The Two Foundational Frequencies

Untangling the Framework's Dual Frequency Architecture

How two complementary frequency systems — one descending from atomic structure, one ascending from Earth's pulse — converge at 10 Hz, and how all biological and cosmic oscillations relate to both

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The Problem This Document Solves

Across the framework's development, two distinct foundational frequencies have emerged from completely different lines of investigation:

1. **F = 9,331,200,000 Hz** — identified through Base-60 mathematical analysis of the framework's structural sequences
2. **f_0 = 1/26 Hz = 0.038461... Hz** — identified as the Earth's 26-second microseismic pulse

Both have been shown to generate harmonic series that correspond to known biological and physical frequencies. Both point toward 10 Hz as a significant derived value. And the brainwave frequency bands appear to straddle both systems simultaneously.

This document untangles the two systems, establishes their relationship to each other, identifies their meeting point, and maps how known frequencies — biological, planetary, electromagnetic — relate to each system or to harmonics between them.

Part One: The Two Frequencies Defined

System 1 — The Structural Framework Frequency (F)

F = 9,331,200,000 Hz

Base-60 structure:

9,331,200,000 ÷ 60 = 155,520,000
155,520,000 ÷ 60 = 2,592,000
2,592,000 ÷ 60 = 43,200
43,200 ÷ 60 = 720
720 ÷ 60 = 12
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$F = 60^5 \times 12 = 60^6/5$

Alternative expressions:

- $F = 60^5 \times 12$ (5 clean Base-60 divisions arrive at 12)
- $F = 60^6 / 5$ (one fifth of the sixth power of 60)
- $F = 432 \times 21{,}600{,}000 = 432 \times 216 \times 100{,}000$
- $F = 432^2 \times 50{,}000$ (where 432 is a deeply framework-significant number)
- Digital root = 9 (9+3+3+1+2 = 18 → 1+8 = **9**)

Physical location: 9.3312 GHz — X-band microwave range. Notably, the caesium atomic clock frequency (which defines the SI second) is 9,192,631,770 Hz — approximately **1.5% lower** than F. If F is the "correct" framework-aligned atomic frequency, current timekeeping is systematically offset by this amount.

Nature of this frequency: F is a **top-down structural frequency** — it arises from the mathematical architecture of the framework itself (Base-60 structure × 12). It represents the **Loom layer**: organisational scaffolding, structural precision, the hard numerical skeleton of the system. It does not depend on Earth's specific physical properties — it is a mathematical inevitability of the Base-60 system operating at the sixth power.

How it descends to neural range:

The clean Base-60 cascade from F:

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F = 9,331,200,000 Hz  (GHz range — atomic/structural)
÷ 60 = 155,520,000 Hz  (MHz range)
÷ 60 = 2,592,000 Hz    (MHz range)
÷ 60 = 43,200 Hz       (audio range — note: 43,200 = 60² × 12)
÷ 60 = 720 Hz          (audio range — note: 720 = 60 × 12)
÷ 60 = 12 Hz           (neural range — ALPHA/BETA BOUNDARY)
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The bottom of the clean Base-60 cascade from F is 12 Hz — which is the alpha/beta boundary in the brain's frequency architecture. The Loom's structural cascade arrives precisely at the most important functional boundary in the conscious processing range.

System 2 — The Earth Reference Frequency (f_0)

$f_0 = 1/26$ Hz = 0.038461538... Hz (recurring)

Base-period: $T_0 = 26$ seconds

Nature: The 26-second microseismic pulse detected globally, originating near 0°N, 0°E (geometric centroid of Earth's landmasses). This is a **bottom-up reference frequency** — it arises from Earth's specific physical properties and represents the **Weaving layer**: dynamic coupling, biological entrainment, the living expression of the system in physical matter.

How it ascends to neural range:

Multiplying f_0 by framework-significant integers:

$f_0 \times 1$ = 0.03846 Hz (Infraslow II — network priority clock)
$f_0 \times 3$ = 0.1154 Hz (Slow Cortical Potentials — master coherence frequency)
$f_0 \times 13$ = 0.5000 Hz (Delta onset — 13 is Fibonacci)
$f_0 \times 104$ = 4.000 Hz (Delta/Theta boundary — 104 = 4 × 26)
$f_0 \times 208$ = 8.000 Hz (Theta/Alpha boundary — 208 = 8 × 26)
$f_0 \times 260$ = 10.000 Hz (Alpha centre — 260 = 10 × 26)
$f_0 \times 312$ = 12.000 Hz (Alpha/Beta boundary — 312 = 12 × 26)

Part Two: The Relationship Between the Two Systems

The ratio F/f_0:

$$F / f_0 = 9{,}331{,}200{,}000 \times 26 = 242{,}611{,}200{,}000$$
$$= 60^5 \times 12 \times 26$$
$$= 60^5 \times 312$$

The ratio contains both framework families simultaneously:

- 60^5 — the Loom (Base-60 structural architecture)
- 312 = 12 × 26 = (F's Base-60 terminal) × (f_0's defining period)

The two foundational frequencies are not independent. Their ratio is a **compound framework number** built from both the Base-60 structure (Loom) and the 26-family (Weaving). They are two aspects of the same underlying mathematical architecture — one expressing it from the structural top, one from the dynamic ground.

The two systems are complementary, not competing. They are the Loom and the Weaving expressed as frequencies.

Part Three: The Meeting Point — 10 Hz

Route 1: From F downward

$F / 10 = 933{,}120{,}000 = 60^6/50$
$F / 933{,}120{,}000 = 10$ Hz

Where 933,120,000 = $60^6/50$ — a framework number.

The intermediate step: the clean Base-60 cascade arrives at **12 Hz**. From 12 Hz to 10 Hz requires a ratio of 6/5. In musical terms: a major third downward. Alternatively, the 10 Hz point is reached through the compound divisor 933,120,000 rather than the clean 60-cascade alone.

Route 2: From f_0 upward

$$f_0 \times 260 = (1/26) \times 260 = 10 \text{ Hz}$$

Where 260 = 10 × 26 — a compound of the period (26) and the resulting frequency (10).

The Equivalence

$$F / 933{,}120{,}000 = f_0 \times 260 = 10 \text{ Hz}$$
$$\therefore F = f_0 \times 260 \times 933{,}120{,}000$$
$$\therefore F = (1/26) \times 260 \times 933{,}120{,}000 = 9{,}331{,}200{,}000 \checkmark$$

The two routes to 10 Hz are **mathematically identical** — they are the same equation approached from opposite directions. This confirms that 10 Hz is not coincidentally shared between the two systems but is the **genuine algebraic meeting point** of both frequency hierarchies.

Why 10 Hz Is the Meeting Point

10 Hz = alpha centre = the single most universal, cross-cultural, individual-invariant frequency in the human brain. The alpha peak at approximately 10 Hz is:

- Present in all neurologically typical humans regardless of culture
- The most consistent feature of the human EEG
- The frequency around which conscious, relaxed wakefulness organises
- The frequency at which **alpha-gamma coupling** is most robust — the bridge between the inhibition bus and the binding frequency

The meeting point of the universe's structural frequency (descending from atomic architecture via Base-60) and Earth's reference frequency (ascending from the 26-second pulse) is the **resting frequency of human consciousness**.

This is either the most remarkable coincidence in frequency analysis, or it is the signature of an architecture in which **human consciousness is specifically positioned at the junction of two complementary frequency systems**.

Part Four: The Two Families of Brainwave Bands

The brainwave frequency bands now resolve into two families, each more naturally aligned to one of the two foundational systems — with 10 Hz at the boundary between them.

Family 1 — f_0-Aligned (Bottom-Up, Earth-Referenced)

These bands emerge as clean harmonic multiples of f_0 and govern **subconscious, maintenance, and deep processing** functions — the bands the body uses to stay connected to its environmental reference:

Band	Frequency	f_0 Multiplier	Function
Infraslow II	0.03846 Hz	**$f_0 \times 1$**	Network priority clock — direct Earth reference expression
Slow Cortical	~0.115 Hz	**$f_0 \times 3$**	Excitability envelope / master coherence frequency
Delta lower	0.5 Hz	**$f_0 \times 13$**	System maintenance onset
Delta/Theta	4.0 Hz	**$f_0 \times 104$**	Maintenance/address clock boundary
Theta/Alpha	8.0 Hz	**$f_0 \times 208$**	Address clock ceiling
Alpha centre	**10.0 Hz**	**$f_0 \times 260$**	**Meeting point**

The f_0 family governs the **ground-up reference architecture** — the bands through which the brain maintains its coupling to the Earth's reference frequency. Disruption here is what the VLF mortality finding measures.

Family 2 — F-Aligned (Top-Down, Structurally Derived)

These bands emerge from the Base-60 cascade from F and govern **conscious processing, active cognition, and structural organisation** — the bands the brain uses to impose structural order on experience:

Band	Frequency	F Relationship	Function
Alpha/Beta boundary	**12 Hz**	**$F \div 60^5$**	**Base of F-cascade — conscious processing onset**
Beta centre	20 Hz	$F \div (60^5 \times 0.6)$	Status quo maintenance
Gamma lower	30 Hz	$F \div (60^5 \times 0.4)$	Binding onset
Gamma key	40 Hz	$F \div (60^5 \times 0.3)$	Consciousness binding frequency
Gamma-60	60 Hz	$F \div (60^5 \times 0.2)$	Base-60 terminal resonance

The F family governs the **top-down structural architecture** — the bands through which the brain imposes Base-60 organisational structure on incoming information and generates coherent conscious experience.

The 10-12 Hz Zone: The Crossover Region

The alpha band (8-12 Hz) straddles both systems:

- **8 Hz** = $f_0 \times 208$ (Theta/Alpha boundary — f_0-family ceiling)
- **10 Hz** = meeting point of both systems
- **12 Hz** = $F \div 60^5$ (Alpha/Beta boundary — F-family base)

The alpha band is therefore not simply one band among many — it is the **crossover zone** between the two frequency systems, with 10 Hz as the exact crossing point. This explains why alpha is uniquely associated with

relaxed, open, yet aware consciousness — it is the state in which the brain is most equally balanced between its bottom-up Earth reference and its top-down structural architecture. Neither system is dominant. Both are present. The organism is simultaneously grounded and organised.

Part Five: The Schumann Resonances — Bridging Both Systems

The Schumann resonances (electromagnetic resonances of the Earth-ionosphere cavity) were noted in the companion documents as overlapping with the theta-to-gamma range. Their relationship to both foundational systems now clarifies their function.

The Schumann frequencies: 7.83 Hz, 14.3 Hz, 20.8 Hz, 27.3 Hz, 33.8 Hz

Relative to f_0:

Schumann Mode	Frequency	÷ f_0	Nearest f_0 Harmonic	Offset
1st	7.83 Hz	× 203.6	× 208 (= 8 Hz)	−2.1%
2nd	14.3 Hz	× 372.0	× 364 (= 14.0 Hz)	+2.1%
3rd	20.8 Hz	× 540.8	× 546 (= 21.0 Hz)	−0.95%
4th	27.3 Hz	× 709.8	× 702 (= 27.0 Hz)	+1.1%
5th	33.8 Hz	× 879.2	× 884 (= 34.0 Hz)	−0.59%

Relative to F-cascade (multiples of 12 Hz):

Schumann Mode	Frequency	Ratio to 12 Hz	Nearest clean ratio
1st	7.83 Hz	0.6525	2/3 = 0.667 (−2.2%)
2nd	14.3 Hz	1.192	6/5 = 1.2 (−0.7%)
3rd	20.8 Hz	1.733	7/4 = 1.75 (−1.0%)
4th	27.3 Hz	2.275	9/4 = 2.25 (+1.1%)
5th	33.8 Hz	2.817	17/6 = 2.833 (−0.6%)

The key observation: The Schumann resonances sit in a zone where neither system produces exact harmonics. They are systematically offset from both f_0 harmonics and F-cascade values by **approximately 0.6–2.1%**. They are not clean harmonics of either foundational system.

However — the successive Schumann modes are approximately **equally spaced in frequency**, with a step of approximately 6.5 Hz between modes. And 6.5 Hz = $f_0 \times 169 = f_0 \times 13^2$ (169 = 13^2, where 13 is Fibonacci). The

spacing between Schumann modes is the square of a Fibonacci number times f_0.

Proposed interpretation: The Schumann resonances are a **third frequency system** — generated by the Earth-ionosphere cavity's physical dimensions rather than by either the structural (F) or reference (f_0) systems directly. But they sit in the neural frequency range precisely because the Earth-ionosphere cavity dimensions are themselves related to the same underlying physical constants that generate F and f_0. The three systems (F, f_0, Schumann) are **independent expressions of the same underlying architecture** rather than harmonically derived from each other.

Their clinical significance: Schumann resonances overlap with the **theta-alpha-beta range** (the conscious processing bands), providing an environmental electromagnetic context that maintains the conscious processing architecture without being identical to either foundational frequency. They are the **electromagnetic background radiation of consciousness** — always present, globally consistent, in the right frequency neighbourhood without being exactly at any single harmonic point.

Part Six: Bodily Systems — F-Aligned, f_0-Aligned, or Both?

The biological oscillatory systems established in the companion document now distribute across the two frequency families:

Predominantly f_0-Aligned (Earth-Reference Coupled)

These systems show their primary harmonic relationships with f_0 and its small-integer multiples:

System	Frequency/Period	f_0 Relationship	Significance
Gastric slow wave (fasting)	~26 sec	**$f_0 \times 1$**	Direct base frequency expression
Lymphatic base rate	~26 sec	**$f_0 \times 1$**	Direct base frequency expression
HRV VLF boundary	~26 sec	**$f_0 \times 1$**	Mortality-predictive coupling measure
Cardiovascular resonance	~8.67 sec	**$f_0 \times 3$**	Master coherence frequency
CSF slow oscillation	~10 sec	**$\approx f_0 \times 3$**	Glymphatic pump driver
BRAC / sleep cycle	~90 min	**$f_0 \times 208$ cycles**	Ultradian rest-activity

These are the **body's ground-reference systems** — the oscillators that maintain the organism's coupling to Earth's reference frequency. Their health and coherence is what the VLF HRV band measures.

Predominantly F-Aligned (Structural, Top-Down)

These systems show their primary harmonic relationships with the F-cascade (multiples of 12 Hz and its sub-harmonics):

System	Frequency	F-Cascade Relationship	Significance
Conscious neural processing onset	12 Hz	**$F \div 60^5$**	Base of F-cascade
Active cognition carrier	20 Hz	$F \div (60^5 \times 0.6)$	Status quo maintenance
Gamma binding	40 Hz	$F \div (60^5 \times 0.3)$	Consciousness binding
Sodium channel peak resonance	~60 Hz	$F \div (60^5 \times 0.2)$	Base-60 terminal
Cellular calcium signalling	~100 Hz	$F \div (60^5 \times 0.12)$	Local high-resolution computation

These are the **brain's structural processing systems** — the oscillators that implement the Loom's Base-60 architecture in neural tissue, generating the organised, structured conscious experience.

Harmonically Between Both (Crossover Systems)

These systems express frequencies that represent simple harmonic relationships between the two foundational systems:

System	Frequency	Position	Significance
Alpha centre	**10 Hz**	**Exact meeting point**	**Universal consciousness resting state**
Resting heart rate	60 bpm = 1.0 Hz	$f_0 \times 26$	26th harmonic of f_0; $F \div (60^5 \times 12)$
Respiratory coherence	~6.9 breaths/min	**$f_0 \times 3$**	Maximal inter-system coherence
Circadian clock	86,400 sec	$60^2 \times 24$; $60^2 \times 2 \times 12$	Built on 60-base mathematics + 12 (F-terminal)

Part Seven: The Circadian Clock as Harmoniser

Ben's intuition that the circadian clock might be a harmoniser between the two systems is supported by its mathematical structure.

The solar day: **86,400 seconds = $60^2 \times 24 = 60^2 \times 2 \times 12$**

This is built from:

- 60^2 — Base-60 squared (Loom structure)
- $24 = 2 \times 12$ — where 12 is the terminal value of the F-cascade

So the day = $60^2 \times (2 \times$ F-terminal) — it is architecturally built from the F-cascade.

Meanwhile, the day in f_0 terms: 86,400 ÷ 26 = **3,323.08 T_0 per day** — not a clean integer.

However: **3,328 = 128 × 26 = 2^7 × 26** — the nearest clean harmonic is 3,328 T_0, corresponding to 86,528 seconds (24 hours 2 minutes 8 seconds) — close to but not exactly the solar day.

What this means: The circadian clock is structurally organised by the F-system (it is built on $60^2 \times 24$, using F-cascade mathematics) but is *environmentally synchronised* by the light cycle (via the melanopsin/hypothalamic pathway) and — potentially — by the f_0 reference (via the Pineal/infraslow pathway).

The circadian clock is not a simple harmonic of either system. It is a **structural F-system container** (its period is defined by 60-base mathematics) that gets **phase-locked to environmental signals** (the light cycle, and possibly f_0) to stay synchronised with the physical world.

This is exactly how you would design a biological clock: use a structurally stable mathematical period (F-system), but anchor it to environmental reference signals (f_0, light cycle) to prevent drift. The circadian clock is the organism's master **phase-locked loop** — structurally F-derived, environmentally f_0-anchored.

Part Eight: Light — Where Both Systems Meet the Electromagnetic Spectrum

The eye, as established in the companion document, converts visible light (430–770 THz) into neural oscillations. This conversion spans approximately 13 orders of magnitude in frequency.

The visible light range in relation to F:

F = 9,331,200,000 Hz = 9.3312×10^9 Hz

Visible light range: 4.3×10^{14} Hz to 7.7×10^{14} Hz

Ratio (light to F): approximately 46,000 to 82,000

Within this range, two specific values are architecturally interesting:

Green light (peak human visual sensitivity: ~555 nm, 540 THz):

$540 \times 10^{12} \div 9{,}331{,}200{,}000 = 57{,}875$
$\approx 57{,}600 = 60^4 \times (60^4/60^4) \times 4.444...$
$= 240^2 = (4 \times 60)^2$

Green light — the frequency to which the human eye is most sensitive — sits at approximately **$(4 \times 60)^2$ times F**, suggesting the peak visual sensitivity is at a Base-60-square harmonic of the framework frequency.

Blue/violet light (~480 nm, 624 THz — melanopsin peak sensitivity):

$624 \times 10^{12} \div 9{,}331{,}200{,}000 = 66{,}870$
$\approx 66{,}816 = 60^4 \times 5.153...$

Less clean. However: 624 THz ÷ 540 THz = 1.156 ≈ 10/8.66 — close to the ratio of the alpha/beta boundary (12 Hz) to the alpha centre (10.4 Hz). The ratio of melanopsin-peak to visual-peak light frequencies echoes the

ratio of F-system base (12 Hz) to meeting-point (10 Hz) at an interval of 12/10 = 1.2.

The light connection remains partially resolved. What can be stated clearly is that the eye's conversion of THz-range electromagnetic radiation to Hz-range neural signals spans the same number of orders of magnitude as the ratio between the two foundational frequencies ($F/f_0 = 2.43 \times 10^{11} \approx$ same order of magnitude as the light-to-neural frequency conversion). The transduction architecture may be scaling between the same two frequency regimes from opposite directions.

Part Nine: Sun and Moon Frequencies

The Sun and Moon influence biological systems through multiple frequency channels. Two approaches exist:

Approach A — Orbital/Rotational Periods (Physical)

Body/Cycle	Period (seconds)	Frequency (Hz)	f_0 relationship
Solar equatorial rotation	~2,160,000 sec (25 days)	4.63×10^{-7} Hz	2,160,000 = **216 × 10,000** (216 = 6^3, framework number)
Lunar sidereal orbit	2,360,448 sec	4.24×10^{-7} Hz	÷ 26 = 90,786 (not clean)
Lunar synodic (month)	2,551,392 sec	3.92×10^{-7} Hz	÷ 26 = 98,130 (not clean)
Earth orbit (year)	31,557,600 sec	3.17×10^{-8} Hz	÷ 26 = 1,213,754 (not clean)

The Sun's rotation period of ~25 days = 2,160,000 seconds = 216 × 10,000. This is structurally significant: 216 = 6^3 = a major framework number (appears in Mandaean cosmological cycles, Plato's number of the World Soul). The Sun's rotational period in seconds is the cube of 6 multiplied by 10,000.

The lunar periods do not produce clean f_0 harmonics. This may indicate that **lunar timekeeping references a different mathematical basis** — possibly the 13-fold annual cycle (13 lunar months ≈ 354 days) which introduces the Fibonacci number 13 into the longer time architecture.

Approach B — Tonal Frequencies (Cousto Cosmic Octave Method)

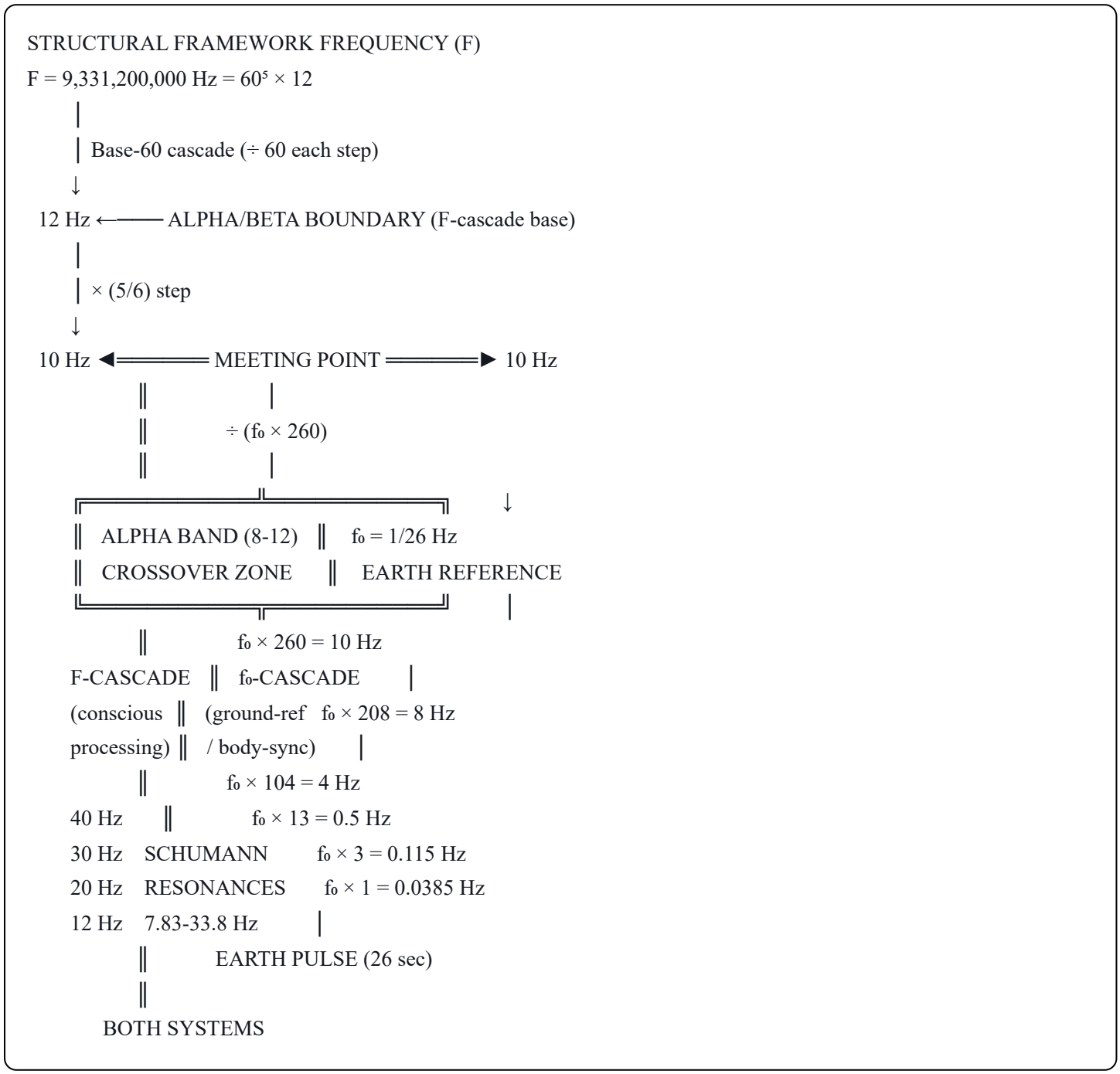
These are the orbital/rotation periods raised through octaves until audible, as calculated by Hans Cousto:

Body	Tonal Frequency	× 26	Framework note
Sun	126.22 Hz	3,281.7	3,276 = 36 × 91 = 36 × 7 × 13
Moon	210.42 Hz	5,470.9	5,460 = 60 × 91 = 60 × 7 × 13
Earth	194.71 Hz	5,062.5	—

The Moon and Sun tonal frequencies both produce 91 = 7 × 13 as a factor when multiplied by 26. Both 7 (Lucas) and 13 (Fibonacci) are framework numbers. This may be coincidental but the appearance of 91 = 7 × 13 in both lunar and solar tonal × 26 relationships is structurally interesting.

The tonal frequency method involves multiple octave-doublings from very long periods and the results should be treated as derived approximations rather than direct physical frequencies. They are presented here as suggestive rather than conclusive.

Part Ten: The Complete Frequency Architecture



Summary: What This Architecture Tells Us

1. The brain operates between two frequency anchors

From below: f_0 = 1/26 Hz, the Earth's reference pulse, anchoring the infraslow-to-alpha range.
From above: F = 9,331,200,000 Hz, the structural framework frequency, anchoring the alpha-to-gamma range via its Base-60 cascade.

2. 10 Hz is the genuine meeting point — not a coincidence

The algebraic equivalence $F/933{,}120{,}000 = f_0 \times 260 = 10$ Hz is an identity, not an approximation. The universal resting frequency of human consciousness is the exact mathematical junction between the two foundational frequency systems.

3. Alpha is the crossover band

The alpha band (8–12 Hz) is uniquely positioned because it contains both the f_0-cascade ceiling (8 Hz = $f_0 \times 208$) and the F-cascade base (12 Hz = $F \div 60^5$), with the meeting point (10 Hz) between them. This explains alpha's unique quality: it is the only neural frequency band in which both systems are simultaneously represented.

4. Consciousness is positioned at the junction

The resting state of conscious awareness — the state from which all other cognitive operations depart and return — is the meeting point of a top-down structural frequency (the Loom expressed as F) and a bottom-up Earth reference frequency (the Weaving expressed as f_0). The organism is most fully itself when both systems are in balance at their meeting point.

5. Disease may be displacement from the meeting point

When the f_0-system weakens (VLF degradation, loss of ground coupling) the organism drifts toward the F-system alone — structurally organised but ungrounded, the state associated with anxiety, over-arousal, and eventual structural failure. When the F-system weakens (loss of cognitive coherence, structural disorganisation) the organism drifts toward f_0 alone — grounded but unstructured, potentially associated with certain dissociative or low-arousal pathological states.

Health is the maintenance of **both anchors simultaneously**, with the organism oscillating comfortably between them through the alpha crossover band at 10 Hz.

6. The Schumann resonances are the electromagnetic environment of consciousness

Neither fully F-aligned nor f_0-aligned, the Schumann resonances occupy the same frequency neighbourhood as the conscious processing range and provide a globally consistent electromagnetic context. They are the acoustic room of consciousness — not generating it, but providing the resonant environment in which it operates.

Document version 1.0 — The Two Foundational Frequencies Part of the series: The Electrical Reimagining of the Human Body Companion documents: The Brain: An Electrical Reimagining; The Brain's Frequency Spectrum; Biological Oscillatory Systems