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Rédiger en anglais et en 500 mots une synthèse des documents proposés, qui devra obligatoirement comporter un titre. Indiquer avec précision, à la fin du travail, le nombre de mots utilisés (titre inclus), un écart de 10% en plus ou en moins sera accepté.

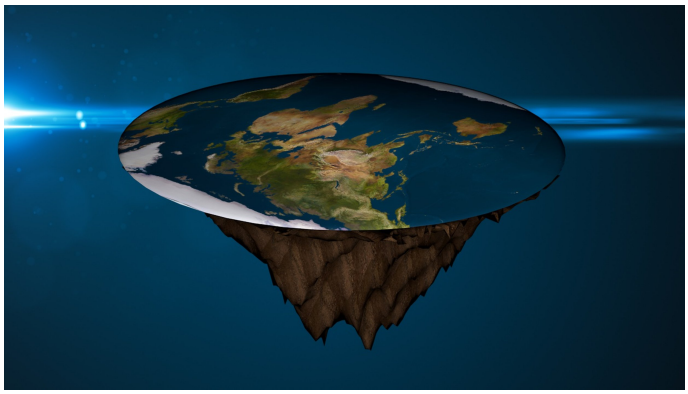
Ce sujet propose les documents suivants :

— un article paru sur le site *www.livescience.com*, de Harry T Dyer, le 8 mai 2018 ;
— un extrait d'article paru dans *Pacific Standard*, de Cynthia Leifer, le 30 avril 2015 ;
— la transcription d'échanges entre Ross et Phoebe au cours de l'épisode 2 de la saison 3 de la série *Friends* ;
— un dessin humoristique de Tony Auth.

L'ordre dans lequel se présentent les documents est aléatoire.

I Watched an Entire Flat Earth Convention — Here's What I Learned

by Harry T Dyer, *www.livescience.com*, May 8, 2018



Speakers recently flew in from around (or perhaps, across?) the earth for a three-day event held in Birmingham: the UK's first ever public Flat Earth Convention. It was well attended, and wasn't just three days of speeches and YouTube clips (though, granted, there was a lot of this). There was also a lot of team-building, networking, debating, workshops — and scientific experiments.

Yes, flat earthers do seem to place a lot of emphasis and priority on scientific methods and, in particular, on observable facts. The weekend in no small part revolved around discussing and debating science, with lots of time spent running, planning, and reporting on the latest set of flat earth experiments and models. Indeed, as one presenter noted early on, flat earthers try to "look for multiple, verifiable evidence" and advised attendees to "always do your own research and accept you might be wrong".

While flat earthers seem to trust and support scientific methods, what they don't trust is scientists, and the established relationships between "power" and "knowledge". This relationship between power and knowledge has long been theorised by sociologists. By exploring this relationship, we can begin to understand why there is a swelling resurgence of flat earthers.

Let me begin by stating quickly that I'm not really interested in discussing if the earth if flat or not (for the record, I'm happily a "globe earther") — and I'm not seeking to mock or denigrate this community. What's important here is not necessarily whether they believe the earth is flat or not, but instead what their resurgence and public conventions tell us about science and knowledge in the 21st century.

Multiple competing models were suggested throughout the weekend, including "classic" flat earth, domes, ice walls, diamonds, puddles with multiple worlds inside, and even the earth as the inside of a giant cosmic egg. The level of discussion however often did not revolve around the models on offer, but on broader issues of attitudes towards existing structures of knowledge, and the institutions that supported and presented these models.

Flat earthers are not the first group to be skeptical of existing power structures and their tight grasps on knowledge. This viewpoint is somewhat typified by the work of Michel Foucault, a famous and heavily influential 20th century philosopher who made a career of studying those on the fringes of society to understand what they could tell us about everyday life.

He is well known, amongst many other things, for looking at the close relationship between power and knowledge. He suggested that knowledge is created and used in a way that reinforces the claims to legitimacy of those in power. At the same time, those in power control what is considered to be correct and incorrect knowledge. According to Foucault, there is therefore an intimate and interlinked relationship between power and knowledge.

At the time Foucault was writing on the topic, the control of power and knowledge had moved away from religious institutions, who previously held a very singular hold over knowledge and morality, and was instead beginning to move towards a network of scientific institutions, media monopolies, legal courts, and bureaucratized governments. Foucault argued that these institutions work to maintain their claims to legitimacy by controlling knowledge.

In the 21st century, we are witnessing another important shift in both power and knowledge due to factors that include the increased public platforms afforded by social media. Knowledge is no longer centrally controlled and — as has been pointed out in the wake of Brexit — the age of the expert may be passing. Now, everybody has the power to create and share content. When Michael Gove, a leading proponent of Brexit, proclaimed: "I think the people of this country have had enough of experts," it would seem that he, in many ways, meant it.

It is also clear that we're seeing increased polarization in society, as we continue to drift away from agreed singular narratives and move into camps around shared interests. Recent PEW research suggests, for example, that 80% of voters who backed Hillary Clinton in the 2016 US presidential election — and 81 percent of Trump voters — believe the two sides are unable to agree on basic facts.

Despite early claims, from as far back as HG Wells' "world brain" essays in 1936, that a worldwide shared resource of knowledge such as the internet would create peace, harmony and a common interpretation of reality, it appears that quite the opposite has happened. With the increased voice afforded by social media, knowledge has been increasingly decentralized, and competing narratives have emerged.

This was something of a reoccurring theme throughout the weekend, and was especially apparent when four flat earthers debated three physics PhD students. A particular point of contention occurred when one of the physicists pleaded with the audience to avoid trusting YouTube and bloggers. The audience and the panel of flat earthers took exception to this, noting that "now we've got the internet and mass communication ... we're not reliant on what the mainstream are telling us in newspapers, we can decide for ourselves". It was readily apparent that the flat earthers were keen to separate knowledge from scientific institutions.

At the same time as scientific claims to knowledge and power are being undermined, some power structures are decoupling themselves from scientific knowledge, moving towards a kind of populist politics that are increasingly skeptical of knowledge. [...]

Again, this theme occurred throughout the weekend. Flat earthers were encouraged to trust "poetry, freedom, passion, vividness, creativity, and yearning" over the more clinical regurgitation of established theories and facts. Attendees were told that "hope changes everything", and warned against blindly trusting what they were told. This is a narrative echoed by some of the celebrities who have used their power to back flat earth beliefs, such as the musician B.O.B, who tweeted: "Don't believe what I say, research what I say."

In many ways, a public meeting of flat earthers is a product and sign of our time; a reflection of our increasing distrust in scientific institutions, and the moves by power-holding institutions towards populism and emotions. In much the same way that Foucault reflected on what social outcasts could reveal about our social systems, there is a lot flat earthers can reveal to us about the current changing relationship between power and knowledge. And judging by the success of this UK event — and the large conventions planned in Canada and America this year — it seems the flat earth is going to be around for a while yet.

Pacific Standard

The role of doubt in science

Cynthia Leifer[1], April 30, 2015

Doubt is inherently human and it has a useful purpose, but that doesn't mean it's OK to keep questioning climate change, evolution, and the power of vaccines.

Rand Paul, the libertarian senator from Kentucky and son of former presidential candidate Ron Paul, has himself officially announced that he will run for president. Paul obtained his Bachelor's degree from Baylor and medical degree from Duke, and worked as an eye surgeon prior to becoming a senator. As a senator, Paul leveraged his education and experience to gain credibility to speak out on many issues, including gay marriage, abortion, and gun rights. Yet Paul consistently rejects scientifically supported findings on climate change and often makes incorrect statements on other important issues such as vaccines. During an interview with CNBC Paul stated "I've heard of many tragic cases of walking, talking normal children who wound up with profound mental disorders after vaccines."

[1] Cynthia Leifer is an associate professor of immunology at Cornell University.

But Paul is not alone in his science skepticism. A recent poll by the Associated Press-GfK showed that while most Americans believe smoking causes cancer (94 percent), at least 15 percent question the safety of vaccines and up to 40 percent don't believe in evolution or that man contributed to climate change. Skepticism is healthy, but choosing not to accept scientific evidence can have long-term consequences, and, in some instances, the consequences can be far-reaching and lethal. [...]

Some parents still refuse vaccines despite strong scientific support for their safety and effectiveness; one recent study with 95,727 children demonstrated no association between the MMR vaccine and autism. Maybe it's because they heard that vaccines were potentially harmful from educated and influential sources like Senator Paul.

Doubt is inherently human and it has a useful purpose. It often forces more rigorous scientific analysis, which can sometimes lead to amazing new ideas and discoveries. When Galileo first claimed that the Earth revolves around the sun few believed him. But because he thought he could prove his hypothesis with evidence, Galileo was compelled to spend his life observing, documenting, and calculating.

When Christopher Columbus wanted to sail from Spain to Asia in the 1400s he faced opposition over the size and roundness of the Earth and whether he would succeed. This was despite the fact that Pythagoras proposed the Earth was round over 1,000 years before. Even until 1956, just before the Soviets launched Sputnik, there was a flat Earth society that promoted skepticism about Earth's roundness.

Few people today would question whether the Earth is round or that it rotates around the sun. What were once unproven hypotheses are now undeniable fact because of scientific advancements and new technologies.

Disbelief in the theory of evolution does not have such immediate impacts on young lives like vaccine refusal; however, refusal to accept and teach scientific concepts to children can still have devastating consequences. "If evolution is not taught, students will not achieve the level of scientific literacy needed to be well-informed citizens," according to the National Science Teachers Association. They will lack the curiosity and skills to contribute to scientific progress. Worse, they will not be informed enough to understand new developments and the potential those developments may have to improve their lives, like vaccines.

Climate change denial also may not have immediate impacts on society, but it is irresponsible to fail to prepare for the eventual effects. "Sea level rise is an inevitable consequence of the warming of the ocean," according to the 2014 Miami-Dade Sea Level Rise Task Force, and "without innovative adaptive capital planning it will threaten trillions of dollars of the region's built environment." [...]

To be sure, some doubt of science is well founded. There are unethical scientists who knowingly publish and promote incorrect information. In 2014, for example, Japanese scientists published a rapid method for producing stem cells that had the potential to revolutionize the field. In just over six months, a scientific misconduct investigation revealed data falsification. Although it is progress that such falsified studies are quickly debunked, some studies take longer to disprove and can leave deep scars in the scientific community, and in the population at large, that are hard to repair. In the case of Andrew Wakefield, who proposed the connection between vaccines and autism, it took 12 years to retract the study, and for the lead author to lose his medical license. Still, vaccine opponents like Rand Paul and Robert F. Kennedy Jr. continue to use the Wakefield study as evidence that children should not be vaccinated.

Doubt allows us to question the world around us, and promotes healthy debate about controversial issues, but we must be open to new information as it comes along.

We circle satellites around the Earth to relay information so you can read this article on your cell phone. An image from the International Space Station shows the Earth's undeniable roundness. These advances were unfathomable to Columbus, but surely would have reduced any fear about sailing off the end of the Earth.

What people deny today based on belief may be undeniable tomorrow. It is best to keep a doubtful, yet open, mind.

Transcript - Text from *FRIENDS*, an American television sitcom, created by David Crane and Marta Kauffman, aired on *NBC* and which lasted ten seasons.

FRIENDS: The One Where Heckles Dies / First Aired: 5.10.1995 / Season 2 Episode 3
written by Michael Curtis and Greg Malins.

Phoebe and Ross debate throughout the episode. Below are the transcripts of the different moments when they argue.

Phoebe: That's fine. Go ahead and scoff. You know, there're a lot of things that I don't believe in, but that doesn't mean they're not true.

Joey: Such as?

Phoebe: Like crop circles, or the Bermuda triangle, or evolution?

Ross: Whoa, whoa, whoa. What, you don't, uh, you don't believe in evolution?

Phoebe: Nah. Not really.

Ross: You don't believe in evolution?

Phoebe: I don't know, it's just, you know ... monkeys, Darwin, you know, it's a, it's a nice story, I just think it's a little too easy.

Ross: Too easy? Too ... The process of every living thing on this planet evolving over millions of years from single-celled organisms, too easy?

PHOEBE: Yeah, I just don't buy it.

ROSS: Uh, excuse me. Evolution is not for you to buy, Phoebe. Evolution is scientific fact, like, like, like the air we breathe, like gravity.

PHOEBE: Ok, don't get me started on gravity.

ROSS: You uh, you don't believe in gravity?

PHOEBE: Well, it's not so much that you know, like I don't believe in it, you know, it's just ... I don't know, lately I get the feeling that I'm not so much being pulled down as I am being pushed.

[...]

ROSS: How can you not believe in evolution?

PHOEBE: Just don't. Look at this funky shirt!

ROSS: Pheebs, I have studied evolution my entire adult life. Ok, I can tell you, we have collected fossils from all over the world that actually show the evolution of different species, ok? You can literally see them evolving through time.

PHOEBE: Really? You can actually see it?

ROSS: You bet. In the U.S., China, Africa, all over.

PHOEBE: See, I didn't know that.

ROSS: Well, there you go.

PHOEBE: Huh. So now, the real question is, who put those fossils there, and why?

[...]

ROSS: Ok, Pheebs. See how I'm making these little toys move? Opposable thumbs. Without evolution, how do you explain opposable thumbs?

PHOEBE: Maybe the overlords needed them to steer their spacecrafts.

ROSS: Please tell me you're joking.

[...]

PHOEBE: Look, can't we just say that you believe in something, and I don't.

ROSS: No, no, Pheebs, we can't, ok, because...

PHOEBE: What is this obsessive need you have to make everyone agree with you? No, what's that all about? I think, I think maybe it's time you put Ross under the microscope.

ROSS: Is there blood coming out of my ears?

[...]

PHOEBE: Uh-oh. It's Scary Scientist Man.

ROSS: Ok, Phoebe, this is it. In this briefcase I carry actual scientific facts. A briefcase of facts, if you will. Some of these fossils are over 200 million years old.

PHOEBE: Ok, look, before you even start, I'm not denying evolution, ok, I'm just saying that it's one of the possibilities.

ROSS: It's the only possibility, Phoebe.

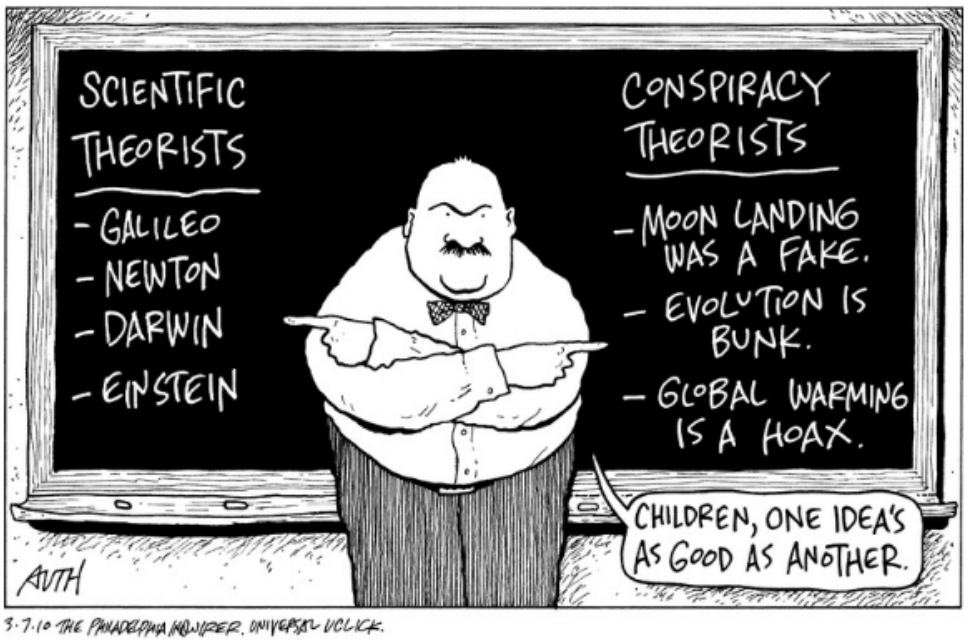
PHOEBE: Ok, Ross, could you just open your mind like this much, ok? Wasn't there a time when the brightest minds in the world believed that the world was flat? And, up until like what, 50 years ago, you all thought the atom was the smallest thing, until you split it open, and this like, whole mess of crap came out. Now, are you telling me that you are so unbelievably arrogant that you can't admit that there's a teeny tiny possibility that you could be wrong about this?

ROSS: There might be, a teeny, tiny, possibility.

PHOEBE: I can't believe you caved.

ROSS: What?

PHOEBE: You just abandoned your whole belief system. I mean, before, I didn't agree with you, but at least I respected you. How, how, how are you going to go into work tomorrow? How, how are you going to face the other science guys? How, how are you going to face yourself? Oh! That was fun. So who's hungry?



By American cartoonist TONY AUTH

March 7, 2010
The Philadelphia Inquirer

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