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The Partition Concordance: Arm Additivity Measured against the Open Literature, and the Reassignment of Purity to the Structural Filters

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Abstract

Article 79 exports a substituted chrysene from a hydrophobic bulk into an aqueous stock phase and rests that export on H_{add}, under which each polar arm lowers the unit's transfer free energy by an amount depending on the arm type alone. Its Target 2.8 asks for the per-arm enhancement q to be measured. Nothing in the corpus has been tested against a number measured by anyone else.

This paper does that. Because H_{phase} makes the stock phase aqueous and the bulk polyaromatic, Article 79's partition coefficient is an organic-to-aqueous coefficient, so it is the reciprocal of an octanol/water coefficient up to the reference solvent: the concordance is an identification and not an analogy. We then observe that Article 79's ordering theorem is a one-line consequence of H_{add} and therefore carries no empirical content of its own; the content is in the hypothesis, which separates into three claims. Against 6 single-laboratory increments and 28 compiled aromatics we find: every arm lowers the coefficient, so the sign claim holds; the increment does not decay with arm count, so the ladder claim holds; and the increment depends on the locant and not on the arm type alone, failing the third claim by 0.42 log units, which is 60% of one whole arm. Monotonicity survives all three, since the weakest increment is still −0.58. Target 2.8 is discharged at $q = 5.05$ per hydroxyl arm, $q^4 = 651$, and we show this is a lower bound. Carrying a benzene-measured increment to a four-ring core needs a hydrogen-bonding substituent tested across ring count, which a nonpolar control cannot supply; we supply one, and it is flat to 0.11 log units over one to three rings.

Against this, H_{bulk} is refuted and withdrawn. It asserts that an unarmed competitor cannot outrun the chrysene into the stock phase; 11 of 19 measured competitors do, naphthalene by a factor of 324, because aqueous affinity tracks size and size carries no arm. Restricting the competitor set to four-ring polyhexes does not rescue it. Article 79's architecture survives, because its Scholium already routes purity through admission and registry rather than through partition; what changes is that the load on those two filters is now quantified, and that one proposition which did use H_{bulk} is left unavailable for a realistic bulk. We close by showing the four arm types are not commensurable: ionizing an arm is worth 3.6 neutral arm installations, so the single-arm-type ladder understates the real arc by orders of magnitude. The measurement bounds the ionization shift only, not the whole increment of an ionizable arm, and the figure is carried by estimated rather than measured entries; both limits are marked where the number is used.

Keywords: Chrysene Formalism; concordance; partition coefficient; arm additivity; octanol/water; polycyclic aromatic hydrocarbons; admission and registry filters

1 Introduction

The corpus has reached eighty-one articles without once being held against a quantity measured by somebody else. That is not a criticism of the articles, which are formal results and announce themselves as such. It is a description of a gap. A formal programme that intends to describe a material world eventually owes that world a point of contact, and the longer the formal development runs before the first contact, the more expensive a disagreement becomes.

This paper makes the first such contact, and it is a deliberately narrow one. We take one hypothesis from one article, find published measurements that bear on it, and report what they say. We do not calibrate, fit, or tune: no parameter in this paper is adjusted to improve an agreement.

1.1 What is being tested, and what is not

Article 79 [Sch26e] builds a source. A chrysene unit sitting in a hydrophobic polyaromatic bulk acquires polar arms; each arm

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makes the unit less at home in the bulk; and so the act of making the reagent is the act of separating it. The thermodynamic content of that story is Hypothesis H_{add}, imported here as Hypothesis 2.5, and the conclusion drawn from it is an ordering theorem.

It is worth being precise about which of the two a measurement can touch, and the answer differs between the theorem's two clauses. Article 79's ordering theorem asserts first the chrysene ladder $P_0 < P_1 < P_2 < P_3 < P_4$ and second, under the optional H_{bulk}, that $P_d \le P_0$ for every competitor $d \in \mathcal{D}$; its proof reads, in full, that $P_{n+1}/P_n = q > 1$ by H_{add}, the second clause being H_{bulk} [Sch26e, Thm. 5.1]. The two clauses stand very differently with respect to measurement. The first is one substitution from its hypothesis and has no empirical content separate from it (Proposition 3.1), so a measurement reaches it only through H_{add}. The second quantifies over species that can be weighed against each other directly, and is therefore testable as it stands — which is how this paper comes to refute it (§8).

1.2 What this paper finds

1. H_{add} separates into three independent claims (Definition 3.4). Two hold and one fails. The one that fails is the claim that an arm's contribution depends on the arm type and not on where the arm is attached; measured constitutional isomers disagree by 0.42 log units, 60% of a whole arm increment. The ordering survives regardless (Theorem 5.7).

2. Target 2.8 is discharged: $q = 5.05$ per hydroxyl arm, and the value is a lower bound on the quantity Article 79 needs (Theorem 6.1).

3. H_{bulk} is refuted by measurement and is withdrawn (Ruling 8.5). One proposition of Article 79 depended on it and is restated.

4. A hydrogen-bonding substituent shows no ring-count drift over one to three rings (Prop. 7.2), which is the test a nonpolar control cannot perform, and which disposes of the one datum that might otherwise have been read against Theorem 6.1 (Rem. 7.4).

5. The four arm types of Article 79 differ in strength by a factor of 3.6, so the single-arm-type ladder is not the ladder of the arc (Scholium 9.3).

1.3 Standing of the results

Proved here. The content proposition (Prop. 3.1); the identification of the partition coefficient (Prop. 4.1); the survival of monotonicity under a locant-dependent increment (Thm. 5.7); the lower-bound direction of the reference-solvent bias (Prop. 4.4).

Measured. All partition data, imported under Convention 2.1 with source and method recorded, and flagged measured or estimated throughout.

Found. $q = 5.05$ per hydroxyl arm; the locant spread 0.42; the refutation of H_{bulk} at 11 of 19; the arm-type ratio 3.6; and the absence of ring-count drift in a hydrogen-bonding substituent at 0.11 log units over one to three rings (Prop. 7.2).

Withdrawn. H_{bulk} of Article 79, and with it the applicability of that article's single-stage purity bound to a bulk of realistic composition (Appendix B).

Not established. Any statement about a hydroxylated four-ring polyhex, for which no measurement was located; that a *phenolic* increment is ring-count invariant, the benzylic control of §7 notwithstanding; the magnitude of the reference-solvent bias, now carried as H_{cav} (Hyp. 4.5); the increment at the operating pH; and the first rung of the ladder. These are set out in §10 and are not disguised as results.

2 Imported objects and the measured label

Convention 2.1 (The measured label)**.** [A] Article 80's status labels [Sch26c] are extended by one. A quantity marked [M] is taken from the published experimental literature with its source and method recorded. A [M] value is not a theorem of this corpus, carries the uncertainty of its source, and is never an axiom. Any statement derived from [M] values is marked [D] with the data set named as its hypothesis, exactly as a statement derived from a structural hypothesis names that hypothesis. Where a source distinguishes measured from estimated or calculated entries, this paper excludes the estimated entries from every test statistic and reports them separately; a test run on a mixture of measurement and model would be a test of the model.

Notation 2.2 (The two sources)**.** [M] Source T is a single-laboratory octanol/water compilation measured by its authors at 23 ± 1.5 °C [Ins], supplying 10 phenols, one benzylic alcohol and 5 aromatic acids. The benzylic alcohol, 9-hydroxyfluorene, carries its hydroxyl on an sp^3 carbon rather than on the ring and is a benzylic alcohol rather than a phenol; it enters no increment pair in §5, where every pair is phenolic, and is used instead in §7, where its difference in class from the phenols is exactly what makes it useful. Source R is a multi-source compilation of polycyclic-aromatic physicochemical properties [Roy], supplying 29 species of which 28 are experimental; the remaining 1, 7-methylbenzo[a]pyrene, is flagged by its source as calculated and is excluded from every test statistic below. The distinction between a single-laboratory set and a compilation is used throughout and is not cosmetic: a difference taken between two members of T cancels systematic method

bias, and a difference that joins T to R does not. Every increment in §5 is taken inside T for that reason.
A third source W supplies two compounds used only in §7: toluene, from a generator-column measurement [TMWM82], and benzyl alcohol, from a general reference that states no method. The second carries weaker provenance than anything else in this paper and is marked wherever it is used; §7 is written so that its conclusion tolerates a revision of that entry by several tenths of a log unit.

Hypothesis 2.3 (H_{data})**.** [M] The entries of T and R not flagged by their sources as estimated or calculated are measurements of octanol/water partition at the stated conditions, to the precision at which they are quoted. This is the premise every [D] result below rests on, and it is a premise about the world rather than about the corpus.

We import from Article 79 the three objects this paper acts on.

Definition 2.4 (Partition, imported)**.** [C] For a species s, $\Delta\mu_s = \mu_s^{\sigma} - \mu_s^{\beta}$ is the standard transfer free energy referred to the free monomer in σ, and $P_s = \exp(-\Delta\mu_s/k_BT)$ at dilute ideality [Sch26e, Def. 4.19].

Hypothesis 2.5 (H_{add}, imported)**.** [C] $\Delta\mu_{(S,a)} = \Delta\mu_0 + \sum_{\ell\in S}\delta_{a(\ell)}$ with every $\delta < 0$. For one arm type, $q = \exp(-\delta/k_BT) > 1$ and $P_n = P_0 q^n$ [Sch26e, Hyp. 4.20].

Hypothesis 2.6 (H_{bulk}, imported)**.** [C] Under H_{sel}, every $d \in \mathcal{D}$ carries no polar arm, so $P_d \le P_0$ [Sch26e, Hyp. 4.22]. The antecedent is satisfied by construction in §8, where only unsubstituted species are compared. Article 79 marks this optional and names it where used.

Hypothesis 2.7 (H_{phase}, imported)**.** [C] σ is a volumetric aqueous phase in which free stock monomers and their columnar aggregates are dissolved, and β is a hydrophobic polyaromatic phase [Sch26e, Hyp. 4.14, Def. 4.13].

Target 2.8 (Per-arm enhancement, imported)**.** [C] Measure q for the bulk/stock pair, and separately establish that e_n at $n = 2$ is large enough for export to compete with the next substitution at all [Sch26e, Target 14.2].

3 Where the empirical content sits

Proposition 3.1 (The first clause carries no independent content)**.** [A] *Let P_n be a positive sequence. Then $P_{n+1}/P_n > 1$ for $0 \le n \le 3$ if and only if $P_0 < P_1 < P_2 < P_3 < P_4$. Hence the first clause of Article 79's ordering theorem is logically equivalent to its four successive ratios exceeding unity, which H_{add} supplies directly; no observation can bear on that clause except through H_{add}. The restriction to the first clause is essential: the second clause is not of this form and is refuted outright in §8.*

Proof. Immediate in both directions, dividing by $P_n > 0$. The equivalence is the point: a statement equivalent to a conjunct of its own hypothesis adds nothing testable to it. The second clause, by contrast, compares distinct species and so has content H_{add} does not supply. □

Remark 3.2. [A] This is not a demotion of Article 79's theorem, which is correctly stated and correctly proved, and which does useful bookkeeping where it is cited. It is a statement about where a measurement can enter. A reader who wishes to know whether the chrysene arc is thermodynamically sound must interrogate H_{add}, and this paper accordingly spends its measurements there.

Remark 3.3 (A defect in the proof as written)**.** [A] Article 79's proof of the ordering writes $P_{n+1}/P_n = q$, with a single q. By Hypothesis 2.5 that equality holds for one arm type; the arc of Article 79 installs four (§9). With mixed arms the correct line is $P_{n+1}/P_n = q_{a(\ell)} > 1$ for whichever arm is installed at step $n+1$, and the conclusion is unchanged, since every $\delta < 0$ gives strict monotonicity whatever the arm. The conclusion of Article 79's theorem therefore stands as stated; only the displayed ratio in its proof is too specific. We record this rather than correct it silently.

Definition 3.4 (The three claims of H_{add})**.** [A] Hypothesis 2.5 asserts the conjunction of

(S) *Sign.* Every $\delta < 0$: each arm lowers the transfer free energy out of the bulk.

(A) *Additivity.* $\Delta\mu$ is a sum of per-arm terms, so an arm's contribution does not depend on how many arms are already installed. For one arm type this is the geometric ladder $P_n = P_0 q^n$.

(L) *Locant independence.* The increment is $\delta_{a(\ell)}$, indexed by the arm type at ℓ; it does not depend on ℓ itself.

The three are independent, and §5 tests each separately.

4 The identification

Proposition 4.1 (Article 79's coefficient is an inverse octanol/water coefficient)**.** D *Assume H_{phase}. Then P_s is the equilibrium ratio of the concentration of s in an aqueous phase to its concentration in a hydrophobic aromatic phase. Consequently, for a reference pair in which the hydrophobic member is n-octanol,*

$$\log_{10} P_s \;=\; -\log_{10} K_{\text{ow}}(s) \;+\; c, \tag{1}$$

with c a species-independent constant absorbing the standard-state convention. In particular, for two species differing by one arm, $\Delta \log_{10} P = -\Delta \log_{10} K_{\text{ow}}$ exactly, with c cancelling.

Proof. By H_{phase}, σ is aqueous and β is a hydrophobic aromatic phase, so $\Delta\mu_s$ is the transfer free energy from a hydrophobic phase into water, and $P_s = \exp(-\Delta\mu_s / k_B T)$ is the corresponding aqueous-over-organic ratio at dilute ideality. The octanol/water coefficient K_{ow} is the organic-over-aqueous ratio for the pair (octanol, water), whence the sign reversal in (1). The standard-state constant is species-independent by Definition 2.4 and cancels in any difference. □

Remark 4.2 (Why this is an identification and not an analogy)**.** A It would be easy to present octanol/water data as a loose proxy for a formal quantity. That is not the situation. H_{phase} commits Article 79 to an aqueous stock phase and a hydrophobic bulk, which is the same *kind* of partition that K_{ow} measures. What differs between the two is the identity of the organic phase, and nothing else. Proposition 4.4 shows that this one difference biases the comparison in a known direction.

Hypothesis 4.3 (H_{ref}, the reference phase)**.** D *n*-octanol is a hydrogen-bond donor and acceptor; a polyaromatic tar is neither. A polar arm transferred out of octanol is therefore already partly solvated at its origin, while the same arm transferred out of a tar is not.

Proposition 4.4 (The measured increment is a lower bound)**.** D *Under H_{ref} and H_{cav} (Hypothesis 4.5), for an arm capable of hydrogen bonding,*

$$\left|\Delta \log_{10} P^{\text{tar}}\right| \;\geq\; \left|\Delta \log_{10} P^{\text{oct}}\right|, \tag{2}$$

so a q obtained from octanol data understates the q of the bulk/stock pair of Article 79.

Proof. Write the transfer out of phase X into water as $\Delta\mu^X = \Delta\mu^X_{\text{cav}} + \Delta\mu^X_{\text{hb}}$, separating the cavity and hydrogen-bonding contributions. Installing a hydrogen-bonding arm changes $\Delta\mu_{\text{hb}}$ by the arm's hydrogen-bond gain in water less its gain in X. Under H_{ref} that subtrahend is positive for octanol and zero for a tar, so the hydrogen-bonding part of the change in $\Delta\mu$ is more negative for the tar by the arm's hydrogen-bond gain in octanol, call it $\gamma > 0$.
The cavity part is not common between the two reference phases and must be carried. Installing the arm enlarges the solute, raising the cavity cost in water and in X alike; the change in $\Delta\mu_{\text{cav}}$ is the difference of the two, and it depends on X through that phase's cohesive energy density. Write the discrepancy between the two reference phases as ε. Then $\Delta \log_{10} P^{\text{tar}} - \Delta \log_{10} P^{\text{oct}}$ has the sign of $-(\gamma + \varepsilon)$, and (2) follows whenever $\gamma + \varepsilon > 0$, which is Hypothesis 4.5. □

Hypothesis 4.5 (H_{cav}, the cavity residue)**.** D $\gamma + \varepsilon > 0$: the arm's hydrogen-bond gain in octanol is not outweighed by the difference between octanol and a polyaromatic tar in the cavity cost of the volume the arm adds. Two considerations support it and neither is a measurement. An h arm adds a small volume, so ε is a difference of two small quantities, while γ is a full hydrogen bond; and octanol and a condensed polyaromatic phase have comparable cohesive energy densities, both far below water's, which bounds $|\varepsilon|$ further. The hypothesis is named rather than assumed, and is listed in §10.

Remark 4.6. A The magnitude of the gap in (2) is not established here; only its sign. Quantifying it requires measured partition into a non-hydrogen-bonding aromatic reference phase, which is recorded as Target 10.3. Until then every q in this paper should be read as a floor.

5 The three claims against measurement

Each row of Table 1 is a pair of species from source T differing by exactly one aromatic hydroxyl on the same core, so that by Proposition 4.1 the tabulated difference is $-\Delta \log_{10} P$ for the installation of one h arm, with the method bias cancelled by Notation 2.2.

Table 1: One-arm increments inside source T, each pair differing by exactly one aromatic hydroxyl on a common core. "Arms" is the arm count before and after installation; "Loc." is the locant class of the installed arm relative to the one already present. Entries are $\Delta \log_{10} K_{ow}$ in log units; by Prop. 4.1 each equals $-\Delta \log_{10} P$. Emitted by E2.

From	To	Arms	Loc.	$\Delta \log_{10} K_{ow}$
phenol	catechol	1→2	o	−0.58
phenol	resorcinol	1→2	m	−0.69
phenol	hydroquinone	1→2	p	−1.00
catechol	pyrogallol	2→3	o	−0.73
m-cresol	4-methylcatechol	1→2	o	−0.64
guaiacol	3-methoxycatechol	1→2	o	−0.58
mean				−0.703
standard deviation				0.143

Table 2: Methyl increments inside source R, per methyl group. The nonpolar control of Scholium 5.2, and the ring-count probe of Prop. 6.3. Emitted by E6.

Species	Rings	$\Delta \log_{10} K_{ow}$
1-methylnaphthalene	2	+0.520
2-methylnaphthalene	2	+0.650
2-methylphenanthrene	3	+0.720
3,6-dimethylphenanthrene	3	+0.365
2,6,9-trimethylphenanthrene	3	+0.490
2,7-dimethylpyrene	4	+0.515
1-methylfluoranthene	4	+0.280
2-methylchrysene	4	+1.020
mean		+0.570

5.1 Claim (S): sign

Theorem 5.1 (The sign claim holds)**.** [D] *Under H_{data} and H_{phase}, every one of the* 6 *increments of Table 1 is negative, with mean* −0.703 *and standard deviation* 0.143 *log units, taken over the population of six and used again as the tolerance in Theorem 5.3. They run from* −1.00 *at the strongest to* −0.58 *at the weakest, a range of* 0.42 *log units, and the weakest is bounded away from zero. Hence each installed h arm raises P, and $\delta_h < 0$ as H_{add} requires.*

Proof. Arithmetic on Table 1; E2. The sign conversion is Proposition 4.1. □

Scholium 5.2 (The control that makes this about polarity). A decrease in $\log_{10} K_{ow}$ on adding any group whatever would be a weaker result than it appears, since it might reflect nothing but a change in size. Table 2 is the control: the methyl group, which is nonpolar, moves $\log_{10} K_{ow}$ the other way in all 8 measured cases, with mean +0.570 and the weakest case still +0.280. The effect in Theorem 5.1 is therefore attributable to the polarity of the arm and not to its bulk.

5.2 Claim (A): additivity

Theorem 5.3 (The ladder does not saturate)**.** [D] *Under H_{data}, the locant-matched increments at one and two arms installed are* −0.58 *and* −0.73 *log units respectively. The second is the larger in magnitude, by* 0.150*. No decay of the per-arm increment with arm count is detected; since the test is one-sided at the scatter* 0.143 *and rests on a single pair of legs, what the data support is that any decay is smaller than* 0.143 *log units, not that none is present.*

Proof. Both legs install a hydroxyl ortho to an existing hydroxyl: phenol to catechol, then catechol to pyrogallol; E3. □

Remark 5.4 (How much this one comparison can carry)**.** [A] Theorem 5.3 rests on a single pair of legs, and their environments are matched but not identical: the arm installed at the second step is ortho to one hydroxyl and meta to another, while the arm installed at the first has only the ortho neighbour. The residual mismatch is a locant effect of the kind measured in Theorem 5.6, where the full spread is 0.42 log units, against a signal here of 0.150. The conclusion is therefore that no saturation is *detected*, not that none is present; a second independent series would be needed to say more.

Remark 5.5 (A trap in the comparison, and why it is recorded)**.** [A] The natural comparison is not the correct one, and it fails in the direction of a false alarm. Averaging the three constitutional isomers at two arms gives a one-to-two step of −0.757, against which the two-to-three step of −0.73 appears *weaker* by +0.027 — an apparent saturation, and therefore an apparent threat to the ordering at high arm count. That signal is an artefact. The isomer average folds the locant spread of §5.3, which is 0.42 log units, into a test whose own signal is the +0.027 just quoted — some

fifteen times smaller than the noise the comparison thereby admits. A signal that far below its own noise cannot be read. A concordance programme will meet this shape of error repeatedly, so the rule is stated once here: an increment may be compared only against an increment matched in locant class.

5.3 Claim (L): locant independence

Theorem 5.6 (The locant claim fails)**.** [D] *Under* H_{data}*, the three constitutional isomers of dihydroxybenzene — identical core, identical arm type, identical arm count, one laboratory — have* $\log_{10} K_{\text{ow}}$ *equal to* 0.92, 0.81 *and* 0.50 *for the ortho, meta and para isomers. The spread is* 0.42 *log units, which is* 60% *of the mean single-arm increment of Theorem 5.1. Hence* δ *depends on the locant and Hypothesis 2.5 is false as written.*

Proof. E4. The three species differ only in the relative position of the two arms, so any difference in $\Delta\mu$ is a locant effect by construction. □

Theorem 5.7 (Monotonicity survives the failure)**.** [D] *Let* $\delta_a(\ell)$ *depend on the locant as well as the arm type, and suppose only that* $\sup_{a,\ell} \delta_a(\ell) < 0$*. Then* $P_0 < P_1 < \cdots < P_4$ *for every installation order and every assignment of arms to locants; that much is unconditional. Under* H_{data} *in addition, the measured supremum over Table 1 is* −0.58 *log units, so the premise holds on the data in hand.*

Proof. Each installation multiplies P by $\exp(-\delta_a(\ell)/k_B T) > 1$, uniformly bounded below by $\exp(-\sup\delta/k_B T) > 1$. The product telescopes and is independent of order. □

Remark 5.8 (What is lost, and what is not)**.** [A] Theorem 5.7 is weaker than H_{add} in exactly one respect, and it is the respect Article 79's downstream numerics use. The ordering is intact and order-independent. The *ladder* $P_n = P_0 q^n$ is not: with a locant-dependent increment it becomes a product of unequal factors, and the single q is a mean over a spread of 0.42 log units per arm. Article 79 already quarantines this, stating that its exit, design and efficiency theorems hold for general e_n and that only the window, the bottleneck bound and the cooperativity identity use the ladder [Sch26e, Hyp. 4.21]. That quarantine is the right one and now carries a measured width.

Scholium 5.9 (The core mitigates its own locant problem). Article 79 arms the chrysene at the 3-, 6-, 9- and 12-positions on a core of C_{2h} symmetry [Sch26e, §4]. The inversion centre identifies 3 with 9 and 6 with 12, so the four arms occupy 2 symmetry orbits rather than 4 free locants, and at most two distinct values of δ_h can arise. The locant spread of Theorem 5.6 was measured on benzene, where all three isomers are inequivalent; on this core the available inequivalence is halved. This does not repair H_{add}, which asserts one value and not two, but it bounds the damage: the aggregate over four arms is $q_A^2 q_B^2$, a ladder in two parameters.

6 The per-arm enhancement

Theorem 6.1 (Target 2.8, partially discharged)**.** [D] *Under* H_{data}*,* H_{phase} *and* H_{ref}*, the per-arm enhancement for a hydroxyl arm referred to octanol is* $\log_{10} q = 0.703$*, so*

$$q_h = 5.05, \qquad q_h^4 = 651, \tag{3}$$

and by Proposition 4.4 each is a lower bound on the corresponding quantity for the bulk/stock pair. The locant spread of Theorem 5.6 propagates to a band $q \in [3.80, 10.00]$ *and* $q^4 \in [209, 10000]$.

Proof. $\log_{10} q = -\Delta \log_{10} K_{\text{ow}}$ by Proposition 4.1, evaluated at the mean of Table 1; the band takes the extreme increments. E3. □

Remark 6.2 (Which half of the target this discharges)**.** [A] Target 2.8 asks two things: measure q, and establish that e_n at $n = 2$ is large enough for export to compete with the next substitution. Only the first is addressed here. The second is a comparison of rates, not of equilibria, and passing from q to e_n requires H_{trans} of Article 79, which asserts that the re-entry barrier is arm-count independent and which no partition measurement can test. The target is therefore reduced and not closed; it is restated as Target 10.4.

Proposition 6.3 (Transfer across ring count is licensed but not verified)**.** [D] *Under* H_{data}*, the per-methyl increment of Table 2 has mean* +0.570 *with standard deviation* 0.215 *across* 8 *species, and its means over the* 3 *ring-count classes present span* 0.080 *log units. Since the between-class spread does not exceed the within-set scatter, the* methyl *increment exhibits no systematic drift with ring count over two to four rings.*

Remark 6.4 (What a methyl series can and cannot bound)**.** [A] Proposition 6.3 is stated for methyl and not for arms in general, because the mechanisms by which a ring-count dependence could arise are not the same. A methyl increment is dominated by cavity formation, which is a property of

the substituent and only weakly of the core. A hydroxyl increment is dominated by hydrogen bonding, whose strength depends on the electron density at the substituted position and so on the ring system — the same dependence that makes phenol and naphthol differ in acidity. A flat methyl series therefore bounds the cavity component of a ring-count drift and says nothing about the hydrogen-bonding component, which is the component that matters for h. The next section supplies the missing test.

Proof. E6. □

7 The benzylic control

Remark 6.4 leaves a hydrogen-bonding substituent untested across ring count. One is available, and it is the compound §2 set aside.

Scholium 7.1 (A confounded comparison, and how to deconfound it). It is tempting to read 9-hydroxyfluorene directly against the phenols of Table 1: both carry one hydroxyl, the former on three rings and the latter on one, and the two differ by −0.74 log units. That reading is confounded. The compounds differ in *two* variables at once — ring count and hydroxyl class — and the difference cannot be assigned to the first without controlling the second. Holding the class fixed instead isolates the ring-count term, and the pair needed to do so exists.

Proposition 7.2 (A hydrogen-bonding substituent does not drift with ring count)**.** [D] *Under H_{data}, installing a benzylic hydroxyl gives*

one ring:	*toluene → benzyl alcohol*	−1.55
three rings:	*fluorene → 9-hydroxyfluorene*	−1.44

in log units. The two differ by 0.11*, which is within the cross-source scatter* 0.215 *of Table 2. A hydrogen-bonding hydroxyl therefore shows no ring-count drift over one to three rings.*

Proof. E9. Both increments are cross-source — the first joins W to W, the second T to R — so the comparison is made at the precision of a cross-source difference and not better. □

Corollary 7.3 (The set-aside datum carries no ring-count signal)**.** [D] *The* 0.74 *log units separating 9-hydroxyfluorene from the phenol mean are a hydroxyl-class effect, not a ring-count effect. The same class difference measured at one ring, where no ring-count term can contribute, is already* 0.85 *log units; the residue unaccounted for by class is* 0.11.

Proof. Immediate from Proposition 7.2 and Theorem 5.1; E9. □

Remark 7.4 (The misreading this forecloses)**.** [A] The consequence is worth stating in the form a sceptical reader would reach for. Taken as though it were a phenolic increment on a polycyclic core, 9-hydroxyfluorene would give $q = 27.5$ in place of 5.05 and $q^4 = 5.75 \times 10^5$ in place of 651, and would reduce the count underlying Ruling 8.5(2) from 5 of 11 to none. It cannot be taken that way. Corollary 7.3 accounts for its entire departure from the phenol series without any ring-count term, and Article 79's h arm is in any case an *aromatic* hydroxyl: the locants 3, 6, 9, 12 of chrysene are aromatic CH positions, while C9 of fluorene is an sp^3 bridge. The datum measures a different arm. It does not discharge obligation (2) of §10 and it does not displace Theorem 6.1.

Remark 7.5 (The weakest joint in this paper)**.** [A] With §7 in hand the joint is narrower than it was, but it has not closed, and it should be read for what it is. Proposition 7.2 shows that a hydroxyl's increment does not drift with ring count when the hydroxyl is *benzylic*; Article 79's arm is *phenolic*. The two classes differ by some 0.8 log units in magnitude (Cor. 7.3), and nothing here establishes that a quantity which is flat in one class is flat in the other. No measured $\log_{10} K_{\mathrm{ow}}$ for a hydroxylated four-ring polyhex was located (§10), so the quantity Article 79 needs has still not been measured by anyone, and Theorem 6.1 reaches the chrysene by inference and not by observation. What has changed is the standing of that inference: it now rests on a hydrogen-bonding substituent measured across ring count, rather than on a nonpolar one.

8 The withdrawal of H_{bulk}

Theorem 8.1 (H_{bulk} is false)**.** [D] *Under H_{data} and H_{phase}, H_{bulk} requires $\log_{10} K_{\mathrm{ow}}(d) \geq \log_{10} K_{\mathrm{ow}}(\mathit{chrysene}) = 5.86$ for every unarmed competitor $d \in \mathcal{D}$. Of the* 19 *unsubstituted measured species of source* R*,* 11 *violate this, that is* 58%*; the extreme case is naphthalene at* 3.35*, whose P_d exceeds P_0 by a factor of* 324*.*

Proof. Table 3; E5. The direction of the inequality is Proposition 4.1. □

Remark 8.2 (What the factor of 324 is, and is not)**.** [A] The *direction* of Theorem 8.1 transfers to the bulk/stock pair without qualification: a smaller aromatic prefers water

Table 3: Unarmed competitors violating H_{bulk}. Column P_d/P_0 is the excess over unarmed chrysene; P_d/P_2 compares against a *two-armed* chrysene at $q = 5.05$. Emitted by E5, E5c.

Species	Rings	$\log_{10} K_{\text{ow}}$	P_d/P_0	P_d/P_2
naphthalene	2	3.35	323.59	12.69
acenaphthylene	3	3.61	177.83	6.97
acenaphthene	3	3.92	87.10	3.41
fluorene	3	4.18	47.86	1.88
dibenzothiophene	3	4.38	30.20	1.18
anthracene	3	4.50	22.91	0.90
phenanthrene	3	4.52	21.88	0.86
pyrene	4	5.00	7.24	0.28
fluoranthene	4	5.20	4.57	0.18
benzo[c]phenanthrene	4	5.76	1.26	0.05
benzo[b]fluoranthene	5	5.78	1.20	0.05

more than a larger one does, in any organic reference phase. The *magnitudes* in Table 3 do not transfer so cleanly. Proposition 4.4 bounds the octanol-to-tar bias only for a hydrogen-bonding arm; nothing here bounds it between two unarmed species of different ring count, which is what the table compares, and the cancellation of the constant c in (1) is exact only if c is independent of molecular size as well as of species. The ratios should therefore be read as octanol-referenced, like q in Theorem 6.1, and unlike q they are not bounded in a known direction. Quantifying this is part of Target 10.3.

Scholium 8.3 (Why the hypothesis was plausible and is still wrong). H_{bulk} reasons that a species carrying no polar arm has no means of preferring water, hence cannot prefer water more than the unarmed chrysene does. The inference fails because aqueous affinity has a second determinant, and that determinant is size, which no arm supplies. A smaller aromatic presents a smaller cavity to the aqueous phase and pays a smaller cavitation cost; naphthalene, at two rings, outruns the four-ring chrysene into the stock phase by 324-fold on this account alone. The hypothesis is not an unlucky guess about magnitudes but an omission of a mechanism.

Proposition 8.4 (The natural rescue fails). D *Under H_{data}, restricting $\mathcal{D}$ to competitors of chrysene's own size and ring type does not restore H_{bulk}: among four-ring-and-larger polyhexes, 2 measured species still violate it, namely pyrene, benzo[c]phenanthrene. A ring-count hypothesis on $\mathcal{D}$ is therefore not available as a repair.*

Proof. E5. The polyhex restriction is proper: acenaphthylene, acenaphthene, fluorene, the fluoranthenes and indeno[1,2,3-*cd*]pyrene each carry a five-membered ring and dibenzothiophene a sulfur heterocycle, so none belongs to the class Article 79's pattern corollary [Sch26e, Cor. 4.5], resting on Article 40's enumeration [Sch26b], addresses, and all are excluded before the count is taken. □

Ruling 8.5 (H_{bulk} is withdrawn). D Hypothesis H_{bulk} of Article 79 is withdrawn as false under H_{data}. The following are the consequences, and they are stated in full because a withdrawal that does not trace its own dependents is worthless.

1. *The ordering theorem.* Its second clause, $P_d \le P_0$ for every $d \in \mathcal{D}$, is withdrawn. Its first clause — the chrysene ladder — is untouched, and Article 79 already records that only the first clause is used downstream.
2. *Single-stage purity.* Article 79's purity proposition [Sch26e, Prop. 5.3] assumes H_{bulk} and writes the competitor contribution as $q^{-2}(N_{\mathcal{D}} + N_0) + q^{-1}N_1$. That term is understated: 5 of 11 measured violators reach the stock phase more readily than a *two-armed* chrysene does, naphthalene by 13-fold. The proposition is therefore unavailable for any bulk containing aromatics below four rings, which is to say for any bulk of realistic prebiotic composition.
3. *The architecture.* Nothing structural follows. Article 79's filter scholium already states that partition does not discriminate an armed competitor at degree two, and routes purity through admission and registry [Sch26e, Sch. 8.14]; those filters are predicates and geometry, and neither appeals to H_{bulk}. What changes is that the load they carry is now a measured quantity rather than a bounded one.

Scholium 8.6 (The favourable residue). One consequence runs the other way. Among the 4 four-ring polyhexes of source R that are measured — the class has seven members in all [Sch26e, Prop. 4.4], so this is a subset and the ranking is a ranking within it — (Table 4), chrysene ranks 2 of 4 by $\log_{10} K_{\text{ow}}$, within 0.05

Table 4: Measured four-ring polyhexes of source R, the competitor class of Article 79's pattern corollary (Cor. 4.5). Fluoranthene is excluded as cyclopenta-fused. Emitted by E5b.

Species	$\log_{10} K_{ow}$
benz[a]anthracene	5.91
chrysene ←	5.86
benzo[c]phenanthrene	5.76
pyrene	5.00

Table 5: Aromatic acids of source T, neutral form and pH 7. **Every pH 7 entry is flagged by the source as estimated or corrected**; the sign is secure and the magnitude is not measured. Emitted by E7.

Acid	neutral	pH 7	shift
vanillic acid	+1.40	−1.14	−2.54
4-hydroxybenzoic acid	+1.55	−0.87	−2.42
trans-ferulic acid	+1.79	−0.65	−2.44
syringic acid	+1.21	−1.45	−2.66
gallic acid	+0.38	−2.30	−2.68
mean shift			−2.55

log units of the most bulk-retained and 0.86 above the least, in a class spanning 0.91. Chrysene is thus at the hydrophobic end of its own competitor class: of the four-ring polyhexes it is among those least inclined to leave the bulk unarmed, so what moves it out is the arming and not its bare solubility. This is the premise Article 79 needs and it is now measured rather than assumed. It is not a maximum — benz[a]anthracene at 5.91 is above it — and should not be stated as one.

9 The arm types are not commensurable

Article 79 installs four arm types: h = -OH; o, an oxalate monoester; e, a hydroxyethoxy arm; and e_P, its phosphate monoester. Two of the four carry an ionizable acid. H_{add} permits distinct δ per arm type, so the question is not whether they differ but by how much.

Proposition 9.1 (The ionization penalty)**.** [D] *Under* H_{data}*, for the* 5 *aromatic acids of source* T *measured both as the neutral form and at* pH 7 *(Table 5), the mean shift is* −2.55 *log units with standard deviation* 0.11*. This is* 3.6 *times the mean hydroxyl increment of Theorem 5.1.*

Proof. E7. □

Remark 9.2 (The weakest data in this paper)**.** [M] Proposition 9.1 is the one result here resting on entries the source itself does not present as measurements: all 5 of its pH 7 values are flagged estimated or corrected. The sign is not in doubt, since an anion prefers water for reasons that need no measurement, and the internal consistency is striking (0.11 across five acids). But the figure −2.55 should not be quoted as measured, and Convention 2.1 requires it be marked. The qualitative conclusion below survives any plausible revision of the magnitude; the numerical one does not.

Scholium 9.3 (Consequence for the ladder). Article 79 conditions $P_n = P_0 q^n$ on there being one arm type, and is right to. The arc has four, in two classes: neutral (h, e) and ionizable (o, e_P). Taking Proposition 9.1 at face value gives $q_{\text{ion}} \approx 353$ against $q_h = 5.05$, so the aggregate over the four arms of the arc is at least $q_h^2 q_{\text{ion}}^2 \approx 3.18 \times 10^6$ rather than $q_h^4 = 651$ — a factor of 4890. That is a *lower* bound and not an estimate, because q_{ion} carries only the ionization shift and omits the installation increment of the arm that ionizes, which Proposition 9.1 does not measure. Two readings follow, and they point in opposite directions. Favourably, the export of a fully armed unit is far more thermodynamically favourable than the single-type ladder suggests. Unfavourably, a ladder whose rungs differ by a factor of 70 is not a geometric ladder, and any result of Article 79 that uses the geometric form across mixed arms — as distinct from across hydroxylations — is using a form the arc does not have.

Remark 9.4 (Monotone partition is not monotone separation)**.** [A] A caution that follows from 353 and belongs with it. Article 79's object is a *separation*: the armed unit must leave the bulk and form a distinct stock phase. Proposition 9.1 says the last two arms of the arc are worth some 5 log units of aqueous preference between them. A unit that prefers water by that margin does not form a distinct phase; it dissolves. Phase separation requires amphiphilicity, which is a property of intermediate and not extremal partition, so the separation efficiency along the arc need not be monotone in P even where P is monotone in arm count. Nothing in this paper establishes where along the arc the optimum lies, and Article 79 does not address it; it is recorded as Target 10.5.

10 Obligations

The 8 things this paper does not establish, recorded in E8 so that they travel with the numbers rather than with the prose.

1. *The first rung.* No measured parent hydrocarbon accompanies the hydroxy series of source T, and no measured value for benzene was located in any source consulted. The step from zero arms to one is therefore untested, and every increment reported here is from one arm upward.

2. *The core itself.* No measured $\log_{10} K_{ow}$ for a hydroxylated four-ring polyhex was located. This is the gap Remark 7.5 turns on and it is the single most valuable measurement anyone could make against this corpus.

3. *The class transfer.* Proposition 7.2 establishes ring-count invariance for a *benzylic* hydroxyl. Article 79's arm is *phenolic*, and the two differ by some 0.8 log units in magnitude. That a quantity flat in one class is flat in the other is not established.

4. *The cavity residue.* Hypothesis 4.5 is named and argued but not measured. It is what makes q a floor rather than an estimate, so it carries the word "floor" wherever that word appears.

5. *The e arm.* No measured value for an aryl hydroxyethoxy compound was located, so of the four arm types only h is measured directly and the ionizable pair by proxy.

6. *The reference phase.* Proposition 4.4 gives the direction of the octanol-to-tar bias and not its size.

7. *The operating pH.* Article 79's bromination runs at pH 3–5, where an arm of pK_a near 4 is partly ionized. Table 5 brackets pH 1 to pH 7 and does not resolve the operating window.

8. *Separation against hydrophilicity.* Remark 9.4.

Remark 10.1 (Sources consulted and not used)**.** [A] Convention 2.1 requires the exclusions to be auditable, so they are named. A compilation of consolidated K_{ow} values [Ano25] and a group-additivity estimator [Ano24] were both located and both deliberately excluded: the first consolidates several estimation methods, and the second is a group-additivity model, which is the very form of Hypothesis 2.5. Agreement with either would have been agreement with a model of the same shape as the hypothesis under test, and so worth nothing. A set of generator-column measurements [TMWM82] was consulted and found to contain no aromatic alcohol and no benzene, which is why the first rung remains untested.

Target 10.2 (The decisive measurement)**.** Measure $\log_{10} K_{ow}$ for a monohydroxychrysene and, if obtainable, for a 3, 6-dihydroxychrysene. The first would test Proposition 6.3 on the actual core; the pair would test Scholium 5.9's prediction that at most two values of δ_h arise on a C_{2h} core.

Target 10.3 (A non-hydrogen-bonding reference)**.** Measure the same increments against an aromatic or alkane reference phase in place of octanol, giving the magnitude in Proposition 4.4 and converting the floor of Theorem 6.1 into a value.

Target 10.4 (From equilibria to rates)**.** The residue of Target 2.8: establish that e_2 is large enough for export to compete with the next substitution. This requires H_{trans} and is not reachable from partition data.

Target 10.5 (The amphiphilic optimum)**.** Locate the arm count at which separation efficiency, as against aqueous preference, is maximal, and determine whether the arc of Article 79 terminates at it or passes through it.

11 Conclusion

The first contact between this corpus and a measurement made by someone else comes out mixed, which is the outcome a first contact should be expected to have.

On the credit side, the load-bearing claim survives. Every arm lowers the transfer free energy out of the bulk, the increment does not decay as arms accumulate, and the per-arm enhancement that Article 79 left open as a target has a value, $q = 5.05$, which is a floor rather than an estimate. The nonpolar control establishes that this is a polarity effect and not an artefact of size, and chrysene's position at the hydrophobic end of its own competitor class — previously assumed — is now measured.

On the debit side, two things. The additivity hypothesis is false in its locant-independent form, by 60% of one arm; the ordering survives this and the geometric ladder does not, which matters because the ladder is what the downstream numerics use. And H_{bulk} is simply wrong: an unarmed naphthalene beats the chrysene into the aqueous phase by 324-fold, for a reason the hypothesis does not contemplate, and no restriction of the competitor class rescues it. Article 79's conclusions stand because that article had already declined to lean on H_{bulk} and had already said that partition does not do the discriminating work. Had it leaned on either, this paper would be reporting a failure rather than a correction.

What the exercise mainly demonstrates is the value of the contact. Two hypotheses marked [D] were carried for two articles without anyone being able to say whether they were true; one is now measured and one is now known to be false. The corpus carries many more in that condition; this paper does not count them, and an uncounted figure has no place in a paper of this kind. The method here — identify the formal quantity with a measured one, decompose the hypothesis into separable claims, test each against single-laboratory data, and keep measured and estimated values apart throughout — is offered as the template for working through them.

Non-independence of review. This article was drafted with AI assistance and the same model performed the concordance computation. The verification script is published with the article and the data sources are external to the corpus, so the arithmetic is checkable by a reader; the selection of *which* data to seek,

however, was made by the same process that drew the conclusions, and a reader should weigh §10 accordingly.

A Verification blocks

Every number in this article is emitted by `verify_a82.py`, published with it. The script uses the Python standard library only, asserts rather than prints its conclusions, writes its output relative to its own location, and exits non-zero on any failure. The data tables are emitted as LaTeX fragments rather than transcribed, so they cannot drift from the values the tests ran on.

The assertions encode the article's conclusions rather than merely its arithmetic: E5 fails if H_{bulk} is *not* refuted, and E9 if the benzylic increment is *not* flat. This is deliberate. A published verification artifact should stop passing when the claims it supports stop holding, and a reader who wishes to retest a hypothesis on new data should expect to edit the assertion as well as the table.

E1 Data import, with source tag and measured flag per entry. 11 entries from T, 29 from R of which 28 measured, 5 acids. Asserts that the non-polyhex name set is a subset of the table, so a typo cannot silently widen the polyhex class.

E2 Claim (S). The 6 single-arm increments, spanning three locant classes; asserts each is negative. Locant matching is required only in E3.

E3 Claim (A) and Target 2.8. Asserts the locant-matched two-to-three step is not weaker than the one-to-two step by more than the scatter 0.143; emits q and its band.

E4 Claim (L). Emits the isomer spread 0.42 and asserts that the worst single increment is still negative, which is the premise of Theorem 5.7. Asserts the C_{2h} orbits cover $\{3, 6, 9, 12\}$.

E5 H_{bulk}. Asserts the hypothesis is refuted on the measured set, and separately that the refutation survives restriction to four-ring-and-larger polyhexes.

E5b Chrysene's rank in its competitor class; asserts it is in the top two.

E5c The load on filters (3) and (4): P_d/P_2 per violator. Asserts the purity proposition's competitor term is understated.

E6 Ring-count drift, and the nonpolar control. Asserts no drift, and asserts every methyl increment has the opposite sign to every hydroxyl increment.

E7 Arm-type commensurability. Asserts the ionization shift exceeds twice the neutral increment and that the mixed ladder exceeds the single-type ladder.

E8 The obligations of §10, recorded in the script.

E9 The benzylic control. Asserts that the benzylic increment is flat across ring count within the cross-source scatter, and that the set-aside datum is nearer the benzylic value at one ring than the phenol mean at one ring — which is what makes it a class effect rather than a ring-count effect.

B Withdrawals and corrections

W1 *Article 79, H_{bulk}.* Withdrawn as false under H_{data}; Theorem 8.1, Ruling 8.5. Reason: the hypothesis omits size as a determinant of aqueous affinity.

W2 *Article 79, ordering theorem, second clause.* Withdrawn with W1. The first clause stands.

W3 *Article 79, single-stage purity at frozen composition.* Unavailable for a bulk containing aromatics below four rings; Ruling 8.5(2). The inequality is not false as an implication, since its hypothesis now fails for realistic bulk composition; it is unavailable.

W4 *Article 79, H_{add}, locant-independent form.* Falsified; Theorem 5.6. Replaced for the purposes of the ordering by the weaker premise of Theorem 5.7, which suffices for every downstream use of the ordering but not for the geometric ladder. Tracing the dependents, as W1 does and as Ruling 8.5 demands: Article 79's register carries H_{add} into its ordering theorem, its window theorem, its purity proposition and its bottleneck bound, and H_{trans} carries the ladder on into the cooperativity identity. Of these, the ordering survives by Theorem 5.7. The other four use the ladder in the form q^{-n} and inherit a per-arm spread of 0.42 log units, halved on the C_{2h} core by Scholium 5.9. We do not recompute them here; they are flagged as carrying a width they are currently stated without.

W5 *Article 79, proof of the ordering theorem.* The displayed ratio $P_{n+1}/P_n = q$ holds for a single arm type and the arc installs four; Remark 3.3. The theorem's statement and conclusion are unaffected.

W6 *This paper, a trap avoided and recorded.* An isomer-averaged comparison of successive increments manufactures an apparent saturation of +0.027 log units where the locant-matched comparison shows none; Remark 5.5. Recorded because the error is natural, is not detectable from the conclusion it produces, and will recur.

C Response to review

The referee report on this article is published with it. Six findings were accepted, two were accepted in a form other than the one recommended, and one was rebutted. The rebuttal is recorded here because a review record that shows only the accepted findings is not a record.

Rebutted. *That the set-aside 9-hydroxyfluorene datum contradicts Theorem 6.1 and Ruling 8.5(2).* The report observes

correctly that this manuscript tabulates the compound and then declines to use it, and correctly computes what follows if it is read as a phenolic increment on a polycyclic core: $q = 27.5$, and the count behind Ruling 8.5(2) falling to none. The premise is that the compound measures "a hydroxyl installed on a polycyclic core . . . the quantity Article 79 actually needs." It does not. C9 of fluorene is an sp^3 bridge, so the hydroxyl is benzylic; the locants Article 79 arms are aromatic CH positions, so its *h* arm is phenolic. The comparison the report draws varies ring count and hydroxyl class together and attributes the result to the first.

Rather than argue the point, §7 was added to decide it. Holding the class fixed and varying only ring count gives −1.55 at one ring and −1.44 at three, a drift of 0.11; the 0.74 log units the report asks to be accounted for are a class effect, already 0.85 at one ring where no ring-count term can contribute. The report's specific inference is therefore refuted, $q = 5.05$ stands, and Ruling 8.5(2) is not conditioned. The manuscript is longer by a section and its weakest joint is narrower than before, which is a better outcome than the conditioning the report proposed and the reason the rebuttal was worth making rather than conceding.

One half of the report's concern survives and is now obligation (3): the control is benzylic and the arm is phenolic.

Accepted in another form. *That Proposition 4.4's proof asserts "the cavity term is common" without support.* The observation is correct. The recommended remedy — weaken the proposition to a conjecture — was not adopted, because it would have cost the word "floor" throughout §6 and the conclusion, which is a larger change than the defect warrants. The cavity term is instead carried explicitly through the proof and the residual condition isolated as H_{cav} (Hypothesis 4.5), which is named, argued, not measured, and listed in §10. This is the corpus's standard treatment of an unmeasured premise and is what should have been done originally.

Accepted in another form. *That Proposition 6.3's methyl series is not a control for a hydroxyl claim.* Accepted: the mechanisms differ, and the proposition is now stated for methyl alone, with Remark 6.4 naming the cavity and hydrogen-bonding components separately. The report recommended recording the hydrogen-bonding component as untested; §7 tests it instead.

Accepted. Convention 2.1 is now observed by Theorem 5.7 and Proposition 8.4, which previously drew on measured values without naming H_{data}. The uncounted "some forty hypotheses" is removed from §11. Theorem 5.3 now states a detection limit rather than an absence. Notation 2.2 reports 10 phenols and one benzylic alcohol rather than 11 undifferentiated hydroxy compounds. Scholium 9.3's mixed ladder is labelled a lower bound, since q_{ion} omits the ionizing arm's installation increment. The standard-deviation convention is stated once where the quantity is introduced.

Noted, not actioned. The report observes that the assertions in blocks `E5` and `E5c` encode the current conclusions, so the script cannot re-test H_{bulk} on new data without editing. This is intended — a published verification artifact should fail if its own conclusions stop holding — and is now stated in Appendix A.

References

[Ano24] Anonymous. A Group-Additivity Method for the Estimation of log P_{ow}. *Liquids*, 4(1), 2024. Consulted and excluded for the same reason as Consolidated2025: a group-additivity model is the very form of the hypothesis under test, so agreement would be circular.

[Ano25] Anonymous. Consolidated Octanol/Water Partition Coefficients: Combining Multiple Estimates from Different Methods to Reduce Uncertainties in log K_{OW}. *Environmental Sciences Europe*, 2025. Consulted and excluded. Consolidates multiple estimation methods; testing a hypothesis of this corpus against consolidated estimates would test the estimators and not the hypothesis.

[Ins] Institute of Chemistry, University of Tartu. log D_7 and log P Values between Water and Various Organic Solvents. Analytical chemistry data compilation. Octanol/water values measured by the authors at 23 ± 1.5 °C. Entries marked with an asterisk are described by the source as estimated or corrected. Accessed 9 October 2026.

[Roy] Royal Society of Chemistry. Physicochemical Properties of Polycyclic Aromatic Hydrocarbons: Supplementary Information. Supplementary data to *Environmental Science: Processes and Impacts*. Experimental log K_{ow} compilation; 7-methylbenzo[*a*]pyrene is flagged by the source as calculated (EPIWEB 4.1) and is excluded from all test statistics here. Accessed 9 October 2026.

[Sch26a] Charles D. Schaper. Carbon Traceable Protocell Construction From Substituted Chrysene Stocks. *Annals of the Chrysene Formalism*, 1(4):1567–1605, 2026. Article 77. DOI: https://doi.org/10.68366/ees7wd38.

[Sch26b] Charles D. Schaper. The Chrysene Formalism Revisited: A Twelve-Axiom Foundation for Molecular Characterization, Tensorial Noncommutative Geometry, and Operator Response. *Annals of the Chrysene Formalism*, 1(2):489–560, 2026. Article 40. DOI: https://doi.org/10.68366/5jctze12.

[Sch26c] Charles D. Schaper. The Completeness Condition: Realisation of the Twelve-Axiom Framework at a Site of the Interior Chrysene Lattice, and the Genome Length It Requires. *Annals of the Chrysene Formalism*, 1(4):1639–1651, 2026. Article 80. DOI: https://doi.org/10.68366/0a19r769.

[Sch26d] Charles D. Schaper. The Composite: Interface Matching across the Chrysene Arc, and the Resolution of Its Obstructions. *Annals of the Chrysene Formalism*, 1(4):1652–1661, 2026. Article 81. DOI: https://doi.org/10.68366/3e4xf053.

[Sch26e] Charles D. Schaper. The Source: Substitution-Initiated Self-Separation of the Substituted-Chrysene Stock from a Polyaromatic Bulk, and the Supply It Delivers to the Protocell. *Annals of the Chrysene Formalism*, 1(4):1616–1638, October 2026. Article 79. DOI: https://doi.org/10.68366/s8sfwq50.

[TMWM82] Y. B. Tewari, M. M. Miller, S. P. Wasik, and D. E. Martire. Aqueous Solubility and Octanol/Water Partition Coefficient of Organic Compounds at 25.0 °C. *Journal of Research of the National Bureau of Standards*, 87(4):311–315, 1982. Consulted. Generator-column measurements for 14 compounds; contains no aromatic alcohol and no benzene, so it cannot anchor the zero-to-one arm step.