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An Eye in the Microscope and Another in the Telescope.

Roberto Matta and Sciences

Trained as an architect, Roberto Matta would focus on science in general, taking concepts as well as pictures from books of popular science. When Matta arrived in New York in December 1939, his painting developed with images from the physical sciences and biology, blending science¹ and nature with the encounter between reality and dream to "invent visual equivalents to the various states of consciousness."² Matta's real training occurred during the summer of 1939 when he stayed at Chemillieu castle with Esteban Frances³ and Gordon Onslow-Ford. They were joined by Andre Breton and his family, as well as Yves Tanguy and Kay Sage⁴.

Yves Tanguy's presence was particularly important in Matta's development at this time and these holidays at Chemillieu were clearly seen, amplified, mythologized by the protagonists. Matta developed an

¹ See Julien Levy : *Memoir of an Art Gallery*, G.P. Putnam son's, New York, 1977, pp. 247-251.

² Germana Ferrari : *Entretiens morphologiques, Notebook n° 1, 1936-1944*, Sistan Limited, London, Filipacchi, Paris, 1987, p. 72.

³ Esteban Francès (1913-1976). He took part in the exhibition *First Papers of Surrealism* in 1942 and in February 1944, he participated as an illustrator of *VVV* and he designed the cover of *View* in December 1944.

⁴ On this period, see Gordon Onslow-Ford : *Towards a New Subject in Painting*, with a foreword by Richard B. Freeman, exhibition from November 9 to December 12 1948, exhib. cat. San Francisco Museum of Art, San Francisco, 1948, pp. 10-16.

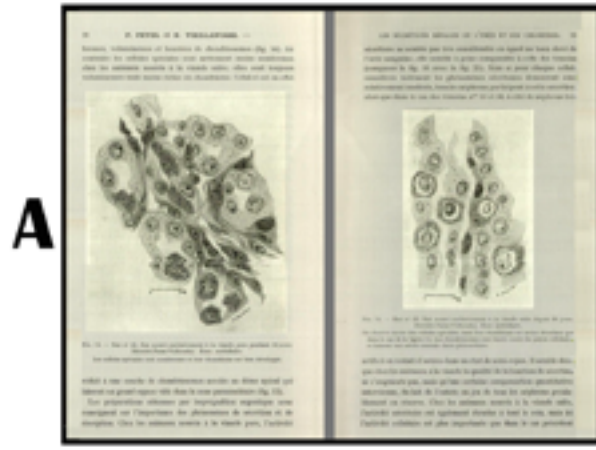
original vocabulary of forms with roots in the infinitely small and the cosmic immensity. “Gordon Onslow Ford says that [...] Matta, his eyes glued to a microscope, focus on flowers, insects, snail shells”⁵. There is no question of a Newtonian physics as Matta or Breton would have dreamed, but a science derived from Einstein or Riemann. This fascination with Einstein is recorded in the pages of one of his scrap books illustrated with several photographs of the German scientist. Such an attraction is understandable because the physics of relativity is the little sister of intuition and analogy.

This dual interest in that which constitutes us (cells, molecules) and that which contains us (stars, nebulae, space-time) paves the way for an inventive painting which resonates with Andre Breton’s purely intellectual interest in the esoteric and the occult. What is the connection between these strange worlds? What are the terms of convergence of such diverse thoughts? Roberto Matta’s painting is at the center of the transformations of Surrealism during the war until the birth of the “Prolegomena to a third Surrealist Manifesto or not,”⁶ and the *Grands Transparents*.

⁵ Paul Haim : *Matta, agiter l’œil avant de voir, errances, souvenirs et autres divagations*, Éditions Séguier, Paris, 2001, p. 33.

⁶ André Breton : *Œuvres complètes*, t. III, bibliothèque de la Pléiade, Gallimard, Paris, 1999, pp. 5-15. This text is written in 1942 in New York.

[Fig-1]



During the years 1937-1939, the subjects are biomorphic and are very close to structures of eukaryotic cells⁷. In the center of the colored circular shapes there are networks of lines that resemble colored representations of the Golgi apparatus⁸ or mitochondria⁹ found in scientific books.

In the drawing *Untitled*¹⁰ of 1937, forms interpenetrate where the colored shapes suggest several internal organelles or some metabolic galleries and microscopic organisms. These forms are also present in the details of *X-Space* and the *Ego* in 1945.

Cell organelles indicate the presence of life and a growing world.

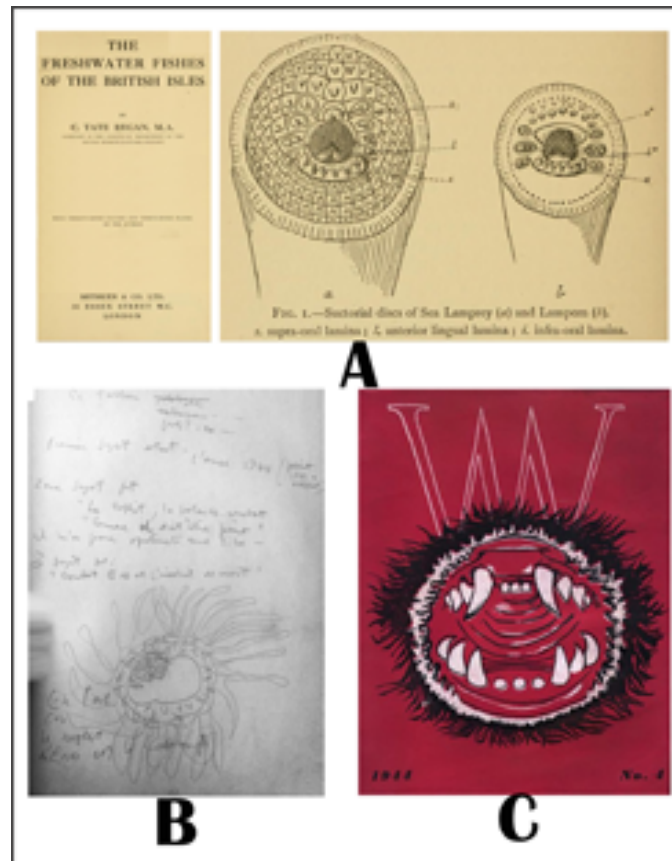
⁷ Fabrice Flahutez : La peinture de Roberto Matta entre cellule eucaryote et singularité de Schwarzschild, in : *Mélusine, (le surréalisme et la science)*, Cahiers du Centre de Recherche sur le Surréalisme (Paris 3 Sorbonne-Nouvelle), Henri Béhar (dir.), n° XXVII, Éditions L'Age d'Homme, Lausanne, March 2007, pp. 145-153.

⁸ Camillo Golgi (1843-1926) was an Italian physician, pathologist, scientist, and Nobel laureate. Golgi identified the intracellular reticular apparatus in 1898 which bears his name, the Golgi apparatus.

⁹ In cell biology, mitochondria are membrane-enclosed organelles found in most eukaryotic cells. Mitochondria are described as cellular power plants because they generate most of the cell's supply of ATP used as a source of chemical energy.

¹⁰ Roberto Matta : *Untitled*, 1937, watercolor on paper, 31,1 x 49, 5 cm, The Ira and Gale Drukier Collection, USA. See Germana Ferrari, n°D37/28.

[Fig-2]



Biology is also the focus of his research, an example of which can be seen in the detail of the wide-open mouth, which is the strong jaws of the lamprey for the cover of issue 4 of the magazine *WV*, released in February 1944. Roberto Matta uses this marine animal because it is the

only one that reverses the sexual behavior of the praying mantis¹¹. This reversal is symbolic insofar as surrealism has always tried to reverse values. Rather than adopting the historic bestiary, Surrealism reinvented the vocabulary of flora and fauna through affinity and analogy. The aggressive acronym *VVV* highlights the idea of Surrealism's offensive in exile, and the lamprey, which characteristically attaches itself, even to stones with the help of a suction cup mouth, is the symbol of resistance to disappearance. But the lamprey is also a snakehead, a migratory vampire that feeds on its host with its fanged mouth¹². This animal, which has both resisted any changes and remained intact despite the evolution of species, metaphorically embodies the immortality of the vampire that sucks the blood of its victims. The cover of *VVV*, no. 4 is entirely dark red, furthermore, the lamprey is mainly cooked in its own blood. It should be noted also that the specie used by Matta was discovered in 1911 date of his birth.

Beyond the study of the infinitely small or the most unusual bestiary, Matta also looked into the telescope and invented the word «

¹¹ About the praying mantis and its morals, see Roger Caillois : *La Mante religieuse, de la biologie à la psychanalyse*, in : *Minotaure*, n°5, Skira, may 1934, pp. 23-26 ; Roger Caillois : *La Mante religieuse, recherche sur la nature et la signification du mythe*, Aux amis des livres, Paris, 1937, and William Pressly : *The Praying Mantis in Surrealist Art*, in : *The Art Bulletin*, December 1973, pp. 600-615.

¹² Claude B. Renaud : *Lampreys of the world : an annotated and illustrated catalogue of lamprey species known to date*, Food and Agriculture Organization of the United Nations, Rome, 2011.

Mattuscope » (Matta + scope) to describe this kind of machine¹³.

Matta's paintings then proceed by fragmentation patterns and the color becomes more varied.

The *psychological morphologies* are a kind of culmination of drawings from 1937 to 1942. The development of psychological morphologies based on the study of Edouard Monod-Hersen¹⁴ and Freud's theories are also developed by Matta to obtain a scholarship at the New School for Social Research in New York in 1940 (and probably funded by Peggy Guggenheim)¹⁵ as we can read in the unpublished letters to Breton. Matta defines drawing as an experimental process, because the drawings are always the site of formal inventions which appear later in his oil paintings. The contrasts of color are violent¹⁶; black and yellow, blue, pink and yellow are mixed directly.

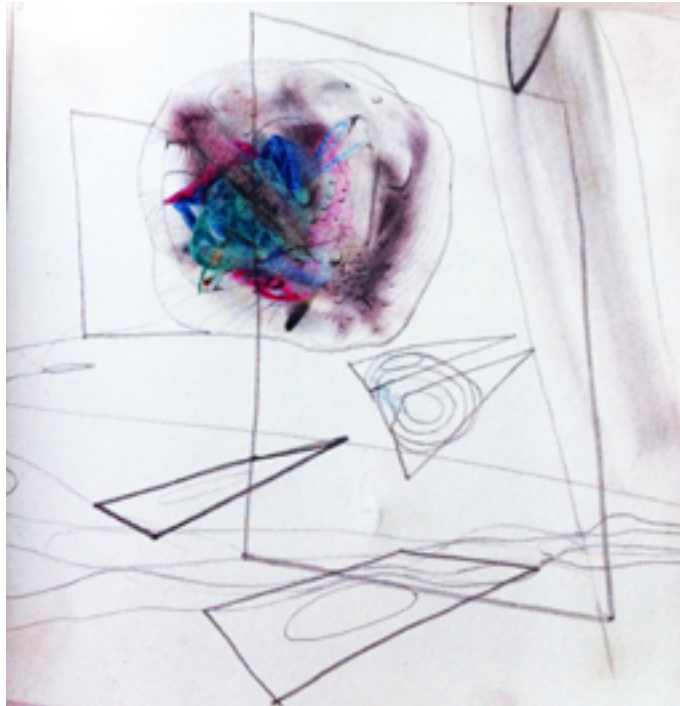
¹³ Letter from Matta to Breton, August 15 1942, bibliothèque littéraire Jacques-Doucet, Paris, BRT.C. 1165.

¹⁴ The books are Édouard Monod-Herzen : *Science et esthétique. Principes de morphologie générale*, Gauthier-Villars, Paris, 1927 and Édouard Monod-Herzen : *Art et inconscient*, Sonor, Genève, 1932 (a copy was in the Breton's Library, sold in 2003).

¹⁵ See letter from Matta to Breton, January 31 1940 (sent from New York to Poitiers), bibliothèque littéraire Jacques-Doucet, Paris, BRT.C. 2097.

¹⁶ Gordon Onslow-Ford : Note sur Matta et la peinture (1937-1941), in : *Matta*, exhib. cat. Paris, Centre Georges Pompidou, Musée national d'art moderne, October 3 - December 16, 1985, p. 32. "The colors are symbolic: blue = sky, yellow = earth, green = vegetation, red and pink = the flesh."

[Fig-3]



“Matta was in possession of an entirely new color range,” wrote Andre Breton in *Surrealism and painting*, “perhaps the only, certainly the most fascinating, which has been proposed since Matisse. This new range is organized from a pink-purple in a process of transformation.”¹⁷ Forms gradually become fluid, the colors make love in the sense that they blend with each other, while the angle is categorically rejected. The world is unstable, hazy or liquid and structures appear as broken

¹⁷ André Breton : *Surrealism and Painting*, trans. Simon Watson Taylor (1972, MacDonald and Company Ltd., London.), reed., MFA Publications, Boston, 2002, p. 187. (André Breton : La perle est gâtée à mes yeux, in : *Le Surréalisme et la Peinture*, Gallimard, Paris, 1979, p. 187. (first edition of the text in : *le surréalisme et la peinture*, 2nd ed., Brentano’s Inc, New York, 1945, pp. 189-195).

windows. The round shapes are like small clouds, whose blurred edges are created by erasing the charcoal drawing and colors. These spherical objects where several détails are not precise, but fluid and blurred are related to Heisenberg's uncertainty principle, which Matta studied in 1943 (p. 214 of his scrap book from 1943). According to Heisenberg's principle, it is impossible to simultaneously measure the present position of a particle while also determining its future motion. In Matta's drawings and paintings the circular volume is bubbling because it expresses a becoming, a dynamic and psychological morphology. The details disappear in favor of flexible, diaphanous, melting elements. In his scrapbook, he tirelessly draws many corpuscular shapes like molten metal. The molten elements are surrounded by planar geometric figures expressing levels of space. Thus, to paint the structure of space, making it visible, Roberto Matta has used parallelograms which suggest that a window has just exploded. This is the only way to make visible the transparency of glass. "The verb is glass," said Matta, "the language is clear as crystal."¹⁸

¹⁸ Germana Ferrari, *op. cit.*, (see note 2) p. 119. "Le verbe est en verre, le langage est transparent comme le cristal." These words appear for the first time in a letter from Matta to Breton dated June 26, 1942, bibliothèque littéraire Jacques-Doucet, Paris, BRT.C. 1164.

[Fig-4]



The phrase near the drawing reproduced on p. 45 of his notebook of 1943 shows his great fascination with anything related to the cosmic: « In recent years,” he writes, “a high penetration of radiation on the earth comes from outer space.”

The compositions in "fusion", where the colors blend, are described by Gordon Onslow-Ford as the meeting point of the feminine and male

principles¹⁹ and in an other hand, there is also a kind of reconciliation between microcosm and macrocosm with the human figure in the center of reflection. The chromatic eruptions are also a metaphor for the intense bubbling of the unconscious²⁰ and the bustle of life. Many drawings are based on this connection between feminine and male principles and/or between bubbling and the figure of motherhood. (Roberto Matta's wife will give birth to twins). [Fig-5]



In a commentary published in an article by Sidney Janis, Matta says: “creating a painting is a phenomenal experience, colossal, in the sense that man is innovative while nature invents always. It’s like

¹⁹ See Gordon Onslow-Ford : Note sur Matta et la peinture (1937-1941), *op. cit.*, (see note 16), p. 35.

²⁰ Germana Ferrari : *op. cit.*, (see note 2) p. 58. “It was the subconscious in a hot molten liquid [...]. Dreams are images of our volcanic experiences.”

participating in advance in future times. [...] painting the colossal structure of life, as science can geometrize the city.”²¹

His attraction to the cosmic spaces makes him interested to recent observations made by astronomers. In the central part of the painting *ETATEAT*²² spherical white shapes float above concentric lines. The contour line combines two line segments that connect but do not intersect; these represent elevation or distortion on a topographic map. The stones seem to be absorbed by these topographic depressions as the stars are inexorably swallowed by the black hole from which even light can not escape. The composition is organized around planes which also suggest broken bidimensional spaces, like glass plates in homage to Marcel Duchamp. *The Large glass* by Duchamp is a multidimensional piece of art.

Matta vocabulary borrows from Max Ernst, Joan Miró, Yves Tanguy for the representation of space, and from Duchamp and Giacometti for objects and themes²³. The paintings *L'année 44*²⁴ or *The Vertigo of*

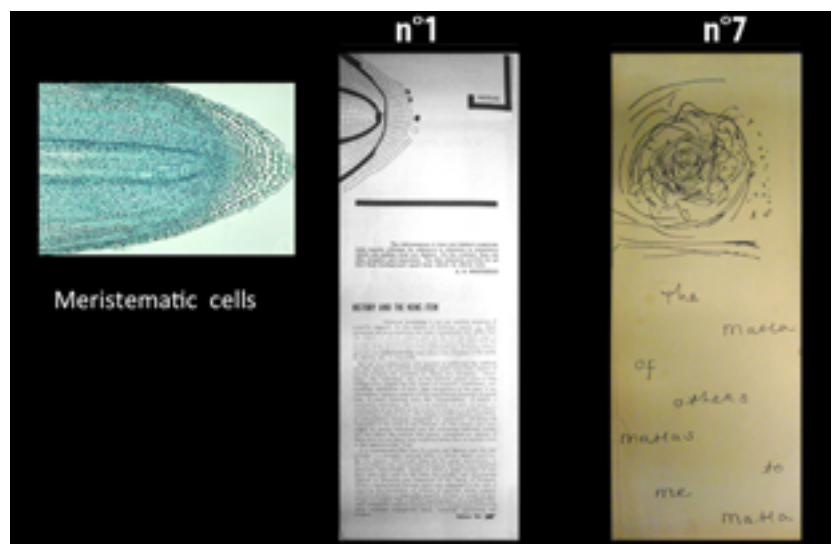
²¹ Sidney Janis : The School of Paris comes to US, in : *Decision*, vol. 2, no. 5-6, November-December 1941, New York, pp. 85-95.

²² Roberto Matta, *ETATEAT*, 1944, oil on canvas, triptych, 86 cm x 247 cm, sold : Sotheby's Paris, July 2&3 2008.

²³ Rubin, William Stanley : *Dada, Surrealism, and Their Heritage*, Museum of Modern Art, Greenwich, Conn, distributed by New York Graphic Society, New York, 1968. p. 169. “These bizarre anthropomorphs, which became increasingly sculpturesque in their modeling as Matta proceeded, recalled the monsters of Ernst, Giacometti's *Invisible Object* and the aggressive mannequins in Masson's drawings of 1939-1941.”

*Eros*²⁵ are also attempts to express the notion of space-time as it was conveyed by American popular scientific journals²⁶.

[Fig-6]



The unknown journal Titled *Instead* supervised by Matta shows many scientific topics even on covers²⁷. The issue n° 1 shows a meristem and the n° 7 a cloud of points and lines related to Heisenberg uncertainty principle. A meristem in biology is the tissue in plants consisting of undifferentiated cells (meristematic cells), found in zones of the plant

²⁴ Roberto Matta : *L'Année 44*, 1942, oil on canvas, 97 x 127 cm, Staatliche Museen Preussischer Kulturbesitz, Nationalgalerie, Berlin.

²⁵ Roberto Matta : *The Vertigo of Eros*, 1944, oil on canvas, 195.6 x 251.5 cm, The Museum of Modern Art, New York.

²⁶ See C. H. Hinton : The Recognition of the Fourth Dimension, in : *Report of the Committee on Mathematical Science*, Philosophical Society of Washington Bulletin, vol. XIV, Philosophical Society of Washington, Washington, March 1900, pp. 179-203.

²⁷ Fabrice Flahutez : Lecture labyrinthe et espaces spirales : la revue *Instead*, in : *Les revues d'art. Formes, stratégies et réseaux au XX ème siècle*, Rossella Froissart (dir), Yves Chevretil-Desbiolles (dir), Presses universitaires de Rennes, Rennes, 2011, pp. 155-165.

where growth can take place. The meristematic cells give rise to various organs of the plant, and keep the plant growing. Andrea Caffi, Matta's collaborator in the rare journal *Instead*, specified: "Cosmogony, geology, the development of vegetable and animal species can be fitted without arbitrariness into the same series with the annals of all the human collectivities that have lived [...] thus to turn around the celebrated hypothesis of Laplace, it seems permissible to conceive, side by side with the omniscience condensed in a gigantic mathematical formula (positions and relations of everything that existed, exists or will exist in space-time), of a "memory" woven of nothing but qualitative moments instead of quantitative coordinates, and capable of evoking the peculiar vicissitudes of every atom, and of all the combinations of atoms, in the eternity of the universe with the contradiction, so insoluble to us, between the reality of the present and the unreality of what is no more or is not yet, as well as between the innumerable possibilities, which are not however just nothing and all that chance has let be realised."²⁸

If these remarks are theorized in the journal *Instead* in 1948, they provide a synthesis of research that Matta had recently conducted with André Breton in the U.S. Breton spoke of Matta's influences: "Thus, also, he invites us constantly to a new space, in deliberate break with

²⁸ Andrea Caffi : History and the News Item, in : *Instead*, no. 1, February 1948, np.

the old, (...). Regardless of (...) the scientific insights of psychological morphology, Gestalt theory²⁹, astrophysics, histology and molecular physics. The need for such research does not express anything else than the desire to expand, with the help of the most modern resources, the scope of the visible.”³⁰

Parker Tyler also mentioned in *Art News* this genesis: “Matta’s early “cosmic systems” are simply astronomized mutations of Freudian visceral metaphysics, made from inspiration as passionate and immediate as a child’s.”³¹ His paintings show spherical particles that seem to levitate in a interstellar world where the concepts of high and low, heavy and light, great and small are absent or obscured. There is a clear collusion between the old esoteric philosophies which advocated the abolition of opposites and the scientific concepts that reveal the futility of our Euclidean physics and our perception of time³². In his scrapbook from 1943, Matta wrote of the programmed death of geometry because it was not adapted to a global vision of the world³³.

²⁹ Andre Breton was very interested in Gestalt theory at the end of 1941 as evidenced by his correspondence. Letter from Andre Breton to Benjamin Peret dated January 4, 1942. (New York to Mexico), bibliothèque littéraire Jacques-Doucet, Paris, BRT.C. 254.

³⁰ André Breton : *Surrealism and Painting*, *op.cit.*, (see note 17).

³¹ Parker Tyler : *Art News*, vol. 56, n° 7, November 1957, p.11.

³² Letter from Matta to Breton dated 1944 and sent from New York to Percé in Canada. Breton Collection. See item n° 1157 (Breton auction April 11 & 12 2003, Hôtel Drouot, Paris (étude Calmels-Cohen).

³³ Germana Ferrari, *op. cit.*, (see note 2), p. 117. excerpts from Scribble-in-book, 1939-1940 and in many pages of the notebook 1943.

[Fig-7]



The centers of these spirals³⁴ are like the eye of the storm where the fusion of opposites takes place, but they are also metaphorical meeting points of Eros and Thanatos, of what Bataille called in his book "Erotism: Death and Sensuality" the passage of discontinuity to continuity³⁵. In addition, Matta often includes the letters OE in his titles. The body and flesh, eroticism and death are embodied in these two letters found in foelie, yeux, feu, poet.

The spiral is finally the expression of the surrealist labyrinth in the centrifugal sense. Roberto Matta also uses a specific mathematical

³⁴ The spiral appears on the cover of the journal *Dyn*, no. 6, November 1944. The spiral is directly borrowed from Theodore Andrea Cook : *The Curves of life, being an account of spiral formations and their application to growth in nature, to science and to art ; with special references to the manuscripts of Leonardo Da Vinci*, Constable and Company LTD, London, 1914, p. 460.

³⁵ Georges Bataille : *L'Érotisme*, Minuit, Paris, 1957, pp. 20-23. (*Erotism: Death and Sensuality*, City Lights Books, San Francisco, 1986).

pattern which is the Karl Schwarzschild singularity. The inclusion of mathematical³⁶ and astrophysical data had started a few years earlier, when Matta (with Gordon Onslow-Ford) discovered the mathematical objects at the Institute Henri Poincaré³⁷ in Paris in 1937³⁸. According to the painter, the attraction for maths is the key to the discovery of light and time.³⁹

³⁶ See Christian Zervos : Mathématiques et art abstrait, in : *Cahiers d'Art*, vol. 11, no. 1-2, 1936, pp. 4-10. The same issue included reproductions of "mathematical objects" photographed by Man Ray at the Institute Poincaré in Paris. See also Jeanine Plottel : The Mathematics of Surrealism, in : *The Romanic review*, vol. 71, no. 190, n° 3, Columbia University, New York, May 3, 1980. Finally, Max Ernst painted in the U.S., a painting entitled *Mattamatichs* tribute to Matta in 1942 and reprinted in Patrick Waldberg : Max Ernst au pays qui lui ressemble, in : *Cahiers d'Art*, year 24, Paris, 1949, p. 290.

³⁷ William Rubin limits his analysis of Matta's paintings to the visit to the Institut Poincaré and unfortunately does not continue the reflection about Schwarzschild singularity. See William S. Rubin : *Dada, Surrealism, and Their Heritage*, *op. cit.*, (see note 23), p. 160. "The spatial effects suggested there, along with ideas derived from the contour lines of the mathematical objects at Poincaré Institut in Paris, were later explored by Matta in such paintings as *Onyx of Electra* and *X space and the Ego*."

³⁸ Gordon Onslow-Ford : Note sur Matta et la peinture (1937-1941), *op. cit.*, (see note 16), pp. 27-28. "I remember we had been influenced by an exhibition of mathematical objects we had seen at the Trocadero, and also by the Tertium of Organum Ouspensky and his theories on humans, one, two, three or four dimensions."

³⁹ Germani Ferrari, *op. cit.*, (see note 2), p. 77. "The unique opportunity to understand light and time is with a mathematographic memory." and p. 116 : "If one could imagine going very far, deeper into the mental state, into mental geology, we would see an incredible energy bubbling and running forever in each species. Through mathematics, languages, it could happen to detach them from each other, to identify them, to name them."

In *Towards a New Subject in Paintings*, Gordon Onslow-Ford evokes the Palais de la découverte in Paris. « *At this time, wrote Gordon Onslow-Ford, I remember being impressed by the mathematical objects on display at the Palais de la découverte, by the microscopy world, photographs of things invisible to the naked eye such as perfumes and by a book on morphology of which I have forgotten the title. Also my training in physics and mathematics began to take on new meaning*⁴⁰ »

Between lines and topographic perspective, the Schwarzschild singularity expresses a path to the inside space. This mathematical figure is the statistic's shape of what may be a black-hole. In his drawings from 1937-1939 and paintings, Matta used it to suggest the possibility of using doors, passages for some kind of related points, passages for ideas, concepts, through time and space. These metaphorical doors, which are passages through space and time, bring objects together in a new kind of surrealist collage. These spatiotemporal deformations are found in Matta's paintings, when the star is isolated by a dark circular area where color is absent. The paintings titled *Children's Fear of Idols*⁴¹, *The End of Everything*⁴²,

⁴⁰ Gordon Onslow-Ford : *Towards a New Subject in Paintings*, *op. cit.*, (see note 4), p. 12.

⁴¹ Three different paintings are titled *Children's Fear of Idols* 1943-1944.

⁴² Roberto Matta : *Composition in Magenta (The End of Everything)*, 1943, oil on canvas, 71 x 91 cm, was sold by Sotheby's, New York, on Tuesday, November 15, 1994.

*Ellimonde*⁴³, *Disasters of Mysticism*⁴⁴ and *Black Virtue*⁴⁵ show these distortions of space, where the image works as a gateway to other dimensions. Paintings titled *The Onyx of Electra*⁴⁶, *Galaxies (Mysticism of Infinity)*⁴⁷, *La Révolte des contraires*⁴⁸ also clearly illustrate the importance of these spaces full of waves, stars, galaxies, black holes. In a drawing from an unpublished illustrated manuscript *Redefinitions Towards a New Dimension For Painting* (1937-1938) exhibited at the Galerie Malingue in Paris in 2003, Matta shows how bodies can mate with these singularities that allow the meeting even if the two sides are separated by space and time⁴⁹.

In this drawing, the male and female bodies make love without touching, the space is deformed, so that harmony is restored. The

⁴³ Roberto Matta : *Ellimonde*, 1943, oil on canvas, 127 x 96 cm, Private collection.

⁴⁴ Roberto Matta : *Disasters of Mysticism*, 1942, oil on canvas, 97 x 131 cm, was sold by Sotheby's, New York, on Tuesday, November 23, 1999.

⁴⁵ Roberto Matta : *Black Virtue*, 1943, oil on canvas, 76 x 182 cm, Tate Modern, London.

⁴⁶ Roberto Matta : *The Onyx of Electra* ("The electronics"), 1944, oil on canvas, 127 x 183 cm, The Museum of Modern Art, New York. The title of this painting refers to the world of quantum physics with the American pronunciation. The word appears for the first time in a letter from Matta to Breton dated May 30 1944 (from Rockport to Breton c/o Pierre Matisse 41 E 57 street New York), bibliothèque littéraire Jacques-Doucet, Paris, BRT.C. 1167.

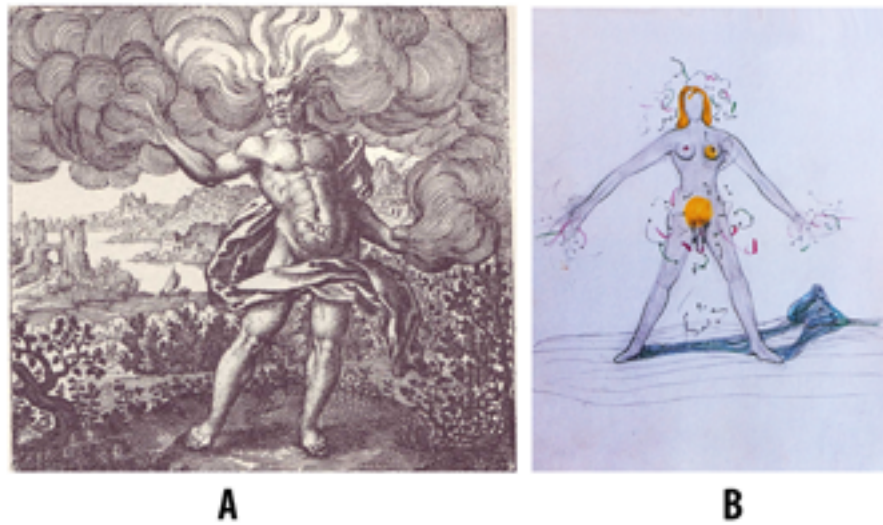
⁴⁷ Roberto Matta : *Galaxies (Mysticism of Infinity)*, 1942, oil on canvas, 92 x 72 cm, 1942.

⁴⁸ Roberto Matta : *La Révolte des contraires*, 1943-1944, oil on canvas, 96,5 x 129, 5 cm, Private collection.

⁴⁹ Roberto Matta : *Redefinitions Towards a New Dimension For Painting*, unpublished notebook from 1937-1938: 14 drawings and watercolors on paper of various sizes arranged next to poems by Matta (page 34 x 28,5 cm), Graphite, colored pencils and ink on paper. See *Matta*, exhib. cat. May 19 –July 16 2004, galerie Malingue, Paris, 2004, pp. 134-137.

concept of harmony was developed in another article about the philosopher Charles Fourier, indian conception of the universe, esoterism and surrealism⁵⁰.

[Fig-9]



In another drawing from the manuscript, genders are mixed and the result is a hermaphrodite. The drawing is formally very close to the *Attalante Fugiens* by Maier, one of whose engravings will illustrate the *Great Transparencies* of André Breton.

By 1941, in the journal *Decision*, Matta is portrayed as a painter who is between science and art: “At the same time his penetrating visual perception X-rays reality, and by a fusion of techniques out of painting,

⁵⁰ See Fabrice Flahutez : *Nouveau Monde et Nouveau Mythe. Mutations du surréalisme de l'exil américain à l'Ecart absolu (1941-1965)*, Les presses du réel, Dijon, 2007.

architecture, fumage, and photography, both images are surimposed upon the screen of his canvas where the composite becomes, in effect, an X-rayograph.”⁵¹

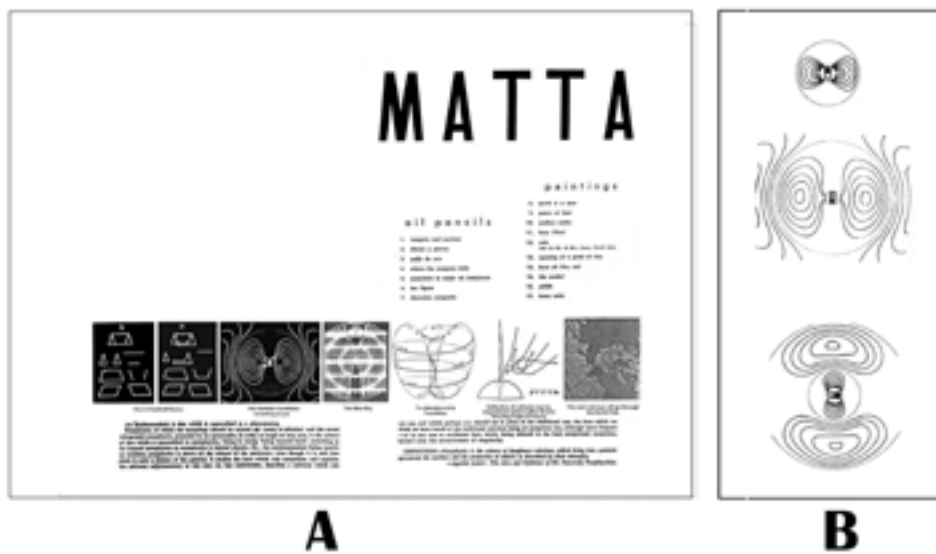
The paintings of the war years are also particularly interesting in that they attempt to express a multi-dimensional universe. For this, the artist used fluorescent pigments that are likely to react to the wavelength of light (visible or invisible spectrum) which illuminate the painting. In a unpublished letter to Breton, Matta explained his experiments: “I dive into the black light. There are many possibilities as some colors disappear to the eye depending on the lamp used.”⁵² This is a completely original device to bring out images from the original pictures. Indeed, if the picture is illuminated with a black light or wood lamp, some pigments can be excited and therefore certain lines or points will react specifically to a particular light or wavelength. The transition from one wavelength to another animates the painting in which other dimensions of the image appear. The picture becomes multidimensional. On several levels, the picture vibrates under fluorescent and divergent tones that Matta will continue to use for a number of his paintings. Julien Levy explains in one of his texts that

⁵¹ Matta Echauren, in : *Decision*, vol. 2, no. 5-6, New York, November-December 1941.

⁵² See letter from Matta to Breton dated March 12 1940 (sent from New York to Poitiers), bibliothèque littéraire Jacques-Doucet, Paris, BRT.C. 2098.

“Matta found a shop that sold fluorescent mineral paints, bought a special light to activate the combustion and with the black light to activate color mineral pigments, and began a series of paintings that used these fluorescent colors.”⁵³

[Fig-10]



Moreover, Matta also looked at the shapes of magnetic fields. We find these forms in the popular literature of magnetic fields, especially the work of Max Born who explains the principles of Einstein’s theory of general relativity for a lay audience.⁵⁴ These representations of the magnetic fields are used by Matta and especially for the cover of the

⁵³ Julien Levy : *op.cit.*, (see note 1), p. 250.

⁵⁴ Max Born, (1882-1970): *The Restless Universe*, illustrated by Dr. Otto Koenigsberger, Harper and Brothers, New York, 1936.

exhibition catalog of his works at the Pierre Matisse Gallery in April 1942.

“The Hertzien oscillation is looking at you,” states Matta in the picture caption⁵⁵ The artist created an analogy between the two magnetic arcs and eyes, which gives an anthropomorphic conception of the invisible in accordance with André Breton’s theory of the *Grands transparents*.

The "mattaïque" challenge favors a universe made of wavelengths and energy. In his paintings, the absence of objects (but the presence of body) is understood as the transformation of matter into energy.⁵⁶ The absence of objects in favor of energy is not a path to abstraction, but a way to express the essence of the world. His friend Lionel Abel recalls how the painter was fiercely opposed to the representation of the object as a subject. In an article in *Commentary*, he repeats the words that Matta defended in New York : “There will never be a recognizable object in a picture of mine. Never. Not one object, not the shadow of an object. No object is good enough to be in a picture of mine. No woman

⁵⁵ The catalog is under the aegis of Alfred Jarry (1873-1907) : *Gestes et opinions du docteur Faustroll, pataphysicien*, Stock, Paris, 1923. (*The Acts and Opinions of Dr. Faustroll, Pataphysician*).

⁵⁶ See the book by Fariba Bogzaran : *Matta : Explorer of Hyperspace and his Friendship with Gordon Onslow Ford*, in : *Matta Onslow Ford : Shared Vision*, California, Weinstein Gallery, San Francisco, June 2003.

is beautiful enough. [...] No fruit, no bottle, no table, no tree. I will not put them on canvas. Never. I swear it.”⁵⁷

The attraction for this type of geometry⁵⁸, the relations between art and science, his admiration for Tanguy and Duchamp, astronomy, chemistry, biology and mathematics will lead to the birth of Matta’s Psychological Morphologies.⁵⁹ It is also the beginning of an adventure combining the aesthetic vision of the microscopic world with a macroscopic view, assimilating in one extreme condensation every moment of perception. The first article by Gordon Onslow-Ford, which appeared in the *London Bulletin*, helps to link the Psychological Morphologies and *The Great Transparent Ones* defined by André Breton: “The psychological morphologies shape the world by our wildest thoughts. (...) There are objects that correspond to "characters", stars, trees, and architecture. (...) Objects that are only visible under a microscope.”⁶⁰

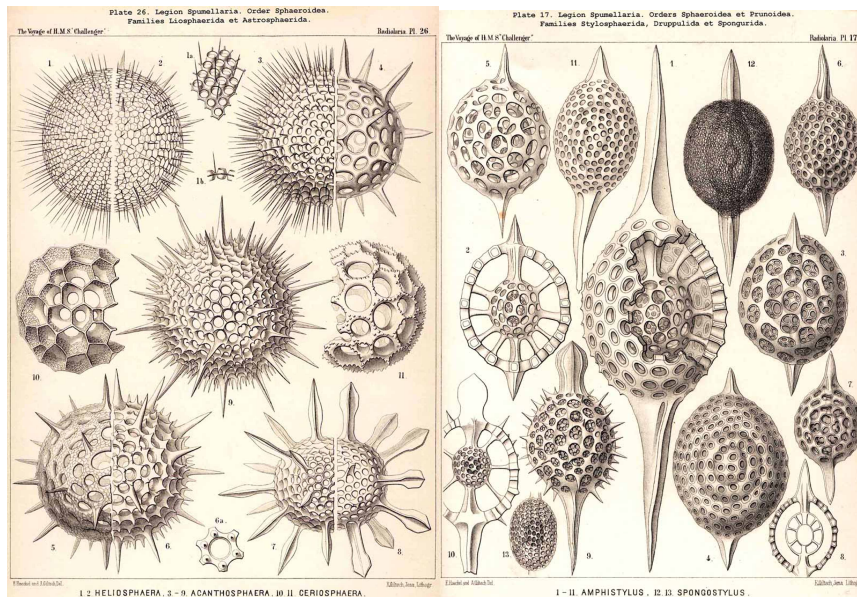
⁵⁷ Lionel Abel : The Surrealists in New York, in : *Commentary*, vol. LXXII, no.4, October 1981, p. 49.

⁵⁸ See Salvador Dalí : Psychologie non-euclidienne d’une photographie, in : *Minotaure*, no. 7, June 1935, pp. 56-57.

⁵⁹ Gordon Onslow-Ford : Note sur Matta et la peinture (1937-1941), *op. cit.*, (see note 16), p. 30. “In fall 1938, Matta coined the phrase: psychological morphology.”

⁶⁰ Gordon Onslow-Ford : Morphologies psychologiques, in : *London Bulletin*, London, June 1940, p. 29. (Translation in French in *Matta*, exhib. cat., Musée national d’Art moderne, *op. cit.*, (see note 16) p. 272.) On the history of the microscope, see the American newspapers of the time: Seeing The Invisible, in : *The New York Times*, January 4, 1936, p. 14; and William L. Laurence : New Tube Enables Seeing In The Dark; “Eye” of Focused Electrons, Penetrating Once Invisible, is Demonstrated to Scientists, in : *The New York Times*, 3 January, 1936, pp. 1-2.

Like most surrealist artists, Matta's interest in biology continues into the 1990s including the use of the pattern of radiolarians he borrows from the zoologist and illustrator Ernst Haeckel (1834-1919) and his famous book « Report on the Radiolaria Collected by the HMS Challenger During The Years 1873-1876⁶¹».



This loan is not a coincidence because Haeckel popularized and promoted Charles Darwin's theory in Europe and developed the controversial recapitulation theory (ontogeny recapitulates phylogeny) claiming that an individual organism's biological development (ontogeny), condense and correlate its species' evolutionary

⁶¹ Haeckel Ernst, *Report on the Radiolaria Collected by H.M.S. Challenger During the Years 1873-1876*, London: Eyre & Spottiswoode, 1887.

development (phylogeny). His main interests lay in life development processes in general including Darwin's theory and developments of non-random forms, which is synthesized in the illustrated *Kunstformen der Natur* (*Art forms of nature*)⁶². Haeckel wrote also his famous *Generelle Morphologie der Organismen, allgemeine Grundzüge der organischen Formen-Wissenschaft, mechanisch begründet durch die von Charles Darwin reformirte Descendenz-Theorie*⁶³, published in 1866, presenting a synthesis of Darwin's ideas with the German tradition of *Naturphilosophie* going back to Goethe and will be very inspiring for the Freudian conception of the individual psyche and the collective thought⁶⁴. Haeckel used morphology to reconstruct the evolutionary history of life using embryology as evidence of ancestral relationships. Haeckel's aim was a reformed morphology with evolution as the organizing principle of a cosmic synthesis unifying myths, religion, science, and art. In that sense, Ernst Haeckel was also

⁶² Haeckel Ernst, *Kunstformen der Natur*, Hundert Illustrationstafeln mit beschreibendem. Text, allgemeine Erläuterung und systematische Übersicht, Leipzig und Wien : Verlag des Bibliographisches Institut, 1899-1904 (new edition : München : Prestel, 2012). (English version : Haeckel Ernst, *Art forms in nature*, New York : Dover Publications, 1974). The published book of Ernst Haeckel includes over 100 detailed, multi-colour illustrations of plants, animals and sea organisms.

⁶³ Haeckel Ernst, *Generelle Morphologie der Organismen : allgemeine Grundzüge der organischen Formen-Wissenschaft, mechanisch begründet durch die von Charles Darwin reformirte Descendenz-Theorie*, Berlin : G. Reimer, 1866 (French version : *Histoire de la création des êtres organisés d'après les lois naturelles : conférences scientifiques sur la doctrine de l'évolution en général et celle de Darwin, Goethe et Lamarck en particulier*; traduites de l'allemand, par Ch. Letourneau; et précédées d'une introduction biographique par Charles Martins, Paris : C. Reinwald, 1874).

⁶⁴ Jacqueline Duvernay Bolens, « La théorie de la récapitulation de Haeckel à Freud », *Topique*, 2001/2 n° 75, p. 13-34.

one of the first to consider psychology as a branch of physiology. André Breton and the surrealists are interested in those theories⁶⁵ and Breton bought the book of Comte de Tromelin about a response to the book of Haeckel named *Les énigmes de l'univers*⁶⁶ published in 1902. In an other hand, in the *International Surrealist Bulletin*⁶⁷, published in 1936, Hugh Sykes Davies made a lecture titled *Biology and Surrealism* where he explained the link between psychoanalyses and biology⁶⁸. When Matta developed his *Psychological morphologies*, it includes the possibility of a biological process that places man in an infinite becoming (ontogeny) and at the same time, in a history of humanity in perpetual becoming (phylogeny). Matta painted shapes that are planets and/or maybe cells or primitive organisms. Matta chose the Radiolaria forms in the 1990's as we can see in the center of several drawings and paintings, because it is a kind of link between architecture (metaphore of ontogeny) and dream or life⁶⁹ (metaphore of phylogeny), or so

⁶⁵ See André Breton, « Réserves quant à la signification historique des investigations sur le rêve », in *Le surréalisme au service de la révolution*, n° 4, décembre 1931, p. 7-12.

⁶⁶ Le Goarant de Tromelin, Gustave, Comte de, *Les Mystères de l'univers, réponse aux "Enigmes de l'univers", de Haeckel*, Paris, Bibliothèque universelle Beaudelot, 1907. (see André Breton's library sold in 2003) ; and Haeckel Ernst, *Les énigmes de l'univers*, traduit de l'allemand par Camille Bos, Paris : Schleicher frères, 1902.

⁶⁷ *International Surrealist Bulletin*, n° 4, september 1936, p. 13-18.

⁶⁸ This link was studied in an article of the biologist Jean Vovelle in 2007. See Jean Vovelle, « Biologie et surréalisme : H. Sykes Davies 1936 », in *Mélusine*, n° XXVII, Lausanne, L'Age d'Homme, 2007, p. 121-134.

⁶⁹ Roberto Matta, *Matta [exposition, Paris], Centre Georges Pompidou, Musée national d'art moderne, 3 octobre-16 décembre 1985*. Paris: Centre Georges

between architecture and organic systems. Radiolaria found throughout the ocean are amoeboid protozoa that produce intricate mineral skeletons, typically with a central capsule which split the cell into inner and outer portions. In the paintings of Matta, we can often find the geometric sphere which explodes itself and in those spheres, organisms are crawling and seemed trying to escape till they are liberated out of this capsule. The skeleton or architecture could be a kind of nest in which life (and also the dreams in a psychic acceptance) is painted in the steps of its own transformation till liberate itself from the constraints. The sphere is almost a planet or a cell which is in a mutation of its own structure. Matta say it very clearly: « We must present the paintings as geographic maps of human nature and its energies⁷⁰ ». In the painting titled *Yoniverso* (1998) (I am universe) or in *Autoportrait des complexités de l'être* (1999) Matta shows the structures completely destroyed and the « last » sphere of that universe is going to be deleted to a chaos of forms and colors. Solid structures infinitesimal are dying and they are starting to be an organic system or in an other way, a star explode in a cosmic history. We can say

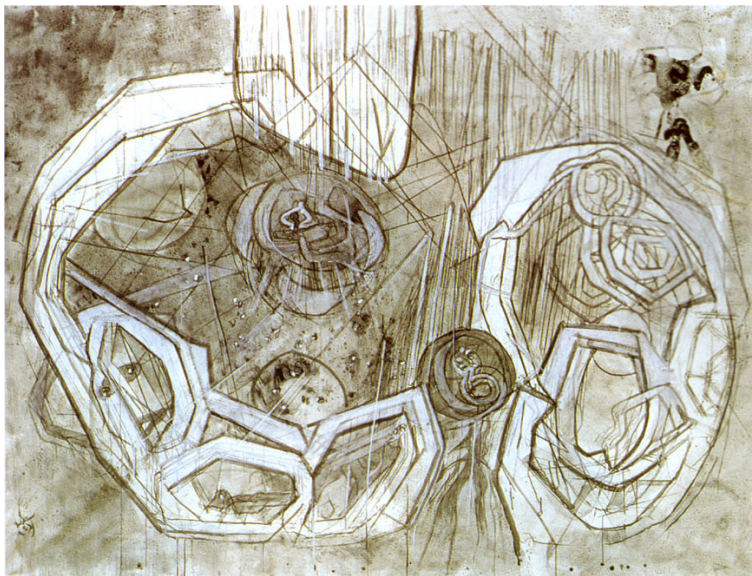
Pompidou, 1985, p. 306. « La peinture a un pied dans l'architecture un pied dans le rêve ».

⁷⁰ Roberto Matta, *Matta [exposition, Paris], Centre Georges Pompidou, Musée national d'art moderne, 3 octobre-16 décembre 1985*. Paris: Centre Georges Pompidou, 1985, p. 306. « Il faut présenter les tableaux comme des cartes géographiques de la nature humaine et de ses énergies ».

ontogeny is linked to phylogeny because ontogeny recapitulates phylogeny. Matta looks in the microscope and in the telescope at the same time like Freud trying to connect individual psyche and the collective thought. In the aquatint etchings *N'ou's T'ou's* (all of us) (1995) or the painting *La terre et ses oignons* (1994), the sphere illustrates literally the link between microcosm (structures and organic endoplasm as it is represented in radiolaria) and macrocosm (stars-space-time). *N'ou's T'ou's* is also the poetic place of a metaphoric brain where memories and dreams are working to build the origin of a new life or a new myth, remembering the all steps of humanity according to the principle of Haeckel and the *Psychological morphologies* by Matta.



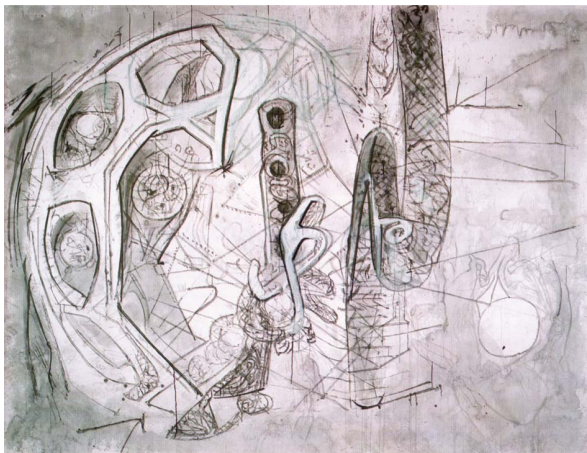
N'ou's T'ou's 1995



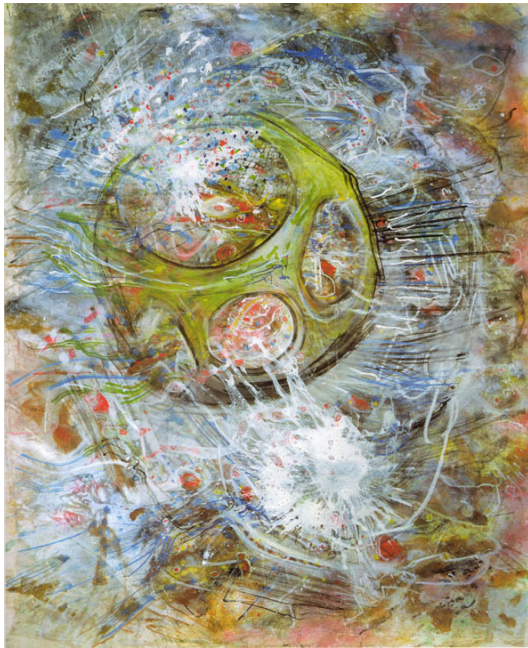
Autoportrait des complexités de l'être



Youniverso 1998



sans titre 1999



la terre et ses oignons 1994

A letter from Roberto Matta to André Breton dated 1941 could serve as a conclusion: “[I’m] in the comparative study of time and space, I do not think the sun is so far as they claim.”⁷¹

⁷¹ Letter from Roberto Matta to André Breton dated 1941 from the poet collection, sold in 2003. See Andrebretton.fr, ref : 1479000.

LIST OF ILLUSTRATIONS

Fabrice Flahutez, Université de Paris Ouest Nanterre

An Eye in the Microscope and Another in the Telescope. Roberto

Matta and Sciences

Fig.1 :

A : Louis Ranvier, Louis Félix Henneguy, Gérard Balbiani, « Les sécrétions rénales de l'urée et des chlorures », in *Archives d'anatomie microscopique*, published by Jolly and Fauré-Frémiet, tome 35, fascicule n°1, Masson Editeurs, Paris : avril 1939, pp. 28-29.(become later : *Archives d'anatomie microscopique et de morphologie expérimentale*).

B : Roberto Matta : *Untitled*, 1937, watercolor on paper, 31,1 x 49, 5 cm, The Ira and Gale Drukier Collection, USA. See Germana Ferrari, n°D37/28.

C : Roberto Matta : *Xpace and the Ego*, (detail) 1945, oil on canvas, 202,2 x 457, 2 cm, Musée national d'art moderne – Centre Pompidou, Paris, Achat 1983, Inv. : AM 1983-94.

Fig.2 :

A : C. Tate Regan : *The Freshwater Fishes of the British Isles*, Methuen & Co. LTD, London, 1911, p. 4.

B : Roberto Matta : *Notebook 1943*, Sometimestudio, Paris, 2011, p. 211.

C : Roberto Matta : *VVV*, n° 4, February 1944, New York.

Fig.3 :

Roberto Matta : *Notebook 1943*, Sometimestudio, Paris, 2011, p. 19.

Fig.4 :

Roberto Matta : *Notebook 1943*, Sometimestudio, Paris, 2011, p. 45.

Fig.5 :

Roberto Matta : *Notebook 1943*, Sometimestudio, Paris, 2011, pp. 145 – 147 – 149.

Fig.6 :

Roberto Matta : *Instead*, n° 1 (February 1948) and n° 7 (November 1948).

Fig.7 :

Roberto Matta : *Notebook 1943*, Sometimestudio, Paris, 2011, pp. 139 – 141 – 277.

Fig.8 :

A : Roberto Matta : *Redefinitions towards a New Dimension for Painting (1939-1940)*, watercolor, graphite, colored pencils and ink on paper, 34 x 28 cm, The Neshui Ertegun and Daniel Filipacchi Collections, Paris, France.

B : Schwarzschild Singularity. Jean-Pierre Luminet : *Black Holes*, Cambridge University, Cambridge, 1992, pp. 163-167.

C : Roberto Matta : *ETATEAT*, 1944, oil on canvas, triptych, 86 cm x 247 cm, sold : Sotheby's Paris, July 2&3 2008.

Fig.9 :

A : *Emblema I (Portavit Eum Ventus in Ventre Fuo)*, engraving by Jean-Theodore de Bry, XVII c. Michel Maier : *Atalanta Fugiens, hoc est Emblemata nova de secretis naturae chymica*, Oppenheim, Francfort, 1618.

B : Roberto Matta : *Redefinitions towards a New Dimension for Painting (1939-1940)*, watercolor, graphite, colored pencils and ink on

paper, 34 x 28 cm, The Neshui Ertegun and Daniel Filipacchi Collections, Paris, France.

Fig.10 :

A : Roberto Matta : Exhibition catalogue, Pierre Matisse Gallery, New York, April 1942.

B : Magnetic fields by Dr. Otto Koenigsberger from Max Born : *The Restless Universe*, Harper and Brothers, New York, 1936.