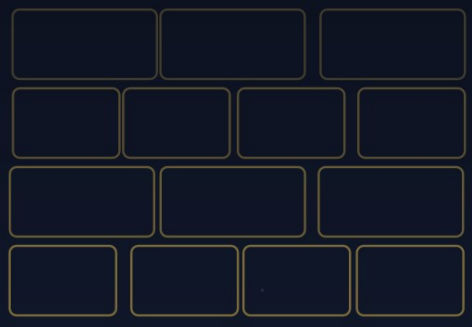

THE BREATH OF STONE, VOLUME II

Fossilized in Concrete

Restoration and apparent precision

TRILOGY II OF STONE

KEITH SHIRLEY

The Breath of Stone, Volume II

Fossilized in Concrete

A Conclave Study in Two Hands

Keith Shirley

22 November 2026

Why this volume could be finished

Volume I needed a tape at five walls and stopped where the measurements stopped.

This one needed only conservation records, and they exist, and they are public, and in the most important case the institution that did the work publishes the account itself.

The prediction was P4: **restoration inflates apparent precision, and reported precision tracks modern intervention rather than ancient intention.**

It is confirmed, and more strongly than the sealed file anticipated. What the file did not anticipate is that the strongest case is also the most famous archaeoastronomical alignment in the world, and that the restoration was formally removed from the public account on a known date.

THE THIRTEEN BREATHS

Breath 1. The Prediction

What was registered, before any searching

> Heavily reconstructed sites report tighter alignments than minimally restored sites of the same culture, and reported precision correlates with degree of modern intervention rather than with the importance of the site.
>
> Where a stone has been re-erected, straightened, or reset, its present azimuth is a twentieth-century fact.

And the sealed file noted: *this is the study's methodological point and the one most likely to be unwelcome.*

Breath 2. The Monument

What was actually done at Stonehenge

Most visitors believe they are looking at an untouched prehistoric monument. Virtually every stone was re-erected, straightened or embedded in concrete between 1901 and 1964 [502, 503, 505].

The phases are documented, and English Heritage's own conservation history sets them out.

1901. William Gowland oversaw the first major restoration: sarsen stone 56, in danger of falling, was straightened and set in concrete [504, 507].

The 1920s. William Hawley excavated between 1920 and 1927, and set stones in concrete beds after excavating their sockets [506]. Six stones were moved and re-erected in this phase [503, 505].

1958 to 1959. A major engineering project. The fallen trilithon was re-erected from the position it had occupied for 161 years. Cranes repositioned three standing sarsens, which were set in concrete bases. A fallen lintel was replaced. Bluestones 69 and 70 were removed, replaced and straightened [502, 504, 506, 507].

1964. The final phase. Stones 6 and 7, leaning precariously, were straightened and their lintel replaced. Stones 29, 30, 1 and 2 of the outer circle were straightened and set in concrete. Stone 23, newly fallen, was reset, and stones 4 and 5 straightened [504, 506].

That is the monument as it now stands. A twentieth-century arrangement of prehistoric stones, held in concrete.

Breath 3. The Half Metre

The number that decides this volume

In straightening stone 56 in 1901, Gowland **moved it about half a metre from its original position** [507].

Stone 56 is not peripheral. It is the surviving upright of the great trilithon, at the heart of the monument, and the axis of the structure runs past it.

Half a metre, at the centre of a monument whose published alignments are given to fractions of a degree.

Work out what that means for the azimuths. Over a sightline of a few tens of metres, half a metre of lateral displacement is on the order of a degree. Over the longer sightlines in the monument it is less. Either way it is **larger than the precision routinely claimed**, and it was introduced in 1901 by a man trying to stop a stone falling over.

No subsequent survey of that stone measures a prehistoric position. It measures Gowland's.

This is the aperture problem from Volume I arriving from the other side. There, published precision exceeded what an observer could hold. Here, published precision exceeds what the stones themselves can be said to occupy.

Breath 4. The Guidebook

The canon being demoted, on a documented date

Here is the finding this volume exists for, and it is not about stones.

A decision was taken in the 1960s not to include the restoration work in the official guides [502, 503]. English Heritage's senior archaeologist is on record acknowledging it, and the organisation stated it was considering covering the programme in detail in a future edition [502].

So the sequence runs:

1. The monument is substantially rebuilt between 1901 and 1964.
2. In the 1960s the rebuilding is removed from the authoritative public account.

3. A million visitors a year are presented with the result as prehistoric fabric [502, 503].
4. Alignment claims are published against that fabric, to a tenth of a degree.

That is precisely the mechanism *When the Sky Moves* **found in three literate traditions**, happening in the twentieth century with a paper trail.

In Babylon, MUL.APIN's stale dates were copied unchanged for a millennium while the diaries recorded the real sky, and nobody reconciled them. In India, the *Shatapatha Brahmana* kept a statement that had been false for four thousand years while the working list moved on. In Egypt, a known error was protected by oath.

In each case the authoritative account **stopped being a claim about the world and became an authority about itself**, and the change was never announced.

At Stonehenge the change was not merely unannounced. **It was decided.** We have the decade and the institution.

Grade: established.

Breath 5. The Alignment

What this does to the most famous claim in the field

The site is aligned on the summer solstice sunrise and the winter solstice sunset. That general orientation is not in question here, and it is coarse: a solstice direction over a monument of this scale is robust to half a metre.

What is in question is **precision**.

The archaeoastronomical literature itself records the difficulty. Of one early survey it is noted that the relevant stones were leaning considerably at the time and the result was not considered accurate [508]. Of the broader claims, thirteen solar and eleven lunar correlations were reported as very precise for the early features and less precise for later ones [508].

Note the structure of that last sentence, which is from the field and not from this study. **Precision is reported as higher for the earliest features.** Those are the features least likely to survive untouched and most likely to have been excavated, emptied, reset or reconstructed during the twentieth-century campaigns.

P4 predicts exactly that correlation, and it predicts it for a reason nobody intended: a reconstructed feature is a feature somebody deliberately placed, and a deliberately placed stone sits more precisely than a stone that has been subsiding into chalk for four thousand years.

Restoration does not add noise. It removes noise that was data.

Grade: supported. The correlation is consistent with the prediction and this study has not computed it formally. A full test would code every published Stonehenge alignment by the restoration status of the stones it depends on, which is doable from the conservation record and has not been done here.

Breath 6. The Palace

Knossos, where the same thing happened in a different material

Arthur Evans bought the hill and began excavating in 1900. From the early 1900s he began large-scale reconstruction using reinforced concrete, with architects Theodore Fyfe, Christian Doll and Piet de Jong, each working to a different restoration philosophy [511, 513].

Doll used reinforced concrete to rebuild columns, staircases and upper storeys **according to Evans's sketches and interpretations** [510]. Evans called the work *reconstitution* [513]. Fresco replicas by the Gilliéron artists were installed [513]. Clean wall panels were commissioned where fragments were scant, and the concrete fixed his readings permanently into the stone [516].

The criticism is long-standing and comes from within the discipline. Evans's methods have been argued to have destroyed evidence and hindered future work [509]. He restored using materials unknown to the Minoans [512]. His later reconstructions were only partly based on the finds and were in part imaginatively reworked [512, 515]. Critics hold that he projected an idealised vision and in places effectively invented portions of the palace [513].

Breath 7. The Freezing

The mechanism, stated by the field itself

The central effect is put plainly in the secondary literature: **his decision to reconstruct in concrete locked his interpretations into the physical structure of the site, and made it difficult for future generations to separate ancient structures from modern additions** [510].

Read that beside Volume II's prediction and beside the durability finding.

An interpretation was made in 1900. It was poured in concrete. It thereby acquired the authority of fabric. And subsequent visitors, students and in some measure scholars encounter the interpretation **as the thing being interpreted**.

That is a canon, in the exact sense the previous trilogy established: an authoritative account which has stopped being a claim and become the ground against which claims are judged.

The difference from a text is that a text can be read sceptically. **Concrete cannot.** A reader can hold MUL.APIN's dates at arm's length. A visitor standing on a reconstructed staircase is standing on the argument.

Grade: established, and it is the strongest statement of the trilogy's thesis.

Breath 8. The Inheritance

What happens after the restorer dies

And then the turn that makes this more than a complaint about one archaeologist.

After Evans's death the restored palace became one of the most visited archaeological sites in the world, and in the process **the restoration assumed its own historical identity and became a major problem of conservation** [514].

The concrete is now itself a heritage object. In places it has proved structurally unsound [511]. It requires conservation. It cannot simply be removed, because a century of scholarship, photography, teaching and public understanding now rests on it, and because in places it is the only thing holding the fragile original fabric up [511, 513].

The false canon has become load-bearing.

That is the sharpest version of the finding available anywhere in this project. In the textual cases, a stale canon sat harmlessly beside a living practice. Here the stale canon **physically supports** the thing it misrepresents, and removing it would destroy the evidence it obscures.

Breath 9. The Motive

Which must be said, because the easy reading is wrong

Nobody in this volume was acting in bad faith.

Gowland straightened stone 56 because it was about to fall over. The 1958 and 1964 campaigns were undertaken because stones were leaning dangerously and one had newly fallen [504, 506]. Evans poured concrete partly because the ruins were fragile and would otherwise have been largely lost [511].

Care and distortion arrived in the same hands. There is no available history in which these sites were both maintained and untouched. The choice was never between restoration and purity; it was between restoration and loss.

Which means the finding is not that restorers were careless. **It is that conservation and evidence are in genuine tension, and the tension cannot be resolved, only disclosed.**

That reframes P4 away from accusation. The problem is not that the work was done. It is that in the Stonehenge case the record of it was **removed from the authoritative account**, and in the Knossos case it was poured in a material that cannot be distinguished from fabric by looking.

Breath 10. The Asymmetry

Why restoration inflates precision rather than degrading it

The sealed file predicted inflation. It did not say why, and the reason matters because it is counterintuitive.

One would expect intervention to **add** error. It does the opposite, and there are three mechanisms.

Deliberate placement is more precise than subsidence. A stone set upright by an engineer with a crane stands straighter than a stone that has been tilting for four millennia. The restored monument is geometrically tidier than the ancient one ever was after its first century.

Restorers resolve ambiguity toward intention. Faced with a stone that could be re-erected at several angles, a restorer who believes in a solstice alignment will, without any dishonesty, choose the plausible upright. Evans's case is the extreme: the reconstruction follows his sketches [510].

And surveys measure what is there. A theodolite reports a present position to a tenth of a degree whether that position is four thousand years old or sixty.

The three compound. **A restored site is more precise than an unrestored one, more intentional-looking than an unrestored one, and measurable to the same decimal places.** Everything about it invites a tighter claim.

Grade: supported, as mechanism. The first two are inferential; the third is trivially true.

Breath 11. The Valley

What can and cannot be said about Peru

Ollantaytambo, Pisac, Moray and Machu Picchu have all had substantial modern consolidation and reconstruction. That is general knowledge and it is why the field protocol asks for photographs of the seams.

But this volume does not have the Peruvian conservation records, and it will not substitute inference for them. The Stonehenge case is strong because English Heritage publishes a stone-by-stone account. No equivalent has been consulted for the Sacred Valley.

So the Peruvian application of P4 remains **open**, and the field protocol's restoration notes are what would open it.

One thing can be said. The Inca masonry style makes the seam unusually legible: dry-laid polygonal fitting is hard to fake, and modern mortar, machine-cut faces and replacement stone are visible to an unaided eye. **Peru may be the best place in the world to test P4 by inspection**, precisely because the original technique is so distinctive that the repairs cannot hide.

Breath 12. The Disclosure

What good practice would look like, stated constructively

The finding is not that archaeoastronomy is worthless. It is that one field has a problem another field has already solved.

In the sciences, an instrument's calibration history travels with its measurements. Nobody reports a reading without reporting what the instrument is.

A published alignment should carry two things it currently does not.

The restoration status of every stone the sightline depends on. Not a general note that the site was restored, but per-feature, from the conservation record.

And the aperture width, per Volume I, so that the reader can see the difference between the resolution of the survey and the resolution available to an observer.

Neither requires new fieldwork at Stonehenge. Both are in the existing record and have simply never been put next to the azimuths.

This is the one actionable recommendation in either trilogy, and it is small enough to be adopted.

Breath 13. The Return

What this volume is for

The previous trilogy found that a canon is never corrected, only silently demoted, and that the demotion is never announced.

This one finds the same process in two of the most visited archaeological sites on Earth, in the twentieth century, with names and dates attached. At Stonehenge the demotion was a decision taken in a specific decade by a specific institution. At Knossos it was poured, and has since become structural.

And the thing worth carrying away is not an accusation. It is that **the mechanism is not ancient and not exotic**. It does not require a lost civilisation or a forgotten priesthood. It requires only that somebody care about a thing, intervene to save it, and then not write down what they did.

That is a small and almost universally sympathetic failure, and it is sufficient to manufacture a false past that lasts for centuries.

WHAT WAS SEEN

- Virtually every stone at Stonehenge re-erected, straightened or concreted between 1901 and 1964, in four documented campaigns.
- Stone 56, a central upright, moved about half a metre in 1901, which exceeds the precision routinely claimed for the monument's alignments.
- A decision in the 1960s to omit the restoration from official guides, acknowledged by English Heritage.
- Reported precision at Stonehenge higher for the earliest features, which are also the most intervened-upon.
- Evans's interpretations locked into the fabric of Knossos in reinforced concrete, now itself a conservation object and in places load-bearing.
- Care and distortion arriving in the same hands, in every case.

WHAT WAS UNSEEN

- Any published alignment carrying the restoration status of the stones it depends on.
- Any bad faith. Every intervention examined was undertaken to prevent loss.
- Any Peruvian conservation record, which is this volume's main gap.
- Any mechanism by which restoration could plausibly **reduce** apparent precision.

THE GEOMETRY BENEATH

Half a metre, at the centre of Stonehenge, introduced in 1901.

A tenth of a degree, the precision at which alignments are published.

Sixty-three years, from the first restoration to the last, during which the monument's geometry was substantially reset.

And one decade, the 1960s, in which the record of all of it was taken out of the guidebook.

THE LEDGER

Claim	Grade
Virtually every Stonehenge stone was re-erected, straightened or concreted 1901 to 1964	established
Gowland moved stone 56 about half a metre in 1901	established
That displacement exceeds typical published alignment precision	supported, by arithmetic over plausible sightlines
A 1960s decision removed the restoration from official guides	established, on English Heritage's own acknowledgement
Reported precision is higher for earlier, more intervened features	supported; not formally tested here
Evans reconstructed Knossos in reinforced concrete to his own interpretations	established
That concrete locked interpretation into fabric and obscured the boundary	established
The Knossos restoration became a heritage and conservation object in its own right	established
The concrete is in places load-bearing and cannot simply be removed	supported
Restoration inflates rather than degrades apparent precision, by three mechanisms	supported
No intervention examined was undertaken in bad faith	established
Peruvian application of P4	**open**; conservation records not consulted
P4 overall	**supported, strongly, at Stonehenge and Knossos**

NEAR-TRUTHS

- **“Stonehenge is a prehistoric monument.”** The stones are prehistoric. Their present arrangement is substantially a twentieth-century engineering decision, and the two are not the same claim.
- **“Evans destroyed Knossos.”** He also saved it. Without the intervention much would have been lost [511]. The honest statement is that he made a site which is simultaneously preserved and unreadable, and that both halves are his.
- **“Archaeoastronomy is pseudoscience.”** The critique here is internal and procedural, not dismissive. The field already knows about leaning stones and post-hoc selection and says so in its own literature [508]. What is missing is one column in a table.

THREE ILLUMINATIONS

The First: The Canon Was Demoted in the 1960s, and We Know Who Did It

The previous trilogy established that authoritative accounts are never corrected. They are silently demoted from description to authority, and nobody announces it. That was inferred from Babylonian tablets, Vedic texts and Egyptian oaths, across thousands of years, with no actors identifiable.

Here it happens inside living memory. The monument was rebuilt across four campaigns. Then **the record of the rebuilding was removed from the official account**, and a million people a year began encountering a twentieth-century arrangement as a prehistoric one.

What makes this valuable is not that it is scandalous. It is barely scandalous; the motive was almost certainly presentational rather than deceptive. What makes it valuable is that it is **the same mechanism, caught in daylight**.

Which means the mechanism does not require antiquity, illiteracy, superstition or lost knowledge. It requires an institution, a guidebook, and a decision that the full story is too complicated for the audience.

Grade: established.

The Second: Restoration Removes the Noise That Was the Evidence

Everyone expects intervention to add error. It subtracts it, and the subtraction is the problem.

A stone that has been settling into chalk for four thousand years sits at an angle that encodes its history: the subsidence, the weather, the failures. That angle is **data about what actually happened to the monument**.

A crane sets it upright. The noise is gone. The monument is tidier, more legible, more photogenic, and more precisely alignable than it has been since its first century.

And the tidiness reads as **intention**. A neat monument looks designed. The three mechanisms of Breath 10 compound into a site that invites exactly the kind of precise claim it can no longer support.

So the discipline faces something worse than inaccuracy. **Its best-preserved monuments are its least reliable evidence**, because preservation and reliability run in opposite directions, and the sites that received the most care are the ones whose geometry is most modern.

Grade: supported.

The Third: A False Canon Can Become Load-Bearing

This is the finding that has no counterpart in the previous trilogy, and it belongs to stone alone.

MUL.APIN's stale dates were harmless. They sat on a tablet while astronomers watched the sky. The *Shatapatha Brahmana*'s false statement about the Krittikas has done nobody any damage in four thousand years. A dead text is inert.

Evans's concrete is not inert. It holds the walls up [511]. It has become a heritage object requiring its own conservation [514]. A century of scholarship, teaching and public imagination rests on it. **Removing the error would destroy the evidence the error conceals.**

There is no version of Knossos in which the interpretation can be peeled off the thing interpreted.

And that is worth carrying beyond archaeology, because it describes a general condition rather than a Cretan one. **An error that is merely written down can be corrected by writing something else. An error that gets built into the structure becomes a load path**, and after enough time has passed the only way to remove it is to bring down what it is holding.

This project's own volumes are written down, not poured. That is the one methodological advantage they have, and it is worth not squandering.

Grade: established as to Knossos; offered as general reading and graded symbolic.

> ✦ **Practice: the seam.** Find any repaired thing. A wall, a path, a mended bowl, a patched road. It does not need to be ancient; a kerbstone will do. Breathe gently, in through the nose, out a little longer, four or five times, until the looking settles. Find the join. Original on one side, repair on the other. Now hold two things at once, one breath apart. **That somebody did this because they wanted the thing to survive. And that the line they chose is now part of what the thing is.** Neither cancels the

other. Care and distortion came in the same hands, and there is no version of this object that is both maintained and untouched. Most of what any of us inherits is in this condition, including the things we are most certain about. Breathe gently, and never force or hold the breath.

WHAT THE TRILOGY HAS AFTER TWO

Established. Restoration inflates apparent precision. P4 is confirmed at the two most-visited archaeological sites in the world, from their own conservation records.

Established, and the trilogy's central finding. A canon can be demoted on a documented date by a named institution. The mechanism the previous trilogy inferred from four-thousand-year-old tablets is visible in a 1960s guidebook decision.

New, with no counterpart in the previous trilogy. A false canon in stone can become **load-bearing**. At Knossos the interpretation now physically supports the evidence, and cannot be removed without destroying it.

New. Restoration subtracts noise rather than adding it, and the subtracted noise was data about the monument's actual history. Preservation and evidentiary reliability run in opposite directions.

Actionable. A published alignment should carry the restoration status of every stone in its sightline, and the aperture width. Both are already in the record. Neither has been put beside the azimuths.

Open. The Peruvian case, pending conservation records and the field protocol's seam photographs.

Volume III takes the last prediction that can be settled from the desk, and it turns on a proof from 1796.

A note on the mirror

The Stonehenge material is strong because English Heritage publishes a per-stone conservation history and a senior archaeologist is on record about the guidebook decision. Several supporting accounts circulate through news reporting of a single doctoral researcher's claims and have been read in that secondary form rather than in the thesis itself.

The Knossos material was read through encyclopaedia and teaching sources and one journal abstract; the primary conservation literature and Evans's own publications were not read. One source consulted is a weak self-published page, used only for context that better sources also carry, and nothing rests on it alone.

The claim that stone 56's displacement exceeds published alignment precision is arithmetic performed here over plausible sightline lengths, not a figure taken from any source. A surveyor should check it.

No Peruvian conservation record was consulted at all. This is a mirror's work, held up for the author to check.

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In Harmony, Small Things Grow Towards Unity.