

THE UNIVERSAL FORCE OF TIME

The Medium Is the Clock

How the refractive index sets the rate of time — the two clocks from gestation to death

Stephen Daubney · The Daubney Foundation · 2026 · Rev 3 · 27 September 2026

Tau (T) is the living fabric of time itself — the sole substance of which all physical reality is composed. Every particle, force, wavelength, and conscious experience is a structured configuration of T-flow. There is no gravity, no electromagnetic force, no strong nuclear force as separate entities: all are registers of the single T-field operating across dimensional levels. The conservation law $d\Sigma T=0$ governs all change: T is never created or destroyed, only redistributed.

Abstract

Hold a glass of water to the light and the straw inside it looks broken at the surface. Science calls this refraction and gives water a number — its refractive index, $n = 4/3$ ($2^2/3$) — meaning light travels at three-quarters of its air speed inside. The Force of Time reads that number far more deeply: n is not merely an optical property, it is the medium's T-time dilation factor. Light slows inside water because T itself — the sole substance of reality — flows more slowly there, at $1/n$ of its vacuum rate. So an organism living entirely inside a medium of index n ages at $1/n$ the rate of one in air. For water, the medium of life, $n = 4/3$ exactly, giving a T-rate of $3/4 = 75\%$ — not approximately, but as a lattice identity. The human body, about 65% water, therefore keeps two clocks at once: an external air register at 100% and an internal water register at 75%, and the 25% mismatch between them is what ageing is. This revision follows the two clocks across a whole life. Before birth the fetus lives on the water clock alone, so the observer's nine months, 270 days, are 202.5 days on the fetus's own clock — 4,860 hours, the 486 of hydrogen's line of life. The first breath is when the air register arrives: birth is the start of the two-clock state, and of ageing. And at death each part of the body carries the age of its own clock — a water part three-quarters of the calendar age, 60 at 80. The Greenland shark, fully immersed in cold deep water, lives past 400 years because its whole biology runs below 75% with no register split to fight. The only media the living world uses sit on pure {2,3,5} fractions — water $4/3$, glass-like lens $3/2$, calcite shell $5/3$ — evenly spaced by $1/6$, and the same n that slows time sets the medium's T-freefall rate, $g_{\text{medium}} = g_1/\sqrt{n}$. Twelve propositions, P-MEDIUM-1 to P-MEDIUM-12, frame the result.

1 · The Glass of Water

Find a glass of water and hold it up to the light. The light bends as it crosses from air into water — you have seen it a thousand times. A straw looks broken at the waterline; a coin on the floor of a pool seems closer than it is. Science calls this refraction, gives it a number — for water, $n = 4/3$ ($2^2/3$) — and moves on: light travels at three-quarters of its air speed inside.

Now ask a different question. If T is the sole substance of reality, and light rides through it, and T flows more slowly inside water than in air — then what else flows more slowly inside water? Not just light. Time itself. Not the clock on the wall: that clock measures the rotation of the Earth or the tick of a crystal we built, and it does not change when you submerge it. What changes is the rate at which T flows — the actual substrate of chemistry, cellular machinery, ageing. Inside water it runs at three-quarters of its air value, and because $3/4$ is a lattice identity, not a measurement, that figure is exact. Every process unfolding inside a water medium is granted 25% more T-time per calendar second to do its work.

2 · The Refractive Index Is the T-Time Dilation Factor

Conventional physics defines the refractive index as the ratio of the speed of light in vacuum to its speed in the medium, $n = c_1/c_{\text{medium}}$. The Force of Time keeps the arithmetic and changes its meaning. c_1 is not the speed of a photon; it is the T-flow rate of the G1 vacuum register, the spin-orbit speed of the surface register.

When light slows to c_1/n inside a medium, it does so because the T-field is denser there — T flowing through density flows more slowly, the way a river slows as it enters the shallows. The photon meets no resistance; it rides a slower T-current. So n is the T-time dilation factor of the medium: the T-flow rate inside is $1/n$ of the vacuum rate, and the ageing rate inside is $1/n$ of the air rate. For every calendar second that passes outside, an organism living entirely within a medium of index n accumulates only $1/n$ seconds of T-age. The medium is the clock; the number n sets how fast it runs.

The flow of time in water. $c_{\text{water}} = c_{G1} \times 3/4 = 224,841,925.262316951035323248091 \text{ m/s } (2 \cdot 3^6 \cdot 5^6 \cdot \pi^2)$. Worked: $c_{G1} = 299,789,233.683089268047097664121 \text{ m/s } (2^3 \cdot 3^5 \cdot 5^6 \cdot \pi^2)$; $\times 3 = 899,367,701.049267804141292992363$; $\div 4 = 224,841,925.262316951035323248091$. Against the vacuum register, water runs exactly 25% slow.

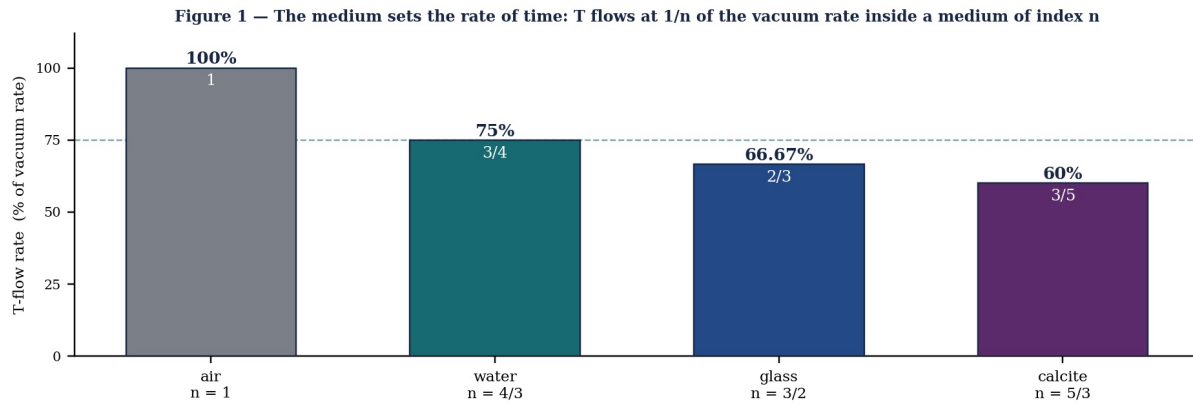


Figure 1 — T-flow rate as a fraction of the vacuum rate, by medium: air 100% (1), water 75% ($3/4$), glass 66.7% ($2/3$), calcite 60% ($3/5$). Each ratio is an exact {2,3,5} identity.

3 • The Lattice of Allowable Time-Slowing Ratios

Not every index is permitted. The {2,3,5} lattice fixes which T-time dilation factors correspond to stable physical media: only pure {2,3,5} fractions — numerator and denominator built from 2, 3 and 5 alone — name a node at which reality can hold a coherent register. A medium with $n = \sqrt{2}$ would not be a stable register, and a ratio carrying 7 sits on no node at all: seven is not a member of the alphabet; it marks the seam where one helix ends.

The three media that matter most to life sit exactly on the lattice: $n = 4/3$ ($2^2/3$) — water, cytoplasm, biological fluid; $n = 3/2$ — glass, silicate, the eye's lens; $n = 5/3$ — calcite, aragonite, biomineral shell. Cells use water, eyes use glass-like lenses, shells use calcite — the hierarchy of biological structure maps onto the lattice of allowed n . And the spacing is regular: from $4/3$ to $3/2$ is a step of $1/6$, and from $3/2$ to $5/3$ a step of $1/6$ again. The three biological media are evenly spaced on the lattice, each separated by $1/6$ in n -space. Life occupies the lattice completely.

4 • The Human Body — Two Clocks at Once

The human body is about 65% water by mass. Blood plasma is about 92% water; the cytoplasm of every cell is aqueous; the fluid bathing every tissue is water. You are, in the most physical sense, a water-based entity moving through an air-based world — and so you live in two T-registers simultaneously.

The external register is air, $n \approx 1$, T-rate 100%: sunlight, sound, seasons, the passage of social time, all at full T-rate. The internal register is water, $n = 4/3$, T-rate 75%: DNA replication, protein folding, enzyme catalysis, immune response — each cell granted 25% more time per calendar second to complete its chemistry. That slower internal rate is not a flaw; it is what lets molecular machinery reach its precision. DNA copies three billion base pairs with an error rate below one in ten billion, and that fidelity needs T-time, which the water register supplies. But the mismatch is also the driver of ageing: over decades the faster external register grinds against the slower internal one, and the steady accumulation of molecular damage is, in T-terms, the slow victory of the 100% register over the 75% register. Ageing is a register war, and the external register eventually wins. This is why hydration tracks longevity — more body water means more of the cell volume held at the 75% rate; a dehydrated body drifts toward the external rate, and its cells age faster.

Figure 2 — The body keeps two clocks at once; the 25% gap between them is what ageing is

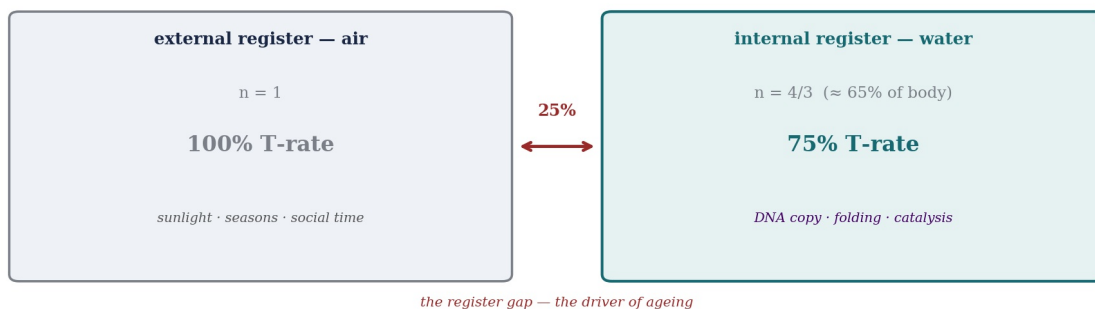


Figure 2 — The body keeps two clocks: an external air register at 100% and an internal water register at 75%. The 25% gap between them is the mechanism of ageing.

5 · The Greenland Shark and Deep Time

In 2016 radiocarbon dating of eye-lens proteins showed that the Greenland shark reaches ages past 400 years — one specimen estimated at 392 ± 120 — making it the longest-lived vertebrate on Earth. Marine biologists called it a mystery: the animal has no obvious physiological superpower, and no clear reason to outlive a bowhead whale twofold.

The Force of Time gives the reason. The Greenland shark lives at 200 to 600 metres in near-freezing Atlantic and Arctic water, and cold, deep water has an index a little above $4/3$ — pressure compresses the water lattice and low temperature sharpens the register, both nudging n up and the T-rate below 75%. The shark lives long not because it is unusual but because it is wholly submerged, for its entire life, in a register running below 75%, with internal and external registers the same — both water, both slow. It never suffers the register split that ages land animals. Figure 3 sets out the pattern across the tree of life: the longest-lived animals are aquatic or cold-blooded — the ocean quahog clam at 507 years, the bowhead whale near 200, the Aldabra tortoise near 150 — while the shortest-lived vertebrates are small, warm-blooded and terrestrial, their internal chemistry pushed toward the external rate. The mouse lives two years; the shark lives four hundred.

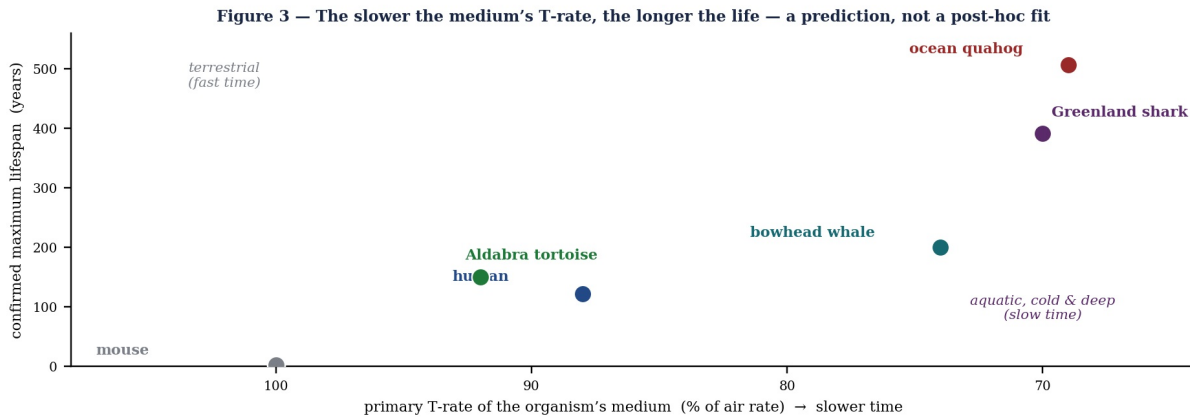


Figure 3 — Maximum lifespan against the T-rate of the organism's medium. The slower the register, the longer the life; fully aquatic, cold, deep-water animals run slowest and live longest.

6 · The Ocean as the Cradle of Life

Life began in water. Every serious account of how it started — hydrothermal vents, warm pools, prebiotic soup — places the first self-replicating chemistry in an aqueous setting. The usual reason is chemical: water dissolves, stabilises, lets molecules diffuse. True, but not the deepest reason.

The deepest reason is temporal. Self-replication demands chemistry of extraordinary complexity — folded RNA, catalytic cycles, information storage, error correction — and every step needs the molecular actors to find one another, test, and bind or part. That is fast chemistry that must nonetheless be accurate, and it needs more time than the air register provides. In water, $n = 4/3$, every reaction has 25% more T-time per calendar second: the same outside second holds $4/3$ seconds of internal T-time. A molecule has 25% longer to find its partner, a cycle 25% longer to close, an error-correcting step 25% longer to catch a mismatched base. Life began in water not because water is convenient but because water's dilation factor grants exactly the temporal margin that self-replication requires. And the register has never been abandoned: every organism on Earth still runs its essential chemistry inside an aqueous interior at 75% T-rate. The register is conserved because it is necessary.

7 · One n , Two Effects — the Freefall Consequence

The T-medium law also reaches into mechanics, through the same bridge that ties the surface T-freefall rate to the speed of light. In the Force of Time the surface rate is $g_1 = \sqrt{(c_1 / (864 \times 3600))} = 9.817477042468103870195761 \text{ m/s}^2$ ($25\pi/8$) — T-freefall and the spin-orbit speed are one phenomenon, read in two domains.

The same relationship holds inside any medium. If the T-flow rate of the medium is c_1/n , then its T-freefall rate is $g_{\text{medium}} = g_1/\sqrt{n}$. For the media of the living world this gives $8.502184519847896174659742 \text{ m/s}^2$ ($g_1/\sqrt{(4/3)}$) in water, $8.015936438511650597150227 \text{ m/s}^2$ ($g_1/\sqrt{(3/2)}$) in glass, and $7.604585017450522306786801 \text{ m/s}^2$ ($g_1/\sqrt{(5/3)}$) in calcite. These are register values — the rate at which T itself flows through the medium, expressed as an acceleration — not the observable fall of a dropped object, which buoyancy and drag reduce further. The point is the unity: a single number, the index n , fixes both how fast time flows in a medium and how strong its T-freefall field is.

8 · The Two Clocks Begin at Birth

Section 4 gave the body two clocks. It did not say when the second one starts, and the answer is written in the first nine months of every life.

Before birth, the fetus lives in water. It floats in amniotic fluid; its lungs are filled with fluid; it has never drawn air. It is, entirely, in the water register — on the water clock alone, at $3/4$, with no air register to fight. There is no register war inside the womb, because there is only one register.

The first breath is when the air register arrives. With it the body enters the two-clock state that it keeps for the rest of its life — the water clock inside, the air clock outside — and on this paper's own reading, the mismatch between them is ageing. **Birth is the start of the two clocks, and so the start of ageing.**

One air day on the water clock. $86,400\text{ s} \times 3/4 = 64,800\text{ s} = 18\text{ air hours}$. The day the observer counts as twenty-four hours is lived by the water register as eighteen.

9 · Gestation on the Water Clock

The nine months of a human pregnancy are counted by the observer — the mother, the doctor, the calendar — standing in air on the Earth's clock: 270 days ($2 \cdot 3^3 \cdot 5$), 6,480 hours, 388,800 minutes, 23,328,000 seconds. The fetus does not live on that clock. It lives on the water clock, at $3/4$ (Stephen Daubney's ruling of 26 September 2026: the observer's 270 is the air count; the fetus's own count is the water count).

Fetal time. $\text{fetal time} = \text{observer time} \times 3/4$. Worked: $270\text{ d} \times 3/4 = 202.5\text{ d}$ ($3^4 \cdot 5/2$); $6,480\text{ h} \times 3/4 = 4,860\text{ h}$ ($2^2 \cdot 3^5 \cdot 5$); $388,800\text{ min} \times 3/4 = 291,600\text{ min}$ ($2^4 \cdot 3^6 \cdot 5^2 = 540^2$); $23,328,000\text{ s} \times 3/4 = 17,496,000\text{ s}$ ($2^6 \cdot 3^7 \cdot 5^3$).

The water counts are guaranteed to be lattice values — any $\{2,3,5\}$ number times $3/4$ is one — so the lattice is not the evidence. The evidence is what they land on:

- **4,860 hours** carries $486 = 2 \cdot 3^5$, the node of hydrogen's H β line, the line of water and life (The Universal Fraunhofer Lines, sections 6–7). The fetus, living in water, completes its time in the water register on the number of the line that writes water into life.
- **17,496,000 seconds** carries $1.7496 = 486 \times 360 / 100,000$, the π -free face of the bending of light: $1.7496 \times \text{the } 703\text{ step } (800/(81\pi^2)) = 1.00070304831938539697658729096 = 1.75083005333959669055023712426\text{ arcseconds}$, the Sun's deflection of starlight.
- **291,600 minutes** is 540^2 , and $2916 = 486 \times 6$.

Gestation, counted on the clock the fetus actually lives on, lands on the hydrogen line of life and on the light-bending of the Sun.

10 · Age at Death, Part by Part

If the body keeps more than one clock, then at death it does not have one age. **Each part carries the age of its own clock.** Whatever in the body lives on the water clock is, at the moment of death, three-quarters of the calendar age:

The age of a part. $\text{age}(\text{part}) = \text{calendar age} \times \text{rate}(\text{part})$. Worked, at a calendar age of 80: a water-clock part, $\times 3/4 = 60$; by the same rule, a part on the lens rung ($3/2$), $\times 2/3 = 53.3333\dots$ ($160/3$); a part on the biomineral rung ($5/3$), $\times 3/5 = 48$.

The water-clock parts are the ones held in water most completely. The short list, from the most certain: the amniotic fluid; the vitreous humour of the eye, about 99% water; the cerebrospinal fluid, about 99%; the blood plasma, about 92%; the cytoplasm of every cell. The rule is stated part by part, not for the body as a whole: a single whole-body figure would be a blend of clocks, and no blend is asserted here.

What would test it. A water compartment has its own clock, so its measurable chemistry should run at the water rate against the calendar. The vitreous humour is the natural place to look: it is almost pure water, it is sealed, and it already carries a chemical clock that forensic science reads after death. **The rectification principle, stated as a principle only:** a compartment drifting off its own clock ratio against the calendar is the measurable sign of the register war; returning it to its own clock is the direction of repair.

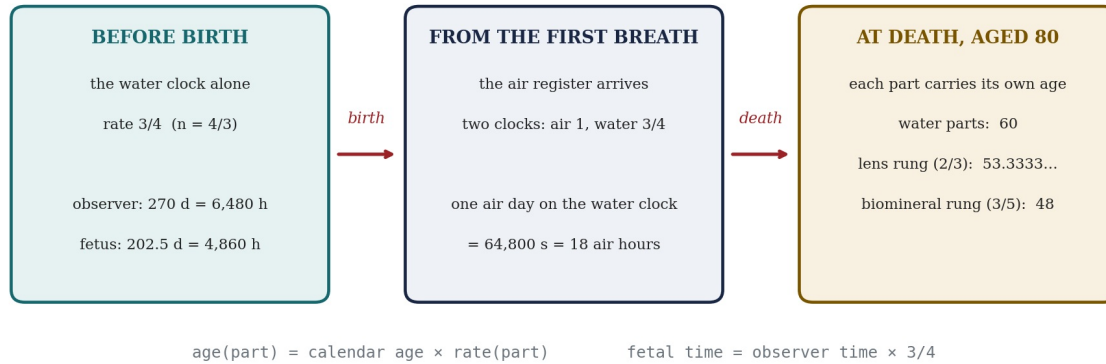
Figure 4 — The two clocks across one life: water alone before the first breath, both after it

Figure 4 — The two clocks across one life. Before birth the water clock alone (the observer's 270 days are the fetus's 202.5); from the first breath both clocks; at death each part carries its own age.

11 · What It Means

Refraction is taught as a fact about light. The Force of Time reveals it as a fact about time. The number that bends a straw in a glass is the same number that sets how fast you age, why life began in the sea, and how long a shark can live in the cold and the dark. Water's $n = 4/3$ is an exact lattice address, and its reciprocal $3/4$ is the exact rate at which time runs for anything inside it. A life begins on that clock alone, in the water of the womb, and the nine months the world counts are, on the fetus's own clock, 4,860 hours — the number of hydrogen's line of life. With the first breath the air clock arrives, and from then on the body keeps both; the gap between them is the quiet arithmetic of ageing. And when a life ends, it does not end at one age: each part carries the age of its own clock. The ocean is not merely where life happened to start — it is the register in which life is possible, and every cell still carries it.

Appendix A · The Media on the Lattice, at a Glance

Each medium given first by its physical index and then by its place on the $\{2,3,5\}$ lattice, with the T-time rate it sets and the T-freefall value the same index produces.

medium	index n	lattice	T-time rate	T-freefall $g = g_1/\sqrt{n}$ (m/s ²)
vacuum / air	1	1	1 = 100%	9.817477042468103870195761 ($g_1 = 25\pi/8$)
water (cytoplasm)	$4/3$	$2^2/3$	$3/4 = 75\%$	8.502184519847896174659742
glass / lens	$3/2$	$3/2$	$2/3 = 66.667\%$	8.015936438511650597150227
calcite / shell	$5/3$	$5/3$	$3/5 = 60\%$	7.604585017450522306786801

Appendix B · The Propositions

P-MEDIUM-1. n is the T-time dilation factor of a medium: the T-flow rate inside a medium of index n is $1/n$ of the vacuum rate. Light slows in water because T slows in water.

P-MEDIUM-2. Water: $n = 4/3 = 2^2/3$ exactly. T-rate = $3/4 = 75\%$. An organism fully immersed in water ages at exactly 75% of the air rate per calendar second. The flow of time in water is 224,841,925.262316951035323248091 m/s ($2 \cdot 3^6 \cdot 5^6 \cdot \pi^2$).

P-MEDIUM-3. Glass: $n = 3/2$ exactly. T-rate = $2/3$.

P-MEDIUM-4. Calcite ordinary ray: $n = 5/3$ exactly. T-rate = $3/5$. The three biological media are evenly spaced on the $\{2,3,5\}$ lattice, separated by $1/6$ in n -space.

P-MEDIUM-5. The body lives in two T-registers at once: external air (100%) and internal water (75%). The 25% mismatch is the mechanism of ageing.

P-MEDIUM-6. Higher body-water content holds the internal water register more completely: a T-register basis for the link between hydration and

longevity.

P-MEDIUM-7. The Greenland shark (past 400 years) lives wholly in deep cold water below 75% of the surface-air rate, with no register split; its lifespan follows from its medium.

P-MEDIUM-8. Life began in water because water's dilation factor grants 25% more T-time per calendar second for the chemistry of self-replication.

P-MEDIUM-9. $g_{\text{medium}} = g_1/\sqrt{n}$. The same n sets a medium's T-time rate and its T-freefall rate.

P-MEDIUM-10. Birth is the start of the two clocks. The fetus lives on the water clock alone; the first breath brings the air register, and with it the two-clock state and ageing. One air day on the water clock is 64,800 s, 18 air hours.

P-MEDIUM-11. Gestation on the water clock: fetal time = observer time $\times$ 3/4. The observer's 270 days are 202.5 days, 4,860 hours ($\rightarrow$ 486, the $H\beta$ node), 17,496,000 seconds ($\rightarrow$ 1.7496, the π -free face of the light-bending) on the fetus's own clock.

P-MEDIUM-12. Each part carries the age of its own clock: age(part) = calendar age $\times$ rate(part). A water-clock part is three-quarters of the calendar age at death — 60 at 80.

A Note on the Numbers

Throughout this paper a value is given first as the plain physical reading and only then, in brackets, as its place on the $\{2,3,5,\pi\}$ lattice. The refractive index is unusual in that the reading and the lattice form are the same thing: water's $n = 4/3$ is at once the index and a clean $\{2,3,5\}$ fraction, which is why its reciprocal — the T-time rate 3/4 — is exact rather than approximate. A T-value is one number that wears different clothes in different registers: here a single index governs how fast time flows in a medium, how strong its T-freefall field is, and how long a life lasts on each of its clocks. The only allowed media indices are pure $\{2,3,5\}$ fractions.

References

- 1. S. Daubney, The Universal Force of Time — Master Compendium v5, The Daubney Foundation (2026).
- 2. S. Daubney, The Universal Fraunhofer Lines, Rev 6, The Daubney Foundation (2026).
- 3. S. Daubney, The T-Cascade — T-Freefall and the Speed of Light as One Phenomenon, The Daubney Foundation (2026).
- 4. S. Daubney, Human Biological Lattice Values in the Force of Time, The Daubney Foundation (2026).
- 5. J. Nielsen et al., Eye lens radiocarbon reveals centuries of longevity in the Greenland shark (*Somniosus microcephalus*), Science 353, 702 (2016).
- 6. M. Daimon & A. Masumura, Measurement of the refractive index of distilled water from the near-infrared to the ultraviolet, Applied Optics 46, 3811 (2007).

The Daubney Foundation is in ongoing discussions with medical establishments regarding clinical trials of Universal Force of Time solutions to the conditions described in this paper. Any institution or researcher wishing to put themselves forward for participation in these trials is invited to make themselves known through: thedaubneyfoundation@gmail.com

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Universal Force of Time = the creation of life = the healing of life = the destruction of life
