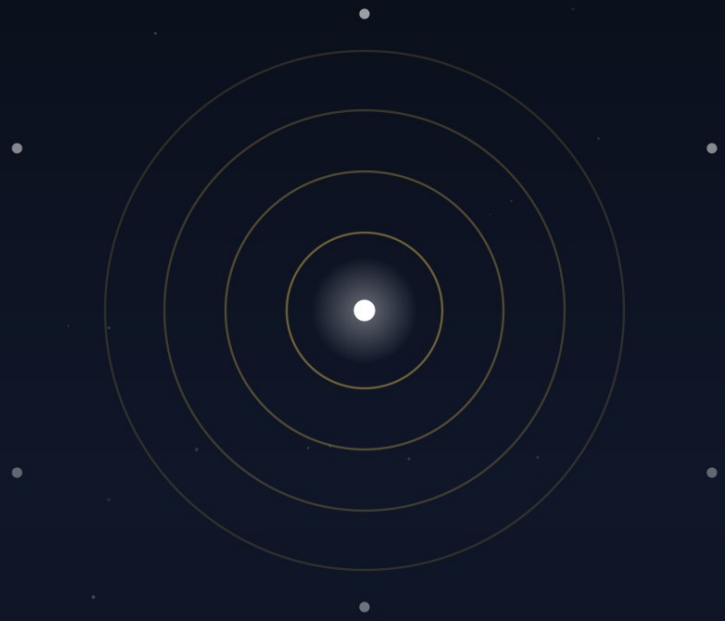

WORKING PAPER, VERSION TWO

An Enumeration Boundary

Gathering-names for the Pleiades, and six pre-registered controls

CORRECTED 23 NOVEMBER 2026

KEITH SHIRLEY

Gathering-Names for the Pleiades Track an Enumeration Boundary

Six Pre-Registered Controls

Working Paper, Open for Challenge

Keith Shirley

22 November 2026

Abstract

The Pleiades is widely reported to be named for seven sisters, with the discrepancy between the attested count and the six stars most observers resolve explained by myths of a lost sister. Norris and Norris (2021) propose that the discrepancy preserves a genuine observational memory from roughly 100,000 years ago, when the proper motions of Atlas and Pleione placed them far enough apart to be separately visible, making the tale a strong candidate for the oldest surviving human narrative.

This paper reports a different finding, derived from a survey of thirteen traditions and tested against six pre-registered control objects.

Across the traditions surveyed, the dominant shared layer is not a narrative and not a count. In fourteen traditions spanning at least nine unrelated language families, the cluster carries a **collective or mass term**: a heap, a herd, a crowd, an assembly, a marketplace, gathered together. Sisters are a minority motif, present in a minority of the traditions surveyed, with several traditions making the cluster explicitly male.

An initial explanation attributed the collective term to three properties of the object: plurality, compactness, and the absence of a dominant member. That explanation was derived from the object it explained and was therefore untested. To test it, six predictions were registered in a sealed file before any further searching, each naming an object that breaks exactly one property, together with a fixed definition of what would count as a collective term.

Before testing began, the three-property account failed on an object not originally considered. Orion's Belt is plural, compact, and more uniform in magnitude than the Pleiades, and it attracts counted terms in every tradition reached. A fourth condition was therefore added to the registration prior to searching: **the group must also defeat enumeration.**

Six controls were then examined. No control attracted a collective term, with one contested Chinese exception reported in full. The strongest evidence is not cross-cultural but **within-tradition**: Greek sources produce three competing explanations for a missing Pleiad and none for a missing Hyad, and a single Australian narrative holds both clusters simultaneously, rendering the Pleiades plural and the Hyades a singular figure.

The paper proposes that the governing variable is a documented perceptual boundary. Enumeration proceeds either by subitizing, which is parallel, effortless and limited to roughly four

items, or by serial counting, which requires that members be individuated for sequential attention. The Pleiades is the only naked-eye object that defeats both.

The astronomical component of the Norris proposal is not disputed. What this paper argues is that the comparative evidence does not support the inference drawn from it.

This paper was substantively corrected on 23 November 2026. Its central mechanism has changed. See Section 13 for what was wrong, why, and what replaced it.

1. Introduction

Two observations about the Pleiades have long been paired. The first is that stories attached to the cluster resemble one another across cultures that cannot plausibly have been in contact, typically involving a group of young women pursued by a male figure associated with Orion. The second is that many traditions attribute seven members to a cluster in which most observers resolve six.

Norris and Norris (2021) propose a single explanation for both. The members of the cluster are in relative motion, and reconstruction of their proper motions indicates that Atlas and Pleione, now too close for unaided separation, were separable roughly 100,000 years ago. On this account seven stars were once genuinely visible, the count entered the tradition at that time, and both the count and its accompanying narrative have been transmitted since, with the anomaly preserved as a fossil of a sky that no longer exists. The authors model the perceptual question explicitly, simulating the appearance of the two stars at both epochs under a specified point-spread function.

The proposal is carefully argued and the astronomical reconstruction is not in question here. The present paper addresses only the inference from the comparative mythological evidence, and reports that this evidence does not support it.

The reference literature has long underwritten the premise. Thompson's motif catalogue records that the constellation is almost always conceived as a group of seven sisters whose mythology explains why only six appear, and that characterisation has propagated through a century of secondary sources.

A survey of thirteen traditions, conducted with the four constituent elements of the motif scored separately rather than treated as a package, does not reproduce it.

2. What the survey found

Four elements were counted independently for each tradition: whether the cluster is a group of females (M1), whether a male figure pursues them (M2), whether a member is absent and the absence is explained (M3), and whether the cluster governs a calendar (C).

Female group. Attested in a minority of the traditions surveyed. Four traditions make the cluster explicitly male: Mesopotamian sources present the Sebettu as seven male deities; Cherokee and Haudenosaunee traditions describe boys; the Torres Strait tradition of Tagai treats the relevant stars as male and counts six.

Pursuit. Attested in full form in four traditions. Elsewhere it is inverted, displaced onto a different object, or absent. In Khoikhoi material the direction of desire is reversed; in South Asian material the relation is displaced; on the Eurasian steppe the structure appears with the genders exchanged, as seven men and an abducted girl.

Missing member. Attested only where a count was committed. See Section 3.

Calendar. Attested in **every** tradition surveyed, without exception, irrespective of whether the cluster was conceived as women, men, deities, an animal's mane, a digging implement, a marketplace or a granary.

The calendrical function is the only element that is universal in this sample, and its universality has a straightforward geometric explanation. The cluster lies within approximately four degrees of the ecliptic and subtends roughly two degrees, so that six distinct annual events are sharply defined: heliacal rising, heliacal setting, acronychal rising, cosmical setting, culmination, and the period of invisibility. Each of these is used as a year-marker somewhere in the sample.

Where stratigraphy permits comparison, the calendrical use appears to be the older layer. The Greek name is plausibly derived from sailing rather than from kinship. Krittika heads the earliest Vedic *nakshatra* lists on positional grounds, with the seven wives appearing in later strata. The Turkic term denotes a military formation before it denotes any narrative. Mesopotamian and Chinese records span several millennia of calendrical and divinatory use with no sister-narrative whatever. And in southern Africa two unrelated peoples sharing one sky preserve cognate or functionally equivalent names while their narratives differ entirely.

A separate layer, not previously foregrounded, is shared far more widely than any narrative element. In fourteen traditions across at least nine unrelated language families, the

cluster's name is a collective or mass term. Representative cases include Hebrew, Aramaic and Syriac *kimah*, a heap; Belarusian *kupa* and *hramadka*; Arabic *al-Thurayya*, read as a herd; Sumerian MUL.MUL, simply "the stars"; Amazigh *tagemmunt*, the group; Khoikhoi *!Khunuseti*, glossed as "to gather together"; Kalahari terms glossed as a crowded bunch of small stars; Turkic *Ülker*, carrying the sense of scattered detachments; Nahuatl *Tianquiztli*, a marketplace; Māori *Te Huihui o Matariki*, an assembly; and Japanese *Subaru*, "gathered together."

None of these is a narrative. All are descriptions. And a lexical item is transmitted by ordinary language acquisition, whereas a narrative requires a teller, an occasion and a transmitting authority, each of which can be interrupted independently.

3. The count and the missing member

The survey yields a correlation without exception in this sample.

Where a tradition committed to a number exceeding what the object reliably delivers, it generated an explanation for the shortfall. Eight such explanations were recorded across six traditions. They are mutually incompatible and several account for physically different objects: a sister concealed through shame at a mortal marriage; a sister veiled in grief at the destruction of Troy; a sister abducted by a deity; a seventh relocated elsewhere in the sky and incorporated into a marriage rite; a boy transformed into a tree; a girl taken by seven men.

Where no number was committed, no member is absent and no explanation exists, irrespective of narrative richness. Traditions naming the cluster for cultivation, for a marketplace, for a granary or for rain exhibit no missing member.

The attested counts, where committed, do not originate in observation. Mesopotamian seven is consistent with an existing structural role for that number; Cherokee seven corresponds to an established sacred number; steppe traditions plausibly transfer the seven of Ursa Major, which genuinely comprises seven separable stars; and English usage derives from Greek.

The numeral seven does not appear in the cluster's name in any language in this sample except modern English.

4. A condition derived before testing

The three-property account offered for the collective terms, plurality, compactness, and the absence of a dominant member, was derived from the Pleiades and then advanced as an explanation of the Pleiades. It was therefore untested and unfalsifiable as stated.

Before any further searching, it failed on an object the original formulation had not considered.

Orion's Belt is plural (three stars), compact (approximately three degrees, comparable to the Pleiades at two), and more uniform in magnitude than the Pleiades: Alnilam 1.69, Alnitak 1.74, Mintaka 2.23, a range of approximately 0.5 magnitudes against the Pleiades' approximately 2.0. By the stated account it should attract collective terms more readily than the Pleiades.

It does not attract them anywhere in the material surveyed. Attested terms are counted or denote a divided object: three pigs among Sotho and Tswana speakers, with Orion's Sword as three dogs pursuing them; three tortoises in /Xam material; three zebras, specified as one male flanked by two females, in Nyae Nyae material; three kings, three Marys, three brothers, three paddlers, three young men; and among the Seri, three separately named species: mule deer, pronghorn, bighorn sheep. Instrument-terms recur independently: a yardstick, an ell, a scale, a line, a three-jointed arrow. These denote objects whose defining property is countable division.

A fourth condition was therefore added to the registration before any searching:

> Collective terms attach to groups that are plural, compact, without a dominant member, **and that defeat enumeration.**

Three is enumerable. Six or seven within two degrees is not.

5. Method

5.1 Registration

Six predictions were written, dated and sealed before any further searching, together with: the specific object for each; the property it removes; the name-family predicted; the condition that would falsify the prediction; a fixed scoring rule; and a list of known hazards.

The scoring rule specified that a name counts as collective **only where its literal sense is a heap, crowd, group, herd, assembly, many, or together**, and explicitly excluded container-terms such as "beehive." The rule was fixed in advance precisely so that an inconvenient result could not be reclassified afterward. Section 6.4 reports the case where it told against the prediction.

Names already cited in the proposal that prompted the test were excluded from scoring.

5.2 Object selection

Each control removes one property. The sequence is a falsification order: each object was selected as the most severe available test of what preceding objects had established.

Order	Object	Property removed	Rationale
1	Ursa Major	compactness and enumerability	the most widely named plural, non-dominant object in the northern sky
2	Orion's Belt	enumerability alone	holds the remaining three more strongly than the Pleiades
3	Hyades	dominance alone	adjacent to the Pleiades; same sky, same season, same observers
4	Praesepe	plurality	compact, non-dominant, non-enumerable, and not resolved as plural
5	Magellanic Clouds	plurality, southern sky	invisible to every literate northern tradition in the source base
6	Coma Berenices	compactness alone	the remaining untested combination

Ursa Major was placed first deliberately. It is plural and without a dominant member, and it is more widely named across unrelated traditions than any object except the sun and moon. If collective terms were a general feature of star-naming rather than a response to specific conditions, the evidence would be concentrated there.

The Magellanic Clouds were included to address a structural weakness in the source base. The majority of the evidence derives from literate traditions in documented contact (Mesopotamian, Greek, Roman, Arabic, Indic, Chinese, European), with much of the remainder recorded by collectors trained in the classical tradition. The Clouds lie below declination −69° and were unavailable to every one of those traditions.

6. Results

No control attracted a collective term, with one contested exception.

6.1 Ursa Major

Attested terms are shape-terms or counted terms without exception in the material surveyed: wagon, wain, plough, dipper, saucepan, ladle, bushel, chariot, bier, bear, camel, shark, skunk, sickle; and Latin *Septentrio* (seven plough-oxen), Sanskrit *Saptarishi* (seven sages), Mongolian seven deities, Chinese seven stars of the northern measure.

Two subsidiary results follow.

No tradition surveyed reports a missing member. The count is seven, it is attested correctly across unrelated traditions, and no explanation of an absence occurs anywhere. The object differs from the Pleiades principally in angular extent, approximately 25° against 2°.

No tradition surveyed uses it calendrically. Above approximately 40°N the asterism is circumpolar and therefore has no heliacal rising. Its attested uses are orientational and horological. The contrast with the Pleiades is accounted for by visibility geometry alone.

Ursa Major also carries the Cosmic Hunt, whose distribution Berezkin (2005, 2009) has mapped across northern Eurasia and the Americas and for which a comparable deep-time transmission claim has been made. The Cosmic Hunt exhibits features the sister-motif does not: a bounded and mappable distribution; documented interior gaps where it is absent though the constellation is well known; systematic regional variation in the prey animal; a published phylogenetic treatment (d'Huy 2013); and a related form in sub-Saharan Africa attached to a different constellation. It is offered here as a reference case for what a transmitted sky-narrative looks like in the record.

6.2 Orion's Belt

As Section 4. At least eight independent naming events across four continents and the Pacific, all counted, none collective.

Two cases bear on mechanism. The Seri name the three stars as three distinct species; Nyae Nyae material differentiates them by sex and position. In both, members are individuated. By contrast,

attempts to individuate the Pleiades are unstable even within a single literate tradition: Greek rosters of the sisters' names differ between authorities, with only Maia constant.

The African material also bears on Section 6.1. Berezkin reports the Cosmic Hunt as the principal widespread star-narrative in sub-Saharan Africa, there attached to Orion. Sotho-Tswana material presents Orion's Sword as three dogs pursuing three pigs. The structure is the same; the cardinality differs. Across the sample, a pursuit structure carries **seven** members on Ursa Major, **three** on Orion's Belt, and **two** on the Magellanic Clouds. The cardinality corresponds in each case to what the object delivers.

6.3 Hyades

Plural, compact, non-enumerable; dominance removed by Aldebaran at magnitude 0.9, approximately 3.5 magnitudes above the next member and a foreground object not physically associated with the cluster.

No collective term occurs in any of six traditions. In every one the group is rendered as a single entity, and in most cases as the anatomy or property of the dominant star: Mesopotamian *is-lê*, the bull's jaw, and the crown of Anu; the Greek face of Taurus; Arabic *al-Qilās*, camels driven before the greater camel; Sanskrit *Rohiṇī śakaṭa*, the cart of Rohiṇī; Chinese *Bì*, a hunting net, with Aldebaran counted among its members.

No tradition surveyed commits to a Hyades count, and none reports a missing member. Greek sources vary between five, six and seven without remarking on the variation.

6.4 Praesepe: the contested case

Mediterranean and Arabic terms are singular throughout: crib, manger, stall; and in the observational literature, mist, cloud, nebulous mass.

No ancient source in the surveyed material assigns it a number. The object lies in the zodiac and was under continuous observation by Mediterranean astronomers for approximately a millennium, and the record is consistent in describing a texture rather than a set of stars until telescopic resolution. This bears directly on the perceptual premise underlying both the Norris proposal and its critics, since it constitutes a long continuous test of naked-eye resolution of a compact cluster under pre-industrial skies.

The exception. Chinese *Jīshī* 積屍 contains *jī*, "accumulated, heaped." Under the registered scoring rule this is a collective term and is recorded as a result against the prediction. It is the only such case across six objects.

Two readings are available and the paper does not adjudicate between them. Under the first, the literal sense is a heap and the rule applies. Under the second, the celestial referent is the *qì*, the exhalation, with the heaped bodies supplying the explanation rather than the referent, which would group the term with the Greek and Roman vapour-terms; the asterism's position within the Ghost lodge is consistent with this. **The case is reported as contested and requires assessment by a specialist in Chinese astronomical terminology.**

6.5 Magellanic Clouds

Terms denote substances and pairs: brolgas, an elderly couple, a mother and daughter, the ash of roasted birds, a swamp, endless water, cloud. No collective term occurs.

The registered prediction that **the pair would be named more frequently than either member** holds across the traditions reached. The two objects are consistently named as a relationship.

A pursuit-and-transformation narrative is attested, with two women, and no missing member.

6.6 Coma Berenices

Terms denote dispersed filamentary objects. Greek and Arabic terms derive from hair and descend from a common Ptolemaic placement and are counted once. Mesopotamian *Sissinnu*, a date-palm frond or spadix, is independent and is the principal evidence at this object.

Chinese *Lángwèi* designates ranked court positions. Under the registered rule this was scored as individuated rather than collective, consistent with the Section 6.2 finding; the scoring is the author's and is left open.

The object carries **no attested function** in any tradition surveyed: no calendrical, ritual or meteorological use. It is the only object in the sample of which this is true, and the photometric and angular properties that would prevent a sharp heliacal event are the proposed explanation.

This rung rests on two clear independent traditions and its naming result is correspondingly weak.

7. The within-tradition controls

The results above are vulnerable to the standard objections facing cross-cultural comparison: unequal source quality, collector bias, undetected diffusion, and the classical training of most nineteenth-century recorders.

Two results are not vulnerable to any of them, because the comparison is internal to a single tradition and a single recording event.

7.1 Greek sources on two adjacent clusters

The same body of Greek mythography, within the same period and genre, produces:

- for the **Pleiades**, three mutually incompatible explanations of a missing member, together with unstable rosters of names;
- for the **Hyades**, 14° distant and observed on the same nights by the same observers, disagreement over whether there are five, six or seven members, with **no explanation of any absence** and no apparent recognition that one is required.

No account invoking collectors, transmission or contamination can explain why one body of authors generated repair-narratives for one cluster and not for the adjacent one. The difference lies in whether a count had been committed.

7.2 A single Australian narrative holding both clusters

In Kokatha material recorded at Ooldea and re-analysed by Leaman and Hamacher (2014), the figure Nyeeruna (Orion) pursues the Yugarilya sisters (the Pleiades), and Kambugudha intervenes. Kambugudha is the Hyades, and Aldebaran is identified as her foot.

Within one narrative, from one informant, concerning one night's sky:

- the **Pleiades** is a plural group of individuals;
- the **Hyades** is a **single figure**, with the dominant star as a body part.

The two clusters are 14° apart and rise within an hour of one another. They differ in the presence of a dominant member. The lexical and conceptual treatment differs accordingly, in a tradition with no contact with any source in the comparative literature.

The same material appears to encode relative variability of Betelgeuse and Aldebaran (Hamacher 2018), correctly as to which varies faster.

These two results, taken together, are the principal evidence in this paper. They do not depend on the cross-cultural name survey, on secondary compilations, or on any judgement about diffusion.

8. The proposed mechanism

This section was substantially revised on 23 November 2026. The original version is superseded and the change is recorded in Section 13.

The governing variable is proposed to be a documented boundary in enumeration, combined with instability in the perceived membership of the set.

Enumeration of a small visual set proceeds by one of two systems. **Subitizing** is rapid, accurate, effortless and parallel, and is limited to approximately four items (Kaufman et al. 1949; Trick and Pylyshyn 1994). Beyond that limit, **serial counting** operates: slower, requiring sequential deployment of attention, and requiring that members be individuated and that the set stay fixed long enough to be traversed.

The subitizing limit is robust. In afterimage presentation, where eye movements cannot contribute, neither increased inspection time nor favourable spatial configuration raises it; enumeration remains near-perfect to four and degrades sharply beyond. The limit shifts only slightly with development, from approximately three in childhood to four in adulthood.

Critically, **the limit is not specific to vision.** It is obtained in tactile enumeration, including in congenitally blind adults, and in sequentially presented auditory stimuli. The boundary is therefore a property of the mechanism that individuates items rather than of the visual system.

8.1 Why angular resolution is not the operative variable

An earlier version of this paper proposed that the second condition was angular separation approaching the **resolution** limit. That is incorrect for the Pleiades, and the error is worth stating because the corrected account explains considerably more.

The bright Pleiades sit at approximately these visual magnitudes: Alcyone 2.9, Atlas 3.6, Electra 3.7, Maia 3.9, Merope 4.1, Taygeta 4.3, Pleione 5.1 (variable), Celaeno 5.4, Asterope 5.8 and 6.4.

Their mutual angular separations run from a few arcminutes for the Atlas and Pleione pair to twenty, forty and sixty arcminutes among the remainder. Against an ordinary visual acuity of approximately one arcminute, those separations exceed what resolution requires by factors of twenty to sixty.

The bright members of the Pleiades are trivially resolvable as separate points. Resolution is not the limiting factor.

8.2 The corrected condition: detection instability

The limiting factor is **detection**, and specifically the instability it produces in the membership of the set.

Naked-eye limiting magnitude is approximately 6.0 under excellent dark-sky conditions, approximately 4.5 under ordinary suburban conditions, and lower in urban settings. Against the magnitudes above, this places roughly six members reliably above threshold, three at or below it, and one of those three (Pleione) intrinsically variable.

Three further factors destabilise the set. Foveal vision lacks rods, so direct fixation on a member near threshold causes it to disappear while averted vision recovers it. Dark adaptation state alters the count within a single observing session. And limiting magnitude varies with altitude, humidity, sky brightness and observer age.

The Pleiades is therefore not an unresolvable blur. It is a set whose membership changes while it is being observed, and differs between observers, between nights, and between sites.

The revised condition is:

> A group defeats enumeration when (a) **n exceeds approximately four**, so subitizing is unavailable, **and** (b) **a substantial proportion of its members sit at or near the observer's detection threshold**, so that the membership of the set is unstable and cannot be held fixed for serial traversal.

8.3 What the correction accounts for

The reported phenomenology. Observers describe a flicker , five, then six, then a possible seventh lost on direct fixation. Resolution failure does not produce flicker; it produces a stable blur. Praesepe is the stable blur, and it attracts container and vapour terms. The Pleiades attracts collective terms. These are distinct perceptions with distinct causes, and the earlier version conflated them.

The sample, sorted by detection rather than separation:

Object	Members detected	Proportion near threshold	Set stability	Term attested
Magellanic Clouds	0 (two patches)	not applicable	stable	substance
Orion's Belt	3	none; all far above	stable	counted
Ursa Major	7	none; all above	stable	counted, shape
Praesepe	0	all below	stable	container, vapour
Coma Berenices	~12	most at or below, dispersed	unstable and dispersed	filamentary
Pleiades	**6 to 9, varying**	**3 to 4 straddling**	**unstable**	**collective**

This continues to account for the Ursa Major result: seven exceeds the subitizing limit, yet the count is attested correctly and universally, because all seven members sit far above detection threshold and 25 degrees of separation permits unhurried serial enumeration of a stable set.

And it accounts for something the earlier version could not: why no count was ever available to be adopted. If observation yielded a stable six, the attested name would be six. If it yielded a stable undifferentiated patch, the attested name would be a mist, as at Praesepe. Because observation yields a different number on different nights and to different observers, **no cardinality is ever established observationally**, and a tradition requiring one must import it from elsewhere. An imported cardinality cannot match an unstable set, which is the proposed origin of the repair-narratives documented in Section 3.

The Pleiades appears to be the only naked-eye object straddling the detection threshold with a substantial number of members on each side of it.

8.4 Reconciliation of an apparent conflict in the literature

Norris observes that no combination of seeing, eyesight quality or sky brightness would cause a human to count seven; his critic argues that ancient eyes under dark skies plausibly resolved more than modern ones. Colenso recorded in 1839 that where he saw six, Māori observers reported seven and sometimes eight.

On the corrected account all three observations are compatible. Under excellent conditions a dark-adapted young eye detects eight or nine members; under suburban conditions the same object yields five. Both are correct reports. **Neither is the count, because there is no stable count to report.** The disagreement in the literature concerns a quantity that does not exist.

9. What this does and does not show

It does not dispute the astronomical reconstruction. The proper motions of Atlas and Pleione are not in question, nor is the simulated appearance at 100,000 BP.

It does not show that no sky-narrative has deep ancestry. The Cosmic Hunt is offered as a case with substantially stronger structural credentials.

It does not establish that the collective layer is ancient. The claim is that it is better transmitted than narrative, not that it is old.

What it does argue is that the comparative evidence does not support the inference that the attested seven preserves an observational memory. The seven-sister motif is a minority pattern; the count correlates exactly with the presence of a repair-narrative; the count is independently derivable in each tradition from sources other than observation; and across six control objects the lexical response tracks perceptual conditions rather than descent.

The lost member is better explained as the residue of a committed cardinality that the object cannot supply.

10. Limitations

These are substantial and are stated in full.

Source base. The cross-cultural name data were compiled from secondary and tertiary English-language sources, including nineteenth and early twentieth-century compilations known to be unreliable outside Europe. No primary language was read: not Akkadian, Sumerian, Greek, Latin, Arabic, Sanskrit, Classical Chinese, any Bantu or Khoe-San language, Te Reo Māori, or any Western Desert language.

The Chinese material is the weakest point. Both difficult cases in this paper are Chinese and both were read in English translation or summary. Section 6.4 may resolve against the argument.

Two rungs are thin. Praesepe and Coma Berenices rest on two clear independent traditions each.

Colonial-era collection. Much non-European material derives from nineteenth-century collectors working in contexts of profound asymmetry. Where modern peer-reviewed re-analyses exist they have been preferred.

Living traditions. Several traditions discussed are living and hold restricted knowledge. Nothing beyond material published by their own custodians has been used.

The subitizing application is novel and untested. The cognitive literature is established; its application to ethnoastronomical naming is the author's and has not been tested experimentally.

No specialist review. The author is not a specialist in any relevant discipline. This paper has not been peer reviewed.

11. Testable predictions

The account yields predictions that would falsify it.

11.1 Psychophysical. Present observers from several unrelated language communities with matched synthetic star fields at controlled separations and luminances, with instructions only to describe what they see.

This prediction was revised on 23 November 2026 following the correction in Section 8. The original named angular separation as the operative variable; that version is withdrawn and recorded in Section 13.

The revised prediction: the transition from counted to mass-noun description will track **the proportion of set members whose luminance sits within approximately half a magnitude of the observer's detection threshold**, and will be largely independent of angular separation once separation exceeds a few arcminutes. Specifically, a field of seven points all well above threshold should be counted; a field of seven points all below threshold should be described as a single object; and a field of seven points with three to four straddling threshold should attract mass-noun description. The transition point should be invariant across language communities.

Falsified if the transition tracks separation while luminance is held constant, or if fields with all members well above threshold attract mass-noun description at comparable rates. Variation of the transition point by language community would falsify the account generally and favour a linguistic-relativity explanation.

11.2 Historiographic. Code every published account of all seven objects for name-family, date each, and classify the recorder. Concentration of collective terms for the Pleiades in collections made by classically trained recorders would seriously damage the argument.

11.3 Comparative. Extend the control set to further naked-eye groups and test whether any other object satisfies both enumeration conditions. The account predicts none does.

11.4 Terminological. The account predicts that collective terms for the Pleiades should pattern as mass nouns or collectives in the grammar of the languages concerned, and should resist the individuating morphology those languages apply to countable sets. This is directly testable by linguists and has not been attempted here.

12. Open questions

- Resolution of the *Jīshī* case by a specialist in Chinese astronomical terminology.
- Whether the Babylonian, Indic and Chinese lunar-station systems share an origin, which bears on several independence claims here.
- Whether Berezkin's conclusions, read here only in English, are correctly represented.
- Whether the Arabic Hyades material is genuinely independent of Ptolemaic transmission.
- Whether the treatment of Alcor, which attracts concealment-vocabulary across Eurasia and North America and lies approximately 12 arcminutes from Mizar, represents the same boundary at smaller scale.
- Southern and Pacific terms for Praesepe and Coma Berenices, absent from this survey.

13. Corrections to this paper

This paper has been revised once since first circulation. Every change is listed here with its date and reason, and superseded text is described rather than silently removed.

23 November 2026 , Section 8, the proposed mechanism. Substantive correction.

Superseded: the second condition was stated as "angular separation approaches the resolution limit, so members cannot be reliably individuated for serial attention."

Reason: incorrect. The bright Pleiades are separated by twenty to sixty times ordinary visual acuity and are trivially resolvable. Resolution is not the limiting factor.

Replacement: the second condition is detection instability , a substantial proportion of members sitting at or near the observer's detection threshold, rendering set membership unstable within and between observing sessions.

Consequences: the corrected account additionally explains the reported flicker phenomenology, distinguishes the Pleiades from Praesepe on principled grounds, reconciles an apparent conflict between Norris, his critic and Colenso, and supplies a mechanism for why no cardinality was ever established observationally. The sample table in Section 8 was re-sorted accordingly.

23 November 2026 , Section 11.1, the psychophysical prediction. Withdrawn and replaced.

Superseded: the prediction that the transition from counted to mass-noun description tracks angular separation.

Reason: follows directly from the Section 8 correction.

Replacement: the transition tracks the proportion of members near detection threshold, largely independently of separation above a few arcminutes. Falsification conditions restated.

Note: the experimental protocol already varied separation and magnitude, so the original design can test the revised prediction. What changed is which variable the prediction names, and the original is on record as having named the wrong one.

How the correction was found. Not by review, which has still not occurred. An outline for a subsequent volume asserted a numerical constant absent from the entire corpus; checking it against the real figures surfaced the arithmetic above. The full account is in the seventh volume,

The Observer. It is recorded here because the origin of a correction is relevant to assessing how many others remain.

Acknowledgements

The three-property formulation, the selection of control objects, and the identification of the Japanese term *Subaru* as significant were contributed by a collaborator working under the designation Architect+. Two of the three stated rationales for the control objects were incorrect and are corrected in the longer treatment; the object selection was nonetheless sound and the resulting correction to the hypothesis is the principal methodological result of the work.

The compilation, searching and drafting were performed by an AI system working under the author's method and grading. Its contribution was reading speed and retention; the judgement of what the material meant, and what was permitted onto the page, remained with the author. The work was completed in a single extended session, which is itself a limitation.

Full treatments, with all claims individually graded and 453 sources, appear in *The Seven Who Are Six: The Pleiades in Thirteen Breaths* and *The Leadered and the Scattered: Five Controls for the Gathering Hypothesis*. The sealed registration file is printed unaltered as an appendix to the second volume.

A note on source access

This paper is offered for challenge, and the most useful thing it can do is be transparent about how its evidence was obtained.

Primary scholarly works cited were read directly or in preprint: Norris and Norris (2021), Berezkin (2005, 2009), Leaman and Hamacher (2014), Hamacher (2018), Fuller, Hamacher and Norris (2014), Norris and Hamacher (2014), d'Huy (2013), Orlove, Chiang and Cane (2000).

The subitizing literature was accessed through review articles, a published afterimage study, and encyclopaedic summaries rather than through the full primary corpus. The foundational references (Kaufman et al. 1949; Trick and Pylyshyn 1994) are cited as reported in those reviews. A reader challenging Section 8 should go to the primary literature directly.

The cross-cultural name data were compiled from a mixture of peer-reviewed ethnoastronomy, specialist encyclopaedias, and popular compilations of varying quality, several of which descend from Allen (1899) and Olcott (1911). Each individual claim is graded and individually sourced in the two longer volumes; this paper summarises and does not re-argue those gradings.

Two sources used in the longer volumes are of poor quality and are cited there only for single specific lines, with their wider claims explicitly disowned. Neither supports any claim in this paper.

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Correspondence and challenge are actively invited. The author has no disciplinary position to defend and would rather be corrected than cited.