Foreword

Scooped? Plagiarize!

While the British journal *Nature* (**575**, 576-577; 2019. doi: 10.1038/d41586-019-03648-4.) reassures us that even scientists who have been scooped may yet receive credit, some authors prefer not to take chances. The concept of discreteness, embodied in the "discrete combinatorial system" (Steven Pinker *The Language Instinct, TLI*, Morrow) revitalized the scientific study of language in 1994. Pinker backs up discreteness with serious reasoning:

"In a blending system the properties of the combination lie *between* the properties of its elements" *TLI*:85 (Pinker's italics)

"The first is the sheer vastness of language." *TLI:*85.

" … *blending systems*, like geology, paint mixing, cooking, sound light, and weather" *TLI*:85. (Pinker's italics)

"A finite number of discrete elements … are … combined … to create larger structures … with properties quite distinct from those of the elements." *TLI*:84

"Infinity is achieved … not by varying some signal along a continuum like the mercury in a thermometer" *TLI*:334.

Where did Pinker get these ideas? Not from Pinker & Bloom P&B 1990 (*Behavioral and Brain Sciences* (13):707-794), the starting-gun for the gold-rush in evolutionary linguistics. P&B includes all the ingredients for a solution: language, the gene and Ronald A. Fisher's 1930 proof that the gene must be particulate, discreteness, and the concept of a solution in engineering. There is no hint of a theory in discreteness, but all of Pinker's 1994 critical quotes and examples are taken directly from my 1989 paper On the Particulate Principle of Self-Diversifying Systems (*Journal of Social and Biological Structures* 12(1):1-13), pages 1, 2 and 8. With no mention in Pinker's text, and a marathon-obstacle-course in his end-notes, Pinker's bibliography entry for my paper is an escape-hatch for him, not a reference for me –and college homework assignments posted on the internet, extending even to the comparison of infinity in language to infinity in a thermometer on *TLI* page 334, are a beacon to my 1989 paper, all credited to Pinker.

An opportunity missed doesn't have to be an opportunity lost, not if you know how to handle it. The particulate principle is a law in physics, and by the time it reached *The Language Instinct*, the idea of language evolution was a hoax.

But I am getting ahead of my story. We moderns are specialists, who treat our academic departments, English, Latin, Mathematics, History, Art, Architecture, Anthropology, Archeology, Paleontology, Physics, Chemistry, Biology, Geology, Astronomy, even our ways of life, as if they were real. For us, it seems natural to treat language and mathematics as separate subjects. Nature has no divisions, and a theory of language depends on that fact in ways that can hardly be guessed, starting with discreteness: "If you wanted to invent a Universe with atoms and a periodic table, stars, planets, and chemistry, life and intelligent life, you would start with the Particulate Principle of Self-Diversifying Systems."

Introduction: Atoms and Atomism

In the beginning of his *Lectures on Physics* (1963. Reading: Addison-Wesley), Richard Feynman (page 1-2) tells us that, "If, in some cataclysm, all of scientific knowledge were to be destroyed, and only one sentence passed on to the next generations of creatures, what statement would contain the most information in the fewest words? I believe it is the *atomic hypothesis.* … In that one sentence, you will see, there is an *enormous* amount of information about the world, if just a little imagination and thinking are applied" (Feynman's italics).

Isaac Newton agrees (the *Opticks*. 1730, 1952. New York: Dover. Page 400), " … it seems probable to me, that God in the Beginning form'd Matter in solid, massy, hard impenetrable, moveable Particles, of such Sizes and Figures, and with such other Properties, and in such Proportion to Space, as most conduced to the End for which he form'd them; and that these primitive Particles being Solids, are incomparably harder than any porous Bodies compounded of them; even so very hard, as never to wear or to break in pieces; no ordinary Power being able to divide what God himself made one in the first Creation."

Atoms have been with us since Antiquity, most famously in the hands of Leucippus and Democritus, 5th century BC, and Lucretius, 1st century BC. Our word "atom" is a borrowing of the ancient Greek word for "a- (not) – tom (cut)", something that can not be cut, or divided –something very close to Newton's concept. The ancient idea was that, if you start with a lump of, say, gold, and keep cutting it in half, you eventually arrive at a lump so small that it can no longer be cut –the "atom". I don't find that very convincing, but my favorite of the ancient concepts of the atom, as I remember it, is, "The world is constantly being worn away by the wind, and washed away by water, and yet it stays approximately the same. All this can be understood if we suppose that the world is composed of particles, unimaginably tiny, whose organization is disrupted by water and wind, but which re-organize themselves into the rocks and trees and mountains and animals that we see around us."

The Ancients deserve enormous credit for looking behind reality as it presents itself to us, and using imagination to understand the order that must underlie and generate our everyday experience.

The struggle for the modern concept of the atom began in AD 1805, when John Dalton, finding that volumes of gases combine in ratios of small whole numbers, 2 volumes of hydrogen combining with one volume of oxygen, for example, realized that this could be understood if we postulate two particles of hydrogen combining with every one particle of oxygen. (*John Dalton and the Atom* 1966. Greenaway, Frank. Ithaca: Cornell). There is nothing to suggest that Dalton used the ancient reasoning to arrive at his concept of the atom. But he used the ancient word, and he used the ancient method of postulating invisible mechanisms to understand visible properties.

The battle for the modern concept of the atom was only won a century after Dalton, with the 1905 publication of Einstein's interpretation of the Brownian movement (in Einstein, Albert. *Investigations on the Theory of the Brownian Movement*. New York: Dover, 1956). Einstein showed that the sudden, random movements of tiny particles suspended in water were the result of being "kicked" by even tinier particles, thus demonstrating the existence of molecules and atoms.

The physicists invested a lot of time, and a lot of agony, in proving the existence of atoms. So, what is so great about atoms? The answer begins with the observation that "atomism" –there is no adequate word for it– is not confined to physics. Under different names and in different systems, atomism appeared twice more in natural science.

The first was the gene. For many decades, it had been taken for granted that biological inheritance was a blending mechanism, under which, except for sex, the characteristics of a child were an average of the characteristics of its two parents. How Nature kept the sexes separated was a mystery, but for other characteristics, inheritance was thought to be a blending mechanism. So, the offspring of a red flower and a white flower would be half-way between red and white, a pink flower. A quote from page 407, volume II, of Darwin's *The Variation of Animals and Plants Under Domestication* (1868. London: John Murray) shows the effect of blending in populations. The operative word is "stain":

"A few individuals of one form would seldom permanently affect another form existing in much greater numbers; for, without careful selection, the stain of the foreign blood would soon be obliterated … "

It was only in 1930, when the concept of evolution was firmly established among scientists, that Ronald A. Fisher could use it to prove what he called the "particulate" nature of the gene (Fisher, Ronald A. 1930. *The Genetical Theory of Natural Selection*. Oxford: Clarendon; 1958. New York: Dover) The entire first chapter of Fisher's book is centered around the formula (page 4) 1/2(x+y), expressing what would happen to individual characteristics under a blending mechanism of inheritance: Characteristics of the two parents would be averaged in the offspring, red plus white would produce pink, half-way between red and white, not blue, in other words, not beyond red or white –and evolution wouldn't happen. Since evolution clearly has happened, biological inheritance can't be a blending mechanism, and must, therefore, be a particulate one.

Beyond that, on his page 7, Fisher makes a prophetic observation. "It is a remarkable fact that had any thinker in the middle of the nineteenth century undertaken, as a piece of abstract and theoretical analysis, the task of constructing a particulate theory of inheritance, he would have been led, on the basis of a very few simple assumptions, to produce a system identical with the modern scheme of Mendelian or factorial inheritance."

Ever the modern thinker, Fisher confined his thinking to the gene, and did not undertake to consider the general case of systems that do not produce blends, or averages. If he had, he might have realized that *any* system with properties not governed by 1/2(x+y), in other words, with properties beyond x and y, has to be a particulate system, and not a blending one. Thus it was completely independently that Zellig S. Harris, in 1951, noticed what he called the "discreteness" property of human language (Harris, Zellig S. 1951. *Methods in Structural Linguistics*. Chicago: University of Chicago Press. Pages 34, 367). Harris mentions (page 179) Y.R. Chao and C.W. Luh's use of the word "isotope" in describing variations in the form of the same word, coming tantalizingly close to bringing the concept of atomism full circle. But Chao and

Luh, and Harris, are modern thinkers just borrowing useful words from physics, in the way that physics borrowed “fission” from biology.

The focus that gathers these stories together is possible only in the wisdom of hindsight; and the scientific atmosphere was entirely vague when, around 1985, I decided, by intuition, that the scientific study of language was going nowhere, and that something had to be done about it. Whether I was right will emerge later. As a beginning, I decided that the way forward was to identify the absolute most basic property of language, and to see whether something could be said about it. In graduate school at Penn, I had taken one or two courses with Harris, so I was able to identify the simplest property of language as the discreteness property of the phoneme. For a few days, the discreteness property of the phoneme seemed so simple as to be beneath notice, but it actually was the simplest property of language. And as I forced myself to think about it, a beautiful and powerful structure took shape. I was no longer thinking about phonemes, or even about language, but about the abstract property of discreteness. So, entering through a side door, I did, in fact, undertake, as a piece of abstract and theoretical analysis, the task of constructing the general case of particulate, or discrete systems, with properties beyond any x and y. The result, in 1989, was what I called the particulate principle of self-diversifying systems:

Abler, William L. 1989. On the particulate principle of self-diversifying systems. *Journal of Social and Biological Structures* 12(1):1-13.

Like other laws of nature, the particulate principle starts from a simple condition:

“Self-diversifying systems, systems with properties beyond those of their original constituents, consist of particles, rather than blending constituents, because blending constituents will produce properties that lie between, never outside, those of their original constituents.”

This simple law, adapted from the first page of my 1989 paper, has consequences, proliferations and ramifications that extend deep into the structure of nature. You find what you are looking for. People are so convinced that language is an autonomous system that they gloss over evidence of a connection to physics as if it weren’t there, thus imagining that the particulate principle means that language is discrete. The particulate principle is a law in physics.

New structures are manifested by assembling particulate constituents into new configurations. Thus a structure like salt, a combination of sodium with chlorine, with properties beyond anything on the periodic table, is possible because sodium atoms and chlorine atoms don’t mix together to form something with properties half-way between sodium and chlorine. Even though the chemical nature of both elements is completely altered, sodium metal and chlorine gas can nevertheless be retrieved intact from sodium chloride by electrolysis. In other words the individual atoms retain their individual identities in spite of chemical combination.

Biological molecules rely on discreteness to construct an architecture in producing new properties. Thus genes and enzymes and proteins work like little robots, physically carrying out their cellular duties. Blending constituents would mix with their neighbors, forming averages, not robots.

Discrete, or particulate constituents, or atoms, can be retrieved intact after forming combinations with other constituents. So, not only can sodium metal and chlorine gas be retrieved from salt; but biological molecules, and, ultimately, the chemical elements can be retrieved intact from living systems. Particulate genes can be retrieved intact by selective breeding.

The number of possible combinations of discrete constituents is vast. In biological molecules, the same few elements, starting with carbon, hydrogen and oxygen, combine in different architecture to generate unlimited numbers of different organic compounds.

The last property needed to generate diversity, without violating the requirements of the particulate principle, is the property. A diverse chemical architecture could be built with just one kind of atom, in the way that different kinds of walls can be built with a single kind of bricks. But for efficiency, to pack the maximum of diversity into the smallest possible space, more than one kind of atom is needed. Consider numbers. Numbers could be represented by a single symbol: One stroke stands for one; two strokes stands for two; a million strokes stands for a million, but that isn't efficient. How many digits, or elements, or speech-sounds ("phonemes"), then, strike a balance between too many symbols to recognize, and enough to build an efficient system? Two works well enough for computing machines, but not for systems in nature: Two isn't enough for the atoms of chemistry or the phonemes of words. Ten or a dozen or a score is about right.

As a matter of balancing number of symbols versus ability to build diverse structures, our familiar Roman alphabet is a work of geometric genius. If we forget about alphabetical order, which is historical, and look at geometric order, which is meaningful. we find that the letters and the numbers just about use up the available geometry, while providing enough symbols to represent large numbers of constructions efficiently. Why such a balance is possible is a profound mystery:

Vertical/Horizontal:	EFHILT 1
Diagonal:	AKMNVWXYZ 47
Curve:	COQS 03689
Hybrid:	BDGJPRU 25

The shapes of the letters and numbers are fairly evenly distributed among the geometric types. And it would be hard to invent too many new letters that would be both new and easy-to-recognize. Mostly, more letters will just appear as a meaningless tangle of lines. The acoustic signal of speech is subject to the same geometric constraints as the letters.

Our base-ten arithmetic has enough digits to write large numbers efficiently, but not so many digits that they become hard to recognize. The same goes for the phonemes of language, whose recognition value depends on differentiating the

geometry of their acoustic signal. There are only a dozen or a score of vital biological atoms, H, C, N, O, Na, Mg, P, S, Cl, K, Fe, Ca, I, and they are concentrated mostly at the top of the periodic table, where atoms are the lightest, and atomic numbers are the lowest. The difference between, say, element #6 and element #7 is large, while the difference between, say, element number a million and element number a million and one would be negligible. Again, this kind of numerical difference works in a computer, but not in nature. And organizing the elements into periods, in effect, allowing them to start over from one, the valence of hydrogen, sodium and potassium, generates a maximum of different geometries and combining strengths with a minimum of chemical elements. The periodic property is so un-obvious, and so perfect for what it does, that, if it were the invention of an intelligent agent, it would be worthy of Newton's concept of God.

Alright, then, what *is* so great about atoms? Together with the genes of living things, and the phonemes of language, their discreteness property allows them to build structures with new, or emergent properties –properties beyond those of their original constituents. It is the humble property of discreteness that generates stars and planets, rocks and trees and animals, and human beings with phonemes and words and sentences. While the physicists struggle to find the "God particle", the one that will explain the existence of everything, their minds are as fixed on particles as the linguists' minds are fixed on language evolution. They are looking in the wrong place. There is no God particle, but there is an anti-entropy law. The next breakthrough in physics will be to discover how the dimensional properties of matter converge to formulate the particulate principle.

I am not questioning evolution or natural selection. I am merely pointing out the obvious fact that they don't apply to everything. They don't apply to the charge on the electron or the orbits of the planets. And they don't apply to the basic structure of language and mind.

The production of new properties is, in effect, the anti-entropy principle. Under thermodynamics, order in natural systems should decay and decrease, and the most spectacular exception is biological evolution. I can remember when evolution was considered to be a thermodynamic paradox, hotly discussed. How do living systems violate the laws of thermodynamics by accumulating information? In his book *What is Life?* (1943. Cambridge: Cambridge University Press, pages 68-69) Erwin Schrödinger, quoting Max Delbrück, explains that, "living matter, while not eluding the 'laws of physics' [entropy] as established up to date, is likely to involve 'other laws of physics' hitherto unknown, which, however, once they have been revealed, will form just as integral a part of this science as the former." It is discreteness and its corollaries, under the particulate principle, that constitute Schrödinger's "other law of physics, hitherto unknown". While the gene is the most spectacular example of anti-entropy in the form of information accumulation and storage, every chemical molecule does that same thing on a smaller scale. And the same is true for the phonemes of words and the words of sentences. By being remembered, they accumulate information. The particulate principle is Schrödinger's anti-entropy law of physics.

Inevitably, the particulate principle could only be discovered by starting with one system in nature, and finding a universal law hidden among the abstract properties that it suggests. As it happens, the starting place was language. This was only an accident of history, but language is a highly charged topic, revered by some and despised by others. Where the physicists struggled to prove the existence of the atom, the language scientists struggled to prove that language evolved in biology by natural selection. My 1989 paper, "On the Particulate Principle of Self-Diversifying Systems" clearly announced a universal law of nature: By applying to the atoms in chemical combination, in other words, to something more basic and older than anything in biology, the particulate principle assumed the character of a universal law. The structure of language was clearly governed by the same laws. And the phoneme chart emerged as a periodic table (page 5 in my 1989 article), also a property in physics, and more basic than anything in biology. The clash of a complete theory in physics with the hope for progress in biology led to possibly the most bizarre episode in science since phlogiston.

While the language scientists were looking for progress, the particulate principle is a complete law governing the formation of words. Since I came to a general law of nature through the study of language, I will tell the story as it unfolded in language.

The Language Instinct

Steven Pinker's 1994 book *The Language Instinct* (New York: Morrow) is built around a few basic ideas and examples. I mentioned them in my foreword, and will give a more complete account of their source later, but they come from my 1989 paper.

1) Abler 1989: "blending constituents would form combinations whose properties lie between ... the properties of the original constituents." Page 1, at end of abstract.

TLI 1994: "In a blending system the properties of the combination lie *between* the properties of its elements". (Pinker's italics, not mine). Page 85, 2nd sentence, first complete paragraph.

2) Abler 1989: "When blending constituents form combinations with one another, their properties are averaged and their identities obliterated." Page 2, caption, Figure 1, lines 1-3.

TLI 1994: "In a blending system, ... the properties of the elements are lost in the average or mixture." Page 85, lines 4-5, first complete paragraph.

TLI 1994: "phonemes snap cleanly into morphemes, morphemes into words, words into phrases. They do not blend or melt or coalesce." Page 163, lines 3-5, first complete paragraph.

3) Abler 1989: " ... blending-based natural systems such as geology or the weather" Page 1, last line; middle of last paragraph; Page 8, 3rd complete paragraph.

TLI 1994: " ... *blending systems*, like geology, paint mixing, cooking, sound, light, and weather". (Pinker's italics, not mine). Page 85, lines 2-3, first complete paragraph.

4) Abler 1989: " ... a blending mechanism of inheritance ... would lead to ... loss of variability in populations ... " (and no evolution. I called this idea "Fisher's reasoning", and extended its logic from the gene to language). Page 2, lines 3-5 and 9-10, paragraph "Sustained variation".

TLI 1994: "Many biologists believe that if inheritance were not discrete, evolution ... could not have taken place". Page 85, last 3 lines, first complete paragraph.

5) Abler 1989: "the properties of a combination of particles may differ widely from the properties of any of its constituents". Page 2, last lines, caption, Figure 1.

TLI 1994: “A finite number of discrete elements ... are ... combined ... to create larger structures ... with properties that are quite distinct from those of their elements.” Page 84, lines 3-5, last paragraph.

6) Abler 1989: “the potential number of such combinations may be vast”. Page 2, last line, caption, Figure 1.

TLI 1994, page 85: “The first is the sheer vastness of language.” Page 85, line 2, last complete paragraph.

7) Abler 1989: “... a thermometer is not a self-diversifying system, even though it is capable of producing an infinite number of readings, because all of the thermometer’s potential readings are implicitly present in the thermometer’s construction.” Top of page 8.

TLI 1994: “infinity is achieved ... not by varying some signal along a continuum like the mercury in a thermometer.” Page 334, Lines 3, 4 from bottom, first paragraph.

8) Abler 1989: “Structures at each higher level of organization are composed of combined units selected from the next lower level.” Page 4, caption to Figure 2.

TLI 1994: “A finite number of discrete elements ... are sampled, combined and permuted to create larger structures ...” Page 84, lines 3-4, last paragraph.
TLI 1994 “discrete combinatorial system”: 84, 85, 89, 92, 93, 97, 127 “the engineering trick behind human language”, 162, 163, 179, 237, 269, 334, 351, 362.

9) Abler 1989: “What would be the difference between element (or phoneme) number 10^{10}, and element (or phoneme) number $10^{10}+1$? ... when one constituent can no longer be distinguished from the next ... the gain or loss of a constituent is a negligible event ... [and] a self-diversifying system loses its self-diversifying property” Page 9, middle of the two top complete paragraphs.

TLI 1994: “the range of properties that can be found in a blending system are highly circumscribed, and the only way to differentiate large numbers of combinations is to discriminate tinier and tinier differences.” page 85, middle of first whole paragraph.

The quotes are hard to find even when you know that they are there. To make things easier, I have made nine side-by-side exhibits, one exhibit to a page, with my original page on one side, and the corresponding page from *The Language Instinct*

facing it on the other side. Each quote has a box drawn around it, and the boxes are joined by a line. So, one exhibit might show " ... blending-based natural systems such as geology or the weather" on one side of the page, and " ... *blending systems*, like geology, paint mixing, cooking, sound, light, and weather" on the other. These exhibits are clear and very helpful in showing the copied material. But I can't include them here because Pinker owns *The Language Instinct*, and Elsevier owns the particulate principle, and showing them would be plagiarism on both sides. The exhibits are very convincing but, sadly, if you want to see them, you will have to make your own. This involves some Xerox copying, and a little work with scissors and ballpoint, but is well worth the effort. We have to wonder who is protected under the law.

There are only a few excuses for this kind of systematic copying. One is that the copied material is clearly credited to its original author. We will return to that later. Another is that the copied material is common knowledge, and you can't steal common knowledge. Can you? So, if I explain that an object in motion continues in a straight line at a constant speed until it is acted upon by an outside force, I don't have to put it in quotes and cite Isaac Newton, because everybody knows all about objects in motion. But newly published results of original research are a different story. Using them without clearly identifying the source is theft. OK. Who knew?

Who Knew?

order to understand anything in science, you have to go back to the beginning.

Out of all the properties of language, then, where did Pinker get the idea of singling out discreteness and identifying it as the critical property that makes language possible, and where did he get his proofs?

Sources:

Not from Ronald A. Fisher in 1930 (Fisher, Ronald A. 1930. *The Genetical Theory of Natural Selection*. Oxford: Clarendon. Re-printed 1958, New York: Dover). Fisher's Chapter 1 is devoted to proving that the genetic material must be a particulate system, not a blending one, because blending constituents would generate averages, not new properties. Fisher even includes (page 4) the formula for the consequences of a blending gene: 1/2(x+y). But recognition of the discreteness property of language was still 21 years and a World War in the future at the time of Fisher's writing, and discovery of the linear nature of the genetic material (DNA), in parallel with language, was 23 years in the future. The information did not yet exist to prompt the formulation of a general law. Prophetically and unwittingly, Fisher predicts his own omission. Noting the advantages of a mathematician's education over that of a biologist, Fisher (Preface page viii) quotes Eddington: "We need scarcely add that the contemplation in natural science of a wider domain than the actual leads to a far better understanding of the actual." Fisher, with his education in mathematics, might have done in the twentieth century what the botanists missed in the nineteenth, but his book is concerned only with

proving the particulate nature of the gene. He never contemplated language, not to mention a universal law of nature. Few discoveries happen without prompting.

Not from Zellig Harris in 1951. As far as I know, Harris was first to recognize the discreteness property of language (1951, *Methods in Structures Linguistics*, University of Chicago Press, pages 20, 27, 34, 367), an observation for which he deserves enormous credit, and never receives any. But an observation is description and natural history, not a theory in science or a law of nature. Harris described language as discrete, not particulate, and in conversation, at least, contrasted discreteness to continuity, not blending. Discovery of the linear nature of the genetic material was still two years in the future at the time of Harris's publication: The state of knowledge was not yet dramatic enough to inspire a comparison between language and the gene, and an explanation of what is meant by the word "discreteness" is not a theory showing why language has to be discrete in order to work. Buried in a few isolated and scattered remarks in Harris's long and difficult book, the concept of discreteness in language was largely overlooked, maybe even by Harris.

Not from Charles F. Hockett in 1963 (The problem of universals in language, pages 1-22 in Greenberg, Joseph H. *Universals of Language* 1963. Cambridge, MIT). Hockett (page 8) contrasts discreteness with continuity, and argues that a continuity system [i.e., the bee dance] has to be iconic, not arbitrary like language, but does not show why. Hockett included discreteness in a long inventory of language universals, starting on his page 7: vocal-auditory channel, broadcast transmission, rapid fading, interchangeability, complete feedback, specialization, semanticity, arbitrariness, discreteness, displacement, openness, new messages coined by blending old ones, new idioms, tradition, duality of patterning, prevarication, reflexiveness, learnability. He does not assign critical importance to any of them, and does not single out any of them as the beginning of a universal law of nature. In effect, Hockett is carrying out the assignment given to him by Greenberg, not trying to solve the mystery of language.

Not from George and Muriel Beadle whose 1966 book (*The Language of Life*. Doubleday) was timed to coincide with the 100-year anniversary of Mendel's first paper. By 1966, the linear nature of the genetic code was well known, and the gene-language analogy was an officially-recognized mystery: Both systems can be represented as a string of discrete components, or letters. By offering a list of language-words that had been adopted by geneticists for talking about the gene, "Rosetta stone", "language", "translate", "messages", "written", "deciphering", "code", "letters", "words", (page 207) the Beadles are practically begging the reader to believe that there is something profound in the gene-language analogy. But a list of analogies is not a law of nature, and the Beadles never claimed to have found one.

Not from Roman Jakobson in 1970. In spite of Noam Chomsky, the presiding spirit of linguistic science in 1970 was Harvard's Roman Jakobson. UNESCO, as part of a comprehensive program to document everything that was worth documenting in science, commissioned Jakobson to report on the state of knowledge in linguistics.

Jakobson divided his report into two sections, of which the first was dedicated to mentioning every possible connection between language and other natural systems.

Jakobson, Roman 1970. Linguistics, part I. Pages 419-453 in: *Main Trends of Research in the Social and Human Sciences* (preface by René Maheu, Director-General of Unesco) 1970. Paris • The Hague: Mouton/Unesco. XLVII+817 pages.

More thorough than systematic, Jakobson (part I) lays out the "Relationship between the science of language and other sciences" (p. 419). He compares language "with anthropology and culture history, with with sociology, with psychology, with philosophy, and more remotely, with physics and physiology". He points out (p. 420) "the unusually regular and self-contained patterning of language" and that (p. 421) "linguistics as the science of verbal signs is but a part of semiotic, the general science of signs". Jakobson considers (p. 423) "The functional difference between formalized and natural languages" and, quoting Bloomfield, "since mathematics is a verbal activity, this discipline naturally presupposes linguistics". Significantly, Jakobson makes no attempt to show a relationship between the equation and the sentence. Jakobson (p. 424) considers "Gesture accompanying speech", and the relationship of language to "verbal, musical, pictorial, choreographic, theatrical, and filmic arts … poetry and other arts, musicology, visual arts, etc., …". Jakobson concentrates (p. 425) on Levi-Strauss's concept of "une théorie de la communication", and mentions (p. 427) "money as a semiotic system" (money talks).

After citing or consulting what can only be understood as a pantheon of science and philosophy at the time, Jakobson considers the mysterious relationship between language and the gene: –Nobel-Prize-winning geneticist and Chancellor of the University of Chicago George Beadle, geneticist and Salk-Institute historian Suzanne Bourgeois, philosopher Jacob Bronowski, cognitive psychologist Jerome Bruner, physicist and co-discoverer of the genetic code Francis Crick, linguist and founder of the first USA linguistics department, mentor of Noam Chomsky and first to report discreteness in language Zellig Harris, Nobel-Prize-winning biologist and author François Jacob, anthropologist Claude Levi-Strauss, Russian neuropsychologist A.R. Luria, Nobel-Prize-winning geneticist André Lwoff, chemist famous for his theory of the origin of life Leslie Orgel, psychological linguist David McNeill, sociologist Talcott Parsons, neurosurgeon and neuropsychologist Karl Pribram, discoverer of polio vaccine and founder of Salk Institute Jonas Salk, electron microscopist Francis Schmitt– Jakobson sets up the problem (page 438): "among all the information-carrying systems, the genetic code and the verbal code are the only ones based upon the use of discrete components which, by themselves, are devoid of inherent meaning but serve to constitute the minimal senseful units". Following the lead of George and Muriel Beadle, Jakobson cites (page 437) Crick and Yanofski's 'four-letter language embodied in molecules of nucleic acid' and mentions 'coded messages', 'code words', genetic 'letters', 'alphabet', 'spell out the genetic message', a 'dictionary' of the genetic code, 64 distinct 'words'.

After enormous effort, Jakobson can only conclude (page 440): "the legitimate question whether the isomorphism exhibited by these two different codes, genetic and verbal, results from a mere convergence induced by similar needs, or whether, perhaps, the foundations of the overt linguistic patterns superimposed upon molecular communication have been modeled directly upon its structural principles." And referring to Hockett's 1964 article The Human Revolution pages 135-147 in Current Anthropology, Jakobson tells us:

"While biology has realized fully that the units of heredity are discrete and, hence, nonblending, the same linguist [Hockett], faithful to the spirit of reductionism, ventures to explain the emergence of the discrete constituents of the verbal code through 'the phenomenon of blending', as 'the only (!) logically (!) possible (!) way' [page 142]".

Jakobson never focusses his attention on any one topic, and has no idea why the genetic and linguistic codes are so similar. If the answer, the particulate principle, were obvious, some one of his numerous and distinguished correspondents would have noticed. Further, when physicists Erwin Schrödinger and Max Delbrück (Schrödinger, Erwin, 1945. *What is Life?* Cambridge: Macmillan. Pages 68-69), found themselves unable to understand how living things can accumulate beneficial properties without violating entropy, that is, without "eluding the 'laws of physics", they postulate the existence of "other laws of physics hitherto unknown". Whether by luck or otherwise, I solved the Schrödinger/Delbrück-entropy mystery, and the mystery of the gene-language analogy, by starting from the answer, discreteness/particles, and working backward from there.

And, last, and most telling, not from Pinker himself, that is, not from Pinker and Bloom, P&B 1990:

Pinker, Steven and Bloom, Paul 1990. Natural language and natural selection. *Behavioral and Brain Sciences BBS* 13(4):707-784.

P&B 1990 was a watershed in the idea of language evolution. On analogy with the idea (page 712) that a little bit of vision is good, and a little more is better, P&B argue (page 712) that a little bit of language is good and a little more is better ("6 percent is better than 5; 7 better than 6"), and that language is therefore subject to natural selection, and is biological in origin. The concept, as stated, is diabolically misleading. If we apply it to language, after language already exists, the concept of *a little bit is good* is a theory of why language might continue to develop. But if we try to apply *a little bit is good* to the origin of language, before language existed, we don't know what to apply it to. In other words, more of something that is unknown, is still something that is unknown. "A little bit is good, and a little more is better" is, at best, a theory of post-origin development, not a theory of language or of language origin. It works by deriving language from language. This no great trick. All theories of language origin are like dehydrated water tablets: You add one to a liter of water, and you get a liter of water.

Nevertheless, the reaction to P&B was immediate and overwhelming. *BBS* has a peer commentary system, where qualified experts are invited to comment on an accepted manuscript –and James Hurford's (page 736) peer-reviewed comment says it all: "***Liberation!***" (Hurford's italics and Hurford's bolding and Hurford's exclamation mark). Whatever the underlying science, it is clear that the community of linguistic scientists wanted a biology of language, and P&B delivered it for them. Someday soon, science textbooks will cite the program in language evolution as the paradigm example of how not to do science: Decide the answer that you want, then go out and find examples to support it. Goal-driven science. The insidious part is that the assumption is hidden in the question, "How did language evolve?" We pose ourselves a riddle without realizing that it begins with an assumption. Thus:

No one contemplated a solution in abstract law.
No one contemplated anything beyond a biology of language.
No one contemplated anything other than an origin in natural selection.
No one contemplated a universal law of nature.
No one contemplated a law in physics.
No one contemplated a theory rather than an observation or an explanation.
No one contemplated anything beyond their own topic of interest.

No one recognized discreteness as the solution to the mystery of the gene-language analogy, not to mention retrievability in chemical interaction, or a periodic law in the phoneme chart. Fisher showed that the gene has to be particulate, and Hockett came close to showing that language has to be discrete.

But there is more. Pinker and Bloom were teenagers when Jakobson published his report. Twenty years later, Steven Pinker and Paul Bloom were at the top of the game, the bright, young people with fresh, new ideas. If they don't know, nobody knows. P&B 1990 offers an explanation as to why we should believe that language evolved by natural selection (a little bit is good, and a little more is better). It contains the seeds to "the engineering trick behind human language": On pages 712 and 714, P&B suggest that we view language "from an engineering point of view", although on page 710 they remind us of François Jacob's 1977 (*Science* 196, page 1161) observation that evolution is a tinkerer, not an engineer. Gary Marcus's K*luge* hypothesis (Houghton Mifflin 2008) is the culmination of Jacob's tinkerer hypothesis. Nature doesn't harbor contradictions. Nothing is simultaneously the work of a tinkerer and an engineer. A tinkerer builds things from parts ready-to-hand. An engineer designs things from the beginning. In the tinkerer-engineer contradiction, we see that the program in language evolution is without a compass. Nevertheless, by introducing the concept of engineering into the conversation, P&B have provided a path from language to physics –a path not taken (P&B page 721): "In sum, there is no support for the hypothesis that language emerges from physical laws acting in unknown ways in a large brain". On page 721 P&B mention Chomsky's description of language as "discrete infinity", introducing the concept of discreteness. And on page 711, P&B mention Ronald A. Fisher's 1930 book, with its chapter 1 built around 1/2(x+y): In a

paper about language, a mention of the gene, and a link to physics and the proof that the gene has to be particulate.

So, P&B 1990 contains all the ingredients for a theory of language as the solution to a problem in physics –language, engineering, physics, discreteness, connection to the gene, proof that the gene is particulate. All that is missing is the step into abstraction, a step that Pinker and Bloom were unprepared to take. The components are scattered, not organized, even contradictory. Maybe P&B didn't see a connection between the *discrete* phoneme and the *particulate* gene, where different vocabulary indicates different paths of approach. With all the ingredients in hand, assembled in the same place at the same time by their own initiative, P&B have no inkling that the famous mystery of the gene-language analogy –already formulated by George Beadle and Roman Jakobson– might be singled out and solved, much less a universal law of nature that amounts to the engineering property that makes language possible in the first place –discreteness. My paper on the particulate principle was published in issue #1 of *JSBS* 1989, more than a year before Pinker & Bloom P&B Natural Language and Natural Selection in issue #4 of *Behavioral and Brain Sciences BBS* in the next year, 1990. There is no possibility that I could have obtained any information from them.

Sometime between 1990 and 1994, then, when he published *The Language Instinct*, Steven Pinker came to the realization that there is an engineering trick, a solution in physics, behind human language –and that trick is discreteness (*TLI* page 127). Where did he get this idea?

Another entry in the Open Peer Commentary attached to P&B 1990 is by Michael Studdert-Kennedy (pages 758-759), who goes by his initials MSK. Referring to my 1989 paper, MSK comments on systems "having properties quite different, in structure and functional scope, from those of their constitutive elements … Abler contrasts particulate systems with blending systems, such as geology or the weather, in which the result of combining structures is an average, so that properties of the original components are lost, and no new level of discrete structure emerges." MSK reports that "Abler term[s his system] "the particulate principle of self-diversifying systems" … [and shows] that it is shared by two other systems: chemical interaction, for which the particulate units are atoms, and biological inheritance, for which the particulate units are genes."

It must have been galling for Steven Pinker, in his moment of triumph, indeed because of it, to see that he had missed what he later termed, "the engineering trick behind human language" (*TLI* page 127), when, as a result of his own effort, he had all the ingredients in hand. He hadn't even realized that there was a puzzle there to be solved. In a drama of Sophoclean portent, the particulate principle was his life's main chance missed. Missed, but, for Professor Pinker, not lost. Pinker might even have glimpsed his soul in the mirror of the particulate principle. It isn't just that he would never discover the engineering trick behind human language, because it had already been discovered. His failure was deeper than that. He had the mystery in hand and

didn't know it. And, what is worse, he must have seen that he is an explainer of science and a science-writer, not a scientist.

The only way to understand a thing is to begin at the beginning. I have in front of me now, the first printing of Noam Chomsky's *Syntactic Structures* (1957. Mouton: The Hague). This is the book that launched the new era in the scientific study of language. In his introduction, on page 5, Chomsky explains, "By pushing a precise, but inadequate formulation to an unacceptable conclusion, we can often expose the exact source of this inadequacy and, consequently, gain a deeper understanding of the linguistic data". Chomsky examines (page 19) finite-state grammars, and immediate constituent grammars have already been eliminated. On page 15, Chomsky introduces his famous "Colorless green ideas sleep furiously", showing that language can be syntactic without being meaningful. And on page 95, Chomsky introduces examples to show that words are not built by attaching phonemes to other phonemes because if they were, the same phonemes assembled in the same order would build the same word, and different phonemes would build different words.

Chomsky explains that the sound "bank" can refer to the bank of a river, or a bank for savings, while the absolute synonyms "ekenamiks" and "eekenamiks" (both spelled economics) have different sounds. So, words are not built out of their speech-sounds, or phonemes. But here is the test. Linguists are not trained scientists. What would Alexander Fleming have done? Rather than being annoyed that mould was killing his bacterial cultures, he discovered how the mould did it, and discovered penicillin. Fleming would have followed up his early success by building on it. He would have seen that synonyms in vocabulary are the same as paraphrase in sentences, and homonyms in vocabulary are the same as ambiguity in sentences. Here would be the proof that sentences are not built by attaching words to other words.

In spite of this omission, Chomsky closes *Syntactic Structures* with the observation (page 106) "there is little motivation for … the conception of higher-level elements as being literally constructed out of lower-level elements". Dogwhistle language is not confined to politics. "There is little reason" or "It is unlikely" are scientific dogwhistle for "no chance in Hell"; while "Unfortunately" and "I fail to see" are scientific dogwhistle for "Don't waste my time". All are supercilious.

Ever the intellectual, Chomsky's "little motivation", is W.H. Auden's crack in the teacup which opens a lane to the land of concatenation grammars –a lane down which Chomsky and all subsequent language scientists have wandered. In spite of his own admonition, and in spite of coming within an inch of proving it, Chomsky launches his transformational grammar, which builds sentences by moving parts of sentences around and attaching them to other parts of sentences. At a deeper level, transformational grammar builds sentences by starting from simple "kernel" sentences. Building sentences by starting from sentences is a case of assuming the proof. The real question, "What is a sentence?" Simply never comes up. And in spite of Chomsky's warning, all theories of language work by attaching words to other words:

Immediate-constituent (parsing) grammar.
Finite-state grammar.
Transformational grammar.

Deep-structure grammar.
"All you need in order to make language is the ability to attach words to other words."
Recursive-embedding grammar.
Words and Rules. (Pinker 1999. Basic Books).
Discrete combinatorial system.
A sentence is a string of words.

While some of these had already been dismissed for other reasons, the words-to-words rule in language is like the second law of thermodynamics in physics: Anything that violates it can be ruled out immediately. The persistent failure to do that still dominates linguistics in 2020, six decades later. Linguists simply aren't scientists.

Science is method. Francesco Redi invented experimental science by inventing a way to isolate cause and effect: Change just one thing, and see what happens. Sometimes people complain that an experiment isn't valid because it isn't natural. Lots of things happen in nature, but we don't know cause-and-effect because too many things are happening at once. Science works *because* it isn't natural: You create science by doing what almost never happens in nature, by making the same thing happen twice, with just one difference between them. The experiment has to be adjusted to fit the circumstances of the question, and has been greatly refined and extended since the 1680's. But it was Redi who introduced the method of isolating a question so that it can be seen clearly. Method trumps genius and inspiration any day. It is the rare scientist who can discipline inspiration with method.

In the 1930's, the University of Chicago lived by its proverbs, most famously "You're only as good as your last paper". But there were others: "Assume a virtue if you have it not" (from Hamlet); "You've got to be smart about *something*"; "Why do you think they call it a *discipline*?", "There's no substitute for knowing", and, wisely, "Intelligence is the ability to see relationships". By any standard, Pinker & Bloom 1990 has to be the definition of stupid. This has happened before, and probably happens all the time. Herbert Butterfield (1957. *The Origins of Modern Science*: Bell & Sons, page 211) reports that, "the very men who had actually made the strategic discoveries – were incapacitated by the phlogiston theory from realizing the implications of their own work." At some stage, science needs people who can actually advance knowledge, andP&B 1990 was a failure of vision. Pinker looked up my article in the library.

When the particulate principle was published, I sent reprints to a number of scientists, some of whom replied:

Erwin Chargaff (biochemist and discoverer of Chargaff's law: In the DNA molecule, the amount of Adenine is equal to the amount of Thymine; the amount of Guanine is equal to the amount of Cytosine).
October 2, 1989
"I just returned from a very long stay in Europe and now find your letter of August 7. Please accept my apology for the delay in my acknowledging your lines together with the reprint of your paper which I hope to be able to read soon. Self-diversifying systems certainly are encountered in many occasions of which one can only wonder what they could have to do with each other. I have often thought such systems could interfere seriously with the inductive reasoning which experimental scientists are forced to apply. With kind regards, Sincerely yours" (signed) Erwin Chargaff

DR. ERWIN CHARGAFF
350 CENTRAL PARK WEST, APT. 13G
NEW YORK, N.Y. 10025-6547

October 2, 1989

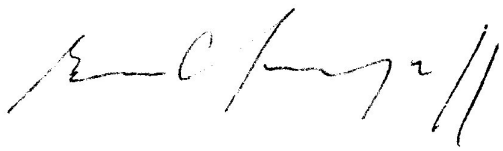
Dr. William L. Abler
4234 North Hazel Street
Chicago, IL 60613-1615

Dear Doctor Abler:

I just returned from a very long stay in Europe and only now find your letter of August 7. Please accept my apology for the delay in my acknowledging your lines together with the reprint of your paper which I hope to be able to read soon. Self-diversifying systems certainly are encountered in many occasions of which one can only wonder what they could have to do with each other. I have often thought such systems could interfere seriously with the inductive reasoning which experimental scientists are forced to apply.

With kind regards,

Sincerely yours,



David Taylor (Portland State University)
Dec. 7, 1989
“Dear Bill, Just a note to say that I greatly enjoyed meeting you and to thank you for your reprints. Your paper regarding self-diversifying systems was especially interesting to me. Thanks so much too for the information on the elephant material from SE Oregon. I did make a call to the person there (the number you gave me) and let him know who I was and that I would be interested to learn of additional mater[ial] that might turn up. I’ll check on potential localities in person the next time I’m in SE Oregon. Here’s wishing you a most enjoyable holiday season. Best Wishes, (signed) David Taylor.”

Portland State University

P.O. Box 751, Portland, OR 97207-0751

Dec. 7, 1989

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4234 North Hazel Street
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Here's wishing you a most enjoyable holiday season.

Best Wishes,

David Taylor

Ernst Mayr (evolutionary biologist, Museum of Comparative Zoology, Harvard)
Dec. 23, 1989
Dear Mr. Abler, Thank you for your reprint on the particulate principle of self-diversifying systems. I have no particular comments to make except for whole-heartedly agreeing with you about the importance of particulate-ness in variation. Sincerely yours, (signed) Ernst Mayr"

MUSEUM OF COMPARATIVE ZOOLOGY
The Agassiz Museum

HARVARD UNIVERSITY · CAMBRIDGE, MASSACHUSETTS 02138 · TEL. 617 495-2466

Dec. 23, 1989

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Sincerely yours

Ernst Mayr

R Thom (mathematician and originator of catastrophe theory. Institut des hautes etudes scientifiques, Bures-sur-Yvette France)´
August 2, 1989
“Many thanks for your report “on the particulate principle of self-diversifying systems” This is an interesting paper, but I am afraid its abstract character creates difficulties of interpretation. I do not think, for instance, that Fisher’s reasoning is valid, only(?) that permanence of diversity in the population requires a set of stable particle-like entities. [much of the next part, written in a tiny hand, is illegible, but the gist is that the offsprings of two animals q1 and q2 are given by a continuous map [psi]: Ø1 x Ø2 from the qualities q1 and q2 of their parents.] … As a conclusion, I find your paper stimulating but not very concerning. As usual, any appeal to (Neo)-Darwinian reasoning oscillates between tautology (the fittest survive) or the use of a non-defined set of [?]lities. I strongly believe –myself– that a hierarchical level of organization has to be defined not only by elements or combinations of elements, but by very specific modes of spatial interaction between constituents. Otherwise, you cannot go beyond a purely [?] discrete mingling of atomic entities, you lose shape and form. With best wishes, I remain, Sincerely yours (signed) René Thom

R Thom

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Bures, 26 August 19 87

William C Abler
4234 North Hazel St Chicago, Illinois 60613 USA

Dear Sir Abler

Many thanks for your preprint: "on the particulate principle of self-diversifying systems". This is an interesting paper, but I am afraid its abstract character creates difficulties of interpretation. I do not think, for instance, that "Fisher's reasoning" is valid: merely that permanence of diversity in the population requires a set of stable particles like genes. Suppose the space-phenotypical properties of an animal of some species can be parametrized by a continuous space Q (a compact manifold, for instance). Suppose two individuals q_1, q_2 mate and generate two offsprings. Let us admit that the properties of the offsprings q_1', q_2' are given by a continuous map $\Psi: Q \times Q \to Q \times Q$, $(q_1, q_2) \mapsto (q_1', q_2')$. The correspondence from the qualities q_1, q_2 of their parents. If the map Ψ is ergodic on $Q \times Q$ (supposed to be compact), there won't be any destroying of the variability among the population (sufficiently large), but there won't be any particulate generators as genes. Of course if you require retrievability of characters, this proof breaks down; but I am afraid retrievability of characters does not differ very much from permanence of characters, hence you run into a tautology. However, if you consider Quantum Mechanics you are supposed to have "permanently retrievable" particles, but the theories require the law of "linear superposition of states" $(\lambda_1 \psi_1 + \lambda_2 \psi_2)$ is a state like the others, as perfect blending -?

As a conclusion, I find your paper stimulating, but not very convincing. As usual, easy appeal to (Neo)-Darwinism oscillate between tautology (the fittest survive), & the use of a non-defined set of virtualities. I strongly believe - myself - that a hierarchical level of organization has to be defined not only by elements & combination of elements, but by very specific modes of spatial interaction between constituents. Otherwise, you cannot go beyond a purely combinatorial discrete sampling of atomic entities, you lose shape and form.

With best regards, I remain

Sincerely yours

René Thom

Michael Studdert-Kennedy (speech scientist, and researcher in language evolution, (later director of) Haskins Laboratories, New Haven, Connecticut)
May 2, 1990
Dear Bill, I have no new insights into, or suggestions for elaboration of, the particulate principle. I simply want to let you know that I used your paper as a basic introductory reference to my course on the Biology of Language at Yale this semester, and that I intend to do so again next year. Also, I made your paper a key reference in my commentary on an excellent paper by Steven Pinker and Paul Bloom, to be published later this year or early next in *Behavioral and Brain Sciences*. I enclose a copy of the paper and of my commentary (limited by law to 1000 words, but exceeded by a few.)

I shall continue to muse over the principle, and in the unlikely event that I am granted any new vision of its origins, implications or ramifications, I will write you about them immediately. Please send me anything more that you come up with. With best wishes for a happy summer digging up dinosaur teeth, (signed, Michael) Michael Studdert-Kennedy

Haskins Laboratories 270 Crown Street New Haven, Connecticut 06511-6695
Telephone (203) 865-6163 Bitnet HASKINS@YALEVM

May 2, 1990

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4234 North Hazel Street
Chicago, Illinois 60613

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With best wishes for a
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Michael

Michael Studdert-Kennedy

The following entry is excerpted from a letter, dated December 3rd, 1994.

"Dear Bill, Most difficult for you, I think, is that your idea is so good and so obviously correct that people tend to exclaim as Huxley is said to have exclaimed upon reading "The Origin": "Of course! Why didn't I think of that?" With best wishes, Michael [Studdert-Kennedy]" Michael's distinctive handwriting is recognizable to anyone who knew him.

December 3rd 1994

Dear Bill,

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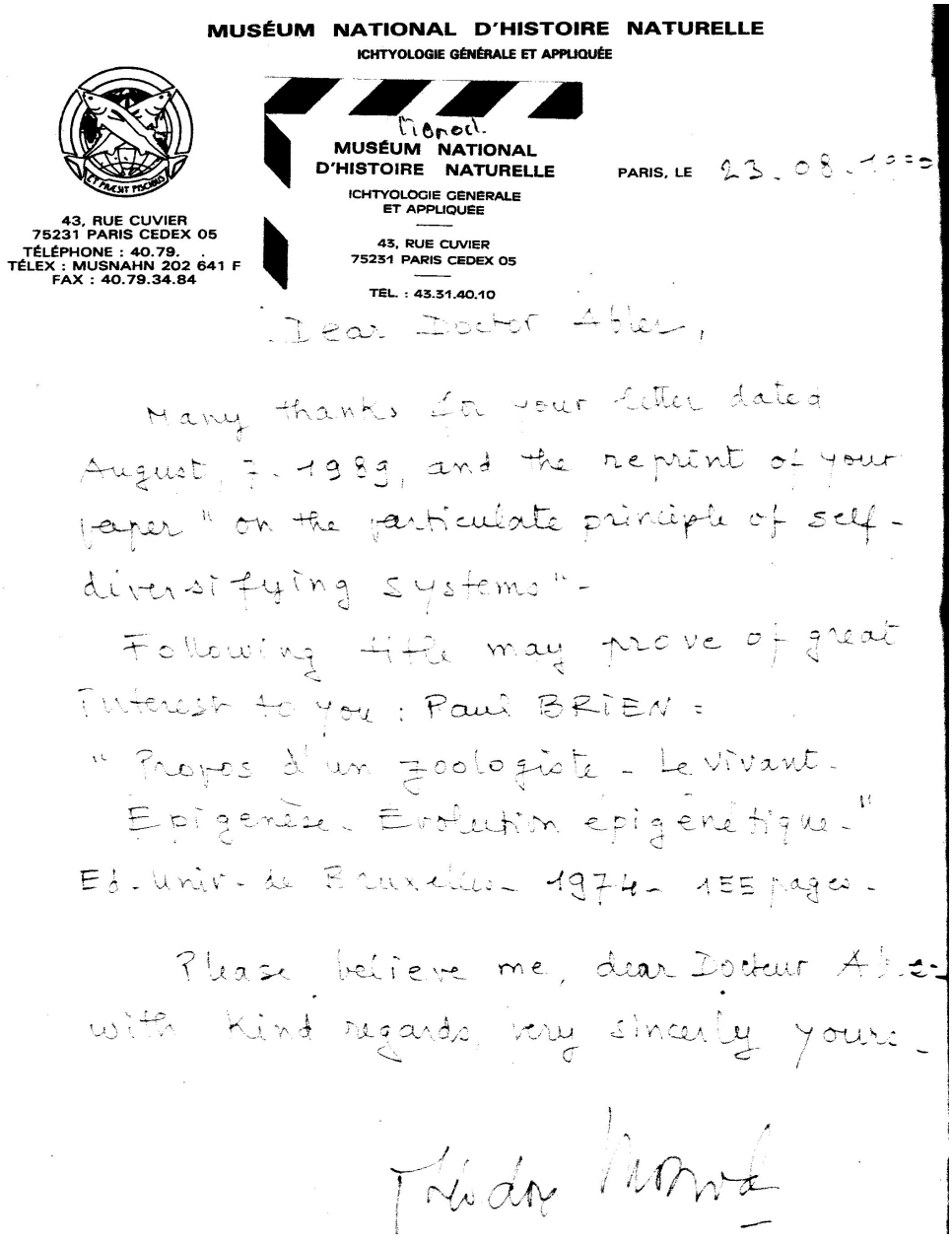
With best wishes

– Michael

Theodore Monod (Museum National d'Histoire Naturelle, Ichthyologie Générale et Appliquée, Paris)
23.08.1990
Dear Doctor Abler, Many thanks for your letter dated August 7, 1989, and the reprint of your paper "on the particulate principle of self-diversifying systems"-– Following title may prove of great interest to you: Paul BRIEN= "Propos d'un zoologist – Le Vivant Epigense – Evolution epigenetique – " ed. Univ. De Bruxelles – 1974 – 155 pages. Please believe me, dear Docteur Abler – with kind regards very sincerely yours (signed) Theodore Monod. Please believe me, dear Docteur Abler – with kind regards very sincerely yours (signed) Theodore Monod.



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Please believe me, dear Docteur Abler with kind regards very sincerly yours.

Théodore Monod

Lawrence Z. Freedman, M.D. (Chairman, Institute of Social & Behavioral Pathology, Chicago
January 25, 1991. Dear Bill: Thank you for your note and for your very interesting and, I believe, significant article on the particulate principle of self-diversifying systems. The integration of chemical, biological and language constructs is both bold and persuasive. I hope that we have an opportunity to talk again. With best regards, Cordially, (signed) Lawrence Z. Freedman, M.D.

INSTITUTE OF SOCIAL & BEHAVIORAL PATHOLOGY

Co-Founder, Harold Lasswell 1902-1978

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Chairman

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(202) 387-7790

January 25, 1991

Mr. William L. Abler, Ph.D.
4234 North Hazel Street
Chicago, Illinois 60613

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The integration of chemical, biological and language constructs is both bold and persuasive.

I hope that we have an opportunity to talk again.

With best regards.

Cordially,

Lawrence Z. Freedman, M.D.

LZF/svw

Edward R. Thornton, Department of Chemistry, University of Pennsylvania
9/6/89
Dear Bill, Many thanks for your very interesting article on the particulate principle. It is fascinating to see such parallels in Nature! Perhaps this means that we chemists are on the right track, after all. But seriously, being able to put together such diverse systems into a linking theory is an impressive feat. And I am particularly pleased if Penn contributed to your being in a position to do that. We always have hopes that some Penn people will be able to contribute new insights, but it is wonderful to see them actually come to fruition, as in your paper. Congratulations and best wishes, Sincerely yours, (signed Ed. Thornton) Edward R.Thornton

UNIVERSITY of PENNSYLVANIA

School of Arts and Sciences
Department of Chemistry
Chemistry Building
Philadelphia, PA 19104-6323

Edward R. Thornton · (215) 898-8309

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Ed. Thornton

Edward R. Thornton

John Bonner (microbiologist)
Department of Biology, Princeton University, Princeton, New Jersey 08544, 5 oct 89
Dear Dr. Abler, This is a shockingly delayed answer to your letter of August 7th. I found the reprint of your recent paper that you sent me most interesting. The idea is totally new to me and it definitely has given me something to think about. Many thanks for sending it. Yours John Bonner

Princeton University **Department of Biology**
Princeton, New Jersey 08544

5 Oct 89

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Many thanks for sending it.

Yours

John Bonner

Alvin Liberman, psycholinguist
Haskins Laboratories, New Haven, Connecticut, 270 Crown Street, November 7, 1989
Dear Dr. Abler, Forgive me, please, for taking so long to thank you for the reprint you sent me. I found it interesting and relevant to my concerns. Needless to say, I agree.
Thank you again, Sincerely (signed) A. M. Liberman

Haskins Laboratories *New Haven, Connecticut 06511-6695*

270 Crown Street
(203) 865-6163

November 7, 1989

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4234 North Hazel Street
Chicago, IL 60613

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Sincerely,

A. M. Liberman

Alvin M. Liberman

Isaac Asimov
28 August 1989
Dear Mr. Abler
Thank you for sending me your paper on self-diversifying systems. The scientific urge to find unifying principles underlying apparently diverse sets of phenomena is, I think, an irresistible one, and I admire your coordination of linguistics with chemistry and biology in this respect (signed) Isaac Asimov

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July 12, 1992
A. Seilacher (paleontologist and paleobiologist)
Department of Geology and Mineralogy
Kyoto University
this is a late appreciation of your letter and reprint last year. In fact we managed to get hold of your friend Michael Studdert-Kennedy and had an interesting discussion with him in our evolutionary biology seminar with Leo Buss and Günther Wagner. In the meantime your paper had another effect, I was always irritated by your statement that sand dunes cannot evolve because they fail to particulate. Now, during work in the Precambrian of Namibia, I found the exception to confirm the rule. In an Early Vendian sand/clay sequence, rippled layers became deformed by tectonic stress oblique to ripple direction. Consequently a shear zone developed in each ripple trough and in a more advanced state the former ripples had developed into elongated “mullions”. While the sand is now transformed into quartzite, it appears to have been softer during deformation, as indicated by feathered drag folds along the shears. You may also be interested to learn that I intend to develop my synergetic view of biological evolution (“morphodynamics”) when I receive the Crafoord prize in Stockholm on Oct.1st. So our view does receive attention. With best wishes, yours sincerely (signed) A. Seilacher

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A.Seilacher
July 12, 1992

Dear Dr.Abler,

this is a late appreciation of your letter and reprint last year. In fact we managed to get hold of your friend, Dr Michael Studdert-Kennedy and had an interesting discussion with him in our evolutionary biology seminar with Leo Buss and Günther Wagner.

In the meantime your paper had another effect. I was always irritated by your statement that sand dunes cannot evolve, because they fail to particulate. Now, during work in the Precambrian of Namibia, I found the exception to confirm the rule. In an Early Vendian sand/clay sequence, rippled layers became deformed by tectonic stress oblique to ripple direction. Consequently a shear zone developed in each ripple trough and in a more advanced state the former ripples had developed into elongated "mullions". While the sand is now transformed into quartzite, it appears to have been softer during deformation, as indicated by feathered drag folds along the shears.

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With best wishes,

yours sincerely,

A. Seilacher
(A.Seilacher)

Do these letters represent sincere comments –or just a bunch of famous people playing to their fan base? I would wonder whether this applies more to Steven Pinker than to Ernst Mayr or René Thom.

The history of discreteness in language is exactly like the history of DNA in genetics. DNA was discovered as a chemical in the middle 1880's, but its role as the genetic material wasn't recognized until much later –1952 or 1953 (see Franklin H. Portugal and Jack S. Cohen 1977, *A Century of DNA*, MIT Press). The discreteness property of language was noticed in 1951, but the role of discreteness as the property that makes language, and all systems with new properties, possible wasn't recognized until 1989. Knowing that a thing exists should not be confused with understanding what it does.

Parallel Quotes

In spite of René Thom's belief that the theory of evolution is a tautology, none of these well-informed scientists thought that the particulate principle was already known, or that it was so obvious as to be beneath notice. Ronald A. Fisher applied the mathematics of blending to show that the gene has to be particulate; and Charles F. Hockett applied the idea of continuity, to argue that language has to be discrete, but without showing why. Their thinking was confined to a material system, not an abstract, general, universal law defining the requirements for any system with properties beyond those of its original constituents. Certainly Steven Pinker never contemplated such a law. The particulate principle wasn't "in the air" before my 1989 article, and it wasn't common knowledge. Pinker has created the illusion that the particulate principle was common knowledge. And he was able to make it obvious in 1994 only because I made it obvious in 1989. But the parallel quotes and the critical concepts match up exactly between my 1989 paper, and Pinker's 1994 book:

Setting elegance aside, I repeat, here, the Parallel Quotes from Steven Pinker's *The Language Instinct TLI* 1994 (Morrow) and:
Abler 1989, "On the particulate principle of self-diversifying systems" *Journal of Social and Biological Structures* 12(1):1-13.

1) Abler 1989: "blending constituents would form combinations whose properties lie between ... the properties of the original constituents." Page 1, at end of abstract.

TLI 1994: "In a blending system the properties of the combination lie *between* the properties of its elements". (Pinker's italics, not mine). Page 85, 2nd sentence, first complete paragraph.

2) Abler 1989: “When blending constituents form combinations with one another, their properties are averaged and their identities obliterated.” Page 2, caption, Figure 1, lines 1-3.

TLI 1994: “In a blending system, ... the properties of the elements are lost in the average or mixture.” Page 85, lines 4-5, first complete paragraph.

TLI 1994: “phonemes snap cleanly into morphemes, morphemes into words, words into phrases. They do not blend or melt or coalesce.” Page 163, lines 3-5, first complete paragraph.

3) Abler 1989: “ ... blending-based natural systems such as geology or the weather” Page 1, last line; middle of last paragraph; Page 8, 3rd complete paragraph.

TLI 1994: “ ... *blending systems*, like geology, paint mixing, cooking, sound, light, and weather”. (Pinker’s italics, not mine). Page 85, lines 2-3, first complete paragraph.

4) Abler 1989: “ ... a blending mechanism of inheritance ... would lead to ... loss of variability in populations ... “ (and no evolution. I called this idea “Fisher’s reasoning”, and extended its logic from the gene to language). Page 2, lines 3-5 and 9-10, paragraph “Sustained variation”.

TLI 1994: “Many biologists believe that if inheritance were not discrete, evolution ... could not have taken place”. Page 85, last 3 lines, first complete paragraph.

5) Abler 1989: “the properties of a combination of particles may differ widely from the properties of any of its constituents”. Page 2, last lines, caption, Figure 1.

TLI 1994: “A finite number of discrete elements ... are ... combined ... to create larger structures ... with properties that are quite distinct from those of their elements.” Page 84, lines 3-5, last paragraph.

6) Abler 1989: “the potential number of such combinations may be vast”. Page 2, last line, caption, Figure 1.

TLI 1994, page 85: “The first is the sheer vastness of language.” Page 85, line 2, last complete paragraph.

7) Abler 1989: "... a thermometer is not a self-diversifying system, even though it is capable of producing an infinite number of readings, because all of the thermometer's potential readings are implicitly present in the thermometer's construction." Top of page 8.

TLI 1994: "infinity is achieved ... not by varying some signal along a continuum like the mercury in a thermometer." Page 334, Lines 3, 4 from bottom, first paragraph.

8) Abler 1989: "Structures at each higher level of organization are composed of combined units selected from the next lower level." Page 4, caption to Figure 2.

TLI 1994: "A finite number of discrete elements ... are sampled, combined and permuted to create larger structures ..." Page 84, lines 3-4, last paragraph.
TLI 1994 "discrete combinatorial system": 84, 85, 89, 92, 93, 97, 127 "the engineering trick behind human language", 162, 163, 179, 237, 269, 334, 351, 362.

9) Abler 1989: "What would be the difference between element (or phoneme) number 10^{10}, and element (or phoneme) number $10^{10}+1$? ... when one constituent can no longer be distinguished from the next ... the gain or loss of a constituent is a negligible event ... [and] a self-diversifying system loses its self-diversifying property" Page 9, middle of the two top complete paragraphs.

TLI 1994: "the range of properties that can be found in a blending system are highly circumscribed, and the only way to differentiate large numbers of combinations is to discriminate tinier and tinier differences." page 85, middle of first whole paragraph.

The pervasive nature of the copying, and the dependence of Pinker's 1994 book on both the ideas, examples and language of my 1989 paper, and the special organization of *The Language Instinct* around its narrative reference system, with no numbered references in the text, show that Pinker has not simply copied a few of my sentences, but is methodically, exhaustively, mercilessly mining my paper for material, carefully weeding out anything (atoms in chemical interaction, a periodic property, and extreme antiquity) that might show an origin in physics, and that Pinker's entire book is organized around the concept of plagiarizing the particulate principle (Abler 1989). His careful omission of any material that would demonstrate an origin in physics shows that Pinker understood the origin in physics, and suppressed it.

Is discreteness and the particulate principle as "the engineering trick behind human language" (*The Language Instinct*, page 127), and behind the gene and chemical interaction and numbers, so simple and so obvious that it is beneath notice, even when the best minds of the third quarter of the twentieth century couldn't see it? If you want to understand a thing, you have to go back to the beginning, and possibly all basic laws in nature begin from observations so simple and so obvious as to be beneath notice.

Symmetry, the mysterious thread that binds together all of physics: "A thing is symmetrical if it can be changed somehow to obtain the same thing" (L. Tarasov 1986. *This Amazingly Symmetrical World*. Moscow: Mir. Page 10).

Fractals: "A thing is a fractal if it looks the same when viewed at any scale". (Benoit Mandelbrot 1977. *The Fractal Geometry of Nature*. New York: Dover).

Thermodynamics: Entropy increases.

Relativity, the theory that blew the mind of the twentieth century: "the same laws of electrodynamics and optics will be valid for all frames of reference" (Albert Einstein 1905. On the electrodynamics of moving bodies. *The Principle of Relativity*. Reprinted in English. 1952. New York: Dover).

The Quantum, and Wave-Particle Duality, the mystery that shook the twentieth century: "It is resonation that introduces integers to physics". (My paraphrase of a statement taken from Louis de Broglie's 1929 Nobel Prize acceptance lecture.)

Evolution, the greatest idea in history: "Natural selection, or survival of the fittest". (Darwin).

Periodic table: A system is periodic if the properties of its components repeat in cycles, or "periods").

I suggest that the simplicity test is exactly backward. If a theory isn't so simple as to be beneath notice, it isn't basic.

If we take Chomsky's (*Syntactic Structures* 1957, page 5) advice, and follow it up, and pursue it to its limit, the particulate principle shows that the properties of words are governed under the quantum property of matter (Abler 2019. Quantum words and Newtonian sentences. *JIS Journal of Interdisciplinary Sciences* 3(1):56-77). Major

properties are consequences of the particulate principle, or emerge as ways of generating large numbers of structures without violating it: retrievability, a periodic law with nothing between the elements and nothing between the phonemes, extreme antiquity, vast numbers, a solution to half the mystery of language, the gene, emergent properties, and the Schrödinger-Delbrück anti-entropy law, an insight into the benefits of the quantum –and that isn't so bad for a theory that is so simple and so obvious as to be beneath notice.

While Pinker's "research on language [was being] supported by the National Institutes of Health grant HD 18381, and National Science Foundation grant BNS 91-09766, and by the McDonnell-Pew Center for Cognitive Neuroscience at MIT" (*TLI* page 9) for "The Origin and Evolution of Intelligence" and for "Negative Evidence in Language Acquisition", I had to, correctly, realize that the scientific study of language was going nowhere, and completely re-imagine the kind of question that should be asked. I say "correctly" because it was my line of research, not Pinker's, that uncovered "the engineering trick behind human language" (*The Language Instinct*, page 127). Then, having ruled out two dimensions and trees, and wanting to have a complete theory of language right away, Pinker ruins the right answer of discreteness by attaching the wrong answer of combinatorics to it. The right answer, in two dimensions, is fractals.

P&B specifically reject the possibility of a fractal structure: ""It is essentially a serial interface, however, lacking the full two-dimensionality needed to convey graph or tree structure". P&B (p. 713) take for granted that words, in themselves, intrinsically belong to one part-of-speech or another, and give the example, "a noun like *dog*" (their italics). "Dog" is as much a Verb as it is a Noun, as in, "John's dog dogs him everywhere he goes". Words have no intrinsic property corresponding to the concept part-of-speech, but are assigned that property temporarily from their use in a sentence. For all I know, our word "dog" is left over from a stone-age word meaning "follow". Language shows the fingerprints of design because it is generated by the same mechanism that generates equations; and equations are generated by the same mechanism, Newton's equal-and-opposite reaction, that generates the properties of physics. The scientific content of P&B'90 is absolute zero, yet, in hindsight, P&B'90 emerges as the theoretical basis for the new era in evolutionary linguistics. It propelled Pinker into the office of professor and director of the McDonnell-Pew Center for

Cognitive Neuroscience at the Massachusetts Institute of Technology (from the dust jacket, *The Language Instinct*).

I have learned more than I want to know about science. Prophetically, Pinker and Bloom (page 725 in their Natural Language and Natural Selection, *Behavioral and Brain Sciences* 1990) warn us that, "Cooperation opens the door to advances in the ability of cheaters to fool people … This in turn puts pressure on the ability to detect subtle signs of such cheating, which puts pressure on the ability to cheat in less detectable ways … ". As Pinker shows in his later studies,

Pinker, S., Nowak, M. A., & Lee, J. J. (2008). The logic of **indirect speech**. *Proceedings of the National Academy of Sciences* 105(3):833-838.

Pinker, Steven 2007. The evolutionary social psychology of off-record indirect speech acts. *Intercultural Pragmatics* 4-4:437-461. DOI 10.1515/IP.2007.023 6

Steven Pinker is fascinated with indirect speech –saying something that can be taken in two ways, one innocent, the other guilty, like his, "Gee, officer, is there some way we could take care of the ticket here?" Pinker shows himself the master of indirect speech, as well as bibliographic obstacle courses, marathons, smoke-screens, wild-goose chases, dead-ends, misdirection and cite-in-one-place, use-in-another –to the point where he has created a new genre of literature in science. In other people's hands, the theory of the particulate principle has gone far –MIT-Harvard, Oxford University Press, William Morrow, the Royal Swedish Academy of Sciences, maybe even *Nature*, in forms that are plagiarized and edited to turn them away from their beginning in physics, to prop up a dead theory in biology. Science is a human activity. Very human.

The will to oppose Creationism has pushed scientists first to defending Darwin, then enforcing him. The theory of the particulate principle provides, as a corollary, that words take their structure from physics. And its sister theory, the Newtonian, or equal-and-opposite theory of the sentence, is also a theory in physics. In their eagerness to defend a biological theory of language, the leaders, Pinker, MacNeilage, even Genarro Auletta, have formulated a biology apart from physics. Nothing in nature is apart from physics. The resulting contradictions can't be sustained forever. And no matter how we revere Darwin, we don't have to answer to him. Just because Creationists think that God created the World in six days, isn't a reason for scientists to think that language evolved by natural selection.

A Theory of Language

There is no substitute for a theory of the human being. No study of brain size, or hyoid bones, or stone tools, or decorated pottery, or cave paintings, or upright posture, or cranial convolutions, or lateralization, or discrimination between languages, or genealogy of Australopithecus, or revelations in the family tree of human "evolution" (read: genealogy), or even generative grammar, will tell you what a human being is. Apart from Eugene Dubois confirming that there really is something halfway between people and monkeys (see Pat Shipman, *The Man Who Found the Missing*

Link. Simon and Schuster 2011), the rest of paleoanthropology is largely beside the point. None of it, however informed, fascinating and sophisticated in its own right, will tell us what language or mind is. There is no substitute for a theory of language and mind and the human being.

A Theory in Physics

Is a theory of language based in physics rather than in biology improbable (*The Language Instinct TLI* page 364)? "The pitiless laws of physics are unlikely to have done us the favor of hooking up [brain] circuitry so that we could communicate with one another in words". "Unlikely." Is Pinker really asking us to bet on the odds? Ninety-nine-to-one? He is telling us that he is ruling out a solution in physics. He is telling us *Trust me. A solution in physics doesn't need to be considered*. But if he put it that way, he might be inviting questions. So he put it in technical-sounding terms. Unlikely, sure, it's unlikely. Anyone can understand that. Can we legislate truth in science by vote –"most biologists agree"? OK: In his 1946 classic *What is Life?* (Macmillan), Irwin Schrödinger, quoting Max Delbrück (pages 68-69) observes "Living matter, while not eluding the 'laws of physics' … is likely to involve 'other laws of physics' hitherto unknown". If I had to bet on who got the physics right –Steven Pinker or Irwin Schrödinger and Max Delbrück– I would bet on Schrödinger and Delbrück any day. The particulate principle is the law of physics, 'hitherto unknown' that Delbrück and Schrödinger call for, and that Pinker rules out. Millions of research hours and millions of dollars in research money, not to mention the careers of graduate students, are riding on this. Nature is unaware of our existence, and doesn't always take our suggestions. Nature is what it is, no matter what anyone says, or no-one says. Remember the geocentric universe and phlogiston.

Science, like Aesop, has morals. One is that nothing is apart from physics, or can violate the laws of physics. Another is that nature harbors no contradictions. So, language can't be simultaneously a kluge, the result of what Francois Jacob calls "tinkering" (*Science* 196:1161-1166, 1977), and the solution to a problem in engineering, i.e., physics (Pinker, *The Language Instinct* 1994, page 127). And another lesson is that when it comes to science, and probably everything else, you are on your own. Science is the original source of truth because, in principle, it is public, and can be checked by anyone, and its structure is apart from us. That is why isolated and obscure people like Mendel can make a difference in science, where politics is mostly closed to them.

Do you really think that language evolved in biology by natural selection? Remember, you are on your own. You must take personal responsibility for every idea through your own process of knowledge and reasoning. "That's what we're going to find out" [the origin of language in biology] isn't enough. Young and enthusiastic graduate students applying new and more powerful methods may turn out to be like cold-fusion hunters in physics, with more and more sensitive instruments detecting the presence (the body-heat) of the experimenter, more than the experiment. Apart from a clear and obvious definition and theory of exactly what evolved –the sentence– proofs that language evolved by natural selection are moot.

What is worse, the proofs of an origin in biology are generated by mis-representing the theory in physics, plagiarized from my 1989 paper. The theory in biology is propped up by fake science and social pressure, not evidence.

The big picture emerges not from panoramic truths, but from details building upon one another. If you start from the simplest possible beginning, and establish something you can rely on (the discreteness property), and iron out all contradictions, a big picture will emerge that is more reliable, and ultimately more faithful to nature and more inspired and beautiful than any visionary panorama. It will gather unexpected relationships into itself and answer questions that would otherwise never be asked.

LOOKING BEHIND THE SCENES

I will be looking at equations, but not in the usual way. Ordinarily, we develop equations as a description of something, like symmetry or compound interest. Or we develop equations for their own sake, and later discover that, in some unexpected way, they are a description of something. The mathematicians can't wait to show you the next more sophisticated equation. Here, I will investigate the structure of the equation itself. What is an equation? "A string of symbols" isn't enough. What causes equations? What force generates the relationship between the symbols? Why are they a model of physics? Is there some shared property or intersection? Do they have a special relationship to the sentences of language? In the end, equations are sentences, and more events than structures.

I dedicate my work to the memory of Francesco Redi, inventor of the single-variable-factor experiment –and to Gregor Mendel, whose experiments opened the door into the forbidden precincts of the unimaginably small. The closest thing to language in material nature is the gene, and the history of discovery in language is a re-play of the discovery of the gene. The real theory always emerges eventually, with a cycling time of thirty or forty years after first publication. That is what happened with the gene in 1900, thirty-four years after Mendel's original publication, with three re-discoverers, all having some connection to Mendel. The particulate principle already has its re-discoverers, so I wrote this book to keep the science, and the record, straight.

§ § § § §

LAW of NATURE

The particulate principle has been so misunderstood, on the one hand, and misrepresented on the other, that a short review is called for. When I mention the particulate principle, I mean the whole theory of discreteness as an abstract property in physics –not its manifestation in any one system.

The particulate principle, a theory that I published in 1989, unifies all emergent systems –systems with properties beyond those of their original constituents– by showing that such constituents have to be particulate, or discrete, because:

"blending constituents would form combinations whose properties lie between, rather than outside, the properties of the original constituents." (From Abler, William L. 1989. On the particulate principle of self-diversifying systems, *Journal of Social and Biological Structures* 12(1):1-13. Page 1, at the end of the abstract.)

Steven Pinker is not the only author to plagiarize or misrepresent the particulate principle, merely the most famous one. Here is my critical quote, copied in Pinker's book:

"In a blending system the properties of the combination lie *between* the properties of its elements". (From Pinker, Steven 1994, *The Language Instinct TLI*, page 85, 2nd sentence, first complete paragraph. Pinker's italics, not mine. *TLI* 2007:76).

I show, here, that this copied quote, and others like it, are the scientific basis and purpose of *The Language Instinct,* and that the formative ideas were unknown before my 1989 paper, and could have no other source. Plagiarism at such a high level is a serious recommendation. Many of the properties that we see in nature represent exercises in generating large numbers of structures without violating the particulate principle.

§ § § § §

Steven Pinker's 1994 book *The Language Instinct TLI* (Morrow) is an elaborate plagiarism and cover-up of my 1989 paper On the particulate principle of self-diversifying systems, without which *The Language Instinct* could not and would not have been written.

Abler, William L. 1989.
On the particulate principle of self-diversifying systems.
Journal of Social and Biological Structures JSBS 12(1):1-13.

The Particulate Principle:

The particulate principle (see above) looks simple –but hidden in the requirements of adhering to it, while generating large numbers of diverse structures, are unexpected consequences, reaching deep into the structure of natural systems, and, among them, language:

The particulate principle is a universal law of nature, which "applies equally to chemical mechanisms and to language", as well as to the gene (Abler 1989:2), and to the structures of mathematics (Abler 1989:8). And to any system, natural or artificial, with properties beyond those of its original constituents.

"The properties of a combination of particles may differ widely from the properties of its constituents" (Abler 1989:2).

"The potential number of such combinations may be vast" (Abler 1989:2, 4).

"When the constituents of self-diversifying systems combine with one another, the constituents retain their original identities, a property which I will call retrievability" (Abler 1989:3).

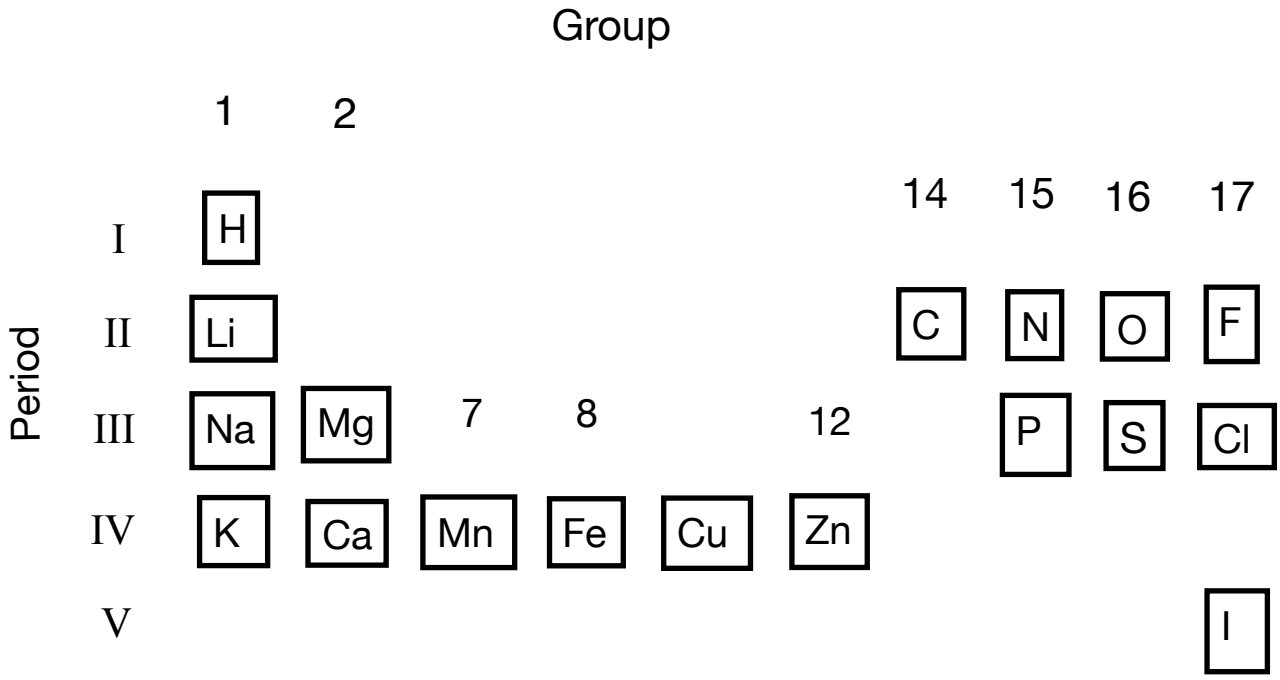
New properties generated by discrete constituents also represent new levels (or layers) of organization in a self-diversifying system (Abler 1989:3, 8).

When the number of constituents in a naturally-occurring self-diversifying system exceeds five or so, such properties will conform to a periodic law. The phoneme chart is a periodic table. (Abler 1989:5, 9). There is nothing between the elements, and nothing between the phonemes, as follows:

The gaps are a necessary part of discreteness. If there were no gaps, and the properties of the atoms formed an unbroken continuum, no two atoms would be the same; no two molecules would be the same; and enzyme molecules wouldn't fit with their corresponding substrate molecules. A regulated metabolism wouldn't be possible, and life would not form. The same constraint applies to the phonemes of language. The gaps are a necessary part of discreteness. There is nothing between the phonemes; and the chart of the phonemes is exactly as periodic as the table of the elements.

Further, the property of number is real in nature. In other words, numbers in nature aren't just a way of counting things, the way they are in a computer. So, where the difference between, say, 1 and 2 is 100%, the difference between 100 and 101 is only 1% –and nature treats them that way. That is why the biological atoms. hydrogen, sodium, carbon, nitrogen, sulfur, oxygen, potassium, phosphorus, chlorine … have low atomic number. They are more useful because the differences between their properties are greater than at the high-number end of the periodic table. And periodicity, in effect,

allows each new period an opportunity to start fresh, as if it had a second chance at a low number. So, where a computer can tell the difference between, say, 100 and 101, nature can't. Since the table of the elements is familiar, I have included only the biologically essential atoms, to show the use of low numbers in gaining maximum diversity in chemical properties from a minimum number of elements.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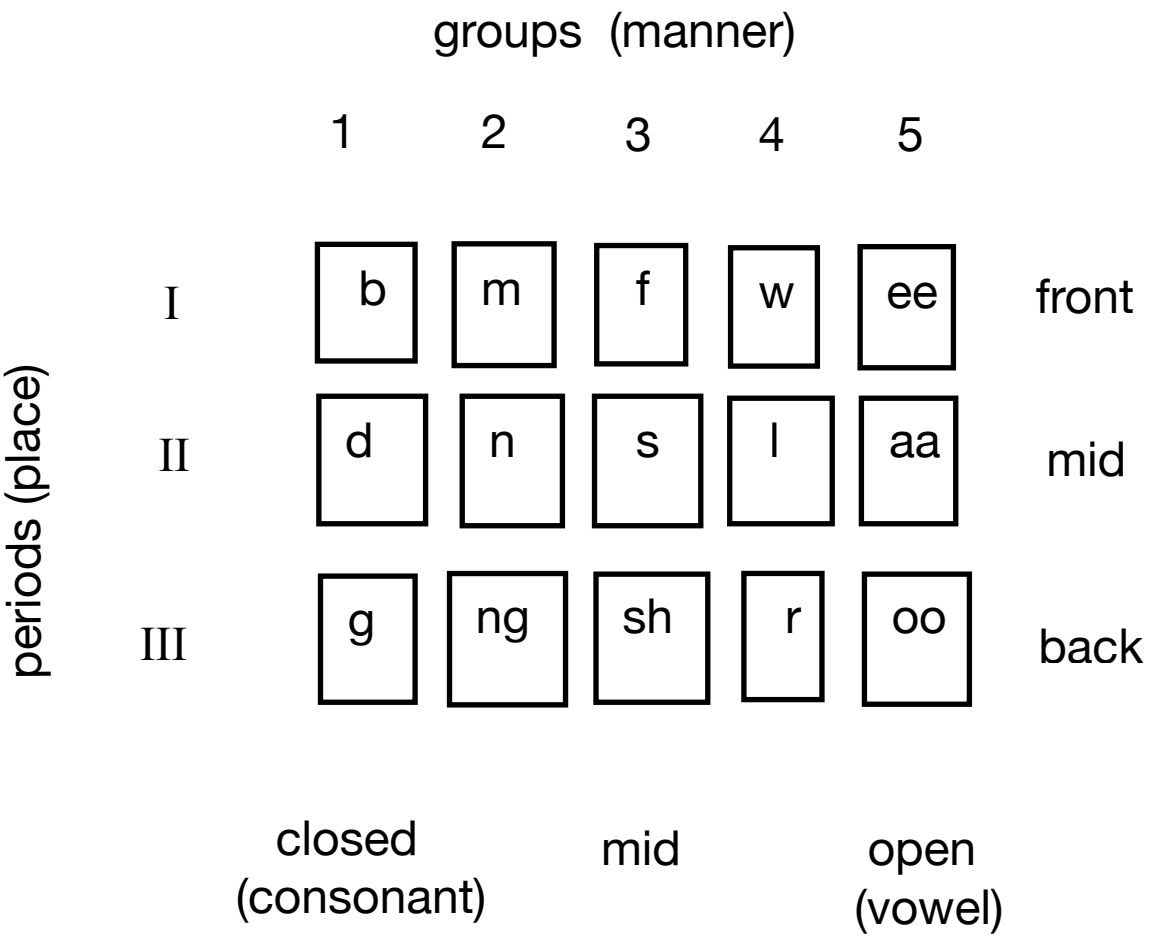
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(vowel)

Twin Periodic Tables.
The upper table is taken from the familiar periodic table of the chemical elements, showing the elements that are basic to life. The lower table, familiar to all who have taken a year of linguistics, is the phoneme chart. Every language has one; and unoccupied spaces in the phoneme chart enable language scientists to predict the existence and properties of a speech-sound in exactly the way that an unoccupied space in the table of the elements enabled Dmitri Mendeleev, in the nineteenth century, to predict the existence and properties of gallium. Both tables are based on the concept of repeating properties and a grid of intersecting dimensions, with nothing between the constituents. "Periodic systems are capable of forming a maximum of units on the basis of minimal changes in relation to the coordinate system which they define." (Abler 1989:8).

The number of constituents in a self-diversifying system is limited to about 70 or 100, because "What would be the difference between element (or phoneme) number 10^{10} and element (or phoneme) number $10^{10}+1$?" (Abler 1989:9). The elements that are basic to life are at the top of the periodic table, where the atomic numbers are smallest, and the differences between one element and the next are greatest.

"A thermometer is not a self-diversifying system, even though it is capable of producing an infinite number of readings, because all of the thermometer's potential readings are implicitly present in the thermometer's construction … [and] all are realized every time the thermometer's indicator travels from one end of its range to the other" (Abler 1989:8). I.e., They are confined to a single dimension.

The particulate principle was active before the beginning of life (Abler 1989:11), and is thus more basic than anything in biology. The particulate principle applies to the atoms in chemical interaction, and is thus a property in physics.

Further developments related to the physics that generates language and mind can be found in my new paper Quantum words and newtonian sentences, which shows: 1) the properties of words conform to the quantum property of matter, which represents a manifestation of the particulate principle. 2) The properties of sentences are generated under Newton's third law, "For every action there is an equal and opposite reaction": equal-and-opposite.

Abler, William L. 2019.
Quantum words and newtonian sentences, structure of language and algebra.
JIS Journal of Interdisciplinary Sciences 3(1):56-77.
(accessible for free by Googling 'abler quantum words')

I repeat that the particulate principle is a universal law of nature that applies uniformly to any system with properties beyond those of its original constituents. The particulate principle is not the observation that the phoneme is discrete, or that the gene is discrete; and it is not limited to its known systems. The particulate principle elevates

the scientific study of language from the level of description, to that of theory. Thus we not only know that the phoneme is discrete, but, under the particulate principle, we know *why* the phoneme, the atom, numerical values and the gene are discrete, and have to be discrete. If they weren't, we wouldn't exist.

STEVEN PINKER:

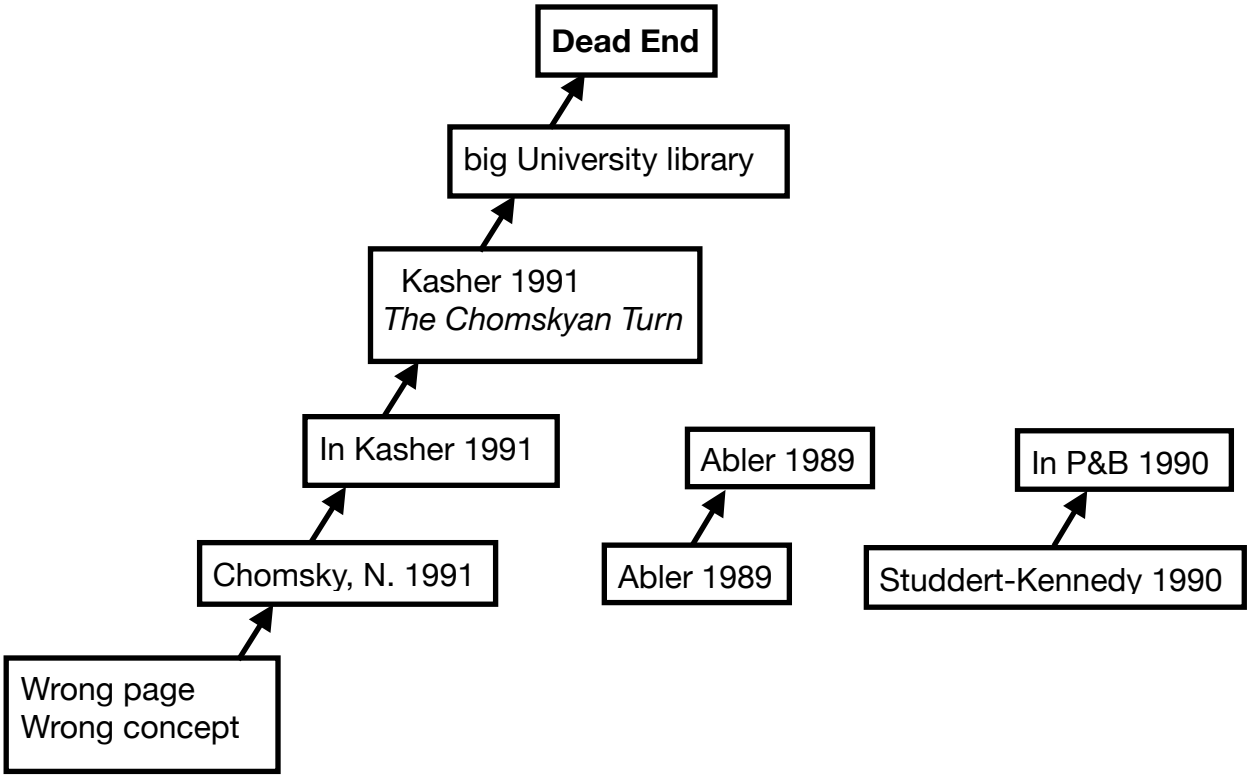
The engine that drives *The Language Instinct* is the concept of discreteness manifested in the "*discrete combinatorial system"*. Pinker uses this phrase on so many pages distributed so thoroughly throughout his book, pages 84 (three times), 85 (twice), 89, 92, 93, 97 ("artificial combinatorial system"), 127, 162, 163 (twice), 179 ("a combinatorial system"), 237, 269, 334, 351, 362 –nineteen times all told, that it is the stitching that holds the book together and the backbone that holds the book up. Only Noam Chomsky gets more mentions, and is listed in the index, although the discrete combinatorial system is not.

Before the introduction of a theory of discreteness, there were descriptions of language which included a number of properties: Language is abstract, and does not physically resemble the ideas that it represents. Language is discrete. Language can talk about things that are not present either in time, like the Roman Empire, or place, like Pluto. Language is arbitrary, so any word might represent any meaning. Language has its own power source, the voice, and can work even in the dark. Language carries emotional content. Language goes around corners and beyond the range of sight. You can't speak language, you can only speak a language. There is, in principle, no limit to the number of potential languages or potential sentences. There is no longest sentence. … Without a theory, there was no reason to single out any one property as more important than the others.

But on *TLI* 1994 (*The Language Instinct* 1994) page 127 (2007:120), Pinker calls the discrete combinatorial system "the engineering trick behind human language", singling it out and identifying it as the critical property that makes language possible, and making the theory of discreteness the single most critical discovery in the scientific study of language. Discreteness, manifested in language through a discrete combinatorial system, is the engine that drives *The Language Instinct*, and Pinker backs up the concept of discreteness with reasoning that defines discreteness, showing its importance in generating distinct signals with new, or emergent properties, as shown earlier.

After pilfering and degrading the particulate principle to prop up the theory in biology, Pinker realized that he needed an insurance policy, in case I should read his book. He decided to include a mention of my 1989 paper in his bibliography, but he would make the trail through his end-notes so long and convoluted and attenuated that no one would see the connection. And by keying his end-note to a phrase that I never

used, “discrete combinatorial system”, he made the trail not just obscure, but disjointed, while leading the reader away from the real law of nature.



End-note for *TLI* page 84. The path to my 1989 paper starts from the wrong concept (discrete combinatorial system) on the wrong page (84), and leads through a dead-end marathon obstacle-course to an irrelevant article in a hard-to-get book, before the mention of Abler 1989. There is no reference to the real law, *TLI* page 85, “In a blending system, the properties of the combination lie *between* the properties of its elements, and the properties of the elements are lost in the average or mixture” (Pinker’s italics, copied and paraphrased from my 1989 article). With each step in the sequence to Chomsky 1991, more and more readers will give up the search. The choice of Chomsky 1991, two years after my 1989 article, avoids the suggestion that Chomsky anticipated me.

And that is just the beginning: The plagiarist's second line of defense is the violation of person and the time and emotional energy wasted in locating the quotes and in identifying the plagiarist's bibliographic tricks. And the complete isolation of the victim. Even now, 25 years later, I am still discovering some of Pinker's abuses. Scientists would rather think about science, because it is just as hard, and a waste of one's life, to think about fraud. By any standard, including Pinker himself, the critical role of discreteness, and the corollaries that follow from it, was new and original in 1989 with the publication of the particulate principle. And that is the only place where Pinker could have got his ideas and his quotes.

Pinker isn't a scientist. He is an actor and a science-writer masquerading as a scientist. Like Don Rumsfeld in Iraq, Pinker can do everything except solve the problem. When you look at Professor Pinker, you are not looking at the face of science, you are looking into a mirror. Pinker knows what you think a genius ought to look like, and he knows how to deliver. He knows what you want to hear: Yes, Virginia, language really did evolve in biology by natural selection, exactly the way you thought. The easy answer is so reassuring. Language is a discrete combinatorial system. I can understand that. A little bit is good and a little more is better. I can understand that, too. The structure of language is easy to understand. Just leave everything to Professor Pinker. Like the author of a love song, Pinker puts into words what you always felt in your heart, but couldn't quite put into words. He informs you of new and fascinating facts. Everything except solve the problem: What is language?

Here, in the spirit of Agatha Christie, I can only try to reconstruct the thinking process that led up to his crime. In spite of Pinker's entry, pages 81-89 in John Brockman's 2004 *Curious Minds* (New York: Random House), a book of essays by successful scientists telling how they became scientists, Pinker is a failed scientist and a successful politician.

The Mind of the Plagiarist

No longer a simple copyist, the modern plagiarist is a creative writer in a literary genre developed in large measure by Steven Pinker –consisting of paraphrase; misdirected references; bibliographic dead-ends, decoys and escape-hatches; plausible deniability; misleading statements without actually lying; cite once, use again and again;

bibliographic marathons, wild-goose chases and obstacle courses; use of end-notes and narrative references instead of numbered ones to place distance between the author and the idea; strategic omission of critical information; bibliographic smoke-screens; cagey misattribution of ideas, creating an illusion that a thing was known before the time of actual discovery. And abuse of a book's dedication to create an illusion of personal goodness: Pinker is using his parents as human shields. The modern plagiarist has given more thought than a train-robber or a jewel-thief to the planning of the perfect crime. Because more is at stake. Immortality.

I did not dream up these tricks myself. I learned them from Steven Pinker by reading his book *The Language Instinct* –where they constitute the book's only real contribution to knowledge. Pinker's logic and lessons of discreteness come from my 1989 paper, and from nowhere else. Forward-looking geniuses don't waste their time taking chances on risky ideas that might take decades to think through. They don't liberate their soul and make themselves vulnerable and follow their dream and let their spirit take flight and go ahead and make mistakes. That's for chumps. Let the other poor fool take chances, express their soul, follow their dream, make mistakes, be vulnerable –while you succeed by not taking chances, watching the journals and listening to the gossip. Even raiding your regional high-school science-fair for promising ideas.

What do you learn at the great university? Not science. Pinker rules *that* out. You learn how to look, how to stand, how to act, how to dress, what to say. You learn how to charm outside audiences. With the sensitivity of radar, Pinker detects what people want to hear, and with the skill of an actor, delivers it. You learn, it isn't *what* you know, it's *who* you know that counts. You learn how to hitch your wagon to the right star, how to be a disciple, how to make tiny contributions without rocking the boat –while the Prince of Greed calls the tunes. Soon, tiny contributions are hailed and celebrated as giant breakthroughs. Very important insight; will lead to very important results. When the old idea is forgotten, it can be re-discovered after ten or fifteen years. You learn *not discovered here!* The mission of the university is to discover how God made the world –not high-end jewelry shops and clothing stores and restaurants and stock-brokerages and sports stadiums. We have lost our way.

Merely to show plagiarism comes nowhere near to understanding it, and I aim to understand it. In order to understand the depths of dishonesty that infect the mind of the plagiarist, we must reconstruct the thinking that leads up to the moment when the

last draft of the manuscript is finally handed to the publisher. The wicked, forbidden thrill that shivers down the plagiarist's spine with the thought *I can get away with this*. The fun of imagining the victim's helplessness and isolation, perhaps a lifetime of dedicated labor swept away by a clever maneuver. Is Pinker smarter than you? You bet, he is. If he had made some wonderful discovery, like, say, the periodic property of the chemical elements, people might object that it isn't really periodic, as chemists did in the nineteenth century. Maybe he didn't really *discover* it. Maybe it was in the air. But if someone can trick you, there can be no question as to who is smarter. Don't let Pinker's folksy pose mislead you. In his superior mind, Pinker despises you. What gave him the courage? I would have to guess that it must have been Hurford's peer-reviewed "***Liberation!***", which showed that you can get away with anything, as long as you are endorsing evolution.

In the Director's Office, Late at Night

Pinker's dilemma, then, in 1990, was, how to make a theory in physics look like a theory in biology, and how to make himself appear to be the originator of the particulate principle, without actually claiming originality. I had already claimed originality in my abstract, page 1, with the opening sentence, "Several natural systems, traditionally treated as being independent, now appear to be based on common principles", and Pinker didn't want to hand me the opportunity of pointing that out. So he settled on a double strategy. First, he would push the particulate principle back before the time of its actual discovery. He knew that discreteness seems to be a simple property, and that it had been on the books for at least 30 years. If he could make discreteness seem familiar he could make the theory of it seem obvious, as if it had been understood since forever. My 1989 paper would then appear as a pointless rehearsal of common knowledge. Innocent readers, at some level sensing that the critical nature of discreteness was actually a new discovery, would assume that the insight had come from Pinker, who would appear to be a genius of such brilliance that he makes fundamental discoveries casually, inadvertently, without realizing the value of what he has done. Having jumped to this conclusion by themselves, readers would then be all the more ready to believe it.

Pinker didn't just copy text, in the way someone might copy standard information out of a field guide, although he did that. He didn't even just steal original research, although he did that, too. Pinker stole the critical idea, the necessity of discreteness, that has become the pivotal concept of language science and research for a quarter century, and has passed the test of time. It is the language equivalent of stealing F=ma in physics. The particulate principle, in its entirety, is the first law emergent properties – and the universe is built on new properties from old particles.

Next, he would create an escape-hatch for himself, in case anyone should detect his plagiarism and call him on it, by constructing a bibliographic obstacle-course dead-

end marathon wild-goose chase smoke-screen between my 1989 article in *JSBS* and the pages of his book. If anyone should ask, "Where's the reference?" he could point to the entry in the bibliography and answer, *It's right here. What are you talking about?* The sincere, trusting and unprepared reader would go away stunned. By the time the reader realized that, without a mention in the text, an entry in a bibliography isn't a reference, it would be too late. Pinker would already have won. The chain of connection could be made so long and tenuous that, for a long time, only the victim would find it, and would look like a fool if he pointed it out. Later it could be explained away, and no one would care.

How to do it, How to do it?

The next device that Pinker needed was the strategic omission of critical information. My 1989 abstract mentions chemical interaction as coming under the scope of the particulate principle –that is, the atoms don't mix and blend with their neighbors when they form chemical combinations. By the time *The Language Instinct* went to press, Pinker must have known that discreteness is a property in physics, and more basic than anything in biology. His careful omission of any reference to a property in physics shows that he knew. But the thing that put Pinker on the scientific map is language evolution, a process in biology; and letting go of that might disappoint his audience, and make his plagiarism too obvious. So, leading from behind, he gave the people what they wanted. *The Language Instinct* isn't just plagiarism, it is scientific pandering and fraud. Like the perpetrator of the Piltdown hoax, Pinker knew, "Tell people what they want to hear, and they will believe it". Pinker's success doesn't lie in his knowledge of science. Ideas are just real-estate for him. Pinker's success lies in his knowledge of what you want to hear. He is a mind-reader who has succeeded in the public awareness by actually decreasing the fund of knowledge in science.

Indirect Speech

To understand the full scope of Pinker's dishonesty, we must turn to his later writings. Pinker is not merely "the world's expert on language and mind", as is proudly announced on the back cover of the 2007 paperback reprint of *The Language Instinct* (Harper Perennial); he is also an expert in plausible deniability and what he terms "indirect speech":

Pinker, S., Nowak, M. A., & Lee, J. J. (2008). The logic of **indirect speech**. *Proceedings of the National Academy of Sciences* 105(3):833-838.

Pinker, Steven 2007. The evolutionary social psychology of off-record indirect speech acts. *Intercultural Pragmatics* 4-4:437-461. DOI 10.1515/IP.2007.023 6

"Indirect speech is the phenomenon in which a speaker says something he doesn't literally mean, knowing that the hearer will interpret it as he intended" says Steven Pinker, and "Indirect speech allows for plausible deniability". So someone stopped for speeding might ask, "Gee, officer, is there some way we could take care of the ticket here?" –indirectly offering a bribe with the possibility of denying it.

"All truths are easy to understand once they are discovered; the point is to discover them" says Galileo, and nobody knows it better than Professor Pinker. Once he had the theory of discreteness in hand, lifted from my 1989 paper, he knew he could find a way to make it easy to understand, as if it had been obvious forever –and to push the discovery back into a vague past before the actual discovery –and you can't steal common knowledge, can you? This was his way of separating the discovery from the discoverer. Sweetly and viciously, Professor Pinker informs his readers (*TLI* pages 84-85), "Many biologists have capitalized on the close parallel between the principles of grammatical combination and the principles of genetic combination." It would be hard to find a better example in science, of making a misleading statement without actually lying. The gene-language analogy was perhaps the leading mystery of the third quarter of the twentieth century, and numerous attempts were made to compare the genetic sequence to transformational grammar. These attempts failed because the solution, discreteness, is so humble, and its corollaries so un-obvious, that it is beneath notice. So no one noticed it. Researchers should be aware that building on what has gone before only works when what has gone before is correct. George and Muriel Beadle, and Roman Jakobson, used the linguistic vocabulary of genetics to show the mystery; Pinker used the same vocabulary to trick the reader into imagining that there never was a mystery.

Indirect speech isn't confined to crooked headwaiters and cops on-the-take. It extends to crooked professors adept at the use of suggestio falsi, (see H.W. Fowler. *A Dictionary of Modern English Usage* 1965 New York and Oxford: Oxford University Press, page 603), "The making of a statement from which, though it is not actually false, the natural and intended inference is a false one". I don't make these things up. Where George and Muriel Beadle, and Roman Jakobson, used the crossover vocabulary of lexicography to dramatize the most mysterious riddle of the third quarter of the twentieth century –the analogy of the genetic code to the linguistic one– Pinker used the same vocabulary to pretend that there never was a mystery (*TLI* 1994, page 84-85): "Many biologists have capitalized on the close parallel between the principles of grammatical combination and the principles of genetic combination": "letters", "punctuation", "palindromic", "meaningless", "synonymous", "transcribed", "translated". Under suggestio falsi, Pinker adds, "immunologist Niels Jerne entitled his Nobel Prize address, "The Generative Grammar of the Immune System". Also technically true, but just one famous person tipping his hat to another, not a theory in science. Didn't anyone remember the mystery the gene-language analogy? In the welter of

enthusiasm over *TLI* (see the comments in the opening pages of the HarperPerennial paperback reprint 2007), I guess not; and Pinker's hoax of mystery/solution reversal was a complete success.

Pinker's strategic omission of any reference to chemical interaction, or the periodic property of the phoneme chart, or the great antiquity of these properties –all direct consequences of the particulate principle, and properties in physics– are suppressio veri, (see Fowler 1965, page 607, "Intentional withholding of a material fact with a view to affecting a decision"). I quote from Fowler's *Dictionary* to show that I have not dreamed up wild fictions. Unlike the particulate principle, Pinker's method was already known, and the term "cherry picking" makes its viciousness seem almost cute.

Pinker's next assignment was to put as much distance as possible between the idea and its author, without actually breaking the thread. How to do it, how to do it? Here, Pinker's genius comes into its own. The first thing is to write a book, not a paper. Almost any journal will insist on "nothing in the text that isn't in the bibliography, and nothing in the bibliography that isn't in the text". A book, therefore. He would have no trouble convincing some publisher that his book is a *popular* one, not a *technical* one, and can get along on end-notes, with only narrative references in the text, not numbered ones. After all, numbered references only break up the continuity for the average reader. Don't they? Stephen Jay Gould didn't think so, but what did *he* know? "Gould is a paleontologist, and paleontologists study organisms after they have turned into rocks" (*TLI* 1994:359). After all the plausible deniability is said and done, the real question is, Why break routine? Pinker had a perfectly workable, acceptable formula that he and hundreds of others had used time and again without complaint. Why change? What prompted the thought in the first place? I suggest that, other than to hide the source of "the engineering trick behind human language", there was nothing to even prompt the idea of changing..

Sleight-of-Hand

Pinker published four books, that I know of, before *The Language Instinct*, and six after. *TLI* was Pinker's first book without numbered references in the text; and only his next one, *How The Mind Works*, was also without numbered references in the text.

Books by Steven Pinker:
Numbered or Dated References in the Text?

1984	*Learnability and Cognition*	YES
1984	*Language Learnability and Language Development*	YES
1985	*Visual Cognition*	YES
1988	*Connections and Symbols* (ed. With J. Mehler)	YES
1994	*The Language Instinct*	NO
1997	*How The Mind Works*	NO
1999	*Words and Rules*	YES
2002	*The Blank Slate*	YES

2007	*The Stuff of Thought*	YES
2011	*The better Angels of our Nature*	YES
2014	*The Sense of Style*	YES
2018	*Enlightenment Now*	YES

I wish that I could offer photos of pages from Pinker's books, to show that my table, above, is not a forgery. But that would be plagiarism.

The in-text references in P&B'90 are so meticulously well done that they are something to be proud of. Here are a few, taken from P&B page 708 alone: " … the evolution of organisms (Darwin 1859, see Bendall 1953 … "; "as yet unknown laws of structure and growth (e.g., Chomsky 1972; 1982a; 1982b; 1988a; 1988b; Gould & Piatelli-Palmarini 1987"; "Premack (1985; 1986) and Mehler (1985) have expressed similar views"; "such researchers as Bickerton 1981, Libernan & Mattingly 1989, Lieberman 1984, and, in limited respects, by Chomsky himself …"; Chomsky has made the following statements: … (1972, p. 70) … (1972, p. 97) … (1988a, p. 167) … (1982a, p. 23)".

Why abandon a practice that Pinker has worked so hard to perfect, that must have become second nature? There had to have been good reason.

The use of narrative references in the text was a conscious decision that just happened to fall on *The Language Instinct*. Was it just a little experiment that didn't work out, so he went back to the old system? Why didn't it work out? Was something wrong with it? How did he know? Did someone complain? Why go back? According to Wikipedia, *TLI* has placed its author in the company of such greats as Ray Bradbury, Erle Stanley Gardner, Margaret Mead, Joe Hill, Walter Lord and others at his publisher, William Morrow and Company. *TLI* is possibly the most successful little experiment in the history of English letters. There is no good reason to tamper with such success, although there is a bad one.

Around 1975 or so, a method was proposed to decide whether properties shared between people and honey bees represented convergence or coincidence, communication system, care of the young, that sort of thing. If we assume a fifty-fifty chance that any two properties will be shared, then for n properties, the chances are $1/2^n$ that the shared properties represent a coincidence. While the substitution of statistics for theory is exactly the kind of science we don't need in understanding the human mind, it offers a way to measure whether it is a coincidence that Pinker's first omission of in-text references fell on *TLI*, where it would do him the most good, or whether it was intentional. So, for twelve books, there is a $1/2^{12}$ probability that it will fall on any given book. There is one chance in 4096 that the first omission of in-text references fell on *TLI* by coincidence.

As far as I am concerned, the use of narrative references was no longer necessary; and numbered references are more informative, pointing out exactly what is important. As far as I am concerned, the use of narrative references was the first step in hiding the source of the critical ideas that made *TLI* possible, and that the theft of the particulate principle was the reason for writing *TLI* in the first place. The whole concept of *TLI* is nothing but camouflage dedicated to the theft of the particulate principle. Ultimately, *The Language Instinct,* built out of my brutally mistreated ideas, is mine.

Sadly, Pinker's 2014 *The Sense of Style,* a treatise on clear writing, represents the loss of a golden opportunity and the waste of a great talent. I have tried, here, to supply this deficiency, which might be titled *Advice to a Young Plagiarist*, or *Obscure Writing Made Easy*. Everybody wants to be appreciated. Even criminals. In the spirit of Charlotte Corday reporting her murder of Marat, or Yusupov reporting his murder of Rasputin, I seriously encourage Professor Pinker to share with us his considerable, and his only, talent –obscure writing, plagiarism, abuse of the scientific referencing system, bibliographic smoke-screens, obstacle-courses, dead-ends, marathons, misdirection and decoys, wild-goose chases, strategic omission of critical information, threats, perfidy, cover-up, and plausible deniability in science. And the idea of Pinker writing a book about our better angels is like Al Capone writing a book about the improvement of society.

Numbered or dated references show clearly that a topic is listed in the index or bibliography. Without the numbers, the reader has to guess whether something is important enough to look up. And with end-notes alone, the match-up might not be obvious. Without actually breaking the thread between the author and the idea, the end-notes strategy makes the thread so long and so tenuous that it becomes vanishing. If Pinker would think as much about science as he does about plagiarism, he might actually discover something.

How Pinker's mind works:

PINKER INTERVIEW
with Oliver Burkeman
The Guardian
September 22, 2007
amended Monday October 1, 2007

"Cursing may involve a different area of the brain …. where words switch places without regard to syntax or meaning, simply held together by some emotional thread … Even the prototypical English curse, 'fuck you' is ungrammatical. It should be 'fuck yourself', he [Pinker] says". This isn't an off-the-cuff answer to an unexpected question. Pinker volunteered it himself. He must have been waiting for the opportunity to tell someone. Pinker's own language instinct should have told him that new constructions in language are only generated on the model of old ones. Of course 'fuck you' is grammatical. 'Fuck you' is short for '[may someone] fuck you', an optative subjunctive, expressing a wish or a hope, on the model of '[may God] bless you', or '[May you have a] Good morning', or a 'Happy birthday', or 'Good luck'. The rising intonation at the end is a threat. Maybe this is a small example, but here is a hypothesis about the brain from the world's expert on language and mind –Pinker's scientific career in microcosm– a wrong-headed, easy answer to a question in how the mind works. He doesn't think deeply enough. He has no sense of time and process. He simply describes the world as it presents itself to him, easy answers to meet the taste of an immediate audience.

Theory and Corollaries

The real basis of the particulate principle, and *The Language Instinct*, is the theory that *discreteness is necessary for generating new properties*. The particulate principle is a universal law of physics, *TLI* is limited to language and the gene. The other properties are consequences –combinations of constituents, retention of constituent identities after combination, new properties generated by new geometry, vast numbers of combinations, retrievability of constituents after combination, limits to the numbers of constituents. Implicitly, the idea of language as a discrete combinatorial system is the theory that language is constructed by attaching words to other words. This is wrong, and I will get to that later. Nevertheless, the discrete combinatorial system is a corollary of the particulate principle. But Pinker knew that the catchy phrase, combined with his readers' wish to believe that they understand, and to borrow prestige from MIT, would convince them. Pinker's end-note that should have referred to the particulate principle, actually refers to its corollary, the discrete combinatorial system.

The end-note to page 84, on *TLI* page 434, reads, "Discrete combinatorial systems: Chomsky, 1991; Abler, 1989; Studdert-Kennedy, 1990." Pinker trivializes a law of nature by referring to it under a corollary to which he has given a catchy name. But his pathway to the law is deliberately convoluted. Pinker hopes that the trusting reader, seeing the reference to "Chomsky, 1991", will think that everything must be OK, and will stop searching. After all, Chomsky must know. If the reader wants to know more, it must be found under (*TLI* page 451) "Chomsky, N. 1991. Linguistics and cognitive science: Problems and mysteries. In Kasher, 1991." Since Chomsky 1991 is the only reference in Kasher 1991, there is no reason to send the reader to yet another bibliography entry. This is just one more hurdle in the obstacle course that Pinker has constructed between the idea and its author, and any excuse is only a talking-point. When we look up (*TLI* page 459) Kasher 1991, we find, "Kasher, A. (Ed.) 1991. *The Chomskyan Turn.* Cambridge, Mass.: Blackwell." At first, I thought that the Chomskyan turn must be some kind of ballet move (it isn't), and Kasher's book isn't exactly on the best-seller list. I found it at a big University library, and had trouble getting it from interlibrary loan. Eventually I bought a copy through eBay.

Chomsky's paper, pages 26-53 in Kasher's book, is long; and the closest it gets to a discrete combinatorial system (page 50) is "a system that is both digital and infinite" –at best a description, not a theory, and a repetition of Chomsky's endlessly repeated "discrete infinity". But Pinker has carefully chosen the most remote article that could defensibly be called relevant; and the date is carefully chosen, too, 1991, so Pinker can not be accused of implying that Chomsky in any way anticipated my 1989 article. If the exhausted reader is still interested after searching out this scientific dead-end, 'Abler 1989' can be found in many big university libraries (this was before the internet) –and what Pinker calls the "discrete combinatorial system" corresponds to "a combination of particles" in the caption to Figure 1 on page 2 of my article.

Does Pinker understand the particulate principle, and is he deliberately leading the reader away from its source? The main intersection between Pinker's 1994 book

and my 1989 article is on *TLI* page 85, “In a blending system the properties of the combination lie *between* the properties of its elements, and the properties of the elements are lost in the average or mixture.” Pinker’s italics, not mine. Pinker’s sentence is a slightly juggled version of my (1989, page 1) “such systems must be based on particles, rather than on blending constituents, because blending constituents would form combinations whose properties lie between, rather than outside, the properties of the original constituents.” Without numbered references in the text, and with the wrong concept listed in the end-note for the wrong page, the reader would have no reason to think that something wasn’t right, yet would practically have to memorize Pinker’s book and my paper to find the correspondences. On the assumption that (from the *TLI* dust-jacket) the “professor and director of the Center for Cognitive Neuroscience at the Massachusetts Institute of Technology” whose (from the *TLI* Preface, page 9) “research on language has been supported by the National Institutes of Health (grant HD 18381) and the National Science Foundation (grant BNS 91-09766), and by the McDonnell-Pew Center for Cognitive Neuroscience at MIT” knows what he is doing and can be trusted, there should be no reason to memorize and compare anything. Pinker tells us (*TLI* page 8) that he “dislikes insipid compromises”, but *The Language Instinct* is possibly the most insipid compromise in the history of science. Pinker (*TLI* page 17) bad-mouths “most books with “language” in the title … chide you about proper usage”, but conforms scrupulously to it. Why didn’t he write *TLI* in dialect, just to show solidarity?

Pinker knows exactly what he is doing. He has placed his italic thumb-print on the critical statement of my theory (*TLI* page 85), “*between* the properties of the elements” (Pinker’s italics, not mine), marking it. Did I somehow miss my own point? Did I forget to include the all-important italics? Is the addition of italics an act of such creative originality that it merits a new copyright? Should all texts from now on be punctuated with defensive italics, to be absolutely sure of making the point? *It’s mine now*, says Professor Pinker.

Charm

Next, Pinker would lard his text with extravagant praise for every accomplishment imaginable. Led to expect that every concept was lavishly credited in the text, the trusting reader would never suspect the omission of the one critical reference, Abler 1989, the particulate principle. In case of need, Pinker could point to the mention in the end-notes or bibliography and answer any criticism, *It’s right here, What are you talking about?*. Thus, we learn (*TLI* pages 25-26) of the linguistic adventures of Michael Leahy, “ a footloose Australian prospector”. We learn of the linguistic accomplishments of the Rolling Stones (pages 186, 376), the Beatles (page 186) and Meryl Streep (page 290); we learn (page 158) that “psychologists Robert Remez, David Pisoni and their colleagues [are] braver men than I am”; we learn (page 366) of Derek Bickerton’s “jaw-dropping additional suggestion”, and (page 159) of “an astonishing illusion with the pleasing name “McGurk effect,” after one of its discoverers” –all listed in the Index. Even on the pages with the main plagiarism of the particulate principle, pages 84-85, we learn “As Richard Lederer points out in *Crazy English*, we drive on a parkway but park in a driveway”. We learn that Wilhelm Von [sic –it should be von] Humboldt’s “infinite

use of finite media" presaged Chomsky, and that immunologist Niels Jerne named his Nobel address, "The Generative Grammar of the Immune System". My (1989, page 1) "... blending-based natural systems such as geology or the weather" becomes Pinker's "*blending systems*, like geology, paint mixing, cooking, sound, light, and weather". (Pinker's italics, not mine, *TLI* Page 85, lines 2-3, first complete paragraph.) Once again, Pinker marks my ideas with his own italics, and exhibits his stupendous creativity by adding paint mixing and cooking for camo. I know where I got the example of geology: From Alfred Wegener's Figure 10 on page 41 of the Dover *The Origin of Continents and Oceans*. Can Pinker say where he got it?

TLI's joyous romp through the fields of language hides a minefield. Pinker's (*TLI* page 367) "What's the matter, is the bride [natural selection] too beautiful?" isn't a cute proverb, not to mention a law of nature. It is indirect speech for the naked threat, *What's the matter [with you]? get with the program* [natural selection] *or else!* Or else what? Pinker has already answered that question on *TLI* page 229, "Mr. Smith will not get the position". Like the Russians on May Day, Pinker doesn't actually annihilate you. You wouldn't be useful to him then. He lets you know that he can. He doesn't just endorse Darwinism, he enforces it with an iron hand. And when you are good to Pinker, Pinker's good to you.

If I had to guess, I would guess that, some time during the 1980's, the British journal *Nature* took a decision, whether explicit or not, to defend Darwin by taking a stand against Creation. And part of that decision, whether explicit or not, was the evolution of language by natural selection. Pinker knew what to do.

In 2014, at least, Pinker was part of the TED Brain Trust, a panel of experts who decide who will and who won't present the influential TED talks that provide the most stimulating and profound ideas of the day to a wide and diverse public audience, through TV, radio, and YouTube. Do you suppose that Professor Pinker would ask the scientist, whose theory made Pinker famous, to present a TED talk? The fact that the particulate principle applies to the atoms in chemical interactions shows, even without appeal to a periodic property of the phonemes, that the particulate principle is a theory in physics, and more ancient and basic than anything in biology. The professor and director of the McDonnell-Pew Center for Cognitive Neuroscience at the Massachusetts Institute of Technology knew well enough how to enforce his hoax. An entry in Pinker's on-line curriculum vitae says, "Testimony, President's Council on Bioethics, 2003". God knows what he told them, but it made him look good.

When is a Mention a Reference?

Am I dreaming? Is everything really OK? Doesn't Pinker's tortured connection between his discrete combinatorial system *TLI* page 84, through the necessity of discreteness *TLI* page 85, to Chomsky, to Kasher, to the library, to Abler in the *TLI* References and back to the library for the particulate principle, really assign credit?. After all, there it is, in black-and-white. By an accident of alphabetical order, first in the *TLI* Reference list (*TLI* page 447): "Abler, W. L. 1989. On the particulate principle of self-diversifying systems. *Journal of Social and Biological Structures* 12, 1-13". For the

love of Mike, isn't that enough? Books don't write themselves, and they can't be understood apart from the way their author intended for the world to interpret them. They are crafted by their authors to make a certain impression on a certain audience. Every excuse, every explanation, every plausible denial and talking point was placed there carefully, and with exhaustive deliberation, by Professor Pinker while he anticipated trouble, and presented an appearance of doing scientific research. To some extent, the meaning of any statement must be judged by the way that listeners understand it.

Even well-intended readers can be misled. I don't blame any of them for their words, and wouldn't mention their names, except that, if I didn't, my report wouldn't be believable. Here are a few quotes taken from the internet. The measure of plagiarism isn't just the offending text itself, but how readers understood it.

Language Acquisition – Electronics and Computer Science
University of Southampton
Users ecs.soton.ac
By S Pinker – Re;Related articles
Steven Pinker Massachusetts … Other animals communication with a fixed repertoire of symbols, or with analogue variation like the mercury in a thermometer

Mano Singham's Web Journal: The Difference Between …
Case Western Reserve
blog.case.edu/…/the_difference_between_human_and_other_animal_co
Jun 27, 2008 – In his book The Language Instinct (1994) Steven Pinker pointed out two …some signal along a continuum like the mercury in a thermometer)

Time Aping over Human-Chimp Genetic similarities …
www. Evolution news.org/…/time_makes_berras…
Oct 4, 2006 –… some signal along a continuum like the mercury in a thermometer).

Animal Language Skepticism /Justin Gregg / Science Writer
jusningregg.com/animal-language-skepticism/
Aug 19, 2012– … up in this passage by Steven Pinker in The Language Instinct (pg… some signal along a continuum like the mercury in a thermometer) and …

[PDF] Simon Steer's Rejoinder – WordPress.com
https.//encountersmissionjournal.files.wordpress.com/…/rejoinder_simon…
book. The Language Instinct. Stephen Pinker (William Morrow, 1994) makes… combinations, not by varying some signal along a continuum like the mercury in a thermometer).

The Speciation of Modern Homo Sapiens
https:///books.google.com/books?isbn=0197263119
T. J. Crow – 2004 – Philosophy
Continuum like the mercury in a thermometer

Pinker, 1994: 334

The Pun Also Rises: How the Humble Pun Revolutionized …
books.google.com/books?isbn=1101513861
John Pollack – 2011 _ Language Arts & Disciplines
“Most of the complicated systems we see in the world.” Writes Steven Pinker, “are blending systems, like geology, paint mixing, cooking, sound, light and weather …

Samuel Scoville: Where the Rubber Meets the Road
samscoville.blogspot.com/2009/09/where-the-rubber-meets-the-road.html
“ Cached
Sep 18, 2009 – like geology, paint-mixing, cooking, light and weather … (Specimens From Steven Pinker The Language Instinct, reformatted to fit my …

Steven Pinker – The Language Instinct – academia.edu
www.academia.edu/…/Steven Pinker_–_The_Language_Insti…academia.edu
STEVEN PINKER THE LANGUAGE INSTINCT The new Science of … in contrast, are blending systems, like geology, paint mixing, cooking, sound, light, and … Eyes do not register wavelengths the way a thermometer registers temperature. … In a blending system the properties of the combinations lie between the …

Of Mind, Artificial Intelligence, and Computers – Are Technica
arstechnica.com/civis/viewtopic.php?p=20746130
“ Cached
Ars Technika
Aug 20, 2010 – …”discrete combinatorial system” from Steven Pinker, pp 84-85 of The … such as “geology, paint mixing, cooking, sound, light, and weather” …

How Language Works – Georgetown University
faculty.georgetown.edu/irvinem/…/Pinker-How-Language-Works.pdf
“ Cached
Glenda B.Claiborne
Socio 500b
Feb 22, 1999
Pinker, S. (1994). *The Language Instinct*.
º Soc 500b – Sociological Theory
• Professor: Albert J. Bergeson, Ph.D.
1 … lie between the properties of its elements, and the properties of he elements are lost … are blending systems, like geology, paint mixing, cooking, light, sound and weather.

Full. Article – Wiley Online Library
onlinelibrary.wiley.com/doi/10.1111/j.1551…/full
“ Similar
John Wiley & Sons
By J.Mitchell – 1020 – cited by 162 – Related articles

Nov 3, 2010 – Interestingly, Pinker (1994 … By contrast, for a blending system the properties of the combination lie between the properties of its …

Pinker S. – The Language Instinct – Passei Directo
www.passeidirecto.com/arquivo/2060810/pinker-s----the…/22
" Cached
Baixe grátis o arquivo PINKER S. – The Language Instinct enviado para a disciplina de … In a blending system the properties of the combination lie between the … and the properties of the elements are lost in the average or mixture.

What is Grammar in Context: the overview of English
ESL/EFL website
www.ingilish.com > … > ELT Conferences > Private Lessons > Online
" Cached
" Similar
(Pinker, 1994) … In blending system the properties of the combination lie between the properties of its elements, and the properties of the elements are lost in the … (Pinker, 1994). "Most of the complicated systems we see in the world, in contrast are blending systems, like geology, paint mixing, cooking, sound, light, and

Terms and Study Questions: Unit 1
Byron W. Bender, Department of Linguistics
University of Hawaii
Www2.hawaii.eduæ…~bender/psq1.html
Terms and concepts from Pinker, arranged by page number …
P84 a generative grammar,
Blending systems P85 The properties of the combination lie between the properties of its elements: the only way to differentiate large numbers of combinations is to discriminate tinier and tinier differences
Discrete combinatorial system, consequences of P85 one: the sheer vastness of language.

These quotes are a beacon to my 1989 paper. These are experienced scholars who know a reference when they see one. They didn't see one. But they saw the science, and in a book brimming with cheerful facts about language, they singled out my quotes, extending even to page 334 in *TLI* 1994 (2007:342), Pinker's example comparing infinity in language to infinity in a thermometer, lifted from my 1989 paper, page 8.

Literacy

Maybe it isn't Pinker's fault. Can he help it if people can't read?. After all, there it is, the reference, first on the list, *TLI* page 447: "Abler, W. L. 1989. On the particulate principle of self-diversifying systems. *Journal of Social and Biological Structures* 12, 1-13". What could be clearer? Pinker knows exactly what could be clearer, and he shows it –numbered or dated references in the text– on the pages of his *Learnability and Cognition* 1984*, Language Learnability and Language Development* 1984*, Visual*

Cognition 1985, *Words and Rules* 1999*, The Blank Slate* 2002*, The Stuff of Thought* 2007, *The Better Angels of our Nature* 2011, *The Sense of Style* 2014, *Enlightenment Now* 2018. *The Language Instinct* is pure hoax and theft and plagiarism and cover-up. If *The Language Instinct* isn't the best-planned heist in the history of crime, I don't know what is. The purpose of the book is the theft of the particulate principle, combined with roadblocks to stop me from complaining. Even the title is deliberately misleading. The idea of language as an instinct isn't so original. The idea of "the engineering trick behind human language" is. The book couldn't and wouldn't have been written without my 1989 paper. Pinker simply isn't smart enough. All the cute examples and the fun stories and the complaints about language mavens and the long book are just camouflage. Did mean-old Theodore Bernstein (*TLI* page 381) really advise you to say "broadcast" instead of "broadcasted"? His book is entertaining, his advice is good –and if you don't take it he won't deny you employment in the way that Pinker will (*TLI* page 229).

In Pinker's pages, and those of his readers, I have been treated to the twisted pleasure of being tutored in my own ideas, my own words, my own examples, my own sentences –with somebody else's name on them on them– Pinker's. And I have been treated to the twisted pleasure of seeing my theory in physics, mutilated and degraded, used to explain a false theory in biology and freeze me out of the scientific conversation. *TLI* has wasted a quarter-century of the world's time in pursuit of a theory that was already dead for more than a year when Pinker and Bloom published Natural Language and Natural Selection in 1990. The parallel constructions in the title are more association learning than a theory in science. Pinker has made millions off of me. To spend four years, 1990 to 1994, plotting and planning the theft of an idea, and the annihilation of its author, is evil, just plain evil, there is no other word for it. Yes, I know – Pinker *did other things* during that time. Naturally, he did. Sure, he did. But every minute, his mind was working away at the real problem of the moment: *How do I deep-six this guy and make it look like science. My science. Pinker's science.* And he did not neglect to find a way to make me look like a fool if I spoke up. At first, he may have seen the wickedness of his deception. But after a few days, it was just an exercise in ingenuity. It is a measure of the importance of the particulate principle. He had to have it.

Maybe I got it wrong. Maybe I over-interpreted all those quotes giving Pinker credit for my science. For years, the British journal *Nature*, the most prestigious scientific publication in the world, printed some laudatory mention of Pinker almost every month. Pinker was their golden god. And in their September 18, 2014 issue (volume 513, pages 309-310), *Nature* published a review by Paul Raeburn, who was at that time a Knight Science Journalist at MIT, where Pinker wrote *The Language Instinct*. In his review titled "The Write Stuff", Raeburn reports, "Pinker gave us the science in *The Language Instinct*". I didn't get it wrong. Pinker's theft of the particulate principle was a total, absolute and complete success, still completely current two decades after the publication of *TLI*. The golden god is made of straw. Or worse. Pinker might say that a reference is a reference is a reference, or a mention in a bibliography is a legitimate reference, or that an attenuated chain of connections is a legitimate

reference. Without a mention in the text, Pinker's mention in the *TLI* bibliography stands only as proof that Pinker read my article. The rest are meticulously planned and carefully planted red herrings in separating the author from the idea –that would have stood as evidence in plausible deniability if I had brought *TLI* to the attention of MIT and Morrow in 1994.

I tried to tell *Nature* several times, and again in 2019, in a letter to the editor that I sent to *Nature's* Correspondence column:

RE:
Ewen Callaway
Scooped in science? Relax, credit will come your way.
Nature 575: 576-577 (2019)
doi: 10.1038/d41586-019-03648-4

Scooped? Plagiarize!
While Ewen Callaway (*Nature* **575**, 576-577; 2019) reassures us that even scientists who have been scooped may yet receive credit, some authors prefer not to take chances. The concept of discreteness, embodied in the "discrete combinatorial system" (Steven Pinker *The Language Instinct*, *TLI*, Morrow) revitalized the scientific study of language in 1994. Pinker backs up discreteness with serious reasoning:

"In a blending system the properties of the combination lie *between* the properties of its elements" *TLI*:85.

" ... *blending systems*, like geology, paint mixing, cooking, sound, light, and weather" *TLI*:85.

"A finite number of discrete elements ... are ... combined ... to create larger structures ... with properties that are quite distinct from those of their elements." *TLI*: 84.

"infinity is achieved ... not by varying some signal along a continuum like the mercury in a thermometer." *TLI*: 334.

Where did Pinker get these ideas? Not from Pinker & Bloom (P&B *Behav Brain Sci* 1990, **13**:707-794), the starting-gun for the gold-rush in evolutionary linguistics. P&B includes all the ingredients for a solution: language, the gene and Ronald A. Fisher's 1930 proof that the gene must be particulate, discreteness, and the concept of a solution in engineering. There is no hint of a theory in discreteness, but all of Pinker's critical 1994 quotes and examples are taken directly from my 1989 paper On the particulate principle of self-diversifying systems (*J. Social Biol. Struct.* **12**:1-13), mostly on pages 1 and 2. With no mention in Pinker's text, and a marathon-obstacle-course in

his end-notes, Pinker's bibliography entry for my paper is an escape-hatch for him, not a reference for me –and college homework assignments posted on the internet, even to the comparison of infinity in language to infinity in a thermometer on *TLI* page 334, are a beacon to my 1989 paper, all credited to Pinker.

An opportunity missed doesn't have to be an opportunity lost, not if you know how to handle it.

William L. Abler

Nature's usual rejection letter looks like this, and I would have accepted it.

Dear Dr. William L. Abler,

Thank you for your Correspondence submission which we regret we cannot offer to publish. The competition for our limited space is severe, so we are able to publish only a very few of the many submissions we receive.

Letters selected for publication depend on a wide range of subjective editorial factors. These include: likely interest to an informal multidisciplinary readership; timeliness; the variety of fields recently represented in our columns; whether we have covered similar aspects of a particular topic before; the novelty of the viewpoint expressed; overlap with other submissions; and length of the submission (see our author guidelines at http://go.nature.com/cMCHno for details). Priority is given to brief insightful comments that advance or clarify discussion of our own most recently published magazine material.

I hope this explanation is helpful should you choose to write to us again. We are sorry to convey a negative response in this instance.

Yours sincerely,

Rosalind Cotter
Correspondence Editor, *Nature*

But the rejection I got looked like this:

Dear Dr. William L. Abler,

Thank you for your submission to Correspondence, which I regret we cannot offer to publish. We do not consider technical material or research findings in this section of the journal, which is not peer-reviewed and is intended primarily for responses to our

Editorials and articles featured in the News and Opinion sections (for details, please see our author guidelines at http://go.nature.com/cMCHno).

Thank you again, however, for writing to us.

Yours sincerely,

Rosalind Cotter
Correspondence Editor, Nature

Callaway's *News* item is exactly the kind of material for which *Nature* explicitly invites Correspondence, so why falsely shift the burden of responsibility from *Nature* for rejecting, to me for the wrong kind of submission? Was the Correspondence Editor saying that I got it right –or was it just a misunderstanding? A misunderstanding, no doubt.

Trust Me

Does Pinker understand what he has done? Sure. P.S.™ is a trademark of HarperCollins Publishers for post-scripts to their publications, and in the P.S.™ to the 2007 paperback reprint of *TLI*, where the back cover designates Pinker as "the world's expert on language and mind", Pinker's first words are, "*The Language Instinct* is dedicated to my parents, "who gave me language"; the ambiguity between nature and nurture was, of course, intentional." Of course? What ambiguity? What nature-nurture? The dedication thanks them for giving him language, not for being symbols of the eternal tension between nature and nurture. Imagine it:

for
my parents
those eternal symbols of the tension between nature and nurture

It is unimaginable. "Of course" –is only Pinker's way of saying *don't ask any questions*. Nobody, not even a psychologist, dedicates their book to their parents because of nature-nurture. It is almost a tradition for authors of books on language to cleverly dedicate their books to their parents for giving them language, but books are dedicated out of gratitude, even love. And nobody has to explain, thirteen years later, what their dedication meant. Pinker had plenty of time, and plenty of reason, to consider and reconsider his dedication. He knew that, someday, I would come calling, and he needed to have his excuses ready. He had dedicated his crimes to his parents, maybe in a moment of forgetful exuberance, maybe when someone suggested it and he couldn't think of a graceful way out –but the effect was to increase the reader's affection for the great scientist who, at the very moment of his apotheosis, stoops to remember his beloved parents by their humble hearthside at home. The dear lad. Most loathsome of all, Pinker has used his parents as human shields. And if he would use them, gentle

reader, he would use you. Pinker has no heart and no conscience. His brutality is untested. He doesn't give a damn about language, or science, or truth, or decency, or you. His mind is an engine for the maximization of opportunity. A kind of Bernie Madoff of science. His P.S.™ is his confession. In the name of fame and fortune, Steven Pinker has deliberately misrepresented the nature of language, decreased the fund of knowledge in science, and held back science for a quarter century. And with his ideas, and his disciples, firmly established in the scientific community, it would take an earthquake to dislodge them.

Once Pinker had released, into the wild, a concept of discreteness apart from universal law, everyone was able to take discreteness for granted and develop the logic of discrete systems without first principles. The result is conventional grammar and logic, and the further development of old ideas. By allowing us to develop old logic instead of first principles, Pinker has ruined, maybe forever, what has to be the first law of nature, the particulate principle. So, we continue to analyze which statements are true and which are false, without questioning the concept of statement, or of true and false. We continue to study phonetics without asking why the speech-sounds are structured in an orderly way. *TLI* is an all-out assault on science.

The Pinker Award

The theory of discreteness revitalized the scientific study of language in a way that nothing else could have done. This could not have happened if the theory of discreteness, and the importance of discreteness, had been understood since forever. *The Language Instinct* revolution was possible only because understanding of discreteness was new. In 1997, Steven Pinker accepted the "Linguistics, Language and the Public Award" from the Linguistic Society of America, the LSA –"first presented in 1997", according to the LSA website. The LSA's accolade reads, "*The Language Instinct* 'weaves our vast knowledge of language into a compelling theory: that language is a human instinct, wired into our brains by evolution like web spinning in spiders or sonar in bats … fundamental to understanding our very humanity'". Did the LSA initiate the Award just for Pinker? Maybe. I'll never know. Either way, the Award was for "Linguistics, Language, and the Public", not for "fundamental to understanding our very humanity", so, strictly speaking, Pinker's conscience remains clear.

But *The Language Instinct* was balanced on the back of my 1989 paper, and could not have been written without it. The rest is camouflage. Nobody writes interesting books without something interesting to write about. It was the initial recognition that there is a critical property that makes language possible in the first place, discreteness, that made its popularization possible. By folding discreteness into the catchy phrase "discrete combinatorial system", and by separating the phrase "engineering trick" from the proof by 22 pages, Pinker hid the theory of discreteness from notice, fully realizing that the public would accept an explanation in place of a theory. Without identifying discreteness, and the proof of its importance, *TLI* is unimaginable. Galileo reminds us that discovery is the hard part. Pinker & Bloom 1990 was a failure of vision, but, with the solution in physics in front of him in the form of my 1989 paper, Pinker 1994 was a failure of courage. He had the revolution in hand, and

threw it away in favor of something he thought would make him popular. It worked. I thank the LSA for their kind opinion of my science.

The LSA accolade isn't one reviewer's opinion. It is the Linguistic Society of America speaking –speaking to my science. If you thought Pinker is smart, then take a look at what evolutionary linguistics has given you. Language is a spandrel, language is a kluge, language is an instinct, language evolved in natural selection, language is a discrete combinatorial system. Easy answers that go nowhere and beg the question, what is language, what is a sentence, what is an equation, what is the relationship of language to mathematics, why is mathematics a mirror of physics, why is there a phoneme chart, why is language mostly on one side of the brain, what is assertion, where do we get our sense of truth-and-falsity, what are we distinguishing when we separate true from false? what is the relationship between language and mind, what is their relationship to the physics and geometry of the natural world, where do we get our ability for technology, what is the fundamental mechanism of the brain? These questions can be answered, if you start from the right beginning, and natural selection has nothing to do with it.

The Risks of Thinking for Yourself

I understood the risks, some of them. I knew that spending years focussing on something with no clear goal and no guarantee of success would yield few publications, the rungs on the ladder to success. I knew that an unconventional result would be hard to publish, and might not meet with immediate acceptance. I knew that some well-established scientist should be the one to undertake such a risky project, because failure of the project would not spell failure of their career. But I knew that no such scientist would do such a thing. Well-established scientists are addicted to their success. So I decided to follow the evidence and live with the consequences. But I was not prepared for the vicious, dishonest attacks, or the fantastic success of my theory in degraded, truncated, plagiarized form in someone else's hands. Where I didn't make mistakes, reviewers dreamed up mistakes for me to have made. Taken together, these publications and near-publications represent a revelation in the human capacity for creative self-confirmation, and the power of the particulate principle.

Plagiarism, an Appreciation

Plagiarists don't steal just any old thing. They are discriminating connoisseurs who steal something that is worth the (minimal) risk. Something that cries out, "Look at me! I am the kind of person who does wonderful things! The kind of person you want for a colleague and friend. The kind of person you want to know." With plagiarism, the punishment doesn't fit the crime, the punishment fits the victim.

Plagiarism is forever. It is permanent literature as much as Thucydides. The adoration –tenure, a rich salary, invitations to speak all over the world, friendships, social acceptability, a nice house, the legacy of a place in the world, a trust-fund for the plagiarist's children– a life and a lifetime stolen from the real discoverer. Plagiarism is the absolute highest recommendation that one author can bestow upon another, a concession that the original author is the better philosopher. Plagiarists look forward to

a time, after their own death, when their place in history is assured. Plagiarism is forever.

Any time-limit, placed on investigating cases of alleged plagiarism, does no justice to the scope of the plagiarist's ambition, to the reach of plagiarism into the future, or to the nature of evidence in the crime of plagiarism. The idea that plagiarized material is still active only as long as a book is still in print, or as long as the journal is checked out of the library, is an insult to the plagiarist's discriminating taste in selecting the right material to steal, or to the value of the original material. Plagiarism is unlike any other crime, and has never been fully appreciated. The evidence for other crimes consists of eyewitness reports or material objects in some form –a gun, a knife, a rope. Witnesses die or move away. Memory fades. Material objects are lost. DNA deteriorates. Plagiarism is the silent crime. The wise plagiarist knows that the more people who are in on a secret, the harder it is to keep secret. With plagiarism, there are no witnesses to die or move away. No memories to fade. Plagiarism is in writing. *It is the only crime for which, by its nature, evidence accumulates, rather than deteriorating*. By the nature of the crime, the written word, evidence of plagiarism accumulates over time. It accumulates in the form of citations quoting the stolen material in the plagiarist's name, while the real author is forgotten or vilified. It accumulates in the plagiarist's later publications. The engine of accumulation is time. In the first moments after publication, plausible deniability may provide enough excuses to protect the plagiarist until it is too late. The imposition of a time-limit on plagiarism is an institution's direct attack on truth and sciences and arts and letters, and an announcement to the world that it intends to protect the public image of itself and its dishonest faculty at the expense of decency and truth and the work of original authors. A time-limit on plagiarism is a crime as bad as plagiarism itself. It disqualifies any institution from accreditation or participation in the world's conversation.