

The Conquest Of Jericho

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Science In Light Of Scripture Series
Valley Bible Church

Today we will examine the familiar account of the falling of Jericho's walls in Joshua 6. Surely only the one true God has the credentials to pull this one off! Have you wondered how a marching parade lasting 7 days around the heavily fortified city of Jericho concluding with a deafening yell could somehow cause the walls to fall? If you were one of those Israelite soldiers wouldn't you possibly be thinking how strange this "battle" is? I would think that their faith in God working through Joshua would encourage them to continuing this parade as day 4 followed by day 5 followed by day 6 went by without any actual fighting! Hebrews 11:30-31 echoes the significance of faith in this specific situation ...the assurance of things unseen (Heb 11:1)

By faith the walls of Jericho fell down after they had been encircled for seven days. By faith Rahab the harlot did not perish along with those who were disobedient, after she had welcomed the spies in peace. (NASB1995)

Why did God use marching soldiers followed by loud yelling to knock the walls over? In other words why didn't God just knock down the walls Himself? Was marching and yelling really necessary? Was it only a show of might to further weaken the morale of those inside Jericho? Recall the battle against Amorite Kings when Joshua commanded the sun and moon to stand still? God participated directly in that battle by throwing hail stones killing more Amorite soldiers than the Israelite army did. No parading in that conquest. But this time God gives instructions only. More like do this and the walls will fall. Presuming that God always has reasons for what He does we are led to ask this question: What was the purpose of marching and yelling? This morning we will consider a possible answer to this question.

God's Reputation Sent Shivers Down The Backs Of The Canaanites

Joshua 6:1-25 (BSB)

Now Jericho was tightly shut up because of the Israelites. No one went out and no one came in.

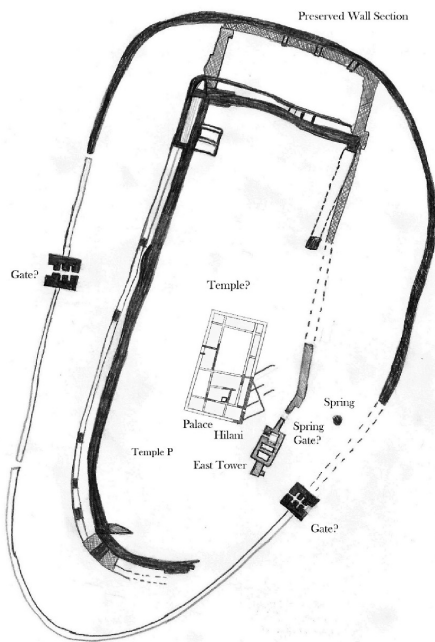
No courage remained in any Canaanite man because God's reputation went before the Israelites. The spies reported this as well as Rahab.

Joshua 2:24 (NASB1995) They said to Joshua, "Surely the LORD has given all the land into our hands; moreover, all the inhabitants of the land have melted away before us."

Joshua 2:9-11 (NASB1995). 9 ... the LORD has given you the land, and that the terror of you has fallen on us, and that all the inhabitants of the land have melted away before you. 10 "For we have heard how the LORD dried up the water of the Red Sea before you when you came out of Egypt, and what you did to the two kings of the Amorites who were beyond the Jordan, to Sihon and Og, whom you utterly destroyed. 11 When we heard it, our hearts melted and no courage remained in any man any longer because of you; for the LORD your God, He is God in heaven above and on earth beneath.

At that time the typical strategy for the invading army was to build a siege ramp against the outer city wall to eventually gain access inside, sometimes taking years. Notice how Jericho was ready for this strategy to play out. Jericho was "tightly shut up". A spring brought water literally under the walls. Archaeologists found many large jars full of grain all intact (quite an unusual find since grain was valuable and usually plundered)...Jericho would have been able to fight off enemies for many months if its walls had not fell. So God's plan was to build a ramp, but to build it instantly. And by using the very walls of Jericho to do so! Instead of constructing a ramp to climb up and over the city walls, God had the reverse plan of causing the walls to fall making a ramp instantaneously. Now that is how the God of the universe builds a ramp!

Below left: sketch map and lower right photo of Ancient Jericho . Upper right jars full with grain in Jericho.



The Walls of Jericho

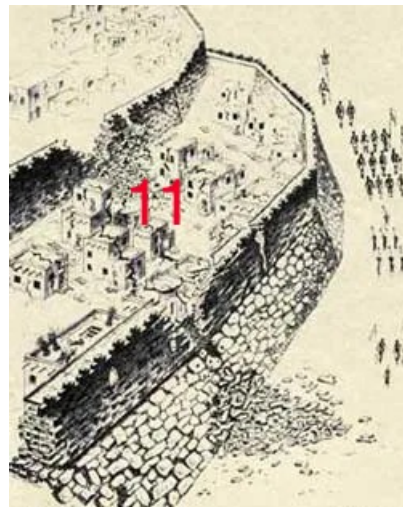
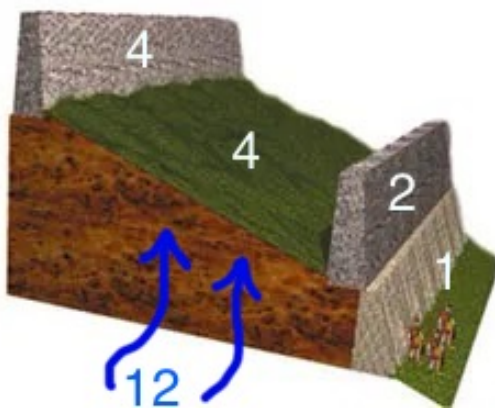
(numbers refer to sketches below)

1. These walls were structured on a three tiered plan. The walls started with an earthen rampart, or embankment, which ran from ground level, upwards on an incline to a stone retaining wall. The stone retaining wall stood 12 to 15 feet in height (4-5m).
2. On top of the stone wall, stood another wall made of mud-bricks, 6 feet (2m) thick, and 20 to 26 feet (6-8m) high. Together, these two walls combined to form a fortification 32 to 41 feet high.
3. To put this into perspective, envision a 4 story tall building. Such was the height of the walls of Jericho.
4. On the other side of the double wall, the embankment continued to climb upwards. At the summit of the embankment, another mud-brick wall stood.
5. At their base, the walls of Jericho stood 46 feet (14m) above ground level outside the retaining wall. To the Israelites below, Jericho seemed impenetrable.
6. The illusion created by the two walls on the bottom, and the large wall at the crest of the embankment, seemed to stand nearly 10 stories in height from ground level! From this height, the Israelites must have seemed like ants, and surely were deemed no threat whatsoever.
7. The fact that God instructed Joshua and the Israelites to walk around the city, would suggest that the walls of Jericho were not that wide in diameter.
8. In fact, the upper city, contained within the top walls of Jericho, was only 6 acres. However, the area of the Upper City, combined with the fortification system, was about 9 - 10 acres total.
9. With this in mind, it is very plausible that the Israelites could march around the city several times in one day.
10. The population of Jericho, within the Upper City, was probably around 1,200 people.
11. However, people were living in the space between the walls of Jericho, on the embankment, and houses were built as part of the wall as well because the spies escaped via rope from her house (Josh 2 and 6)
12. Spring provided secure water source but the ground between the 2 walls was most likely saturated with water making ground failure likely when the ground is shaken

From <http://www.israel-a-history-of.com/walls-of-jericho.html>

Numbers in sketches below correspond to numbers above.

Much of the following information and sketches about Jericho was taken from <https://biblearchaeologyreport.com/2019/05/25/biblical-sites-three-discoveries-at-jericho/>



God's Instructions To Joshua

2And the LORD said to Joshua, “Behold, I have delivered Jericho into your hand, along with its king and its mighty men **3**March around the city with all the men of war, circling the city one time. Do this for six days. **4**Have seven priests carry seven rams horns in front of the ark. Then on the seventh day, march around the city seven times, while the priests blow the horns. **5**And when there is a long blast of the ram's horn and you hear its sound, have all the people give a mighty shout. Then the wall of the city will collapse and all your people will charge straight into the city.” **6**So Joshua son of Nun summoned the priests and said, “Take up the ark of the covenant and have seven priests carry seven rams horns in front of the ark of the LORD.” **7**And he told the people, “Advance and march around the city, with the armed troops going ahead of the ark of the LORD.”

How Many Marched?

- Numbers 26:2 “Take a census of all the congregation of the sons of Israel from twenty years old and upward, by their fathers’ households, **whoever is able to go out to war in Israel.**”
 - **7** These are the families of the Reubenites, and those who were numbered of them were 43,730.
 - **14** These are the families of the Simeonites, 22,200.
 - **18** These are the families of the sons of Gad according to those who were numbered of them, 40,500.
 - **22** These are the families of Judah according to those who were numbered of them, 76,500.
 - **25** These are the families of Issachar according to those who were numbered of them, 64,300.
 - **27** These are the families of the Zebulunites according to those who were numbered of them, 60,500.
 - **34** These are the families of Manasseh; and those who were numbered of them were 52,700.
 - **37** These are the families of the sons of Ephraim according to those who were numbered of them, 32,500.
 - **41** These are the sons of Benjamin according to their families; and those who were numbered of them were 45,600.
 - **43** All the families of the Shuhamites, according to those who were numbered of them, were 64,400.
 - **47** These are the families of the sons of Asher according to those who were numbered of them, 53,400.

- 50 These are the families of Naphtali according to their families; and those who were numbered of them were 45,400.
- 51 **These are those who were numbered of the sons of Israel, 601,730.**

Now, since Josh 6:3 says that “all the men of war” marched around Jericho, we will assume about 600,000 men marched.

Center of ancient Jericho at the yellow pin. Assuming one square meter per man, (about 1 square yard or 9 square feet) for all 600,000 men to march around the city together would require a width of 250 meters (about 700 feet) from the oval with the red cross in it, Jericho, to the outermost red oval).



How Did They March?

Jos 6:14 And the secondh8145 dayh3117 they compassedh5437 the cityh5892 **onceh6471 h259**, and returnedh7725 into the camph4264: so they didh6213 sixh8337 daysh3117.

- **6471.** M(a-a pa)am pa)ama4h, pah'-am, pah-am-aw';
From 6470; a *stroke*, literally or figuratively (in various applications).
:-anvil, corner, foot (-step), going, [hundred-] fold, X now, (this) + once, order, rank, step
- **6470.** M(a-f pa4)am, paw-am';
A primitive root; to *tap*, that is, beat regularly; hence (generally) to *impel* or *agitate*, move.
- **259.** dxf)e 8eh9a4d, ekh-awd';
A numeral from 258; properly *united*, that is, *one*; or (as an ordinal) *first*.
:-a, alike, alone, altogether, and, any (-thing), apiece, a certain [dai-] ly, each (one), + eleven, every, few, first, + highway, a man, once, one, only, other, some, together.
- The same word “onceh6471 h259” is used in Jos 6:3, 11 and 14. In verse 15 it says “... marched around the city in the same manner seven times; only on that day they marched

around the city seven times.” (NASB) **Perhaps the “same manner” refers to how they marched, not that they encircled the city again.**

From **A Concise Dictionary** of the words in **The Hebrew Bible**; with their renderings in the **Authorized English Version** by **James Strong, S.T.D, LL.D.** L A R I D I A N , Cedar Rapids, Iowa , Hebrew-Aramaic Dictionary of the King James Version , Electronic Files ,Copyright © 2005, Laridian, Inc.

Examples Where Humans have shaken the earth and structures

70,000 sports fans make earthquake <http://www.king5.com/news/local/Seahawks-fans-cause-12th-Man-quake-during-Lynch-touchdown-113208789.html>

Everything has a particular resonance frequency, or preferred vibration, where the object shakes with the greatest amplitude...like breaking a wine glass with only sound of the correct resonant frequency. The Northridge earthquake had a dominant frequency equal to the resonance of six story buildings so more of them were damaged than buildings shorter and also taller.

Football game example

"It's all real," said John Vidale, Director of **Pacific Northwest Seismic Network**. "People were shaking the stands, the stands were shaking the ground and it [was] going to the instruments."

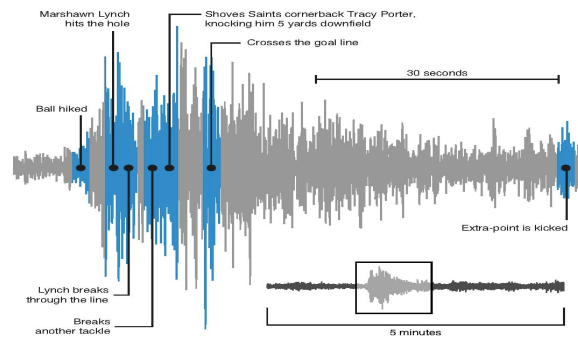
Pace for pace with Lynch, an old geologic sensor planted where the Kingdome used to be recorded actual seismic vibrations from the ground at 4:43 p.m.

"People were losing their minds and screaming and kicking and stomping," said Vidale.

The vibrations time out in perfect correlation with the build-up, Lynch's run, and the celebration, Vidale said. Seismic activity was recorded for about 90 seconds.

"It took him about 20 seconds to run the touchdown," said Vidale, "We recorded 30 seconds of strength, and then for about a minute afterward."

It's not something that happens every time there's a touchdown at Qwest Field, or anywhere else for that matter. According to Vidale, perhaps the only similar instance of seismic activity around a sporting event was in February, 2006, during an African Cup of Nations soccer match. Cameroon scored a goal, and a seismic instrument picked up the



Marching soldiers example

In April 1831, a brigade of soldiers marched in step across England's Broughton Suspension Bridge. According to accounts of the time, the bridge broke apart beneath the soldiers, throwing dozens of men into the water. After this happened, the British Army reportedly sent new orders: Soldiers crossing a long bridge must "break stride," or not march in unison, to stop such a situation from occurring again.

From Vaishnavi Patil, "Can A Contingent Of Marching Soldiers Collapse A Bridge?," *ScienceABC*, July 8, 2022. <https://www.scienceabc.com/humans/can-a-contingent-of-marching-soldiers-collapse-a-bridge.html>

The Tacoma Bridge example



The Tacoma Narrows Bridge collapses in 1940.

At Jericho

Resonance could be significant because the resonant frequency of soil is about 2 hertz...about the frequency of marching soldiers. Now notice that

- there was sloping soil between the two walls
- at least some of that soil was saturated with water due to the spring
- saturated soil when shaken can liquify, called liquefaction
- perhaps enough shaking by the soldiers marching softened or slid the soil downward removing support from the outside of the top walls
- so the walls were subject to falling outward due to their curved shape
- But what caused the walls to fall after the great shout? Clearly, God could have ordained that moment for the walls to fall...or perhaps more vibrations were to come related to the great shout...

8After Joshua had spoken to the people, seven priests carrying seven rams horns before the LORD advanced and blew the horns, and the ark of the covenant of the LORD followed them. 9While the horns continued to sound, the armed troops marched ahead of the priests who blew the horns, and the rear guard followed the ark. 10But Joshua had commanded the people: “Do not give a battle cry or let your voice be heard; do not let one word come out of your mouth until the day I tell you to shout. Then you are to shout!” 11So he had the

ark of the LORD carried around the city, circling it once. And the people returned to the camp and spent the night there.

Notice the horns were blowing every day they marched but they could say nothing until the last (seventh) march on the last (seventh) day and only when Joshua commanded them to shout. Why?

12Joshua got up early the next morning, and the priests took the ark of the LORD. 13And the seven priests carrying seven rams horns kept marching ahead of the ark of the LORD and blowing the horns. The armed troops went in front of them and the rear guard followed the ark of the LORD, while the horns kept sounding. 14So on the second day they marched around the city once and returned to the camp. They did this for six days. 15Then on the seventh day, they got up at dawn and marched around the city seven times in the same manner. That was the only day they circled the city seven times. 16After the seventh time around, the priests blew the horns, and Joshua commanded the people, "Shout! For the LORD has given you the city!" 17Now the city and everything in it must be devoted to the LORD for destruction. Only Rahab the prostitute and all those with her in her house will live, because she hid the spies we sent. 18But keep away from the things devoted to destruction, lest you yourself be set apart for destruction. If you take any of these, you will set apart the camp of Israel for destruction and bring disaster upon it. 19For all the silver and gold and all the articles of bronze and iron are holy to the LORD; they must go into His treasury. 20So when the rams horns sounded, the people shouted. When they heard the blast of the horn, the people gave a great shout, and the wall collapsed. Then all the people charged straight into the city and captured it. 21At the edge of the sword they devoted to destruction everything in the city" man and woman, young and old, oxen, sheep, and donkeys.

Consider this narrative from the Web.

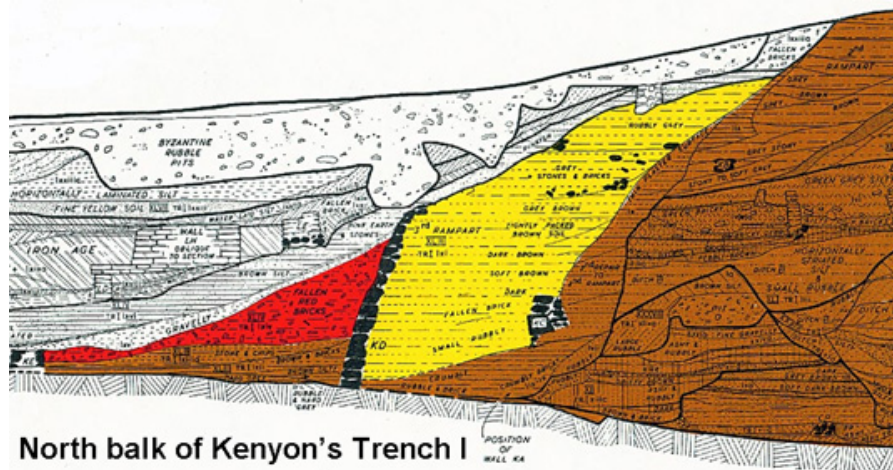
On the seventh day, the Hebrews did something different. Instead of just one trip around the city, they make seven. Because of this, I'm guessing that by the seventh trip around the city the crowd on the wall had grown to the point that nearly everyone therein had found a good viewing spot. It probably never occurred to the architects that nearly everyone in the entire city would ever ascend the wall at one time, but they all wanted a good view of the Israelite army parade. I wonder if anyone thought to ask, "I wonder how many people that wall will hold at one time, anyway?" The Jews had followed the same procedure each day for six previous days--rather uneventful as parades go. In their state of wonderment and terror, I can imagine that the Jericho people filled every place on the wall where a view was possible, and they stood (or sat) there motionless listening to music and watching thousands of soldiers pass by.

Then, something very unexpected happened. The whole Hebrew army let out a resounding shout at the same time. Startled by the deviation from the established parade program, everyone on the wall probably jumped or scrambled at the exact moment of the shout causing an enormous jolt to the structure of the wall. The weight, the sudden jolt in reaction to the shout - it was just more than that poor wall could stand, and it collapsed under the pressure of so many people standing on it and simultaneously physically reacting to the shout. It is probably safe to conclude that many inhabitants of the city were killed immediately upon the collapse of the wall. The job for the Hebrew army after that was simply executed. This conjecture in no way diminishes the miracle, but it does show that God's plan may have had a method we can understand. Had they not marched around Jericho the six preceding days, the crowd would not have known to gather to watch. By the seventh day, a shout was all that was necessary to cause the

sudden jolt from the people on the wall sufficient to bring down the house (so to speak). What a great plan! <https://www.bibletrack.org/notes/resource/misc/Jericho.html>

Archeological Evidence Is Consistent With Scripture

This cross-section shows how the upper wall (grey shading) now lays down on top of the lower wall (yellow and red)



This cross-section drawing of Kenyon's west trench, shows the fallen red mud bricks from the collapsed city wall that reached almost to the top of the revetment wall, creating a natural siege ramp. Illustration Credit: Associates for Biblical Research <https://biblearchaeologyreport.com/2019/05/25/biblical-sites-three-discoveries-at->

Notice the sequence of events in verse 20

20 So when the rams horns sounded, the people shouted. When they heard the blast of the horn, the people gave a great shout, and the wall collapsed. Then all the people charged straight into the city and captured it.

Perhaps the upper wall foundation was loosened by all the marching vibration over 7 days. The soil on the slope between the walls slid downward some since it had no where else to go. The upper wall was ready to fall outward having lost support on the downslope side. Finally, startled by the loud shout the residents of Jericho hastily left their viewing spots on the wall creating the last vibration that sent the wall downward creating a ramp of rubble in the process for the Israelites to enter the city. So God used the walls of the city to produce a seize ramp in only a matter of seconds.