641.00 High Tide and Low Tide
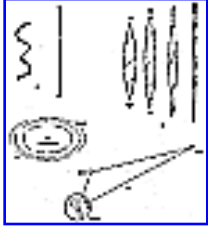
641.01   No tension member is innocent of compression, and no compression member is innocent of tension. That is, when we are tensing a rope visibly and axially, its girth contracts as it goes untwistingly into compression, precessionally, compressing in planes at 90 degrees to the axis of our purposeful tensing. We learn experimentally that tension and compression always and only coexist and operate precessionally at right angles to one another, covarying in such a way that one is ebbing toward low tide while the other is flowing toward high tide, or vice versa, in respect to relative human apprehendability, as they fluctuate between visibly obvious and human subvisibility.

641.02   Tension and compression are inseparable and coordinate functions of structural systems, but one may be at its "high tide" aspect, i.e., most prominent phase, while the other is at low tide, or least prominent aspect. The *visibly* tensioned rope is compressively contracted in almost *invisible* increments of its girth dimensions everywhere along its length. This low-tide aspect of compression occurs in planes perpendicular to its tensed axis. Columns *visibly* loaded by weights applied only to their top ends are easily seen to have their vertical axes in compression, but *invisibly* the horizontal girths of these columns are also in tension as the result of a cigar-shaped, swelling pattern of forces acting in the column at right angles to its loaded axis, which tends, *invisibly,* to transform toward the shape of a squash or a banana. As a result of the visible, or high-tide, vertical compressioning aspect of such axial loading of the column's system, this swelling force imperceptibly stretches, or tenses, the column's girth as a low-tide reciprocal function of the overall structural-integrity reciprocity.

642.00 Functions

642.01   Functions are never independent of one another. There is a plurality of coexistent behaviors in nature; these are the complementary behaviors. Functions occur only as inherently cooperative and accommodatively varying subaspects of synergetically transforming wholes. Functions are covariants. Wave magnitude and frequency are experimentally interlocked as covarying cofunctions, and both are experimentally gear- locked with energy quanta. The meaning of a function is that it is part of a complementary pattern. No function exists by itself: X only in respect to Y. Tension and compression are always and only interfunctioning covariables whose seeming relative importance is a consequence of local pattern inspection. Multiplication is accomplished only by division. Universe expands through progressively differentiating out or multiplying discrete considerations.
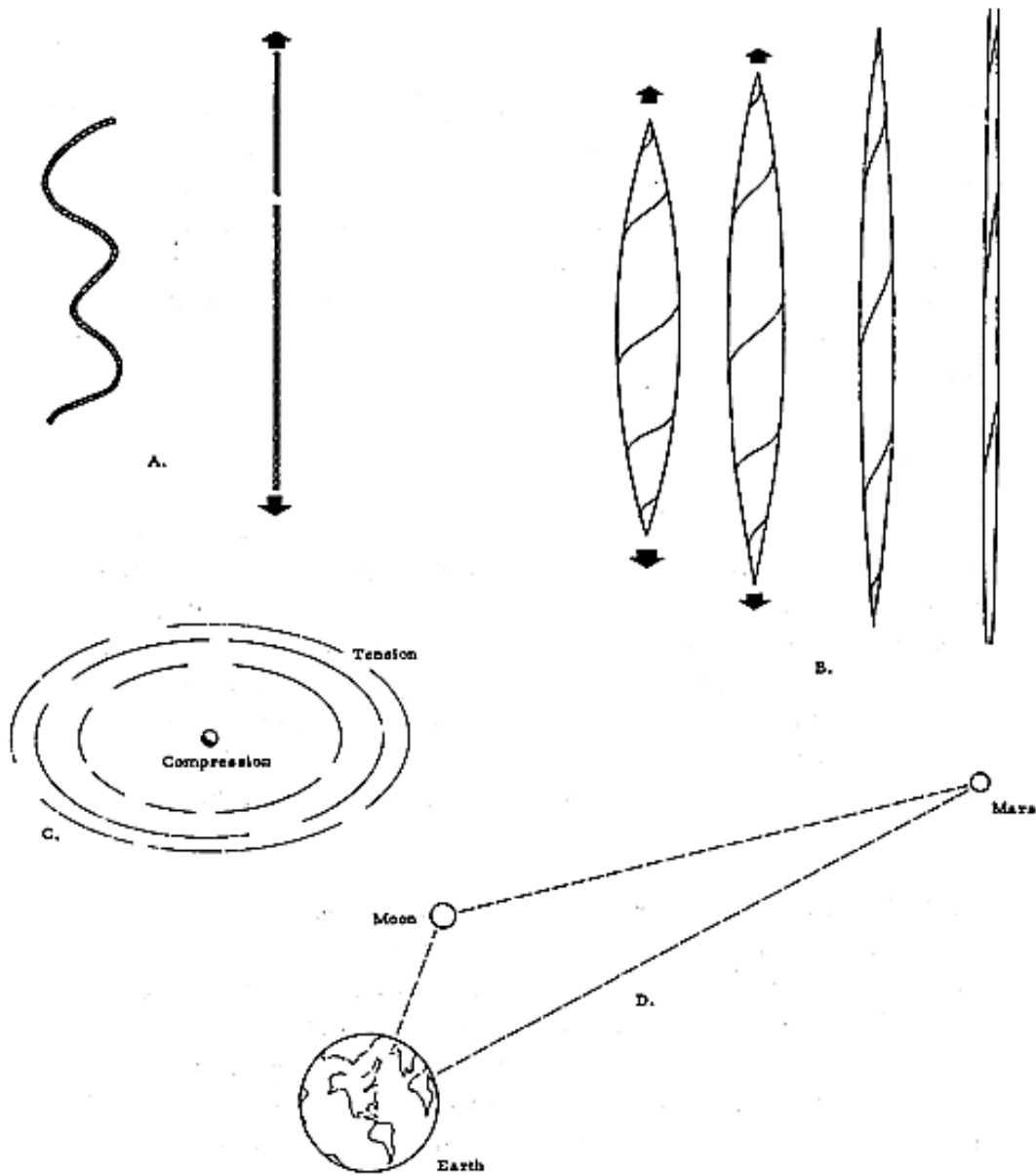
Fig. 641.01 Tension Members Tend Toward Arcs of Ever Greater Radius:

A. Slack rope and tensed rope: tensed rope tends toward "straight," i.e. toward arcs of ever greater radius, but never attains complete "straightness."
B. As tension increases: neutral axis lengthens and girth contracts (becomes more compact). Therefore, the long-dimension profile arcs increase in radius and spiral arcs' "radii" increase in dimensions but never attain "straightness" of relation between two "fixed" points, as there are no experiences of fixed points and straight points.
C. Tension goes toward arcing of larger and fewer different radii all ultimately spirally closing back on self. Tension: inherently comprehensive and finite. Compression goes toward relatively smaller radius and toward more of smaller and multiplying microcosmic differentiation. Compression: inherently local and infinite.
D. Tension as gravity: a tension structure is nature's fundamental pattern-cohering principle.

642.10 **Tetrahedral Models of Functions**

642.11   Covarying functions are tetrahedrally modelable. A series of covarying tetrahedral models is presented in Secs. [961.10-48](#).

643.00 **Tension and Compression: Summary**

Compression is IN.	*Tension* is OUT.
Compression is dispersive both laterally and circumferentially, inherently electrostatic because differentiative, divisive, temporary, and local.	*Tension* is omniradially conversive and is both electromagnetically and gravitationally tensive because eternally and integrally comprehensive.
Compression tends to local dichotomy and multiplication by separation.	*Tension* is unit: universally cohering and comprehensively finite.
Compression is locally expressive in discrete tones and frequencies internal to the octave.	*Tension* is both internal and external to the octave and is harmonic with either the unit octave or octave pluralities.
Compression accumulates potential. As demonstrated in the arch, compression is limited to absolute, local, and within-law relationships of one fixed system.	*Tension* is comprehensive, attractive, and gravitational. Tension is inherently integral and eternally, invisibly, infinitely comprehensive. Tension is comprehensively without law.
Compression tends toward arcs of decreasing radius.	*Tension* tends toward arcs of increasing radius.
Compressions are plural.	*Tension* is singular.
Compression is time.	*Tension* is eternity.
Compression is specifically directional.	*Tension* is both omni- and supra-directional.
Compression is inherently partial.	*Tension* is inherently total.

644.00 **Limitless Ratios of Tension**

644.01   I adopted as a working hypothesis that there is a limit to slenderness ratio of the girth diameter of a compression member in respect to its longitudinal axis and that there is no limit to the slenderness ratio of structures dominated by tensional components. Astronomical magnitudes of structural-system coherence are accomplished by tensionally dominated structural functions of zero slenderness ratio, i.e., by gravitational functioning. Compressionally dominated structural components tend toward contour transformation in which the radius of curvature steadily decreases under axial loading, that is, the cigar- shaped column forces tend toward squash- or bananalike bending of their contours. This tending of compressionally loaded systems toward arcs of lessening radius is in direct contrast to the contour transformation tending of tensionally dominated structural components, which always tend toward arcs of ever-increasing radius of axial profile. For instance, the coil of rope tends toward straightening out when terminally tensed, but it never attains absolute straightness; instead, it progresses toward ever-greater radius of locally spiraling but overall orbital arcing, which must eventually cycle back upon itself. Tensionally dominated patterning is inevitably self-closing and finite.

644.02   Compressionally dominated functions of structural systems are inherently self-diminutive in overall aspect. Tensionally dominated functions of structural systems are inherently self-enlarging in overall involvement. The sum of all the interactive-force relationships of Universe must continually accelerate their intertransforming in such a manner as to result in ever more remotely and locally multiplied, islanded, compressional functions—comprehensively cohered by ever-enlarging finite patterings of the tensional functions. Universe must be a comprehensively finite integrity, permitting only a locally islanded infinitude of observer-considered and regenerated-differentialing discovery. We have herein discovered a workable man-awareness of a complete reversal of presently accepted cosmology and of general a priori conceptioning regarding the general patterning scheme of Universe, which has heretofore always conceived only of locally finite experiences as omnidirectionally surrounded by seemingly unthinkable infinity.

645.00   **Gravity**

645.01   The ratio of length to section in tension appears to be limitless. I once wondered whether it was a nonsensical question that we might be trending toward bridges that have infinite length with no section dimension at all. As a sailor, I looked spontaneously into the sky for indicated clues. I observed that the solar system, which is the most reliable structure that we know of, is so constituted that Earth does not roll around Mars as would ball bearings, which is to say that the compressional components of celestial structures are astro-islands, spatially remote from one another, each shaped in the most ideal conformation for highest compressional-structure effectiveness, which is the approximately spherical shape. All other spheroidal shapes (cigar, turnip, egg, potato, spider) have only one most neutral axis. This is why spherical ball bearings are the ideal compressional-system structures of man's devising, as they continually shift their loads while distributing the energetic effects to the most parts in equal, ergo relatively minuscule, shares in the shortest time. I saw that the astro-islands of compression of the solar system are continuously controlled in their progressive repositioning in respect to one another by comprehensive tension of the system. This is what Newton called *gravity.* The effective coherence between island-components varies in respect to their relative proximities and masses, in ratio gains and losses of the second power in respect to the dimensional distance as stated in terms of the radius of one of the component bodies involved.

645.02   Throughout the Universe, we find that tension and compression are energetically and complementarily interactive. A steel wire of ever stronger metallic alloys can span ever greater distances. In this kind of patterning, we find that the nonsimultaneous structural integrities of Universe are arranged by the tensional coherences. As thinner and thinner wire can span ever greater and greater distances, visible cross section of the tension members trends toward ever lesser and lesser diameters.

645.03   Finally, because there is no limit ratio in tension, may we not get to where we have very great lengths and no section at all? We find this is just the way Universe is playing the game. This is demonstrated astronomically because it is just the way the Earth and the Moon are invisibly cohered . . . remotely cohered and coordinated, noncontiguous, nontangent, physical entities with their respective coherence decreasing at a second-power rate of their relative remoteness multiplied by their combined masses. It is the way the solar system coheres.

645.04   The gravitational, mass-attractive cohering is noncontiguous, and so there is no cross-sectional diameter or identifiable local entity. This is why tension and coherence are able to approach larger and larger magnitudes while working toward no cross section at all: for there never was any cross section in the adjacent atoms. You have enormous tension with no section at all. This is also true in the atoms: true in the macrocosm and true in the microcosm. The same relative distance intervenes as between the Earth and the Moon in respect to their relative masses. The only surprise here is that man has been so superficially misled into ever having thought that there could be solids or continuous compressional or tensional structural members. Only man's mentality has been wrong in trying to organize the idea of structure.

645.05   The trends are to increasing amplification of tension to infinite length with no section. Every use of gravity is a use of such sectionless tensioning. The electric tension first employed by man to pull energy through the nonferrous conductors and later to close the wireless circuit was none other than such universally available sectionless tension. In the phenomenon tension, man is in principle given access to unlimited performance. It seems fantastic, but there it is!

645.10   Tension is shown experientially to be nondimensional, omnipresent, finitely accountable, continuous, comprehensive, ergo timeless, ergo eternal. Comprehensive Universe is amorphous and only locally finite as it transformingly differentiates into serially conceptual pattern integrities, some much larger than humanly apprehendable, some much smaller than humanly apprehendable, ever occurring in nonsimultaneous sets of human observings, most of whose time-canceling, harmonically integrative synchronizations are supra- or subhuman sensibility and longevity experienceability and whose periodicities are therefore so preponderantly unexpected as to induce human reaction of overwhelming disorder, so that . . . suddenly, around comes the comet again, for the first known time in humanly recorded experience, periodically closing the gap and periodically pulsing through eternally normal zero.

645.11   In our old ways of thinking, infinity was expressible numerically as N + 1. We tried to get a static picture of a sphere, but we could not understand one more layer beyond it and what was beyond that—in order for it to be something.

645.12   In the nonsimultaneous experiencing of Universe, there is no simultaneous "one frame." We are not faced with that at all. We get to the finite physical world of the physicist and then to the local compressionals and we find that the local is continually subdivisible. We started with a whole that was finite and then began to subdivide it. So there is, in a sense, an infinity of subdivisions locally. This is very much the way the intellectual pattern goes, so that the only thing you might call infinity here is the further subdivision of finity. So it is really never infinite because you are not looking at one part. It is never just Plus One. It is always plus the rest of Universe when you separate that One out. You can separate unity up further and further. You can multiply the subdivisions of unity.