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When glaciers disappear, the bugs move in

11:48 27 August 2008 by [Catherine Brahic](#)

We've all been stunned by images showing the dramatic retreat of mountain glaciers. Yet few of us have given much thought to what happens next.

Now the first study to look at how life invades soil immediately after [mountain glaciers melt](#) has an answer. Primitive bacteria step in to colonise the area, enrich the soil with nutrients, and even cement the ground, preventing landslides, say researchers who have studied the process in the Peruvian Andes.

A few studies have looked at the types of plants that colonise mountain valleys that were previously covered in ice. But before plants move in there is usually a period, which at high latitudes and altitudes can last several years, during which the newly uncovered soil appears totally barren (see picture, right).

To investigate what is happening during this period, [Steve Schmidt](#) of the University of Colorado and colleagues examined the soil at the retreating edge of the Puca glacier in the Peruvian Andes. Between 2000 and 2005, they sampled the top 10 centimetres of ground that was revealed as the glacier moved uphill at a rate of 20 metres per year.

Nutrient boost

They analysed the chemical structure of the samples and screened for bacteria. They found that over the years, the "oldest" soil – the dirt taken from the point that was revealed at the glacier edge in 2000 – changed rapidly.

The first organisms to appear in the soil were cyanobacteria. These primitive bacteria are found in many marine ecosystems and some land-based ecosystems. It is these bacteria we have to thank for pumping oxygen into Earth's atmosphere 3.4 billion years ago, [allowing land life to evolve](#).

By running [DNA](#) analyses on the soil, Schmidt and his colleagues show how the bacteria population changed over the first five years. Whereas "young" soil contained just three distinct genetic strains of cyanobacteria, four-year-old soil harboured up to 20.

The cyanobacteria increased the amount of carbon available in the soil, through photosynthesis and, along with other types of bacteria, they also boosted nitrogen levels in the soil, an essential nutrient for plant life.

Ground glue

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Seemingly barren soil can be seen at the foot of the Puca glacier, which is retreating by 20 metres per year (Image: Sasha C Reed)

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18:07 08 September 2009

Genetic ID tags have been created to help conservationists put an end to illegal trade in animals

[Climate change: no Eden, no apocalypse](#)

Another, perhaps more surprising, function of the [cyanobacteria](#) seems to be to hold the ground together.

Previous studies have shown that they secrete sugary chemicals that help hold the soil particles together and prevent erosion. At Puca glacier, the researchers found that soil shear strength was nearly double in the oldest soil relative to the youngest.

"An important role of cyanobacteria in extreme environments may be to hold the soil in place," say Schmidt and colleagues.

Previously, it had been suggested that newly uncovered soil might draw its life from nutrients and bacteria deposited by wind, or from ancient carbon "pools" that were trapped beneath the glacier. Instead, the team say that though ancient carbon may help fuel the very early stages of new life, the cyanobacteria and nitrogen-fixing bacteria rapidly take the leading role.

Journal reference: *Proceedings of the Royal Society B: Biological Sciences* (DOI: 10.1098/rspb.2008.0808)

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And We Doubt God

Wed Aug 27 14:28:21 BST 2008 by **D4m**

How can we doubt God. . . the earth is perfectly tuned in every way for life ...what ecological advantage do these cyano bacteria get?

...this coming from a believe in evolution, and God

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And We Doubt God

Wed Aug 27 14:48:50 BST 2008 by **Kiptere**

13:46 07 September 2009

Rather than placing ourselves in a "fight" against climate change, or lament a lost Eden, we should take the chance to rethink how we live, says **Mike Hulme**

'Extinct' British subject repatriated after 100 years

10:00 07 September 2009

The short-haired bumblebee will shortly be reintroduced back to the UK from New Zealand

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12:00 06 September 2009

Wind farms could hasten the extinction of the endangered Egyptian vulture in Spain

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There is no god

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And We Doubt God

Wed Aug 27 21:19:11 BST 2008 by **Zav**

Amen to that. And remember this: Jesus loves you but I'd prefer that we just stay friends. And no touching.

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And We Doubt God

Wed Aug 27 14:55:04 BST 2008 by **Tom Keller**

I would say that depends heavily on what god or gods you are thinking about....yes life works very well.....a new piece of land with no natural enemies, abundant space. I say that pretty much covers the question.... Evolution is the best and least contradicted theory we have at the moment so I go for that too.

Only place a god or gods is as good an explanation as any other is what caused the big bang and what was before it.

I personally go for the theory of the quarks being tired of having a rave party and decided to go make a universe over some billion years just for the fun of it before having the next big party :)

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And We Doubt God

Wed Aug 27 15:42:11 BST 2008 by **Ed O'hara**

Evolution is fine for tidying up the rough edges but there are a few colossal elephants in the swimming pool - for instance, given the big bang, why did life start in the first place? and where is it all going - what comes after humans? - and why doesn't it happen again on earth, didn't it happen once before? or did it happen many times...on and on the questions go. So, if we're honest, then as yet, we don't know much. All good data welcome...

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And We Doubt God

Wed Aug 27 16:03:10 BST 2008 by **Tom Keller**

Exactly my point, for every question we find an answer to, at least 10 new ones arise. My guess is that we haven't found out more than 0.001% of what is knowable about the universe we inhabit.

About the poolelephant, life started because the ability, the material needed and the chance was there, but we will not understand it in the near future, first of all our statistic base material is rather useless, we have one sample planet, secondly we know very little about the possibilities life can explore, again lack of samples, and

third we tend to have a phsyhic resistance toward accepting life is just a biological happening, without meaning, without purpose, it just happens. So untill we explore and discover and spend a lot of research we wont be much wiser.

But I am sure we will get to a solution and answers given time, and the hope that the religious fanatics dont blow us to pieces in the meantime.

Until then, hurra for the little bugs that paves the ground for life to prevale.

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And We Doubt God

Wed Aug 27 20:18:38 BST 2008 by **Soylent**

"[...]why did life start in the first place?"

Because it did; there's no more purpose to it than that.

"[...]and where is it all going - what comes after humans?"

Whatever creatures use their surroundings to survive and reproduce best. Evolution is directionless.

"[...]and why doesnt it happen again on earth, didnt it happen once before?"

Abiogenesis has nothing to do with evolution; but if you insist: Because if it happens again there are lifeforms which have had billions of years to adapt to life on Earth and exploit any available resource. It's unlikely that free nukleotides and other goodies would be left alone and that simple replicators that might form from them would be competitive against existing lifeforms.

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And We Doubt God

Wed Aug 27 16:06:21 BST 2008 by **Cb**

If God was that great he could have at least designed the human eye so that it could 'see' the correct way up - not upside down. This means the brain has to vertically invert the image to make it comprehensible and useful. Why would a designer do that? Life is NOT perfectly tuned. It's nasty, brutish and short.

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And We Doubt God

Wed Aug 27 16:45:25 BST 2008 by **C. Wilson**

The existence of God is a debate that will not be won until something profound happens that is undeniable to all... And then there will still be islands of stubbornness that argue in the

face of all evidence. Those who believe will continue to believe, as that is the basis of faith. Those who don't believe will continue to seek evidence that supports their position.

I take a scientific approach to life, as it is a proven tool that we can use to understand the world around us. I also believe in God.

Science and religion are not mutually exclusive. Denying God's existence without conclusive evidence directly contradicts the fundamentals of science. Until a hypothesis is proven, you can not put it forward as a statement of fact. To this point, the only evidence against God's existence is circumstantial. Therefore, it is hypocritical to claim conclusively that He does not exist and still claim to believe in science.

Those who believe base their belief on faith which, by definition, means that they do not need scientific evidence to maintain their position. Does this not mean that any onus to prove or disprove God's existence must rest on those who cling solely to science as their guiding principle.

With regards to the way the human eye functions, it can be argued that it supports the "belief" approach. The fact that light is inverted when it enters the eye, and is interpreted in a different way by the brain proves that we are creatures capable of using the information presented to us in a more complex way than an observer would first think. Those who have experienced the eye understand that there is much more to it than the external observer can hope to understand.

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And We Doubt God

Wed Aug 27 18:57:25 BST 2008 by **Bazooka**

If a god (or gods) really exist they aren't that powerful because god seems very afraid of us. If you build a world for people to live on why would you put that world in such a big space so they never will get out of it? This god clearly doesn't want anybody to know he exists what is contradicting with all the scriptures telling we should believe in him, her, them or it. The more we know the more god's ways seem to have no logics at all. While god was created to get some logic to all that didn't make sense. The only gods ive seen so far are called humans. They can make and terminate life with such ease just like described only to the powers of god.

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And We Doubt God

Wed Aug 27 19:32:38 BST 2008 by **Erasure25**

But science doesn't need to refute or disprove there is a god or gods. People believe because they want to, without any logic, proof, or reasoning. Science is the study of the natural world, not the supernatural world of religion. Science doesn't require a god or gods in its theories, hypotheses, or tenets. The functioning of the eye doesn't provide any support for a god or gods. It is explained entirely through evolution, assuming you

understand evolution and not the common misconceptions about it.

If people have a psychological need to believe because it makes their life more complete, well that's fine. But I don't need anyone to correct my wrongdoings - I can take responsibility for my own actions without needing a supernatural being to "forgive" me.

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And We Doubt God

Wed Aug 27 22:32:29 BST 2008 by **Ronnie**

Well said C. Wilson!!! So far I can't get anyone to tell me where the Big Bang got all that matter compressed into a small space to start with. People on this site go nuts if you believe there is something possibly higher than us. I've never had a problem with science or God. Whether there is a God or not our existence is truly a miracle! Cheers! Ronnie

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And We Doubt God

Thu Aug 28 01:21:31 BST 2008 by **Tim Owens**

I think you'll find many cameras do the same thing. My telescope does too, without the correcting mirror attached. It's easier to invert the signal than the optics. Seems like a reasonable design to me!

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And We Doubt God

Thu Aug 28 19:55:46 BST 2008 by **Andrew Page**

It's more difficult to explain why the retina is the wrong way around, with the nerves coming out of each photoreceptor on the inside of the eye, so that the optic nerve has to drill back through the retina creating a blind spot. Why would a designer not build them the right way round and have the wiring at the back?

Some (non-mammalian) eyes are built with the retina the other way round. There are various eye designs that reflect a series of accidents of history, which evolution has made the best of. I don't think you'll find a camera with wires trailing in front of and through the CCD.

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And We Doubt God

Wed Aug 27 20:47:38 BST 2008 by **Chris Winger**

I don't doubt God, but this is no proof. Life is what it is because it is. A bit circular I know but such is consciousness. You are attributing something special to life on earth but if life didn't evolve here to be the way you see it then you wouldn't be standing here marveling at it. Maybe you'd be marveling at something else or maybe no one would be here to marvel at all. Either way this is just how things happened to be. To say that the earth is perfectly tuned for life is to presume that you have knowledge of an alternative. Most of us do not.

Perhaps life isn't even the most exciting thing that can happen to a planet. I have never been a rock on Mars or a perpetual storm on Jupiter but I suspect it might be an interesting existence.

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And We Doubt God

Wed Aug 27 21:17:37 BST 2008 by **Alex Zavatone**

Because believing in a god is like believing things are true just because "daddy told me so". The question for you is "does there $\langle \rangle$need</i> to be a god for complex systems to operate? And the answer is no. Systems will either die out, or sustain. Over time, all that is left are the systems that are self supporting. A "Director of All" is not needed. Now that we know that systems can act on their own (and do) the question is "is it probable to have an overseer/director of all"? And the answer is statistically, the probability of that is near zero. Remember, that your belief in a god is not founded in reality, it is a belief. Reality dictates otherwise. We do not believe in evolution. It is not a belief. It is a fact based upon the evidence. Do you believe in electricity or gravity? The evidence supports the existence of both. If you choose to be ignorant of the evidence, then that is your choice. But by paying attention to it, your argument is merely wishes, not fact.

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And We Doubt God

Thu Aug 28 00:07:45 BST 2008 by **C. Wilson**

I love a good debate... :-)

None of the arguments put forth so far disprove the existence of God. The fact that complex systems can operate without direct divine intervention does not mean that the divine does not exist. Evidence for evolution (maybe the process God used to create life...), electricity, and gravity are simply that, and likewise do not disprove Him. Before you refer to wind, photons, etc., they don't disprove God either.

Stating that belief is not founded in reality is logically unsound. It is not founded in science (which is my entire argument), but there is no evidence that it is not founded in reality. In fact, that statement is simply one outlining your personal belief that He does not exist...

Belief is, for many, based on their personal experience with life and the path they have chosen to follow. My personal experiences have left me with a lot more than "daddy told me so" to go on, so I choose to have faith.

The fundamental point here is that many choose to not believe in God. They don't base that choice on concrete scientific evidence, because none exists. They base their beliefs on their own personal experiences and the way those experiences have been interpreted. The fact is that the choice to not believe in God is just as unscientific as the choice to believe.

I don't offer this up as evidence for His existence - as I said, those who choose not to believe will continue to do so. I am just saying that it is hypocritical to say that science supports the belief that God does not exist. Simply state that you cannot base belief or disbelief on science. We all need to recognize that we are incapable of designing an experiment that will either prove or disprove His existence.

It is also illogical to state that placing a world in a huge space proves fear or a lack of power. As to why He would do that, I don't presume to know.

Science, for all that it gives us is, in the end, simply science.

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And We Doubt God

Thu Aug 28 01:06:34 BST 2008 by **Methodanarchy**

There are theories in every branch of science, but I would challenge you to find one legitimate theory that includes god as a parameter. In science, there has been no place for god. After all, it is simply science.

Saying no theories disprove the existence of god, or pointing at holes in existing theories is no way to prove your theory. That's just bad science.

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And We Doubt God

Sat Aug 30 12:08:05 BST 2008 by **Kenny Vesterund**
(swe)

"The fundamental point here is that many choose to not believe in God. They don't base that choice on concrete scientific evidence, because none exists."

How would you ever be able to disprove a figurative entity that has never ever appeared in reality*? It is absurd claiming any kind of scientific credibility while at the same time believing in something as unscientific as christianity (or any other religion incorporating "supernatural" entities). If I told you that the Lord of the Rings and Harry Potter actually are true historical writings of the Great Prophets J.R.R. Tolkien and J.K. Rowling, would that make them any more credible as historical material? And wouldn't you tell me, or at least quietly be of the opinion, that I am the one to bring forth proof that my claims are true? How on earth can you then claim that your storybook, the Bible (or the Quran, Talmud, etc.), has any credibility whatsoever until anyone else has provided proof that You are wrong?

"They base their beliefs on their own personal experiences and the way those experiences have been interpreted. The fact is that the choice to not believe in God is just as unscientific as the choice to believe."

Who has a more scientific approach? The scientist who wants scientific proof before believing in the supernatural, or You who first choose to believe and _then_ asks for proof that You are wrong? (And keep in mind that it is _You_ who have the burden of proof about your claims being true, its not anyone else who has to prove that your claim is wrong.

"I don't offer this up as evidence for His existence - as I said, those who choose not to believe will continue to do so. I am just saying that it is hypocritical to say that science supports the belief that God does not exist. Simply state that you cannot base belief or disbelief on science. We all need to recognize that we are incapable of designing an experiment that will either prove or disprove His existence."

Yes, we are incapable of creating such an experiment, but that is _not_ in any way an indication that God exists, rather it is a great indication that the story** about God is faulty. If God would have existed, we would be able to perceive Him in some kind of way, and thereby would have the means to do research on Him. This would mean that if Humans would be able to "sense" God, Humans would also be able to prove the existence of God scientifically (by examination). As this is not possible, we are forced to the conclusion that God does _not_ exist.

If you claim that only the ones who want to know God are allowed to know Him***, then why haven't these people been able to prove his existence through the millions of years that man has existed (6000 years, I think, would be more than sufficient time to bring forth proof, if you are a follower of that view of the age of the Human race). If there is a God, why is there not any proof of his existence?

*No, Jesus is not even scientifically proven to having been a real historical person.

**I am not even going to call it as a theory, as a theory needs to be falsifiable (at least a scientific theory, which is what we are discussing).

***I know through own experience that this is not true, as I have been a rightful christian most of my life, but never got to experience God in any kind of way no matter how much I prayed, no matter how long I cried. This made me begin to search for the truth, I read all I could find about being a good christian, I searched the Bible, and I searched my own mind and soul. This search went on for a couple of years, and I did everything and more than what is required of a good christian. But I found nothing except contradiction, and everything that was my world slowly began falling apart. As christianity didn't give me anything except a wet pillow, I tried judaism, which was no better. But as I searched I got the courage to try new ideas, ideas forbidden to christians, ideas as the theory of the big bang, the world being 4,5 billion years old and

Humans evolving from the same ancestors as today's apes. And soon I found that science actually has answers to most of the questions I had and that I even could explain my behaviour and thought pattern during the years I had attempted to find the truth. Everything suddenly made sense. And the most frightening about the whole experience was that I had had the truth right before my nose through my whole time in elementary school, only I had been too afraid (due to religious reasons) to actually listen to it. It is amazing how religion can totally control a person's life!

Today, at last, I am free of the religious yoke, and have been of a healthy mind for about two of my nineteen years on this earth.

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And We Doubt God

Thu Aug 28 10:40:04 BST 2008 by **Charles**

"If God existed, and he cared about humans, he would never have given us religion" -- Martin Amis

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And We Doubt God

Thu Aug 28 17:31:29 BST 2008 by **Jeremy**

So you're saying that evolution can exist in a God-created world?

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And We Doubt God

Thu Aug 28 22:18:45 BST 2008 by **Ronnie**

Why not!!! Ronnie

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Bugs Move In!

Wed Aug 27 15:49:46 BST 2008 by **Uncle B**

North Bay, Ontario, Canada - Last few years the black-fly season has lasted much longer, started earlier and been much more intense than anyone remembers. Is this part of Global warming?

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Bugs Move In!

Wed Aug 27 16:24:21 BST 2008 by **Tom Keller**

Perhaps, but we cannot say until we have gathered enough knowledge about if this a natural cycle or just a few odd seasons.

Unless we had a precise record of the dates the fly's arrived, how long they stayed, and the time and dates of at least a few hundred years, it can be hard to get anything scientifically sound out of it.

But going on a long shot here, I would say that yes, the fly's will be there to stay, longer, there have been findings saying that as the globe heats up, more and more insects move north (on the northern hemisphere) because the climate allows them to.

Lets hope the grasshoppers dont find out pine and spruce tastes good.....

But start a notebook as a hobby, write as precise as you can about the fly's, app numbers, dates, days they are there and so on, someone in the future might find it very interesting to study. Also look out for insects that has never been there before. Take pictures too and video if possible, a lot of old records can be mined today for very valuable knowledge, so lets leave something for our grandchildren to research too.

An example is the log books of the swedish ships that sailed to china in the 16-17'th century, they contain a lot of very good information about how people lived back then and a lot of weather information too.

Make sure that all the notebooks and other material you have gathered gets donated to a public (national) library after you have passed away.

That way we can all help science get a better picture of whats going on.

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Bugs Move In!

Thu Aug 28 19:12:24 BST 2008 by **Bbd**

The opposite. The bugs are causing the global warming.

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Succession

Wed Aug 27 16:22:18 BST 2008 by **Tracy**

We know that 'Nature abhors a vacuum'. If there's a vacant niche, something will move into it and exploit it PDQ, and the ecosystem will gradually become more complex as conditions change. Life creates the conditions for more life (which is getting dangerously close to Gaia Theory :))

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