

Will the Manhattan Project Always Exist?

- 3 Quarks Daily

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Will historians and archaeologists a few thousand years from now believe that scientists in the mid-twentieth century split the atom? That they even created a nuclear bomb? There's a good chance the answer will be "no." If nothing else, there's reason to think this could be a contentious point among men and women of learning, debatable on both sides.

A span of thousands of years is both extremely short and impenetrably long. It's short because human nature will not change much in that time. Which means our human tendency to discount the past and pooh-pooh the achievements of antique cultures will not have diminished. Dismissing *technical* achievements in the remote past is especially tempting. We're willing to believe that people philandered and murdered and philosophized uselessly like we do today, but we conveniently reserve the notion of technical progress for ourselves. It's really a

poverty of imagination: *They didn't have the tools or libraries or scientific understanding we do today, so how could they have accomplished much?* We tend to conflate science and technology, as if one cannot exist without the other. But without much science the Greeks did calculate the circumference of the earth; the Chinese did invent paper, gunpowder, and the printing press eons before Europeans; the Polynesians did navigate thousands of miles of open ocean on tiny barks; and the Egyptians (among many others) did log as much about the movement and appearance of stars and planets as astronomers know today. Nor are those special examples, or even unique—many technologies arose more than once.

It's a commonplace that history written by "winners" in wars is unreliable. It's even more unsettling to realize that normal, everyday history is just as flimsy. The theory that people before Christopher Columbus thought the earth was flat—possibly the biggest, stupidest swindle (http://www.amazon.com/Inventing-Flat-Earth-Columbus-Historians/dp/027595904X/ref=sr_1_1?ie=UTF8&s=books&qid=1254071531&sr=8-1) in the history of history—more or less sprung from one book, a fictionalized biography of Columbus written by Washington "Rip van Winkle" Irving in the late 1820s. Irving needed a little drama to make Columbus more than a lucky thug, so he invented the flat-earthers. Within a decade, and apparently independently, a Frenchman with a beef against Christianity invented a flat-earth conspiracy of his own—that Church fathers in the olden days had been so beholden to a few favorite Bible passages they couldn't see the evidence for sphericity in front of their own noses. Never mind that this view was considered almost heretical by the Church itself: The idea of priests and other trembling idiots afraid of falling off the edge of the world meshed so well with what people in 1800s wanted to believe about the remote past that they swallowed the tale whole, and virtually every school book since has included some version of the story.



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If the past is any guide to the future, people will do to us what we have done unto others, and they'll have a hard time believing that so primitive a people as us could have harnessed nuclear power. After all, we lacked computers, uranium refineries, missiles, lasers, and dozens of other fundamental pieces of equipment in the 1940s. No one even knew about nuclear fission until 1939. And we're supposed to believe a few labcoats in the desert built a bomb *from scratch*?

The big difference, obviously, between ancient cultures and cultures today is our hyperography: We document anything. Newspapers especially have recorded every day since about 1800 onward, and by now there's an almost hour-by-hour record online. But that's where four or so thousand years starts to look very, very long—time for plenty of accidents to occur. Who in the BCs ever dreamed that the Library at Alexandria would be wiped off the face of the Earth? Languages, too, will have evolved in unrecognizable ways. English will be a dodo, and we might not employ the same numerals or mathematical notations, either. Most printed media, including books—all made of cheap, convenient, mass-market paper—will have long since succumbed to pests or pollutants, crumbling into flakes. Digital media are even less stable over the long term; there's a significant

chance that almost nothing we're "archiving" nowadays will survive to the year 3000, much less later. Paradoxically, our abundance of documents means we set little store on preserving any one item. And regardless, our long-term track record for preservation is laughable. Few works were better known in ancient times than the plays of Sophocles and Aeschylus, yet barely any exist now. Even Plato barely survived history's guillotine—throughout medieval times, Plato was unknown in the West, living on only in Muslim countries and in footnotes to other Greek authors. Had the Muslims been worse stewards, or been conquered by marauding Christians who needed kindling or toilet paper, Socrates would have died in vain.

But let's say that stray references to the Manhattan Project survive, and that a few pedants can even read our hieroglyphics. If the dismissive tendencies outlined above don't throw doubts on the Manhattan Project, there are other reasons to be skeptical. Americans generally are very spiritual, and there's no more cinching argument for dismissing the knowledge of the past than to point out how immersed people were in some all-consuming religion. (Obviously most of the scientists themselves were not believers; they simply lived in a religious society. But it's exactly that sort of fine point that has a way of getting lost over long stretches of time.) Indeed, what will be easier to believe in retrospect—that people doing calculations by hand built nuclear weapons advanced enough to wipe out the planet? Or that a religious society took some mundane event, a science conference in New Mexico, and mythologized the whole thing? It has all the necessary elements: A small group of elite demigods, a war in the background between ultimate good and evil, heavenly objects like planes, a Jesus-like exile in the Los Alamos desert, a potent symbol in the mushroom cloud rising on the horizon ...

Besides (you can almost hear a future Foucault arguing) if these people were so clever, why didn't they *do* anything with their hard-won technical knowledge? We can read in tree rings and the tiny flakes of ice around the poles that they were turning the atmosphere into a giant kiln of carbon dioxide. Why didn't

these geniuses convert to relatively clean nuclear power? Would they really have been so blind as to keep pushing forward, deciding that when fossil fuels got scarce that the best thing to do was double their dependency on them? Rubbish.

(This last objection could apply to more than just nuclear energy—but that just reinforces my general point. Will it really seem plausible to future generations that we spent so much effort to get to the moon ... and then shrugged, giving up space exploration to drive cars on Earth? Hell, there already is an angry cabal of people who don't think we ever got to the moon. Lord help us if one of their tracts is one of the few books that survives until 6000. To future generations, such a work might seem like a deductive proof our idiocy—that for all our achievements in building roads and dams and skyscrapers, our very greatest talent was for deluding ourselves, fantasizing about bombs and flying to other planets.)



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Probably the hardest evidence about nuclear bombs to account for would be the physical evidence, the forensics. Not bomb silos—those might have been anything. Churches, even. I mean lingering atoms and radioactive isotopes. But even those can be explained away. There has been at least one *natural* nuclear reaction in the Earth's past (albeit the very remote past), at a place called Oklo (<http://en.wikipedia.org/wiki/Oklo>), in Africa. (I'm not kidding.) So there's at least some precedent for nuclear activity without humans. Most radioactive isotopes will have decayed in a few millennia anyway, returning to background

levels. The ratios of non-radioactive elements that are left over won't be normal, but we could create clever explanations for that, too. Barring any future catastrophes, virtually all the nuclear bombs in Earth's history will have gone off between about 1945 and 1975—a period that will look suspiciously narrow in the future, practically instantaneous. In that case, an abundance of radioactive stuff could have resulted from the after-effects of a cosmic ray burst or gamma ray burst in space, or could have been the interstellar jetsam and flotsam of a supernova explosion. Terrestrial nuclear fallout would seem about the least likely explanation.

If nothing else, we can always count on good old human myopia to erase any hints that people way back when did something brilliant. Nuclear technology will never disappear, but much of the nuclear waste generated today will have long since been buried and forgotten about. The rest of the nuclear stuff, the still-fissile material, will likely be recycled into newer nuclear plants or advanced weapons. And after untold generations of ushering uranium or plutonium or whatever from plant 2.0 to plant 2.1 or missile 3.0 to missile 3.1, the ultimate origin of that material will be lost. They're atoms, after all, and don't have labels. We cannot uncreate nuclear material, but people can (and will) forget its source. Like so many other technologies and discoveries, humans will pinpoint its emergence at more recent date, and even if a few dissident historians insist otherwise, facts won't trouble the majority of people, who find it more comfortable to believe that we today were flat-earthers of a different sort.

Any of the arguments above would apply *a fortiori* if civilization breaks down worldwide in the next few millennia, whether through disease, overpopulation, an asteroid impact, or a prolonged war. If any of those things happen, we'll seem especially archaic, and any of our achievements will seem as remote and unlikely to earthlings in 6000 AD as the tales of Homer do today. There's about only one thing that could unequivocally prove to people that we did possess nuclear weapons at such an early stage in human evolution: a nuclear holocaust. Probably better to be forgotten, even snickered at.