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Semantography Series No. 277

L E I B N I T Z, A S C I E N C E H I S T O R I A N

A N D S E M A N T O G R A P H Y

In 1968 something happened which simply took my breath away. I felt that my life has reached a turning point, that from now on all my difficulties will be over. What happened? In order to understand the significance of that momentous happening, let me recall the situation before 1968, and even before 1949, when I published the first edition of my "Semantography."

When I worked on this book I felt that all philosophers, all logicians, all linguists, and even all mathematicians will look up and take notice that the 300 years old dream of the great Leibnitz has been realized at last, that his speculation on a simple "Symbolis Universalis" has come true through my work. Consequently, it was with great hopes that I sent out promotion papers to public and university libraries.

But nothing happened. Ah well, I said, promotion papers are one thing, but real promotion is quite another thing. And then that "real promotion" came about. Prof. Oliver L. Reiser of the University of Pittsbrugh gave a lecture in 1951 to the American Association for the Advancement of Science titled

"Unified Symbolism for World Understanding in Science"(See S.S.52 and 150)

He agreed to include in his lecture an exposition of my work, and I supplied to him a printed leaflet showing some of my symbols for distribution among the scholars who will attend his lecture. I was delirious with joy when Prof. Reiser, who had studied my 3 volumes on Semantography before, told the assembled scholars

"Bliss realized the ambition of the great mathematician Leibnitz."

Now, I said to myself, this will make them look up and take notice. After all, it is not every day that a scientific problem,which was considered impossible to realize for the last 300 years, has been realized at last. But nothing happened.

Again, I and Claire didn't lose our courage and our hope. In 1954 I published Reiser's lecture in the Semantography Series No. 150, and distributed it. Reiser himself distributed the brochure to his friends. But again nothing happened.

Reiser must have felt my desperation. One day I received from him the addresses of all members of the American Philosophical Association, all professors and lecturers at American universities, all in all about 1250 members. Immediately I composed a circular letter, promising all a copy of Reiser's lecture, and also offering them free publication of their criticism or otherwise of Reiser's contention that I have solved Leibnitz' problem. Of 1250 scholars addressed, only two responded and they were old and retired men. But they themselves did not bother to offer any criticism or otherwise. I was dumbfounded.

To make sure that I should not be too hasty in my condemnation or otherwise of American philosophers, I addressed a letter to all professors of philosophy as well as all readers and lecturers of Australian universities, offering them also free for reading Reiser's lecture. But not one responded. I then offered the brochure to every professor of every faculty of every university in Australia. Hooray, 4 responded, a professor of obstetrics, a professor of veterinary science, a professor of psychology, and a professor of semitic studies. But not one professor of philosophy, logic, linguistics or mathematics. (See S.S. 177 and 193).

But now 1968 came around, and I felt everything will be changed from now on. What happened was an article in Scientific American which appeared in the issue of May 1968, the story of Leibnitz written by a professor of the history of science Prof. Frederick C. Kreiling. I was overjoyed when I read it. Prof. Kreiling has especially stressed Leibnitz' ideas on an international language and a universal symbolism. As this paper is being duplicated in a few copies only for university libraries, and as these libraries are all subscribers to the most prestigious scientific American journal the "Scientific American" there is no harm done to the copyright when I re-type the article in order to show to the reader that my semantography fills exactly the speculation and prophecy of Leibnitz. I have underlined the significant words and passages. Kreiling uses the German spelling Leibniz, but this is mispronounced in English and French, and hence the name of Leibniz is always spelt Leibnitz in English and French to correspond to the proper pronounciation in German. The article follows on the next page. All underlinings in the following article are mine as I want to indicate those statements which directly refer to my subsequent work.

L E I B N I Z

The theme of his career was the search for a universal language and algebra of reasoning. He perfected the calculus by establishing its fundamental notation, and he pointed the way toward symbolic logic

by Frederick C. Kreiling

"...there would be no more need of dispute between two philosophers than between two accountants. It would suffice for them to take their pencils in their hands, sit down to their slates, and say to each other...: "Let's calculate."

GOTTFRIED WILHELM LEIBNIZ

Such was Leibniz' dream: to develop a generalized symbolic language, and an algebra to go with it, so that the truth of any proposition in any field of human inquiry could be determined by simple calculation. His quest was unsuccessful, but he did invent the calculus, a mathematical way of dealing with change and motion, and he did devise and promote much of modern mathematical notation. Perhaps even more important, his vision pointed the way toward modern symbolic logic, as such 20th century mathematicians and logicians as Bertrand Russell, Kurt Goedel and Alfred Tarski have recognized. Indeed, Norbert Wiener suggested that Leibniz might be considered the patron saint of communication theory and control theory, twin mathematical foundations of much contemporary technology, because his thought centered on "two closely related concepts, that of a universal symbolism and that of a calculus of reasoning. From these are descended the mathematical notation and the symbolic logic of the present day."

The same passion for universality that prompted Leibniz' search for a mathematical lingua generalis informed his entired varied career. He functioned at one time or another, and often simultaneously, as political theorist, diplomat, engineer, inventor of gadgets and house historian for German princely families. He aimed at binding into a consistent whole all the tangled threads of 17th-century thought, and in his philosophy he did manage to link mathematics, physics, metaphysics, psychology and theology. In the last analysis, however, his effort at synthesis failed. His life is interesting more for his extraordinary versatility and his sharp perceptions, many of them foreshadowing modern developments, than for a unified and systematic body of thought.

Gottfried Wilhelm Leibniz was born in Leipzig in 1646, the son of a professor of moral philosophy at the university. At eight he taught himself Latin; soon he was reading Greek and at 14 he was immersed in Aristotle. He immediately found questioning the master's formal system. The 10 Aristotelian "categories" - substance, quantity, quality, relation, place, time, position, possession, action, affection-had been held for centuries to be necessary elements of all thought, scientific or otherwise; for the scientific revolution of the 17th century to advance, their hold on the imagination of learned people had to be loosened. Ecountering them as a boy, Leibniz wondered whether perhaps the Aristotelian categories had subsets, whether they could fit into larger categories, whether a "regular passage" might not be found among them. (Eventually just such questions were to be dealt with in the 19th century by George Boole and John Venn.)

Leibniz' philosophy of mathematics turned out to be much like Aristotle's in that its metaphysical and logical theories were closely related. Aristotle had held that in logic every proposition could be reduced to a subject-predicate form; this directly paralleled his metaphysical doctrine that the world is made up of "substances" with "attributes". Leibniz held that the predicate of every proposition is"contained in" the subject, and this paralleled his metaphysical doctrine that the world consists of self-contained points, the "monads", that operate in preestablished harmony. The metaphysics, in turn, was inextricably bound up with mathematics. "There are", he wrote in the Monadology, the final summary of his philosophy, "two kinds of truth, those of reasoning and those of fact. Truths of reasoning are necessary and their opposite is impossible; truths of fact are contingent (on definition or on perception, for example) and their opposite is possible." Truths of reasoning, for Leibniz, included all mathematical axioms, postulates, definitions and theorems, since their opposites involve contradiction.

Leibniz agreed in theory with Plato that diagrams, geometric figures and means of notation in general were mere aids to mathematical thinking, but he

he placed great emphasis on their importance in practice. He called them the "thread of Ariadne" that could guide the mind, and he was always looking for "methods of forming and arranging characters and signs, so that they represent thoughts, that is to say, that they are related to each other as the corresponding thoughts." Unlike most mathematicians of his day, he made an extended study of notation, in the course of which he corresponded with many of the leading mathematicians he knew: the Bernoullis in Switzerland, John Wallis in England, Christian Huygens in Paris. He was responsible for introducing more signs and symbols than any other mathematician with the exception of Leonhard Euler, and he promoted the use of still more. He recommended the use of parenthesis to set apart portions of algebraic expressions instead of the vinculum, a line above the terms which had long been in use. He proposed the dot to indicate multiplication (because the St. Andrew's cross was too readily confused with the letter X), the decimal point, the equal sign, the colon for division and ratio. He also introduced numerical superscripts as exponents for the letter terms in algebra instead of merely repeating the letter.

The notation of the calculus as we know it today is in large part due to Leibniz. For the process of intergration, which had been developing slowly ever since the time of Archimedes, he proposed the familiar symbol $\int$, an elongated s signifying "summation." Perhaps the best-known of his innovations is the d for the differential. Isaac Newton, who had invented the calculus independently, used dots and dashes above the letters to indicate what he called "fluxions" and "fluents" and they were difficult to read and to print. It is generally agreed that the development of the calculus in England was hindered until well into the 19th century because English mathematicians remained loyal to Newton's notation while their Continental colleagues moved ahead into new areas with Leibniz' more expressive system. Leibniz sought to make the form of a symbol reflect its content. "In signs," he wrote, "one sees an advantage for discovery that is greatest when they express the exact nature of a thing briefly and, as it were, picture it; then, indeed, the labor of thought is wonderfully diminished."

Leibniz had a touch of the mystic, and sometimes he saw mathematical notation as a reflection of a higher order of reality. Having devised a system of binary arithmetic, for example, he came to see its symbols as analogues of the ancient Chinese magic symbols called trigrams, the meaning of which he thereupon tried to fathom. His interest in Chinese culture had a more practical aspect, however. The fact that Chinese ideograms symbolize concepts rather than sounds, and can therefore represent the same things in different dialects, suggested to him that he might find in Chinese a means of constructing his universal symbolic language. He strove to advance cultural contact between Europe and China, with Russia serving as an intermediary. This was one of the objectives he proposed to Peter the Great in 1711; he discussed with the czar the formation of a scientific society in Russia.

If Peter were to send a mission to China, Leibniz suggested, a suitable diplomatic present might well be Leibniz' own calculating machine. Blaise Pascal had earlier constructed several devices for addition and subtraction; Leibniz extended Pascal's principles to accomplish multiplication and division by repeated addition or subtraction. The key elements in Leibniz' machine were the "stepped cylinders," in effect long gears with nine teeth, each a different length. Smaller gears were set above them, each representing a digit of the multiplicand and placed so as to be engaged by that number of the long gears' teeth. Each complete turn of the set of long gears therefore registered the multiplicand once; the multiplier was expressed by the number of times the long gears were turned. When the first commercial calculating machines were made in the early 19th century by Charles Xavier Thomas in Alsace, they incorporated the Leibniz stepped wheel.

Leibniz' considerable flair for engineering was exhibited primarily in the large number of designs he left, most of them unexecuted; wagon wheels that would plow through mud, improved ship hulls and smokestacks, even a new type of nail with tiny spurs to fix it more firmly in the wood. To some extent his technological ability was put to the service of the various dukes and princes by whom he was employed as a kind of all-purpose civil servant. There was, for example, the incident of the silver mines. Leibniz' patron Duke John Frederick of Hanover owned mines in the Harz mountains; their yield was low, but they helped to maintain the duke's balance of payments. Thus it was a serious matter when a drought lowered the level of streams at the surface, rendering inoperative the waterwheels that drove pumps to clear the mine passages of seeping ground water. Leibniz was given a contract to set up a windmill-operated pump and work it for one year; if the pilot project was successful, Leibniz would receive 1,200 talers a year, a considerable income. The inevitable friction between science adviser and bureaucrat ensued: the mine directors protested that Leibniz was a theorist who lacked

lacked practical experience; he accused them of incompetence. His plan - to use windmills to pump the mine water above the surface and then let it flow down an inclined plane, turning a waterwheel that would help to pump more water - was technically valid. It ran into all kinds of trouble, however, at least partly because the directors had given him the most difficult mine to work with. Leibniz persisted, and after four years the system finally seemed to be functioning. A delegation from the duke arrived for an inspection. That day the wind failed, and Leibniz' grant was promptly terminated. He persisted for two years with his own money, but finally gave up, fearing that his reputation would be ruined.

Typically the trips to the Harz mountains developed new interests for Leibniz: geology and paleontology. In these areas his ideas were essentially those of most other 17th-century students of natural history, but he asked some interesting questions. He saw that the traditional views could not account for the age of the earth, which, it seemed to him, must be immensely old. The whole question of chronology, both evolutionary and historical, was a burning issue in those years. Newton was interested in it. Robert Boyle and the Italian scholar Lodovico Antonio Muratori spent years trying to establish precise dates for historical events, and chronology was a major concern in Leibniz' ventures into historiography.

In 1685, as the windmill project was abandoned, Duke Ernst August of Hanover commissioned Leibniz' to write a full-length history of his house. The duke wanted a document that would justify his political aspirations; Leibniz looked on the project as an intellectual challenge. He grounded the history in a number of geological observations and then burrowed into old documents, copying out royal edicts and diplomatic letters. After several years he brought out a thick volume, and then two more, all stuffed with quotations from original sources. His readers had expected something a little more digestible. When some of them told him so, he replied that what he had attempted was a unique kind of work that would put the events of the past into a clear new light; among other things, he felt that an authentic history could establish a new code of international relations.

Leibniz was in some respects rather conservative. The disunity of the remains of the Holy Roman Empire pained him; unlike most political theorists of his day, he was for holding it together in the name of a united Europe rather than seeing it break up into nation states. His role as a diplomat was often that of a mediator between opposing political factions. The same was true in religion: he spent years trying to bring about unity between the Catholic and the Protestant church. In position papers and correspondence he often used the pen name "Pacidius".

If he was a peacemaker in diplomacy, Leibniz was an impassioned partisan in physics, mathematics and philosophy. Through correspondence and publication he engaged in a series of strenuous debates, largely with English scholars. It all began when he and Newton became embroiled in their bitter struggle over which of them had first devised the calculus. Neither appears to have been exactly forthright; each unnecessarily denigrated the contributions of the other. It is now fairly certain that they each discovered it independently. Newton wrote on his method of fluxions for dealing with velocities and change as early as 1665 and continued to do so for the next decade, but he did not publish on the subject until 1687, three years after Leibniz had published in the journal Acta Eruditorum a brief and cryptic essay: "A new method for maxima and minima, as well as tangents,...and a curious type of calculus for it."

Leibniz had come to the calculus by way of combinatorial analysis. (It was in his De arte combinatoria, written at the age of 20, that he first proposed "a general method in which all truths of the reason would be reduced to a kind of calculation.") At first it was the logical and the occult that interested him most; he studied the number diagrams of the 13th-century Spanish mystic Ramon Lull, for example. It was only when he visited Paris and London in the 1670's that he became acquainted with leading mathematicians, including Huygens, and learned about contemporary advances in algebra and geometry. Soon he discovered the fundamental principle of the calculus: that differentiation, the means of studying limits and rates, is the inverse of integration. Neither Leibniz nor Newton was ever able to establish a rigorous basis for the calculus, but both had overcome the prime obstacle set up by the mathematics of the ancients: the belief, inspired by Plato, that scientific treatment of variability was impossible because of the unchanging nature of true reality.

Leibniz' dispute with Newton spread into other areas, notably the nature of gravitation. The controversy that surrounded Newton's ideas is easier to understand for us - who have been exposed to relativity and quantum theory and to the intellectual resistance to them - than it was for 19th-century scholars, whose belief in the absoluteness of Newton's universe had been repeatedly confirmed.

What is important to realize is that to Leibniz - and to Huygens and other leading natural philosophers - Newton's theory seemed a regression to medieval notions that had been dispelled with great effort. Natural philosophers interested in physics had gradually freed themselves from the old scholastic concepts of qualities and powers and from animistic ideas in general. They had come to see every force as the effect of the motion of material particles; they admitted of no way for bodies to affect one another except through the force of impact exerted when they came into contact. They had gone as far as to develop complex systems for explaining the motions of the planets and the behavior of heavy bodies on the earth by means of the motion of corpuscles. To accept the theory of gravitation uncritically would be to forsake these ideas for an explanation that apparently depended on a mysterious force exerted on each other by two separate bodies in empty space, without benefit of a medium between them. It meant a return to "action at a distance," which even scholastic philosophers had rejected.

In short, gravitation seemed to Leibniz to contradict the mechanistic principles to which he was fully committed. He began his critique in 1690, after reading Newton's Principia, and kept it up until he died. Some of his ideas on the subject, developed in the correspondence with Samuel Clarke, an English philosopher and friend of Newton's, had a prophetic edge. Space and time are not independent, absolute entities as Rene Descartes and Newton held, he wrote, but rather systems of relation and order among things. "As for my own opinion," he wrote in his third letter to Clarke, "I have said more than once that I hold space to be something purely relative, as time is; that I hold it to be an order of [illegible] coexistences, as time is an order of successions. For space denotes, in terms of possibility, an order of things which exist at the same time, considered as existing together without inquiring into their manner of existing." Again, in his fifth letter he observed that "it is sufficient to consider these...relations and the rules of their changes without needing to fancy any absolute reality out of the things whose situation we consider."

As Albert Einstein noted, Leibniz' criticisms were justified. Einstein pointed out, however, that "had they won out at that time, it hardly would have been a boon to physics, for the empirical and theoretical foundations necessary to follow up his idea were not available in the 17th century" (see "On the Generalized Theory of Gravitation," by Albert Einstein; SCIENTIFIC AMERICAN, April, 1950)

Together with Huygens, Leibniz also contributed to the first clear formulation of the principle of the conservation of mechanical energy, the energy of motion and position. Here again his ideas emerged in the course of a long dispute, this time with the Cartesians. Descartes had believed the quantity of rest and motion in the universe was constant and the "efficiency" of objects was equal, in the case of colliding bodies, to the product of their mass and velocity (mv). Leibniz held that the velocity should be squared - that the measure was mv^2. It is easy to resolve the dispute in contemporary terms: what the Cartesians were talking about is what we call momentum, whereas Leibniz was talking about kinetic energy.

When Leibniz spoke of energy, however, he had more in mind than physical laws. What was real for Leibniz was not "extension," as Descartes had held, but "activity" proportional to degree of "sensitivity." The fundamental unit in his metaphysics was the monad, and the simplest monad was a kind of dimensionless elementary particle of energy; then there was a series of gradually more sensitive, and consequently more active, units including the human psyche and ultimately God. At certain of the higher levels the monad was something like a point of view - a substance capable of perception. Here Leibniz distinguished between animals and men. Animals have perceptions and, through memory, a "sort of consecutiveness" that as he describes it is very like the modern concept of a conditioned reflex. Men "act in like manner as animals" most of the time but also have "the knowledge of eternal and necessary truths" that "gives us reason and the sciences, thus raising us to a knowledge of ourselves and of God."

Leibniz' psychological ideas were more fully developed in a long unpublished work he wrote to refute John Locke's Essay concerning Human Understanding. He respected Locke but he could not accept the English philosophers doctrine that the mind amounts a blank tablet on which experience writes. It was not that Leibniz believed in a concrete factual memory that was present in the brain at birth, but he did insist that experiences are registered in the mind in certain distinct patterns. Moreover, he did not agree with Locke and Descartes that conscious awareness makes up the whole of mental activity. In effect, he proposed the existence of an unconscious. He observed that dreams often awaken previous thoughts; he even conceived of a theory of psychic trauma, noting that "when we are stunned by some blow, fall, symptom, or other accident, an infinite number of minute confused sensations take form within us."

In this remarkable man's body of thought, then, one finds the seeds of symbolic logic and computer design, hints of the special theory of relativity and some anticipation of Freudian psychology. Many scholars have held that Leibniz could have been a great mathematician if he had stuck to mathematics - but he simply did not want to stick to mathematics. Scholars deplore the fact that he wasted many years as an adviser on trivial matters to German princes - but he chose that career deliberately, in preference to what he considered a dull life in a university town, because routine made him uneasy. He enjoyed meeting people, being involved in the tumultuous public affairs of the day, feeling that he was helping to set things right. He enjoyed travelling, and as he bounced in stagecoaches from capital to capital, engaged in petty diplomatic intrigues, he filled hundreds of sheets of paper with speculations on scores of different subject. The papers were found when he died, neglected and quite alone, in 1716. They have yet to be completely sorted and analyzed."

End of article

This is the sorry end about Leibniz' own writings. They are still packed in bales, and from time to time scholarly voices are heard in Germany that his writings should be finally put into printed books. But nothing happened.

About the author of this article it says: FREDERICK C. KREILING is professor of the history of science at the Polytechnic Institute of Brooklyn, where his interests are chiefly in the scientific revolution of the 17th century and in the history of ecological theory. Kreiling was trained as a historian, receiving a Ph.D. in modern European history fron New York University in 1959. At Brooklyn Polytech he has developed a graduate program in the history of science. "I feel it is imperative," he writes, "that the history of science be cultivated as a means of combating the intellectual isolation in which modern specialists tend to find themselves." Kreiling is planning a full-scale biography of Leibniz; he notes that "the last one appeared in the 1840's." He writes that aside from his work he is "an ardent musician and once was a professional bass player."

But I let almost one year pass by without writing to Professor Kreiling. I feared another bitter disappointment. But in the end, in March 1969 I wrote the following letter:

Professor Frederick C. Kreiling,
Polytechnic Institute of Brooklyn,
BROOKLYN. N.Y. U.S.A.

Sydney 20-3-69

Dear Professor Kreiling,

Scientific American of May 1968 brought your excellent article on Leibniz, and I have read it a number of times in fascination, but alas also in sorrow. As you are a professor of the history of science you know very well of the fight and the plight of innovators of new ideas in science and engineering. As usual, the pioneer had to be dead first before he is exhumed and extelled. Leibniz' advantage was that he was an "ambassador", that he had therefore the money for expensive clothes, a coach of his own, etc., etc. Thus it was easy for him to be received by royality and to have access to the highest society of his time. I wonder what would have happened to all his ideas and innovations had he been only a poor Schulmeister in a poor German village.

When I studied at the University of Technology in Vienna I believed that in our enlightened age the force of any greatbidea or innovation would make itself felt almost immediately, because the printing presses are turning out so many scientific journals which reach all the scholars of the world. It was a bitter disappointment for me when I found in later life that I simply can't get into the columns of a scientific journal even with the support and recommendation of some professors. But why? As it happened, I have chosen to be an industrial research chemist and factory man. I was bluntly told that scientific journals and publication grants from scientific foundations are solely reserved for those who are on the pay-roll of a university. Being a manufacturer, it was then easy for me to manufacture my own books after some unsuccessful approaches to publishers. I learned from them that scientific books are no profit proposition except when they are obligatory texts books used at colleges and universities. As professors must "publish or perish" I learned in utter dismay that many professors are paying clandestinely the printers and publishers. I published my own books and with them I approached a number of scholars of whom I believed that they will be interestedin what could be really termed "a scholarly sensation".

This "scholarly sensation" is nothingless than the news that Leibniz' "Symbolism Universalis" has been realised after 300 years. One professor of the University of Pittsburgh, his name is Dr. Oliver L. Reiser, was so enraptured that he

he gave a lecture in 1951 at the Annual Meeting of the American Association for the Advancement of Science in which lecture he demonstrated my work and stated that

"Bliss realized the ambition of the great mathematician Leibniz".

That was in 1951. Since then I have approached thousands of scholars and educators with no effect whatever. My books are now in public and university libraries in all five continents, and there are thousands of scholars who know that Leibniz' dream has been realised at last.

Imagine now my shock and my sorrow when reading your excellent article. The first page, dealing with a universal symbol language containing also a symbolic logic is almost a description of what I have achieved.

At the beginning of your article you quote Leibniz' saying that philosophers would sit down in much that same way as two accountants would sit down to clear up their misunderstandings. I have gone even further , and sometimes I believe that this is perhaps the root of my trouble. I have taken Leibniz' words on their face value. He demanded that the "Symbolic Universalis" must be simple, "very popular, very agreeable to the people", and I have devised my symbols and my symbolic logic on such simple lines that even common people and children could "calculate away" their disagreements and quarrels. Also,I found out to my dismay that to be popular in science is not popular with the scientists.

When I saw your article I wanted to write to you immediately, hoping that you will study eagerly my work and perhaps induce the editor of Scientific American to accept an article written by you in which article you would do again what Professor Reiser has done 17 years ago, namely, telling the world that Leibniz' "universal language"and algebra of reasoning" has been realised at last.

And then I hesitated. From one time to another I started but never ended a letter to you. I simply was afraid of another disappointment and another setback. I am now 72 years of age and in this age such shocks could be deadly.

Now, however, I have written my letter to you in the hope that you might really take the time to study my work and to write an article for the Scientific American for which article I would gladly give you all special information on possible demonstrations of my symbols and the logic they contain, within the space of an article.

I enclose a few informative papers, and hope that you will be able to induce the librarian of your Institute to order my book (882 pages) for the library. Should you then be willing to write the article I shall send you one more copy free for your own private library. You will note that I don't send this letter by air but by surface mail. Firstly because I went broke several times paying for all my publication ventures, and secondly I want to put off as long as possible a disappointing answer from you. That I still write to you proves that I still hope you will prove me wrong.

I am,

Yours sincerely,

C. K. Bliss.

The following issues of the Semantography Series
are enclosed: 1, 5, 6, 13, 37, 40, 52, 62, 157, 243, 244.

The enclosed dust-jacket and promotion paper in two colours lists as my American wholesaler Acme Code Company. A few months ago this company went into Liquidation. Orders for the book can now only be executed from Sydney.

Half a year went and no answer came from Prof. Kreiling. At last I wrote my second letter in September, but waited another month until I posted it in October. This I wrote:

Sydney 17 Sept 69
Posted 24 Oct. 69

Dear Professor Kreiling,

On the 20th March 1969 I wrote you a letter (of which I attach a copy herewith) congratulating you to your excellent article on Leibniz in the magazine Scientific American, and giving you the good news that some eminent scholars have verified the scientific sensation that I have indeed fulfilled the dream of the great Leibniz. I sent this letter by surface mail, simply because I am going bankrupt from time to time spending all my earnings on writing letters and publishing articles and books. I included some papers, and expressed the hope that you may be interested to see my book, and perhaps write an article about it for the Scientific American. I sent this letter to arrive in Brooklyn about May. Alas, you have not answered.

I sent also a copy of the book to the librarian of your Institute. He lost no time to reject it, and I have sent off the postage stamps in order to make him post the book back to me. Whether or not he has contacted you, I don't know.

Well, this is another bitter disappointment, and this time from you a professor of the history of science. History is repeating itself. The innovator of a new idea is all too often not on the payroll of a university and hence excluded from all the attention given to the professionals in science. I hope you will understand the bitterness of my words, because you, more than any other, knows about the bitterness which clouds the minds of innovators. Leibniz himself, ended his life in bitterness, and all his writings are still - after 300 years - buried in bales in the cellars of the royal Hanoverian Library.

But perhaps I am wrong about you. Perhaps my letter never reached you. Perhaps the librarian of your institute didn't bother to show my book to you. Perhaps you would be delighted to know about my work and to use the pages of Scientific American to tell the world that Leibniz ' idea of a simple "Symbolis" Universalis" has been solved at last, and in such a simple way that even ordinary people and children could use his predicted "Algebra of Thought" to disentangle their daily problems. Because this is indeed what my discovery can do.

And so, hope springs eternal. I am writing to you, and including the postage for a return answer. Please answer, and be it even only a "Scram!" I will understand. If you don't answer, there will be nothing more to do than to incoporate my pleading letters to you in my Semantography Series which is already collected by eminent university libraries whose librarians have recognized the value of my pioneering work. By the way, perhaps your librarian has not despatched my book. Perhaps it is still in your institute. I am

Yours sincerely C.K.Bliss

At last I received the following answer:

POLYTECHNIC INSTITUTE of BROOKLYN
333 Jay Street Brooklyn. New York 11201

DEPARTMENT OF SOCIAL SCIENCES November 26, 1969

Semantography-Blissymbolics
Publications
2 Vicar Street, Coogee 2034

Dear Mr. Bliss,

Please forgive me for not having written before. All I can say in my defense is that I have been having quite a hard time of it over the past two years and one overt symptom of it has been that I have not been able to write anything at all. Now that seems to be clearing up.

I have instructed our order librarian to purchase your book. After I have studied it, I will send you my comments, for whatever they may be worth. As far as my attempting to write an article on it for Scientific American, that will naturally have to follow.

With all good wishes,

Apologetically yours,

Frederick. C. Kreiling
Professor of History of Science

I answered happily:

Dear Professor Kreiling, Sydney 2 Dec. 69

Many thanks for your kind letter. I was unhappy for many months having not had an acknowledgement of my letters and papers from you. But I see now that my worry was small against the hard time you have had. Not to be able to write is the worst a scholar can experience, but apparently this was a minor matter.

I am now sorry of having bothered you at all. But now I hope that everything is alright with you, amd I thank you for ordering my book for the institute's library. It may arrive within a few days or weeks.

And then I want to reduce me being a nuisance to you. I would be unhappy if I have forced you to deal with my book and to write about it to me. Don't do this. I have so many good accounts of my work from other scholars, that I don't want to bother you with this. All I have in mind is the idea of you following up your article in SCIENTIFIC AMERICAN.with another article, a sequel. I am sure I shall be able to convince you by Leibniz' own words that I have indeed fulfilled all his demands for his speculation of a "Symbolis Universalis".

Moreover, I am a practical engineer (a graduate in industrial chemistry at the Technische Hochschule in Vienna), and I want to prove to you that my work

work is immensely practical, and immensely and sorely needed. Mankind needs my work. Hence I don't want the glory of a priority or the like. All I want is that the learned world should know at last that this work exists. Professor Reiser has mentioned my work in almost all his books and writings, but they are philosophical, and who reads philosophical books nowadays.

I am now in my 73rd year, and past the craving for limelight and all that. I want to serve humanity, and you Prof, Kreiling are at present my great hope through an article in SCIENTIFIC AMERICAN. I shall co-operate with you to the utmost so that your article will be also of great credit to you. In a few days I shall write about the history of Leibniz idea, and how I went about it. I am

Sincerely yours C.K.Bliss

And then I set to work on the draft:

FIRST DRAFT (TO BE SEVERELY SHORTENED) OF A SUBMISSION TO THE EDITOR OF SCIENTIFIC AMERICAN SUGGESTING A SECOND ARTICLE ON L E I B N I Z.

The first article on Leibniz in Scientific American of May 1968 begins with an explanatory subtitle on Leibniz' main ambition, yet unfulfilled, and a quotation from Leibniz' writing about the possibility of it. The subtitle reads:

> "The theme of his career was the search for a universal language and algebra of reasoning. He perfected the calculus by establishing its fundamental notation, and he pointed the way towards symbolic logic."

And the quotation reads:

> "...there would be no more need of dispute between philosophers than between two accountants. It would suffice for them to take their pencils in their hands, sit down to the slates, and say to each other ...:"Let us calculate!"

Here we have the basis of the disbelief and discontent of the philosophers, mathematicians, linguists, and logicians of the last 300 years, who considered Leibniz' idea of a"universal language" which should also contain an "algebra of reasoning," an absolute "Impossibility." Indeed, if we imagine two philosophers debating hotly on issues of moral, ethics or metaphysics, how could they ever come to an agreement by mathematical calculations, using Leibniz' "Symbolis Universalis."

No wonder then that two Cambridge scholars C.K.Ogden and I.A. Richards said in their standardwork on Semantics/ published in 1922 (London) "The Meaning of Meaning"

> "This speculative construction, which first occupied his attention at the age of 18, and was constantly in his thoughts, especially about the year 1679, and when it became clear that he would not have the strength to proceed with it, still remains where Leibniz thus left it."

And no wonder when Professor E.T.Bell wrote in 1937 in "Men of Mathematics" (Penguin, London):

> "The very diffusion of Leibniz' genius made him capable of the dream which Archimedes, Newton and Gauss missed, the "Universal Symbolism." Others may bring it to realization. Leibniz did his part in dreaming it to be possible."

And no wonder when all the efforts of mathematicians and logicians of the last 300 years were concentrated solely on abstract and abstruse systems of mathematical and symbolic logic, which are highly scholarly, and beyond the mental grasp and usefulness of ordinary men and women.

But if we study Leibniz' writings about his "Symbolis Universalis" we find that he always thought of a practical tool for the ordinary man and woman. He wrote that it should be "very popular" and "very agreeable to the people" and he referred even that rudiments of such a universal language are already used by the "peasants" (see full quotation later on). In short, the scholars, mathematicians, logicians and philosophers were all on a false track, believing that Leibniz thought all the time of a mathematical tool, beyond the grasp of "people" and "peasants".

The first article stresses the fact that Leibniz was a very practical man who had a "considerable flair for engineering" (p.97). On the pages 96 and 97 we see Leibniz' calculating machine which contains the main features still used today in mechanical calculators. On page 100 we see Leibniz' drawing of a "wheel to move through mud or over obstacles" and a glance at his drawing shows clearly that he had invented the "caterpillar track" 300 years before it came into common use in

in todays earth-moving equipment.

The article goes on to cite more engineering ideas as "improved ship hulls and smokestakes" and "a new type of nail with tiny spurs to fix it more firmly in the wood." And it recites at length his construction of a windmill pump for pumping water out of the mines of the duke of Hanover who promised him 1200 talers a year. Leibniz' construction by which the pumped water would turn a water wheel that would pump more water, etc.etc. worked beautifully. Alas, when the official commission arrived to see the work in operation there was no wind, and the bureaucrats promptly cancelled Leibniz' reward and the whole scheme.

We shall learn in later paragraphs that it was Leibniz the engineer who thought of a practical tool for "people" and "peasants" when he dreamed of a "universal language" which should also contain an " algebra of reasoning." But how? The article gives a hint by quoting Leibniz on p. 96. Leibniz had made some practical inventions in mathematics, used today by children and peasants. He invented the decimal point, the equal sign, the colon for division and ratio, etc.etc. "Leibniz," says the article "sought to make the form of a symbol reflect its content." This may be demonstrated by the equal sign which reflects its meaning by showing two lines which are "equal to each other" in length, direction, etc.

But a "universal language" which even peasants can use must contain many more symbols which "reflect its content." The article quotes Leibniz who wrote

> "In signs one sees an advantage for discovery that is greatest when they express the exact nature of a thing briefly and, as it were, picture it."

Reading this quotation, mathematicians must come rather crest-fallen to the realization that Leibniz thought of a "picture writing". This is amplified by another quotation from Leibniz' writings quoted by C.K. Ogden and I.A. Richards (see before):

> "A Universal Characteristic, very popular...might be introduced if small figures were employed in the place of words, which would represent visible things by their lines."

Very good, but many words of our language contain meanings which are not picturable, words like "thought, imagination, envy, enmity" etc,etc. How to "picture" these? Of these Leibniz said that "invisible" meanings should be pictured

> "by the visible, which accompany them."

But how? One day the bales in the cellars of the Royal Hanoverian Library will be opened, and all of Leibniz' writings will be sorted out, and then we might know more. In any case, it becomes clear that Leibniz thought of a "picture writing" as a universal language when he wrote:

> "This would be of service at first for easy communication with distant nations, but if introduced also among us without however renouncing ordinary writing, the employment of this mode of writing would be useful in enriching the imagination, and in giving thoughts less absurd and verbal than we now have."

Here we have again Leibniz the engineer who thought of an "inter-national language" not by forcing people to learn a new language (as the Esperantists and others propose). Leibniz realized that mathematical notations can be read in all mother tongues - without translation (like 1 + 2 =3) and he proposed therefore a picture writing for "easy communication with distant nations."

But he goes further. He states that this kind of picture writing should also be learned by the people of a nation who don't need to communicate with other "distant nations." Should we then give up our alphabetical writing? No, said Leibniz. But why then should we learn this new sort of symbol writing? Because said Leibniz (see above) it will "give thoughts less absurd and verbal than we now have." And he elaborates on this in the following words:

> "This true method of a Universal Symbolis would furnish us with an Ariadne thread, that is to say, with a certain sensible and palpable medium, which will guide the mind as do the lines drawn in geometry and the formulas for operation in arithmetic..."
>
> "In times everybody would learn the plan in youth, so as not to be deprived of the convenience of this figured character, and would speak in truth to the eyes, and would be very agreeable to the

> people, just as in fact the peasants already have certain almanacs, telling them without words much that they ask...

These are the almanacs and calendars found in peasant huts where pictures of the sun and the phases of the moon, together with other symbols of the seasons and days, are indeed the beginning of an "international language" which could be read in any language.

Leibniz concluded his speculation with these words:

> "I think these thoughts will some day be carried out, so agreeable and natural appears to me this writing, and it seems of no little consequence for increasing the perfection of our mind, and rendering our conceptions more real."

However, the disbelief of learned men and laymen alike that a picture writing could be used for modern mankind was and still is too great. To this comes Leibniz' belief that it will contain an "algebra of reasoning" which marked his philosophical speculation an "Impossibility."

But not to Leibniz. He examined the picture writings used by mankind through thousands of years. The most impressive was the Egyptian hieroglyphics, not deciphered in his time. Apparently he rejected it, simply because it was discarded thousands of years ago. He did not live to hear of the discovery of the Rosetta Stone, and the decipherment of the hieroglyphics by Champillion. Thus he didn't know of the bombshell when Champollion found that hieroglyphics are not a picture writing at all, but a fully fledged alphabetical writing, the picture denoting alphabetical letters. This is clearly visible in the hieroglyphics denoting the name of Cleopatra. The picture of an eagle appears twice as the 6th and the 9th picture, simply because the eagle denotes the letter A, and this letter appears twice in the name of Cleopatra.

But he soon found a picture writing which was used in his time, the Chinese characters. The article says:

> "His interest in Chinese culture had a more practical aspect however. The fact that Chinese ideograms symbolize concepts rather than sounds, and can therefore represent the same thing in different dialects, suggested to him that he might find in Chinese a means of constructing his universal symbolic language."

He never went to China, and all he could do was corresponding with Jesuit missionaries whose intrinsic knowledge of Chinese script was scant anyway. They had suggested for the meaning of the Christian God the symbols for "heavenly ruler" a meaning reserved for the Emperor of China, and this blunder has antagonized all Emperors.

It is now time to summarize the main features from the article on Leibniz in order to prepare the reader for the sensation which is to follow. These features are:

1. Leibniz was a successful engineer, practical and even visionary.
2. He visualized a simple picture writing which even "people and peasants" could learn to use.
3. He visualized a symbolic logic using the pictorial symbols of his international language.
4. He hoped that study of the Chinese script could help in devising such a symbolic logic and language.

Now in our time the prophecy of Leibniz came true. An engineer came to China and realized Leibniz' dream. His name is Charles K. Bliss, and his symbols are so simple that preparations are in hand to introduce his symbols in an American textbook for 6th grade school children. In the following pages some of his symbols will be shown for a statement which is highly topical, a statement of which millions of Americans, and many more millions all over the world and millions of North Vietnamese believe it to be true. It's about the means to end the war in Vietnam.

Let us use the method of Plutarch in telling the Bliss story. Plutarch described the work of a man by showing how his experiences in life brought about a new thought and a new idea. Bliss went through a serious of traumatic experiences which began in the cradle and ended in the concentration camps of Dachau and Buchewald.

Bliss was born in the Babel of old Austria. The Bukowina, the Eastern-most province of the old Austrian empire was covered with virgin forests when the Empress Maria Theresia acquired it in 1775 from the Turks. She called for settlers and they came from many parts of Europe, and built villages and towns. In the capital Czernowitz, where Bliss was born on the 5th September 1897, people had to learn

learn about 6 different languages in order to make a living. The baby in the cradle heard Papa and Mama speak in Ukrainian to the milkman, in Polish to the grocer, in Roumanian , in Russian, etc. But to the little Karl Papa and Mama spoke only in German, because this was the language of the authorities, the language of the highschools and the university, and the language of culture. Soon little Karl refused to learn a single word of other languages, though he heard them all the time. He found it extremely illogical that wasser should be written and pronounced water, eau, acqua, agua, voda, etc. To this came the illogic in German grammar. Though he wrote the best essays in German (by acquiring fluency through voracious reading) he was a total failure at grammar, and consequently a total failure when it came to the learning of foreign languages in the highschool. But he was top of the class in chemistry, physics, geometry and mathematics. That H_2O means water in all languages was a revelation, that this chemical symbolism was a symbolic logical language in which the meaning elements of water were revealed and even their ratio, all this was nothing short of a miracle for the boy. The "language" of mathematics and geometry was pure logic to him.

When war broke out in 1914 he tried to enlist, but was rejected because of his youth. He joined a Red Cross field ambulance, and was within days on the battle field not far away from his hometown. There he was shocked to the core. He collected dead and wounded Austrian and Russian soldiers, and was shaken when he found Russians who spoke perfect German, the "Volga Deutsche", when he realized that Austrian Ukrainians have killed Russian Ukrainians, etc, etc. and he began to realize the tremendous influence of the native languages on the thoughts of men. Later as an Austrian soldier he witnessed the desintegration of the Austrian Empire into small national states in which those people who spoke another language were degraded to second-class citizens.

When he came home in 1918 at the end of the war, he inscribed at the Kaiser Franz Josef University and studied mainly Chemistry and Physics. But when in 1919 the Roumanians took over and changed the language of the university he emigrated to Vienna and studied chemical engineering at the Vienna Technische Hochschule. He graduated brilliantly in 1922 and found immediate emplyment in a factory making electric lamps in Vienna. One year later radio came upon the world, and Bliss was one of the pioneers in the making of electronic equipment. To his intense delight, a new pictorial writing was introduced, the actual outline of a condenser, a coil, a radio valve, an antenna, etc. etc., and he used them in his radio diagrams. Many years later in China when he had to go to a radioshop for spare parts he was able with these electronic pictograms and a few Chinese ideograms to tell the Chinese behind the counter what he wanted.

Electronics being then a new science, forced Bliss to delve in scientific journals and books written in other languages. This was a great handicap. He realized the need for an international language, and examined Esperanto. He found it wanting. The grammar was complicated though regular, but the words were a strange mixture of Latin, Greek, German and Russian; it was a new language, and people don't want to learn new languages. They stick to their mother-tongues, even in the United States and elsewhere.

We have heard of his first two traumatic experiences concerning language, his discovery of the Babel of Languages, and the utter illogical construction of these languages. His third traumatic experience was in his beloved field of science of which he believed that only truth and logic prevails. His firm was attacked by the giants in the lectronic field in Europe Philips and Telefunken. Bliss was asked to help in warding off the attackers who threatened to close down the firm because of infringements of patents. Bliss learned of the existence of a new science the name of which he didn't even know: Semantics.

He had to examine the patents of the attacking firms, and had to search for prior publications. He found to his dismay that the very same word in ordinary speech and in scientific terms could be twisted to mean this or that. Thus, prior publications were used in the patent courts to deny the novelty of an invention, by interpreting some words in a novel way suited to the new idea.

Thus an inventor could be deprived of his just reward by firms who had the money to question his invention in the patent court. Conversely, small manufacturers could be cowed into submission by the giant firms who asserted that their patents were infringed, and who brought forth the evidence of scientific experiments carried out by their experts. Here Bliss, the lover of the laws of nature, realized in dismay that the very same scientific experiment could be used in different ways, and even in opposite ways simply by using ambiguious words to interpret the experiment in the way the paying firm wanted to have it interpreted in order to win in the court.

Bliss threw himself into the fight with gusto - and won one courtcase after another, until he lost out, and almost lost his life too. He had to go to Germany many times, and there he was fascinated by another linguistic catastrophic development, the turning of the German nation into a mass of maniacs. He went to their rallies, listened to the speeches of a Hitler and a Goebbels, and realized in shock that ambiguous and vague words could be twisted to mean anything. But not all Germans were befuddled by the Nazis. Many saw through the frauds, and from every journey Bliss brought back the latest Hitler jokes, and made the workers and employees in his firm shake with laughter, to the dismay to the Nazis among them who were determined to get their revenge. When Hitler overrun Austria Bliss was among the very first to be arrested and then shipped to Dachau and later Buchenwald. To him who loved the German language it was a terrifying spectacle to see it used for the justification of mass murders.

Bliss tried another language with his jailers. On his clandestine orders his good wife smuggled his musical instruments into Buchenwald camp, and with his music he won the hearts of the Nazis and his freedom. Eventually they both found themselves in Shanghai China as refugees. There a new world opened up to him: the Chinese script. He climbed what Lin Yutang called "the second great Wall of China, its ideographic script" and from the top he looked into a linguistic wonderland, a land where different people and tribes who spoke different languages yet could read the same book and the same newspaper, a land where books written 2500 years ago in languages long lost could still be read in the language of today. Soon Bliss learned to read the headlines of Chinese papers in English, or in German, and slowly the idea got hold of him that here perhaps is a new idea of an international language for written communication in commerce, industry and even science.

He had made some inventions in the factory, but deep in his heart was the desire to invent something by which the whole of mankind could benefit. He had manufactured electric lamps, and therefore Thomas Alva Edison was his hero, and Edison's words hid guidance in every research he undertook. Edison said that success depends on 2% inspiration and 98% perspiration. He started in September 1942 and gave his first public lecture in January 1943. All newspapers reported it, and many people, Europeans and Chinese alike, were quite enthusiastic about Bliss' work, because they could see a picto-ideography, though archaic and cumbersome, working beautifully in all walks of life.

Bliss didn't know of Leibniz speculation, and therefore he didn't know that it was considered an impossibility. He knew only that the symbols of mathematics, of chemistry, of electronics were of immense benefit, and he realized too that a new picto-ideography is already in use on the highways of the world where warning signs in the native languages are taken down and replaced by pictographs which could be read in all languages and could be quickly discerned even in mist or rain, in the dark of the night, and under the stupor of liquor.

In 1946 Bliss and his wife Claire emigrated to Australia and there Bliss could study in the libraries, could learn of Leibniz and could perfect his system of not more than 100 basic symbolselements which could be accomodated on a typewriter of ordinary size by which the capital letters only were replaced by symbol lines, leaving the small letters for names and ordinary correspondence.

In 1949 he published his 3 volumes in mimeographed form. He found immediate interest with a number of eminent scholars whom he approached. They helped him with testimonies of glowing praise, but the mass of educators remained unimpressed Indeed, the idea that mankind should use a picture writing for international communication, even in science (as Bliss proved in his volumes), seemed silly, and that pictures could be used in a simple symbolic logic seemed utterly absurd - but not to those who looked through his volumes and attended his lectures at the University of Sydney and New South Wales, and elsewhere. Bliss harangued his audiences to give him any word, or any statement from the newspaper of today and he will prove that the word and statement could be easily "pictured" with a few of his 100 symbol elements and could thus be logically examined, exactly what Leibniz hoped, and what the article in Scientific American puts right in the beginning about Leibniz ambitions.

In the following paragraphs Bliss will show a statement which is today believed and hotly debated by many millions of American's, Vietnamese, and other people around the world. It runs:

"The door is wide open for negotiations to end the war in Vietnam."

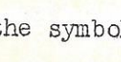
We shall not show the symbols for the "particles" the, is, for, to, in, because they are not needed and even omitted in ordinary writing when the layoutman of headlines in newspapers dispenses with them and prints:

Door wide open for negotiations ending Vietnamese war.

Door wide open for negotiations ending Vietnamese war.

We shall now show the Blissymbols for door, wide, open, negotiations, end, war. Vietnam is a name and is written in the alphabetical letters. We shall show further applications for the symbols shown.

This is the picture of a door  and Bliss uses this picture for depicting badly needed signs in public places, department stores, cinemas, etc. in all parts of the world visited by people of different countries and languages.

These are the symbols for entrance and exit:  which once explained become not forgettable. Moreover, Bliss insists that the words in the native language should always be displayed beneath the symbols, thus French in France, German in Germany, Austria, Switzerland, etc. so that children will learn their meaning easily and recognize them in many more combinations.

To form the symbol for door  Bliss uses only one of his symbols "elements" the line in various positions, which can be easily typed on his typewriter. The arrow symbol is also a combination of the line | and the arrowhead > which children learn to use in their algebra lessons in school. Standing alone it indicates in Bliss' Semantography the same meaning as in mathematics, a relationship, as in a>b.

Now Bliss uses these 2 symbol elements for the combination of the meanings: wide and narrow:  This graphic representation is actually used by students and draughtsmen when indicating the width of pipes, openings, doors, etc. But it becomes quickly clear that these two meanings are of some use in comparison only, that is when we can compare certain different widths, and then say "this is wider than that" or "this is more narrow than that". Standing alone as in our statement about the war in Vietnam, the meaning of wide becomes almost meaningless. How wide is wide? How narrow is narrow? Children, even in the primary school can quickly realize that these words are used only for small talk, and that they cannot be used in serious discussions. How to overcome this? Simply by doing what the scientists are doing, by measurements. Once we measure the width of a door and state that it is say 39 inches, or 100 cm, the contentious meanings of wide and narrow have disappeared, because 100 cm is neither wide nor narrow. How to apply this rule to other meanings?

By using Bliss' most important logical rule which runs: Hearing a word we must ask ourselves: Can we draw a picture of it? If we can, well and good. Then we can measure the THING pictured and can come to an agreement about what we are talking. But if we can't draw a picture of a door, a gate, . we can't measure its dimensions. Hence we can't draw a picture of a meaning of wide as such. We can only draw the meanings of wide and narrow in comparison, knowing that these meanings are vague and must be eliminated by concrete measurements as shown in the foregoing paragraph.

Here we have a simple demonstration on Leibniz' prophecy who said (see foregoing full quotation):

> "This true method of a Universal Symbolism would...guide the mind as do the lines drawn in geometry...This...would be useful...for rendering our conceptions more real... and for giving thoughts less absurd and verbal than we now have."

And "now" was the 17th century, which can be said also of our 20th century.

For the symbolization of the meaning of open, Bliss uses his symbol element the line in 4 different positions to mean enclosure:  By removing one line he arrives at the meaning of opening:  There is no need to show how Bliss uses a small indicator on top of the symbols to differentiate between opening and open, enclosure and enclosed. The symbols remain the same for both meanings.

Now Bliss teaches children another symbol they know already, the question mark which indicates the meaning of WHAT? He wants us to realize to be wary of

of words and to attach invisibly the question mark to every word we hear. A door? WHAT door? Wide? WHAT width? An enclosure? WHAT enclosure? An opening? WHAT opening? An enclosure may hold sheep, but be wide open for rabbits. An enclosure for rabbits will be wide open for say water. An enclosure for water, may be wide open for say gases or subatomic particles.

We now combine visibly the symbol for open with the 3rd symbol element, the question mark, and we arrive at a combination already used in tourist places meaning information or open for question: [?] . In general this symbol means question, and when we close the question we have the symbol for answer [?]

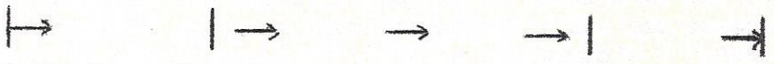
But, says Bliss, watch out, the question mark is still hidden within the symbol. And this holds true with many of our answers. The question remains, or in other words: many answers are no answers at all. When we imagine the beneficial effects of this simple symbol when taught in the primary school, we shall also imagine that it will help to remove the cocksureness of many people who know all the answers." But do they?

We are now coming to the symbol for negotiation. Negotiations are carried out by talking, and talking is carried out by the mouth, tongue, larynx, etc. What we see however all the time when looking at a person speaking is the mouth, and this can easily be pictured by this symbol, the 4th of Bliss' symbol elements:

The picture of the open mouth can also be used for the meaning of speech, talk, debate, etc. and there is no need here to show how the differences can easily be indicated by a small indicator on top of the symbol. Viewed within the context of our statement on Vietnam it means the mouth in action, and there is no need for an indicator.

However, at least 2 mouths are involved in negotiations, and they can easily be pictured by simply repeating the mouth symbol. However, this is not necessary because we can better express the meaning of debating, negotiating, etc. by adding two arrows, thus: negotiating ⇄

Now we come to the picturing of the end of the war in Vietnam. Here again we use the first 2 symbol elements we learned already for the meaning of end. Seen in the context, these are the symbols which can be used for timetables for railways, buses, ships, airplanes and for many other things. They are



start, begin departure progress approach stop, end

We see that the vertical line is actually the "line of reference" so important in relativity theory, indeed this line and these symbols can be used for space and time. Using now our persistent question of WHAT? We can ask WHAT space and WHAT time? The answer must be clear to the point: Start London 10 a.m. on the 10th November 1969. Stop Glasgow at 4 p.m. the same day.

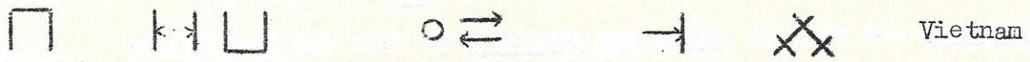
Every arrow in Blissymbolics indicates some progress, but we must add WHAT? WHAT is progressing, wherefrom, and whereto, and when? Progressing bricks and mortar to do WHAT? To build prisons or schools? Schools to teach WHAT? The implications of such teaching in the primary schools are unfathomable and overwhelming. When we consider that half of humanity is under 25 years, and that soon boys and girls on reaching the age of 18 will be given voting rights, we see the utter urgency of such teaching. We see too the effect of the absence of such teaching in the U.S.A. In California movie actors are made governor of state and senators, and much worse is to come.

We are now coming to the last word in our state-ment to be symbolized, the meaning of "War". For this there is an age-old symbol found on the lapels of soldiers of many armies, the crossed swords. Bliss allots a symbol element not only to the line in general, but to the lines of different size and different direction, a large or small vertical line, or horizontal line, or oblique line. All these line elements 12 altogether are easily accomodated on his typewriter using the spaces on the keys which today are occupied by the large capital letters, which are obsolete anyway. Thus, using a long and a small oblique line, Bliss forms the symbol for a  sword, a knife, etc. and crossing them we arrive at the symbol for war:

Let us disgress for a moment to show the utter simplicity and poetic meaningfulness of his symbols. This as we have seen above is the outline of a sword, a knife, a cutting instrument:  This horizontal line indicates what the word

word says, the horizon, or in a wider meaning our earth. When we put now the knife, the sword onto the earth thus, we picture a plough:  And it looks like a plough, and what we have done now is we have turned "the sword into a plough share." No wonder that some educators who have made some private tests with the Blissymbols reported that children are "thrilled and fascinated" by these simple symbols.

We have now discussed all symbols of that statement and we can now write

 Vietnam

(the) door (is) wide open (for) negotiations (to) end (the) war (in) Vietnam.

Millions of people in America, in Vietnam and elsewhere believe that this statement represents the truth. But when we picture it we see that it is almost meaningless. All what is going on is the wagging of tongues and blabbering of mouths. And it went on already for more than one year. In Panjanmun it is going on already for 16 years and American and South Korean soldiers are still killed.

But the statement is even worse than meaningless. It is misleading. There is no door anywhere, and consequently there is that argument that "the door is NOT wide open" for negotiations. It never was. The delegation from Hanoi was sent to Paris for nothing more than blabbering invectives in order to keep away the threat of renewed bombing of Hanoi and North Vietnam.

What happened in this statement? The same which is happening in millions of statements used all over the world to befuddle people, make them angry, and make them retort with violence and even war. There is a metaphor in that statement, and children are not taught to beware of the metaphor. Instead, they are told that they are pigs and swines, and geeses and asses, and when they cry, they are told that their tears are crocodile tears.

A few weeks ago Time magazine reported that a number of secret speeches of Mao-Tse-Tung have been stolen during the Red Guard riots and smuggled out to Hong Kong. Time brings some samples from his speeches and points out the atrocious metaphors used by Mao, and surely believed by him to reflect the truth. His red booklet reveals metaphors in almost every sentence, and this red booklet is bought and read by hundreds of thousands of American teenagers who are carrying Mao's thoughts about guerilla warfare right into the campuses, and even into the offices of deans and university presidents.

The pernicious use and influence of what language teachers call euphemisticaly "flowery speech," " picturesque speech", "figures of speech" etc. is not taught to children im any school of the world, and this im spite of John Locke who wrote 300 years ago:

> "All figurative applications of words are for nothing else but to insinuate wrong ideas, move the passions , mislead the judgement, and thus are perfect cheats."

Locke wrote these words in his "Essay concerning human Understanding. " Leibniz was so much taken with this work that he wrote a sequel under the same title "New Essays concerning human Understanding." And the foregoing quotations have been published by C.K.Ogden, and I.A.Richards in their "The Meaning of Meaning" as Leibniz' own words, which we may repeat here again, in order to see how Bliss really follows Leibniz' ideas

> "In time everybody would learn the plan in youth, so as not to be deprived of the convenience of this figured character and would speak in truth to the eyes and would be very agreeable to the people."

> "I think these thoughts will someday be carried out, so agreeable and natural appears to me this writing, and it seems of no little consequence for increasing the perfection of our mind, and rendering our conceptions more real."

And may we close with Leibniz' own words which Professor Kreiling has put at the beginning of his article. But instead of philosophers let us name other members of the human community:

> "...there would be no more need of dispute between two children, two teenagers, two adults, two politicians,etc.etc. than between two accountants. It would suffice for them to take their pencils in their hands, sit down to their slates, and say to each other... "Let us calculate."

Bliss has proved for anyone who wanted to listen that there is no need to write down argumentative statements once the children or adults have received some basic training in Bliss' Semantography. They would stop before uttering such statements when they realize the vague and ambiguous words it will contain.

Yes, but Leibniz spoke of philosophers in the statement above. It is true he said too in the second statement that "in time everybody would learn the plan in youth" meaning with this that it will be simple as to be grasped by youthful minds but in the last statement he spoke of philosophers.

Well, Bliss has not shirked this task. He shows in his large book(882 pages of the 2nd edition) that even philosophical statements can be tackled with his Semantography. And there he arrives at some conclusions which are truly amazing and even breath-taking, not only for ordinary people but also for scientists and even philosophers, In this too, he has realized Leibniz' dream.

Among the scholars who have praised Bliss' work is an American Professor of Philosophy Dr. Oliver L. Reiser (now emeritus) of the University of Pittsburgh. He said:

Bliss realized the ambition of the great mathematician Leibniz"

Dear Professor Kreiling Sydney 8 Dec 69

Here I am again developing nicely into a pain in the neck, which I want desperately not to be. For this reason I said in my last letter to you of December 2, that you should not study my book for the only reason to tell me of your opinion. Don't do this. Don't waste your time. All I want is that you should - after your immensely interesting article about Leinbiz in Scientific American - write a sequel, stating that Prof. Reiser and other scholars have said: "Leibniz' dream of a Symbolis Universalis has been fulfilled, and is immensely practical and useful for humanity!"

But here again the usual way would be to write the article and send it in to the editor of Scientific American, and hope, hope, hope that he will accept it. Usually he won't! He is innundated with hundreds of articles all crying to be published. He has to make a selection somehow. Leibniz? We dealt with him some time ago. Too early to get him again in the readers eye. And then all your labor and mine too would simply be wasted.

For this reason I would suggest an unorthodox way, but one which could save you much valuable time. When you have convinced yourself that I have indeed fulfilled all you claimed in your article about Leibniz' speculation, I suggest you write an outline of an article (of one or two pages) about your proposed sequel, and then ask the editor bluntly whether or not he would be interested in the publication of it. If he is fairminded, he wouldn't mind this unorthodox approach.

However, you should inform him about me, and here is the hitch. I am looking through every issue of Scientific American (at my newsagent, as I cannot afford to subscribe to it, and as he knows that I buy from time to time a copy which interests me) and I usually look up the column "About the Authors." It's there where I found out your address. And what do I find in this column? Professors and only professors. They deal with a non-professorial man usually when he is dead and thus has been elevated to the rank of a pioneer in science. It is my belief that the fact that I am not on the payroll of a university which speaks against me, though I have a university degree and have lectured in Vienna, London, Shanghai and in Sydney at universities and colleges.

I make you now the following proposal, trying to take off any burden from your mind. I will try to interest you - and the editor of S.A. - by drawing up a draft of the outline for him. You may re-word this outline and send it to him. If he is not interested, then I shall thank you for all your kind help, and this will be the end of it. I enclose this outline, and remain with my best wishes for A MERRY XMAS AND A VERY HAPPY NEW YEAR 1970

Yours sincerely

C.K.Bliss

At Xmas time I felt I had to send him again my best wishes and I wrote:

Dear Professor Kreiling, Sydney 27 Dec 69

Christmas has gone, and I hope you had a merry Xmas, and the New Year is coming. Allow me to wish you a most successful and happy year 1970, and none of the distractions and difficulties which marked 1968 and 1969.

Let me believe that you are still a young man, surely young in view of my 73 years, and let me hope that you will take kindly to my work and promote it when I am gone. I see from your letterhead that you are working in the Department of Social Science. And finally I am happy that you are working not in a scholarly university but in an institute devoted to the realities of life.

Then you will be enriched in your life if you could take my work seriously, and if you could enhance your own creative personality by making my work your

your own and by going out and preaching the acceptance of it in the schools of the world. Believe me, the part of an international language and a method of symbolic logic which is incorporated in my work is only a small part of my findings. Just as Leibniz let his thoughts range far and wide so I too have found new creative thoughts and new ideas, and thanks to my qualification of an engineer I have been able to explain it all in simple words which simple people can understand. I am at present at work on a paperback, but when it will be ready, and if it will be finished in my life time I don't know.

As you well know, thoughts and ideas come when you are writing about them. When I wrote my letter to you (enclosed) of December 8 the thought came to me that I should take off the burden of an explanatory paper to the editor of Scientific American from your shoulders and write it myself, with you editing and re-writing it. But when I started on it, I felt that it will necessary first to convince you, and only you. And this even if the idea of an article in Scientific American should never materialize. Allow me therefore to dedicate the attached 18 pages to you and to you only. Indeed, you could write a short letter to the editor if you think it worthwhile, because if he is not favourably inclined to a second article you and I could save much time and labour. However, the letter to him must not be in general terms, because he might answer that you should submit the finished article - and then, the usual things might happen, ... regret that the article is too specific and to this and that, so sorry, and all that. It would be a pity.

So, when you think we should condense the 18 pages to give the editor an idea what the article would be about, I am ready to do all the work, and I wait for your decision. Meanwhile I am again with my best wishes

Sincerely yours

C.K.Bliss

PS By surface mail I am sending you an Australian picture calendar. It will arrive in February. Furthermore it may take some weeks until you will receive my book. I am writing about this to Mrs.Radziejowski of the Spicer Library.

Dear Mr. Bliss:

Professor Kreiling sent me a copy of your letter with a recommendation to buy your book. Please be so kind and send it to the Library Order Department along with an invoice. Professor Kreiling is indeed very interested in your work and you will certainly hear from him shortly.

Last Spring the institute was in a difficult financial position and we were not able to buy any new books.

Sincerely yours

Mrs. Anna Radziejowski
Head, Acquisitions Department

I answered her:

Dear Mrs Radziejowski, Sydney 2 Dec 69

Many thanks for your kind letter, informing me that Professor Kreiling has ordered my book and that he is very interested in my work. I assure you that your letter was most heartwarming to me, an author of a new idea "One Writing for One World". Authors of new ideas ahead of their time have usually a hard time, and if all would write such kind letters like you did, the world will be a better place to live in. Thanks again.

It may take a few days, or a few weeks until the book will be in your hands. A year ago I was in a desperate situation. My book wholesaler in the U.S.A. went bankrupt. I could save my books but not the money for books sold. I could not store them, as it was expensive, and I could not return them to Australia because of the dockstrike and the wharf chaos. Hence came the idea to send the books for inspection to selected libraries. To my great surprise many librarians bought the books. Others returned them for which I provided the U.S postage. But there are still many books floating around. I have written to those libraries, and some of them have sent their check, and some have returned the book.

I have now written immediately on receipt of your letter to a library next to Brooklyn, namely the Great Neck Public Library of GREAT NECK, N.Y. saying that if they don't intend to return the book, and if they have not returned it to me yet, then to despatch it immediately to your library. I enclosed enough U.S. postage stamps for the mailing, and asked also that your name be mentioned on the label. Now, should they return the book, or have it not more (I asked them to inform me immediately and sent postage stamps for doing so) I shall approach another library. So, as said before, it may take a few days, or a few weeks, but you will get the book for sure. I enclose in any case an invoice, some indexing matter, and also a short letter

letter for Professor Kreiling to whom I shall soon write a detailed letter.

Your name is Polish, and you may be interested to know that there is a man in Poland Mr. B. Spolitakiewicz of Sopot, who is a linguistic genius, and who is working in the same field as I do. We are corresponding, and I help him as much as I can, but I always tremble in fear for him. Who knows, some of these Russian secret police baggards may think that those symbols are a secret code, and what not. What a terrible world we live in.

However there is some hope. People like you and Spolitakiewicz and Prof. Kreiling and others will bring about a better world. And in this hope let me wish you a MERRY XMAS AND A HAPPY NEW YEAR, and (I am sure I write it wrongly) Niesze Polsku niesz genela! I can sing it, as I hiked with Polish boyscouts when I was a boy.

Sincerely yours
C.K.Bliss

One month later I received a copy of the American magazine PRINT with my article "Semantography" One Writing for One World." I immediately sent it to Prof. Kreiling with the following letter:

Dear Professor Kreiling, Sydney 1 Feb 70

I assumed that you have received my letter of December 27 together with my 16 pages of a demonstration of my semantography. And now I have received word from my distributor that he had sent your library one copy of my book. In this letter I include the article which has just appeared in the prestige magazine for the American publishing trade PRINT Issue November/December 1969. Unfortunately the xerox copy is not very good making the small print difficult to read, but it will suffice for you to get another demonstration of my Leibnizian symbolic logic.

In this article I tried to show another side of this logic. In my 18 page demonstration I have shown how my pictorial script could counter mental muddles arising from "picturesque speech" called metaphors. In the article in print, I have shown how my symbols can "picture" invisible meanings as for instance "emotion, reason, conscience, jealousy, insincerity, good, bad, tolerance" by following Leibnitz advice to picture the visible which accompanies the invisible. The visible which accompanies the invisible abstract meanings is the outline of the upper skull (∩) seat of the brain within which grey matter these abstract meanings originate.

The trouble is with such articles is that I have to write them in simple language if I want to convince the readers who in the case of the Print articles are not scholars. In the book itself I have to go to great length to deal with all the scholarly arguments and counter arguments, and I have tried there to discuss them and to convince the scholarly reader that after all, this is what Leibnitz had in mind. I suggest that you open up the index under "Leibnitz" and follow up all references to his idea of a "Symbolis Universalis". I refer especially to the pages 312ff which contain the chapter "Leibnitz' Dream."

The bibliography in the Print article (bottom of page 65) lists first the paper which Professor O.L.Reiser (Pittsburgh) read to the AAAS, and which contains the passage "Bliss realized the ambition of the great mathematician Leibnitz." I am ready to post this paper to you should you want to read it before making your suggestion to the editor of Scientific American. Again I want to stress what I said in previous letters, you should acquaint yourself with my book only in so far as it will enable you to suggest to the editor of Scientific American a sequel to the first article of yours. If he disagrees with the idea, let's forget about it all. If he agrees, then ask him the exact length and space he has in mind, and I would supply you with photographic drawings of all the symbols to fit in that space together with your explanations for which I would also make suggestions. Lastly, please realize that I am now well past 72 and not lokking for the limelight of the world. All I want is that my work should become a practical reality and should help humanity. And you, a professor of the history of science is best suited to help a pioneering idea along. I am with sincere thanks Yours sincerely
C.K.Bliss

And then I waited and waited and waited with ever sinking hope, but no answer came from Kreiling. Today as I include this unhappy correspondence, the date is March 4, 1971. More than one year has gone by. I am glad I am still alive, but my approach to Prof, Kreiling is dead. And yet, he is a professor of the history of science. It is simply his duty to take an interest in this historic scientific event: the realization of Leibnitz' old dream and prophecy. Or is it that men of new ideas must be dead first, until professors of the history of science take an interest in their work?

The End

It is now October 1971 when I start mimeographing these pages. No word from Kreiling. I am afraid it will never come. How discourteous! How incredible! And he a Professor of the History of Science.