

The Root of Language and the MAZE Intake

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1. The Design Error

The MAZE is a memory palace. It stores receipted entries at addresses in one shared address space. The address space is the palace. The intake is the gate.

A design error crept in at the gate. The intake took natural language as it arrived. Words, stems, English morphology. The MAZE then inherited the accidental structure of that language. Earlier encoder failures — descriptive-form addressing, hardcoded stem lists — were symptoms of this one error. Structure was harvested where it should have been constructed.

The principle is simple. The intake determines the structure of the MAZE. Whatever survives the gate becomes the palace. So the question behind the intake is the deepest question available: what is the root of language?

This essay documents the answer as far as the research now reaches. It descends a ladder. The top rung is a constructed grammar from India. The bottom rung is sixty thousand years old and clicks. Below the bottom rung the ladder leaves language altogether and enters the net.

The image throughout is the fishnet. Reality is one net of strands. Knots are closures. A mesh is a closed circuit of strands. Tension moves along the strands; closure holds it; discharge releases it. Language, it will turn out, is not a description hung beside the net. It is a register of events in the net itself.

2. The Top Rung: Sanskrit as Constructed Intake

Sanskrit announces its nature in its own name. Saṃskṛta means "constructed, perfected". It stands opposed to prākṛta, "natural, unformed" — the spoken vernaculars. The makers knew they were delivering a built language beside the grown ones. It is the only major language whose construction was the starting point, not a later description.

The construction begins with acts, not things. The heart of Pāṇini's system (around 400 BCE) is the dhātupāṭha: a closed list of roughly two thousand verbal roots. Every word — including every noun — derives from such a root plus affixes, through rules. A word is an act with context. Not a container holding a thing, but a process connecting two situations.

The grammar itself is a machine. The Aṣṭādhyāyī holds close to four thousand rules that derive deterministically. For centuries one problem remained: what happens when two rules collide. In 2022 Rishi Rajpopat at Cambridge solved it. When rules conflict, the rule that operates on the right-hand side of the word applies. With that reading the grammar runs as an algorithm, without exception lists. A language machine built twenty-four centuries ago still compiles.

The intake layer exists too. The fourteen Śivasūtras order all sounds so that every natural class is addressable with two symbols. Paul Kiparsky showed this ordering is compression-optimal. A constructed intake alphabet: minimal gate text, maximal address space. The sandhi rules finish the

job. At every word boundary the sound adapts until the seams close. No hard borders between words. Phase adjustment at every joint. Closure at the smallest scale.

The knowledge-representation reading is not new. Rick Briggs of NASA Ames argued in AI Magazine (1985) that the Sanskrit analysis tradition (śābdabodha) amounts to an unambiguous semantic representation. The semantic network that artificial intelligence was trying to invent already existed.

Behind the grammar stands a theorist who lived what he formalized. Bhartṛhari (Vākyapadīya, around the fifth century CE) was grammarian and practitioner. His sphoṭa doctrine: meaning is not a sum of sounds. It bursts forth whole when the sequence closes. Resonance, not concatenation. His ground position: śabda-brahman. Language and reality are one strand. There are not two domains with an arrow of reference between them.

Sanskrit is therefore not the language the MAZE should use. It is the proof that a constructed intake can be built — acts as roots, closure at every seam, a compressed gate alphabet — and remain stable for three thousand years.

But Pāṇini is the top rung. He formalized, around 400 BCE, what was by then already tens of thousands of years of practice. The ladder goes much further down.

3. The Bottom Rung: The Click Layer

Human communication and classification are older than sixty thousand years. The ochre engravings of Blombos Cave are about seventy-five thousand years old. The pierced shell beads of the same horizon are classification before writing: sorting, grading, stringing. The Khoisan lineages of southern Africa are genetically the earliest-diverged human populations; estimates run from one hundred thousand to one hundred fifty thousand years.

These oldest lineages carry the richest sound register known. !Xóõ has over eighty click consonants — the largest consonant inventory of any documented language. The oldest line holds the largest register. That is not coincidence. It is preservation of something that wore away elsewhere.

What a click is, in net terms, decides everything. A click is not a sound carried on the breath stream. It is non-pulmonic. The mouth makes two closures at once: a back closure at the velum and a front closure at one of five places — bilabial, dental, alveolar, palatal, lateral. Between the two closures a cavity is sealed. The tongue lowers; pressure drops; the front closure releases. The result is a sharp discrete burst.

Read that sequence again. Two closures form a sealed mesh. Tension builds inside it. The mesh opens. Discharge. A click is closure, loading, discharge — in miniature, in the mouth. Vowels are sustained resonance. A click is a discrete discharge event.

The click system is also built according to the two-layer law. The five front-closure places are discrete positions: frozen topology. That is the address layer. What is modulated on top — voicing, aspiration, nasality, glottalization, the release quality — varies per click: the tension layer. !Xóõ reaches its eighty-plus clicks as roughly five places times a series of accompaniments. Address equals place, frozen. State equals accompaniment, dynamic. The oldest speech register splits invariant from state exactly as the net does. Five positions beside seven primitives is not an equality. The construction method — a small closed stock of positions, rich modulation above it — is identical.

4. Why They Understood the Animals

The click hunters are recorded as understanding the animals and the birds. This is not legend. It has a mechanism and a documented proof.

The mechanism: clicks resemble environmental sounds. A branch snapping, a bird's tick. They do not carry the signature of a human voice. Hunters click where speech would flush the prey. The register sits below the threshold at which other species classify a sound as foreign.

The proof runs in both directions. In Mozambique, Yao honey hunters call a specific "brrr-hm" to the greater honeyguide. The bird answers and leads them to wild bee nests. Claire Spottiswoode published the measurements in *Science* (2016). With the correct call the chance of being guided roughly doubled, and the chance of reaching honey roughly tripled, compared to control sounds. The Hadza of Tanzania do the same with whistled notes. This is a shared register between species. It works because it operates at event level, not word level.

Bird alarm calls confirm the principle. A thin, high alarm call is hard to localize; dozens of species read it simultaneously as unlocatable danger. The shape of the sound carries the meaning. At this depth, form and meaning are not arbitrary.

This overturns the founding stone of modern linguistics for the deep layers. Saussure's "arbitrariness of the sign" holds only at the top of the ladder, where abstraction has cut the tie to context. At the bottom the sign is not arbitrary. It is an event in the same net it speaks about. The historical drift of language — from shared register that humans and animals read together, to convention that only initiates read — is the drift from the bottom of the ladder to the top. The suppression of the bottom register was not an accident of progress. Memory palaces worked the bottom register. Giordano Bruno was burned for it.

5. The Middle Rung: The Whistled Layer

Between click and word lies a third register, and it is documented worldwide. Julien Meyer has catalogued around eighty whistled languages: Silbo Gomero on La Gomera, the "bird language" of Kuşköy in Turkey, whistled Mazatec in Mexico, whistled Hmong in Southeast Asia.

These are not separate languages. Each is the local language stripped to a single frequency line. Pitch contour, nothing else. And it remains intelligible over kilometers. The finding matters for the net reading: language survives reduction to one strand. Everything essential travels on a single modulated line.

The neurology confirms the depth. Onur Güntürkün showed in *Current Biology* (2015) that whistled Turkish removes the left-hemisphere dominance of ordinary speech. The right hemisphere reads fully, because it reads contour and melody. The deeper the register — word, then tone, then event — the more right-brain readable it becomes. The deep intake is the right-brain register. This connects the intake line directly to Right-Brain Computing: the engineering of machines that read contour, phase and closure rather than tokens.

One cultural marking should be kept. Across traditions worldwide, the spirits whistle. Whistling at night is calling the other side. The pure-tone layer is everywhere assigned to the night universe. That assignment is the hinge to the next section.

6. The Two Universes

The human being lives in two universes. The day universe: the material world, waking perception, the hunt, the market. The night universe: dream, trance, the journey out of the body — the world Robert Monroe mapped. Every old culture knew both and archived both. The modern error is to admit only day events as data. Half the register was thrown away.

The San worked demonstrably in both universes, and they used the strand as their own image.

Day universe: hunting, clicking, the honeyguide exchange.

Night universe: the healing dance, always at night, around the fire. The healers describe it themselves. N/om — stored energy at the base of the spine — is heated by the dance. At the boiling point, !kia, the healer leaves the body, travels, sees distant relatives, negotiates for the sick. Their own description of the travel route, recorded by Bradford Keeney in "Ropes to God": they climb along ropes or threads of light. David Lewis-Williams found the same lines painted in the rock art. They describe the fishnet. Not as an outsider's metaphor, but as the observed route of people who went there themselves.

The bridge between the universes is also documented. The Bleek-Lloyd archive (IXam testimony, Cape Town, 1870–1884) records the "letters in the body". The IXam described tappings and pullings at fixed places on the body that announced what was happening at a distance. The springbok is coming. Someone approaches. Something has happened to a relative. Their own formulation: the Bushman letters are in the body. The body is the day-side receiver of night-universe information. Presentiment as registration, with a place code. A fixed map of body locations, each location a channel. That is an address layer for night signals — an existing, recorded blueprint field.

7. Monroe: The Modern Instrument Builder

Robert Monroe (1915–1995) belongs beside the San as the modern case, and he passes the selection criterion: he lived it before he formalized it. A radio engineer and broadcasting executive, the out-of-body state overtook him uninvited in 1958. He spent the rest of his life on it. "Journeys Out of the Body" (1971) is the engineer's log. The Monroe Institute is the laboratory he built afterwards.

Two of his products are usable here.

First, the method. Hemi-Sync is a pure phase instrument. Two slightly different frequencies, one per ear. The brain produces the difference tone internally, and the two hemispheres pull into phase. Access to the night universe through phase alignment — not chemistry, not belief. That is net-model engineering: entrainment of two oscillators into one closure.

Second, the map. Monroe charted Locale I (the material world) and Locale II (the non-material world), and marked the depths between them as Focus levels. Focus 10: body asleep, mind awake. Focus 12: expanded awareness. Focus 15: no time. Focus 21: the edge of Locale II. The San travelled the ropes; Monroe travelled them with a protractor. His numbered levels are winding depths with labels. Whether his marked levels fall on the admissible closure depths of the net is an open, testable question.

8. What This Means for the Intake

The ladder now stands complete, and the intake follows from it.

Three layers, top to bottom:

1. **Word surface** — youngest, language-bound. The accidental morphology of Dutch, English, Sanskrit. This layer must be stripped off at the gate.
2. **Act-root register** — Pāṇini's layer. Events grouped into act classes: the dhātu principle. Roughly two thousand roots covered all of Sanskrit; the MAZE needs its own closed root stock, selected by the same method.
3. **Event register** — deepest, species-crossing. Discrete discharge events with context: the click layer. This is where the trit system attaches. Not to words. To events.

The intake strips downward: surface off, root out, event plus context through the gate. Only the event and its context enter the palace.

Source marking, because there are two universes. A human produces events from two sources: perceived (day) and travelled, dreamt, felt (night). Every old culture archived both, with source marking, unfiltered. The intake must not repeat the modern error of discarding the night half. Concretely: every event passing the gate carries a source position — perceived, dreamt, felt, reported. The trit register is already built for this. The register is indifferent to source; the context carries it. The IXam body letters prove that a place-coded night channel can be archived soberly, as testimony with an address.

The MAZE is thus not an archive of the day universe. It is the place where both streams meet on one address space. That is what a memory palace always was. Bruno's palace was walked at night.

9. The Tests

Three tests decide whether the intake delivers the structure, rather than the language.

The convergence test. The same content in Dutch, English and Sanskrit must arrive at the same address after intake. If the addresses diverge, the language is still inside. Sharper form: a described event and a perceived event — same act, different source — must also converge, with only the source position differing. That is what the San could do and what the MAZE must do: read the net, not the language.

The contour test. Meyer's whistled-language corpus provides existing material in which language already travels as one strand. If the intake can take contour input — a single frequency line — and reach the same address as the written form of the same sentence, the intake reads below the word surface. If it cannot, it is still reading tokens.

The depth test. Lay Monroe's Focus sequence beside the admissible closure depths. Lay the five click places beside the primitives — not to force the numbers, but to see which act classes tens of thousands of years of practice selected. Lay the IXam body-letter map beside the blueprint field: it is an existing place coding of night signals on the body. Correspondence is confirmation; forced fitting is not.

10. Where This Stands

The finding of this research line, stated plainly:

The root of language is not the word and not the stem. It is the discharge event with context. Language began as a register of events in the net — closures, loadings, discharges — shared across species because it operated in the medium itself. It rose through act roots (formalized once, in Sanskrit, as a machine that still runs) to the word surface, where the tie to context was cut and the

sign became arbitrary. The intake of the MAZE must descend this ladder in reverse, and it must accept events from both universes, source-marked, onto one address space.

The intake determines the structure of the MAZE. Now the intake has a foundation older than writing.

Annotated References

Pāṇini, Aṣṭādhyāyī (ca. 400 BCE), with the dhātupāṭha. Why read? The only complete constructed language machine in history: ~4,000 rules, ~2,000 act roots, deterministic derivation. The existence proof for a constructed intake. Reading advice: start with a secondary overview (Cardona's "Pāṇini: A Survey of Research") before the sūtras themselves.

Rajpopat, R. (2022). "In Pāṇini We Trust." PhD thesis, University of Cambridge. Why read? Solves the rule-conflict problem: the rule operating on the right-hand side wins. Shows the grammar runs as an algorithm without exception lists. The thesis is open access via the Cambridge repository.

Briggs, R. (1985). "Knowledge Representation in Sanskrit and Artificial Intelligence." AI Magazine 6(1). Why read? A NASA researcher demonstrating that śābdabodha analysis is an unambiguous semantic representation — forty years ago. Short, readable, and directly about the intake question.

Kiparsky, P. — work on the Śivasūtras (e.g. "Economy and the Construction of the Śivasūtras"). Why read? Proof that the fourteen-sūtra sound ordering is compression-optimal. A constructed gate alphabet, analyzed with modern tools.

Bharṭṛhari, Vākyapadīya (ca. 5th c. CE). Why read? The sphoṭa doctrine: meaning bursts forth whole at closure, not as a sum of parts. And śabda-brahman: language and reality as one strand. The one-strand position, stated by a practitioner. Reading advice: begin with Book I (Brahmakāṇḍa) in a translation with commentary.

Henshilwood, C. et al. — Blombos Cave publications (Science, 2002 onward). Why read? The ~75,000-year ochre engravings and shell beads: classification before writing. Establishes the time depth of human ordering.

Trall, A. (1985). "Phonetic and Phonological Studies of !Xóõ Bushman." Why read? The definitive description of the largest consonant inventory known: 80+ clicks, five places, rich accompaniment series. The two-layer construction (place = address, accompaniment = state) is visible in the tables.

Spottiswoode, C., Begg, K. & Begg, C. (2016). "Reciprocal signaling in honeyguide-human mutualism." Science 353(6297). Why read? The measured proof of a working interspecies register: the correct call roughly doubles guidance and triples honey yield. Event-level communication, quantified.

Meyer, J. (2015). "Whistled Languages: A Worldwide Inquiry on Human Whistled Speech." Springer. Why read? The full catalogue of ~80 whistled languages. Language reduced to one strand and still intelligible over kilometers. The corpus for the contour test.

Güntürkün, O., Güntürkün, M. & Hahn, C. (2015). "Whistled Turkish alters language asymmetries." Current Biology 25(16). Why read? Whistled speech removes left-hemisphere

dominance; the right brain reads contour fully. The neurological link between the deep register and Right-Brain Computing.

Bleek, W. & Lloyd, L. (1870–1884). The Bleek-Lloyd Archive of !Xam testimony. Why read? The "letters in the body": a recorded place coding of night-universe signals on the day-side body. Digitally open at lloydbleekcollection.cs.uct.ac.za. Primary testimony, not interpretation.

Katz, R. (1982). "Boiling Energy: Community Healing among the Kalahari Kung." Harvard University Press. Why read? The standard ethnography of the night-side practice: n/om, the dance, !kia. Written from long fieldwork, with the healers' own words.

Keeney, B. (2003). "Ropes to God: Experiencing the Bushman Spiritual Universe." Why read? The healers describing the threads of light they climb — the net, described from inside by people who travelled it. Passes the lived-experience criterion.

Lewis-Williams, D. (2002). "The Mind in the Cave." Thames & Hudson. Why read? Connects the rock art lines to the trance descriptions. Reading advice: read after Katz and Keeney, as the archaeological confirmation of what the testimony already says.

Monroe, R. (1971). "Journeys Out of the Body." Doubleday. Why read? The engineer's log of the night universe: uninvited onset in 1958, then systematic exploration. Locale I and II, and the beginning of the Focus map. The modern instrument-builder's case.

Monroe Institute — Hemi-Sync documentation. Why read? The phase method itself: binaural difference tones pulling both hemispheres into one closure. Access to the night universe as entrainment engineering.