

## What was the Tower of Pisa originally built for?

Dear Cecil:

I have been searching for the answer to this question for some time now. I hope you can solve my dilemma. What was the Leaning Tower of Pisa originally designed to house? Such as, apartments, shops, observatory, monument, etc. Thank you in advance for any help. --

Rebecca Smith



Dear Rebecca:

You get questions in this business that give you pause. The other day someone writes in and says, "If making a robot limb is so hard but other types of machines are easy, how come no animal species has ever evolved wheels?" Had to think about that for a while. The purpose of the L.T. of Pisa is in a similar vein. Since, unlike the wheel thing, the answer isn't likely to come to you by process of introspection, I'll just come out and tell you: it's a *campanile*. This perhaps raises additional questions in your mind, e.g.:

Q: What's a *campanile*?

A: A bell tower.

Q: Why a bell tower?

A: Why not? Guys, being guys, always want to build towers. In fact, the region around Pisa was famous for them. But the best excuse for a tower they could come up with in the 12th century was: We could put bells on it! Whereas we 20th-century sophisticates, with our mature grasp of the architectonic possibilities, would be more likely to say: What a great place for a satellite dish.

Q: Seriously.

A: "The bell tower [was] begun in 1174 as the third and final structure of [Pisa's] cathedral complex," the *Encyclopaedia Britannica* says. *Scientific American*, however, says construction started in 1173. I'm not saying *EB* screwed up. But you remember what they said about drawing and quartering.

Q: So what's the deal with the slant?

A: You've heard the expression "building on sand"? The Leaning Tower of Pisa is exhibit A. All of the Piazza dei Miracoli, the square in which the tower stands, is subsiding, but the spot under the LT seems particularly unstable. The tower began to lean while it was still under construction.

Q: So why'd they keep going?

A: You've never dealt with contractors. During the first phase of construction, from 1173 to 1178, the tower began to lean slightly north. When they got to the third level the builders made the walls higher on the north side and shorter on the south side to level out the top.

Q: Why didn't they just start from scratch?

A: Maybe they figured nobody would notice. Another thing contractors do a lot. An alternative explanation comes to mind when you look at a cross section of the tower. The thing is massive, with masonry walls maybe eight or nine feet thick at the base. All told, the tower weighs 14,700 metric tons. The guys may have figured, no way we're doing *this* sucker over.

In 1178 construction halted due to "political unrest." (Probable translation: the unions went on strike.) By the time construction resumed in 1272, the building was leaning the opposite way, toward the south. A reasonable crew would have concluded: this project is doomed. Let's see if we can unload it on somebody with astigmatism. Not the Pisans. They added stories four through seven. At level five, having previously zigged south, they decided to zag north, making the walls noticeably taller on the south side in an attempt to square things up. This gives the building the squashed-layer-cake look it has today.

Construction halted again in 1278 (more unrest) and resumed in 1360. Bear in mind that it was now 187 years after the first stone was laid, the tower was dangerously out of true, and there were still no bells in it. What the hell, said the Pisans, let's put in some bells. They added the eighth and final story, the bell chamber, which zagged even further north, and at some point installed the first of seven bells. The largest of these, cast in 1655, weighed nearly three and a half tons.

Q: These people had no clue.

A: Maybe not, Ms. 20-20 Hindsight, but the thing is still standing today, more than 800 years after it was started. How long do you think that aluminum siding on your garage is going to last?

That said, the fact that something has lasted 800 years is no guarantee it's going to last 900. Despite, and in a couple cases because of, various ameliorative efforts, the tower's tilt steadily increased over the centuries, so that today it's about 17 feet out of true (pretty steep tilt for a building that's only 185 feet high). Remarkably, the bells were still rung, and the public was still allowed to climb to the top.

Then in 1989 a similar bell tower collapsed. Oops, said the Pisans. They promptly closed the Leaning Tower and began some serious rehab. The most visible signs of this are 750 metric tons of lead weights piled around the north side of the base and steel straps around the second level to keep it from collapsing under the weight of the unevenly loaded masonry above. Results to date: It's still standing, but I wouldn't want to have a picnic under it. With apologies to the guy on Usenet whose sig I ripped off the following from, the latest plan is to take out the bells and put in a clock.

Q: Why a clock?

A: Because it's no use having the inclination if you haven't got the time.

--CECIL ADAMS, The Straight Dope