Giorgio de Chirico and the Theory of Relativity

by
*Ralf Schiebler**

[...] In 1911 Marcel Duchamp painted a *Sad Young Man in a Train*, and in 1912 the famous second version of the *Nude Descending a Staircase*, the "continuative" image of successive states – although somewhat dissolved and hardly definable of a moving body. This painting caused a sensation at the *Armory Show* in New York in 1913. To round off the set of means of transportation, in that same year Duchamp mounted an ordinary bicycle wheel on a stool, thus inaugurating kinetic art. Apart from all these whirling movements stands the statuary and classical figure of Giorgio de Chirico. Let us have a look at his *Les plaisirs du poète* (Delights of a Poet), painted in 1913 in Paris, the seething capital of the avantgarde, and now to be found in the Museum of Modern Art in New York. When compared to the previously mentioned works, no greater difference could be imagined.

The first impression is one of rigid fixation. For one thing, this is achieved by the use of a strong, though slightly deviate linear perspective system, a system which had appeared to have been finished and dissolved with Paul Cézanne; for another, this effect is achieved by means of a sort of fossilization. The whole vegetationless piazza, including the solitary figure, is afflicted with it. Yet we would not sense such a stunning feeling of standstill, were there not also in the picture movement that has been brought to a standstill (more eternal than momentary).

There is the train approaching the station; there are the flags rattling in the wind, as Holderlin would have said; there is the fountain rippling in the midday heat, its enclosure forming a trapezoid, whether by virtue of perspective or of reality; and there are, most interesting of all, – the hands of the station clock, showing 2 p.m. The advancing of a minute hand is – curiously very similar to that of the moon – just in the borderland between those movements which are perceptible and those which are imperceptible to the human eye. On the other hand, the light of the sun, scorching so relentlessly on the Mediterranean square and intensified by the deep shadows, is a bit too fast to be persued. Thus, an hour hand seems stationary. In the same way light does.

* From a Lecture at Stanford University, October 1988

Time is essentially connected with the speed of light, as we shall see in ten minutes. And time is, in its turn, the basis and the denominator of velocity as well as of acceleration. Today, even the unit of length – which one year after de Chirico's birth was defined as the distance between two marks on an x-shaped bar of platinum-iridium alloy near Paris – is defined as the distance traveled by light in a certain very small fraction of a second. So, when the 19th century, extended until 1914, is spoken of as the age of acceleration, it could equally as well be spoken of as the age of time, i.e. an age where time seemingly elapses faster, or an age of a growing consciousness of time. I have already mentioned some examples in the domain of the visual arts in which this spirit of the age is reflected. However, one example taken from the domain of literature still must be added: *The Time Machine*, by Herbert George Wells.

The time machine allows its operator to travel into the future or the past (while not stirring from the spot three-dimensionally). As it happens, this "scientific romance," as its author called it, was published in 1895, the same year in which Albert Einstein conducted a mathematical experiment which convinced him that the traditional conceptions of space and time could not be correct. Secondly, Wells had published a first version of his work in 1888 under the title *The Chronic Argonauts*. This was the year Giorgio de Chirico was born in Thessaly in the Greek city of Vólos, the site of ancient Iolcos, from where, according to Greek mythology, the Argonauts, comprised of Jason, Orpheus, Heracles and others, had put to sea in quest of the Golden Fleece.

De Chirico loved to imagine himself as one of these heroes sailing on the "Argo" (in the early twenties he painted *The Departure of the Argonauts*) the remarkable thing about the "Argo" is that it was said to be able to sail with the speed of lightning. On its way into the Black Sea, it succeeded in passing through the "Symplegades," a dangerous strait at the Bosporus where two swinging rocks had crushed any creature trying to pass.

The Argo's passing broke the spell, the rocks were immobilized forever. This anticipates the Theory of relativity: for anyone traveling at the speed of light, the world in the direction of movement will appear, will actually be as flat as a painting by Giorgio de Chirico, and time in this world will have ceased to elapse. Let us return to the *Delights of a Poet*. A clock alone would not be sufficient enough to argue that time is the main topic of this painting.

And the mere standstill of a clock would in itself not be sufficient to connote that time has come to an end, since a painted or photographed clock has lost its movement. Here in this picture, though, we see firstly three different types of chronometers: a water clock – one of the oldest time-measuring instruments – suggested by the fountain, a sundial, suggested by the wandering shadows on the piazza and in the arcade, and the mechanical station clock. This variety of chronometers – to which may be added the "stone clock" readable in the disintegrating architecture – illustrates a variety of the kinds of time, in particular astronomical and atomic time, which are inconsistent and thus require a leap

second now and again; astronomical time is in itself so inconsistent that leap years are necessary. Secondly, in regard to the stopping of time, the arrested hands are embedded in an extremely firm and fixed composition, creating a sensation of unalterableness. De Chirico succeeds in conveying an atmosphere of eternity, one which he experienced himself in moments of "revelation", "nearly morbid states of sensitivity", when staying in Florence and Turin. The result is a transcendental mood hovering over the stones. Just as strange as the green sky and, indeed, a poet's delight, is the contrast between metaphysics of the loftiest nature and its most massive foundations in physical reality. What Platonic Ideas, and architectural and pictorial constructions such as seen in de Chirico's work have in common, is their considerable resistence to the flux of time. In addition to these atmospherical devices, de Chirico uses allegorical ones. However, not in the way Goethe did in the passage already cited from *Faust*: "The clock shall stop, its hands break off, time shall be over for me". Since ancient times, and especially since the Renaissance, philosophers, w ho in thinking possess a time and space machine, have been closely connected with the temperament of melancholy. De Chirico often condensed the general melancholic mood weighing upon his "Piazze d'Italia" into a personification of "Melanconia" (as it is in Italian).

The Soothsayer's Recompense was also painted in 1913 and now is in the Philadelphia Museum of Art. Downstage, sleeping on her base in cubist luxation, lies the mighty figure of Melanconia. Her features result from her understanding of time being transitory, while nevertheless trying to check it in deepest thought or dream. The time of day is three or four minutes earlier than in the *Delights of a Poet* and the background train, behind the wall, is a bit faster. This is clear since its steam is driven to the right in spite of the wind blowing strongly from the right, which in turn is shown by the flags on the station. The station appears as another allegorical , or at least metaphorical element. A station is literally a place where things become stationary.

We may view de Chirico's paintings as stations where the arrow, the train of time, has come to a halt, a waiting room of time. But in this case do we have a "distinguishing" snapshot like the *Epsom Downs Derby* by Théodore Géricault – who, like de Chirico, was "born under the sign of Saturn" (thus making him a melancolic)? The answer is no, because it seems that, on the contrary, the decisive moment we remember, characteristic of the distinguishing style – in de Chirico's pictures is alienated and removed from normal life. It is mystified and faded out, Even time is more than just stopped: we are leaving it. While in the *Epsom Downs Derby* the distinctness of imagination wanes as we go away into the past or the future from the moment represented, de Chirico's paintings, and above all those done between 1910 and 1919, resemble a black box in spite of their highlight illumination.

The more we leave the familiar situations taking place in Italian squares, which presumably preceded and will follow the moments depicted in the paintings,

and the more we concentrate on them, plunging into their very centers, the more enigmatic they get. Thus, they are strangely similar in structure to the "completing" images of Giotto, where we also saw that the crucial instant was eclipsed. Indeed, with de Chirico we are in this respect returning to the Middle Ages. If Géricault is a painter of movement, then Giotto and de Chirico are painters of rest. Hence, it might seem quite astonishing were I to suggest a close affinity between de Chirico and Albert Einstein, the latter normally being associated with terms such as "revolutionary" and seen as a paragon of the modern spirit. The truth, however, is that, according to the general Theory of relativity, it makes absolutely no difference whether the earth revolves itself or whether the sun revolves around the earth.

As Douglas R. Hofstadter put it: ten points again for the infallibility of the Pope. In a popular explanation of the Theory of relativity, Einstein gives an ingenious insight into the reversing of an occurance as familiar as the slowing down of a train. He argues that a passenger need not ascribe the jolt he feels to a "real" retardation of the train. The passenger's interpretation might just be: "The railroad car I am sitting in remains motionless. But (during the braking period) there is a gravitational field (changeable in the course of time) and pulling in the direction the train is allegedly going. It causes the embankment, moving in the opposite direction, along with the earth as a whole, to decrease in speed. And it is this gravitational field that causes the jolt felt by the observer." This means: whether I take the sun as my body of reference, as Copernicus did, or the earth, as Ptolemy did and as most people do in everyday life, is a matter of convenience and physically of equal value, "Rest" and "motion" are relative notions. There is no point, place or system in the world which is superior to others on the basis of its absolute rest. By using this axiom as one of the two pillars of his construction, Einstein destroyed the so-called ether hypothesis, which had been predominant in the 19th century. According to it, electromagnetic waves needed the ether, which was at absolute rest in space, to be transmitted. It turned out to be a phantom possessing psychological properties but having no physical ones. The laws of nature are the same in any frame of reference, whatever its state of motion. The expression "state of motion" actually shows that, in theory, moving objects are made static, for otherwise they could not be examined. The famous arrow of Zeno of Elea in the 5th century B.C. is in fact not moving insofar as we are following it in thought. It seems that the human mind is a great immobilizer, striving to get hold of the important things which try to vanish. This is where I see the parallel between Einstein, the thinker, and de Chirico, the painter of rest.

Until now, the developments in physics at the beginning of the 20th century have always been analogized with cubist, futurist and rayonist painting and with Duchamp, because of their obvious dynamical, even actionist character. In *The Fourth Dimension and Non-Euclidean Geometry in Modern Art* by Linda Dalrymple Henderson, a voluminous book, no mention is made of de Chirico.

Viewed superficially, this seems understandable. Just ponder the fact that F.T. Marinetti, the "father" of Futurism, when considering how to name his child, at first vacilated between "Dynamism" and "Electricism"; and, on the other hand, consider that Einstein's initial paper on relativity bore the title of *On the Electrodynamics of Moving Bodies*. Here is a concordance in words, not in spirit.

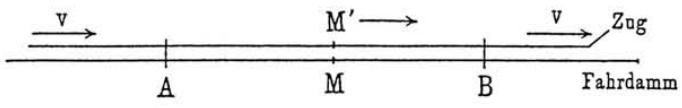
In citing the example of the braking train, or respectively the embankment slowing down under the influence of a gravitational field, I already jumped ahead to the general Theory of relativity, completed in 1915/16. But let us proceed step by step from the beginning. In *On the Electrodynamics of Moving Bodies*, published in September 1905 in the German monthly "Annalen der Physik," the term "theory of relativity" does not occur. Two years later Einstein did use it, rather casually, in another paper.

And of course, the first paper could not be considered as expounding on and inaugurating the special Theory of relativity until that moment when there was talk about a general Theory of relativity. The difference between the two lies in the fact that the special Theory of relativity is concerned with frames of reference moving relative to each other at a constant speed, in unvarying directions and without rotation – so-called Galilean or inertial frames of reference – whereas the general Theory of relativity deals also with coordinate systems being accelerated relative to each other. Although Einstein succeeds in arresting even accelerated systems – "fixing the imagination," as he once said (e.g. by imagining an observer sitting on a constantly revolving disk) – things are clearer with uniform movements. What he, in 1905, called the "principle of relativity," had – in its mechanical or kinematical meaning – already been known to Galilei (who, understandably, could not have forseen the difficulties this would present in electrodynamics). Galilei remarked: "An individual imprisoned in the hold of a big ship in a calm sea cannot decide whether the ship is at rest, or floating at a constant speed relative to the earth".

We remember that in the *Epsom Downs Derby* Géricault primarily chose a frame of reference relative to which the horses were standing still and the meadows flying by. In the series of paintings we are looking at here, de Chirico, apparently in emphasizing the principle that rest is movement and movement is rest in its latter part, integrated two frames of reference: one relative to which the station is at rest and one relative to which the train is at rest. In the *Gare Montparnasse*, painted in 1914 (Museum of Modern Art, J.T. Soby Bequest), it might seem as if de Chirico had added a third frame of reference for the steam of the locomotive. At least one art critic concluded from the steam rising straight up in the air that there was "discontinuity" in the picture, because the flags, in contrast, were flapping heartily in the wind. There is indeed discontinuity of space, considering the bold perspective, discontinuity of style, regarding the pointillist touch of the sky, and there is also discontinuity of time, but the steam is not the reason for it: the wind is blowing at the same speed and in the same direction as the train is going.

The assumption of discontinuity of time was already implied by our bringing together de Chirico's images with the "completing" style of Giotto. Therefore, we must be careful when speaking of the "moment" de Chirico's painting shows.
Which moment? The question arises: is a certain period of time the same for the tiny twin figures standing in front of the Montparnasse Station and for a passenger on the train? Do their respective watches synchronize?
It is exactly this question that Einstein asks while explaining the special Theory of relativity, and he does so by means of the same leitmotiv, the locomotive. Since synchronism implies the simultaneity of two respective "strokes" of two different clocks, a definition is required according to which we can state whether or not two events taking place at a great spatial distance from each other happen simultaneously.
The quickest possible way of finding out that a momentary event has happened is a signal traveling at the speed of light – only a god could have instantaneous knowledge and this lies beyond the realms of physics (but was the basis of Newtonian physics). Einstein therefore defined: two events, for example the strokes of lightning A and B, happened simultaneously, if an observer sitting exactly in the middle (M) between A and B sees A and B simultaneously. A, B and M lie on the lower line of this diagram, the line signifying the earth, the embankment and the rails.

Fig. 1.



The upper line denotes a long train moving at a constant speed to the right. M' is the middle of the line between A and B on the moving train. The moment, as witnessed by an earthbound observer, when the bolts of lightning struck at points A and B simultaneously, M' coincided with M. But then what happens? A train passenger sitting at M' moves towards the flash of light emitted by B, and travels ahead of the light emitted by A. Hence, he will see B first, then A and will then conclude that B happened earlier than A.
This he does with the same right as did the observer at M when he confirmed synchronism. It follows that there is not such a thing as absolute simultaneity. Each frame of reference has its own time. A date makes sense only if we know the coordinate system to which it refers. In the case of de Chirico's painting, the clock in the tower indicates the time valid exclusively for the tower and everything not moving relative to it.
If the timepieces of the city of Paris and of the traveler are out of synchronization, they must tick either faster or slower in respect to one another. Through considerations which cannot be demonstrated here, Einstein shows that a pas-

senger on the train would find the clock in the tower to be slower than his own watch and – owing to the principle of relativity – the passenger's watch would be found to be slow compared to the clock in the tower by someone standing in front of the station! In addition, when measuring their mutual rules they both would come to the conclusion that each other's rules are foreshortened in the direction of mutual motion.

Dilatation of time and foreshortening of rods, i.e. the relativity of space and time, the essence of the special Theory of relativity, serve to resolve a contradiction for which there had been no satisfactory solution until 1905: the contradiction between the principle of relativity (as we saw, already known to Galilei) and what we might call a principle of absoluteness: the universal constancy of the speed of light, in theory and in experiment, irrefutably confirmed in the course of the 19th century by Fizeau, Maxwell, Lorentz and others. The contradiction becomes obvious to common sense with the help of the following illustration: imagine a beam of light sent out parallel to rails straight as an arrow. The air has been pumped away.

The light travels at its known velocity in the vacuum, relative to the earth. Imagine now a train running on the rails at constant speed and in the same direction as the light is traveling, but somewhat slower. One would assume that the speed of the beam of light relative to the railroad car is the speed of light as measured before, minus the speed of the train (just as the speed at which a person is walking in a train toward the back has to be subtracted from the speed of the train in order to calculate the speed of this person relative to the embankment). But this is not the case.

The constancy of the velocity of light remains untouched, because in going over from one inertial frame of reference to another, an observer will have to apply particular mathematical transformations (known as the Lorentz transformations) which neutralize the difference originally expected. I add that these dilatations of time and contraction of distances become noticeable, of course, only when the relative speed approaches the rate of 186,000 miles per second. If a rapid elementary particle in the Linear Accelerator close by were in the position to observe us, we would in fact turn out to be very big, very flat, and ageless, just like a painting by Giorgio de Chirico.

To sum up, we can state that trains and clocks play a decisive role in the iconographies of Einstein's physics as well as of de Chirico's metaphysics. Picasso, with his eye for the essential and in his only recorded comment on his Italian colleague, described him, as J.T. Soby reports, as "a painter of railroad stations". Einstein's illustrations w ere taken from his popular account of the relativity Theory.

This booklet was first published in 1917 and attained wide circulation, especially after the spectacular verification of his predictions thanks to a solar eclipse that happened to occur in West Africa in May 1919. Thus, one might object that the painter's inventions, dating from 1912-1914, were totally independant of the

scientist's imagery. But, as it turns out, we do find already in the famous initial paper of 1905 – the first pages of which are quite understandable also to the general reader – the railroad example. It concerns a definition of time and reads as follows: "We have to take into account that all our judgements in which time plays a part, are always judgements of *simultaneous events*. When I say, for example: 'This train arrives here at 7 o'clock,' this means approximately: 'The pointing of the hour hand of my watch at 7 and the arrival of the train are simultaneous events'".

Einstein is not the only German connection de Chirico had. He studied at the Academy of Arts in Munich from 1906-1910. He knew German very well and read Goethe in the original. He especially admired the art of Arnold Böcklin and Max Klinger and profoundly loved the writings of Friedrich Nietzsche. He read the works of the Austrian philosopher Otto Weininger, i.e. especially *Sex and Character*, the highly curious and controversial creed of a young man who was to commit suicide shortly after its publication.

About 1912/13 de Chirico began to call his painting "metaphysical": "pittura metafisica". The initial impulse that led him to do this remains a mystery. But it would not come as a heard of the studies published in 1912 by the German classical philologist Werner Jaeger on the History of the *Origins of Aristotle's Metaphysics*. Attention thereby was drawn to the fact that the word "metaphysics" does not at all occur in Aristotle's metaphysics.

The title was chosen two centuries later by the editor of the philosopher's lectures, because he placed the corresponding writings "after Aristotele's Physics" ("metà tà physiká"). Nevertheless, the term then could also be understood in a figurative sense, since the work contains the "prime philosophy," dealing with the first and last things "beyond" the physical world. De Chirico offers an additional connotation of "metaphysics". He is a philosophical and poetic artist who does not paint "from nature", but "from thought", for instance, from thoughts congenial to Einstein's. I propose, therefore, to view "pittura metafisica" as painting that comes "after physics". Such an inclination for physics would be consistent with an observation made by Erwin Panofsky concerning the general difference between the natural sciences and the humanities.

The natural scientist strives to rescue the underlying invariable laws from the varied stream of time. As Einstein once said: "Politics are for the moment, but an equation is for eternity" (we can understand the resulting Melancholy of the Politician who has not succeeded in ensuring his immortality through writings, films etc.). The historian, on the other hand, tries to revive dead works of the past, thereby complementing the artist, who fixes time in images as eternal as, for instance, de Chirico's. It follows the affinity between artist and natural scientist, at least from the point of view of their attitude towards time.

Proceeding from the special to the general Theory of relativity, we discover another parallel to de Chirico's works. In late 1915 or early 1916 they changed decisively in character, after his having returned from Paris to Italy. He was drafted

into the infantry at Ferrara and then got a posting to a military hospital nearby, but always had some free time to paint and "to think just a bit about art and the things of the mind which had always been the ultimate goal of our lives." De Chirico had spent his youth in Greece, where his father had worked as a railroad constructor, and his student years in Munich. In his native country, he had only lived a short time. Then, upon his return in 1915, he almost immediately stopped painting the "Piazze d'Italia", which had been his main subject, and perhaps a nostalgic one at that, during his stay in Paris from 1911 to 1915. At this point, he turned to painting interiors. The world is turned outside in, so to speak. Often the outside world is still present in the room as a thrilling reminiscence in the form of a painting within the painting as in this magnificent *Metaphysical Interior with Lighthouse* (1918). But this only emphasizes the real isolation of the room.

Those vast Italian squares were already very quiet. Silence reigned over them, interrupted only sometimes by the frantic whistle of a locomotive exemplifying the Doppler effect. But these "metaphysical interiors" are hermetically sealed. The air was already very thin over the squares. But here no air is left. They have been called "claustrophobic" interiors, and one might speak of a claustrophobic phase replacing an agoraphobic one.

The same reversal is to be found in Einstein's work. In explaining the special Theory of relativity, he used trains racing in a straight line at a constant speed over an infinite plane. Concerning the general Theory of relativity, he, for a moment, came back to this example in imagining the situation of a braking train. Also de Chirico will come back to his urban stages on a more, complicated level. Einstein's initial and chief image, however, is that of a "closed box in the shape of a room," which by means of a rope fastened to a hook on the outside is drawn through cosmic space by some unspecified being at a uniformly accelerated speed. Any person (or object) inside this windowless container would be pressed "downwards" to what he would call "the floor", and he would interpret his situation as being the effect of a constant gravitational field. Probably he would wonder why the container does not fall down under this influence of gravity.

But looking toward the ceiling and noticing the mounted hook, he will conclude that the box is suspended from a rope. Thus, the principle of relativity is likely to be valid nat only with respect to Galilean frames of reference, but also with respect to frames of reference being accelerated relative to each other. The equations of such a generalized Theory of relativity hold true for any frame of reference, whatever its state of motion.

Later on, though, it becomes obvious that, the space-time continuum according to special relativity (the so-called Minkowsky universe) being an Euclidean one but according to general relativity being a non-Euclidean one, all rigid (Cartesian) coordinates have to be replaced by those named after the German mathematician Carl Friedrich Gauss. In Gaussian coordinate systems, the short-

est connection between two points is not a straight, but a curved line called a geodesic. This term traces back to land surveying by methods of triangulation, where such lines occurred as a result of the earth's curvature.

The "universe as a whole", according to Einstein's assumptions also resembles a globe: it is a four dimensional sphere having a finite volume, but no boundaries. De Chirico's metaphysical interiors are stuffed with rulers, drawing triangles, French curves, measuring poles, maps and references to landmarks or survey points, such as the lighthouse. But the maps are of unknown, fantastic countries. The quiet presence of all these engineering utensils makes the scenes disquieting – as the stormy sea breaking against the rockbound coast and the pinwheel standing stock-still in its case at the side. Geometry and pictorial space become increasingly disintegrated and undermined. In these enigmatic and oppressing storerooms you are going to lose your bearings. The familiar view of the world is destroyed, but a freer and wider view can rise from the ruins.

The affinities between de Chirico and Einstein continue when in the 1920s Einstein refuses to follow the path taken by the physics of indeterminacy and de Chirico refuses to join the surrealists, who enthusiastically praised his early period, his metaphysical painting, as their own point of departure. I cannot prove by explicit documentary evidence that there was, at any given point of space and time, a definite contact between de Chirico and Einstein.

On the other hand, no one can prove to me that there was not such a point of contact. This is especially so since the painter was very reserved about revealing possible sources of his art or giving any rational "explanations" of it. However, the parallels cross in the figure of another Nobel prize winner, in physics, namely the very first winner. In 1895 Professor Wilhelm Conrad Röntgen in Würzburg, Germany, had discovered an unknown sort of "ray" (as he supposed) that could penetrate books, wood and flesh, but bones to a lesser extent and lead not at all, and which could be fixed on photographic plates. Because of the unknown nature of these rays , he named them "X rays". This novelty had an immediate and spectacular effect on both the world of science as well as on the general public. Here we have an advertisement for X-ray apparatus published in Paris at the end of the century.

In 1919 it happens that de Chirico, when giving his decisive definition of Metaphysical Art, made use of a comparison with this physical phenomenon: "... everything has two aspects: a normal one that we almost always see and which is seen by other people in general; the other, the spectral or metaphysical which can be seen only by rare individuals in moments of clairvoyance or metaphysical abstraction, just as certain bodies that exist within matter which cannot be penetrated by the sun's rays, appear only under the power of artificial light, under X-ray for example"[1]. The letter X is of special significance to de Chirico. When starting his metaphysical painting, around 1911 at the age of 23, we saw that he was quite at home in four languages: Greek, Italian, German and French (Latin he knew as well). Thus, he was aware of the fact that the sign of X in the Greek alphabet designates the letter chi – i.e. the initial letter of his name. X(chi) became his monogram. Indeed, it appears in several pictures of the period, but in such an autonomous, independent way that it is more than merely a signature; the implication is that the picture is a Self-portrait.

Regard this amazing triangle, *L'énigme de la fatalité (*The Enigma of Fatality), painted in 1914. It is a singular forerunner of the "shaped canvas." Its shape constitutes the lower half of an X. At the bottom on the left, inscribed on the wall between the arches is a big X. This Chi is facing a huge iron gauntlet, and "hand" in Greek is "cheir." De Chirico plays with this connection without going to far into the fields of chiromancy. Whereas in this painting the X is quite thin and schematic, it gains in plasticity in the following work, entitled *Il linguaggio del bambino* (The Language of a Child), which was done in 1916 in Ferrara. Within one of these claustrophobic interiors an x-shaped brioche is leaning, surrounded by non-identifiable objects and what might possibly be the traces of a chirographer's exercises.

The title appears to be just as strange. On the other hand, though, is there a language more understandable to small children than that of cookies? The x-shaped brioche is a speciality of the bakers of Ferrara, who are known throughout the world for the quality of their bread. During wartime, such a delicious thing acquires the quality of a mirage. But de Chirico is also alluding to his own childhood, even to his embryonic stage.

The reference here is to the X chromosome, which is one of the two sex chromosomes, more precisely the one having a sort of hermaphrodite character. It appears de Chirico has represented here a baked genetic code. I cannot go into detail about this today, since our time does not allow it.

Nor is there time enough to cover the relation to psychology inherent in metaphysical painting. I should like to point out, though, that the German child psychologist William Stern, who wrote a book on children's language, introduced in 1916 the concept of the intelligence quotient, simultaneously with the American Lewis Terman, working at Stanford and in whose tests problems were posed to eight-year-old children similar to problems posed by some of de Chirico's paintings. In German, I now would probably talk not wanting to carry owls to Athens,

[1] G. de Chirico, *Sull'arte metafisica*, "Valori Plastici", n. 4-5, a.I., Roma, Apr.-Magg. 1919, pp. 15-18. In G. de Chirico, *Commedie dell'Arte Moderna* (1945), edited by Jole de Sanna, Milan, Abscondita, 2002, pp. 26-30.

a German proverb which itself derives from a Greek one (Aristophanes used it in one of his comedies), and in my dictionary I found the rather curious translation: "to carry coals to Newcastle", but I suspect that this might be a bit out of the way. A more suitable Californian equivalent might be to speak of not wanting to bring knowledge to the learned or the Stanford Intelligence Scale to the faculty and students of Stanford University.

Where a commodity is already in ample supply, more is not necessarily needed. I would like to conclude by stating: both Einstein and de Chirico, believed in a static and eternal universe. And just as Einstein did not succeed in finding the ultimate equation for eternity, reconciling the Theory of relativity with the uncertainty principle, so did de Chirico fail to solve his own personal mystery. He fused his monogram chi and the letter X, symbolizing an unknown factor, into the simple equation: I, de Chirico, am a mystery.