

# DEDEKIND, SAUSSURE, AND STATIONARY LINGUISTIC SYSTEMS

Ian Harnett

## Abstract

The Twentieth Century General Linguistic Corpus is best contextualized first as a footnote to the Nineteenth Century's attempts to arithmetize the calculus, and then second as a dead branch to the Medieval Modistae Scholars' battle against Idealism.

Part Three in this five part genre shift towards a theory of Wave Mechanics matches text from Richard Dedekind (1831-1916) to the foundational text of the Twentieth Century Linguistic Corpus, *Troisieme Cours de Linguistique Generale* (Saussure 1910-1911). The syntactocentric codifications of stationary linguistic systems receive their inner product, base line, and directed number from the Dedekind Cut, explained in "Continuity and Irrational Numbers" (Dedekind 1872). It is from this Dedekind Cut, located deep within the Ideal and Real Numbers, that the Discourse of Modernity derives its hegemonic legitimization over global society. However, knowledge representation and Public Order isolated from the External Products of Nature and Speech by the Saussurean Cuts of 1911, which created the linguistic calculus of General Linguistics stabilized within its rigid Dedekind frame by its ultimate Dedekind building blocks, is founded on the notion that LINGUISTIC TWO is integer, linear, rational, safe, and well-founded.

However, Computation, like Nature and Speech, is driven by Self-reference and Recursion, not syntactocentrics. The crisis in legitimization signaled by the work of Henri Bergson, Mikhail Bakhtin, Ludwig Wittgenstein, Benjamin Whorf, *Tel Quel* (1960-1983), Michael Polanyi, Julia Kristeva, Michel Foucault, Jean Francois Lyotard, Jacques Derrida, Pierre Bourdieu, Hans Gadamer, Isaiah Berlin, Harold Garfinkel, Clifford Gertz, Richard Rorty, and Umberto Eco is confirmed to be well-grounded in geometric fact, i.e. a Cantor Dust, a fractal dimension, Nonlinear Two.

## Keywords

Alogon, analytics, arithmetization, calculus, concatenation, confusion linguarum, curve, discontinuity, discretization, external product, internal product, Nature, recursion, scatter matrix, speech, standing wave, syntactocentric, tangentless, two.

## 1 Introduction

The Nineteenth Century was the Age of Certainty built on the baseline of the Enlightenment and the methodology of Reason. From this framework came a model of Order which dominates the Discourse of Modernity. However, in the Information Age based on the methodology of Computation, the syntactocentric relationship between Code and Reason is obsolete.

The "General" in General Linguistics refers specifically to the generalization implicit to algebraic systems, and it is for this reason that Saussure, following the principles of mechanics outlined in *The Principles of Mechanics* (Hertz 1894), bifurcated linguistics into two domains, the Internal and the External. In the Internal Domain, scientification was to be based on the Dedekind Correspondence, Chain, Cut, Domain, Dot, Line, and Set. It is from this Dedekind base within the Ideal Real Number Set that the origins of rational order were to be built. But review of the Twentieth Century Linguistic Corpus and its numerous schools reveals a background of confusion linguarum. However, rather than representing failure, the confusion linguarum of General Linguistics represents evidence for resolving the problem of the Tower of Babel, i.e., Alogon.

In making the genre-shift from stationary linguistic systems towards the harmonics of Wave Mechanics, the matching of Richard Dedekind (1831-1916) with Ferdinand de Saussure (1857-1913) provides a solid base for understanding the rhetorical machining behind ideal systems. Everdell in *The First Moderns* (1997) writes that "Dedekind became the West's first Modernist in 1872". It remains a little underappreciated fact that the linguistic calculus of the Twentieth Century Linguistic Corpus is not Newtonian but based on the digitalization of Dedekind. In other words, the corralled linguistic calculus is not geometric but algebraic, and it is from this algebraic corral that the rationality and reason of the Discourse of Modernity derives its right to rule.

It was the Greeks who both first became suspicious of Janus Reason and struggled to explain the mystery of the irrational numbers. However, in the Christian Epoch, which has dominated the two millennia, which makes up the history of Europe, few have questioned Judas Reason, e.g. David Hume and Johann Hamann (1730-1788), and undoubtedly, in a Grand Narrative of Certainty, Reason is a difficult target (Berlin 1991, 1994; Eco 1984,

1997, 2000). One of the most successful to do so in the Twentieth Century was Henri Bergson (1859-1941). Be that as it may, Reason is an evolutionary advance over faith-based systems of epistemology.

The West's first Modernist was a member of the 1870s Berlin School of mathematicians, centered around Karl Weierstrass, Leopold Kronecker, and Ernest Kummer, and their goal was to "Coral the Calculus". In 1872 Richard Dedekind published "Continuity and Irrational Numbers", and in this small text he cleaved the digital from the continuous, or the digital from the irrational. This bifurcation inside the Ideal Real Number Set provides the break and separation for grounding a codification discourse of accountability, certainty, continuity, impartiality, independence, objectivity, rigor, and transparency.

## 2 Context

The context is the crisis in the concept of the sign (Eco 1984) and the search for the perfect language (Eco 1995). It was the Pythagoreans who represented magnitudes by pebbles or calculi, and in Euclid's *Elements* magnitudes became associated with line segments as arithmetized geometry (Aczel 2000: 21). Based on a thousand years of mathematics from Egypt and Mesopotamia, Euclid's text had a major influence on the manipulation of the physical world, and it came to serve as the model for the calculating machine, e.g., Kabbala, Dante, the *Ars Combinatoria*, Lullian Wheels, *Concordia Universalis*, Dee's magical language, Spinoza's universal language, Hobbe's *Leviathan*, and Leibniz's Binary Calculus. However, by the start of the Nineteenth Century mathematicians wished to replace the Newtonian geometric calculus with an arithmetized calculus based on discrete and stable number units. This project would have essentially achieved the goal of the Enlightenment and legitimized the Age of Reason.

The Discourse of Modernity, which first finds its origins in the pebbles and sticks of primate evolution, has led to modern technology, MER Rovers walking on Mars, the Huygens probe landing on Titan, and Cassini in orbit around Saturn. However, this evolution towards being an interplanetary species has been accompanied by a companion mystery, the persistence of chaos in linear systems. Known as Apophis and Seth to the Egyptians, Anze and Labbu to the Mesopotamians, Vritra and Rakshashas to the Vedic Indians, Angra Mainyu to the Zoroastrians, and Satan to the Semetic peoples, it was Benoit Mandelbrot, while working for IBM, who identified that the spontaneous noise disrupting computer signals came in the pattern of a Cantor Dust, and Edward Lorenz in 1961 who found the Butterfly Effect operating in the machine world of his computer weather systems. Cantor Dust and the Butterfly Effect disconnect the Discourse of Modernity.

The first complete integrated system of grammar in Indo European is the Panini Grammar (ca. 350 BC), and it has exercised a strong influence over nineteenth and twentieth century linguistic descriptions. An explicit rule system, the Panini Grammar consists of classes, an inventory, 2000 roots, and 4000 rules. However, however specific, inference remains and a massive commentary tradition exists to rectify the lapses (Kiparsky 1995). Similarly, with modern grammars, instruction books, manuals, and laws passed by the Legislative State, a massive commentary tradition is required to balance and rectify the vast lacunae and idiosyncracies of reduced semiotic systems.

In the Graeco-Roman language sciences, it is Socrates who first clarified the dichotomy between the existential and equational functions of the Copula, and tackled the arbitrariness of the sign in the *Cratylus* (Taylor 1995). But it is the Stoics and the Alexandrians though, who had the most influence on Greek language science, although each rational school was virtually incompatible with the other. In Latin linguistics, Marcus Terentius Varro produced major works on language science (now mostly lost) combining Stoic propositional logic with Latin lexicial studies, while Apollonius Dyscolus of Alexandria produced logical, orderly, and rational rule-based grammars, now labeled as Apollonian. Opposed to this reduction to system approach was Sextus Empiricus, who claimed that neither analogy, nor rule, nor use stabilized speech.

The Papal Revolution of 1073 laid the foundations of Modern Europe, and for three centuries (1150-1400) the Modistae, or Scholastics, struggled to contain and restrain language, so that they could describe their relationship to God. First Roman writers, e.g., Donatus and Priscian, then Aristotle, and then Plato (Preserved by the Arab Renaissance and the Byzantium Empire) were harnessed into service at the new universities of Bologna, Paris, Oxford, and Cambridge in the search for the universal grammar, but this harnessing led ultimately not to faith but knowledge-based systems. Perhaps the most influential text of this epoch is "A Concordance of Discordant Canons by Gratian (1140), which remained in use until 1917.

The problem of universals dominated the Scholastic world, dividing essentially into *Realia* and *Nomina*, but the problem was never resolved. The period was also defined by increasing codification, legalization, and regulation. The Assizes of Ariano (1140) represents the first modern legal code. It recognized itself to be general, incomplete, flexible, and requiring restraint and interpretation. By contrast, its predecessor, the *Liber Papiensis*, attempted to cover all the law, to rule for every situation, and was disjointed, full of gaps, and marred by contradictions (Berman 1983: 420-421). Rules proliferated for markets, guilds, monasteries, knights. towns, cities, with the general intellectual guiding rule for the inchoate situation being the principles of the Dialectic.

Moore in *The Formation of a Persecuting Society* (1987) identifies the period as the beginning of authourative persecution in Europe and in *The First European Revolution 970-1215* (2000) punningly refers to this authourity as the Ruling Culture.

The Scholastic world of the Modistae were criticized in the Twentieth Century for their focus upon Latin as the universal language, but Twentieth Century linguists devoted an extraordinary amount of space and time to the study of English and the explication of codification. Moreover, the Modistae emphasized connection and relationship with the Natural World, whereas the Twentieth Century Linguistic Corpus is constructed by bifurcation from the Natural World. The methodology of the Modistae laid the foundations for the creation of European Science, whereas Twentieth Century linguists may be merely a footnote to the Nineteenth century's discretization program and a dead branch attached to the Modistae Corpus.

The coordination of Reason (Systematic Methodology) to Nature was intended to confirm and glorify faith-based systems, but led instead to a bifurcation - a break with custom, mind control, superstition, and tradition - and the evolution of a radically different and separated institution, science. At the centre of this secularizing movement was Paris and the birth of the university system. See Peter Abelard (1074-1142); Hugh of Saint Victor (1096-1141); Albertus Magnus (1206-1280); Roger Bacon (1214-1294); Thomas Aquinas (1225-1274); and Siger of Brabant (c. 1240-1280). In the emergence of the European material secular world, Reason was the use of strictly logical processes derived from the new constructive dialectical method to synthesise and systematize natural observation towards a coherent and complete body of knowledge. And this emergent methodology - autonomous human reason - was an epistemological import from the pagan Aristotelian-Arabic world; in effect, the Porphyrean Tree.

The move to Reason as a geometry commenced with Rene Descartes (1596-1650) with his analytical geometry and Thomas Hobbes (1588-1679) with *Leviathan*. It is now reason is separated from emotion, and this bifurcation between emotion and reason demarcates the medieval from the modern.

Published in 1687 the *Mathematical Principles of Natural Philosophy* presented a system of the world which was closed, mechanical, orderly, and self-sustaining. Containing only particles, forces, and rules, and proceeding by ruthless simplification (Berlinski 2002), the *Principia* remains the model template for point accountability, credibility, and transparency. Newton and Leibniz both independently developed the calculus, and the calculus, which is the driving heart of the *Principia*, provides the original lexicon, image, model, and rhetoric for the metagenre of the linguistic calculus, and thus for the legitimization of the Discourse of Modernity.

John Locke (1632-1704), in *Essay concerning Human Understanding*, advanced sensory-driven words as a semiotic of logic, and this idea of reason as well-defined words was developed by Condillac (1715-1780), which led to tropes coupling words and chemistry. "The Language of Calculation" (Condillac 1798) emphasized the linguistic aspects of calculation. However, developments by Condorcet (1743-1794) and Lagrange (1736-1813) led to an emphasis upon the signs of algebra, with the intention to achieve a model of least action. See *From Locke to Saussure* (Aarsleff 1982).

Immanuel Kant in *The Metaphysical Elements Of Ethics* (1780), *The Critique of Pure Reason* (1781), *Critique of Practical Reason* (1788), *Critique of the Faculty of Judgment* (1790), *Religion within the Limits of Reason Alone* (1793), and *Perpetual Peace: A Philosophical Sketch* (1795) developed the notion of the Tribunal of Reason, the inventory of all that is given us by pure reason, systematically arranged.

The Newtonian Calculus was geometric, but especially from the beginning of the Nineteenth Century, marked by Augustin Louis Cauchy (1789-1857), Augustus de Morgan (1806-1871), and George Boole (1815-1864), there was a determined effort to ground reason in mathematical analysis and logic by the arithmetization of the calculus.

In the 1870s the Berlin School of Mathematics was the leading centre behind the discretization program, and it was in Berlin in the autumn of 1878 that Heinrich Hertz (1857-1894) had arrived from Munich to study electromagnetics and Ferdinand de Saussure (1857-1913) had arrived from Neogrammarian Leipzig to study linguistics with Hermann Oldenberg (1854-1920) and Heinrich Zimmer (1851-1910). At this time Saussure, aged 20, wrote "Essai d'une distinction des differents (1878) and *Memoire sur le systeme me primitif des vowelles dans les langues indo-europeenes* (1879); each remarkably different in genre and lexicon from the evolutionist and organic *The Life and Growth of Language* (Whitney 1875), but similar in text to the discretization program.

In the 1907-1911 *Course of General Linguistics* Saussure introduced the Cartesian coordinates, bifurcated *La Langue* from *La Parole* on the principles of mechanics, referred to as Newtonian, but actually derived from Hertz (1894), and emphasized that General Linguistics was an algebra. At the heart of this methodological analysis of language production was the sign traveling in one direction and chained in one dimension. In this calculus system, which dominated the Twentieth Century Linguistic Corpus, the Saussurean sign and the line (Linear Linguistics) came from Richard Dedekind. Separated from the chaos of Nature, People, and Use, this stationized and stilled frame was intend to present a freeze-dried snapshot of language mechanics.

*The Search for Mathematical Roots 1870-1940* (Grattan-Guinness 2000), *Where Mathematics*

Comes From (Lakeoff & Nunez 2000), and Conflicts between Generalization, Rigor, and Intuition (Gert Schubring (2004) provide a comprehensible framework to the history behind the discretization program and the goal to arithmetize the calculus. Birkhoff (1973), Dunham (2005), and Heijenoort (1967) provide a deeper background. The First Moderns (Everell 1997) is a fun introduction to the context.

### 3 Richard Dedekind And Ferdinand De Saussure

#### 3.1 The Riemann Connection

Richard Dedekind was the last student of Carl Gauss (1777-1855), completed his doctorate in 1852 on "On the Theory of Eulerian Integrals, and then went to Berlin where he and Georg Friedrich Bernard Riemann (1826-1866) were contemporaries and graduated in the same year 1854. Possibly one of the most influential mathematicians of the middle of the nineteenth century, Riemann's collected works were edited by Dedekind. Riemannian geometry, the first geometry to be developed after Euclidean geometry, was a higher dimensional geometry incorporating four dimensions. This had a tremendous influence on Charles Hinton, H. J. Wells, Picasso, Albert Einstein, and hyperspace theory. See Saussure's 29 November 1910 lecture for spatial projection of language in four dimensions coupled with waves.

#### 3.2 The Dedekind Cut

In 1858 Dedekind began teaching calculus at the polytechnic in Zurich, Switzerland, remaining there until 1862. Here he developed the notion of the Cut, that an irrational number divides the rational numbers into two classes, the greater and the lower. This insight led to the notion that there were no discontinuities on the number line continuum, and it was published in 1872 as "Continuity and Irrational Numbers". Saussure, in Switzerland, cut language into two classes, the Internal and the External, and allocated the irrational to the External La Parole. By these cuts, both Dedekind and Saussure intended to establish certainty and continuity into their systems.

#### 3.3 The Dedekind Correspondence

Dedekind's theorem states that if there is a one to one correspondence between two sets, then the two sets were similar. It is Dedekind's theorem which allows Twentieth Century linguists to throw away the External La Parole Set, and then to claim to recover it later by correspondence theory.

#### 3.4 The Dedekind Domain

The Dedekind Domain is an integrally closed domain where each ideal can be written as a product of a finite number. The domain of Internal General Linguistics is a Dedekind Domain, and the grammars and syntax systems of the Discourse of Modernism are located

and motivated inside a Dedekind Domain.

### 3.5 A Dedekind Dot

A Dedekind Dot is a Dedekind Rational Number separated from the irrationals. This limitation enables, within the encompassing mindset, description and fabrication of the ideal dot without chaos, discontinuity, gap, or irrationality. Here are located the ultimate building blocks of stationary semiotic systems, the linguistic atoms, bricks, crystals, elements, invariants, particles, pebbles, primitives, and universals. Prolegomena to a Theory of Language (Hjelmslev 1943) provides a prime example of the move towards a more rational linguistics. The corpus of the American Structuralists provides an excellent example of the Titanic struggle to ground and manipulate the distribution of fixed equals within phonetic, semantic, and syntactical systems by unique factorization. See Bernard Bloch, Zellig Harris, Charles Hockett, Martin Joos, Sydney Lamb, Freeman Twaddel, Rulon Wells. Finally, Chao called for non-unique solutions, and Kenneth Pike called for the inclusion of chaos, discontinuity, and mixed levels into linguistic analysis, whereupon he was labeled a heretic and excluded from publication.

### 3.6 The Dedekind Line

The Dedekind Line is the Number Line without discontinuity, gaps, or irrationality. Like the Dedekind Dot, the Dedekind Line justifies the rhetoric of rigor coupled with all the moral sanctimony of completeness, concreteness, order, and tidiness.

### 3.7 The Dedekind Chain

The Dedekind Chain is a train of Identities and Values on the Number Line without discontinuity, gaps, or irrationality.

### 3.8 The Dedekind Set

The Dedekind Set is a set of Identities and Values collected from the Number Line without discontinuity, gaps, or irrationality.

### 3.9 The Dedekind Review

The Dedekind Cut, Dedekind Correspondence, Dedekind Domain, Dedekind Dot, Dedekind Number Line, Dedekind Chain, and Dedekind Set are the isomorphic and theoretical source of General Linguistics, and the Discretization Program of the Nineteenth Century is the origin of General Linguistics rhetoric of rigor used to castigate any unfortunate confronting a discontinuity or disjunction. Identification enables the disregard of General Linguistics and the tying of the Corpus of Twentieth Century to the Nineteenth Century Discretization Program as a footnote.

Nowhere in this isolated and tidy house-keeping world of Richard Dedekind is there any



notion of internal breakdown, recursion, repair, or upgrade, nor any awareness of emotion or external perturbation. Rationalism is now defined by reduction to a certain fixed solid dot and then recovery of the obliterated whole by concatenation and correspondence without chaos. In essence, this is the Discourse of Modernism. However, the Age of Computation and Information commences not from calculation per se but by the protection of the process of calculation (Shannon 1916-2001; Mandelbrot 1924) and by recursion (Godel 1906-1978; Alonzo Church 1903-1995; John von Neumann 1903-1957; Alan Turing 1912-1954; Emil Post 1897-1954). Defence against information breakdown and the ability to replicate information are a vast evolutionary step far beyond information reduction to a dot and then the concept of building up logic trains from a dot.

#### 4 Ferdinand de Saussure And Richard Dedekind

Two great cuts define General Linguistics, The acoustic chain is cut from the complex, protean social product, i.e., the speech circuit, and cut from time. One might expect this methodology to control, fix, isolate, and limit the code. Counterproductively, however, it is actually the dynamics of speech and time which limit the inner product. This dynamic explains why General Linguists die with incomplete projects.

The Twentieth Century Linguistic Corpus is, therefore, more than just a footnote to the Nineteenth Century discretization program to arithmetize the calculus. It is a weed which has overgrown and hidden its seed, source, and spring, and thereby created a labyrinth of rational synchronicity, or fractal froth.

The rational point of view for linguistics Saussure explained 16 June 1911 was focus on the linguistic object, the theoretical, ideal, and pure linguistics whose divisions are defined by what should exist internally rather than what is currently observable. In counterbalance to his personal pursuit, Saussure always stressed the overwhelming importance of the facts of speech and the speech circuit, in the domain he called the Domain next Door. People, schools, students, and teachers existed in the Domain next Door he explained, and never were General Linguistics and the Domain next Door to be conflated. Any attempt to conflate education and learning, for instance, with General Linguistics would lead to chimera. The two were separated by the mechanics of analysis.

Within the Dedekind Domain reached only by the bifurcation of the speech and time circuits, two principles existed: the primary truth is that the linguistic sign is arbitrary; the second primary truth is that the sign extends and unfolds in one linear dimension of time.

The linguistic entity is like a composite chemical substance such as water, but unlike chemistry, once linguistic water is dissolved, there is no linguistics. The acoustic chain

combining sound and concept in a linguistic entity, thus, formed a train of identity on the single dimension; it is by this device we know there is a before and an after, and this division represented the whole of the language mechanism. It is not difficult to see in this theoretical construct Richard Dedekind achieving continuity on the Number Line.

It is also not difficult to see that the rationality of Twentieth Century Linguistic Science is very far from the rationality of the Modistae Scholastics. The Modistae Scholastics aimed to connect with Nature. Twentieth Century Linguistic Science aimed to disconnect from Nature. The great disconnect from the real world, i.e., the break in signification, has placed rhetoric and not speech in the driving seat of Modernity.

True Speech said Plato is the Soul, and currently because syntactic and not semantic systems control model making, Humanity is confronted by the counterfeit.

## 5 The Cut Of Richard Dedekind

In 1858 the limitation of the arbitrary and the lack of a really scientific foundation for arithmetic concerned Richard Dedekind, and he wished to avoid the geometric in reaching a fixed, limiting value for rational numbers. In conceiving that the domain of real numbers was complete in itself and in his demanding that arithmetic be developed out of itself rather than geometry, he commenced with a system called a well-arranged domain of one dimension where - each defined by the one immediately preceding in the chain - a series of positive integers could be ordered. His ordering device consisted of the separation of the points of a straight line into two classes, which provides a left and a right class, and this severance into two proportions proceeded from one exact point between the two (Dedekind 1901: 3-7).

The challenge, however, consisted in defining the irrational numbers by the rational numbers, i.e., the reals, while the existence of gaps, a certain incompleteness, and discontinuities was believed to mar the number line and the scientific basis of continuous domains. Dedekind commenced by defining his principle of continuity from the commonplace converse. If all points of a straight line fall into two classes, such that every point of one portion lay to the left of every point of the second class, then there exist only one point which produces this division of all points into two classes. In other words, each rational number separates the line into two classes, and this separation is defined as a cut. However, not all cuts land on a rational point, and it is by this binary property of the cutting act that the irrational is defined. Whether one is convinced by the legitimacy of the Dedekind Cut or not is not the matter under discussion.

It is by the Dedekind Cut that Saussure organizes the whole of General Linguistics. There

will only be muddlement if language is not divided into the rational and the irrational, and any hope of combining the two approaches, domains, and orders in the same perspective is chimerical. Consistency, identity, precision, and value are to be found in the state of affairs organized by the cut of internal synchronic order.

Once the Dedekind Cut is accepted as the methodological organization for General Linguistics, then the target of interest has been reached. For the cut of internal synchronic order, which frames and holds the stationary linguistic system, has produced not order but inconsistency, lack of identity, imprecision, and confusion of value in the stationary linguistic system, i.e., scalar disorder - the existence of gaps, a certain incompleteness, and discontinuities - has survived the Dedekind Cut. Dedekind himself candidly admitted that he was utterly unable to adduce any proof for the correctness of his commonplace principle, and stated no one had the power to do so. It was an axiom beyond discussion which would remain true regardless whether space was continuous or discontinuous (Dedekind 1901: 12).

## 6 The Axe Of Reason

The emergence of scalar disorder was not expected in the analysis of stationary linguistic system, which, following the trope of the watch or mechanical object, was defined by rational positive number and causal mechanics. However, semiotic systems are not pebble systems, nor are they cities built by bricks, nor are they logic trains built up from Dedekind Dots, however reasonable the tropes may appear to be in a visual hegemony. Chao and Pike were correct, although their insights have been long swept under the carpet and out of sight. Stationary linguistic system cannot be reduced and reduced systems cannot recover. Despite all the rhetoric and reason stating the converse, the hard evidence is for Non-reduction and Non-Recovery.

The Discourse of Modernity - the Western rhetoric of causal mechanics - represents an integration of the Enlightenment, Leviathan, the Calculus, and German Idealism; however, at the centre of this great analytical system exist two problems, the point and the integral. Apollonian language science has dominated the past two millennia. One of the most succinct oppositions to the model was raised by Nicolas of Cusa (1401-1464), who said, "There is no centre". Ostensibly considered impossible, Nineteenth Century geometric figures such as Cantor Dusts, Koch Snowflakes, and Menger Sponges provide models of structures without centres. Combining Cantor Dusts, Koch Snowflakes, and Menger Sponges provides a network of foam or sponge surfaces separated by repellant centres. Instead of a classical three dimensional geometry of positive integers, this provides a dimensional space of  $D \sim 6309$ ;  $D \sim 1.2618$ , and  $D \sim 2.7268$ , with perhaps the greatest stability derived from a tetrahedron with a dimension of 2.

Taking the original axe of reason to the Dedekind Cut resolves the Dedekind Cut to be the constructive dialectical method, and the clue to progress is the "there exist only one point which produces this division of all points into two classes". Whether there is one point is moot, but at the minimum there are two gaps, and it is by focusing on the gapping rather than the pointing and the classes that the lacunar background emerges. The key word is not point but BETWEEN, and the study of BETWEEN leads to the notion of Non Linear Two. Non Linear Two is a scatter matrix, and when Two is viewed as a geometry of discontinuous magnitudes, rather than the algebra of continuous magnitudes, it can be seen that the dialectical method is not an algebra (from the Arabic -"jabara" to bind) but a breakage or fracture. Fracturing coupled with binding makes text to be both geometry and algebra, with impossible problems being introduced by insistence that it is either one or the other. Great structural simplicities become introduced because the breakage is consistent, e.g., there is one sign of  $D \sim 1.2618$ . Limitation of semantics becomes a matter of spacetime and speech, not reason. In this reduction, which is an equalization and not a lessening, "Galaxy" and Ant" have the same text size. Reduction by sign equalization rather than by diminution is achieved by the lacunarity of Non-Reduction.

## 7 Non Linear Two

In rethinking context, it is Eco (1984, 1997, 2000) who discussed in detail the obstinacy in signs, dictionaries, encyclopedias, metaphors, symbols, and codes. Hence, by the Dedekind Theorem, the scalar disorder manifested in the footnote to the Nineteenth Century discretization program to arithmetize the calculus can be studied in the dictionary, and no better place exists in the dictionary than its discourse on TWO.

The Oxford Dictionary has about eight hundred pages devoted to TWO (e.g., Be, bi, bra, di, du, dwa, twi) and there the scatter matrix of TWO does not reveal a very well-behaved sign but a rather bewildering prefix, with THREE being little better than treacherous and tree.

BETWEEN; or Betweonum; Betwinum; Bitwione; Betwine; or in OE 'By sea twain;'; or in numerous variations refers to the binding of two twines or Bewind.

Bevel and Bezel refer to broken angles; faces; lines; planes; slants; or slopes; while Bewilder means to be led astray and to become lost in a pathless place.

Bias; Bichant means an enchantment or biwitchment; Bicharre means to be turned; bifurcation; bind; Binche - a town in Belgium for making lace; bird; birds eye view; bisection; bit; bivariate - two degrees of freedom; Bive - to shake and tremble; Biweve - to twist; wind; or wrap; Biwile; Biwrixle - from wrixlan to change or transform; and, of course, Bizarre.

While Bra leads to Branch, Brahman, and Brass and Di to Diramation - Branching - and Direct; Diable and Diagonal; Dizzy and Dialogue; Dirty and Discrete; Diarrhoea and Diagnose; Diaspora and Diatom; Disable and Disabuse, Diloricate - to tear apart - and Dilucidate - to make clear; Dilapidation and Diligence; Disarray and Discipline; Discord and Disciple; Disaster and Dictator; Dissemble and Disentangle; Disorientate and Disect; Disorderly and Diamond; Dilemma and Divide; Disguise and Disown; and Discontinue and Discourse also demonstrate the crooked and straight properties of TWO.

The Du in Dual can be Dub - a muddy pond; Doubtful; Dubious; Dud - fake; Dudder - to shiver; Duddle to confuse; Duddy - ragged; Duffer counterfeit; dusk, Dust; or Dyad; Duct; Duet; Duty; or Dux. While Dva in Sanskrit means pair or two. In OE Dwale; Dveola; Dwola; Dwala; dwole; Dwale; and Duale means deceiver, deceit, delusion, error, fraud, heresy, heretic; Dwalm; Dwam; and Dwolma means abyss, chaos, and confusion; and in Old Norse Dwale; Dwall, Dwaille; Dwoll; Dwalaar; and Dwali means drink, delay, soporific, sleep, torpor, and trance.

Twain; Twine; Twoegen; Twegen; Twein; and Tweyne is to pull asunder. Twaddle; Twattle, and Twittle Twattle is senseless, silly, trifling talk; Twaddledom is the Realm of Twaddle; and there is Twatterlight.Tweenlight; Twilight, and Twidark. Twail and Tweed are a cloth or web, while Tweedle is a counterfeit, fiddle, or swindle. Tweon is to be doubtful or to debate in OE, while twiddle is to twirl, twist, or curl; Twig is branch, Twiggen is made of branches, and a Twigger is a prolific breeder or a lascivious person. Twill is to weave, a twilly rod is a twisted rod; and Twind is to entangle, knot, twist, twine, and wind. Twine itself is to bend, coil, crawl, curl, to become circuitous, complicated, contorted, entangled, irregular, meander, plait, serpent-like, spiral, wriggle, and writhe. Twinkle is to alternate, blink, flutter, glimmer, intermit, quiver, scintillate, tremor, and vibrate; while Twirede is to be of two minds. A Twirly is full of curves; a Twirl is a giddy spin, twist, or Twirl; a Twisel; Twissel; Twizzel; and Twisla is a branch, division, or separation; and then there is Twirliblast; Twirlwind; Twirlification; and Twirligig. Twist refers to craze, confound, distortion, eccentric, interweave, irregularity, kink, peculiarity, screw, and to wrench out of shape.

This brief review of Dictionary TWO demonstrates that TWO functions as a Divider and source of confusion just as much as it Binds and clarifies. Hence, since the same sign acts both as scatter matrix and combinant, it is not surprising that Reason is a double-edged sword; that it is hard for General Linguistics to maintain a Linear Line; that codes, protocols, and rules do not control; that legislators have lost control of Legislation; that students have trouble making grammar work; and that events spin quickly out of control.

Dictionary THREE confirms the geometric and algebraic patterns of Dictionary TWO,

e.g., Tree, Treacherous, Treason, Tremble, Tremor, Trill, Trivia, Trouble, Trauma, Trample, Trick, and True, Trust, Triangle.

Three patterns are of interest. The first pattern is that many of the words are associated with textiles, and it seems that the weaving class and cloth merchants in medieval times may have been Manichaeans, a dualist sect emerging out of the Zoroastrians and termed heretics by the early Christian Church dedicated to Unitarianism. The brutal Twelfth Century suppression of the Cathars often seems to be associated with itinerant weavers, e.g., Albi near Toulouse, Languedoc, Liege, Burgundy, Flanders, Germany. It would seem that the origin - a consequence of the First Crusade - of many of these itinerant weavers, who were called Publicani and Poplicani, was Paulicians from Constantinople, the Dragovitsan branch of the Bogomil Church. It is a long neglected fact that a Dualistic tradition once spread from the Black Sea to the Atlantic coast (Runciman1999: 116-180). The second pattern is that the origin of Devil and Satan appears to be Zoroastrian and also connected to directly to Two, e.g., diable. The third pattern is that the key metaphors of linguistics, i.e., Text, Tree, and Binary Principle are dualistic. In other words, it would appear that the dualistic properties of textual studies have been over written by a rhetoric of Unitarianism, just as the Medieval Church over wrote the Gnostic and Manichaean sects of Europe during the Middle Ages.

Modern Linguistics originates with August Schleicher (1812-1868), who introduced (a) the tree diagram to Linguistics; and (b) algebraic notation. Foundations of Language (Jackendoff 2002) represents an excellent illustration of this type of genre, i.e., the Tree and Algebra methodology of representation. Focused on syntactocentrism, (Jackendoff's observations are of a pattern of anomaly, bewilderment, bottomless pit, drowning in endless detail, many tricky details, total mush, and welter. Hence, the narrative Foundations of Language confirms the patterns of the dictionary.

## 8 Implications Of Non Linear Two

The notion of stability centered in code and syntactocentrism has been the Grammarian's Dream (Halliday 1961: 267) throughout the Twentieth Century, and, in fact, the dream can be traced back at least four thousand years to the start of the Iron Age. It is no coincidence that the Tower Of Babel narrative is chronologically located at the interface between the binary Bronze Age and the unitary Iron Age, and that the rhetoric of rigor is both Mason-like and steel-like.

A stationary linguistic system is not a stationary physical system. A stationary linguistic system is: "the elusive continent...and the nesting of islands within lakes within islands continues without bound" (Mandelbrot 1983: 121); "as with the frictionless pendulum,

widespread points in phase space will not converge upon smaller sets, and there will be no attractors" (Lorenz 1993: 62); "information randomness and incompleteness" Chaitin 1987; 1999; 2001; 2003; 2005). Thus, the ultimate building blocks are not points but discontinuities, gaps, and incompleteness; and the pattern of discontinuities, gaps, and incompleteness display the principle of Disjoint Mechanics.

The Grammarian's Dream of syntactocentrism has been the nightmarish pursuit of a curve without a tangent, and this is easily proven by the use of the Tree Diagram. The ubiquitous Linguistic Tree, which is the Porphyrian Tree, is a geometric curve, and this curve, once the rhetoric of algebraic certainty is stripped from the text is non-rectifiable. It is no coincidence that Humanity was expelled from the garden of Eden, after talking to the Snake in the Tree and eating the fruit from the Snake in the Tree. The Snake in the Tree is the non-rectifiable curve of the tangentless tree, and eating the fruit leads directly to the bitterness and weeds of the non-rectifiable wilderness.

The tangentless tree destroys all who seek the base, foundation, and point. Zoroaster taught of the mixture of mediums and interpenetration of parallel worlds, one of order and the other of disorder (Cohn 1993: 77-115). Classically, this phenomenon was known as 'Alogon' to the Greeks (Mlodinow 2001: 26); 'Babel' to the Hebrews; the Manichean heresy to the Christians; and as 'Confusio Linguarum' to the Romans, Dark Ages, Middle Ages, and Renaissance. Plato termed the obstinacy the 'different degrees of certainty', the 'word traps', the 'unconnected medley' and 'ruin of whatever happens to be contained in it' (Frede 1993: 69, 79), Aristotle called it the 'indefinite dyad' (2001: 920); Hobbes (1651) described it as the 'lime twig' trap; Hume (1739: 89, 326) wrote of 'quicksilver', the 'enchanted castle', and 'The number of fractions brings it no nearer the last division than the first idea it formed with every particle eluding the grasp by a new fraction'. Ramus puzzled over the grammatical inconsistencies (Kibbee 1995: 163) which remained in language despite imposition of the Tree of Dichotomies; Leibniz called it the 'imperfect primitive' (Eco 1997: 269-292); Hegel called it the 'splintered harmony' (Eco 1984: 143-144; 1997: 342-342); and Schopenhauer termed it the 'irrational cosmic force' (Berlin 1991: 78). In the first half of the Nineteenth Century, linguist Jakob Grimm (1785-1863) tolerated 'patchy regularity' (Collinge 1995b: 206), while the Neogrammarians, in the latter half of the Nineteenth Century, despite their uncompromising rejection of the 'grey theories' and 'voyaging without a compass' of earlier studies, and demands for 'rigor', 'excision of the anomalous' and 'infallible histories', themselves soon encountered a 'surprising spottiness' from the linguistic geographers (Collinge 1995b: 205, 206). And in 1894 Saussure wrote of 'The utter inadequacy of current terminology' and that 'there is not a single term used in linguistics which has any meaning for me' (Culler 1985: 15).

In the Twentieth Century Henri Poincare wrote of the element of fog (1905: 31), and

Saussure described the phenomena as the most troubling contrasts and paradoxes', a snare, a phantom, 'fragmentation on the spot', the differentiating phenomena, and *poussiere linguistique* (linguistic dust) (Komatsu and Wolf 1997: 1, 2, 23, 97, 98, 99, 103, 104; Jacobsen and Waugh 1979: 237). Mathieu, Bevernage, and Palmer called it the Linguistic Problem (Palmer 1917: 5). Freeman Twaddell wrote of the 'malignant perversity' (Twaddell 1935, 1957: 67); Householder (1952) wrote of the two views of reality, God's Truth and Hocus Pocus; Joos wrote that 'everyone continually fools himself about what he is doing', 'No: that way lies madness', and of the 'hocus pocus map' (Joos 1957: 80). Whorf (1956: 238) termed it 'the dusty answer'; Roe (1980a: 178; 1980b: 5) as 'disjointing' and the 'linguistic dimension of difficulty'; Stern wrote of the messy realities of language use (Stern 1983); Eco (1984: 16, 23; 1997: 46) as the 'crisis of a concept', the Net of Fractures, and the 'Wound of Babel'; Barthes (1988: 7, 85, 130, 133) as "a volume of traces in displacement", 'the very space where code ceases', 'generalized distortion', and 'structural limping'. Malinowski and Halliday wrote of the coefficient of weirdness (Halliday 1987: 135); Garfinkel (1989) of 'ad-hocing'; Givon of the 'certain measure of murk that comes with the territory' (1989: 424); Rorty (1991) of the 'awkward', 'softer,' 'squishier,' and 'more dubious'; Candlin that 'Common and encompassing terms have a sting in their tail' (Bhatia 1993: ix). Martin wrote that 'there will always be rough edges for the analyst' and 'It is thus hard to draw the line' (Martin 1992: 59, 75); Berlin wrote of the untidy reality (Berlin 1993: 35); Knowles and Roe (1994: 6) of "a chain of struggles"; Mathiessen (1995) observed countless linguistic systems, strata, and variation at a self-estimated projection of about 1: 1000 000; McCarthy wrote of the imperfect product and the veritable black hole lying at the end of such a quest (1998: 13); and Jackendoff (2002: 271, 26, 23, 25, 26, 125, 135, 194, 283, 427, 18), scientifically tracing the chain of relationships in the foundations of language, described 'the welter of overlapping positions', 'coarse location,' 'squishy categories,' 'total mush,' 'disparity accumulating as we proceed,' 'In between, there is a bewildering variety,' 'many tricky details,' 'a bottomless pit,' 'drowning in endless detail,' and a 'far from clear' picture, while noting that 'the overall outlines of the phenomenon are clear'.

Analytical intractability and its break-down space which lies beyond the resolving power of the categorization, codification, and extension mechanics of the pure 'scientific description of language' comes directly from the assembly machine, the Tree of Dichotomies, Non Linear Two.

## 9 Exiting The Grammarian's Nightmare

No exit exists from the Grammarian's Nightmare save abandonment of the 'real world', burning its bridges, and return to the Real World. The stability of semiotic systems is not driven by the code-focused syntactocentrism of the Internal Product but by the significations of the External Product. It is long past time for the linguistic profession to



Cold Turkey their Circean addiction to the flickering shadows on the walls by exiting the Cave of the Internal Product. Moving Dialogue and Mind to the External Product may seem a backward step, but, while the Medieval placed the mind in the Heart and the Modern in the brain, escape from the Circean Grammarian's Dream requires Mind placed in the world. Externalizing and objectifying Dialogue and Mind in the world is an extraction from the Cave of the Internal Product.

The External Product is Performance in Public, not competence in private. The disconnected rhetoric of certainty and rigor which surrounds the impossible Dream of Competence (Internal Product) has led to a century of bureaucrats, judges, and politicians engaged in accounting fraud, cooking the books, covering up, faking it, pretence, and rigging the results, thereby leaving their victims in such despair or hopelessness, that no choice seemed to remain but suicide bombers and acts which outrage the conscience of mankind (UN1948 Universal Declaration of Human Rights). However, it is the Discourse of Modernism, with its base of certainty founded on the Tree of Dichotomies, Non Linear Two, which is responsible for the proliferation of rhetorical cloaks.

The proliferation of rhetorical cloaks, which defines the current epoch, is the causal consequence of the Discourse of Modernism, i.e., the Grammarian's Dream of the perfect language. It is the fact that the Linguistic Tree is tangentless which automates and mandates the necessity for dishonesty - to appear competent - and the face-saving dishonesty automated and mandated by the Tangentless Tree installs a broken window culture, where one successful act of dishonesty breeds another successful act of dishonesty, for the Tangentless Tree is the source of all legal loopholes.

The Linguistic Tree of stationary linguistic systems does not lead to the mother of all certainty but to the mother of all legal loopholes, and it is the Dynamic External Product which brutally cuts, prunes, shapes, and trims the lascivious breeder. Treating the Twentieth Century Linguistic Corpus as a footnote to the Nineteenth Century's attempts to arithmetize the calculus, thus, provides evidence that faith in the Discourse of Modernism is betrayed by fractal dimensions. In other words, the Twentieth Century Linguistic Corpus provides proof of fractal dimensions, not concrete streets, houses, town, cities, lands, and continents. One conclusion is that fractal froth obscures the obvious, or, it is Trivia which is thrown up by the dogged search for the syntactocentric.

The dimensions  $D \sim 6309$ ;  $D \sim 1.2618$ , and  $D \sim 2.7268$  correlate with the text patterns of the Tree and Algebra genre of Schleicher, and indicate a de-centered foam structure. In retrospect, this resistant and repulsive structure may seem obvious, for from the event horizon of a syntactocentric collapse, there is no recovery and no return.

## 10 The External Product

It is the dynamics of the Speech and Time Circuit of the External Product in the Saussurean Doman Next Door which maintain order to the disordering systems of General Linguistics and the discourse of Modernity. In this Circuit Communities, Emotions, Education, Institutions, Role models, Repair Strategies, and Tolerance play an equalizing and regulating role in sustaining Order. What passes for Reason is a circuit of amplified Cliches, Customs, Glosses, Habits, Herding Instincts, Invested Interests, Protocols, and Rhetorical Recipes.

Externalising objectification is a culture shift, a genre shift, and a mind-shift. Reason concatenates from the external Circuit. The Western belief in the Internal Product developed as a response to faith-based systems, but, as Peter Abelard put it very clearly in his Ethics, it is time to force out Idealism. If Kant's Internal Reason existed, 70 million tons of greenhouse emissions would not be produced every day, rain forests would be protected, biodiversity would be a global priority, consumption would not be an international religion; everyone would have clean drinking water and shelter; war would cease, and there would be no need for Judges and Lawyers. The sign itself might be arbitrary, but the signification of the External Product is not arbitrary.

## 11 Implications for the Saussurean Second Language Teacher

The analytical notions of the linguistic calculus have hijacked the second language learning classroom, culture, experience, and textbook. By principled definition, chaos and confusion, emotion and impulses; repair and refocus, and the collective intelligence of speech are an unsatisfactory systemics, but non-systematic Enabling Grammars (Hertz 1894) cope or manage with non-conservative forces dissipative systems, and the experiential External Product. In genre-shifting to Enabling Grammars - which are human and social dynamic oriented - integrate the Twentieth Century Non-Idealists, e.g., Bakhtin, Polanyi, Gadamer, Garfinkel, Bourdieu, with Descartes' Error (Damasio 1994), Emotional Intelligence (Goleman 1995) and Working with Emotional Intelligence (Goleman 1998) as a start towards by-passing linguistic calculus mindset.

Agent-based, not algebra-based, and process-based, not product-based, Enabling Grammars are a Wave Mechanics. Such a wave model dedicated to language communication might be a mixture of Psychotronics and Distributed Task Learning.

## 12 Implications for the General Linguist

The representation of knowledge as the product of a syntactocentric ratio misleads

civilization and Humanity. Actaeon was devoured by his own hounds, Narcissus drowned in his own mirror, and the swine of Circes lived off their own excrement: the Tangentless Tree devours kings, heroes, empires, and planets.

Disjoint Mechanics scarcely forms the principled basis for either a linear or a static linguistics, and, similarly, the curve without a tangent can scarcely form the principled basis for linear, static, or syntactocentric linguistics. Disjoint Mechanics do not close but scalar display by a scatter matrix. The only limitation to the elusive continent, frictionless pendulum, and information incompleteness is the Spacetime of Nature.

Assertions of linguistic atoms, bricks, cores, elements, points, primitives, and tokens are not evidence-based but faith-based, a rhetoric stemming from the Iron Age, the Monotheistic Age, the Masonic Age, the Democritan Atom, and the Watchmaker's Culture. The Internal Product is a standing wave, which collapses once the current is disconnected. The origin of order is not in the Internal Product but in the Circuit.

The modern advent of the algorithm (Berlinski 2000) begins not with the Dedekind's axiomatic set theory but from Frege's higher order logic. The arithmetization of analysis based on the definition of real numbers in terms of the rational numbers produced a convincing rhetoric that analysis was rational. The Dedekind Cut produced two classes, each essentially equivalent, and from the cut Dedekind created the number set (Gillies 1982: 5-6), just as Saussure created the two sets General Linguistics (Internal Product) and the Domain next Door (External Product) from his Dedekind Cuts. A complete and consistent set, arithmetic (algebra) thus forms the whole of analysis for every domain, just as the Internal Product Set of General Linguistics forms the whole of analysis for every domain. However, the Dedekind Sets include the Infinite Set.

The rigor of Dedekind and Frege produced a crisis in the foundations of mathematics, which still exists more than a century later. In the Critique of Pure Reason (1781), Kant had argued that both geometry and arithmetic were synthetic a priori, but the Discretization program of the Nineteenth century aimed to make arithmetic analytic a priori, and to advance the concept that all significant mathematical truths are analytic.

Kant's original distinctions were linguistic (a priori and a posteriori; analytic and synthetic) based on the Subject Predicate relationship. However, Frege sidestepped the Subject Predicate logic of the Aristotelian propositional calculus by including Relationships and Quantifiers, which bind the variables. Termed Predicate Calculus, Frege's system represented an advance in logical systems, but it encountered Russell's Paradox and Godel's Incompleteness Theorem.

Godel's Incompleteness Theorem and his identification of formally undecidable propositions in related systems developed from a combination of self-reference and recursion. While the world pondered on the profound mystery of the Incompleteness conclusion, a few, e.g., Alonso Church, Stephen Kleene, Alan Turing, Emil Post, and John Von Neumann, focused on the methodology of Self-reference and Recursion, and it is this focus which led to the computer and the internet.

Self-reference and Recursion are excluded from General Linguistics, Synchronics, and Syntactocentric Linguistics by the demands of Rigor, but the functions of Self-reference and Recursion are integral to Speech. Speech is a Self-reference and Recursion System.

Godel's Incompleteness Theorem and Mandelbrot's discovery that the scalar disorder in communication signals obeys the geometric progression of a Cantor Dust are connected.

General Linguistics is dead. Without Circuit it has no attractors, thus, it cannot reduce. Alternatively, reduced, it cannot recover. Description, Explanation, and Rhetoric are not cause. Thus, the Discourse of Modernity is terminated by its own Tree.

### 13 Implications for the Legislative State

The Mysterious Science of Law (Boorstin 1941), the global crisis in legal systems and in the notion of legality itself (Berman 1983: 33-41), and the crisis in legitimization signaled by the work of Henri Bergson, Mikhail Bakhtin, Ludwig Wittgenstein, Benjamin Whorf, Tel Quel (1960-1983), Michael Polanyi, Hans-Georg Gadamer, Julia Kristeva, Roland Barthes, Michel Foucault, Jean Francois Lyotard, Jacques Derrida, Pierre Bourdieu, Isaiah Berlin, Harold Garfinkel, Clifford Gertz, Richard Rorty, and Umberto Eco indicate to the Legislative State and its Citizens that there is something fundamentally flawed and rotten in the heart of the state system.

Garfinkel's study of the coding procedures in a psychiatric clinic (1967) high-lighted the mismatch between Competence and Commonsense. 'Ad-Hocing Operations' are the causal Human response to the non-rectifiable curve of the Linguistic Tree embedded in stationary semiotic systems. See Bourdieu, Gadamer, and Polanyi on hermeneutics.

The codification of General Linguistics is a failed state. And it is the Disjoint Mechanics of Tangentless Two which makes the Legislative State a failed regime, for legislation is not reason concatenating by rules from well-defined code in a straight line. Instead, Nonlinear Two with its non-rectifiable curve make the Law Managers of the Legislative State rely on conspiratorial silence and rhetorical cloaks to conceal the breakdowns, contradictions, discontinuities, and gaps in their 'professions' (speech) and praxis.

The Courts of the Legislative State paper over their mystery and crisis (Boorstin 1941; Berman 1983) by rhetorical cloaks derived from status genres but disconnected from signification, i.e., Aristotelian, Euclidean, Newtonian, and General Linguistics. The rise of the professional class of judges and lawyers in Europe commenced in 1073 with the Papal Revolution of Gregory VII, and it is from this time mass persecutions in Europe began coupled coincidentally with confiscated property. The Aristotelian and Euclidean cloaking devices began in the law faculty of Bologna University. See Valla (1407-1457) for penetrating criticism of Bartolus and the Jurists (Mack 1993). Remetaphorizing the demetaphorized demonstrate the Rule of Law from the Bench and the Court - and its discourse of accountability, balanced, correct, equity, impartiality, integrity, level, objectivity, right, straight, square, and true - to be geometric discourse mimesis. And the Disjoint Mechanics of Tangentless Two explain why the victims of the professional class of Judges and Lawyers (1073) cry out in protest, "Ad-hoc, Bent, Crooked, Double-crossing, Double-dealing, Screwed, and Twisted". In the Newtonian Cloak, "Gravity of the Court, Material Matters, the Weight of Evidence, and Weighing-Up the Evidence" are demetaphorized tropes, also empty mimetic rhetoric without signification.

The Natural Law Jurisprudence of Thomas Hobbes (1588-1679); and his Discourse of Calculation (*De Corpore*, *Cive*, *De Homine*, *Elements*, *Leviathan*); Baruch Spinoza (1632-1677); Samuel Pufendorf (1632-1694); John Locke (1632-1704); Jean-Jacques Rousseau (1712-1778); and Immanuel Kant (1724-1804) provide the foundations of the Modern Cloak of the Court. The fraud of the Court has been greatly assisted by Kant referring to Reason as the Tribunal, and by his making the Trope of the Tribunal - a kind of police machinery - as the locus of pure, practical reason in the cognitive faculty (1788, 1993: 158). However, all these Rhetorics of Mechanical Rational Thought have been subsumed by the Analytical Arithmetic of the Dedekind Discourse of Digital Rationality.

The non-rectifiable curve of the TANGENTLESS TREE derived from Tangentless Two dismisses and dissolves all notions of a Competent Court. No greater fraud is fostered by the Legislative State upon its Citizens than the bluff and brainwash that the Court is accountable, credible, fair, independent, rational, and transparent.

The Papal and Royal Courts of the Medieval Ages were cabals famous for their avarice, cheating, and double-dealing, where decisions were determined by the papal or royal wind blowing property and wealth into the hands of the ruling class. Those entrenched customs, habits, practices, and traditions of the "ancient regime" remain the primary function of Modern Judiciary and its professional legal industry, a licensed cabal of inside traders cloaked and fire-walled by the status rhetorics of Western Civilization.

The mysterious science of law (Boorstin 1941), the global crisis in legal systems (Berman

1983) and the permanent pattern of daily injustices are the product of the standing wave caused by the self-referencing and recursion professional class of judges and lawyers. Reform of the system is impossible. It is the existence of professional class itself which is the cause of the mystery, legal crisis, and injustice. Constitutional Revolution can drag these grand pretenders to Reason and the Rule of Law to the trashcan of history to be deleted from human society with one Constitutional Click.

The Computational Court must replace the Competence Court, if the Legislative State is to retain its warrant to rule and to provide security for its citizens.

## 14 Conclusion

The Twentieth Century General Linguistic Corpus is best contextualized first as a footnote to the Nineteenth Century's attempts to arithmetize the calculus, and second as a dead branch of the Medieval Modistae Scholars' battle against Idealism.

No return to reason (Toulmin 2001) no reshaping reason (McCumber 2005), no return to peaceful governance (Leibniz; Kant), and no understanding the crooked timber of Humanity (Berlin 1991) can exist without understanding Disjoint Mechanics, the Tangentless Tree, and the need for Enabling Grammars (Hertz 1894). Differentiation and integration are the fundamental goal of codification, yet codification is not only concomitant with arbitrariness, bias, cheating, injustice, persecution and prejudice, but it also provides the rhetorical power base to the ruling elites of the Legislative State.

Nonlinear Two with its non-rectifiable curve, i.e., Linguistic or Porphyrian Tree derived from Tangentless Two, is difficult to grasp with the dogmas of Ironmongers, Masons, and Monotheists and from the visual bias of primates. But the Linguistic Tree, has no ratio in Euclidean geometry, Newtonian mechanics, or Riemann geometries. Instead, Nonlinear Two throws a curve ball. Alogon, Babel, and Confusion Linguarum demonstrate hard evidence of an Integer Mindset in a close encounter with the fractal dimension. The Age of Reason is dissolved by Non Linear Two and the Tangentless Tree, but the praxis of decentred self-referencing and recursion can emerge a higher order rationality.

The great Saussurean Cuts of 19 and 30 May 1911 (Speech) and 2 and 6 June 1911 (Time) disconnected both Nature and Speech to produce Competence Theory, a stationary semiotic system presumed to possess the physical properties of a stationary watch. However, Nature and Speech are Standing Waves - based on Self-reference and Recursion - which shape and stabilize the dynamic system in an equilibrium of Least Time. Therefore, disconnected from Spacetime, the codifications of stationary semiotic systems lack Poincaréan Attractors, and, thus, paradoxically, rather than reduction to the corralled

roots of reason, inflation is the first automatic result of the great Cuts of General Linguistics. The second automatic result is non-recovery.

Non-reduction places emphasis on discontinuities and gaps, i.e., codification and generalization by decentred recursion, not by centred concrete cores. See Whorf (1956) and the great book of wisdom. Abandonment of the fixed regular singular point in place of discontinuous domains, e.g.,  $D \sim 6309$ ;  $D \sim 1.2618$ , and  $D \sim 2.7268$ , with the self-referential recursion being discontinuous everywhere - rather than defeat for the Legislative State - is evidence-based demonstration of the Recovering Integral.

Non-reduction also places emphasis on the public performance and praxis of Human Agents. Thus, emotive persuaders such as back-biting, belittlement, bullying, denigration, false claims, intimidation, judgment, mockery, putdowns, shouting, sneering, standover, and tongue-lashing can be categorized to be abusive linguistic behaviors.

In the history of intellectual ideas, General Linguistics seemed a good idea but rigor removed from Nature and Speech lacks attractors. Dedekind and Saussure - the first Modernists - both pushed theory to ideal extremes in order to fabricate a clear image regardless of the outcome, and this extreme idealism has led to an extreme crisis in knowledge representation, which is evident in all domains of knowledge save space exploration. Space exploration is governed by the rigor of the External. Externality is the only escape from Idealism, and the Dedekind Dot, the Dedekind Line, the Dedekind Chain, the Dedekind Set, the Dedekind Domain, the Dedekind Correspondence, and the stationary systems of General Linguistics represent extreme Idealism. Implosion is the consequence of disconnection, and, at the current time, there is a Great Disconnect in knowledge representation papered over by rhetorical cloaking.

The battle to expose the failures in the Discourse of Modernism replicates the battle of the Modistae Scholars against Idealism, for, in fact, it is the same battle being replayed on a higher order branch of the Linguistic Tree. The first battle against Idealism may be fairly located in France, in Paris, and in the first professors of the first European Universities, e.g., Berengar of Tours (999-1088); Abelard, Hugh of Saint Victor, Gratian, Albertus Magnus; Roger Bacon; Thomas Aquinas, Siger of Brabant, William of Ockham (1285-1347); Jean Buridan (1300-1358), and Nicole d'Oresme (1323-1382), who stressed intellectual inquiry into secular learning; the power of rationality; and rationality grounded in Nature to glorify the Prime Mover. Their goal led to the amplification of the methodology, i.e., Self-reference and Recursion. However, this massive genre shift towards the External was motivated by the discovery of the Aristotelian Corpus.

Berengar of Tours asserted the intellectual power of the Dialectic, Logic, Observation, and

Rationalism, when he took the first stand against Transubstantiation. And he greatly resented being forced by Irrational Coercion to be Untrue to Dialectic Principle.

Peter Abelard asserted that logic and evidence-based reason provided the path to truth.

Hugh of Saint Victor (who wrote the first encyclopedic treatise of reality since Aristotle and Archimedes) proposed the radical educational thesis that secular learning, focused on the natural world, constituted a necessary foundation... (for religious belief). Learn everything... later you will see nothing is superfluous (Tarnas 1991: 175).

Saint Francis of Assisi, the first Doctor Doolittle, rejoiced in sacred fellowship with Nature. Gratian in *A Concordance of Discordant Canons* wrote that Nature was the genus, *lex* a species of it, and that God, the Church, Princes, Reason, and Conscience were bound by Natural Law, which reflected God's Will (Berman: 1983-143-151). Albertus Magnus stressed the firm distinction between scientific and theological knowledge, and the independent value of secular learning (Tarnas 1991: 178). Roger Bacon emphasized experimental science over Dogma, and wrote *Opus Majus*, *Opus Minus*, and *Opus Tertium*. Aquinas integrated Aristotle and theology, asserting that participation in the rational intelligible order of profane reality provided a deeper appreciation of divine wisdom (Ibid: 180). Siger of Brabant, noting contradictions between Aristotle and theology, promoted the "Double Truth Universe", Materialism and Religion. William of Ockham, with the "Via Moderna, firmly separated empirical reason from idealistic faith. His principle of parsimony emphasized that entities should not be multiplied needlessly, i.e., (1) simplification in method and content; (2) abstraction and metaphysical universals are not empirical realities. Jean Buridan developed Impetus Theory, applying it to both celestial and terrestrial phenomena. This is the first introduction of Inertia, and the first major correction of Aristotelian physics. Nicole d'Oresme invented coordinate geometry before Descartes, was the first to use a fractional exponent, worked on infinite series, and defended the theoretical notion of a rotating Earth.

Plato termed the good rhetoric of fact Logography and the bad rhetoric of falsehood Sophistry. The Great Disconnect in Modern Logography represented by the Discourse of Modernism has led to a great proliferation of sophistry and unaccountability (Where are the weapons of mass destruction, George?).

SOUL Plato located in the Human Voice, and in Platonic ontology SOUL is born by Speech dedicated to Truth, a process termed Psychagogy (Barthes 1988: 18-19). Personal Speech is probably the best place to display SOUL, and public speech provides the best platform by which to bifurcate Beasts from Humans.



Since Copernicus Aristotle's geocentric 'universe' has gone from science, but the genre, lexicon, mindset, and rhetoric survived in the Idealism of General Linguistics and its Discourse of Modernity, thereby providing an interesting example of an obsolete rhetorical system surviving by capturing another knowledge domain. It is not surprising that the Discourse of Modernity with its Great Disconnect is accompanied by a discourse of alienation, desperation, dislocation, dispossession, and violent reaction.

A walk on the curve of the Tangentless Tree is a walk on the Devil's staircase. Emotion and the external natural world may not appear to be a foundation for language, but they beat the bottomless pit of analytical set theory. 'The dangerous discipline of logic, Berlinski writes, where any number of logicians go mad after finding themselves hopelessly lost in the wilderness of their own thoughts, and whose only explanation upon rescue by thumping reality is that they were searching for something they could not find' (2000: 155). Presenting itself to be integer innocent, meek, and mild, the Tangentless Tree with its 'Chimerical Castle-Buildings', 'Fiery Sparks,' and 'Quicksilver Sea' quickly leads to an 'Overheated Brain', whose 'splenetic delirium' is only dispelled by a 'Solitary walk by a river side', where 'Nature herself suffices to dispel the deepest darkness', followed by 'conversation with merry friends' (Hume 1739: 89, 318-323).

The Tangentless Tree - a malignant perversity producing the Wound of Babel, i.e., lacunarity by geometric progression - is a scaling fractal; an irregular and winding path, which slips through the fingers of anyone who wants to grasp it. Regular but tangentless, the non-rectifiable curve of Disjoint Mechanics highlights both the importance of the ad hoc, bricoleur, and mimetic aspects of the enabling grammars (Aristotle, Bergson, Benjamin, Bourdieu, Gadamer, Garfinkel, Girard, Hertz, Polanyi), and the requirement for constant adaptation, repair, and vigilance based upon real events at the edge of chaos.

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