

SKEPTOID 3
PIRATES, PYRAMIDS, AND
PAPYRUS

BY BRIAN DUNNING

FOREWORD BY RICHARD SAUNDERS
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Skeptoid 3: Pirates, Pyramids, and Papyrus
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It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.

Mark Twain

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To Erika –

The brightest light in my universe, and quite possibly in all the other ones as well.

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FOREWORD: WHY SKEPTOID IS PART OF MY LIFE

BY RICHARD SAUNDERS

Fourteen hours... not a long time really, unless you are flying from Sydney to Los Angeles on a clapped out 747, then it's a very long time indeed. As the night hours dragged and the in-flight movie ended on yet another trip to the United States, when all hope of getting sleep had vanished, I put on my eye mask and turned to my one true friend...my iPod, and heard those familiar words. "You're listening to Skeptoid. I'm Brian Dunning, from Skeptoid dot com."

We often hear that skeptics spend too much time preaching to the converted or preaching to the choir. I never find this a waste of time as I am a member of that choir and always appreciate more information and inspiration. In fact I need it. For me, that normally means climbing aboard those 747s and flying off to some of the major international skeptical conventions such as The Amazing Meeting (TAM) in Las Vegas held by the James Randi Educational Foundation or, more recently, Dragon*Con in Atlanta. There is nothing like hearing first-hand from the likes of James Randi, Dr. Phil Plait, Dr. Steve Novella and of course, Brian Dunning. But now, at your leisure, you can pour over some of the many topics Dunning has not only thoroughly researched but also formulated in to bite size and very readable explorations into the sometimes strange world of beliefs and investigations.

Often I find myself reaching for copies of Dunning's books and his podcast of the same name when researching skeptical topics for articles I'm called upon to write or to prepare for radio and TV interviews. I imagine that I am not alone in this. All over the world people are at once discovering and building

upon their skeptical knowledge with the help of Skeptoid in all its forms. Without exception I learn a little more or even a great deal more from each new contribution. More than once the information I have gleaned from Skeptoid has stopped me from making an ass of myself when talking about the paranormal and such like. There is nothing worse for our way of thinking than the blathering of an uninformed or ill-informed skeptic.

Now we come to your role in Skeptoid, and a vital role it is to be sure. If you find that Dunning has lapsed in his research or made an error in his reasoning, let him know. At heart Skeptoid is following in the tradition of science and that tradition demands that research be questioned and conclusions be tested when and where necessary. It is no insult to science to be corrected from time to time, in fact science itself would not work without this measure. It is a testament to Dunning's sincerity that he will correct and update his findings in line with that tradition. Without doubt he is what we call in Australia, 'a fair dinkum bloke.'

In 1995 Bill Gates wrote *The Internet Tidal Wave* memorandum to Microsoft executives in which he outlined the impact of this new form of communication and directed that it be given the "...highest level of importance". From what we in the skeptical world have seen, Dunning has jumped on his surfboard of reason, paddled out into the Internet ocean and is riding the tidal wave for all it's worth. I hope he never wipes out.

I really don't know when Dunning finds time to sleep, let alone do all the research needed to write and record Skeptoid. But thank your lucky stars, your lucky shoes and your lucky socks he does.

Richard Saunders is one of Australia's leading skeptical investigators and communicators. A former President of Australian Skeptics, he is also the producer of the popular Skeptic Zone podcast. An author with around 30 books to his credit, Richard delights in travelling the world to teach his other passion, Origami.

INTRODUCTION

Chances are you're wondering what the heck kind of a book this is. The chapters seem to be all over the map; a boggling array of unrelated topics, urban legends mixed with popular products and claims, even some philosophy and history with a smattering of hard science. What's the glue that binds it all together?

These chapters are all adapted from episodes of my audio podcast, *Skeptoid*, available at Skeptoid.com. It's a show about examining the stories we hear in our daily lives, and how to analyze them to see what's fact and what's fiction.

There is no shortage of fiction being foisted upon us by the mass media. What masquerades as news and even as documentaries are often mere sensationalism, driven by the business model of needing to attract a large audience. It's easy to excite people with sensationalism. Tell people that something inexplicable and magical is going on, and you'll turn heads. The result is twofold: First, the TV networks, magazine publishers, and email spammers are happy; and second, the general public's collective knowledge level drops to the point where nobody cares what's real and we have this skewed sense of how our world actually works.

Decisions are based on this skewed information. Policy is formed. Voters make their selections. Entertainment companies pick their lineups. Healthcare and life-or-death decisions are made. People make important life decisions based on the quality of the information they have.

A growing number of people – loosely called skeptics, thus the title of this book and the podcast – are concerned about this. We demand a minimum standard for quality of information. We believe it's important to understand the way the

universe actually works, to best prosper within it. The chapters in this book look at fifty topics, some of which you've heard of, others you haven't, but all are examined from a skeptical perspective. You'll see the thinking process behind the analysis of popular claims.

This process often puts us at odds with snake oil salesmen, with promoters of the supernatural and paranormal, and with providers of alternatives to healthcare that have failed to meet scientific standards. And, nine times out of ten, it puts us in the same camp as "the establishment" of scientific consensus and government regulators. To many people, this raises suspicion. I've been accused of being "on the payroll" of Big Government, Big Oil, Big Pharma, Big Science, Big Toxins, Big Education, and just about everything else more times than I can count.

I hate the appearance of "toeing the company line" just as much as you do, but a closer look at the real demographics shows that, by no means, are the conclusions of skeptics mainstream. By any survey you want to name, the majority of people are mistrustful of science. Most people believe in ghosts and other spiritual beings. Most people purchase unproven healthcare supplements. Most people accept that strange things happen all the time that defy scientific explanation, without ever bothering to ask the scientists themselves.

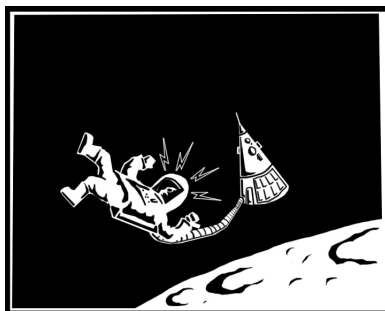
But who has the time or knowledge to properly investigate every such question? Almost nobody. Does this mean that we're all left to fend for ourselves, guessing and applying our television knowledge to know what's real and what's not? Unfortunately, it does, in most cases. The purpose of this book is to offer you some of the tools that will help you be right far more often than you're wrong. It's the value of critical analysis, and I think you'll find it a fascinating experiment.

– Brian Dunning

1. SEARCH FOR THE MISSING COSMONAUTS

During the late 1950's and early 1960's, the space race between the United States and the Soviet Union was hot. Both sides built and tested rockets as quickly as they could, trying to be the first to launch an artificial satellite into orbit, often with explosive results. Both sides had their successes, and both sides had their failures. People around the world watched and listened. Some, most notably amateur radio operators, listened more closely than others.

And of these, a pair of young brothers from Italy, Achille and Giovanni Judica-Cordiglia, reigned supreme. Their library of audio recordings of nearly every flight from the space race is by far the most comprehensive private collection



known. But the real reason it's notable is that includes a number of recordings of alleged events that didn't make it into the history books: doomed Soviet cosmonauts captured in their final moments of life, on flights that the Soviets said never happened.

During the cold war, the Soviet Union was a knot of state secrets. More than anything else, the cold war was a war of propaganda, each side trying to show the world that they were the smartest, the fastest, the highest, and the best. In this context, it's not surprising at all that the true progress of their space program would be closely guarded and only the best news released to the world. With their state-controlled media, the So-

viets had the ability to accomplish coverups of failures to a degree that would never have been possible in the United States.

Achille and Giovanni were creative and scientific geniuses in the truest sense, both in their twenties. When the Soviets announced the successful launch of Sputnik I on October 4, 1957 and published the radio frequency for everyone to hear, the brothers scavenged what radio equipment they could and tuned it in.

From that one recording, their self-taught education proceeded like a rocket (pun intended). They learned how to detect the Doppler effect in signals from orbit, and how to calculate an object's speed and altitude from that. They filled log-books with conversion tables and Soviet frequencies. And so, when the Soviets launched Sputnik 2 only a month after Sputnik 1, they were well prepared. And this time, the brothers discovered something new: a pulse.

It was the heartbeat of Laika, a small dog. Sadly for Laika, Sputnik 2 was a one-way trip; there was no provision for re-entry or recovery. Three months later, the United States launched its first satellite, Explorer I, and like the Soviets, published the frequency of the signal. Achille and Giovanni captured it, and then their lives as local media celebrities began. They were the darlings of the local papers and radio stations. They took over a nearby concrete bunker left over from World War II, made improvements to their equipment, and built larger antennas. They called their little radio observatory Torre Bert, and anytime anything launched into space from anywhere, Torre Bert was filled with friends, reporters, local scientists, and anyone who wanted a good time.

The Torre Bert experiment took a more serious turn on November 28, 1960. A West German observatory announced that it was receiving a strange signal on a Soviet space frequency. The brothers tuned in, and heard hand-keyed Morse code repeating the international distress signal, S-O-S, over and over again. Their Doppler calculations showed almost no relative

speed, which they interpreted to mean that the distressed spacecraft was on a course directly away from the Earth. The signal grew weaker and was never heard from again. Apparently, the brothers had just recorded evidence that a manned Soviet spacecraft somehow got off course and left Earth's orbit, permanently.

About two months later in February 1961, variously reported as the 2nd or the 4th of the month, they picked up another transmission from space, which experts interpreted at the time as the dying breaths of an unconscious man.

And another signal from the same flight, interpreted by the brothers' father, a cardiologist, as a failing human heartbeat.

The brothers' story and recordings were played throughout Italy. Two days after this publicity, the Soviets announced the failed re-entry of a large unmanned craft.

In April of 1961, a journalist at the International Press Agency in Moscow tipped off the brothers that something big was about to happen. They turned on their equipment, and the next day, listened in on Yuri Gagarin's voice during the first manned space flight.

But, the most dramatic of the brothers' recordings came about five weeks later in May of 1961, the date variously reported as the 17th, 19th, or 23rd. A woman's voice transmission, translated as "Isn't this dangerous? Talk to me! Our transmission begins now. I feel hot. I can see a flame. Am I going to crash? Yes. I feel hot, I will re-enter..." (Note, this is the popular translation given on the Internet. I had some Russians of my own translate it for me, and her words were much less dramatic. Mostly counting off numbers, and nothing about flames, crashing, or re-entry. But it was recorded on a known Soviet space frequency.)

When I first heard about the Judica-Cordiglia recordings from Torre Bert, I was definitely intrigued. It simply appears plausible. We know that the Soviets covered up their failures. We know that their launch record in those days was absolutely

abysmal, far worse than the United States. If Yuri Gagarin made it into space, it almost seems like a foregone conclusion that at least a couple of other guys must have previously died in the attempt.

Part of the trouble you find when you research this is that the recordings from Torre Bert are only one small square in a quilt the size of Texas. There are many, many stories circulating about missing cosmonauts who died in spaceflights as early as 1957. According to some Western intelligence sources, as many as 11 fatal Soviet accidents occurred, both in flight and on the ground, all before 1967. We know that the Soviets painted certain cosmonauts out of photographs, in fact you can see some great before & after examples of this on the LostCosmonauts.com web site. We know that the death of at least one cosmonaut killed in a training accident, Valentin Bondarenko was concealed until 1986, and even then was only declassified after western journalists found out about it in 1980. There's also considerable controversy about the case of Vladimir Ilyushin, who claims to have launched five days before Gagarin, but a problem caused him to re-enter early and land inside China, where he was held captive for a whole year. Some of Ilyushin's supporters even assert that Gagarin's flight never took place; rather that he was hastily shuttled to a mocked-up landing site in Ilyushin's backup capsule so the Soviet propaganda machine could attach a healthy, smiling young face to Ilyushin's heroic flight. Ilyushin still lives in Moscow at last report, and still maintains his story.

Much of the criticism of the Judica-Cordiglia brothers comes from space historian and author James Oberg, who wrote a book based on his investigations into all of these stories of lost cosmonauts. His principal conclusions were that there was insufficient evidence available to substantiate any of these stories. But Oberg's research concluded in 1973, when the Iron Curtain was still strong. 35 years later, virtually everything has been long since declassified. It's now possible to read detailed histories of those early days, and the dates and types of all their

launches, failures included, is thoroughly documented. I compared the timelines of what the Judica-Cordiglia brothers recorded to the timeline of the Soviet space program. I did find some problems.

The main inconsistency is that during the times of the Morse code and the astronaut's alleged breathing and heartbeat sounds, the Soviets were still launching dogs and mannequins. A few days after the Morse code recording, Sputnik 6 carrying two dogs was deliberately self-destructed upon a failed re-entry, and three weeks after that, two dogs were launched and safely recovered even though the third stage of their Vostok booster failed and the craft did not achieve orbit.

While it's true that the Soviets did have a proven capability to escape the Earth by the time of the fading Morse code (Luna 1 had passed the moon a year earlier), the Vostok 8K72 booster only had the ability to lift 500 kilograms to escape velocity, way too small for a manned capsule. Even for several years afterward, the Soviets had no rocket capable of lifting a manned capsule beyond Earth's gravity.

In the two months following the brothers' recording of the breathing and the alleged heartbeat, the Soviets made two successful low Earth orbit flights, each carrying a small dog and a mannequin. These are the type of test flights made when you're not yet ready to launch a man.

Following the Soviets' success at launching Gagarin in April 1961, the Judica-Cordiglia version of events suggests that their next feat was to launch a woman, thus the May 1961 recording. However, the Soviets' next launch wasn't until August, and it was another man, Gherman Titov, who flew for a full day in orbit. Valentina Tereshkova, credited as the first woman cosmonaut, didn't fly until more than two years after Gagarin, in June of 1963.

Of course these inconsistencies don't prove anything, they just show that if you accept the Judica-Cordiglia assertions as fact, they show an illogical backwards progression by the Sovi-

ets that's contradictory with the character of the space race. The Soviets never took backward steps.

A more compelling reason to be skeptical of the Judica-Cordiglia brothers' interpretation of their recordings is the lack of corroborating evidence from the numerous, far more sophisticated radio tracking stations that existed. These were the days of the Distant Early Warning Line and the birth of the North American Air Defense Command, and the Americans, British, Canadians, Germans and French all had equipment that far exceeded the humble capabilities of homebuilt Torre Bert, with things like tracking dishes that Torre Bert lacked; and moreover, the western propaganda machine would have loved nothing better than to publicize Soviet failures. The best explanation for why such announcements were never made is that no such failures were ever observed.

Indeed, the story of the Soviets announcing a failed unmanned flight after hearing that the brothers' recorded their dying cosmonaut doesn't match the history books. It's a great sound bite but I found no such report anywhere. Moreover, current records show a successful test of an R7 booster carrying a dummy missile warhead on February 7, 1961, about the day of the claimed admission.

Am I saying Achille and Giovanni were hoaxers? Far from it. In fact, in researching their story, I gained tremendous respect for their abilities and for what they accomplished. As I said before, their library of recordings is a treasure of inestimable value, and there's a documentary film about them called *Space Hackers*, which I found on YouTube, and which I highly recommend. Unfortunately their story is too often told without critique or inquiry into the plausibility of their most extraordinary claims. There are simply too many other possible explanations for their recordings to comprise useful evidence of lost cosmonauts. Is there stuff we still don't know about the Soviet space program? Absolutely. Might it include accidents, even deaths? Probably. Might it include unknown spaceflight failures, possibly even lost cosmonauts? Maybe, but now you're

into territory that western intelligence too easily could have known about. I maintain an open mind on the question.

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2. HOW DANGEROUS IS CELL PHONE RADIATION?

Today we're going to pick up virtually any consumer magazine or open any Internet news web site and read about a frightening new threat: That radiation from cell phones is dangerous, perhaps causing brain tumors or other cancers, maybe even cooking your brain like an egg or like popcorn. Most people have no knowledge of science other than what they hear on the news, so we have a whole population growing up with this understanding. Is the fear justified? Do cell phones have the potential to cause physical harm, or are they completely safe? Or, like so many other questions, is the truth somewhere in the middle?



Let's take a closer look at exactly what kind of threat is being reported. A recent article on CNN.com quotes Dr. Debra Davis, Director of the University of Pittsburgh's Center for Environmental Oncology, saying that "You're just roasting your bone marrow" and asking "Do you really want to play Russian roulette with your head?" The article goes on to give five recommendations for limiting your exposure to cell phone radiation: Using a headset, using the speakerphone, getting a different phone, and so on. CNN followed up with another article with more quotes from Dr. Davis, this time saying that children are especially at risk because their brains are still developing, so they should be allowed to use cell phones in emergencies only.

As the director of an oncology center, she must have all kinds of experience treating cancer patients, and since she's going on CNN to talk about cell phone risks she must have a lot of experience dealing with cancer caused by cell phones. Right? Well, you'd think, but apparently CNN is not quite that particular about their guests. Dr. Davis' Ph.D. is in "science studies", whatever that is, and she is neither a medical doctor nor does she have any specialization in physical sciences like radiation. Now, I'm not trying to disrespect Dr. Davis — she has a fine background loaded with experience and all sorts of publications and accolades in her field — but I do want to draw attention to the fact that when CNN brings a doctor onto television to talk about a health problem, you shouldn't take anything for granted. You're the one who assumed that she treats cancer patients and has seen harmful effects from cell phone radiation. The fact is that the only danger Dr. Davis actually cited was that "since cell phones have only been in widespread use for 10 years or so, the long-term effects of their radiation waves on the brain has yet to be determined." Neither she, nor CNN, cited a single case of harm being caused by a cell phone, nor did they present any theoretical arguments indicating any plausible danger.

Dr. Davis is also dramatically wrong on one very significant point: That there has not yet been time for long-term studies to have been conducted, or that the question of cell phones and cancer is otherwise inadequately studied. In fact, the Journal of the National Cancer Institute published the results of a massive study in Denmark that followed the cancer histories of 420,000 cell phone users over 13 years. You'd think that someone in Dr. Davis' position would know about that, or at least take the slightest trouble to search for studies before going on CNN to proclaim that no such studies exist. The study's main interest was to search for increased incidences of brain or nervous system cancers, salivary gland cancer, and leukemia. The study concluded:

Risk for these cancers ... did not vary by duration of cellular telephone use, time since first subscription, age at first sub-