

Kyle,

Ben mentioned on his podcast that you'd brought up something about vibrational properties at the sites. That got me thinking, and I fell down a rabbit hole. What came out the other end is a single hypothesis that might explain four different anomalies with one mechanism.

I want to run it by you because you've had your hands on the stones. You've scanned the surfaces. You've seen the interior joint geometry that nobody else is documenting. If this idea has legs, your data might be able to test it.

The Core Idea: Vibrational Grinding

What if the polygonal masonry wasn't carved to fit? What if it was *ground* to fit—two stones vibrating against each other at high frequency until they automatically achieved perfect contact?

Here's the mechanism:

1. Bring two stones into rough contact
2. Apply sustained high-frequency vibration to both
3. With abrasive medium (ite, sand, water) at the interface
4. Vibration causes thousands of micro-impacts per second at contact points
5. High-pressure points experience more abrasion
6. Low-pressure points experience less
7. **The process is self-correcting**—surfaces automatically converge toward maximum contact
8. Continue until desired fit is achieved

The key insight: **you don't need to measure anything**. You don't need master craftsmen with decades of training. You don't need to cut Block B to match Block A. You just vibrate them together and let the physics do the work.

The pillowed surfaces we see? That's the signature of this process. Centers of faces (lower initial contact pressure) retain more material. Edges and corners (higher contact pressure) get abraded more.

The complex polygonal shapes? They're not designed. They're **emergent**—the geometry that naturally results when you let contact optimization run to completion.

The Interior Joint Geometry

This is where I think you have data that could confirm or kill this hypothesis.

You've scanned those walls in Cusco where earthquakes shifted the stones. You've documented the interior surfaces—the parts that were never meant to be seen.

From what I understand, those interior faces show:

- Pillowing that continues into the joint
- Curvature that **changes direction** as it goes deeper
- Complex 3D topology, not flat contact surfaces

If that's accurate, it rules out:

- **Casting/geopolymer:** Molds produce uniform interiors
- **Conventional chiseling:** Produces flat mating surfaces
- **Template grinding:** Would show consistent curvature throughout

But vibrational grinding *predicts* exactly this signature. The process follows actual 3D contact topology into the invisible spaces. It doesn't care about appearance—it cares about contact. So it keeps optimizing the fit even where no one will ever see it.

If your scans show interior geometry consistent with contact-following abrasion rather than tool-following shaping, that's significant.

The Nubs: Anchor Points

Now let's talk about those mysterious protrusions—the “nubs” or “bosses” found on so many megalithic stones.

Standard explanation: lifting points, or unfinished surfaces they didn't bother to remove.

Problem: They're often positioned where they'd be useless for lifting. They appear on lower courses more than upper courses. And why would perfectionist builders who achieved sub-millimeter tolerances leave rough protrusions all over their work?

Alternative explanation: **The nubs are anchor points for the vibrational device.**

When you apply high-frequency vibration to a surface, the device wants to “walk”—to migrate across the stone due to the oscillation. You need attachment points to keep it coupled to the stone.

The nubs are where the transducers attached. They're on lower courses because those stones were processed first, when the technique was being applied. They cluster in specific positions because those positions provided stable coupling for sustained vibration.

After the work was done, some nubs were removed (the clean surfaces). Others were left in place (too much effort to remove, or the builders moved on).

The nub distribution pattern might actually map the vibrational device attachment points.

Transport: Same Technology

Here's where it gets interesting. The same mechanism that fits stones together could *move* them.

A 2020 paper in *Frontiers in Mechanical Engineering* documents that vibration reduces friction by up to 89%. Under ultrasonic vibration, the contact between surfaces enters a “walking slip” cycle—stick, slip, stick, slip, thousands of times per second.

Now imagine a 100-ton stone on a prepared trackway. Normally, you'd need enormous force to overcome static friction. But if you vibrate the stone at high frequency:

- Friction drops to 11% of normal
- The stone enters “walking slip” mode
- With each oscillation cycle, it advances slightly
- Sustained vibration = sustained forward motion

The stone doesn’t levitate. It doesn’t need to. It just needs to *walk*.

The “cart ruts” of Malta—those mysterious grooves cut into bedrock that go off cliffs and underwater—might not be cart tracks at all. They might be the wear signature of vibrational transport. Stone after stone, vibrated along the same path, abrading the same groove into the bedrock.

Same technology. Different application.

Tube Drilling: Same Technology Again

You’ve seen the core-drilled holes in Egyptian granite. The spiral grooves. The clean cuts through incredibly hard stone.

Christopher Dunn documented something strange: in some drill holes, the drill cut *faster* through the harder quartz than through the softer feldspar. That’s backwards. Abrasion should cut faster through softer material.

Unless the quartz was *participating* in the process.

Granite is 20-60% quartz. Quartz is piezoelectric—it vibrates in response to oscillating pressure. Apply ultrasonic vibration to a tube drill with abrasive, and the quartz crystals in the granite **resonate sympathetically**. They amplify the cutting action at their own locations.

The harder quartz doesn’t resist the cut. It *helps* it. Because it’s vibrating in sync with the tool.

Same technology. Third application.

One Technology, Four Anomalies

So here’s the hypothesis in full:

The ancient builders had a vibrational technology—some method of generating sustained high-frequency oscillation and coupling it to stone. They used it for:

1. **Fitting:** Stone-to-stone vibration with abrasive = polygonal masonry
2. **Transport:** Stone-to-ground vibration = friction reduction, “walking” motion
3. **Drilling:** Tube-to-stone vibration with abrasive = core drilling with quartz resonance
4. **Attachment:** Device-to-stone coupling = the nubs as anchor points

One technology. Four applications. Explains the precision without requiring impossible hand-carving. Explains the transport without requiring impossible labor forces. Explains the drill signatures without requiring impossible tool materials. Explains the nubs without requiring them to be “unfinished.”

What Would Confirm This

The hypothesis makes testable predictions:

1. **Interior joint geometry** should show contact-following topology, not tool-following marks. Your scans could check this.
2. **Nub positions** should cluster at mechanically optimal attachment points for vibration coupling, not random locations or lifting-optimal positions.
3. **Surface microstructure** at joints should show signatures consistent with vibrational abrasion—different from chisel marks or grinding marks.
4. **Cart rut cross-sections** should show wear patterns consistent with oscillating load, not rolling load.
5. **Drill hole analysis** should show faster cutting through piezoelectric minerals if ultrasonic vibration was used.

You've got equipment. You've got site access. You've got scans nobody else has.

I'm not asking you to validate anything on the show. I'm asking whether this framing matches what you're seeing in the data. Because if it does, it's worth pursuing. And if it doesn't—if the interior geometry shows something else entirely—that's worth knowing too.

The Simplest Explanation

Occam's Razor says prefer the simplest explanation. But "simple" doesn't mean "familiar." It means "explains the most with the least."

The conventional explanation requires: unknown tools that leave no marks, unknown transport that leaves no trace, unknown motivation for meaningless precision, unknown reason for skills that disappeared without record.

The vibrational hypothesis requires: one technology (sustained high-frequency oscillation) applied in different ways to achieve different results. Using physics we understand. Making predictions we can test.

I don't know if it's right. But it's the first explanation I've seen that actually *explains* something, rather than just filling space where an explanation should go.

Let me know if any of this lands.

Best,
Justin

Key Sources

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