

Cusa's Method of Creative Interruption

by William F. Wertz, Jr.

July 26—In a July 20 discussion, Lyndon LaRouche emphasized that society functions on the basis of abrupt interruptions which may change the entire direction of the action which had been going on before. In fact, voluntary human interruptions are the essential characteristic of a sane society. Mankind's natural tendency is a creative one, not a deductive one. The function of mankind is to make creative discoveries which define the future of mankind.

And that's what our problem is today: We've got to get rid of the mathematicians, the idea that you can use mathematics, which is only a deductive method; the deductive method will never give you a discovery as such. Mathematics is for lunatics. What kills us is the fact that people still believe in mathematics. Mathematics gives you a predetermined order. A true physical principle is never mathematical. The process of creating it is never mathematical.

Pragmatism is virtually enshrined as the national character of Americans. The repeated statements designed for every occasion: "Let's be practical," "You have to go along to get along," the belief that you can't beat City Hall, that "they" will never let you do it, or never let it happen, are all reflections of the same empiricist-deductive mathematical mentality, which, unless rejected, ensures the doom of humanity.

The American poet and storyteller Edgar Allen Poe understood

this well. In his short story "Mellonta Tauta," he exposed the fact that the oligarchy controls human beings to their own self-destruction, by convincing them that there are only "two possible roads for the attainment of Truth." He writes that long ago there lived a Turkish philosopher (or Hindoo) possibly called Aries Tottle. "This person introduced, or at all events propagated what was termed the deductive or a priori mode of investigation. He started with what he maintained to be axioms of 'self-evident truths,' and thence proceeded 'logically' to results. His greatest disciples were one Neuclyd, and one Cant. Aries Tottle flourished supreme until the advent of

one Hog . . . who preached an entirely different system, which he called the a posteriori or inductive. . . . The savants now maintained that the Aristotelian and Baconian roads were the sole possible avenues to knowledge."

Poe described these two methods as "creeping" and "crawling," which he contrasted to the true nature of man, which is that the human soul loves nothing so well as to "soar." He then points to the method of Kepler as coherent with the true nature of man. He asks, do you think man could have attained to the idea of gravitation with these two methods? And how did Kepler discover this truth? Kepler admitted that his three laws were guessed at—that is to say, imagined.

The method of Kepler, as described by Poe, was introduced



"For just as God is the Creator of real entities and of natural forms, man is the creator of rational entities and artificial forms."—Nicolaus of Cusa. He's shown here on an early German book cover.

to Kepler by Nicolaus of Cusa (or Cusanus), who used the method of “conjecture” or “hypothesis” developed by Plato to bring about a revolution in human history in the 1400s, a revolution which saved mankind from the otherwise certain doom of the Medieval Dark Ages in Europe under the Venetian system, which was an earlier version of the current British imperial system.

And it is only that method now, which can free mankind from the “practical” mental shackles of the Aristotelian and Baconian methods, which reduce him to a creeping or crawling animal preyed upon by the British Empire today.

The Promethean Method

The method of Cusanus, the method employed by Lyndon LaRouche, is also accurately referred to as the Promethean method.

In Plato’s dialogue *Philebus*, Socrates says:

There is a gift of the gods—so at least it seems evident to me—which they let fall from their abode, and it was through Prometheus, or one like him, that it reached mankind, together with a fire exceeding bright. The men of old, who were better than ourselves and dwelt nearer the gods, passed on this gift in the form of a saying. All things, so it ran, that are ever said to be, consist of a one and a many, and have in their nature a conjunction of limit and unlimitedness.

In the dialogue Plato first develops the conception of this conjunction of “the limit” and “unlimitedness,” as a fixed limit which is imposed on unlimitedness. Such an Aristotelian conception only permits induction from the unlimited, and deduction from the fixed limit.

But what Socrates points out in the dialogue, is that another conjunction exists, besides the imposition of a limit on the family of the unlimited. That conjunction is an unlimited family of higher-order limits.

Plato then stresses that all things that come to be, should come to be because of some cause. Thus, he continues:

The first, then, I call the unlimited, the second the limit, and the third, the being that has come to be by the mixture of these two; as for the fourth, I hope I shall not be at fault in calling it the cause of the mixture and of the coming-to-be.

Finally Plato stresses that there exists in the universe a “presiding cause of no mean power, which orders and regulates the years, the seasons and the months, and has every claim to the names of wisdom and reason, and that the human mind belongs to the family of this cause of all things.”

In this dialogue, Plato thus develops that man, as Cusanus will later argue, is in the living image of the Creator, i.e. the human mind belongs to the family of the cause of all things, and that the nature of man’s role in the universe is to bring into existence higher forms of existence, through the creation of an unlimited family of higher-order limits. Man is thus not defined by the imposition of a fixed limit on the unlimited, as defined by that fixed limit. In fact, such a notion is contrary to the very nature of man as a creator in the living image of the Creator.

The fact of the matter is that all progress in the physical universe and in human society, only occurs through the creative interruption of a fixed inductive/deductive system. It is for this reason that Lyndon LaRouche says that if you are practical, you are stupid, and responsible for your own destruction. The only thing worthy of the attention of a human being, is to concentrate on discovering and acting on those principles which make man the cause of the coming into being of a higher-order geometry, coherent with man’s actual mission as the only creative immortal species.

The Circle Cannot Be Squared

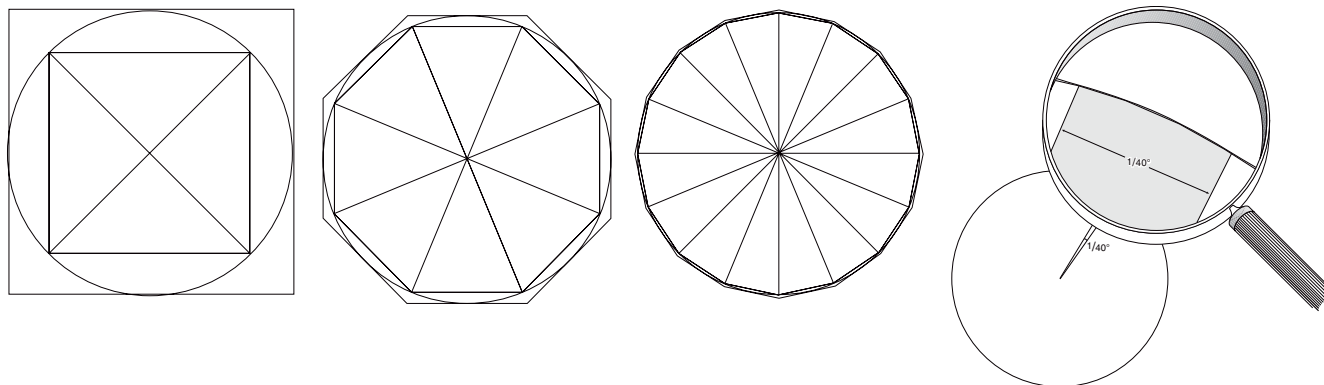
The best way to access the contribution of Nicolaus of Cusa to this discussion, is by turning our attention to his refutation of the Aristotelian/Euclidean method of Archimedes, who argued that the circle can be squared.

In his “On the Quadrature of the Circle,” (1450) (**Figure 1**) Nicolaus of Cusa proves that if one inscribes a polygon in a circle or circumscribes a circle with a polygon, the more sides one adds to the polygon, thus apparently approaching the circle, the more distant the polygon is from equality with the circle, by virtue of the unlimited multiplication of sides. The reason why the polygon can never become equal to the circle, is because, as Cusanus writes, “polygonal figures are not magnitudes of the same species as the circular figure.”

In respect to things which admit of a larger and smaller, one does not come to an absolute maximum in existence and potentiality. Namely, in comparison to the polygons, which admit of a

FIGURE 1

Quadrature of the Circle



Nicholas of Cusa showed that Archimedes' attempt at "quadrature of the circle"—to approximate the value of π —was ontologically incompetent. The first three drawings show the process of estimating the area of a square approximately equal to that of a given circle, as the average area of two regular polygons. In the last drawing, although the inscribed polygon of 216 may seem to closely approximate a circle in area, it actually contains a devastating paradox. There are slightly more than 182 angles of the inscribed polygon within each degree of circular arc.

larger and smaller, and thereby do not attain to the circle's area, the area of a circle is the absolute maximum, just as numerals do not attain the power of comprehension of unity, and multiplicities do not attain the power of the simple.

Cusanus goes on to say that some consider a square equal to the circle, if it is not larger or smaller than the circle by the smallest specifiable fraction of the square or the circle:

If one apprehends the concept of equality in this way, then it is justly said that one can give an equal circumference to a given polygonal perimeter. However, if one apprehends the concept of equality, insofar as it relates to a magnitude, absolutely, without regard to rational fractions, then it is true that no precisely equal non-circular magnitude can be given for a circular magnitude.

In his most revolutionary work, *On Learned Ignorance* (Book I, Chapter 3), Cusanus also writes:

For truth is not something more or something less, but is something indivisible. Whatever is not truth, cannot measure truth precisely. (By comparison, a non-circle [cannot measure] a circle, whose being is something indivisible.) Hence, the intellect, which is not truth, never

comprehends truth so precisely that truth cannot be comprehended infinitely more precisely. For the intellect is to truth as [an inscribed] polygon is to [the inscribing] circle. The more angles the inscribed polygon has, the more similar it is to the circle. However, even if the number of angles is increased ad infinitum, the polygon never becomes equal [to the circle]. . . .

In another location in *On Learned Ignorance* Book III, Chapter 1, Cusanus writes:

A square inscribed in a circle passes—with respect to its size—from being a square which is smaller than the circle to being larger than the circle, without ever arriving at its equal. And an angle of incidence increases from being lesser than a right [angle] to being greater [than a right angle] without the medium of equality.

This transition he describes as a "certain singularity."

As Lyndon LaRouche has pointed out, the Greeks had discovered incommensurability. They knew, for instance, that the diagonal of a square is incommensurate with the side. Archimedes believed that π was similarly an irrational magnitude. But what Cusanus established, is that whereas the relationship of the diagonal to the side of the square is irrational, the relationship of the

circle to the square is transcendental.

As LaRouche wrote in Appendix A to the “Truth About Temporal Eternity” (*Fidelio*, Vol. III, No. 2, of 1994):

Cusanus recognized that circular action:

- (a) could not be defined ontologically within the implicitly axiomatic formalities of Greek mathematics, since the circular perimeter, the locus of that action, was an absolute mathematical discontinuity between the two transfinite series, inscribed and circumscribed, of polygonal processes.
- (b) Moreover, since those polygonal processes themselves were externally bounded by circular constructions, the axiomatic formalities implicitly underlying Archimedes’ constructions could not access efficiently the ontological domain of circular action, but circular action could determine, and thus access efficiently the processes of the polygonal constructions’ domain.
- (c) Therefore we must discard the implied set of axioms of Archimedes’ use of the Euclidean domain, and replace those with the axiomatic quality (Platonic hypothesis of universal circular action [later, universal least action]).

Now the practical man or woman will ask: “What does this theoretical stuff have to do with me?” If you don’t master its implications and act on the basis of it, it means that you are dead as a result of your own stupidity.

Take the example of the recent Encyclical released by the Vatican on Global Warming. Acceptance of this document will lead to your death as ineluctably as Jerry Brown’s water-denial policy in California. Both are extensions of the genocidal policy of the Nazi-loving British royal family, which intends to reduce the world’s population from seven billion to one billion by whatever means necessary, including thermonuclear war. If you accept the British Empire and its anti-scientific “Limits to Growth” genocidal policy, your death and that of six billion other human beings is deductively certain.

Riemann’s Shock-Wave

The anti-deductive Promethean method developed by Cusanus was further developed by two German sci-

entists, Georg Cantor and Bernhard Riemann.

In his *Foundations of a General Theory of Manifolds* (1883) Cantor developed the conception of the transfinite. In doing so, he makes explicit reference to Plato’s *Philebus* dialogue and to the work of Nicolaus of Cusa.

In one footnote to this work, Cantor says that he believes that his notion of the transfinite is related to that of the Platonic idea, as well as to that which Plato, in his *Philebus* dialogue, calls the mixture of the unlimited and the limit.

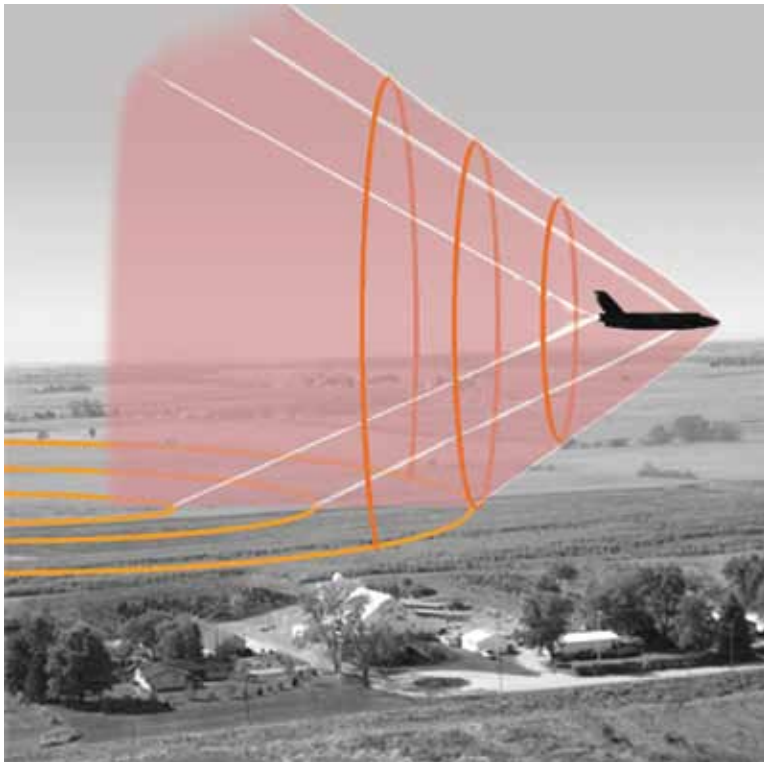
In a second footnote, he writes that “Plato’s conception of the infinite is an entirely different one than that of Aristotle,” and that “similarly, I find points of contact for my conceptions in the philosophy of Nicolaus Cusanus.”

In *On Learned Ignorance* Book II, Cusanus indeed makes the point that since the Infinite Form is received only finitely, “every created thing is, as it were a finite infinity.” And in Book III, Cusanus suggests that “species are like a number series which progresses sequentially.”

In his habilitation dissertation, “On the Hypotheses which Lie at the Foundation of Geometry,” Riemann develops the idea of a multiply extended manifold, i.e. an “endless series” of higher order manifolds. Riemann writes:

If in the case of a notion whose specializations form a continuous manifold, one passes from a certain specialization in a definite way to another, the specializations passed over form a simply extended manifold, whose true character is that in it a continuous progress from a point is possible only in two directions, forwards or backwards. If one now supposes that his manifold in its turn passes over into another entirely different, and again in a definite way, namely so that each point passes over into a definite point of the other, then all the specializations so obtained form a doubly extended manifold. In a similar manner one obtains a triply extended manifold, if one imagines a doubly extended one passing over in a definite way to another entirely different; and it is easy to see how this construction may be continued.

Having thus rejected the Euclidean notion of geometry, Riemann concludes his habilitation paper by



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A jet plane crosses the “sound barrier,” creating a shock wave popularly called a “sonic boom.”

pointing out that one can only progress in mastering the laws of the physical universe by abandoning the false linear assumptions of mathematics. This conclusion, he says, “leads us into the domain of another science, that of physics, into which the object of today’s proceedings does not allow us to enter.”

In a later work “On the Propagation of Plane Waves of Finite Amplitude,” Riemann, however, does precisely that,—he enters the domain of physics. In this paper, Riemann describes the generation of a hydrodynamic shock wave, in which a phase change is effected from an n -fold domain to an $n+1$ -fold domain, which is entirely different. What Riemann describes in this paper, is perhaps best illustrated by the phenomenon, unknown during his lifetime, of an airplane exceeding the speed of sound. The speed of sound is a physical limit, which when it is exceeded generates a sonic boom. The creation of a sonic boom is a creative interruption of the subsonic linear geometry, and as such is a demonstration of principle.

In the 1500s, numerous Aristotelians, including Galileo Galilei, argued that Cusanus was wrong, and Archimedes was right. They insisted that the circle is a

straight line in the infinitely small. Similarly in the 1890s, Lord Rayleigh, Bertrand Russell, and others insisted that Riemann’s physics was absurd. Rayleigh, in particular, insisted that “sonic booms” could not exist.

Riemann refers to the hypotheses which underlie scientific progress as “Geistesmassen,” or as Lyndon LaRouche terms them, “thought objects.” Nicolaus of Cusa expresses this same idea in two of his writings. He refers to conjectures or hypotheses as “rational entities.”

In *On Beryllus*, Cusanus writes:

For just as God is the Creator of real entities and of natural forms, man is the creator of rational entities and artificial forms. These are nothing other than similitudes of his intellect, just as the creatures of God are similitudes of the divine Intellect. Therefore man has intellect, which is a similitude of the divine Intellect, in creating. Therefore, he creates similitudes of the similitudes of the divine Intellect, so the extrinsic artificial figures are similitudes of intrinsic natural forms. Hence he measures his intellect through the power of his works and from this measures the divine Intellect, as the truth is measured through its image.

In *On Conjectures*, Cusanus makes a similar statement:

Conjectures must go forth from our minds as the real world does from the infinite divine Reason. For, since the human mind, the lofty similitude of God, participates, as far as possible in the fecundity of the creatrix nature, it exerts the rational from itself, as the image of omnipotent form, in the similitude of real entities.

In *On Conjectures*, Cusanus writes:

Man is indeed god, but not absolutely, since he is man; he is therefore a human god. Man is also the world, but not everything contractedly, since he is man. Man is therefore a microcosm or a human world. The region of humanity therefore

embraces God and the whole world in its human potential.

Breaking Satanic Shackles

If you contrast this conception of man with that expressed in the recent encyclical of Pope Francis on the environment, *Laudato Si'*, it should be obvious to you that the current Pope has adopted, and is actively campaigning for, a conception which is actually Satanic, in that it denies man's true role, in the living image of the Creator, to do as Prometheus did. That is, to free mankind from the shackles imposed upon him by the Zeusian imperial system, today represented by the British Empire,—by mastering the laws of the universe, and by creating new forms of social organization.

The basis for achieving both of these objectives can be found in the “rational entities” generated by Nicolaus of Cusa in the 1400s.

First, it is man's destiny to be an instrument of the Creator exerting dominion not only over the earth, but over the universe, beginning with our galaxy.

In *On Learned Ignorance*, Book II, Cusanus devastated the Aristotelian conception which had been imposed on mankind since the time of Ptolemy,—the insistence that the earth is the immobile, fixed center of the universe around which the heavenly bodies orbit in circular orbits. Cusanus argued that in the created world, there can be no absolute maximum or minimum. Therefore “it is not possible for the world-machine to have, as a fixed and immovable center, either our perceptible earth or air or fire or any other thing.”

On the same basis he argues that “the world does not have a fixed circumference.” Therefore, he concludes, “just as the earth is not the center of the world, so the sphere of fixed stars is not its circumference.” He continues: “It is evident that the earth is moved.” Moreover, “neither the sun nor the moon nor the earth nor any sphere can by its motion describe a true circle, since none of these are moved about a fixed point.” Cusanus



“Prometheus carrying fire” by Jan Cossiers, 1600-1671.

also concluded on the same basis that the universe is not characterized by linearity as argued by Euclid, but rather by curvature.

It was on the basis of this series of “thought objects,” that Kepler was prompted to make his great discoveries concerning the solar system, beginning with his *Mysterium Cosmographicum*, in which he pays explicit tribute to Cusanus:

Now God decided that quantity should exist before all other things so that there should be a means of comparing a curved with a straight line. For in this one respect Nicolaus of Cusa and others seem to me divine, that they attached so much importance to the relationship between a straight and a curved line, and dared to liken a curve to God, a

straight line to his creatures; and those who tried to compare the creator to his creatures, God to man, and divine judgment to human judgments did not perform much more valuable a service than those who tried to compare a curve with a straight line, a circle with a square.

The next time someone tells you to “be practical,” and that you can't do anything to change things, think about how Nicolaus of Cusa's thought object in *On Learned Ignorance*, suddenly changed the entire direction of your existence as mediated by Kepler. And then think about the task of going beyond Kepler today, by mastering the laws of the Galaxy, so as to address among other things the question of how to solve the water crisis presently confronting California and other parts of the globe.

‘Fire Within the Mind’

The second objective facing mankind today, which Nicolaus of Cusa uniquely addressed in the early 1430s, is defining the type of social organization we must de-

velop on this planet to ensure that we fulfill our mission as human beings.

Nicolaus of Cusa addressed this question in 1433 in his work *De Concordantia Catholica*, which can be translated as “On Universal Concordance.”

In the same July 20 discussion cited above, Lyndon LaRouche stated:

We’re coming into a new era, for mankind. Everything is going to change. We’re not going to have nations in the old sense any more, if we survive. Mankind is going to be more unified, if this works. It’s going to be more unified than ever before. The separations of populations in a crucial way will disappear, gradually disappear.

Lyndon LaRouche had earlier expressed this idea in his *On the Science of Christian Economy* published in 1991. There he wrote:

What we must establish soon upon this planet, is not a utopia, but a *Concordantia Catholica*, a family of sovereign nation-state republics, each and all tolerating only one supranational authority, natural law, as the classical Christian humanists recognized it. Yet, it is not sufficient that each, as a sovereign republic, be subject passively to natural law. A right reading of that natural law reveals our obligation to co-sponsor certain regional and global cooperative ventures, in addition to our national affairs.

In *Concordantia Catholica*, Cusanus develops the notion expressed later in the U.S. Declaration of Independence, that government can only be established by election and by the consent of the governed. He states that the “common good only comes from the consent of all or of a majority. . . . All legitimate authority arises from elective concordance and free submission. There is in the people a divine seed by virtue of their common equal



Promethean man, as depicted by German Renaissance artist Albrecht Durer in his self-portrait, 1500.

birth and the equal natural rights of all men, so that all authority—which comes from God as does man himself—is recognized as divine when it arises from the common consent of the subjects.”

Nicolaus of Cusa also develops a higher conception capable of unifying humanity in the way discussed by Lyndon LaRouche, and now emerging among the BRICS nations.

The conception developed by Cusanus is that all human beings, and by implication all nations, must exist in “rational harmony with the Word,” or the Logos or creative intellect. Cusanus argues that every concordance is made up of differences, but if all adhere to reason, then there is no opposition internally. Thus, he writes: “There is

a concordance of differences among them. They enjoy together the good of one member, just as they suffer in common any evil, and they carry out their functions not only for themselves alone but rather for mutual benefit.”

From what has been stated above, it should be clear that the gift of Prometheus is not fundamentally an external gift of fire. Such a gift is the result of a more fundamental gift. The fire Prometheus gave man was rather the self-consciousness of the fire within the mind to create necessary thought-objects, and the will to change the direction of humanity positively through the realization of those hypotheses. As Nicolaus of Cusa writes in *On Searching for God*: “Our intellectual spirit has the power of fire in itself.”

When we exercise that power we are truly human. As Cusanus writes in Book III of *On Learned Ignorance*, when man has risen above sense perception and deductive thinking, to the level of creative intellect in harmony with the Logos, he has the power to command “even the evil spirits, and has power over nature and motion.”

Isn’t it time to give up our creep-crawly habits, and to truly soar like the human beings we were created to be?