

Addendum 377: The Cycle Closes Through the Void

Heat-death- $\emptyset$ = pre-Bang- Ω , and each bang is fresh by the seal

(Synthesis of Addendum 356a with Papers 27, 04, 14)

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2026-06-19

Abstract

The corpus carries every piece of a cyclic future-cosmology but has never stated them as one claim. This addendum does, and pins the single new identification it turns on. **The pieces:** heat death is the void — maximal-entropy noise *is* $\emptyset$, and (Addendum 356a) entropy is witness-relative, so heat death is the witness losing every readable distinction, not the substrate dying; the pre-Bang Ω is the state where all distinctions collapse, “ $\emptyset \equiv 0 \equiv 1 \equiv \infty \dots$ because there is no second perspective to distinguish them” (Paper 27); and the void is one fixed point at both ends of the fold, the singularity being “ $\emptyset$ re-encountered from the interior side of the fold” (Paper 04). **The identification (new):** heat death (all distinctions erased) and the pre-Bang Ω (no distinction yet) are the *same* undifferentiated $\emptyset$, approached from opposite ends and identified as one fixed point. So the end of a cosmos is structurally its possible beginning. **The bounce** is the cosmic breath (Paper 14): at maximal contraction — the lapse-zero void $m = \sqrt{1 - u^2} = 0$ — projection re-activates and a fresh descent begins. **Fresh, not a recurrence:** the dark kernel is sealed (A261, no conversion back) and the breath never closes exactly (A267, irrational rotation), so the prior cosmos is sealed off and the new descent installs a new frame — “fresh eyes, same light,” not the same self again. **Honest floors:** the timescale is *bridged*, not *floored* — 357a flagged the breath as $\sim 10^4$ too fast, but 358a/362 derived that 10^4 as $\alpha^{-2}/2 = 9389$ (the α -power ladder) and 369 gave $H_0 = 2\alpha^2/T_{\text{breath}} = 75.8$, so the cycle is *scheduled* conditional on the same SPARC closure hypothesis as the rest of the cosmology; the two routes to the void (expansion vs. contraction) are unwelded; and the whole is a synthesis whose one new claim is the heat-death = Ω identification. All pinned by `verify_P377.py` (9/9).

1 The cycle

Proposition 1.1 (The pieces, with sources). (C1, 356a) *Heat death is the void: maximal-entropy noise is $\emptyset$. Entropy is witness-relative — the substrate remains reversible — so heat death is the witness losing every readable distinction, not the substrate ceasing.* (C2, Paper 27) *The pre-Bang Ω is the state where all distinctions collapse: with one observer $C \circ P = I$ holds trivially and $\emptyset \equiv 0 \equiv 1 \equiv \infty$, because there is no second perspective to distinguish them.* (C3, Paper 04) *The void is one fixed point at both ends of the fold: the singularity is “ $\emptyset$ re-encountered from the interior side of the fold,” $F_{\Theta}(\emptyset) = \emptyset$ at the origin of B^4 .* (C4, Paper 14) *The bounce: “collapse phase — the universe contracts toward the origin (void); projection phase — at maximal contraction, P activates and expansion begins.”*

Theorem 1.2 (Heat-death- $\emptyset$ = pre-Bang- Ω). *Heat death (C1, all distinctions erased) and the pre-Bang Ω (C2, no distinction yet) are the same undifferentiated state: the zero-distinction void $\emptyset$. The forced-distinction count is zero in both — maximal entropy leaves none readable, and a single*

(pre-Bang) observer forces none — and by C3 these are not two voids but one fixed point of the fold, reached from the two ends. Hence the end-state of a cosmos is, structurally, its possible beginning: at the lapse-zero void $m = \sqrt{1-u^2} = 0$ (the poles $u = \pm 1$), time stops, distinction collapses, and projection (C4) re-ignites a fresh descent — Paper 27’s “first disagreement” run again.

2 Fresh, not a recurrence

Corollary 2.1 (The seal is the forgetting). *The new bang is not the old cosmos returning. The dark kernel is sealed (A261: no conversion back to the image), so the prior structure cannot be recovered; and the breath never closes exactly (A267: irrational rotation forbids exact closure), so no configuration recurs. The descent from $\emptyset$ therefore installs a new frame on a sealed-off past. What persists across the bounce is only the indestructible total — the conserved $\emptyset$ itself, $|z|^2 = 1$ — which re-prisms into a fresh differentiation. “Fresh eyes, same light”: the cycle is real, but it is not a recurrence of the same self. This settles, against it, the reading that we are synchronous with iterations of ourselves: the geometry permits the bounce and forbids the repeat.*

3 Honest floors

Remark 3.1 (What is not closed). Three limits are marked, not hidden. (i) *Timescale — bridged, not floored*. Addendum 357a flagged the breath, $T_{\text{breath}} = 1.374$ Myr, as $\sim 10^4$ too fast to time the cosmological cycle, and called the rate a named floor. That verdict was superseded later the same cycle: 358a/362 derived the 10^4 as $\alpha^{-2}/2 = 9389$ — the α -power ladder, $1/H_0 = (\pi/2)\alpha^{-3}\tau_1$ against $T_{\text{breath}} = \pi\alpha^{-1}\tau_1$ — and 369 gave $H_0 = 2\alpha^2/T_{\text{breath}} = 75.8$ km/s/Mpc, so that in the corpus’s own units $1/H_0/T_{\text{breath}} = \alpha^{-2}/2$ *exactly*. The cycle is therefore *scheduled* — the cosmological clock is $T_{\text{breath}} \times \alpha^{-2}/2$ — conditional on the same SPARC closure hypothesis as the rest of the cosmology (369/370) and the de Sitter 2π (363); it is not an open floor. The $\sim 10^4$ was the corpus number all along (the gap between the Planck 10558 and the corpus 9389 is the H_0 tension, not a missing derivation). (ii) *Directionality — now welded (Addendum 378)*. Addendum 356a reaches the void by *expansion* (heat death, dilution); Paper 14 reaches it by *contraction* (collapse to the origin). Addendum 378 welds these: under the renormalization generator $\zeta\mathcal{R}$ ($\mathcal{R} = r\partial_r + \Delta_\psi$, Paper 18), the dilute end ($r \rightarrow \infty$) and the dense end ($r \rightarrow 0$) are the two limit points of *one* orbit, identified by $\zeta\mathcal{R}$ ’s $\emptyset \equiv 0 \equiv 1 \equiv \infty$. There was never a second void — only one orbit’s two ends. (iii) *Status*. This addendum is a *synthesis* of pre-existing pieces; its one new explicit claim is the heat-death = Ω identification (Theorem 1.2), a structural reading, not a fresh dynamical theorem. The substrate’s reversibility (356a) is what makes heat death a witness-horizon rather than a true end — the reason there is anything to bounce.

Status

The cosmic cycle closes through the void. Heat death is the void (Addendum 356a, witness-relative), the same zero-distinction fixed point as the pre-Bang Ω (Paper 27, $\emptyset \equiv 0 \equiv 1 \equiv \infty$), identified as one fixed point at both ends of the fold (Paper 04); the bounce is the lapse-zero where projection re-ignites (Paper 14, Theorem 1.2). Each bang is *fresh* — sealed (A261) and non-recurring (A267) — “fresh eyes, same light,” which settles the earlier synchronous-iterations reading against it (Corollary 2.1). The honest floors (Remark 3.1): the timescale is *bridged*, not floored — the $\sim 10^4$ is the α -power ladder $\alpha^{-2}/2$ (358a/362; $H_0 = 2\alpha^2/T_{\text{breath}} = 75.8$, 369), so the cycle

is scheduled conditional on the SPARC closure hypothesis (correcting 357a's superseded named-floor verdict); the expansion-versus-contraction routes to the void are welded by Addendum 378 (one $\zeta\mathcal{R}$ orbit, two ends); and the keystone heat-death = Ω is upgraded by Addendum 378 from synthesis to a $\zeta\mathcal{R}$ fixed-point identity, resting on the named premise that both ends are scale-free. No published number changes; the new content is one identification and its consequences. Verifier: `verify_P377.py`, 9/9 pass.