，宇宙演化分为三个阶段： 1. 迅速扩张 2. 由于重力减速到不稳定的滑行阶段 3. 我们现在在遥远星系的多普勒红移中观察到的新膨胀。 勒梅特还指出，他的模型可以将神秘的宇宙射线解释为从原始爆炸中发出的“化石射线”，并且仍然“证明了宇宙的原始活动”。 然而，如今宇宙射线被认为起源于银河系，即超新星的辐射。 该模型不再被科学界认为是现实的。 一个原因是希望第 (ii) 阶段的滑行期足够长且足够稳定，以允许星系通过充满模型的混沌气体的引力凝结形成。 然而，通过复杂的计算发现，阶段 (ii) 非常不稳定，即使是最轻微的原星系形成也会使其进入阶段 (iii)，在该阶段原星系无法在气体的爆炸冲击中幸存下来。 此外，勒梅特的模型使用了假设的宇宙学常数。 在科学上，最好保留实验和观察上公认的物理定律，而不是用实验室实验中尚未检测到的术语修改它们。 超级原子的起源也无法解释。 大爆炸模型 原始原子假说在很大程度上已被乔治·伽莫夫 (George Gamow) 于 1947 年提出的大爆炸模型所取代。他撰写了许多通俗易懂的类比书籍，有效地推广了该理论。 正因为如此，大爆炸模型在今天可能比过去或现在的任何其他宇宙起源论都得到更广泛的接受，特殊创造除外。 可观测的星系宇宙似乎正在膨胀，这意味着宇宙中的所有物质在大约 100 亿年前都在同一个地方。 生活大爆炸假设情况确实如此。 原始火球物质被伽莫夫称为“ylem”，由温度为数十亿度、密度为 1014 g/cc（即水密度的 100 万亿倍）的物质和辐射组成。 它的体积比勒梅特的超级原子小得多，爆炸也更猛烈。 它向各个方向输送氢气。 氢在引力作用下冷却并凝结成星系，然后是我们今天看到的恒星。 宇宙膨胀将永远持续下去，最终即使是最亮的星系也会因为太暗而无法被观测到。 伽莫夫还解释了 ylem 本身是如何形成的。 宇宙的前困境条件是永恒过去的一种收缩——后困境条件的镜像，大爆炸代表了两种状态之间的弹性反弹。 等离子体物理学教授兼宇宙学家汉内斯·阿尔文 (Hannes Alfven) 强烈反对宇宙可能由于先前的收缩而达到如此惊人的密度的观点。 当粒子在这样的收缩中聚集在一起时，实际接触很少，它们被打包成一个 ylem 的机会也很小。 为了说明这一点，阿尔文诉诸了一个以伽莫夫风格提出的有趣类比。 他让读者想象一只被行刑队处死的家蝇。 倒霉的苍蝇被放置在一个大圆圈的中心，而数量异常多的神射手并肩站在圆周的周围。 如果每个人都按信号开火，都能达到完美的目标和时机，子弹就会聚集在一起成为一颗大炮弹。 这种情况会发生在理想化的过度简化的数学模型中。 但在现实生活中，大多数情况下，子弹会彼此划过而不会发生碰撞。 宇宙收缩阶段的粒子也是如此。 他们将无法在假设的 ylem 的形成中“合作”。

Another problem which has been recognized by Gamow and his co-workers has to do with the production of elements during the initial stages of the expansion. This view of atom-building is based on successive neutron-capture reactions to achieve elements of increasing atomic weights in a stepwise manner starting from 100% neutron content in the ylem matter. At the end of the first 30 minutes more than half of the ylem has been converted into hydrogen and slightly less than half into helium. There is an impasse when we attempt to go past the stable inert gas He. A gap exists therefore at mass 5 among nuclides that can actually be formed since neither a proton nor a neutron can be attached to a helium nucleus of mass 4.

A further difficulty with the Big Bang hypothesis is that mathematical analysis shows that galaxies will not form by gravitational condensation from random statistical fluctuations in the cosmic gases because of the disruptive effect of the expansion of the Universe.

伽莫夫及其同事认识到的另一个问题与扩张初始阶段的元素生产有关。 这种原子构建的观点是基于连续的中子捕获反应，从 ylem 物质中的 100% 中子含量开始，以逐步方式获得原子量增加的元素。 在前 30 分钟结束时，超过一半的元素已转化为氢，略少于一半转化为氦。 当我们试图越过稳定的惰性气体 He 时，就会陷入僵局。 因此，由于质子和中子都不能附着在质量为 4 的氦核上，因此实际上可以形成的核素之间在质量 5 处存在间隙。 大爆炸假说的另一个困难是，数学分析表明，由于宇宙膨胀的破坏性影响，星系不会通过宇宙气体中随机统计波动的引力凝结形成。

### Steady State Hypothesis

We come to the Steady State Hypothesis announced in 1948 by Fred Hoyle, Hermann Bondi and Thomas Gold. Rather than have the Universe become depleted of matter as it expands the originators of this scheme have suggested that new matter appears out of nowhere to replace what has been lost in any given region of space. The density of matter is thereby maintained at a fairly constant level and the Universe stays in a steady state. The self-creating matter is said to be neutrons which possess the ability to condense into galaxies within which evolve stars, planets, plants, animals and people—all originating from empty space.

The continuous creation hypothesis has been dignified somewhat by the introduction of a ‘creation field’ into the Einstein equations of curved space. Matter is supposed to ‘happen’ when the C-field builds up to sufficient intensity at a given point in space. As well as having to modify the Einstein equations, the Steady State theory requires the basic laws of Thermodynamics to be changed. The first law of Thermodynamics, known also as the law of conservation of energy, of course forbids the condensing of matter out of nowhere inasmuch as matter is recognized as being a form of energy. The law has to be modified to saying that the amount of mass-energy per unit volume is constant on the average in the universe. However there is no experimental evidence in favor of this change. The Steady State theory is also in disagreement with the second law of Thermodynamics according to which such perpetual motion machines are not possible in the real world. In 1965 Hoyle himself has admitted that the following evidences weigh against the Steady State theory:

1. Radio astronomy counts by Martin Ryle and his associates indicate that the density of radio sources was greater in the past.
2. Red-shift measurements from QSOs (quasars) indicate that the universe has expanded from a state of higher density.
3. A background cosmic black-body radiation has been discovered which cannot be accounted for in the present state of the Universe.
4. Helium to hydrogen ratios in stars and gaseous nebulae show an unaccountably high amount of helium.
5. The structure of elliptical galaxies is not in accordance with expectations based on the Steady State theory.

Hoyle has since abandoned his original Steady State model. Alfven has also pointed out that a continuous creation of neutrons without a corresponding creation of anti-neutrons to offset them is a direct violation of the very basic principles of particle-anti-particle symmetries recently discovered by atomic and nuclear physicists.

稳态假说

我们来看看 Fred Hoyle、Hermann Bondi 和 Thomas Gold 于 1948 年宣布的稳态假说。 该计划的发起者认为，宇宙并没有随着膨胀而耗尽物质，而是认为新物质会凭空出现，以取代任何给定空间区域中失去的物质。 因此，物质的密度保持在相当恒定的水平，宇宙保持在稳定状态。 据说，自我创造的物质是中子，它们能够凝结成星系，在星系中演化出恒星、行星、植物、动物和人类——所有这些都起源于真空。 通过在弯曲空间的爱因斯坦方程中引入“创世场”，连续创世假说在某种程度上变得更加庄严。 当 C 场在空间中的某一点达到足够的强度时，物质就会“发生”。 除了必须修改爱因斯坦方程之外，稳态理论还需要改变热力学的基本定律。 热力学第一定律，也称为能量守恒定律，当然禁止物质凭空凝结，因为物质被认为是能量的一种形式。 该定律必须修改为：宇宙中每单位体积的质能平均是恒定的。 然而，没有实验证据支持这种改变。 稳态理论也不符合热力学第二定律，根据热力学第二定律，这种永动机在现实世界中是不可能的。 1965 年，霍伊尔本人承认以下证据反对稳态理论： 1. 马丁·赖尔（Martin Ryle）及其同事的射电天文学统计表明，过去射电源的密度更大。 2. QSO（类星体）的红移测量表明宇宙已经从较高密度的状态膨胀。 3. 已发现背景宇宙黑体辐射，但在目前的宇宙状态下无法解释。 4. 恒星和气态星云中氦与氢的比例显示氦含量高得令人难以置信。 5. 椭圆星系的结构与稳态理论的预期不符。 霍伊尔从此放弃了他最初的稳态模型。 阿尔文还指出，连续产生中子而不相应地产生反中子来抵消中子，直接违反了原子和核物理学家最近发现的粒子-反粒子对称性的基本原理。

### Ambiplasma Hypothesis

So we finally come to the most recent evolutionary cosmological model of the origin of the Universe, Alfven’s Ambiplasma Hypothesis put forward by him in 1965. Alfven begins with an extremely tenuous mixture of koinomatter (i.e. regular matter) and anti-matter occupying an enormous region of space 1012 light years in radius. The primordial material is a mixture of protons, antiprotons, electrons and positrons which he calls ‘ambiplasma’. Over a period of trillions of years gravitational attraction gradually shrinks the sphere and increases its density. In the case of proton-antiproton annihilation reactions, neutrons and electromagnetic radiation result. After trillions of years the radiation intensity increases to the extent that its outward pressure not only hinders the gravitational contraction but eventually reverses its direction completely. Thus we have arrived at an expanding universe without the need for catastrophic ‘fireworks’. Professor Alfven concedes that there are serious difficulties concerning the mechanism of galaxy formation. He is uncommitted as to whether the process began during the contraction of the metagalaxy, or during the hypothetical 10 billion years since the beginning of the expansion. The detailed development within each galaxy at still later stages, he says, poses an even more formidable problem. A major problem with this theory is that of explaining how koinomatter and antimatter became stably separated. Alfven has offered the suggestion that thin buffer zones of ambiplasma might separate growing regions of koinomatter and antimatter. Such, however is a difficult feat to accomplish and could well be analogous to the statistical improbability of spontaneously separating lukewarm water into regions of hot and cold water. Alfven confesses that there are several problems here.

Having looked in some detail at the modem evolutionary models of the Universe we come now to the Special Creation Model of the origin of the Universe. Rather than being based on the idle conjectures of men, the Special Creation Model is based on the record God has given us of what He did in creation week. Archaeology has been able to verify Bible statements as true and accurate as far back as the Table of Nations in [Genesis 10](https://biblia.com/bible/esv/Gen%2010). Christians believe that the whole of God’s Word is true and accurate from the beginning as it says in [Psalm 119:160](https://biblia.com/bible/esv/Ps%20119.160) AV.

By the nature of the act of creation, the World was created ‘old’. In computer jargon we would say that creation week was ‘transparent to the observer’. As man’s knowledge increases ([Dan. 12:4](https://biblia.com/bible/esv/Dan.%2012.4)) he sees further and further into the depths of the Universe. Likewise, since God created all things mature, man can see further and further into time past as well as space. Space and time seem endless and such that man never quite arrives at an overall comprehension of God’s creation though men of almost every generation have believed themselves to be at the apex of knowledge. And this has been in the plan of God, for we read in [Ecclesiastes 3:11](https://biblia.com/bible/esv/Eccles%203.11): God has the Universe into man’s heart, yet such that no man can find out the work that God makes from the beginning to the end.

The real Universe matches very well with the Special Creation Model where an initial perfect balanced creation that was ‘very good’ is now in bondage to decay and disruption, for we know that the Earth’s rotation is slowing down, the Sun is losing 5 million tons of mass per second in used up hydrogen fuel and emitted gases and energy, great masses of gases and dust are streaming out of galaxies, galactic and globular clusters are breaking up for lack of sufficient binding energy and the whole Universe is in a state of irreversible expansion heading for a ‘heat death’ where all the stars have burnt out and the Universe has come to a uniform cold temperature.

双原体假说

 因此，我们终于来到了最新的宇宙起源进化宇宙学模型，即阿尔文在 1965 年提出的双原质假说。阿尔文从占据巨大区域的可伊物质（即规则物质）和反物质的极其微弱的混合物开始。 半径为1012光年的太空。 原始材料是质子、反质子、电子和正电子的混合物，他称之为“双等离子体”。 在数万亿年的时间里，引力逐渐缩小球体并增加其密度。 在质子-反质子湮灭反应的情况下，会产生中子和电磁辐射。 数万亿年后，辐射强度增加到其向外的压力不仅阻碍了引力收缩，而且最终完全逆转了其方向。 因此，我们不需要灾难性的“烟花”就已经到达了一个不断膨胀的宇宙。 阿尔文教授承认，星系形成机制存在严重困难。 对于这个过程是在元星系收缩期间开始，还是在膨胀开始后的假设 100 亿年期间开始，他没有做出承诺。 他说，每个星系在更晚阶段的详细发展提出了一个更加艰巨的问题。 该理论的一个主要问题是解释相物质和反物质如何稳定分离。 阿尔文提出了这样的建议：双原质的薄缓冲区可能会分隔相续物质和反物质的生长区域。 然而，这是一项很难完成的壮举，很可能类似于将温水自发地分成热水和冷水区域的统计可能性。 阿尔文承认这里存在几个问题。 在详细研究了宇宙的现代进化模型之后，我们现在来到宇宙起源的特殊创造模型。 特殊创造模型不是基于人类的无聊猜想，而是基于上帝给我们的关于他在创造周所做的事情的记录。 考古学已经能够验证圣经的陈述是真实和准确的，早在创世记第 10 章的《国家表》中就已存在。基督徒相信，正如诗篇 119:160 AV 中所说，上帝的全部话语从一开始就是真实和准确的。 根据创造行为的本质，世界是“古老”创造的。 用计算机术语来说，我们会说创造周“对观察者来说是透明的”。 随着人类知识的增加（但以理书 12:4），他对宇宙的深处看得越来越远。 同样，既然上帝创造了成熟的万物，人类就可以对过去的时间和空间看得越来越远。 空间和时间似乎是无穷无尽的，因此人类永远无法完全理解上帝的创造，尽管几乎每一代人都相信自己处于知识的顶峰。 这也在神的计划之中，因为我们在传道书3章11节中读到：神将宇宙放在人的心里，但神从始至终所做的工作，没有人能查明。 真实的宇宙与特殊创造模型非常吻合，其中最初“非常好”的完美平衡创造现在受到腐烂和破坏的束缚，因为我们知道地球自转正在减慢，太阳正在损失 500 万吨 每秒质量的氢燃料耗尽并排放出气体和能量，大量气体和尘埃从星系中流出，星系和球状星团因缺乏足够的结合能而破裂，整个宇宙处于不可逆转的状态 膨胀正走向“热寂”，所有恒星都被烧毁，宇宙达到均匀的低温。

Let us now conclude with two observations:

1. Firstly, it is always possible to modify the Laws of Physics to suit a particular philosophy in such a way that the modification would be unnoticed on Earth, but have significant effects on the cosmological scale. This however is not good scientific practice.
2. Secondly, people are forever hopefully inventing so called perpetual motion machines, which can sometimes take a trained scientist a good while to sort out the flaw. Evolutionary theories of the origin of the Universe where ordered systems are supposed to be self-created are just like those perpetual motion machines though on a much grander scale. The very idea that any ordered system can give rise to itself directly contradicts the most basic Laws of Science.

In conclusion we can say that:

* all evolutionary cosmological models start off with matter, be it neutrons or hydrogen, without any explanation of where that came from.
* all evolutionary cosmological models assume that this matter obeys certain physical laws with no explanation of why or where the laws come from.
* all evolutionary cosmological models involve gross over-simplifications of reality and have not stood the test of time in the light of new information.
* all evolutionary theories on the origin of the planets, the stars, the galaxies or the whole Universe that I have studied, at one or several points defy the Laws of Physics. My own studies have shown that the usual theory of gaseous nebula condensing to form the magnificent astronomical objects we see today of planets, stars and galaxies doesn’t even work if the Universe were a billion billion years old. It is far more likely for a celestial system to break up into its constituent parts than for the reverse to occur.

The only satisfactory explanation of the **origin of the universe** is to be found in the ancient book of Genesis: ‘In the beginning God created the heavens and the earth.’

现在让我们得出两个结论：

1. 首先，总是有可能修改物理定律以适应特定的哲学，这种修改在地球上不会被注意到，但会对宇宙尺度产生重大影响。 然而，这不是良好的科学实践。 2. 其次，人们永远希望发明所谓的永动机，这有时需要训练有素的科学家花很长时间才能解决缺陷。 宇宙起源的进化论认为有序系统是自我创造的，就像那些永动机一样，尽管规模更大。 任何有序系统都可以产生自身的想法直接违背了最基本的科学定律。 总之我们可以说： • 所有演化宇宙学模型都从物质开始，无论是中子还是氢，都没有任何解释其来源。 • 所有进化宇宙学模型都假设该物质遵循某些物理定律，但没有解释这些定律的原因或来源。 • 所有进化宇宙学模型都涉及对现实的过度简化，并且没有经受住新信息的时间考验。 • 我所研究的所有关于行星、恒星、星系或整个宇宙起源的进化论，在一个或几个点上都违背了物理定律。 我自己的研究表明，如果宇宙有十亿年的历史，气态星云凝结形成我们今天看到的行星、恒星和星系等宏伟天体的通常理论甚至不起作用。 天体系统分裂成其组成部分的可能性远大于发生相反情况的可能性。 关于宇宙起源的唯一令人满意的解释可以在古老的《创世记》中找到：“起初，上帝创造了天地。”

## String theory and the origin of the universe—new idea, old problem

by Daniel Schmidt

Perhaps the most serious problem with the big bang theory is the singularity problem, which involves the original cause of the universe and the origin of matter and energy. Big bang theorists can attempt to describe the early universe, but so far they have not explained why there is a universe to describe. However, there have been numerous attempts at such an explanation, and recently Paul J. Steinhardt has suggested yet another idea, this one based on string theory. String theory is a new physical theory that seeks to solve the conflict between general relativity and quantum mechanics, thus providing a unified, overall description of physics as it is now known. But despite the advanced physics involved, Steinhardt’s model does not overcome, or even address, the old problems that have plagued all previous naturalistic origins theories.

弦理论与宇宙起源——新思想，老问题

丹尼尔·施密特

也许大爆炸理论最严重的问题是奇点问题，它涉及宇宙的起源以及物质和能量的起源。 大爆炸理论家可以尝试描述早期宇宙，但到目前为止他们还没有解释为什么有一个宇宙可以描述。 然而，人们已经多次尝试过这样的解释，最近保罗·J·斯坦哈特提出了另一种想法，这是基于弦理论的。 弦理论是一种新的物理理论，旨在解决广义相对论和量子力学之间的冲突，从而提供对现在已知的物理学的统一、全面的描述。 但是，尽管涉及先进的物理学，斯坦哈特的模型并没有克服，甚至没有解决困扰以前所有自然主义起源理论的老问题。

## An introduction to string theory

Quantum mechanics and general relativity are both tremendously successful scientific theories. Quantum mechanics describes the bizarre workings of matter and energy on the smallest imaginable scales; general relativity describes the force of gravity, and becomes useful when gravitational fields are so extreme that they begin to depart from Isaac Newton’s much simpler description. The problem is that these two theories seem to be mutually exclusive. Both appear to be accurate descriptions of the world, but they cannot both be true. General relativity assumes that space-time is a smooth continuum which is curved by gravity. Quantum mechanics, by contrast, involves random, violent distortions of space-time in what has been called ‘quantum foam’ at the smallest scales. This is usually not a serious drawback, since strong gravitational fields, the domain of general relativity, usually occur on large scales, where the quantum effects are not noticed. But in some cases, such as the singularity inside a black hole, there are strong gravitational fields (requiring general relativity) coupled with very small scales (requiring quantum mechanics). If one simply joins the equations of general relativity to those of quantum mechanics, they give totally nonsensical answers to calculations, such as infinity.1

String theory is the most successful, and the most popular, attempt to unify these apparently conflicting theories in a coherent description of reality. A critical part of this new theory is the idea that elementary particles such as the electron are not points, as is generally believed, but oscillating loops of ‘string’. This apparently unrelated suggestion actually has profound implications for the conflict between general relativity and quantum mechanics.

When you want to probe something at very small scales (and assuming for the moment that you cannot see it directly), you can shoot very small projectiles at it and see how they are deflected, thereby reconstructing its image. Large projectiles will reveal only the largest-scale structure of the object in question, giving only a crude picture. Very small projectiles, however, can be deflected by the smallest irregularities in the target, revealing the finer details. In common experience we do this with photons, particles of light, without even thinking about it. The pattern of light and shadow, revealing an object’s shape, is a result of the way light is deflected by the surface.

It takes small objects to probe small scales, and no object can be used to probe a scale smaller than its own size. Therefore, if all elementary particles are actually loops of string, then no scale smaller than these strings can possibly be probed. The problem of the ultra-small quantum foam that gives relativists a headache arises on precisely that scale. String theory therefore eliminates the problem and allows a unified description of nature.2

String theory involves a number of very strange ideas. For example, the universe consists of nine or ten spatial dimensions, along with the one dimension of time.3 Furthermore, all forces arise from the same underlying force (just as electricity, magnetism and the weak force are already known to be interrelated). The properties of elementary particles are believed to arise from the patterns of vibrations in strings. String theory has not yet been completely developed or understood at the mathematical level, but so far it seems to have great potential.

Despite its apparent theoretical promise, string theory does have the problem that there is not yet any experimental evidence for or against it. That will have to wait until either the theorists or the experimenters (or both) develop their techniques and ideas further. In the meantime, however, string theory seems to be the most promising solution, even if speculative.

弦理论简介

量子力学和广义相对论都是非常成功的科学理论。 量子力学在可想象的最小尺度上描述了物质和能量的奇异运作。 广义相对论描述了引力，当引力场非常极端以至于开始偏离艾萨克·牛顿的简单得多的描述时，广义相对论就变得有用。 问题在于这两种理论似乎是相互排斥的。 两者似乎都是对世界的准确描述，但它们不可能都是真实的。 广义相对论假设时空是一个光滑的连续体，因重力而弯曲。 相比之下，量子力学涉及最小尺度的时空随机剧烈扭曲，即所谓的“量子泡沫”。 这通常不是一个严重的缺点，因为强引力场（广义相对论的领域）通常发生在大尺度上，而量子效应不会被注意到。 但在某些情况下，例如黑洞内的奇点，存在强引力场（需要广义相对论）和非常小的尺度（需要量子力学）。 如果简单地将广义相对论方程与量子力学方程结合起来，它们就会给出完全无意义的计算答案，例如无穷大。1 弦理论是最成功、也是最受欢迎的尝试，它试图将这些明显相互冲突的理论统一到对现实的连贯描述中。 这个新理论的一个关键部分是这样的观点：电子等基本粒子并不是人们普遍认为的点，而是“弦”的振荡环。 这个看似无关的建议实际上对广义相对论和量子力学之间的冲突有着深远的影响。 当你想在非常小的尺度上探测某物时（假设你暂时无法直接看到它），你可以向它发射非常小的射弹，看看它们是如何偏转的，从而重建它的图像。 大型射弹只能揭示物体的最大尺度结构，只能提供粗略的图像。 然而，非常小的射弹可以通过目标中最小的不规则性来偏转，从而显示出更精细的细节。 根据一般经验，我们用光子、光粒子来做到这一点，甚至不假思索。 揭示物体形状的光影图案是光被表面偏转的结果。 需要用小物体来探测小尺度，任何物体都不能用来探测比自身尺寸更小的尺度。 因此，如果所有基本粒子实际上都是弦环，那么就不可能探测到比这些弦更小的尺度。 让相对论者头疼的超小量子泡沫问题正是在这个规模上出现的。 因此，弦理论消除了这个问题，并允许对自然进行统一的描述。2 弦理论涉及许多非常奇怪的想法。 例如，宇宙由九个或十个空间维度以及时间的一维组成。3此外，所有力都源自相同的潜在力（正如众所周知的电、磁和弱力是相互关联的一样）。 人们相信基本粒子的特性是由弦的振动模式产生的。 弦理论尚未在数学层面上得到完全发展或理解，但到目前为止它似乎具有巨大的潜力。 尽管弦理论在理论上有明显的前景，但它确实存在一个问题，即目前还没有任何支持或反对它的实验证据。 这必须等到理论家或实验者（或两者）进一步发展他们的技术和想法。 然而与此同时，弦理论似乎是最有希望的解决方案，即使是推测性的。

## String theory and the origin of the universe

As might be expected of such a new physical theory, string theory has important implications in the field of cosmology, and it has been applied to the singularity problem.

Paul J. Steinhardt and Neil G. Turok have claimed that string theory allows for the possibility of an eternal universe.4 In their model, called the ekpyrotic model, our universe is only one of two. These two universes, or ‘branes’, lie side-by-side in a higher dimension (an analogy would be two flat sheets lying parallel in the third dimension) and are attracted by a ‘new kind of force arising from quantum interactions’ between the two branes. This attraction causes the branes to collide, with the energy of the collision producing a big bang. The branes then separate, space expands in each brane, stars and galaxies form, life evolves and asks where it came from, etc. Eventually, this attractive force pulls the two branes back together in another big bang, and so it goes, in an eternal cycle with no beginning, no end, and no need for a cause or a creator.4

Unfortunately, despite all the advanced (if unproven) physics involved in this theory, these two scientists have made a very elementary mistake that could have been perceived long ago. The ekpyrotic model, like any other theory that claims the universe is infinitely old, ignores the simple fact that the Second Law of Thermodynamics disallows any such possibility. According to the Second Law, any isolated system must tend toward randomization and disorder or, more precisely, it must increase in entropy. Obviously, nothing that is wearing out can last forever, so this well-demonstrated law of physics requires that the universe cannot be infinitely old. This argument has been made many times before, and big bang theorists will sometimes admit to it when it is convenient. But when an otherwise apparently promising origins theory contradicts the Second Law, that law is ignored, as in this case. (Sometimes it is claimed that this argument is not correct, since the Second Law applies only to isolated systems, whereas in the ekpyrotic model, the universe we live in is interacting with another, and thus is not isolated.5 However, the two universes can still be counted together as an isolated system. This overall system must still increase in entropy.6)

弦理论与宇宙起源

正如人们对这种新的物理理论所期望的那样，弦理论在宇宙学领域具有重要的意义，并且它已被应用于解决奇点问题。 Paul J. Steinhardt 和 Neil G. Turok 声称弦理论允许存在永恒宇宙的可能性。4 在他们的模型（称为火模型）中，我们的宇宙只是两个宇宙之一。 这两个宇宙，或“膜”，并排位于更高的维度（类比为在三维中平行放置的两个平板），并被两者之间的“量子相互作用产生的新型力”所吸引。 两个膜。 这种吸引力导致膜发生碰撞，碰撞的能量产生大爆炸。 然后膜分离，每个膜中的空间膨胀，恒星和星系形成，生命进化并询问它从哪里来，等等。最终，这种吸引力在另一次大爆炸中将两个膜拉回到一起，就这样，以一种 永恒的循环，没有开始，没有结束，也不需要原因或创造者。4 不幸的是，尽管该理论涉及所有先进的（如果未经证实的）物理学，但这两位科学家却犯了一个很早以前就可以察觉的非常低级的错误。 与任何其他声称宇宙无限古老的理论一样，火热模型忽略了一个简单的事实，即热力学第二定律不允许任何这种可能性。 根据第二定律，任何孤立的系统都必须趋向于随机化和无序化，或者更准确地说，它的熵必须增加。 显然，任何磨损的东西都无法永远存在，因此这个已得到充分证明的物理定律要求宇宙不可能无限古老。 这个论点以前已经被提出过很多次了，大爆炸理论家有时会在方便的时候承认这一点。 但是，当一个原本看似有希望的起源理论与第二定律相矛盾时，该定律就会被忽略，就像在本例中一样。 （有时有人声称这个论点是不正确的，因为第二定律仅适用于孤立的系统，而在火热模型中，我们生活的宇宙正在与另一个宇宙相互作用，因此不是孤立的。5然而，这两个宇宙 仍然可以算作一个孤立的系统。整个系统的熵仍然会增加。6)

## Conclusion

Naturalistic theories of the origin of the universe generally fall into two categories: those that claim the universe appeared from nothing with no cause, thus denying causality and the conservation laws; and those that claim the universe is infinitely old, thus denying the Second Law of Thermodynamics. The recent idea based on string theory makes no more progress than the previous attempts, indicating that there is something fundamentally wrong with the naturalistic assumptions behind such ideas.7 If we simply take the laws of physics at face value, however, it becomes obvious that the universe must have had a beginning, and that it must have been caused by some outside agent. Thus there is no scientifically valid way to avoid the conclusion that ‘In the beginning God created the heavens and the earth.’

结论

关于宇宙起源的自然主义理论一般分为两类：一类认为宇宙是无缘无故地从无到有出现的，从而否认因果关系和守恒定律； 以及那些声称宇宙无限古老的人，从而否认热力学第二定律。 最近基于弦理论的想法并没有比以前的尝试取得更多进展，这表明这些想法背后的自然主义假设存在根本性错误。 7 然而，如果我们简单地从表面上理解物理定律，很明显， 宇宙一定有一个开始，并且它一定是由某种外部因素造成的。 因此，没有科学上有效的方法可以避免得出“起初上帝创造了天地”的结论。

# Does the universe need a cause?

NASA/Hubble Heritage Team

This week we have two feedback responses about the cosmological argument for a Creator. In the first, J.M. from the United States writes in response to article [Who created God?](https://creation.com/who-created-god), and CMI’s [Dr Jonathan Sarfati](https://creation.com/dr-jonathan-sarfati) replies with comments interspersed. Then in the [second response below](https://creation.com/universe-cause#2), John T. from Switzerland wrote in response to the article [Curiosity: Did God create the universe?](https://creation.com/curiosity-did-god-create-the-universe) Comments from CMI’s [Dr Carl Wieland](https://creation.com/dr-carl-wieland) are interspersed:

I find it refreshing that this article attempts a proof at god using reliable evidence rather than circular logic.

Thanks, but we don’t actually claim this is a ‘proof’ of God, but rather the article shows that it is rational to conclude that a supernatural Creator like the one revealed in the Bible exists, based on the existence and nature of the creation.

I would like to point out, however, some fallacies therein. You claim that the universe must have had a supernatural cause due to the laws of thermodynamics; I assume you are siting entropy and the loss of energy therein. You then state that this requires the universe to have a beginning, and you are correct, it does. But it does not require a creator. Here is the underlying issue. Since relativity states that space and time are one and the same (space-time, it is aptly named) then before the universe existed, there was no time. Time was created along with our universe.

Aha, you said “created”. And we make this point ourselves [here](https://creation.com/oil-starlight-time).

Therefore, the laws of entropy and thermodynamics would not take effect until the universe began. This being the case, it becomes theoretically possible that the point of infinite mass and zero volume our universe can begin without a sufficient cause, in the sense that there is nothing required to “set it in motion.”

Why was it a universe that popped into being without a cause, not a tiger or banana for example?

宇宙需要一个原因吗？

美国宇航局/哈勃遗产团队

本周我们收到了两个关于造物主的宇宙论论证的反馈。 第一篇是来自美国的J.M.对《谁创造了上帝？》一文的回应，CMI的乔纳森·萨法蒂博士则以穿插评论的方式进行回复。 那么在下面的第二条回复中，来自瑞士的John T. 回复了《好奇心：上帝创造了宇宙吗？》一文。 CMI 的 Carl Wieland 博士的评论散布其中： 我觉得这篇文章尝试使用可靠的证据而不是循环逻辑来证明上帝，这令人耳目一新。 谢谢，但我们实际上并没有声称这是上帝的“证明”，而是这篇文章表明，根据上帝的存在和本质，可以合理地得出这样的结论，即像《圣经》中所揭示的那样的超自然造物主是存在的。 创建。 但我想指出其中的一些谬误。 你声称，根据热力学定律，宇宙一定有超自然的原因； 我假设你正在寻找熵和其中的能量损失。 然后你说这需要宇宙有一个开始，你是对的，确实如此。 但它不需要创造者。 这是根本问题。 由于相对论指出空间和时间是同一的（时空，它被恰当地命名），所以在宇宙存在之前，不存在时间。 时间与我们的宇宙一起被创造。 啊哈，你说“创造”。 我们在这里自己提出了这一点。 因此，熵和热力学定律直到宇宙开始时才生效。 在这种情况下，从理论上讲，我们的宇宙的无限质量和零体积点可以在没有充分原因的情况下开始，从某种意义上说，不需要任何东西来“使其运动”。 为什么它是一个无缘无故突然出现的宇宙，而不是老虎或香蕉？

We invoke the second law only to show that the universe had a beginning. You are missing the point with this diversion. Nothing you said overcomes the problem of something beginning without a cause. Also, why was it a universe that popped into being without a cause, not a tiger or banana for example?

Consider the following thought experiment. If time were to stop and then start up again, we would have no knowledge of what happened, and would not age; it would literally be as if nothing happened. This shows the duality of time. If time does not exist, then an infinite amount of “time” would be the same as an instant.

Or rather, both these terms would have no meaning before time was created.

Imagine, for a moment, that we were outside observers of the creation of the universe. Relative to us, it would seem as if the point of mass was “frozen” in time. Relative to the universe itself however, since time as yet to exist, it has been there no time at all. In this sense, the singularity was “waiting” to explode to an outside observer. But, since we live inside the universe, we cannot observe it from the outside. We therefore see the universe as we would relative to us: It began as an explosion, before which nothing existed. Relativity allows us to make this distinction within the laws of Physics, and therefore, the universe does not need any creator.

Most of your email is stating things that, as we show, are hardly news to us, then draws a conclusion that simply does not follow.

The assumption in your article is that before the creation of the universe, time was still linearized.

我们援引第二定律只是为了表明宇宙有一个开始。 你没有抓住这个转移的重点。 你所说的任何事情都无法解决无缘无故开始的问题。 另外，为什么是一个无缘无故突然出现的宇宙，而不是老虎或香蕉？ 考虑以下思想实验。 如果时间停止然后重新开始，我们将不知道发生了什么，也不会衰老； 从字面上看，就像什么都没发生一样。 这体现了时间的二元性。 如果时间不存在，那么无限的“时间”就等同于瞬间。 或者更确切地说，在时间被创造之前，这两个术语都没有任何意义。 想象一下，我们是宇宙创造的局外观察者。 相对于我们来说，质点似乎被及时“冻结”了。 然而相对于宇宙本身来说，自从时间存在以来，它就根本不存在时间。 从这个意义上说，奇点正在“等待”外部观察者爆炸。 但是，由于我们生活在宇宙内部，因此我们无法从外部观察它。 因此，我们以相对于我们而言的方式看待宇宙：它始于爆炸，在此之前什么都不存在。 相对论使我们能够在物理定律内做出这种区分，因此，宇宙不需要任何创造者。 正如我们所展示的，您的大部分电子邮件所陈述的内容对我们来说几乎不是什么新闻，然后得出的结论根本不成立。 您文章中的假设是，在宇宙诞生之前，时间仍然是线性化的。

As shown, we do no such thing. One of our [old articles](https://creation.com/if-god-created-the-universe-then-who-created-god) even answers the points you raise:

A last desperate tactic by sceptics to avoid a theistic conclusion is to assert that creation in time is incoherent. Davies correctly points out that since time itself began with the beginning of the universe, it is meaningless to talk about what happened ‘before’ the universe began. But he claims that causes must precede their effects. So if nothing happened ‘before’ the universe began, then (according to Davies) it is meaningless to discuss the cause of the universe’s beginning.

But the philosopher (and New Testament scholar) William Lane Craig, in a [useful critique](https://creation.com/if-god-created-the-universe-then-who-created-god) of Davies, pointed out that Davies is deficient in philosophical knowledge. Philosophers have long discussed the notion of **simultaneous causation**. Immanuel Kant (1724–1804) gave the example of a weight resting on a cushion simultaneously causing a depression in it. Craig says:

The first moment of time is the moment of God’s creative act and of creation’s simultaneous coming to be.

Time is just as malleable as space however, and therefore the universe does not require causation in order to begin. Cause and effect relationships only work in a linearized time frame (one that only moves in one direction, with a definite beginning).

As shown, simultaneous causation is an old concept.

Since time did not exist, the universe did not require a push to begin; in a sense, the universe existed in a perpetual state of ‘beginning’ before it was actually born. It’s a difficult concept to describe since the concept of time is so ingrained in us, but it does fit within the laws of general relativity. A creator is only necessary if time existed before the universe. Time did not exist before the universe. Therefore, a creator is unnecessary.

Because of the concept of simultaneous causation, your argument fails and there is no fallacy in our argument.

如图所示，我们不做这样的事情。 我们的一篇旧文章甚至回答了您提出的观点： 怀疑论者为避免有神论结论而采取的最后一个绝望策略是断言时间创造是不连贯的。 戴维斯正确地指出，由于时间本身是从宇宙的开始开始的，所以谈论宇宙开始“之前”发生的事情是没有意义的。 但他声称原因必须先于结果。 因此，如果在宇宙开始“之前”什么都没有发生，那么（根据戴维斯的说法）讨论宇宙开始的原因就毫无意义。 但哲学家（也是新约学者）威廉·莱恩·克雷格（William Lane Craig）在对戴维斯的有益批评中指出，戴维斯缺乏哲学知识。 长期以来，哲学家们一直在讨论同时因果关系的概念。 Immanuel Kant (1724-1804) 举了一个例子，一个重物放在垫子上同时导致垫子凹陷。 克雷格 说： 时间的最初时刻是上帝创造行为和创造物同时出现的时刻。 然而，时间和空间一样具有可塑性，因此宇宙的开始不需要因果关系。 因果关系仅在线性时间范围内起作用（仅朝一个方向移动，有明确的开始）。 如图所示，同时因果关系是一个古老的概念。 由于时间不存在，宇宙不需要推动力就可以开始； 从某种意义上说，宇宙在真正诞生之前就处于一种永恒的“开始”状态。 这是一个很难描述的概念，因为时间的概念在我们心中根深蒂固，但它确实符合广义相对论定律。 只有当时间早于宇宙存在时，创造者才是必要的。 在宇宙出现之前，时间并不存在。 因此，创造者是不必要的。 由于同时因果关系的概念，你的论证失败，而我们的论证没有谬误。

NASA/ESA/Hubble Heritage Team

Dear John

Thanks for your email.

You wrote (see responses interspersed):

My god, are you people gullible and narrow-minded!

We must be, indeed, since we:

* fail to accept that an effect can exist without an adequate cause
* find it incoherent that anyone could accept that nothing could have given rise to something
* find it also difficult to comprehend how so many intelligent (some not-so-intelligent, of course) people could believe that all of the intricate biological design in the world, even down to the machine-like functioning of many molecular biological systems, could have come into being with no intelligence involved at all.

You think you know how the universe was created because you read it in some old books, which by the way do nothing but contradicting themselves

This is an example of the informal logical fallacy known as ‘elephant hurling’. You have not provided one example of a true contradiction. Further, if you believe that a book that truly involved per your description “nothing but contradicting [itself]” could cause tens of thousands of qualified scientists worldwide (at least), not to mention millions of highly-educated people overall, to claim adherence to its life-impacting propositions as truth, what does that say about your willingness to believe things that have a vanishingly small likelihood of being true?

If the Bible’s other claims about reality and history are so strongly concordant with facts and reason, perhaps one should closely enquire into the facts that are relevant to its chronological claims.

and are based on superstition and false beliefs, fed to the ignorant and taken as the absolute truth.

Here is a great scientist, who still has the humility to say “we are not 100% sure, but we think this is what happened…” Even if he’s dead wrong, his opinion is infinitely more valuable than yours, since it is based on actual and observable FACTS, …

This implies that the people in this organisation, for instance, are not interested in how the Bible’s propositional truths, which rest strongly on its claims about history, interact with the **facts** of the real world. Or that these facts somehow contradict it. Maybe it’s time you did some perusing of the >8,000 articles on our site, perhaps beginning at the [Q and A section](https://creation.com/creation-answers). This will hopefully be particularly helpful to you, as it is nicely topically organised. So it does not require an Einsteinian mental capacity to work through.

… not some dream that a man allegedly had in some cave!

I’m not sure how this relates to the Bible, since its own claims about itself and its source of information/origin never mention anything even remotely resembling that description.

亲爱的约翰 谢谢你的电邮。

 您写道（参见散布的回复）： 我的天啊，你们这些人是不是太轻信、太狭隘了！ 事实上，我们必须如此，因为我们： • 无法接受结果可能在没有充分原因的情况下存在 • 发现任何人都可以接受“无事可生”的说法，这是不合逻辑的 • 发现也很难理解为什么这么多聪明的人（当然，有些人不太聪明）会相信世界上所有复杂的生物设计，甚至包括许多分子生物系统的类似机器的功能， 完全可以在没有任何智力参与的情况下产生。 你认为你知道宇宙是如何创造的，因为你在一些旧书中读到过它，顺便说一句，这些书除了自相矛盾之外什么也没做 这是被称为“大象投掷”的非正式逻辑谬误的一个例子。 您没有提供一个真正矛盾的例子。 此外，如果你相信一本真正按照你的描述“除了自相矛盾之外什么也没有”的书可能会导致全世界数以万计的合格科学家（至少），更不用说数百万受过高等教育的人，声称遵守 与其将影响生活的命题视为真理，这说明你愿意相信那些可能性微乎其微的事情？ 如果《圣经》关于现实和历史的其他主张与事实和理性如此强烈地一致，那么也许我们应该仔细探究与其按时间顺序排列的主张相关的事实。 它们基于迷信和错误的信仰，被灌输给无知的人并被视为绝对真理。 这是一位伟大的科学家，他仍然谦虚地说“我们不是 100% 确定，但我们认为这就是发生的事情……”即使他完全错了，他的观点也比你的观点更有价值，因为它是基于 实际和可观察到的事实，…… 例如，这意味着该组织中的人们对圣经的命题真理（强烈依赖于其对历史的主张）如何与现实世界的事实相互作用不感兴趣。 或者这些事实在某种程度上与它相矛盾。 也许您是时候仔细阅读我们网站上超过 8,000 篇文章了，也许从问答部分开始。 希望这对您特别有帮助，因为它按主题组织得很好。 因此，它不需要爱因斯坦式的心理能力来完成。 ……这可不是一个男人在某个山洞里做的梦！ 我不确定这与《圣经》有什么关系，因为它自己关于自身的主张及其信息来源/起源从未提及任何与该描述有一点相似的东西。

You really think the world is 6000 years old? Come on, grow up!

If the Bible’s other claims about reality and history are so strongly concordant with facts and reason, perhaps one should closely enquire into the facts that are relevant to its chronological claims. Those who have done this, rather than reacting emotively, or using claims based on an appeal to authority, or the authority of ‘numbers of adherents’, have more than once changed their mind.

Given its potential importance in the eternal perspective, and its impact on society, I would have thought that even if it were found to be incorrect, this was a topic that deserved a more mature approach than has been demonstrated in your comments.

Sincerely,

Carl W.

你真的认为世界有6000年的历史吗？ 加油，快点长大吧！ 如果《圣经》关于现实和历史的其他主张与事实和理性如此强烈地一致，那么也许我们应该仔细探究与其按时间顺序排列的主张相关的事实。 那些这样做的人，不是情绪化地做出反应，或者使用基于诉诸权威或“众多追随者”权威的主张，而是不止一次地改变了主意。 考虑到它在永恒视角中的潜在重要性及其对社会的影响，我认为即使它被发现是不正确的，这个话题也值得采取比您的评论中所展示的更成熟的方法。

真挚地， 卡尔·W.

**Has the universe always existed?**

NASA/Hubble

Ted G. from the UK wrote in response to Don Batten’s article [Who created God?](https://creation.com/who-created-god) as follows:

The ‘Universe’ is the set of all sets. This means it contains EVERYTHING (and therefore every person) that exists. It follows immediately that there is NOTHING outside the set we call the universe. Therefore there cannot be any kind of thing outside the universe. Therefore the universe wasn’t created by anything because every thing is inside the universe. Simple logic! If you define the universe in a different way then you need another word that means ‘The set of all sets’. I don’t know of such a word, so I prefer the definition given already for the word ‘Universe’. We know the universe exists and cannot have come from something else because the ‘something else’ would already be inside the universe! Therefore, the universe has always existed! Simple logic!

[Carl Wieland](https://creation.com/dr-carl-wieland) responds:

Interesting; I would have defined the universe as ‘all the matter and energy that exists’—and materialists (which the majority of scientists are today, sadly) would have agreed with me, since they don’t acknowledge the existence of anything other than mass/energy. I.e. there is no non-material, supernatural realm.

Let me put it another way. In set theory, (which is presumably the framework from which you derive the meaning of the word ‘set’) a set consists of objects.

The definition of a set is laid out by German mathematician Georg Cantor, who founded set theory, in his Beiträge zur Begründung der transfiniten Mengenlehre (Contributions to the Founding of the Theory of Transfinite Numbers) as follows (bold emphasis added): “Eine Menge, ist die Zusammenfassung ***bestimmter, wohlunterschiedener Objekte*** unserer Anschauung und unseres Denkens—welche Elemente der Menge genannt werden—zu einem Ganzen.” (“A set is a gathering together into a whole of **definite, distinct objects** of our perception and of our thought—which are called [elements](http://en.wikipedia.org/wiki/Element_%28mathematics%29) of the set.”)

Assume a materialist were to discuss set theory with a Christian. In that situation, it is more than likely that there would be an automatic presupposition by both parties that they were referring to objects which were either

1. Composed at least hypothetically of mass/energy, or
2. Numbers, which are utilized as abstract representations of objects in the material world.

If that were not presupposed, there would be no common ground for discussion, since the materialist does not concede the existence of anything outside the material (mass/energy) realm. (Thought itself, in that philosophy/worldview, is regarded as ultimately material in origin. In one of his notebooks, Darwin addresses himself as, “O, you materialist!” and says, “Why is thought, being a secretion of brain, more wonderful than gravity as a property of matter?”—see [Darwin’s real message: have you missed it?](https://creation.com/charles-darwins-real-message-have-you-missed-it))

The materialist does not concede the existence of anything outside the material (mass/energy) realm.

宇宙一直存在吗？

美国宇航局/哈勃

来自英国的 Ted G. 回应 Don Batten 的文章《谁创造了上帝？》 如下： “宇宙”是所有集合的集合。 这意味着它包含存在的一切（以及每个人）。 紧接着，我们称之为宇宙的集合之外不存在任何东西。 因此，宇宙之外不可能有任何事物。 因此宇宙不是由任何事物创造的，因为一切事物都在宇宙内部。 简单的逻辑！ 如果你以不同的方式定义宇宙，那么你需要另一个词来表示“所有集合的集合”。 我不知道这个词，所以我更喜欢“宇宙”这个词已经给出的定义。 我们知道宇宙存在并且不可能来自其他东西，因为“其他东西”已经在宇宙内部了！ 因此，宇宙一直存在！ 简单的逻辑！ 卡尔·维兰德回应： 有趣的; 我会把宇宙定义为“存在的所有物质和能量”——而唯物主义者（遗憾的是，今天的大多数科学家都是这样）会同意我的观点，因为他们不承认除了质量之外还有任何东西的存在/ 活力。 IE。 不存在非物质、超自然的领域。 让我换一种说法。 在集合论中（这大概是你推导出“集合”一词含义的框架），集合由对象组成。 集合论的创始人、德国数学家格奥尔格·康托 (Georg Cantor) 在他的《Beiträge zur Begründung der transfiniten Mengenlehre》（对超限数理论的建立的贡献）中对集合的定义如下（加粗强调）： , ist die Zusammenfassung bestimmter, wohlunterschiedener Objekte unserer Anschauung und unseres Denkens—welche Elemente der Menge genannt werden—zu einem Ganzen。” （“集合是我们感知和思想的明确的、不同的对象的集合，这些对象被称为集合的元素。”） 假设一位唯物主义者要与一位基督徒讨论集合论。 在这种情况下，双方很可能会自动预设他们所指的对象是 1. 至少假设由质量/能量组成，或 2. 数字，用作物质世界中物体的抽象表示。 如果没有预设这一点，就不会有讨论的共同点，因为唯物主义者不承认物质（质量/能量）领域之外存在任何东西。 （在这种哲学/世界观中，思想本身被认为是最终的物质起源。在他的一本笔记本中，达尔文对自己说：“哦，你这个唯物主义者！”并说，“为什么思想是大脑的分泌物， 作为物质的一种属性，它比引力更奇妙吗？”——看看达尔文的真实信息：你错过了吗？） 唯物主义者不承认物质（质量/能量）领域之外任何事物的存在。

Thus, someone defining the universe as the ‘set of all sets’ would normally have my agreement, as it would just be an alternative way of saying ‘all the mass-energy entities in existence’, i.e the same as the one I gave above. This is certainly how science’s founding fathers regarded the universe; the total amount of material stuff which God created, but not God Himself, who is non-material. What you are doing here in a ‘too-clever’ philosophical word-game, essentially, is to try to slip something past the goalkeeper, hoping no one will notice. I.e., you have tried to make use of a definition of set which normally assumes we are talking about the material (we would say created) world only, but then at the same time, you have assumed the existence of God as a discrete entity within set theory—all for the purpose of strengthening the materialist maxim of ‘no God’—which if true, would make your assumption invalid in the first place.

Of course, you might argue that you are simply saying ‘for the sake of the argument’, that ‘if God exists’ He must be part of the set of all sets. In that case, however, I would then respond that if you are presupposing God as an object within the realm of set theory, then your definition of the universe as the ‘set of all sets’ is clearly inappropriate. Because if you presuppose God at all, then since by definition, God is not a part of the universe He created, you can’t have it both ways. It’s like saying ‘I’ve disproved the existence of a transcendent God by assuming He is not transcendent’. In short, you can’t have your cake and eat it, too. Your definition in the way you seek to use it turns out to be totally circular, committing the logical fallacy known as begging the question, i.e. assuming that which you claim to prove. So we revert to the definition of the universe as follows (recognizing today that matter and energy are interchangeable):

By definition, God is not a part of the universe He created.

All the matter/energy that exists.

Notice a couple of things in closing:

First, it matters not whether all of this is observable or not. In the same way, in classical thermodynamics, a system plus its surroundings is the universe—seen or unseen, bounded or unbounded.

Second, it can’t be said that this is a self-serving definition designed by Christians for Christians, since it is one that can be (and has been) agreed upon by materialists and non-materialists alike. The materialists have no problem with it, because in their view, there is nothing outside of matter/energy. They therefore would not perceive a difference between this and your definition; the two definitions would, in their perception, be synonymous. And as pointed out, I would normally have no problem with either definition, because it would be assumed by all sides that one is talking about the material world of objects. It’s only when you try to be tricky and slip God into being a part of the material world (the God you don’t believe in, and who by definition is not a part of that material world anyway) that it becomes logically invalid. But the problem is in the premises, not the logic, as we have seen.

Just to reiterate: the universe (all matter/energy) cannot have always existed (been eternal) because of the Second Law of Thermodynamics. The universe must have had a beginning and such a beginning needs a sufficient cause that is non-material (in order to be self-existing/eternal).

# The elements of the universe point to creation.

因此，有人将宇宙定义为“所有集合的集合”通常会得到我的同意，因为这只是“存在的所有质能实体”的另一种说法，即与我上面给出的相同 。 这无疑是科学创始人看待宇宙的方式。 上帝创造的物质总量，但不是上帝本身，他是非物质的。 在一场“太聪明”的哲学文字游戏中，你所做的本质上是试图让某些东西溜过守门员，希望没有人会注意到。 也就是说，您尝试使用集合的定义，该定义通常假设我们仅讨论物质（我们会说创造的）世界，但同时，您假设上帝作为内部的离散实体存在 集合论——所有这些都是为了强化唯物主义格言“没有上帝”——如果它是真的，那么你的假设首先就会无效。 当然，你可能会争辩说你只是“为了论证”，“如果上帝存在”，他一定是所有集合的集合的一部分。 然而，在这种情况下，我会回应说，如果你将上帝预设为集合论领域内的一个对象，那么你将宇宙定义为“所有集合的集合”显然是不合适的。 因为如果你预先假设上帝，那么根据定义，上帝不是他创造的宇宙的一部分，所以你不能两者兼得。 这就像说“我通过假设上帝不是超验的来证明他的存在”。 简而言之，鱼与熊掌不可兼得。 你的定义以你寻求使用的方式被证明是完全循环的，犯了被称为回避问题的逻辑谬误，即假设你声称要证明的东西。 因此，我们回到宇宙的定义如下（今天认识到物质和能量是可以互换的）： 根据定义，上帝不是他创造的宇宙的一部分。 存在的所有物质/能量。 最后请注意以下几点： 首先，所有这些是否可观察并不重要。 同样，在经典热力学中，一个系统及其周围环境就是宇宙——可见或不可见、有界或无界。 其次，不能说这是基督徒为基督徒设计的一个自私的定义，因为它是唯物主义者和非唯物主义者都可以（并且已经）达成一致的定义。 唯物主义者对此没有任何问题，因为在他们看来，物质/能量之外没有任何东西。 因此，他们不会察觉到这与您的定义之间存在差异； 在他们看来，这两个定义是同义词。 正如所指出的，我通常对这两种定义都没有问题，因为各方都会假设人们正在谈论物体的物质世界。 只有当你试图耍花招，让上帝成为物质世界的一部分（你不相信的上帝，而且根据定义，他无论如何也不属于物质世界的一部分）时，它在逻辑上就变得无效了。 但问题出在前提，而不是逻辑，正如我们所看到的。 只是重申一下：由于热力学第二定律，宇宙（所有物质/能量）不可能一直存在（永恒）。 宇宙一定有一个开始，而这样的开始需要一个充分的非物质原因（为了自我存在/永恒）。 宇宙的元素指向创造。

## Introduction to a critique of nucleosynthesis theory

by [Jonathan Henry](https://creation.com/jonathan-henry)

The cosmic H/He ratio and temperature of the cosmic background radiation (CBR) are supposed to match predictions of nucleosynthesis theory (NST). However, model ‘predictions’ were in fact retrodictions. With the failure of NST to account for elemental origins and abundances, theorists are in the position of a century ago, when physicists such as James Maxwell claimed that the existence of the elements points to creation. Just as naturalistic origins-theory failed to anticipate properties of cosmic elemental-matter prior to modern NST, modern NST continues to exhibit the shortcomings of naturalistic theory as a predictor of cosmic properties. A full critique of modern NST would consider (1) nucleosynthesis in the big bang; (2) nucleosynthesis in the sun; (3) nucleosynthesis in other stars; and (4) anomalous elemental abundances in stars, solar system bodies and the interstellar and intergalactic media. This paper focuses on the claim that big bang NST successfully predicted the cosmic H/He abundance, together with the subsidiary claims (A) that big bang theory successfully predicted the CBR temperature and (B) that the nature of the CBR confirms the big bang.

对核合成理论的批判简介

 作者：乔纳森·亨利

宇宙 H/He 比率和宇宙背景辐射 (CBR) 的温度应该与核合成理论 (NST) 的预测相匹配。 然而，模型的“预测”实际上是回顾。 由于 NST 未能解释元素的起源和丰度，理论家们陷入了一个世纪前的境地，当时詹姆斯·麦克斯韦等物理学家声称元素的存在表明了创造。 正如自然主义起源理论未能在现代 NST 之前预测宇宙元素物质的性质一样，现代 NST 继续表现出自然主义理论作为宇宙性质预测的缺点。 对现代 NST 的全面批评将考虑（1）大爆炸中的核合成； (2)阳光下的核合成； (3)其他恒星的核合成； (4) 恒星、太阳系天体以及星际和星系间介质中的异常元素丰度。 本文重点讨论大爆炸 NST 成功预测宇宙 H/He 丰度的主张，以及附属主张 (A) 大爆炸理论成功预测 CBR 温度和 (B) CBR 的性质证实了大爆炸 。

Light and dark patches representing the variation of the temperature in the microwave CBR after all foreground sources have been subtracted. The different regions represent temperature differences of the order of 0.01% above or below the average sky temperature of 2.73 K (see Hartnett112).

Since the rise of modern evolution in the 1800s, naturalistic theory has experienced two phases regarding the existence and abundances of elemental matter. In the first phase, the matter of the universe was believed to be exotically different and non-uniform with respect to terrestrial elements. This belief was a holdover from the teachings of antiquity prior to the acceptance of atomic theory. In this context, the discovery that atoms of a given element have identical structure and properties wherever they exist was taken to imply a common design and Designer for the universe. This design argument was widely used in the late 1800s. Most evolutionists readily accommodated to atomic theory, but this design argument illustrates the inability of naturalistic theory to predict cosmic properties before the rise of modern NST.

The second phase was underway by the mid-1900s, when a large body of theory was developed to explain the formation of elements in the big bang and in stars. Theorists embraced not only the uniformity of the atomic plan for all elements in the cosmos, but further proposed that elemental abundances are universally uniform or at least predictable. These expectations continue in modern NST:

‘The relative abundances of the various isotopes of different elements are repeatedly found in similar ratios in stars, in the interstellar medium, in meteorite fragments and in the earth’s crust. The similarity of these ratios cannot be accidental, and the detailed explanation of the hundreds of known abundance ratios provides a severe task for the theory of stellar evolution.’1

In a similar vein, Gamow, a prime originator of big bang theory, also claimed:

‘Relative abundances of elements [throughout the cosmos] have been exhaustively studied. … The most important result of these studies is the fact that the chemical composition of the universe is surprisingly uniform [emphasis in original].’2

Each of these writers is expressing what he wants to believe rather than the actual situation.3 Matter in the universe is uniform in atomic construction, but diverse in elemental abundances. This paper focuses on the success of big bang theory in explaining observed cosmic abundances of H and He.

浅色和深色斑块代表减去所有前景源后微波 CBR 中温度的变化。 不同区域的温度差异约为 0.01%，高于或低于 2.73 K 的平均天空温度（参见 Hartnett112）。 自 1800 年代现代进化论兴起以来，自然主义理论在元素物质的存在和丰度方面经历了两个阶段。 在第一阶段，宇宙的物质被认为与地球元素截然不同且不均匀。 这种信念是原子理论被接受之前的古代教义的延续。 在这种情况下，发现给定元素的原子无论存在于何处都具有相同的结构和属性，这意味着宇宙有一个共同的设计和设计者。 这种设计论点在 1800 年代末被广泛使用。 大多数进化论者很容易接受原子理论，但这种设计论点说明了自然主义理论无法在现代 NST 兴起之前预测宇宙特性。 第二阶段在 1900 年代中期开始，当时发展了大量理论来解释大爆炸和恒星中元素的形成。 理论学家不仅接受宇宙中所有元素的原子排列的一致性，还进一步提出元素丰度普遍一致或至少是可预测的。 这些期望在现代 NST 中继续存在： “在恒星、星际介质、陨石碎片和地壳中，不同元素的各种同位素的相对丰度以相似的比例反复被发现。 这些比率的相似性不可能是偶然的，对数百个已知丰度比率的详细解释为恒星演化理论提供了一项艰巨的任务。”1 同样，大爆炸理论的主要创始人伽莫夫也声称： “[整个宇宙]元素的相对丰度已经被详尽地研究过。 ......这些研究最重要的结果是宇宙的化学成分惊人地均匀[强调原文]。’2 这些作者中的每一位都在表达他想要相信的东西，而不是实际情况。3宇宙中的物质在原子结构上是一致的，但在元素丰度上是不同的。 本文重点讨论大爆炸理论在解释观测到的 H 和 He 宇宙丰度方面的成功。

## Naturalistic theory did not expect a uniform atomic nature of matter

Little was known about the elements or their abundances in the early 1800s. Then, it could be said that, ‘We do not know of what kind of matter the sun is made.’4 Though meteorites were recognized as having a source beyond the earth,5 and it could be said that ‘all the materials of which they consist are familiar to us’,6 the origin of meteorites was still a mystery. The solution of this mystery was not helped by the fact that they contained substances unlike ‘the known mineral substances on the face of the globe’.6 Though meteorites clearly had an atomic structure, their unknown origin made it difficult to extrapolate their atomic nature to the cosmos in general, and assumptions that the cosmos was atomic were based on ‘the simplicity of the hypothesis’.7 Humboldt made this assessment despite the fact that the intersecting orbits of Ceres and Pallas pointed to an origin within the solar system,8 thus indicating the difficulty of extrapolating atomic concepts to the solar system, let alone to the stars beyond. Early indications of asteroidal origin in the solar system were obscured by claims of Laplace’s nebular hypothesis, in which the nebula from which the asteroids developed had an unknown source.9

Indeed, the ancient belief was that the cosmos was made of exotic matter unlike that found on Earth. Though Galileo’s observation of sunspots and lunar craters in the 1600s gave a setback to the belief that cosmic matter was fundamentally different from terrestrial matter,10–12 this belief persisted for centuries. In the early 1800s—before evolution was widely accepted—this belief may have formed part of the basis for the widespread expectation that extraterrestrial life inhabited the sun and planets.13 If cosmic matter were truly exotic and could exist in mysterious forms capable of supporting biological systems on even the sun and on the coldest planets, then clearly life must thrive nearly everywhere.

The belief in exotic extraterrestrial matter did not diminish until the discovery of spectroscopy. Spectroscopy is based on the fact that all matter gives off some light or radiation. This energy can be analyzed to find which elements are causing it. Each element produces a unique spectrum, a ‘fingerprint’. Light from stars can be gathered by a telescope, passed through a prism to produce a spectrum and then the spectrum can be analyzed to determine the elements originating it. Spectroscopy was first applied to the light from stars in 1859:

自然主义理论并没有期望物质具有统一的原子性质

 1800 年代初期，人们对这些元素及其丰度知之甚少。 那么，可以说，“我们不知道太阳是由什么样的物质构成的。”4 尽管陨石被认为具有地球之外的来源，5 也可以说“陨石的所有材料 它们的组成对我们来说很熟悉”6，陨石的起源仍然是一个谜。 由于它们含有与“地球表面已知的矿物质”不同的物质，这一事实无助于解开这个谜团。 6 尽管陨石明显具有原子结构，但它们的未知来源使得很难推断它们的原子性质 宇宙是一般性的，而宇宙是原子的假设是基于“假设的简单性”。7尽管谷神星和智神星的相交轨道指向太阳系内的起源，洪堡还是做出了这一评估，8因此 表明将原子概念外推到太阳系是很困难的，更不用说外推到更远的恒星了。 拉普拉斯星云假说的主张掩盖了太阳系小行星起源的早期迹象，其中小行星形成的星云来源不明。 9 事实上，古老的信念是宇宙是由与地球上发现的不同的奇异物质组成的。 尽管伽利略在 1600 年代对太阳黑子和月球陨石坑的观察使宇宙物质与地球物质根本不同的信念受到了挫折，10-12 但这种信念仍然持续了几个世纪。 在 1800 年代初期，在进化论被广泛接受之前，这种信念可能构成了人们普遍预期外星生命居住在太阳和行星上的部分基础。 13 如果宇宙物质确实是奇异的，并且可以以能够支持生物的神秘形式存在， 甚至在太阳和最冷的行星上都有系统，那么显然生命必须在几乎所有地方繁衍生息。 直到光谱学的发现，人们对奇异地外物质的信念才逐渐减弱。 光谱学基于所有物质都会发出一些光或辐射的事实。 可以分析这种能量，找出引起这种能量的元素。 每种元素都会产生独特的光谱，即“指纹”。 来自恒星的光可以通过望远镜收集，穿过棱镜产生光谱，然后可以分析光谱以确定源自它的元素。 1859 年，光谱学首次应用于恒星发出的光：

‘Kirchoff and Bunsen immediately saw their discovery’s celestial possibilities. Bunsen wrote to a fellow chemist in England: “Kirchoff has made a wonderful, entirely unexpected discovery in finding the cause of the dark lines in the solar spectrum. … A means has been found to determine the composition of the Sun and fixed stars”.’14

With the discovery of stellar spectroscopy, the elements present in the universe could be detected anywhere telescopes could penetrate. It was soon found that all stars—or at least their surfaces—are mostly hydrogen, which led one wag to pen the ditty:

‘Twinkle, twinkle little star
I don’t wonder what you are,
For by spectroscopic ken,
I know that you are hydrogen.’15

The same basic kinds of atoms exist throughout the cosmos. This was a well recognized fact a century ago (though the lack of uniform element abundances was not so well recognized then), but modern theorists continue to comment on its significance:

‘The Ancients believed in a sort of unity between the heavens and the Earth. … But there is a real unity … That real unity is in the basic structure of matter everywhere in the universe … We have learned that all matter is made of the same stuff—the matter of the Earth … of the stars and even the remotest galaxies (from studying their spectra). This stuff is … approximately a hundred different kinds of atoms that make up the hundred or so naturally occurring elements and, in various combinations, the molecules of the billions [sic] of kinds of chemical compounds.’16

Further, this is not a trivial state of affairs, but is ‘significant’, ‘The deeply significant point is that everything, everywhere, is basically the same. … [It is] made up of the same things: mainly protons, electrons and neutrons.’17 There is ‘a marvelous unity’ implied by this observation, ‘Science has revealed a marvelous unity in the universe; … everywhere … we find the same kind of stuff: atoms, electrons, and so on.’18 Since this observation is viewed as being a ‘significant’ condition of ‘marvelous unity’, we might suspect that this is not the observation which naturalistic origins theory would have led one to expect. Indeed, it was the failure of naturalistic thought to anticipate this observation that conferred an anti-evolutionary status upon it.

基尔霍夫和本生立即看到了他们的发现的天体可能性。 本生在给英国一位化学家同行的信中写道：“基尔霍夫在寻找太阳光谱中暗线的原因方面取得了奇妙的、完全出乎意料的发现。 ……已经找到一种方法来确定太阳和恒星的成分”。’14 随着恒星光谱学的发现，宇宙中存在的元素可以在望远镜可以穿透的任何地方被检测到。 很快人们发现所有恒星——或者至少是它们的表面——大部分都是氢，这使得一位爱开玩笑的人写下了这首小曲： '一闪一闪亮晶晶 我不好奇你是什么， 根据光谱学知识， 我知道你是氢。’15 相同的基本类型的原子存在于整个宇宙中。 这是一个世纪前众所周知的事实（尽管当时还没有很好地认识到缺乏统一的元素丰度），但现代理论家继续评论其重要性： “古人相信天地之间存在某种统一。 ……但是存在真正的统一性……这种真正的统一性存在于宇宙各处物质的基本结构中……我们已经了解到，所有物质都是由相同的物质组成的——地球的物质……恒星甚至最遥远的星系的物质 （通过研究它们的光谱）。 这些东西……大约有一百种不同的原子，它们构成了一百种左右的天然元素，并且以各种组合构成了数十亿种化合物的分子。’16 而且，这不是一件微不足道的事情，而是‘意义重大’，‘最重要的一点是，任何地方的一切都基本上是相同的。 ……[它]由相同的物质组成：主要是质子、电子和中子。”17这一观察暗示着“一种奇妙的统一”，“科学揭示了宇宙中一种奇妙的统一； ……到处……我们发现相同类型的东西：原子、电子等等。”18 由于这一观察被视为“奇妙统一”的“重要”条件，我们可能会怀疑这不是自然主义的观察 起源理论会让人有所期待。 事实上，正是自然主义思想未能预见到这一观察结果，才赋予了它反进化论的地位。

This uniformity is especially remarkable considering the diversity of celestial bodies constructed from these elements. Moons and planets, for example, exhibit a diversity of properties and elemental abundances which naturalistic theory cannot explain,19,20 and the sun is sufficiently different from most other stars to be considered special, if not unique.21,22 The interstellar medium and the intergalactic medium have D/H abundance ratios that do not fit into conventional NST.23,24 Indeed, God has named each star ([Psalm 147:4](https://biblia.com/bible/esv/Ps%20147.4)); a fact suggesting that perhaps each one is truly unique in some way. Yet among all celestial bodies, there is a uniform plan evident in the elements employed in their creation. This universal plan was taken to point to the action of a creator, who spoke the cosmos into existence instantly rather than to a process of gradual evolution.

The anti-evolutionary implications of cosmic elemental unity were emphasized by the great physicist James Clerk Maxwell. In a ‘Discourse on Molecules’ written in 1873, Maxwell recognized the creationary implications of the fact that over the universe, molecules and atoms of a given kind are identical:

‘A molecule of hydrogen … whether in Sirius or in Arcturus, executes its vibrations in precisely the same time. Each molecule therefore throughout the universe bears impressed upon it the stamp of a metric system as distinctly as does the meter of the Archives at Paris.

考虑到由这些元素构成的天体的多样性，这种一致性尤其显着。 例如，卫星和行星表现出自然主义理论无法解释的多种性质和元素丰度，19,20 并且太阳与大多数其他恒星有足够的不同，即使不是唯一的，也被认为是特殊的。21,22 星际介质和 星系间介质的 D/H 丰度比不符合传统的 NST。23,24 事实上，上帝已经命名了每颗恒星（诗篇 147:4）； 这一事实表明，也许每个人在某种程度上都是独一无二的。 然而，在所有天体中，在其创造过程中使用的元素中明显存在一个统一的计划。 这个普遍的计划被认为是指向造物主的行动，他说宇宙立即存在，而不是逐渐进化的过程。 伟大的物理学家詹姆斯·克拉克·麦克斯韦强调了宇宙元素统一的反进化论含义。 在 1873 年撰写的《分子论》中，麦克斯韦认识到了宇宙中某一特定种类的分子和原子是相同的这一事实的创世意义： “氢分子……无论是在天狼星还是在大角星，都在完全相同的时间进行振动。 因此，整个宇宙中的每个分子都带有公制的印记，就像巴黎档案馆的米一样清晰。

‘No theory of evolution can be formed to account for the similarity of molecules, for evolution necessarily implies continuous change. … the exact equality of each molecule to all others of the same kind gives it, as Sir John Herschel has well said, the essential character of a manufactured article, and precludes the idea of its being … self-existent.’25

Shortly before his death in 1879, Maxwell also wrote:

‘… there are immense numbers of other atoms of the same kind [throughout the universe]. … Each is physically independent of all the others. … We are then forced to look beyond them to some common cause or common origin [i.e. supernatural creation] to explain why this singular relation of quality exists … .’26

Apologists in the following years used Maxwell’s arguments as a case for creation. Iverach criticized the nebular hypothesis, harking back to Maxwell’s design argument from atomic uniformity:

‘The nebular theory does not explain even the mechanics of the [solar] system … The unity [of the elements] we have to start with is not simple, but complex. It is again a unity of related elements, and thus a unity which is not merely material; it is also rational.’27

Then, speaking of the evolution of the universe in general, Iverach stated, ‘What has to be accounted for is the unity of all these elements in one [chemical] system [throughout the universe]’,28 and he clearly identified these arguments as originating with Maxwell.29 For Maxwell and for others after him, part of their pro-creation offensive was the fact that the atomic makeup of elements throughout the cosmos shows a common creation, not a random nuclear/chemical development in a naturalistic process.

In contrast, physicist Ernst Mach opposed the atomic theory as it developed in the 1800s and early 1900s.30 The anti-evolutionary implications of atoms constructed on a common plan throughout the cosmos may have been responsible indirectly for Mach’s view. Mach was an evolutionist and also shared some of the beliefs of George Berkeley, a freethinker of the 1700s and one of the originators of the philosophy called ‘positivism’.

“无法形成任何进化论来解释分子的相似性，因为进化必然意味着持续的变化。 …正如约翰·赫歇尔爵士（Sir John Herschel）所说，每个分子与所有其他同类分子的精确平等赋予了它制造品的基本特征，并排除了它是……自我存在的想法。’25 1879 年麦克斯韦去世前不久还写道： “……[整个宇宙]还有大量的同类原子。 ……每个人在物理上都独立于其他人。 ......然后我们被迫超越它们去寻找一些共同的原因或共同的起源[即。 超自然的创造]解释为什么这种奇异的质量关系存在......”26 接下来几年的辩护者使用麦克斯韦的论点作为创造的理由。 伊维拉奇批评了星云假说，从原子均匀性回到了麦克斯韦的设计论证： “星云理论甚至无法解释[太阳]系统的力学......我们必须从[元素]开始的统一并不简单，而是复杂。 它又是相关元素的统一体，因此这种统一体不仅仅是物质的，而且是物质的。 这也是理性的。’27 然后，在谈到宇宙的一般演化时，伊维拉赫指出，“必须考虑的是[整个宇宙]一个[化学]系统中所有这些元素的统一性”，28他明确地将这些论点识别为 起源于麦克斯韦。29对于麦克斯韦和他之后的其他人来说，他们支持创造论攻势的一部分是这样一个事实：整个宇宙中元素的原子组成显示了共同的创造，而不是自然过程中随机的核/化学发展。 相比之下，物理学家恩斯特·马赫反对 1800 年代和 1900 年代初发展的原子理论。 30 在整个宇宙中按照共同计划构建的原子的反进化论含义可能间接促成了马赫的观点。 马赫是一位进化论者，也分享了乔治·伯克利的一些信仰，乔治·伯克利是 1700 年代的自由思想家，也是“实证主义”哲学的创始人之一。

Positivism asserted that only directly observable information should be considered as a legitimate part of science.31,32 Mach attempted to dissociate himself from Berkeley’s metaphysics,33 which postulated a type of impersonal ‘New Age’ force animating the universe. Nevertheless, some of Mach’s scientific ideas follow from Berkelian thought.34,35 Thus positivism sought to divorce from science any philosophical considerations, such as the creationary implications of the cosmos to which [Romans 1:20](https://biblia.com/bible/esv/Rom%201.20) alludes. Given the philosophical (creationary) implications of atomic matter existing on a cosmic scale, together with the fact that atoms cannot be sensed directly, the logical conclusion of positivism was that atoms are not a valid scientific concept. As a positivist, Mach was forced to assert that atoms do not exist. However, with the widespread acceptance of atomic theory, investigators from the early 1900s onward sought naturalistic mechanisms by which the elements might have been produced. Modern nucleosynthesis theory was the eventual result.

实证主义声称，只有直接可观察到的信息才应被视为科学的合法部分。31,32马赫试图将自己与伯克利的形而上学划清界限，33该形而上学假设一种非个人的“新时代”力量赋予宇宙生命力。 然而，马赫的一些科学思想源自伯克利思想。34,35 因此，实证主义试图将任何哲学考虑与科学分离，例如罗马书 1:20 提到的宇宙的创造含义。 考虑到宇宙尺度上存在的原子物质的哲学（创造）含义，以及原子无法直接感知的事实，实证主义的逻辑结论是原子不是一个有效的科学概念。 作为一名实证主义者，马赫被迫断言原子不存在。 然而，随着原子理论的广泛接受，研究人员从 1900 年代初开始寻找元素可能产生的自然机制。 现代核合成理论是最终的结果。

## Naturalistic theory has not explained the H/He abundance ratio

In 1896, the French scientist Henri Becquerel discovered radioactivity. Meanwhile, Marie and Pierre Curie had been making a steady series of findings about the previously unsuspected phenomenon of atomic transformations.36 A few years later, George Darwin, son of Charles Darwin, made the first proposal of solar nuclear fission reactions.37 Fission was dropped as a possible solar energy source because it could not supply the sun with energy long enough to match the geologic age of the earth.38,39 In the 1930s following the discovery of the neutron, research into fusion reactions intensified,40 and in 1939, Hans Bethe proposed that fusion reactions power the sun and synthesize heavier elements.41,42

The concept of fusion nucleosynthesis was refined until by the late 1940s a theoretical framework existed to explain nucleosynthesis in the big bang more than 10 Ga ago. Big bang theorists once believed that virtually all isotopes were synthesized in the sequence of conditions following the primordial explosion.43–48 Today, the big bang is considered the source of only a few isotopes, including H, D, 3He, 4He and 7Li,49–51 with stellar nucleosynthesis supposedly forming the rest.52

It has long been claimed that big bang theory correctly predicted the 3:1 abundance of H to He in the universe.53–57 This is not true. The H/He ratio was known before big bang NST was conceived. The theory has been modified to fit the facts and did not make a prediction:

‘The study of historical data shows that over the years predictions of the ratio of helium to hydrogen in a BB [big bang] universe have been repeatedly adjusted to agree with the latest available estimates of that ratio as observed in the real universe. The estimated ratio is dependent on a ratio of baryons to photons (the baryon number), which has also been arbitrarily adjusted to agree with the currently established helium-to-hydrogen ratio. These appear to have not been predictions, but merely adjustments of theory (‘retrodictions’) to accommodate current data.’58

自然主义理论尚未解释 H/He 丰度比 1896年，法国科学家亨利·贝克勒尔发现了放射性。 与此同时，玛丽和皮埃尔·居里一直在对以前未被怀疑的原子转变现象做出一系列稳定的发现。36几年后，查尔斯·达尔文的儿子乔治·达尔文提出了太阳核裂变反应的第一个提议。37裂变是 太阳能不再是一种可能的能源，因为它无法为太阳提供足够长的能量以匹配地球的地质年龄。38,39 在中子发现后的 20 世纪 30 年代，对聚变反应的研究加强了，40 并于 1939 年 ，汉斯·贝特提出聚变反应为太阳提供动力并合成更重的元素。41,42 聚变核合成的概念得到了完善，直到 20 世纪 40 年代末，出现了一个理论框架来解释 10 多年前大爆炸中的核合成。 大爆炸理论家曾经相信，几乎所有同位素都是在原始爆炸后的一系列条件下合成的。43-48 如今，大爆炸被认为仅是少数同位素的来源，包括 H、D、3He、4He 和 7Li， 49–51 据称由恒星核合成形成其余部分。 52 长期以来，人们一直声称大爆炸理论正确地预测了宇宙中 H 与 He 的丰度为 3:1。53-57 这不是事实。 H/He 比率在大爆炸 NST 诞生之前就已为人所知。 该理论已被修改以适应事实，并没有做出预测： “对历史数据的研究表明，多年来对 BB（大爆炸）宇宙中氦与氢比例的预测已被反复调整，以与在真实宇宙中观察到的该比例的最新可用估计一致。 估计的比率取决于重子与光子的比率（重子数），该比率也已被任意调整以与当前建立的氦与氢的比率一致。 这些似乎不是预测，而只是对理论的调整（“回顾”）以适应当前数据。”58

Other acknowledgments of such ‘retrodictions’ are generally more subtly expressed than the source just quoted. Hawking wrote:

‘At the time that Alpher, Bethe, and Gamow59 wrote their paper [proposing stellar nucleosynthesis], not much was known about the nuclear reactions of protons and neutrons. Predictions made for the proportions of various elements in the early universe were therefore rather inaccurate, but these calculations have been repeated in the light of better knowledge [i.e. the model parameters have been retrodicted to fit reality] and now agree very well with what we observe.’60

On the other hand, Barrow and Tipler claim:

‘… calculations predicted that the present Universe should contain about 75% of its mass in the form of hydrogen and 25% as helium-4 with about one part in a million ending up in the form of all the other elements… These predictions have been strikingly confirmed by observations.’61

Such claims are misleading and go back to a paper that made this ‘prediction’ about twenty years after the big bang theorizing of Gamow and colleagues.62 By 1967, theoretical H and He abundances had been refined to agree with observations. As mentioned above, this was done by adjusting the baryon-to-photon ratio, a parameter whose actual value is unknown.43,63,64 In other words:

‘It is commonly supposed that the so-called primordial abundances of D, 3He, 4He and 7Li provide strong evidence for Big Bang cosmology. However, a particular value for the baryon-to-photon ratio needs to be assumed ad hoc to obtain the required abundances.’65

A significant consequence of sizing the baryon-to-photon ratio by recourse to big bang theory is that the density of the universe works out to be about two orders of magnitude less than that required for closure, i.e. long-term ‘stability’. This putative density deficiency has led to the claim that dark matter must exist to provide the closure which visible matter does not.43 Thus the belief in dark matter is at least partly due to retro-fitting big bang theory to the observed H/He cosmic abundance ratio.

Along with the faulty claim that big bang NST correctly predicted the H/He abundance ratio, theorists have focused on other alleged confirmations of big bang theory, namely (1) the temperature of the CBR, and (2) the non-isotropy of the CBR.

对这种“追溯”的其他承认通常比刚刚引用的消息来源表达得更微妙。 霍金写道： “当阿尔弗、贝特和伽莫夫撰写他们的论文（提出恒星核合成）时，人们对质子和中子的核反应知之甚少。 因此，对早期宇宙中各种元素的比例所做的预测相当不准确，但这些计算已根据更好的知识进行了重复[即。 模型参数已被重新调整以适应现实]并且现在与我们观察到的非常吻合。’60 另一方面，巴罗和蒂普勒声称： “……计算预测，目前的宇宙应包含约 75% 的质量以氢的形式，25% 的质量以氦 4 的形式存在，大约百万分之一最终以所有其他元素的形式……这些预测已被证实。 观察结果惊人地证实了这一点。'61 这种说法具有误导性，可以追溯到伽莫夫及其同事提出大爆炸理论大约二十年后做出这一“预测”的论文。62到 1967 年，理论上的 H 和 He 丰度已经得到改进，与观测结果一致。 如上所述，这是通过调整重子与光子之比来完成的，该参数的实际值未知。43,63,64 换句话说： 人们普遍认为，所谓的 D、3He、4He 和 7Li 的原始丰度为大爆炸宇宙学提供了强有力的证据。 然而，需要临时假设重子与光子比率的特定值以获得所需的丰度。’65 利用大爆炸理论来确定重子与光子之比的一个重要结果是，宇宙的密度比闭合所需的密度（即长期“稳定性”）小大约两个数量级。 这种假定的密度缺陷导致了这样一种说法，即暗物质必须存在才能提供可见物质所不具备的封闭性。43因此，对暗物质的信仰至少部分归因于将大爆炸理论与观测到的 H/He 宇宙进行了改造。 丰度比。 除了大爆炸 NST 正确预测了 H/He 丰度比的错误主张外，理论家们还关注大爆炸理论的其他所谓证实，即 (1) CBR 的温度，以及 (2) CBR 的非各向同性。 CBR。

## The big bang did not predict the temperature of the CBR

**Figure 1.** Eddington’s estimate of the temperature of the interstellar radiation field of 3.18 K from optical emissions does not account for the data from interstellar dust (ISD) and the CBR. Therefore, Eddington did not anticipate the CBR. (After Ned Wright in Wright81).

Space is filled with microwave radiation popularly believed to be a vestige of the big bang ‘fireball’ over 10 Ga ago. This cosmic background radiation (CBR) is thus the ‘glimmer’ of the big bang.66 Indeed, big bang theory is supposed to have correctly predicted the temperature of the CBR.67–69 This is not true. The first predictions of the theory were of the order of 10 times too high. Gamow claimed that according to big bang theory, the temperature of the CBR was as high as 50 K.70 The theory was later modified to fit the observed CBR temperature. Big bang theory in 1948 predicted the CBR’s existence, but the CBR temperature was not known then. Indeed, as will be seen below, the first inference of microwave CBR was not from big bang theory. Big bang theoretical prediction of CBR existence has been conflated with discovery of the CBR temperature:

‘The Big Bang theory received remarkable confirmation with the discovery of the microwave background radiation in 1965 by Penzias and Wilson. It had been predicted by Alpher and Herman in 1948 that the hot fireball of the Big Bang should leave an ‘echo’, a glimmer of its former self, in the present-day Universe. They calculated that the adiabatic expansion of the Universe should have cooled the heat radiation from the hot initial state down to a level ~ 5 K or thereabouts by the present … .’71

Following up on earlier calculations of Gamow,66,72 Alpher and Herman had predicted a CBR temperature of 5 K,73 but this was revised to 50 K before the discovery of Penzias and Wilson that the CBR temperature was about 3 K.74 Indeed, published alongside the paper announcing the 3 K CBR discovery was the last minute prediction of a 40 K CBR temperature.75 Thus, at the time of Penzias’ and Wilson’s discovery, the theoretical CBR temperature was of the order of ten times too high, so it cannot be said that big bang theory made an accurate prediction. Nevertheless, Trefil claims that ‘theoretical physicists’ predicted 3 K for the CBR temperature in 1948.76 In the context of 1948, Trefil should have referred only to the prediction of the CBR’s existence,77 but he also mentioned the observed CBR temperature known only since 1965, a misleading conflation.

Did Eddington correctly predict the CBR temperature without recourse to big bang theory?78 Eddington wrote:

‘It is quite true that far away from the sun, at an average point in our galaxy, the temperature of any solid or liquid body would fall to–270°C, or 3° above absolute zero.’79

大爆炸并没有预测 CBR 的温度 图 1. Eddington 对光发射产生的星际辐射场温度 3.18 K 的估计并未考虑星际尘埃 (ISD) 和 CBR 的数据。 因此，爱丁顿并没有预见到CBR。 （继 Wright81 中的 Ned Wright 之后）。 太空中充满了微波辐射，人们普遍认为这是 10 Ga 前大爆炸“火球”的遗迹。 因此，这种宇宙背景辐射（CBR）是大爆炸的“微光”。66 事实上，大爆炸理论应该正确预测了 CBR 的温度。67-69 这不是真的。 该理论的最初预测大约高出 10 倍。 伽莫夫声称，根据大爆炸理论，CBR的温度高达50 K.70。后来对该理论进行了修改，以适应观测到的CBR温度。 1948年的大爆炸理论预言了CBR的存在，但当时还不知道CBR的温度。 事实上，正如下面将要看到的，微波 CBR 的第一个推论并不是来自大爆炸理论。 CBR 存在的大爆炸理论预测与 CBR 温度的发现混为一谈： 1965 年彭齐亚斯和威尔逊发现了微波背景辐射，大爆炸理论得到了显着的证实。 阿尔弗和赫尔曼在 1948 年预测，大爆炸的炽热火球应该在当今的宇宙中留下“回声”，即它以前的光芒。 他们计算出，到目前为止，宇宙的绝热膨胀应该已经将热辐射从热的初始状态冷却到约 5 K 或左右的水平......’71 根据 Gamow 的早期计算，66,72 Alpher 和 Herman 预测 CBR 温度为 5 K,73，但在 Penzias 和 Wilson 发现 CBR 温度约为 3 K 之前，该预测被修正为 50 K。74 事实上， 与宣布 3 K CBR 发现的论文一起发表的是对 40 K CBR 温度的最后一刻预测。75 因此，在 Penzias 和 Wilson 发现时，理论 CBR 温度高出十倍左右，因此 不能说大爆炸理论做出了准确的预测。 尽管如此，Trefil 声称“理论物理学家”预测 1948 年 CBR 温度为 3 K。76 在 1948 年的背景下，Trefil 应该只提到 CBR 存在的预测，77 但他也提到了自 1965 年以来才知道的观测到的 CBR 温度。 ，一种误导性的合并。 爱丁顿是否在不借助大爆炸理论的情况下正确预测了 CBR 温度？78 爱丁顿写道： “确实，在远离太阳的地方，在我们银河系的平均点，任何固体或液体的温度都会降至零下 270°C，即比绝对零度高 3°。”79

Elsewhere, Eddington predicted a background radiation temperature of 3.18 K.80 However, Eddington did not know of the microwave CBR, and the 3.18 K temperature was actually Eddington’s estimate of the temperature of optical emissions.81 In sum, neither big bang theory nor Eddington anticipated the microwave CBR temperature observed in 1965 (figure 1). However, in 1940–41, Canadian astrophysicist Andrew McKellar did in fact deduce the microwave CBR to be 2.3 K based on the behaviour of cyanide (CN) molecules in space.82 Gamow’s big bang theory was still in the future. Thus the observed CBR temperature is no confirmation of the big bang, and the CBR should not be described as the ‘glimmer’ of the big bang.

在其他地方，爱丁顿预测背景辐射温度为 3.18 K。80 然而，爱丁顿不知道微波 CBR，3.18 K 温度实际上是爱丁顿对光发射温度的估计。81 总之，无论是大爆炸理论还是爱丁顿 预测了 1965 年观测到的微波 CBR 温度（图 1）。 然而，在 1940-41 年，加拿大天体物理学家安德鲁·麦凯勒 (Andrew McKellar) 事实上根据氰化物 (CN) 分子在太空中的行为推论出微波 CBR 为 2.3 K。82 伽莫夫的大爆炸理论仍处于未来阶段。 因此，观测到的 CBR 温度并不能证实大爆炸，并且 CBR 不应该被描述为大爆炸的“微光”。

## CBR properties do not confirm the big bang

Big bang theory originally predicted that the CBR temperature must be smooth and uniform, i.e. isotropic, and that all galaxies and all matter in the universe must be evenly distributed, i.e. homogeneous:

‘[The big bang model] gives a picture that very closely resembles the observed universe. … it assumes at the outset that the universe is spatially homogeneous. The astronomical evidence confirms that this is an extremely good approximation to reality. … The observations imply that the universe can be considered homogeneous. … Roughly speaking, the level of inhomogeneity in the observable universe is small and the matter distribution becomes increasingly homogeneous in [large] sample volumes …’83

This belief followed from the picture of cosmic matter and energy expanding uniformly and smoothly in the eons since the big bang. By the 1980s, however, disillusionment with this prediction was setting in because observations showed that galaxies are distributed unevenly in huge clusters. Further, theorists began to realize that the ‘standard big bang’ with an isotropic CBR could not explain, ‘… where did [cosmic] structure originate?’84 To resolve this dilemma, the ‘inflation hypothesis’ was proposed:

‘The inflationary model for the early universe proposes that … the rate of [cosmic] expansion began to increase rapidly with time. … Inflation explains the origin of the structure that later became galaxies and clusters. … Before inflation, the part of the universe that we can observe was so small that density fluctuations appeared and disappeared in a random manner that can only be described by probabilities. At the instant inflation began, the existing fluctuations were inflated to great sizes and became the fluctuations in the CBR and the seed of large-scale structure in the universe.’85,86

CBR特性并未证实大爆炸 大爆炸理论最初预测CBR温度必须是平滑且均匀的，即各向同性，并且宇宙中所有星系和所有物质必须均匀分布，即同质： “[大爆炸模型]给出的图像与观测到的宇宙非常相似。 ……它一开始就假设宇宙在空间上是均匀的。 天文学证据证实，这是对现实的极其接近。 ......观察结果表明宇宙可以被认为是均匀的。 …粗略地说，可观测宇宙中的不均匀性程度很小，并且在[大]样本量中物质分布变得越来越均匀…'83 这种信念源于宇宙物质和能量在大爆炸以来的亿万年中均匀而平稳地膨胀的图景。 然而到了 20 世纪 80 年代，这一预测开始幻灭，因为观测表明星系在巨大的星团中分布不均匀。 此外，理论家开始意识到，具有各向同性 CBR 的“标准大爆炸”无法解释，“……[宇宙]结构起源于哪里？”84为了解决这一困境，提出了“暴胀假说”： “早期宇宙的暴胀模型提出……[宇宙]膨胀的速度随着时间开始迅速增加。 ......暴胀解释了后来成为星系和星团的结构的起源。 ......在暴胀之前，我们可以观察到的宇宙部分非常小，以至于密度涨落以随机方式出现和消失，只能用概率来描述。 在膨胀开始的那一瞬间，已有的涨落被膨胀到很大，成为CBR的涨落，成为宇宙大尺度结构的种子。’85,86

Inflation theory has two fatal flaws. The first is that the CBR has not been demonstrated to possess significant fluctuations, as we will see below, despite the insistence that such fluctuations have been detected.87 The second is that cosmic inflation is ‘untestable’.88 After claiming that ‘inflation can provide natural answers to the problems of the standard model of the Big Bang’, Fix acknowledges that cosmic inflation actually has no observable cause, ‘But what caused the epoch of inflation? The explanation that has the widest acceptance today depends on a phase change in the universe when the temperature was 1027 K.’89

Aside from the fact that the ‘phase change’ is only a consensus (i.e. ‘the most widely accepted explanation’), this reasoning seems plausible. However, Fix confesses,

‘… this explanation for the period of inflation may sound like a fairy tale … It seems unlikely … that people will ever be able to confirm the validity of these theories by means of experiments …’89

In short, the inflation and phase change theories constructed to explain cosmic structure via the big bang are themselves unverifiable speculation. Indeed, inflation resulted in ‘increasingly complicated’ models,90 which ‘[came] nowhere close to providing us with an understanding of the large-scale homogeneity of the universe’.91

The isotropy of the CBR eventually caused the big bang itself to be questioned. Ferris complained, ‘The Big Bang theory … fails to tell us how galaxies, stars and planets formed: If the universe began as a homogeneous soup, why did it not stay so forever?’92 Finally, there were ‘widespread reports of the death of the Big Bang [but] Big Bang proponents responded with new ad hoc hypotheses’ to save the theory.93

The ‘smoothness’ of the CBR was detected by monitoring CBR temperature, known since 1965 to be about 3 K. Ironically, this temperature, once seen as a confirmation of the big bang, had become a liability because its uniformity denied that ‘lumpy’ galaxy clusters could have evolved. Even with inflation and phase change, the isotropic 3 K background left the early universe with no heterogeneities to explain present cosmic structure. This crisis was resolved by processing CBR temperature data to extract minuscule variations:

通货膨胀理论有两个致命的缺陷。 第一个是，正如我们将在下面看到的，尽管坚持认为已经检测到了这种波动，但 CBR 尚未被证明具有显着的波动。87 第二个是宇宙膨胀是“不可测试的”。88 在声称“通货膨胀可以 为大爆炸标准模型的问题提供了自然的答案”，菲克斯承认宇宙暴胀实际上没有明显的原因，“但是是什么导致了暴胀时代呢？ 当今最广泛接受的解释取决于温度为 1027 K 时宇宙的相变。’89 除了“相变”只是一种共识（即“最广泛接受的解释”）这一事实之外，这种推理似乎是合理的。 然而，菲克斯承认， “……这种对通货膨胀时期的解释可能听起来像一个童话故事……似乎不太可能……人们能够通过实验来证实这些理论的有效性……”89 简而言之，通过大爆炸解释宇宙结构的暴胀和相变理论本身就是无法验证的推测。 事实上，暴胀导致了“越来越复杂”的模型，90这些模型“远不能让我们理解宇宙的大尺度同质性”。 91 CBR的各向同性最终导致大爆炸本身受到质疑。 费里斯抱怨道，“大爆炸理论……未能告诉我们星系、恒星和行星是如何形成的：如果宇宙一开始是一锅同质的汤，为什么它没有永远保持下去？”92最后，有“关于死亡的广泛报道” 大爆炸的[但是]大爆炸的支持者用新的临时假设来回应以拯救该理论。93 CBR 的“平滑度”是通过监测 CBR 温度来检测的，自 1965 年以来已知温度约为 3 K。具有讽刺意味的是，这个温度曾经被视为大爆炸的确认，但现在却成为了一种负担，因为它的均匀性否认了“块状”的存在。 星系团可能已经演化。 即使存在暴胀和相变，各向同性的 3 K 背景也使早期宇宙没有异质性来解释当前的宇宙结构。 通过处理 CBR 温度数据以提取微小的变化，解决了这场危机：

Artist’s impression of the COBE satellite.

‘Much to the embarrassment of big bang boosters, increasingly sensitive studies of the microwave background continued to show a uniform glow of radiation. Theorists obligingly adjusted their models to accommodate ever smaller initial density fluctuations. … COBE’s [Cosmic Background Explorer satellite] precision instruments seem to have come to the rescue. The detected fluctuations [are] near the limit of COBE’s sensitivity.’94

The COBE team leader claimed that the fluctuations are ‘real’, but Powell noted that:

‘In this case, “real” is a somewhat blurry term. COBE’s map of the microwave sky is dominated by instrument noise; roughly two-thirds of the data … originated in COBE or in unaccounted-for nearby sources and not in the infant universe. … The reason for the ambiguity lies in the Herculean task of accounting for every source of microwave emission other than the cosmic background.’95

Even after this extensive data processing, the CBR fluctuations were so small as to disallow formation of galaxies in the required time:

‘The temperature fluctuations are minuscule, only about one part in 100,000. … Such slight variations could not easily have produced dense, highly organized galaxies within a billion years or two after the big bang.’96

Riordan and Schramm similarly noted that:

‘These ripples are far smaller than those necessary to trigger gravitational collapse … But the compact structures we witness in all directions tell us that such collapses occurred almost everywhere. What is wrong here?’97

Before COBE, theory had led investigators to expect a maximum non-isotropy of 1 in 10,000,95 but ‘no significant variations’ were found at this level.98 However, even if galactic structure could develop from a 1-in-10,000 non-isotropy, ‘From such a smooth state, there is simply not time for gravity to have assembled the galaxies and clusters we see today.’99 In other words, ‘Gravity can’t, over the age of the universe, amplify these irregularities enough to form galaxy clusters.’100

Theorists responded that a 1 in 10,000 non-isotropy might trigger galaxy formation if as much as 99% of the universe were ‘dark matter’.101 This dark matter is supposed to emit no light or other electromagnetic radiation, so would be invisible,102 but this means that ‘its existence must remain an article of faith for the true believer in the standard model’.101 Even indirect evidence for the existence of dark matter has been questioned,103 but big bang models with no dark matter have difficulties, such as the requirement of a super-heavy neutrino.104 (Neutrinos have been thought to be virtually massless.)

A theory that reconciles inconsistencies by multiplying unobserved and unobservable phenomena can hardly be said to have been confirmed by any one of them.

COBE 卫星的艺术家印象图。 “令大爆炸助推器感到尴尬的是，对微波背景的日益敏感的研究继续显示出均匀的辐射辉光。 理论家们乐于调整他们的模型以适应更小的初始密度波动。 ...... COBE 的[宇宙背景探索卫星]精密仪器似乎已经来救援了。 检测到的波动接近 COBE 灵敏度的极限。’94 COBE 团队负责人声称波动是“真实的”，但鲍威尔指出： “在这种情况下，‘真实’是一个有点模糊的术语。 COBE 的微波天空图主要是仪器噪声； 大约三分之二的数据……源自 COBE 或来自不明原因的附近来源，而不是来自婴儿宇宙。 ……造成这种模糊性的原因在于，要考虑除宇宙背景之外的所有微波发射源，这是一项艰巨的任务。’95 即使经过如此广泛的数据处理，CBR 波动仍然很小，以至于无法在所需时间内形成星系： “温度波动很小，大约只有十万分之一。 ……如此微小的变化不可能在大爆炸后的十亿年或两年内轻易地产生密集、高度组织的星系。’96 Riordan 和 Schramm 同样指出： “这些涟漪远小于引发引力塌缩所需的涟漪......但我们在各个方向看到的紧凑结构告诉我们，这种塌陷几乎无处不在。 这里出了什么问题？’97 在 COBE 之前，理论使研究人员预计最大非各向同性为 10,000,95，但在这个水平上“没有发现显着变化”。 98 然而，即使星系结构可以从 10,000 分之一的非各向同性发展而来， 各向同性，“在如此平滑的状态下，引力根本没有时间聚集我们今天看到的星系和星团。”99换句话说，“在宇宙的年龄中，引力无法充分放大这些不规则性” 形成星系团。'100 理论家回应说，如果宇宙的 99% 都是“暗物质”，那么万分之一的非各向同性可能会引发星系的形成。101 这种暗物质应该不发射光或其他电磁辐射，因此是不可见的，102 但这意味着“对于标准模型的真正信徒来说，它的存在必须是一种信仰”。101甚至暗物质存在的间接证据也受到质疑，103但没有暗物质的大爆炸模型有困难，例如 作为超重中微子的要求。104（中微子被认为实际上是无质量的。） 通过增加未观察到的和不可观察到的现象来调和不一致的理论很难说已经被其中任何一个所证实。

The rise of the dark matter concept ‘saved’ the big bang despite the virtually total isotropy of the CBR. With a virtually isotropic CBR, theorists once again expect a universe that is ‘quite uniform on the very largest scales, [though] it has complicated structure and is highly non-uniform on smaller scales, such as the sizes of clusters of galaxies’.84 Yet features of size on the order of galaxy clusters are the largest observable scales in the universe: the cosmos appears incorrigibly ‘lumpy’. Further, dark matter does not really explain how this ‘lumpiness’ developed. Models of dwarf galaxy evolution indicate that dark matter hinders development of observed galactic properties, and dwarf galaxies are supposed to be the precursors to larger galaxies.102 On the other hand, dark matter is required to prevent the dissipation of galactic structure over the presumed age of the cosmos.105

In sum, to reconcile the near-isotropy of the CBR with the lumpiness of galactic structures, big bang theory has invoked (1) unobservable inflation, an unobservable phase change epoch and unobservable dark matter; and (2) unobserved uniform galactic structures. A theory that reconciles inconsistencies by multiplying unobserved and unobservable phenomena can hardly be said to have been confirmed by any one of them:

‘Theorists … invented the concepts of inflation and cold dark matter to augment the big bang paradigm and keep it viable, but they, too, have come into increasing conflict with observations. In the light of all these problems, it is astounding that the big bang hypothesis is the only cosmological model that physicists have taken seriously.’106

If the big bang did not occur, neither did nucleosynthesis in the big bang. This means that existence of the isotopes commonly credited to big bang nucleosynthesis (e.g. H, D, 3He, 4He and 7Li) cannot be explained by the big bang.

尽管 CBR 几乎完全各向同性，但暗物质概念的兴起“拯救”了大爆炸。 凭借几乎各向同性的 CBR，理论学家再次期望宇宙“在最大尺度上相当均匀，[尽管]它具有复杂的结构，并且在较小尺度上高度不均匀，例如星系团的大小”。 84然而，星系团数量级的大小特征是宇宙中可观测到的最大尺度：宇宙显得无可救药地“块状”。 此外，暗物质并不能真正解释这种“块状”是如何形成的。 矮星系演化模型表明，暗物质阻碍了观测到的星系特性的发展，矮星系被认为是较大星系的前身。 102 另一方面，需要暗物质来防止星系结构在假定年龄内消散。 宇宙的.105 总之，为了调和 CBR 的近各向同性与星系结构的块状性，大爆炸理论援引了（1）不可观测的暴胀、不可观测的相变时代和不可观测的暗物质； (2) 未观测到的均匀星系结构。 通过乘以未观察到的和不可观察到的现象来调和不一致的理论很难说已经被其中任何一个所证实： “理论家……发明了暴胀和冷暗物质的概念，以增强大爆炸范式并保持其可行性，但他们也与观测结果产生了越来越多的冲突。 鉴于所有这些问题，令人震惊的是，大爆炸假说是物理学家认真对待的唯一宇宙学模型。”106 如果大爆炸没有发生，大爆炸中的核合成也不会发生。 这意味着通常被认为是大爆炸核合成的同位素（例如 H、D、3He、4He 和 7Li）的存在不能用大爆炸来解释。

## What is the creation alternative to NST?

Without a big bang, the isotopes now postulated to have been synthesized in the big bang were not produced. On the other hand, Scripture read straightforwardly teaches that God relatively recently created a finished cosmos. It is possible to conclude that the ‘finished’ state of creation included to a large degree the present suite of stable isotopes, without the need for nucleosynthesis to account for them. With respect to origins, this is the creation alternative to NST.

A mistaken alternative is to assume that naturalistic processes can be reconciled with fiat creation by shortening the timescale to fit within a literal Creation Week. A naturalistic process impossible over eons is less likely over days, and to say that God accomplished the naturalistic process quickly is to verge on a kind of ‘theistic naturalism’. Naturalistic origins theory, NST or otherwise, should be seen for what it is—an attempt to rob God of the glory of creating His universe by mechanisms not subject to natural law and which natural law will never explain.

NST 的创作替代方案是什么？

 如果没有大爆炸，现在假设在大爆炸中合成的同位素就不会产生。 另一方面，圣经直接教导我们，上帝最近才创造了一个完整的宇宙。 可以得出结论，创造的“完成”状态在很大程度上包括目前的稳定同位素套件，而不需要核合成来解释它们。 就起源而言，这是 NST 的创造替代方案。 一个错误的选择是假设自然主义过程可以通过缩短时间尺度以适应字面上的创造周来与法定创造相协调。 一个不可能在亿万年里完成的自然过程在几天之内就不太可能发生，而说上帝很快完成了自然过程就接近于一种“有神论自然主义”。 自然主义起源理论，无论是 NST 还是其他理论，都应该看清它的本质——试图通过不受自然法约束的机制来剥夺上帝创造宇宙的荣耀，而自然法永远无法解释这一点。

## Conclusion

The uniformity of atomic structure throughout the cosmos is not what naturalistic origins theory once expected. After the general acceptance of atomic theory, naturalistic NST was again surprised by the diversity of elemental abundances throughout the cosmos. Big bang ‘predictions’ of the cosmic H/He abundance ratio and the CBR temperature were actually retrodictions, so offer no confirmation of big bang NST. CBR isotropy, though once expected by big bang theory, is now understood to render nucleosynthesis and cosmic development impossible without invoking unobservable phenomena such as dark matter. Since the CBR has generated difficulties for big bang theory, its properties cannot be cited as confirmation of the big bang. Ross claims that the CBR ‘magnificently confirms biblical cosmology’ in the sense of confirming the big bang.107 The truth is that, by exposing the big bang fallacy, the CBR affirms a non-big bang biblical cosmology.

The present paper is only an introduction to the problems of modern NST. Other long-standing difficulties are the deuterium synthesis problem,23,108 and the overage of Population I stars.109 Neither has stellar NST actually explained the origin of the elements. The elements in their existence and abundances continue to point to creation. Indeed, in his Nobel lecture, William Fowler acknowledged:

‘In spite of the past and current research in experimental and theoretical nuclear astrophysics … Hoyle’s grand concept of element synthesis in the stars [is not] truly established. … It is not just a matter of filling in the details. There are puzzles and problems in each part of the cycle that challenge the basic ideas underlying nucleosynthesis in stars.’110

The words of Seneca appended by Alexander Humboldt near the end of the astronomical section of his epochal five-volume Cosmos series remain applicable, ‘We believe we are initiated; whereas we halt at the very threshold.’111

结论

整个宇宙原子结构的均匀性并不是自然主义起源理论曾经所期望的那样。 在原子理论被普遍接受之后，自然主义 NST 再次对整个宇宙元素丰度的多样性感到惊讶。 大爆炸对宇宙 H/He 丰度比和 CBR 温度的“预测”实际上是回顾，因此无法证实大爆炸 NST。 CBR 各向同性虽然曾经被大爆炸理论所预期，但现在被认为在不引入暗物质等不可观测现象的情况下不可能实现核合成和宇宙发展。 由于CBR给大爆炸理论带来了困难，因此它的性质不能用来证实大爆炸。 罗斯声称，CBR 在确认大爆炸的意义上“极大地证实了圣经宇宙论”。107事实是，通过揭露大爆炸谬误，CBR 肯定了非大爆炸的圣经宇宙论。 本文仅介绍现代 NST 的问题。 其他长期存在的困难是氘合成问题，23,108 和 I 族恒星的过量。109 恒星 NST 也没有真正解释元素的起源。 它们的存在和丰富的元素继续指向创造。 事实上，威廉·福勒在他的诺贝尔奖演讲中承认： “尽管过去和现在在实验和理论核天体物理学方面进行了研究……霍伊尔关于恒星中元素合成的宏伟概念尚未真正建立。 ……这不仅仅是填写细节的问题。 该周期的每个部分都存在挑战恒星核合成基本思想的谜题和问题。’110 亚历山大·洪堡（Alexander Humboldt）在其划时代的五卷本《宇宙》系列的天文学部分接近结尾时添加的塞内卡的话仍然适用：“我们相信我们已被启蒙； 而我们却停在了门槛处。”111

# God and the beginning of the universe

Broly U. from Ukraine writes:



Is the Cosmological argument incoherent? This is from a fellow Christian.

“Craig and Loke’s talk of “initially changeless” is incoherent. If something exists timelessly, it is necessarily immutable. “Initially changeless” doesn’t actually mean “changeless”. It means “possesses the ability to change but just so happens not to be changing right now.” But of course there is no “right now” sans creation. Changeless = immutable. And there is no “initially” sans creation. So you can take the Kalam as usually pronounced and when you get to the part about the First Cause being “timeless” you can then dovetail nicely into Classical Theism. Changeless = no potential for change. Not, “just so happens not to be changing”. The change would have had to originated in God because since creation there is nowhere else for the change to come from. But, God is said to be initially changeless, so this change is basically popping into existence from nothing.”

上帝与宇宙的开始

来自乌克兰的 Broly U. 写道： 宇宙论的论证是不连贯的吗？ 这是一位基督徒同工说的。 “克雷格和洛克所说的“最初不变”是不连贯的。 如果某物永恒存在，那么它必然是不可变的。 “本来不变”实际上并不意味着“不变”。 它的意思是“拥有改变的能力，但恰好现在不改变”。 但当然，没有创造就没有“现在”。 不变=不变。 没有创造就没有“最初”。 因此，你可以按照通常的发音来理解“Kalam”，当你谈到“第一因”是“永恒的”部分时，你就可以很好地契合古典有神论。 不变=没有改变的潜力。 不是，“只是碰巧没有改变”。 这种变化必须起源于上帝，因为自从创造以来，没有其他地方可以使这种变化产生。 但是，据说上帝最初是不变的，所以这种变化基本上是从无到有。”

CMI’s [Shaun Doyle](https://creation.com/shaun-doyle) responds:

Dear Broly,

The fact is the Bible underdetermines any sort of commitment to how God relates to time.

Thanks for writing in. Your friend goes into very deep theological and philosophical questions! And I think they’re great to explore.

First of all, though, let me state this: The Christian faith doesn’t stand or fall on the success of the Kalam cosmological argument. We have defended it quite extensively on [creation.com](https://creation.com/) (and I personally have done a lot of that defending), and I believe it is a good argument. But if I came to believe it was flawed, I’d abandon using it, but I wouldn’t quit Christianity.

Moreover, the issue of God’s relation to time is something on which Christians can disagree. For instance, your friend adopts a position on God’s relation to time in good standing within the history of the church. I have defended the biblical legitimacy of an essentially timeless conception of God’s relation to time ([How does God relate to time?](https://creation.com/god-and-time)). I want to stress this before engaging your friend’s arguments, because it’s easy to blow these sorts of matters out of proportion. The fact is the Bible underdetermines any sort of commitment to how God relates to time. As such, there are multiple views that are consistent with the Bible. Thus, there is room for Christians to disagree on this matter. So, all any of us can do is weigh up extrabiblical considerations (whether scientific, philosophical, or theological) and come to the conclusion that seems best to us.

With those caveats in mind, let’s now turn to the issue at hand. First, does “Changeless = immutable”? I don’t think so. ‘Changeless’ means ‘without change’, and ‘immutable’ means ‘cannot change’. These are not the same idea. The former describes how something actually is, the latter describes how something must be. In other words, ‘immutable’ isn’t equivalent to ‘changeless’, it’s equivalent to ‘necessarily changeless’.

CMI 的 Shaun Doyle 回应：

亲爱的布罗利， 事实上，圣经没有明确规定上帝与时间的关系。 感谢您来信。您的朋友探讨了非常深刻的神学和哲学问题！ 我认为它们很值得探索。 首先，让我声明一下：基督教信仰的成败并不取决于卡拉姆宇宙论论证的成功。 我们在creation.com上对它进行了相当广泛的辩护（我个人也做了很多这样的辩护），我相信这是一个很好的论点。 但如果我开始相信它有缺陷，我就会放弃使用它，但我不会放弃基督教。 此外，上帝与时间的关系问题是基督徒可能存在分歧的问题。 例如，你的朋友对上帝与时间的关系采取了在教会历史上享有盛誉的立场。 我捍卫了上帝与时间关系的本质上永恒概念的圣经合法性（上帝与时间有何关系？）。 在讨论你朋友的论点之前，我想强调这一点，因为很容易夸大这些事情不成比例。 事实上，圣经没有明确规定上帝与时间的关系。 因此，有多种观点与圣经一致。 因此，基督徒在这个问题上有不同意见的余地。 因此，我们所有人所能做的就是权衡圣经之外的考虑因素（无论是科学的、哲学的还是神学的），并得出对我们来说最好的结论。 考虑到这些注意事项，现在让我们转向当前的问题。 首先，“不变=不可变”吗？ 我不这么认为。 “不变”是指“不改变”，“不变”是指“不能改变”。 这些不是同一个想法。 前者描述某事物实际上如何，后者描述某事物必须如何。 换句话说，“不变”并不等于“不变”，而是相当于“必然不变”。

But that leaves us with another potential option: could God, sans creation, be contingently changeless? In other words, is God, sans creation, completely static but able to change? This can come in two possible guises, as Loke points out:

Thus the First Cause must either have an actual infinite past without an actual infinite regress of events—this would imply an initially changeless state with an actual infinite past extension on a substantive view of time (Padgett 1992)—or be initially timeless and changeless at least sans the creation of time, as Craig (1998, p. 115) argues. In either case, the First Cause would be initially changeless”.1

How does your friend respond to this? He says:

“‘Initially changeless’ doesn’t actually mean ‘changeless’. It means ‘possesses the ability to change but just so happens not to be changing right now.’ But of course there is no ‘right now’ sans creation.”

This only rejects one form of ‘initial changelessness’. It rejects the former view: a changeless state (prior to creation) with an actual infinite past extension on a substantive view of time. This is the classical Newtonian view of God’s eternity. But it doesn’t reject Craig’s view: a timeless and changeless state sans creation on a relational view of time. Why? On Craig’s view, since God is timeless sans creation, there clearly can’t be a ‘right now’ sans creation.

但这给我们留下了另一个潜在的选择：没有创造的上帝是否可以偶然地保持不变？ 换句话说，没有受造物的上帝是完全静止的但能够改变吗？ 正如洛克指出的那样，这可以有两种可能的形式： 因此，第一因必须要么有一个实际的无限过去，而没有事件的实际无限倒退——这意味着在实质性时间观上有一个最初不变的状态，具有实际无限的过去延伸（Padgett 1992）——要么最初是永恒的和不变的 正如 Craig (1998, p. 115) 所言，至少没有时间的创造。 无论哪种情况，第一因最初都是不变的。”1 你的朋友对此有何反应？ 他说： “‘最初不变’实际上并不意味着‘不变’。 它的意思是‘拥有改变的能力，但恰好现在没有改变。’但当然，没有创造就没有‘现在’。” 这只是拒绝了一种形式的“最初的不变性”。 它拒绝了前一种观点：一种不变的状态（在创造之前），在实质性时间观上具有实际无限的过去延伸。 这是经典牛顿关于上帝永恒的观点。 但它并不拒绝克雷格的观点：一种永恒且不变的状态，没有基于时间关系观的创造。 为什么？ 在克雷格看来，既然上帝在没有创造的情况下是永恒的，那么显然不可能有没有创造的“现在”。

But your friend does have an argument against both forms of contingent changelessness:

“The change would have had to originated in God bcuz sans creation there is nowhere else for the change to come from. But, God is said to be initially changeless, so this change is basically popping into existence from nothing.”

However, this seems confused. Yes, if God is contingently changeless, God doesn’t have to remain changeless. He can freely choose to change it. So yes, the change does come from God himself, and not anywhere else. Crucially, it comes from God’s freedom of choice ([A personal cause for the universe?](https://creation.com/personal-cause-for-the-universe)). Is this change popping into existence from nothing (which I take to mean ‘uncaused’)? That’s simply to misunderstand what agent causation is. There’s nothing uncaused except the First Cause from which the free choice to create the universe comes. The causal ‘buck’ stops with God.

Anyway, that’s Craig and Loke’s view. I don’t think your friend has shown it’s incoherent, and I don’t think it is incoherent. But does that mean it’s true? Not necessarily.

Stick closely to Scripture, and do your best to bring all such theologies to the bar of Scripture.

但你的朋友确实反对这两种形式的偶然变化： “这种变化必须起源于上帝，因为没有创造，没有其他地方可以产生这种变化。 但是，据说上帝最初是不变的，所以这种变化基本上是从无到有。” 然而，这似乎很混乱。 是的，如果神是偶然不变的，那么神就不必保持不变。 他可以自由选择改变它。 所以，是的，改变确实来自上帝本人，而不是其他任何地方。 至关重要的是，它来自上帝的选择自由（宇宙的个人原因？）。 这种变化是从无到有（我认为是“无原因的”）突然出现的吗？ 这只是误解了主体因果关系。 除了自由选择创造宇宙的第一因之外，没有什么是无因的。 因果“责任”由上帝承担。 无论如何，这是克雷格和洛克的观点。 我不认为你的朋友表现出它是不连贯的，我也不认为它是不连贯的。 但这是否意味着这是真的？ 不必要。 紧紧抓住圣经，并尽力将所有这些神学带到圣经的标准上。

For instance, your friend mentioned ‘classical theism’. That’s an astute observation. Craig and Loke reject the absolute immutability of God, which is part of the ‘classical theism’ of Augustine and especially Aquinas. So, they are not classical theists in the Thomistic/Augustinian mould. Their view has been dubbed ‘theistic personalism’, but I’m not sure how accurate that label is. The operative point is that they have a different conception of God’s absolute perfection from the ‘classical theism’ of medieval theology. Their theology is Anselmian (i.e. it understands God as the greatest conceivable being) in method, but the results of their method are a little different from much of medieval theology. For instance, they think God’s freedom of choice entails the falsity of his absolute immutability. They of course confess that there are many important ways that God cannot change: e.g. He’s necessarily existent, self-existent, eternal, indestructible, good, omnipotent, and omniscient. But their view of divine immutability isn’t as ‘stringent’ as e.g. the ‘classical theism’ of Thomas Aquinas, who considers God completely static and has all his attributes essentially.

So, the question arises: which conception of God is more likely to be true? Scripture largely underdetermines this question at the level of philosophical theology we’re beginning to work at, now. All I say, then, is this: stick closely to Scripture, and do your best to bring all such theologies to the bar of Scripture. If Scripture doesn’t say anything clear on the topic, follow the arguments to the conclusion that seems most reasonable to you.

Kind regards,
Shaun Doyle
Creation Ministries International

例如，你的朋友提到“古典有神论”。 这是一个敏锐的观察。 克雷格和洛克拒绝上帝的绝对不变性，这是奥古斯丁，尤其是阿奎那的“古典有神论”的一部分。 因此，他们不是托马斯/奥古斯丁模式中的古典有神论者。 他们的观点被称为“有神个人主义”，但我不确定这个标签有多准确。 关键在于，他们对于上帝的绝对完美有着与中世纪神学的“古典有神论”不同的观念。 他们的神学在方法上是安塞尔米亚式的（即，它将上帝理解为可想象的最伟大的存在），但他们方法的结果与中世纪神学的大部分内容略有不同。 例如，他们认为上帝的选择自由意味着他的绝对不变性是虚假的。 他们当然承认，有许多重要的方式是上帝无法改变的：例如 他必然是存在的、自我存在的、永恒的、坚不可摧的、善良的、全能的、全知的。 但他们对神圣不变性的看法并不像其他人那样“严格”。 托马斯·阿奎那的“古典有神论”，他认为上帝是完全静态的，本质上具有他的所有属性。 那么，问题就来了：哪种上帝观念更有可能是真实的？ 在我们现在开始研究的哲学神学层面上，圣经在很大程度上没有充分确定这个问题。 那么，我要说的就是：紧紧抓住圣经，并尽力将所有这些神学带到圣经的审判台上。 如果圣经没有明确说明该主题，请按照论据得出对您来说最合理的结论。

亲切的问候， 肖恩·道尔 国际创造事工

# Simultaneous causation and the beginning of time



Blake C. from the United States writes:

I have a question about simultaneous causation. Do we need simultaneous causation? If God is outside of time, he can create time and have a motive to do so without time passing, correct? Atheists would then be right however that the concept of "before time" is meaningless if that's true. They still can't explain how matter got there and clearly an eternal, non-time-bound and non-material God must be the uncaused cause, but the concept of simultaneous causation seems like a philosophical fudge-factor to me. So is simultaneous causation a possibility and can Atheists have a universe without a cause?

来自美国的 Blake C. 写道： 我有一个关于同时因果关系的问题。 我们需要同时因果关系吗？ 如果上帝在时间之外，他就可以创造时间，并且有动机在不让时间流逝的情况下创造时间，对吗？ 然而，如果这是真的，无神论者就会说“在时间之前”的概念毫无意义。 他们仍然无法解释物质是如何到达那里的，并且显然一个永恒的、不受时间限制的、非物质的上帝一定是无因的原因，但同时因果关系的概念对我来说似乎是一个哲学上的捏造因素。 那么，同时因果关系是否可能存在，无神论者能否拥有一个没有原因的宇宙呢？

CMI’s [Shaun Doyle](https://creation.com/shaun-doyle) responds:

## Do we need simultaneous causation?

You ask: “Do we need simultaneous causation?” For time’s beginning, yes. There’s no other logical option. Clearly, causes cannot happen after their effects in time, even when the effect is time’s beginning. But could the cause of time’s beginning occur before time’s beginning in time? Of course not! Nothing can occur before time’s beginning in time; such an idea is self-contradictory. Thus, we have only one option left: the cause of time’s beginning occurred when time began. In other words, cause and effect (since the effect is time’s beginning) were simultaneous.

A ‘cause’ is in some sense ‘responsible’ for an effect; there’s nothing about this that immediately tells us cause and effect can’t happen at the same time.

Note that I’m talking here of time’s beginning, not necessarily the universe’s beginning. We can conceive of the two being distinct without contradiction. For instance, say that God counted to three before He created the universe. In this scenario, the universe began after time began. If God counted in sequence before He created the universe, time would’ve existed before the universe began.

Moreover, the relevance of simultaneous causation isn’t affected by how long ago time began. Of course, the Bible teaches that it began around [6,000 years ago](https://creation.com/6000-years). But even if time began with the supposed ‘big bang’ 13.7 billion years ago, simultaneous causation remains the only way for time to begin as an effect. The biggest problem with using the big bang as evidence for God is that it contradicts the biblical time frame and event order ([Did God use a big bang?](https://creation.com/did-god-use-big-bang)), not that it presupposes a faulty understanding of causality and time’s beginning.

CMI 的 Shaun Doyle 回应： 我们需要同时因果关系吗？ 你问：“我们需要同时因果关系吗？” 对于时间的开始，是的。 没有其他合乎逻辑的选择。 显然，原因不可能在其影响之后及时发生，即使影响是时间的开始。 但时间开始的原因是否可能发生在时间开始之前呢？ 当然不是！ 在时间开始之前什么都不会发生； 这种想法是自相矛盾的。 因此，我们只剩下一个选择：时间开始的原因发生在时间开始的时候。 换句话说，原因和结果（因为结果是时间的开始）是同时发生的。 从某种意义上说，“原因”是对结果“负责”的。 这并没有立即告诉我们因果不能同时发生。 请注意，我在这里谈论的是时间的开始，而不一定是宇宙的开始。 我们可以认为两者是截然不同的，并不矛盾。 例如，假设上帝在创造宇宙之前数到了三。 在这种情况下，宇宙是在时间开始后开始的。 如果上帝在创造宇宙之前就按顺序计算，那么时间在宇宙开始之前就已经存在了。 此外，同时因果关系的相关性不受时间开始多久的影响。 当然，圣经教导说它始于大约 6000 年前。 但即使时间从 137 亿年前所谓的“大爆炸”开始，同时因果关系仍然是时间作为结果开始的唯一方式。 使用大爆炸作为上帝存在的证据的最大问题是它与圣经的时间框架和事件顺序相矛盾（上帝使用了大爆炸吗？），而不是它预设了对因果关系和时间开始的错误理解。

## Is simultaneous causation possible?

But is simultaneous causation a coherent concept? Since effects cannot precede their causes in time, it could only be incoherent if effects must follow their causes in time. But why think this is true?

First, there’s no obvious incoherence in the term ‘simultaneous cause’. When we look at the term ‘married bachelor’, a basic understanding of both words quickly shows that it’s an impossible idea. Bachelors are unmarried men. Not so with ‘simultaneous cause’. A ‘cause’ is in some sense ‘responsible’ for an effect; there’s nothing about this that immediately tells us cause and effect can’t happen at the same time. Thus, the burden of proof lies with those who would say simultaneous causation is impossible.

Could it be that we only ever experience effects following causes in time? Even if that were true (which is debatable), it wouldn’t show that effects must always follow their causes in time. A prince of a tropical nation who only ever experiences liquid water can’t thereby argue that ice is impossible. Indeed, if time began and had a cause, it must be an exception to this, as shown above.

And consider the theological consequences of saying an effect must follow its cause in time. If so, then time must be uncaused. This is true whether time began or not (though a beginningless past runs into philosophical problems—[Doubt your doubts!](https://creation.com/doubt-your-doubts)). Without a moment preceding time’s beginning in which a cause could operate, time must be uncaused if time began. Similarly, without a beginning, time cannot have a cause preceding it. Thus, time can’t be an effect if it has no beginning. And if time can’t be an effect, then it must be uncaused.

But if time must be uncaused, not even God can be time’s cause. Can this be avoided by positing time as a divine attribute? No, that’s a category mistake. Eternity is a divine attribute, which describes God’s relation to time. However, the Bible teaches that God is the sole source of all things, and it strongly implies that time began (see [Process theism](https://creation.com/process-theism) and [Did God create time?](https://creation.com/did-god-create-time)). Indeed, any theism worthy of the name must insist that God is the sole source of all being. But if time is uncaused, God is not responsible for time, and so is not the sole source of all being. Such a ‘god’ is no God at all. Thus, without any obvious incoherence in the idea, or any solid evidence against it, the theist has no reason to abandon simultaneous causation, and plenty of reason to embrace it.

同时因果关系可能吗？ 但同时因果关系是一个连贯的概念吗？ 由于结果不能及时先于其原因，因此如果结果必须及时跟随其原因，那么结果就只能是不连贯的。 但为什么认为这是真的呢？ 首先，“同时原因”一词并没有明显的不一致之处。 当我们看到“已婚单身汉”这个词时，对这两个词的基本理解很快就会表明这是一个不可能的想法。 单身汉是未婚男子。 “同时因”则不然。 从某种意义上说，“原因”是对结果“负责”的。 这并没有立即告诉我们因果不能同时发生。 因此，举证责任在于那些认为同时因果关系不可能的人。 难道我们只能及时经历因因而果的结果吗？ 即使这是真的（这是值得商榷的），也并不表明结果一定总是及时追随其原因。 一个热带国家的王子只经历过液态水，因此不能说冰是不可能的。 事实上，如果时间开始并且有原因，那么它一定是一个例外，如上所示。 并考虑一下“结果必须及时追随其原因”的神学后果。 如果是这样，那么时间必定是无因的。 无论时间是否开始，这都是事实（尽管无始无终的过去会遇到哲学问题——怀疑你的怀疑！）。 如果时间开始之前没有一个原因可以起作用的时刻，那么如果时间开始，时间就必定是无原因的。 同样，如果没有开始，时间就不可能有原因。 因此，如果时间没有开始，它就不可能成为一种结果。 如果时间不能产生影响，那么它一定是无因的。 但如果时间必须是无因的，那么即使是上帝也不能成为时间的原因。 通过将时间视为神圣属性可以避免这种情况吗？ 不，这是一个类别错误。 永恒是一种神圣的属性，它描述了上帝与时间的关系。 然而，圣经教导说，上帝是万物的唯一源头，并且它强烈暗示时间开始了（参见过程有神论和上帝创造了时间吗？）。 事实上，任何名副其实的有神论都必须坚持上帝是一切存在的唯一源头。 但如果时间是无因的，那么上帝就不对时间负责，因此也不是一切存在的唯一源头。 这样的“神”根本就不是神。 因此，在这个想法中没有任何明显的不连贯性，或任何确凿的证据反对它，有神论者没有理由放弃同时因果关系，并且有充分的理由接受它。

Nonetheless, we can give examples of simultaneous causation: e.g. a ball sitting on a cushion. This example goes back to Immanuel Kant. In this example, the depression in the cushion (the effect) lasts as long as the ball is sitting on the cushion (the cause). This would be true even if the ball had been sitting on the cushion forever, or if God had created them ex nihilo so that they began to exist simultaneously. As such, at any given time cause and effect are both occurring; i.e. they are occurring simultaneously. Thus, far from being “a philosophical fudge factor”, simultaneous causation is both coherent and even something we regularly experience.

尽管如此，我们可以举出同时因果关系的例子：例如 坐在垫子上的球。 这个例子可以追溯到伊曼努尔·康德。 在此示例中，只要球坐在垫子上（原因），垫子中的凹陷（效果）就会持续。 即使球永远坐在垫子上，或者上帝从无到有地创造了它们，以便它们开始同时存在，这也是正确的。 因此，在任何给定时间，因果都同时发生； 即它们同时发生。 因此，同时因果关系远非“哲学上的捏造因素”，而是连贯一致的，甚至是我们经常经历的事情。

## Is time’s beginning an uncaused cause?

Of course, if time began, then the atheist’s only way out is to say that time began uncaused. But if time began uncaused, it would be an inexplicable brute fact. And why think time’s beginning is inexplicable? Nothing comes from nothing. If it did, then anything could come from nothing, not just time or universes. Balls, angels, ducks, unicorns, and Sherlock Holmes could all just pop into being without cause. Even worse, saying that causes are not always needed ruins the potential for any explanatory discipline, including science. After all, how could we justify trying to explain anything if anything could pop into being inexplicably? Thus, something had to be responsible for time’s beginning (see [In the beginning God created—or was it a quantum fluctuation?](https://creation.com/god-created-not-quantum-fluctuation)). God is the sole source of all being, exists necessarily, and is the greatest conceivable being. Therefore, God is the best candidate cause for time’s beginning. And since simultaneous causation is a coherent idea, there’s no causal problem with God doing so.

时间的开始是无因的吗？ 当然，如果时间开始了，那么无神论者唯一的出路就是说时间是无因开始的。 但如果时间无因地开始，那将是一个令人费解的残酷事实。 为什么认为时间的开始是无法解释的？ 没有什么是从无到有的。 如果确实如此，那么任何东西都可能从无到有，而不仅仅是时间或宇宙。 球、天使、鸭子、独角兽和福尔摩斯都可能毫无缘由地突然出现。 更糟糕的是，说并不总是需要原因会破坏任何解释性学科（包括科学）的潜力。 毕竟，如果任何事情都可能莫名其妙地突然出现，我们怎么能证明试图解释任何事情是合理的呢？ 因此，必须有某种东西对时间的开始负责（参见上帝创造之初——还是量子涨落？）。 上帝是一切存在的唯一源头，必然存在，并且是可以想象的最伟大的存在。 因此，上帝是时间开始的最佳候选原因。 由于同时因果关系是一个连贯的概念，因此上帝这样做并不存在因果问题。

## God and ‘before time’

Now, you ask: “If God is outside of time, he can create time and have a motive to do so without time passing, correct? Atheists would then be right however that the concept of ‘before time’ is meaningless if that's true.”

God is responsible for time’s beginning. But that means at least one effect occurred when its cause occurred.

First, if God is outside time, can He be in time? If He can’t, can He create time? How you answer these questions will determine whether God can have a timeless intention to create time. However, your answer will depend crucially on how you view God’s relation to time. This is a difficult subject on which Bible-believing Christians disagree. On these questions, please see [How does God relate to time?](https://creation.com/god-and-time)

Still, is it true that “the concept of ‘before time’ is meaningless”? It depends on what we mean by “before time”. Obviously, if we mean by it ‘temporally before time’, yes, that’s a meaningless self-contradiction. I said that above, and theists have said so (e.g. Augustine and Leibniz) as much as atheists. But we don’t have to read it that way, since ‘before’ can have connotations other than temporal priority. For instance, it can be stipulated to mean something like ‘logically prior’ or ‘explanatorily prior’ without temporal connotations. And God is certainly ‘ontologically prior’ to time in that He is ultimately responsible for it existing.

上帝和“时间之前” 现在，你问：“如果上帝在时间之外，他就可以创造时间，并且有动机在不让时间流逝的情况下这样做，对吗？ 然而，如果这是真的，无神论者就会说‘在时间之前’的概念毫无意义。” 上帝负责时间的开始。 但这意味着当其原因发生时，至少有一种结果发生了。 首先，如果上帝在时间之外，他能在时间之内吗？ 如果他不能，他能创造时间吗？ 你如何回答这些问题将决定上帝能否有永恒的意图来创造时间。 然而，你的答案很大程度上取决于你如何看待上帝与时间的关系。 这是一个困难的话题，相信圣经的基督徒对此意见不一。 关于这些问题，请参阅上帝与时间有何关系？ 不过，“‘时间之前’这个概念真的毫无意义吗”？ 这取决于我们所说的“在时间之前”是什么意思。 显然，如果我们的意思是“在时间之前的时间”，是的，这是一个毫无意义的自相矛盾。 我在上面说过，有神论者（例如奥古斯丁和莱布尼茨）和无神论者都这么说过。 但我们不必这样理解，因为“之前”可以具有时间优先级以外的含义。 例如，它可以被规定为“逻辑上先验”或“解释性先验”之类的意思，而没有时间含义。 上帝无疑“在本体论上先于”时间，因为他对时间的存在负有最终责任。

## Conclusion

God is responsible for time’s beginning. But that means at least one effect occurred when its cause occurred. It could be no other way for time’s beginning. And there’s no logical problem with saying so. We thus can’t say that effects must follow their causes in time. As such, we can use causality and time’s beginning as arguments for God. God is the only plausible candidate for causing time to begin ([If God created the universe, then who created God?](https://creation.com/if-god-created-the-universe-then-who-created-god)).

结论

上帝负责时间的开始。 但这意味着当其原因发生时，至少有一种结果发生了。 对于时间的开始来说，没有其他的方式。 这么说并没有逻辑上的问题。 因此，我们不能说结果必须及时跟随其原因。 因此，我们可以使用因果关系和时间的开始作为上帝的论据。 上帝是导致时间开始的唯一合理的候选者（如果上帝创造了宇宙，那么谁创造了上帝？）。

# In the beginning God created—or was it a quantum fluctuation?

***by***[***Dr Jonathan D. Sarfati***](https://creation.com/dr-jonathan-d-sarfati)

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In one sense, [Genesis 1:1](https://biblia.com/bible/esv/Gen%201.1) is the most important verse in the Bible: “In the beginning, God created the heavens and the earth.” If we can believe this verse, no other verse in the Bible should be a problem. For example, if God can create the whole universe, then raising people from the dead and causing a virgin to conceive would be easy beyond words.

Also, in this one verse, all other false religions are rejected:1

|  |  |
| --- | --- |
| Atheism: there is no God.2 | * God exists, and was present ‘at the beginning’.
* God created the universe; the universe neither spontaneously appeared nor has it existed forever.
 |
| Agnosticism: it is impossible to know whether God exists.3 | * God has revealed Himself in Scripture as Creator.
 |
| Dualism: Good and Evil are eternally co-existent (as Zoroastrians believe). | * God was alone when He created.
* God is perfectly good.
* Beings who became evil are part of the created order.
 |
| Finite-god views (e.g. Open Theism and Process Theology). | * God created the space-time universe.
* Thus He is not limited by anything in the universe,4 including the future, since God created time itself.
 |
| Evolutionism: that goo became you via the zoo. | * God created all things.
 |
| Humanism: man is the measure of all things. | * God is the ultimate reality.
* Man is part of the created order.
* God created us so He is the measure of all things.
 |
| Materialism: Matter (or mass-energy) is the only reality. This is a synonym of:Naturalism: natural laws describe all things. | * God created matter (and mass-energy); or, God created nature.
* God is thus sovereign over the natural world.
* Thus matter (mass-energy) are not eternal or self-existent.
 |
| Pantheism: all is god; god and creation are the same thing. | * God created the universe.
* Thus God is distinct from His creation.
 |
| Panentheism: “all is in god”. | * God transcends what He created.
 |
| Polytheism: there is more than one god | * Only one God created all things.
 |
| Unitarianism (that God is an absolute unity, e.g. Islam, modern Judaism, Jehovah’s Witness doctrine, classical unitarianism). | * Elohim is a plural noun with a singular verb, teaching a plurality in the Godhead.
* The NT reveals this further as the Trinity.
 |

Conversely, if we can’t trust this verse, then nothing else in the Bible makes sense. Since this verse is so foundational, it is not surprising that atheists have feverishly attacked this concept. Some of the attacks are childish, while others have the veneer of philosophy or advanced science.

If God can create the whole universe, then raising people from the dead and causing a virgin to conceive would be easy beyond words.

起初上帝创造了——或者说是量子涨落？

作者：乔纳森·D·萨法蒂博士

美国国家航空航天局 (NASA) 地球观测站、美国国家海洋和大气管理局 (NOAA) 从某种意义上说，创世记一章一节是圣经中最重要的一节经文：“起初，神创造天地。” 如果我们能相信这节经文，那么圣经中的其他经文就不会有问题了。 举例来说，如果上帝能够创造整个宇宙，那么让人们从死里复活并让童女怀孕就变得难以言喻。 此外，在这一节经文中，所有其他错误宗教都被拒绝：1 无神论：不存在上帝。2 • 上帝存在，并且在“太初”就存在。 • 上帝创造了宇宙； 宇宙既不是自发出现的，也不是永远存在的。 不可知论：不可能知道上帝是否存在。3 • 上帝在圣经中启示自己是创造者。 二元论：善与恶永远共存（正如琐罗亚斯德教徒所相信的那样）。 • 神在创造时是孤独的。 • 神是完美的。 • 变得邪恶的存在是受造秩序的一部分。 有限神观点（例如开放神论和过程神学）。 • 上帝创造了时空宇宙。 • 因此，他不受宇宙中任何事物的限制，4 包括未来，因为上帝创造了时间本身。 进化论：那个粘液通过动物园变成了你。 • 上帝创造了万物。 人文主义：人是万物的尺度。 • 神是最终的现实。 • 人是创造秩序的一部分。 • 上帝创造了我们，所以他是万物的尺度。 唯物主义：物质（或质能）是唯一的现实。 这是以下的同义词： 自然主义：自然法则描述一切事物。 • 上帝创造了物质（和质能）； 或者，上帝创造了自然。 • 因此，上帝拥有自然界的主权。 • 因此物质（质能）不是永恒的或独立存在的。 泛神论：万物皆神； 上帝和创造物是同一件事。 • 上帝创造了宇宙。 • 因此，上帝与他的创造物不同。 泛神论：“一切都在上帝之中”。 • 神超越他所创造的一切。 多神论：有不止一位神 • 只有一位神创造了万物。 一神论（上帝是绝对统一的，例如伊斯兰教、现代犹太教、耶和华见证人教义、古典一神论）。 • Elohim 是一个带有单数动词的复数名词，教导神性的复数性。 • 新约进一步揭示了三位一体。 相反，如果我们不能相信这节经文，那么圣经中的其他内容就没有意义了。 由于这节经文是如此基础，无神论者狂热地攻击这个概念也就不足为奇了。 有些攻击是幼稚的，而另一些则披着哲学或先进科学的外衣。 如果上帝能够创造整个宇宙，那么让人从死里复活、让童女怀孕就变得非常容易了。

## Who created God?

The Bible doesn’t attempt to prove that God exists—it proclaims this truth as obvious. But a common question from little children (and not-so-little atheists) is: “If God created the universe, then who created God?” Or, “If everything has a cause, then who caused God?” But no serious apologist ever argued that way. As we have pointed out in several articles and books, one of the main real arguments is:

1. Everything **which has a beginning** has a cause.5
2. The universe has a beginning.
3. Therefore the universe has a cause.6,7

The words in **bold** are important—it is not everything that has a cause, but only everything which begins to exist. The universe requires a cause because it had a beginning. This can be shown by the [Laws of Thermodynamics](https://creation.com/thermodynamics-and-order-questions-and-answers). The First Law of Thermodynamics states that natural processes can neither create nor destroy mass-energy (mass-energy interchange can occur according to E = mc2, but the total remains the same). But the [Second Law](https://creation.com/the-second-law-of-thermodynamics-answers-to-critics) states that the amount of energy available for work is running out, or entropy is increasing to a maximum. If the total amount of mass-energy is limited, and the amount of usable energy is decreasing, then the universe cannot have existed forever. Otherwise, it would already have exhausted all usable energy—the ‘heat death’ of the universe. For example, all radioactive atoms would have decayed, every part of the universe would be the same temperature, and no further work would be possible. So the obvious corollary is that the universe began a finite time ago with a lot of usable energy, and is now running down.

谁创造了上帝？

圣经并没有试图证明上帝存在——它宣称这个真理是显而易见的。 但小孩子（以及相当小的无神论者）常见的问题是：“如果上帝创造了宇宙，那么谁创造了上帝？” 或者，“如果万事皆有因，那么谁造成了上帝呢？” 但没有一个严肃的辩护者曾经这样争论过。 正如我们在几篇文章和书籍中指出的，主要的真实论点之一是： 1. 凡事有始有因。5 2. 宇宙有一个开始。 3. 因此宇宙是有原因的。6,7 粗体字很重要——并不是每件事都有原因，而是每件事都开始存在。 宇宙需要一个原因，因为它有一个开始。 这可以通过热力学定律来证明。 热力学第一定律指出，自然过程既不能产生也不能破坏质能（质能交换可以根据E = mc2发生，但总量保持不变）。 但第二定律指出，可用于做功的能量正在耗尽，或者熵正在增加到最大值。 如果质能总量有限，可用能量不断减少，那么宇宙就不可能永远存在。 否则的话，它就已经耗尽了所有可用的能量——宇宙的‘热寂’。 例如，所有放射性原子都会衰变，宇宙的每一部分都将处于相同的温度，并且无法进行进一步的工作。 因此，明显的推论是，宇宙在有限的时间之前开始时具有大量可用的能量，但现在正在耗尽。

In addition, Einstein’s general relativity, which has much experimental support, shows that time is linked to matter and space. So time itself would have begun along with matter and space, an insight first pointed out by Augustine in the fourth century. Since God, by definition, is the Creator of the whole universe, he is the Creator of time. Therefore, He is not limited by the time dimension He created, so has no beginning in time—God is “the One who is high and lifted up, who inhabits eternity, whose name is Holy” ([Isaiah 57:15](https://biblia.com/bible/esv/Isa%2057.15)). Therefore, He doesn’t have a cause.

此外，得到大量实验支持的爱因斯坦广义相对论表明时间与物质和空间相关联。 因此，时间本身可能与物质和空间一起开始，这是奥古斯丁在四世纪首次提出的见解。 由于根据定义，上帝是整个宇宙的创造者，因此他也是时间的创造者。 因此，他不受他所创造的时间维度的限制，因此在时间上没有开始——神是“那至高、被高举、住在永恒的、他的名为圣的”（以赛亚书57:15）。 因此，他没有因。

## Cause and Effect

It is a metaphysical principle that things which begin have a cause, but it is also self-evident—no-one really denies it in his heart.

All science and history would collapse if this law of cause and effect were denied. So would all law enforcement, if the police didn’t think they needed to find a cause for a stabbed body or a burgled house. Also, the universe cannot be self-caused—nothing can create itself, because that would mean that it existed before it came into existence, which is a logical absurdity.

Suppose that a banana suddenly appeared on your plate. You would not think, ‘Hume was right after all—this banana really did come into being without a cause.’ No, you would think, ‘How did that banana get there?’ and look for the likely cause.

Despite this, the favorite philosopher of modern atheists, the [Scotsman David Hume (1711–1776)](https://creation.com/miracles-and-science), disagreed. He taught that one might conceive of something coming into being without a cause.

However, British analytic philosopher (and conservative Roman Catholic) G.E.M. (Elizabeth) Anscombe (1919–2001) argued cogently that no one really conceives of any such thing.8 To paraphrase one of her points, suppose that a banana suddenly appeared on your plate. You would not think, “Hume was right after all—this banana really did come into being without a cause.” No, you would think, “How did that banana get there?” and look for the likely cause. Maybe there was a hole in the ceiling above it, or in the plate below it. If that were ruled out, then maybe you were temporarily unaware of your surroundings, and in that time, someone placed the banana there without your noticing. Failing that, maybe a magician’s trick, or even a miracle, was the cause. Regardless, even an unknown cause would be more likely than no cause.

因果

万物有因，这是形而上的道理，但也是不言而喻的，没有人内心真正否认这一点。 如果否定因果法则，所有的科学和历史都会崩溃。 如果警察认为他们不需要为被刺伤的尸体或被盗的房屋寻找原因，那么所有执法部门也会这样做。 此外，宇宙不可能是自生的——没有任何东西可以创造自己，因为那意味着它在出现之前就已经存在，这是逻辑上的荒谬。 假设你的盘子里突然出现了一根香蕉。 你不会想，“休谟毕竟是对的——这根香蕉确实是无缘无故地产生的。”不，你会想，“那根香蕉是怎么到那里的？”并寻找可能的原因。 尽管如此，现代无神论者最喜欢的哲学家苏格兰人大卫·休谟（1711-1776）并不同意。 他教导说，人们可以想象某件事物的出现是无缘无故的。 然而，英国分析哲学家（和保守的罗马天主教徒）G.E.M. （伊丽莎白）安斯科姆（Elizabeth Anscombe，1919-2001）令人信服地指出，没有人真正想到过这样的事情。8 为了解释她的一个观点，假设一根香蕉突然出现在你的盘子里。 你不会想：“休谟毕竟是对的——这种香蕉确实是无缘无故地产生的。” 不，你会想，“那根香蕉是怎么到那里的？” 并寻找可能的原因。 也许它上面的天花板上有一个洞，或者它下面的盘子上有一个洞。 如果排除这种情况，那么也许你暂时没有意识到周围的环境，而当时有人在你没有注意到的情况下把香蕉放在那里。 如果做不到这一点，也许是魔术师的把戏，甚至是奇迹，就是原因。 无论如何，即使是未知原因也比没有原因更有可能。

Further, Anscombe pointed out, we would be less likely to think that this banana came into being than that it already existed and was somehow moved to the place. I.e. the cause was in transportation not in creation out of nothing.9,10

So even though Hume claimed that one could easily conceive of something coming into being without a cause, in reality, he likely never really conceived any such thing. Indeed, it seems impossible to conceive. Hume himself, in more lucid moments, even admitted as much:

此外，安斯科姆指出，我们不太可能认为这种香蕉是已经存在的，而是已经存在并以某种方式转移到了这个地方。 IE。 原因在于交通，而不是无中生有。9,10 因此，尽管休谟声称人们可以很容易地想象出某种事物没有原因地产生，但实际上，他可能从未真正想象过任何这样的事情。 确实，似乎不可能怀孕。 休谟本人在更清醒的时刻甚至承认了这一点：

Wikimedia commons/JvangielLawrence Krauss.

But allow me to tell you that I never asserted so absurd a Proposition as that anything might arise without a cause: I only maintain’d, that our Certainty of the Falsehood of that Proposition proceeded neither from Intuition nor Demonstration; but from another Source.11

## Universe from nothing?

Despite the above, a number of atheists have claimed that the universe really came from ‘nothing’. For example, an article about Alan Guth (1947– ), the pioneer of the inflationary universe (see ch. 6), stated:

The universe burst into something from absolutely nothing—zero, nada. And as it got bigger, it became filled with even more stuff that came from absolutely nowhere. How is that possible? Ask Alan Guth. His theory of inflation helps explain everything.12

More recently, physicist and atheistic propagandist Lawrence Krauss (1954– ) has promoted this notion, and even wrote a book, A Universe from Nothing,13 which had a glowing afterword by prominent atheist Richard Dawkins.14 However, Luke Barnes, a non-creationist astrophysicist who is a Postdoctoral Researcher at the Sydney Institute for Astronomy, University of Sydney, Australia, is scathing about Krauss and those who argue like him:

First and foremost, I’m getting really rather sick of cosmologists talking about universes being created out of nothing. Krauss repeatedly talked about universes coming out of nothing, particles coming out of nothing, different types of nothing, nothing being unstable. This is nonsense. The word nothing is often used loosely—I have nothing in my hand, there’s nothing in the fridge etc. But the proper definition of nothing is “not anything”. Nothing is not a type of something, not a kind of thing. It is the absence of anything.

劳伦斯·克劳斯。

但请允许我告诉你，我从来没有断言过一个如此荒谬的命题，以至于任何事情都可能无缘无故地出现：我只是坚持认为，我们对该命题的虚假性的确定性既不是来自直觉，也不是来自论证；而是来自于我们的直觉。 但来自另一个来源.11 宇宙从无到有？ 尽管如此，许多无神论者仍然声称宇宙确实来自“虚无”。 例如，一篇关于暴胀宇宙先驱艾伦·古斯（Alan Guth，1947-）的文章（见第 6 章）指出： 宇宙从绝对的虚无中爆发出某种东西——零，虚无。 随着它变得越来越大，里面装满了更多不知从何而来的东西。 这怎么可能？ 问问艾伦·古斯。 他的通货膨胀理论有助于解释一切。12 最近，物理学家和无神论宣传家劳伦斯·克劳斯（Lawrence Krauss，1954-）推广了这一概念，甚至写了一本书《从无到有的宇宙》13，其中著名的无神论者理查德·道金斯（Richard Dawkins）写了一篇热情洋溢的后记。 14 然而，卢克·巴恩斯（Luke Barnes），一个非 澳大利亚悉尼大学悉尼天文研究所的博士后研究员、神创论天体物理学家对克劳斯和那些像他一样争论的人进行了严厉的批评： 首先也是最重要的，我真的厌倦了宇宙学家谈论宇宙是从无到有的创造。 克劳斯反复谈到宇宙从无到有、粒子从无到有、不同类型的无、任何东西都是不稳定的。 这是无稽之谈。 “什么都没有”这个词经常被宽松地使用——我手里什么也没有，冰箱里什么也没有等等。但是“什么都没有”的正确定义是“什么都没有”。 没有什么不是某物的类型，不是某物的种类。 这是什么都没有的情况。

First and foremost, I’m getting really rather sick of cosmologists talking about universes being created out of nothing. … What Krauss is really talking about is the quantum vacuum. The quantum vacuum is a type of something. It has properties. It has energy, it fluctuates, it can cause the expansion of the universe to accelerate, it obeys the (highly non-trivial) equations of quantum field theory.—Cosmologist Luke Barnes.

Some of the best examples of the fallacy of equivocation involve treating the word nothing as if it were a type of something:

* Margarine is better than nothing.
* Nothing is better than butter.
* Thus, margarine is better than butter.

We can uncover the fallacy by simply rephrasing the premises, avoiding the word nothing:

* It is better to have margarine than to not have anything.
* There does not exist anything that is better than butter.

The conclusion (margarine is better than butter) does not follow from these premises.15

## Does a quantum fluctuation solve the problem?

Some physicists assert that quantum mechanics violates this cause/effect principle and can produce something from nothing. For instance, Paul Davies writes:

首先也是最重要的，我真的厌倦了宇宙学家谈论宇宙是从无到有的创造。 ……克劳斯真正谈论的是量子真空。 量子真空是某种东西的一种。 它有属性。 它有能量，它会波动，它可以导致宇宙加速膨胀，它遵循（非常重要的）量子场论方程。——宇宙学家卢克·巴恩斯。 模棱两可谬误的一些最好的例子包括将“nothing”一词视为某种事物的类型： • 人造黄油总比没有好。 • 没有什么比黄油更好的了。 • 因此，人造黄油比黄油更好。 我们可以通过简单地改写前提来揭开这个谬误，避免使用“无”这个词： • 有人造黄油比什么都不吃要好。 • 没有什么比黄油更好的了。 这些前提并不能得出结论（人造黄油比黄油更好）。 15 量子涨落能解决这个问题吗？ 一些物理学家断言，量子力学违反了这个因果原理，可以从无到有。 例如，保罗戴维斯写道：

… spacetime could appear out of nothingness as a result of a quantum transition. … Particles can appear out of nowhere without specific causation … the world of quantum mechanics routinely produces something out of nothing.16

But this is a gross misapplication of quantum mechanics. Quantum mechanics never produces something out of nothing. Davies himself admitted on the previous page that his scenario ‘should not be taken too seriously.’ Also, theories that the universe is a quantum fluctuation must presuppose that there was something to fluctuate—their ‘quantum vacuum’ is a lot of matter-antimatter potential—not ‘nothing’. So this is another equivocation.

However, Krauss is still resorting to these fallacies, as Luke Barnes points out, explaining in more detail how the term ‘nothing’ is misused:

Now let’s look at Krauss’ claims again. Does it make sense to say that there are different types of not anything? That not anything is not stable? This is bollocks. What Krauss is really talking about is the quantum vacuum. The quantum vacuum is a type of something. It has properties. It has energy, it fluctuates, it can cause the expansion of the universe to accelerate, it obeys the (highly non-trivial) equations of quantum field theory. We can describe it. We can calculate, predict and falsify its properties. The quantum vacuum is not nothing.

This suggests a very simple test for those who wish to talk about nothing: if what you are talking about has properties, then it is not nothing. It is pure equivocation to refer to the quantum vacuum as nothing when a philosopher starts asking the question “why is there something rather than nothing?”. She is not asking “why are there particles rather than just a quantum vacuum?”. She is asking “why does anything exist at all?”. As Stephen Hawking once asked, why does the universe go to all the bother of existing?

……由于量子跃迁，时空可能从虚无中出现。 ...粒子可以凭空出现，没有特定的因果关系...量子力学的世界通常会从无到有产生一些东西。16 但这是对量子力学的严重误用。 量子力学永远不会无中生有。 戴维斯本人在上一页承认，他的设想“不应该被太认真地对待。”此外，宇宙是量子涨落的理论必须预设有一些东西会涨落——他们的“量子真空”是大量的物质-反物质 潜力——而不是“无”。 所以这又是一个模棱两可的说法。 然而，正如卢克·巴恩斯所指出的那样，克劳斯仍在诉诸这些谬论，并更详细地解释了“无”一词是如何被滥用的： 现在让我们再看看克劳斯的主张。 说“什么都没有”有不同的类型有意义吗？ 那不是有什么不稳定的地方吗？ 这是胡说八道。 克劳斯真正谈论的是量子真空。 量子真空是某种东西的一种。 它有属性。 它有能量，它波动，它可以导致宇宙加速膨胀，它遵循量子场论的（高度非平凡的）方程。 我们可以描述它。 我们可以计算、预测和伪造它的属性。 量子真空并非空无一物。 这为那些想什么都不谈论的人提出了一个非常简单的测试：如果你谈论的东西有属性，那么它就不是什么都不是。 当哲学家开始问“为什么有东西而不是空无一物？”这个问题时，将量子真空称为“虚无”纯粹是模棱两可。 她并不是在问“为什么存在粒子而不仅仅是量子真空？”。 她在问“为什么有任何东西存在？”。 正如史蒂芬·霍金曾经问的那样，为什么宇宙要费尽心思地存在？

We can now see that this question cannot be answered by any of the methods we normally call scientific. Scientific theories are necessarily theories of something, some physical reality. Equations describe properties, and thus describe something. There cannot be equations that describe not-anything. Write down any equation you like—you will not be able to deduce from that equation that the thing that it describes must exist in the real world. Existence is not a predicate, as Kant memorably explained.17

The fact that particles can pop in and out of existence, over time, as those fields rearrange themselves, is not a whit more mysterious than the fact that fists can pop in and out of existence, over time, as my fingers rearrange themselves. And none of these poppings—if you look at them aright—amount to anything even remotely in the neighborhood of a creation from nothing.—Physicist and philosopher David Albert

Barnes’ objections to Krauss’s equivocations are shared by philosopher David Albert, professor of philosophy at Columbia University, NY, who also has a doctorate in theoretical physics. He reviewed Krauss’s book critically in the New York Times, not known for friendliness to orthodox Christianity:

Where, for starters, are the laws of quantum mechanics themselves supposed to have come from? Krauss is more or less upfront, as it turns out, about not having a clue about that. He acknowledges (albeit in a parenthesis, and just a few pages before the end of the book) that everything he has been talking about simply takes the basic principles of quantum mechanics for granted. …

现在我们可以看到，这个问题不能用任何我们通常所说的科学方法来回答。 科学理论必然是某些事物、某些物理现实的理论。 方程描述了属性，从而描述了某些东西。 不可能存在描述“无”的方程。 写下任何你喜欢的方程式——你将无法从该方程式中推断出它所描述的事物一定存在于现实世界中。 正如康德令人难忘的解释，存在不是一个谓词。 17 随着时间的推移，随着这些场的重新排列，粒子会突然出现和消失，这一事实并不比拳头随着时间的推移，随着我的手指重新排列而出现和消失更神秘。 如果你正确地看待它们的话，这些爆裂物在从无到有的创造物中都算不上任何东西。——物理学家和哲学家大卫·阿尔伯特 巴恩斯对克劳斯模棱两可的说法的反对意见得到了纽约哥伦比亚大学哲学教授、哲学家大卫·阿尔伯特的赞同，他也拥有理论物理学博士学位。 他在《纽约时报》上对克劳斯的书进行了批判性的评论，而《纽约时报》并不以对正统基督教的友好而闻名： 首先，量子力学定律本身应该来自哪里？ 事实证明，克劳斯或多或少地坦率地表示对此一无所知。 他承认（尽管在括号中，而且就在本书结束前的几页），他所谈论的一切都只是将量子力学的基本原理视为理所当然。 ……

Krauss seems to be thinking that these vacuum states amount to the relativistic-quantum-field-theoretical version of there not being any physical stuff at all. And he has an argument—or thinks he does—that the laws of relativistic quantum field theories entail that vacuum states are unstable. And that, in a nutshell, is the account he proposes of why there should be something rather than nothing.

But that’s just not right. Relativistic-quantum-field-theoretical vacuum states—no less than giraffes or refrigerators or solar systems—are particular arrangements of elementary physical stuff. The true relativistic-quantum-field-theoretical equivalent to there not being any physical stuff at all isn’t this or that particular arrangement of the fields—what it is (obviously, and ineluctably, and on the contrary) is the simple absence of the fields! The fact that some arrangements of fields happen to correspond to the existence of particles and some don’t is not a whit more mysterious than the fact that some of the possible arrangements of my fingers happen to correspond to the existence of a fist and some don’t. And the fact that particles can pop in and out of existence, over time, as those fields rearrange themselves, is not a whit more mysterious than the fact that fists can pop in and out of existence, over time, as my fingers rearrange themselves. And none of these poppings—if you look at them aright—amount to anything even remotely in the neighborhood of a creation from nothing.18

克劳斯似乎认为这些真空状态相当于相对论量子场理论版本，根本不存在任何物理物质。 他有一个论点——或者认为他有这样的论点——相对论量子场论定律表明真空态是不稳定的。 简而言之，这就是他提出的为什么应该有一些而不是没有的解释。 但这是不对的。 相对论量子场论真空态——就像长颈鹿、冰箱或太阳系一样——是基本物理物质的特殊排列。 真正的相对论量子场论相当于根本不存在任何物理物质，这不是场的这种或那种特定排列——它是什么（显然，不可避免地，相反）是简单地不存在 田野！ 场的某些排列恰好对应于粒子的存在，而有些则不然，这一事实并不比我手指的某些可能排列恰好对应于拳头的存在而有些则不对应这一事实更神秘。 't。 随着时间的推移，随着这些场的重新排列，粒子会突然出现和消失，这一事实并不比拳头随着时间的推移，随着我的手指重新排列而出现和消失更神秘。 如果你正确地看待它们，这些爆裂物中的任何一个都与无中生有的创造物相距甚远。 18

Krauss’s is just the latest in a series of philosophically inept books by the soi-disant ‘new atheists’. It’s hard to disagree with the Thomist19 philosopher Edward Feser, Associate Professor of Philosophy at Pasadena City College:

The spate of bad books on philosophy and religion by prominent scientists … is notable not only for the sophomoric philosophical and theological errors they contain but also for their sheer repetitiveness. Krauss’ fallacious account of how something can come from nothing, … is largely a rehash of ideas already put forward by Hawking, Mlodinow, and some less eminent physics popularizers.—Philosopher Edward Feser.

The spate of bad books on philosophy and religion by prominent scientists—Dawkins’ The God Delusion, Hawking and Mlodinow’s The Grand Design, and Atkins’ On Being, among others—is notable not only for the sophomoric philosophical and theological errors they contain but also for their sheer repetitiveness. Krauss’ fallacious account of how something can come from nothing, though presented as a great breakthrough, and praised as such by Dawkins in his afterword, is largely a rehash of ideas already put forward by Hawking, Mlodinow, and some less eminent physics popularizers. Dawkins has been peddling the “Who created the creator?” meme since the eighties.

克劳斯的著作只是远离社会的“新无神论者”所写的一系列哲学上无能的书籍中的最新一本。 很难不同意 Thomist19 哲学家、帕萨迪纳城市学院哲学副教授爱德华·费瑟 (Edward Feser) 的观点： 著名科学家撰写的大量关于哲学和宗教的糟糕书籍……值得注意的不仅是其中包含的二年级哲学和神学错误，而且还因为它们纯粹的重复性。 克劳斯关于事物如何从无到有的错误解释……很大程度上是对霍金、姆洛迪诺和一些不太知名的物理学普及者已经提出的想法的重述。——哲学家爱德华·费瑟。 著名科学家所著的大量关于哲学和宗教的糟糕书籍——道金斯的《上帝错觉》、霍金和姆洛迪诺的《大设计》、阿特金斯的《存在论》等等——值得注意的不仅是它们所包含的低年级哲学和神学错误，而且 因为它们纯粹的重复性。 克劳斯关于事物如何从无到有的错误描述，尽管被描述为一个伟大的突破，并在后记中受到道金斯的赞扬，但很大程度上是对霍金、姆洛迪诺和一些不太著名的物理学普及者已经提出的想法的重复。 道金斯一直在兜售“谁创造了造物主？” 自八十年代以来的模因。

Critics have exposed their errors and fallacies again and again. Yet these writers keep repeating them anyway, for the most part simply ignoring the critics. What accounts for this? To paraphrase a famous remark of Ludwig Wittgenstein’s, I would suggest that a picture holds these thinkers captive, a picture of the quantitative methods of modern science that have made possible breathtaking predictive and technological successes.20

## Conclusion

The Bible presupposes that God began the universe. The fact of the universe’s beginning points strongly to a Creator consistent with the biblical God. Some atheists, following Hume, have asserted that something can begin without a cause, but this is not only unreasonable, it is arguably inconceivable. The ‘New Atheists’ have resorted to quantum bluffing to claim that something really can come from nothing. But they must equivocate about the word ‘nothing’. This really should mean nothing—no properties. However, their proposed quantum vacuum is not nothing; it must be something, with properties—e.g. the quantum vacuum, which is being bound by the laws of quantum physics, so that it can ‘fluctuate’.

“In the beginning God created the heavens and the earth.” It stands to reason.

批评者一次又一次地揭露他们的错误和谬论。 然而，这些作家无论如何都在不断重复这些内容，而且大多数情况下只是忽略了批评者。 这是什么原因造成的？ 套用路德维希·维特根斯坦 (Ludwig Wittgenstein) 的一句名言，我建议用一张图画来俘获这些思想家，一张现代科学定量方法的图画，正是这些方法使惊人的预测和技术成功成为可能。 20 结论 圣经预设上帝创造了宇宙。 宇宙起源的事实强烈表明有一位与圣经上帝一致的创造者。 一些无神论者追随休谟，断言某事可以无因地开始，但这不仅不合理，而且可以说是不可想象的。 “新无神论者”诉诸量子虚张声势来声称某些东西确实可以从无到有。 但他们必须对“什么都没有”这个词含糊其辞。 这实际上应该没有任何意义——没有属性。 然而，他们提出的量子真空并非空无一物。 它必须是某种具有属性的东西——例如 量子真空受到量子物理定律的约束，因此它可以“波动”。 “起初，上帝创造了天地。” 按理说。

**A review of A Universe from Nothing: Why There is Something Rather Than Nothing by Lawrence M. Krauss**
Free Press, New York, 2012

劳伦斯·克劳斯（Lawrence M. Krauss）对《从无到有的宇宙：为什么有东西而不是无》的评论 自由新闻社，纽约，2012 年



Reviewed by Dan W. Reynolds

Atheists insist that all of nature can be explained on its own terms without invoking a supernatural creator. Some argue, as does Lawrence Krauss (figure 1) in his recent book A Universe from Nothing, that modern science has now made it plausible that space-time, matter-energy, and even the universe can emerge from nothing. As we shall see, these ideas are self-contradictory and not aligned with current thinking—even in the secular scientific community—concerning the possibility of a universe existing in the eternal past. Krauss does provide his readers with interesting insights into physics, the big bang theory, virtual particles, dark matter, inflation theory, the ‘landscape’ of a multiverse, dark energy, relativity, string theory, and science associated with these topics. However, he does not successfully show how the universe could emerge from nothing. Much of what is in Krauss’ book was brought out in a debate with William Lane Craig in 2011 at NC State University, a debate Craig won in my opinion. The debate is available for viewing on the internet.1

丹·雷诺兹 (Dan W. Reynolds) 审阅 无神论者坚持认为，所有自然现象都可以用其自身的术语来解释，而无需求助于超自然的创造者。 正如劳伦斯·克劳斯（Lawrence Krauss）（图 1）在他的新书《无中生有的宇宙》中所言，有些人认为，现代科学现在已经使时空、物质-能量甚至宇宙可以从无中出现这一观点变得合理。 正如我们将看到的，这些想法是自相矛盾的，并且与当前关于宇宙存在于永恒过去的可能性的想法不一致——即使在世俗科学界也是如此。 克劳斯确实为读者提供了对物理学、大爆炸理论、虚拟粒子、暗物质、膨胀理论、多元宇宙“景观”、暗能量、相对论、弦理论以及与这些主题相关的科学的有趣见解。 然而，他并没有成功地展示宇宙如何从无到有。 克劳斯书中的大部分内容都是在 2011 年与威廉·莱恩·克雷格 (William Lane Craig) 在北卡罗来纳州立大学的一场辩论中提出的，我认为克雷格赢得了这场辩论。 这场辩论可以在互联网上观看。1

Lawrence M. Krauss, Ph.D., is Foundation Professor in the School of Earth and Space Exploration and the Physics Dept., Co-Director of the Cosmology Initiative, and Inaugural Director of the Origins Initiative at Arizona State University.

Krauss begins by making it clear he dislikes theism. He argues that science is based on observation and experiment, religion on unprovable faith. He dislikes the definition of nothing as the absence of the potential for existence (he has trouble arguing against it). He starts off on a philosophical note and ends on one, with his science offered in between. He thinks that the direction of scientific discovery is progressively eliminating the need for God as an explanation for natural phenomena and the origin of everything. He thus thinks God is the ‘god of the gaps’ that science will eventually eliminate, although the real arguments are based on what we do know not on gaps.2 Much of his science is speculative. He seems to be saying that what is scientifically plausible is so compelling that theism is automatically an inferior explanation. He does admit, however, that science may never have an unambiguous explanation for the origin of the universe. In a debate, he said he could become a deist.

劳伦斯·克劳斯 (Lawrence M. Krauss) 博士是亚利桑那州立大学地球与空间探索学院和物理系的基金会教授、宇宙学计划的联合主任以及起源计划的首任主任。 克劳斯首先明确表示他不喜欢有神论。 他认为科学基于观察和实验，宗教基于无法证明的信仰。 他不喜欢将“无”定义为缺乏存在的潜力（他很难反驳这一点）。 他以哲学笔记开始，以哲学笔记结束，并在两者之间提供了他的科学知识。 他认为科学发现的方向是逐步消除对上帝作为自然现象和万物起源的解释的需要。 因此，他认为上帝是科学最终将消除的“间隙之神”，尽管真正的论点是基于我们所知道的而不是间隙。2他的科学大部分都是推测性的。 他似乎是在说，科学上合理的东西是如此令人信服，以至于有神论自然而然地成为一种低劣的解释。 然而，他确实承认，科学可能永远无法对宇宙的起源有明确的解释。 在一次辩论中，他说他可以成为自然神论者。

## Preface

Krauss admits his atheism. He asks: if God is the answer to the origin to the universe, then who created God? Real Christian apologists, including his opponent Craig, have long argued that it’s only things that have a beginning that have a cause. Christians believe that God is self-subsistent and exists outside of time and had no beginning, properties Krauss wishes nature had. He claims that science is epistemologically superior to revelation, and that theology has not added to knowledge for hundreds of years. He overlooks that modern science arose from a culture that assumed a Judeo-Christian worldview, which believed a reasonable creator would have made a reasonable creation. He admits that Isaac Newton was probably the greatest scientist that ever lived, but overlooks that Newton was drawn closer to God by his discoveries.

Since God exists independently and separately from the universe, then He is the initial ‘something’ from which all else came.

前言

克劳斯承认自己是无神论者。 他问：如果上帝是宇宙起源的答案，那么谁创造了上帝？ 真正的基督教护教者，包括他的对手克雷格，长期以来一直认为，只有有开始的事物才有原因。 基督徒相信上帝是自存的，存在于时间之外，没有开始，克劳斯希望大自然拥有这些属性。 他声称科学在认识论上优于启示，而神学数百年来都没有增加知识。 他忽视了现代科学起源于一种采用犹太基督教世界观的文化，这种世界观相信一个合理的创造者会做出合理的创造。 他承认艾萨克·牛顿可能是有史以来最伟大的科学家，但忽视了牛顿因他的发现而更加接近上帝。 既然上帝独立于宇宙而存在，那么他就是一切事物的最初“事物”。

Krauss says ‘nothing’ has physical properties because he assumes the eternal operation of quantum mechanics. However, theologians say a quantum vacuum is not ‘nothing’; ‘nothing’ is the absence of the potential for existence. Krauss says that if that is so, then even God can’t create the universe. But this definition of ‘nothing’ simply means the absence of the possibility for existence within itself, and does not exclude the potential for creation ex nihilo by God. Since God exists independently and separately from the universe, then He is the initial ‘something’ from which all else came. It is self-contradictory to say something (the universe = everything in nature) can create itself because if the universe were able to create itself, it would have to already exist (quantum mechanics) and would not need creating.

克劳斯说“没有任何东西”具有物理属性，因为他假设量子力学的永恒运行。 然而，神学家表示，量子真空并非“虚无”，而是“虚无”。 “无”是指没有存在的潜力。 克劳斯说，如果真是这样，那么即使是上帝也无法创造宇宙。 但这个“无”的定义仅仅意味着其自身不存在存在的可能性，并不排除上帝从无到有创造的可能性。 既然上帝独立于宇宙而存在，那么他就是一切事物的最初“事物”。 说某物（宇宙=自然界中的一切）可以创造自己是自相矛盾的，因为如果宇宙能够创造自己，它就必须已经存在（量子力学）并且不需要创造。

Krauss says: 1) science is the best way to know things because it follows the evidence wherever it leads, 2) scientists must be willing to find evidence for and against their theories, and 3) experimental results are king regardless of personal preference.

Strictly, his statement is self-refuting, because there is no scientific way to test those three premises. As meta-scientific philosophy, these guidelines for science are commendable, but Krauss does not consistently follow them. For example, William Dembski and several others in the Intelligent Design Movement have shown convincingly that the fine tuning of physics and the information in biomolecules are strong evidence for the creative work of an intelligence and not the result of random natural processes.3 Indeed, Krauss believes we are getting close to showing how abiogenesis may have occurred on Earth when in truth no such breakthrough is near. At best, science has possibly shown how two of the four nucleotides of RNA might have emerged naturally.4 But that is only the first step of a thousand-mile journey to explaining abiogenesis (chemical evolution).

克劳斯说：1）科学是了解事物的最佳方式，因为无论它指向何处，它都会遵循证据；2）科学家必须愿意寻找支持和反对他们的理论的证据；3）无论个人喜好如何，实验结果才是王道。 严格来说，他的说法是自相矛盾的，因为没有科学的方法来检验这三个前提。 作为元科学哲学，这些科学指导方针值得称赞，但克劳斯并没有始终如一地遵循它们。 例如，威廉·登布斯基 (William Dembski) 和智能设计运动中的其他几位人士令人信服地证明，物理的微调和生物分子中的信息是智能创造性工作的有力证据，而不是随机自然过程的结果。3 事实上，克劳斯 相信我们即将展示地球上如何发生自然发生，但实际上还没有这样的突破。 科学充其量可能已经证明了 RNA 的四种核苷酸中的两种是如何自然产生的。4但这只是解释自然发生（化学进化）的一千英里旅程的第一步。

## Chapter 1—A Cosmic Mystery Story: Beginnings

Krauss explains how Einstein’s General Theory of Relativity, our best theory of gravity, has been supported by observations such as the precession of the planet Mercury’s orbit and the expansion of the universe. But then he makes a leap to claiming science has shown that the universe emerged from a hot big bang 13.72 billion years ago and continues to expand, and had a beginning. But as we will see, he thinks ours is but one of an infinite number of universes that have been popping out of nothing for all eternity.

Krauss explains the evidence for the expansion of the universe from Edwin Hubble’s work on galactic redshifts. Hence Hubble found empirical support for general relativity. Krauss also asserts that the Cosmic Microwave Background Radiation (CMB) and the abundance of light elements (H, D, He, Li) support the big bang model. However, he fails to explain why the CMB fails to cast the shadows expected from the big bang.5

第一章——宇宙之谜的故事：开端

克劳斯解释了爱因斯坦的广义相对论（我们最好的引力理论）如何得到水星轨道进动和宇宙膨胀等观测结果的支持。 但随后他又断言，科学已经表明，宇宙是在 137.2 亿年前的一次热大爆炸中诞生的，并持续膨胀，并且有一个开始。 但正如我们将看到的，他认为我们的宇宙只是无数个永远从虚无中突然出现的宇宙之一。 克劳斯从埃德温·哈勃关于星系红移的研究中解释了宇宙膨胀的证据。 因此，哈勃找到了广义相对论的经验支持。 克劳斯还断言，宇宙微波背景辐射（CMB）和丰富的轻元素（H、D、He、Li）支持大爆炸模型。 然而，他未能解释为什么宇宙微波背景未能投射出大爆炸所预期的阴影。5

## Chapter 2—A Cosmic Mystery Story: Weighing the Universe

Astronomers have been puzzled that the visible matter in the universe can’t account for the rotational behaviour of spiral galaxies; there is not enough mass. So astronomers have proposed an invisible halo of ‘dark matter’. In reality, their physics is deficient—Carmelian special relativity explains the galactic rotation curves without needing the fudge factor of ‘dark matter’.6

Another related problem is that the visible number of protons and neutrons are less than expected based on the abundances of the light elements. Where is the missing matter?

One method for weighing a galaxy cluster is to take advantage of a phenomenon called gravitational lensing. Predicted by Einstein, gravitational lensing occurs when the light from a very distant object passes through the vicinity of a large mass (e.g. galaxy cluster) on its way to an observer on Earth. According to relativity, matter bends space. The bent space around a galaxy cluster would cause the light of the distant object to be bent or lensed on its way to Earth. The amount of bending depends on the mass of the galaxy cluster. Astronomers can determine how much normal matter is in a galaxy cluster by the light from it. The entire mass of the galaxy cluster can be determined by the amount of gravitational lensing of very distant objects. What astronomers have found is that gravitational lensing says there is much more mass present in the galaxy cluster than can be accounted for by normal visible matter alone. Once again, ‘dark matter’ is hypothesized, and once again, Carmelian relativity explains the observations without recourse to this fudge factor.6

After weighing everything, many astronomers say our universe consists of 4% ordinary matter, 23% dark matter, and 73% dark energy. Again, Carmelian relativity predicts the observations adduced to support dark matter.7

第二章宇宙之谜故事：称量宇宙

天文学家一直感到困惑的是，宇宙中的可见物质无法解释螺旋星系的旋转行为。 质量不够。 因此天文学家提出了一种看不见的“暗物质”光环。 事实上，他们的物理学是有缺陷的——卡梅尔狭义相对论解释了银河系旋转曲线，而不需要“暗物质”的捏造因素。 6 另一个相关问题是，质子和中子的可见数量低于基于轻元素丰度的预期。 缺失的物质在哪里？ 称量星系团的一种方法是利用一种称为引力透镜的现象。 爱因斯坦预测，当来自很远物体的光在到达地球上的观察者的途中穿过大质量（例如星系团）附近时，就会发生引力透镜效应。 根据相对论，物质使空间弯曲。 星系团周围的弯曲空间会导致遥远天体的光线在到达地球的途中发生弯曲或透镜化。 弯曲的程度取决于星系团的质量。 天文学家可以通过星系团发出的光来确定星系团中正常物质的含量。 星系团的总质量可以通过非常遥远的物体的引力透镜效应来确定。 天文学家发现，引力透镜表明星系团中存在的质量比单独正常可见物质所能解释的质量要大得多。 “暗物质”再次被假设，卡梅尔相对论再次解释了观察结果，而无需求助于这种捏造因素。 6 在权衡一切之后，许多天文学家表示，我们的宇宙由 4% 的普通物质、23% 的暗物质和 73% 的暗能量组成。 卡梅尔相对论再次预测了支持暗物质的观察结果。7

**Figure 1.** Lawrence M. Krauss.

## Chapter 3—Light from the Beginning of Time

We have already mentioned the CMB as a fallacious proof of the big bang. The CMB has been mapped by COBE, WMAP, Boomerang, and currently by Planck space probes. Astronomers have used the CMB to determine the geometry of space-time. The three possibilities are closed, open, and flat. A closed space-time would occur if the gravity of the matter (all types) of the universe exceeded the rate of expansion. In such a universe, the expansion would eventually reverse and the universe would collapse. In an open geometry, the expansion would exceed the gravity of the matter in the universe and the universe would continue to expand. In a flat universe, the gravity and expansion of the universe are balanced so that the universe expands but at a progressively slower pace. In a closed universe, reversal of the expansion could occur before stars and galaxies have time to form. In an open universe, the expansion could be so fast that gravity would never able to pull the light elements together to form stars. Only in a flat universe are the gravitational forces and expansion rate balanced so that gravity can form stars and galaxies that then continue to exist. According to measurements of the CMB, our universe has a flat geometry. But when it comes to observed matter, the universe seems open: “several measurements currently seem to suggest a density of only a fraction Ω ≌ 0.3 of the critical density.”8 However, Krauss suggest that there is enough dark matter to close the universe.

图 1.劳伦斯 M.克劳斯。 第三章太初之光 我们已经提到宇宙微波背景是大爆炸的错误证明。 CMB 已由 COBE、WMAP、Boomerang 绘制，目前由普朗克太空探测器绘制。 天文学家利用宇宙微波背景来确定时空的几何形状。 三种可能性是封闭式、开放式、扁平式。 如果宇宙物质（所有类型）的引力超过膨胀率，就会出现封闭时空。 在这样的宇宙中，膨胀最终会逆转，宇宙会崩溃。 在开放几何中，膨胀将超过宇宙中物质的引力，并且宇宙将继续膨胀。 在平坦的宇宙中，宇宙的引力和膨胀是平衡的，因此宇宙膨胀但速度逐渐减慢。 在封闭的宇宙中，膨胀的逆转可能会在恒星和星系有时间形成之前发生。 在开放的宇宙中，膨胀速度可能如此之快，以至于引力永远无法将轻元素拉在一起形成恒星。 只有在平坦的宇宙中，引力和膨胀率才能平衡，引力才能形成恒星和星系，然后继续存在。 根据宇宙微波背景的测量，我们的宇宙具有平坦的几何形状。 但当谈到观测到的物质时，宇宙似乎是开放的：“目前的一些测量似乎表明密度仅为临界密度的一小部分 Ω ≌ 0.3。”8 然而，克劳斯认为有足够的暗物质来封闭宇宙 。

## Chapter 4—Much Ado About Nothing

In this chapter, Krauss gives evidence for entities called virtual particles. They are called virtual because they have never been directly observed due to their fleeting lifetimes (less than Planck time). However, the existence of virtual particles is allowed by quantum mechanics, from the uncertainty principle. There is indirect evidence for their existence. The calculated energy levels associated with the orbitals of hydrogen differ slightly from experimental measurement. However, if a virtual particle pair is assumed to be located around the hydrogen nucleus, the calculated energy levels match the experiment exactly. They are believed to convey the strong force between quarks in protons and neutrons. Virtual particles are usually invoked in strong fields (electromagnetic, gravitational). Hawking radiation, predicted to be a mechanism by which black holes could ‘evaporate’, depends on the existence of virtual particles, but has not been observed so far.

Krauss says a universe where the total mass/energy is balanced by the potential gravitational energy has zero net energy and so could pop into existence from nothing without violation of the first law. Such a universe should, however, collapse and disappear in periods shorter than the Planck time unless inflation allows it to exist beyond the Planck time.

Krauss also says that this proves you can get something from nothing given the energetics of empty space and the law of gravity. So he says you can get a universe from nothing if you can start with empty space with non-zero energy and the laws of gravity and quantum mechanics. He admits empty space with non-zero energy is something!

A quantum theory of gravity would mean quantum mechanics applies to space, not just to objects in space. Then we could say that space-times pop in and out of nothing if the total energy is zero. But we don’t yet have a quantum theory of gravity.

Krauss concedes that this speculation does not prove our universe arose from nothing, but says it makes such a scenario more plausible. And plausibility is apparently all he needs to justify rejection of God. So much for basing his worldview on hard, cold facts alone.

The energy calculated for empty space assuming virtual particles is 10120 times greater than that observed. This is a long-standing unsolved problem.

第四章无事生非

在本章中，克劳斯给出了称为虚拟粒子的实体的证据。 它们之所以被称为虚拟的，是因为它们的寿命短暂（小于普朗克时间），因此从未被直接观察到。 然而，根据不确定性原理，量子力学允许虚粒子的存在。 有间接证据证明它们的存在。 与氢轨道相关的计算能级与实验测量略有不同。 然而，如果假设虚拟粒子对位于氢核周围，则计算出的能级与实验完全匹配。 人们相信它们传达了质子和中子夸克之间的强力。 虚拟粒子通常在强场（电磁场、引力场）中调用。 霍金辐射被预测为黑洞“蒸发”的一种机制，取决于虚粒子的存在，但迄今为止尚未被观测到。 克劳斯说，总质量/能量与势引力能平衡的宇宙的净能量为零，因此可以在不违反第一定律的情况下从无到有地突然出现。 然而，这样的宇宙应该在比普朗克时间短的时间内坍缩和消失，除非通货膨胀允许它在普朗克时间之外存在。 克劳斯还说，这证明了考虑到真空的能量和万有引力定律，你可以从无到有。 所以他说，如果你能从具有非零能量的真空以及万有引力定律和量子力学开始，你就能从无到有得到一个宇宙。 他承认具有非零能量的真空是某种东西！ 量子引力理论意味着量子力学适用于空间，而不仅仅是空间中的物体。 那么我们可以说，如果总能量为零，时空就会从无到有。 但我们还没有量子引力理论。 克劳斯承认，这种推测并不能证明我们的宇宙是从无到有，但他表示，这使得这种情况更加可信。 显然，他所需要的一切都是合理的，以证明他拒绝上帝是合理的。 他的世界观仅建立在冷酷的事实之上。 假设虚拟粒子的真空计算出的能量比观测到的能量大 10120 倍。 这是一个长期未解决的问题。

## Chapter 5—The Runaway Universe

The expansion rate of the universe is accelerating. Astronomers used Type 1a supernovae to determine this.9 When Einstein first realized that his Theory of Relativity required the universe to be expanding or contracting, he thought it was wrong and added a fudge factor, the so called cosmological constant, to make his equations give a static universe. Later, after Hubble showed the universe was indeed expanding, Einstein called his fudge factor a great blunder. However, in light of the accelerating expansion of the universe, it appears the cosmological constant is real after all. The cosmological constant means that there is an energy that causes space to expand. This mysterious energy has been dubbed ‘dark energy’. The nature of dark energy is a major problem for physics, again solved by Carmelian relativity without recourse to dark entities.10 Eventually all galaxies will be moving away from us at speeds > c.

Krauss claims the universe is not rotating, but this is still an open question (‘axis of evil’). Polarization of light from galaxies and CMB both point to a similar axis.

第五章失控的宇宙

宇宙的膨胀速度正在加快。 天文学家利用 1a 型超新星来确定这一点。9 当爱因斯坦第一次意识到他的相对论要求宇宙膨胀或收缩时，他认为这是错误的，并添加了一个模糊因子，即所谓的宇宙学常数，以使他的方程给出 一个静态的宇宙。 后来，在哈勃证明宇宙确实在膨胀后，爱因斯坦称他的捏造因素是一个巨大的错误。 然而，鉴于宇宙的加速膨胀，看来宇宙常数毕竟是真实的。 宇宙常数意味着存在一种导致空间膨胀的能量。 这种神秘的能量被称为“暗能量”。 暗能量的性质是物理学的一个主要问题，再次由卡梅尔相对论解决，无需求助于暗实体。10 最终，所有星系将以> c 的速度远离我们。 克劳斯声称宇宙并不旋转，但这仍然是一个悬而未决的问题（“邪恶轴心”）。 来自星系和宇宙微波背景的光的偏振都指向相似的轴。

## Chapter 6—The Free Lunch at the End of the Universe

Krauss says that the flat geometry of space-time requires very specific initial conditions and expansion rate. There is nothing known in physics that required these conditions to exist.

克劳斯说，时空的平坦几何形状需要非常特定的初始条件和膨胀率。 物理学中没有任何已知的东西需要这些条件的存在。

**Figure 2.** 1) Early in the alleged big bang, points A and B start out with different temperatures. 2) Today, points A and B have the same temperature, yet there has not been enough time for them to exchange light.

There is another problem in cosmology called the horizon problem. The problem is that the CMB is very smooth (almost the same temperature). At the time the CMB was allegedly emitted, 300,000 years after the big bang, the CMB uniformity implies that thermal equilibrium spanned a range over 10 times larger. But even at the speed of light, heat could not have travelled that far to equilibrate the temperatures (figure 2). Note, this is a ‘light travel’ problem for big bangers, who therefore have no grounds to point to the hoary old distant starlight problem for Genesis.11

A theory called Inflation allegedly solves this and the flatness problem. Inflation says that within a fraction of a second after the big bang, the universe expanded by a factor of 1028. (Relativity allows the expansion of space-time to be faster than the speed of light; it just prohibits objects accelerating to the speed of light through space.) The expansion then settled to a rate similar to today. The predicted pattern of density fluctuations in the CMB that would result from quantum fluctuations during inflation is what is observed in the CMB. Quantum fluctuations would be ‘frozen’ by inflation. No-one knows why inflation would start or stop. The universe became flat because the originally dominant matter density was diluted during inflation to the point that gravity and the expansion were balanced.

图 2. 1) 在所谓的大爆炸早期，A 点和 B 点开始时具有不同的温度。 2）今天，A点和B点的温度相同，但还没有足够的时间来交换光线。 宇宙学中还有一个问题，称为视界问题。 问题是CMB非常平滑（几乎相同的温度）。 据称，在大爆炸 30 万年后，CMB 被发射时，CMB 的均匀性意味着热平衡的范围扩大了 10 倍以上。 但即使以光速，热量也无法传播那么远来平衡温度（图 2）。 请注意，对于大佬来说，这是一个“光旅行”问题，因此他们没有理由指出创世记中古老的遥远星光问题。11 据称，一种名为通货膨胀的理论解决了这个问题以及平坦度问题。 暴胀说，大爆炸后不到一秒，宇宙就膨胀了 1028 倍。（相对论允许时空的膨胀速度快于光速；它只是禁止物体加速到 光穿过空间。）然后扩张速度稳定在与今天相似的速度。 宇宙微波背景中由暴胀期间的量子涨落引起的密度波动的预测模式就是在宇宙微波背景中观察到的。 量子波动将被通货膨胀“冻结”。 没有人知道通货膨胀为何会开始或停止。 宇宙变得平坦，因为最初占主导地位的物质密度在膨胀过程中被稀释到重力和膨胀达到平衡的程度。

## Chapter 7—Our Miserable Future

In this chapter, Krauss discusses what will happen to our universe if the expansion accelerates indefinitely. He says that eventually other galaxies will be receding from us at speeds greater than the speed of light so they will disappear. Supposedly at some distant future time even atoms will be torn apart.

第7章——我们悲惨的未来 在本章中，克劳斯讨论了如果膨胀无限加速，我们的宇宙将会发生什么。 他说，最终其他星系将以大于光速的速度远离我们，因此它们将会消失。 据说在遥远的未来某个时间，甚至原子也会被撕裂。

## Chapter 8—A Grand Accident

Physicists have looked for a theory that would explain everything—why we have the physical laws and constants we have, a theory that would require our universe to be the way it is. However, no theory like this has ever been developed. In fact, Gödel’s Incompleteness Theorem shows that none could be developed, as Stephen Hawking belatedly realized.12

As far as we know, there are no laws of physics that require our universe to have the constants and laws it has. It is well known that many of the laws and constants of nature are exactly what they must be for life as we know it to exist. Change any of these constants just a little and you get different elements, different stars, a different geometry of space-time, a different universe! In other words, our universe appears to be fine tuned for life for no apparent physical reason. Christians point to this fine tuning as evidence for intelligent design consistent with the existence of the God of the Bible.

This is where Krauss gets philosophical. He embraces the anthropic principle and the idea of a multiverse. The anthropic principle says that the universe looks the way it does because if it did not, we would not be here. The multiverse idea postulates countless universes with different physical laws and constants (the landscape); we just happen to be in a universe where the physical laws and constants allow for galaxies, planets, and people.

The idea of the multiverse is consistent with some particle physics and string theory. Inflation could explain a multiverse. During expansion, some regions may exit inflation while others continue to inflate; this is the eternal inflation model. Regions that exit will become causally isolated universes. However, inflation models are not eternal in the past.

String theory holds that tiny vibrating strings determine elementary particles and forces. Scientists would like to have a theory of everything, so efforts have been directed at combining relativity with quantum mechanics to produce a quantum theory of gravity. String theory is an attempt at this fusion. String theory says gravitons are the force-carrying particles of gravity but only if strings can vibrate in 26 dimensions. By adding the math of super-symmetry, the number of dimensions is reduced to 10. By this reasoning, we live in a 10-dimension universe where there are 4 large dimensions and 6 dimensions that are so small they elude detection. Physicists speculate that some of the compactified dimensions may be revealed with the Large Hadron Collider. It now appears that branes (membranes) may be the fundamental object, not strings. We still don’t know if string theory has anything to do with the real world.

第8章 一场大事故

物理学家一直在寻找一种能够解释一切的理论——为什么我们有物理定律和常数，一种要求我们的宇宙保持现状的理论。 然而，还没有发展出这样的理论。 事实上，正如史蒂芬·霍金后来意识到的那样，哥德尔不完备定理表明，任何一个定理都无法发展。 12 据我们所知，没有任何物理定律要求我们的宇宙具有它所具有的常数和定律。 众所周知，许多自然法则和常数正是我们所知道的生命存在所必须的。 只要稍微改变这些常数中的任何一个，你就会得到不同的元素、不同的恒星、不同的时空几何形状、不同的宇宙！ 换句话说，我们的宇宙似乎在没有明显物理原因的情况下对生命进行了微调。 基督徒指出这种微调是智能设计与圣经上帝的存在相一致的证据。 这就是克劳斯变得哲学化的地方。 他拥护人择原理和多元宇宙的理念。 人择原理说，宇宙看起来就是这个样子，因为如果不是这样，我们就不会在这里。 多元宇宙的想法假设无数的宇宙具有不同的物理定律和常数（景观）； 我们只是碰巧生活在一个物理定律和常数允许存在星系、行星和人类的宇宙中。 多元宇宙的思想与某些粒子物理学和弦理论是一致的。 通货膨胀可以解释多元宇宙。 在扩张过程中，一些地区可能退出通胀，而另一些地区则继续通胀； 这就是永恒的通货膨胀模型。 退出的区域将成为因果上孤立的宇宙。 然而，通货膨胀模型在过去并不是永恒的。 弦理论认为，微小振动的弦决定基本粒子和力。 科学家们希望拥有一个万有理论，因此一直致力于将相对论与量子力学相结合，以产生量子引力理论。 弦理论就是这种融合的尝试。 弦理论认为，引力子是重力的载力粒子，但前提是弦可以在 26 维振动。 通过添加超对称数学，维数减少到 10。根据这个推理，我们生活在一个 10 维宇宙中，其中有 4 个大维度和 6 个小到难以检测的维度。 物理学家推测，大型强子对撞机可能会揭示一些压缩维度。 现在看来，膜（膜）可能是基本物体，而不是弦。 我们仍然不知道弦理论与现实世界是否有任何关系。

Krauss says that the difference between speculative physics and spiritual realities is that the former can be measured in principle (p. 133). However, this ignores personal spiritual experience, the fulfillment of prophecies, the empirical detection of design in nature, the historical accuracy of the Scriptures, the over 500 eye witnesses to the Resurrection of Christ, etc. These spiritual realities have been measured in fact.

Krauss says all this speculation (e.g. string theory) challenges the notion that our universe is unique. String theory says there may be as many as 10500 universes with 10 dimensions, 4 of which are large like ours. The theory of everything becomes the theory of anything. Each universe would have different particles, forces, space-time, physics, etc. Allegedly, we just happen to be in one of the universes that has the physics required for our existence. Krauss hopes for a theory of everything that confirms the multiverse and eternal inflation; he would then have support for the landscape and anthropic principle.

Even features that Krauss would agree were designed by humans could be explained as chance, since given an almost infinite number of universes, even the most unlikely events must take place in one of them.

But this sort of ‘reasoning’ proves too much. That is, even features that Krauss would agree were designed by humans could be explained as chance, since given an almost infinite number of universes, even the most unlikely events must take place in one of them. For example, even though there is an infinitesimally small probability that ink molecules could spontaneously rearrange to form the content of A Universe from Nothing, we could just happen to be living in the one multiverse where this probability is actualized.

克劳斯说，推测物理学和精神现实之间的区别在于前者原则上可以测量（第133页）。 然而，这忽略了个人的精神体验、预言的应验、对自然界设计的经验检测、圣经的历史准确性、基督复活的500多个目击证人等等。这些精神现实已经被事实衡量。 克劳斯说，所有这些推测（例如弦理论）都挑战了我们的宇宙是独特的这一观念。 弦理论称，可能有多达 10500 个具有 10 个维度的宇宙，其中 4 个像我们的宇宙一样大。 万有理论变成万有理论。 每个宇宙都会有不同的粒子、力、时空、物理学等。据称，我们恰好处于一个具有我们存在所需物理学的宇宙中。 克劳斯希望有一种万有理论能够证实多元宇宙和永恒的暴涨。 然后他就会得到景观和人择原理的支持。 即使克劳斯认为是人类设计的特征也可以被解释为偶然，因为考虑到几乎无限数量的宇宙，即使是最不可能的事件也一定会发生在其中一个宇宙中。 但这样的‘推理’却显得太过分了。 也就是说，即使克劳斯认为是由人类设计的特征也可以被解释为偶然，因为考虑到几乎无限数量的宇宙，即使是最不可能的事件也必须发生在其中一个宇宙中。 例如，尽管墨水分子自发地重新排列以形成“无中生有的宇宙”的内容的可能性极小，但我们可能恰好生活在实现这一概率的单一多元宇宙中。

## Chapter 9—Nothing is Something

Krauss starts off talking about Newton, revelation versus science, and some philosophical issues. He again mentions how he does not like the definition of nothing as the absence of even the possibility to exist.

He states that the Newtonian gravitational energies of galaxies moving with the Hubble expansion is zero and space-time is flat according to observation.

Assuming the existence of empty space and the laws of physics, space has a non-zero energy. During inflation, the expansion dumps energy into empty space as it becomes flatter and flatter. When inflation stops, the energy of space gets turned into the energy of real particles and radiation (big bang). Quantum fluctuations leave some irregularities in spacetime and hence in the distribution of particles and radiation—allegedly reflected in the CMB (if you can trust the low radiological standards13,14).

第9章——什么都不是

克劳斯首先谈论牛顿、启示与科学以及一些哲学问题。 他再次提到他不喜欢将“无”定义为不存在甚至存在的可能性。 他指出，根据观测，随着哈勃膨胀运动的星系的牛顿引力能为零，时空是平坦的。 假设存在真空和物理定律，空间具有非零能量。 在膨胀过程中，膨胀将能量倾倒到空旷的空间中，因为它变得越来越平坦。 当膨胀停止时，空间能量转化为真实粒子和辐射的能量（大爆炸）。 量子涨落在时空中留下了一些不规则性，从而在粒子和辐射的分布中留下了一些不规则性——据称这反映在宇宙微波背景中（如果你能相信低放射性标准13,14）。

## Chapter 10—Nothing Is Unstable

Empty space is boiling with virtual particles that pop in and out of existence on time scales too small to measure (shorter than the Planck time). Quantum mechanics allows for violations of the 1st Law of Thermodynamics over brief periods of time. Krauss says nothing always creates something if only for an instant. Quantum mechanics can sneak energy from empty space as long as it is returned before anyone can observe it. Krauss invokes Hawking radiation to support this. However, Hawking radiation has never been observed!

One unsolved mystery is why there is an excess of matter in our universe; this is the Matter/antimatter problem. Why is the universe only made of matter? Matter/antimatter particles annihilate each other to produce radiation. Radiation coverts to equal amounts of matter and antimatter. Krauss says that the CMB suggests the photon-to-proton ratio was a billion to one. He says that by ‘plausible quantum processes’ the universe started out with 1 part per billion more matter than antimatter. Most of the matter and antimatter combined to make photons. Later he admits we still don’t really know how this asymmetry between matter and antimatter began.

第10章——没有什么是不稳定的

真空中充满了虚拟粒子，这些粒子在太小而无法测量的时间尺度上突然出现和消失（比普朗克时间短）。 量子力学允许在短时间内违反热力学第一定律。 克劳斯说，没有什么总能创造出一些东西，即使只是一瞬间。 量子力学可以从真空中窃取能量，只要它在任何人能够观察到它之前返回即可。 克劳斯援引霍金辐射来支持这一点。 然而，霍金辐射从未被观测到！ 一个未解之谜是为什么我们的宇宙中有过量的物质。 这就是物质/反物质问题。 为什么宇宙仅由物质构成？ 物质/反物质粒子相互湮灭产生辐射。 辐射转化为等量的物质和反物质。 克劳斯说，宇宙微波背景表明光子与质子的比率是十亿比一。 他说，通过“合理的量子过程”，宇宙开始时的物质比反物质多十亿分之一。 大多数物质和反物质结合形成光子。 后来他承认我们仍然不知道物质和反物质之间的这种不对称性是如何开始的。

## Chapter 11—Brave New Worlds

Krauss gives many of his reasons for not liking God as an explanation for the origin of the universe (intellectually lazy, no evidence, god of the gaps, etc., etc.). He asks if God is the answer, what determined God’s rules? [God did; He revealed some in the Bible, and left some for scientists to discover, as Kepler and Newton believed they were doing.] Krauss iterates his ipse dixit that there is no evidence for God—but as shown, his explanations such as multiverses are not scientific and beg the question. He says a first cause is needed for a universe with a beginning but it does not have to be the God of the Bible (he has admitted elsewhere that deism might be true)—but no Christian apologist would claim that, merely that it’s consistent with the Bible; the Bible is supported by other lines of evidence. He suggests the universe might be eternal in the past and future and that physical law may have always existed. He admits that this raises the question of where the laws came from and how they got to be what they are. He asserts that one can’t define ‘nothing’ as the lack of the potential to exist since then even God could not create anything (not true if God is outside of and separate from nature). He says the universe will eventually die a heat death, even protons and neutrons will decay.

第11章——美丽新世界

克劳斯给出了许多他不喜欢上帝作为宇宙起源解释的理由（智力懒惰、没有证据、间隙之神等等）。 他问上帝是否是答案，是什么决定了上帝的规则？ [上帝做到了； 他在《圣经》中揭示了一些，并留下了一些让科学家去发现，正如开普勒和牛顿相信他们正在做的那样。]克劳斯重申了他的 ipse dixit，即没有上帝存在的证据，但如图所示，他的解释（例如多元宇宙）并不科学。 并提出问题。 他说，一个有开始的宇宙需要一个第一因，但它不一定是圣经中的上帝（他在其他地方承认自然神论可能是正确的）——但没有基督教护教者会声称这一点，仅仅因为它与 圣经; 圣经有其他证据的支持。 他认为宇宙在过去和未来可能是永恒的，并且物理定律可能一直存在。 他承认，这提出了法律从何而来以及它们如何成为现实的问题。 他断言，人们不能将“无”定义为缺乏存在的潜力，因为从那时起，即使上帝也无法创造任何东西（如果上帝在自然之外并与自然分离，则这是不正确的）。 他说宇宙最终会因热寂而死亡，甚至质子和中子也会衰变。

## Epilogue

He says we must choose what we believe based on fact, not revelation. Yet his faith is based on unproven speculation.

He says science has made it possible to not believe in God (sounds like Dawkins). But God has always made it possible for people to deny him.

## Conclusion

1. Krauss must assume quantum mechanics so the universe does not actually come from nothing.
2. Most recent scholarship on major cosmological theories all require a beginning.15,16 No current theory allows an eternity past! Hence all current theories say there still had to be a beginning.
3. Fine tuning is still a problem for materialists. No evidence so far for hidden dimensions, other universes, string theory, etc.
4. The matter/antimatter problem is still unsolved.
5. Krauss admits deism may be right. His rejection of Christianity seems to be based more on personal rather than scientific criteria.
6. Young earth/old universe cosmologies such as Russell Humphreys’ and John Hartnett’s can explain the CMB, abundance of light elements, ‘axis of evil’, expansion of the universe, and the starlight-time problem.
7. Even if the landscape and the anthropic principle are correct (there is no evidence they are), one still has to explain origin of life and evolution. However, there is still no evidence for hidden dimensions, other universes, Hawking radiation, etc.
8. Much of Krauss’s scenarios is speculative and depends on a quantum theory of gravity which is not currently available. The universe had a beginning ([Genesis 1:1](https://biblia.com/bible/esv/Gen%201.1)) and was created by God for his glory ([Psalm 19:1](https://biblia.com/bible/esv/Ps%2019.1)). God has hidden in mystery how the universe came to be ([Eccl 3:11](https://biblia.com/bible/esv/Eccles%203.11)). Science may help us see more of God’s glory, but only He can reveal what He has hidden.

结语

他说我们必须根据事实而不是启示来选择我们的信仰。 然而他的信仰是基于未经证实的猜测。 他说科学使不相信上帝成为可能（听起来像道金斯）。 但神总是让人有可能否认他。

结论

1. 克劳斯必须假设量子力学，这样宇宙实际上并不是从无到有。 2. 最近关于主要宇宙学理论的学术研究都需要一个开始。15,16 没有任何当前的理论允许永恒的过去！ 因此，当前所有的理论都认为仍然必须有一个开始。 3.微调对于唯物主义者来说仍然是一个问题。 到目前为止还没有隐藏维度、其他宇宙、弦理论等的证据。 4.物质/反物质问题仍未解决。 5.克劳斯承认自然神论可能是正确的。 他对基督教的拒绝似乎更多地基于个人而非科学标准。 6. 年轻的地球/古老的宇宙宇宙论，如拉塞尔·汉弗莱斯和约翰·哈特尼特的宇宙论可以解释宇宙微波背景、丰富的轻元素、“邪恶轴”、宇宙膨胀和星光时间问题。 7. 即使景观和人择原理是正确的（没有证据表明它们是正确的），人们仍然需要解释生命的起源和进化。 然而，仍然没有隐藏维度、其他宇宙、霍金辐射等的证据。 8. 克劳斯的大部分设想都是推测性的，并且依赖于目前尚不可用的量子引力理论。 宇宙有一个开始（创世记 1:1），是神为了他的荣耀而创造的（诗篇 19:1）。 神将宇宙的形成隐藏在奥秘中（传道书 3:11）。 科学可以帮助我们更多地看到上帝的荣耀，但只有他才能揭示他所隐藏的一切。