

Art, Science and Exploration
Rereading the Work of Remedios Varo

Natalya Frances Lusty
University of Sydney

I was back in the women's bathroom on the fourth floor of the Faculty of Philosophy and Literature and it was September 1968 and I was thinking about the adventures of Remedios Varo. I never met her. I would sincerely love to be able to say that I'd met her, but the truth is that I never did. I have known marvellous women, strong as mountains or ocean currents, but I never met Remedios Varo.¹

In Roberto Bolaño's short novel *Amulet*, the surrealist painter, Remedios Varo, haunts the central protagonist, Auxilio Lacouture. Set during the 1968 military invasion of the National Autonomous University of Mexico, just days before the Tlatelolco massacre, Auxilio hides out in the women's bathroom of the university, while violence erupts across the city. Armed with a book of poems as her only source of nourishment, Auxilio's peripatetic imagination strays beyond the confines of her toilet stall into a dream-vision of an entire generation of Latin-American artists and writers. In her imaginary encounter with Varo, Auxillio, ("the mother of Mexican poetry") constructs a portrait of an enigmatic figure whose legendary adventures ignite the possibilities of a "new" revolutionary moment. While Auxillio's fantasized encounter abruptly ends with the lament of never having actually met the legendary figure, Varo is nevertheless invoked as the archetypal Surrealist heroine, the "marvelous woman." The fetishized persona of Remedios Varo thus becomes in Bolaño's narrative a motif for the revolutionary possibilities of a new Mexico,

Natalya Frances Lusty: natalya.lusty@sydney.usyd.edu.au

Copyright © 2011 (Natalya Frances Lusty). Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 Unported License. Available at <http://jsa.asu.edu/>

which evocatively recalls Mexico's modernist heritage as "the Surrealist place par excellence."²

How might this meta-literary representation offer us ways in which to reconsider the legacy of Varo's work? While Varo's extraordinary painting has attracted critical attention over the years, the seemingly magnetic force of her legendary status, indicative of Bolaño's portrait, still seems to overshadow the almost forgotten intellectual and epistemological currents that inform her late painting.³ As an artist whose career spanned surrealist coteries in Barcelona, Paris, and then finally, Mexico City, Varo is both an "authentic" member of the surrealist group, and a key figure in the movement's revitalization and transformation in Mexico. Varo's prolific output toward the end of her life, from the '50s through to the early '60s, however, somewhat ironically positions her as a "belated" Surrealist, and explains why she has been reclaimed as one of Mexico's greatest national painters.⁴ Positioned within these contradictions, as "authentic" and "belated," as both a Mexican painter and a surrealist artist, has made it difficult to fully appreciate the complexity with which Varo's work responds to key intellectual ideas informing the surrealist movement's far-reaching critical and artistic legacy. If the themes of exploration, metamorphosis and discovery continually surface in Varo's work, how might they be connected to a broader surrealist interest in science, and to the larger epistemological questions that emerged in the wake of the discovery of non-Euclidian geometry, and its profound challenge to an older science wedded to a static conception of rationalism and reason? To read Varo's work in this context, as well as through its protracted period of germination and the various zones of influence that shaped her idiosyncratic iconography and the intellectual ideas informing her images, offers us something beyond the familiar rhetoric—mystical, inspired, dream-like, esoteric—that often informs an appreciation of her painting. I want to reconsider Varo's work in the context of her life-long fascination with both science and the larger epistemological and metaphysical questions driving the innovations of the early twentieth century. While her fascination with the popular and occult sciences has understandably been the focus of critical appraisals of her work, many of the late images also exhibit a profound and informed engagement with science, in all of its disciplinary and interdisciplinary contexts.⁵ While there is invariably a certain whimsicality informing her representation of scientific and metaphysical ideas, a preoccupation with larger themes concerning the relationship between older forms of knowledge such as alchemy and the innovations of the new science (with its radical questioning of space and time) suggests her avid interest in the dialectic of old and new. This same interest informs a great deal of surrealist intellectual and creative work.

Although critics have emphasized the magical and esoteric elements in

Varo's work, her fascination with laws of physics, the hidden world of microbiology, the speculations of metaphysics, feats of engineering and mechanical design, as well as the intricate labor of the domestic sciences and crafts, points to a sustained interest in the relationship between science and art on the one hand, and the old and the new on the other. These relations become most fully developed in her mature work, from the late '40s through to the early '60s. In many of these images an industrious evolving modernity clashes with a medieval world of architectural forms, cloaked and hooded figures, and pre-modern scientific laboratories. Her work moves between domestic interiors and external landscapes; but in either location one invariably locates the presence of the intrepid explorer or artist figure, trapped in a world of imaginative interpretation and industrious creation. The artist figure shares the solitary creative experience bound to the possibilities of discovery and metamorphosis with other inventors—be they the engineers, musicians, watchmakers, scientists or dressmakers that populate her images. However none of these inventors ever completely relinquishes the manual labor and skill, or the assiduous attention to detail, that informs all manner of invention and creation. As a result, her work often remains anchored to the world of everyday objects and experiences, even while it imparts a decidedly surreal, metaphysical enchantment. In Varo's images material objects and elements from the natural world take on an anthropomorphic dimension, disturbing our everyday sense of reality and epistemological certainty. We are often confronted with the secret life of "things" and "places" as they are animated by the world of physical laws and oneiric and imaginative possibility, which unfold a kind of hypervisual unconscious. The enchanted spaces in Varo's paintings seem to question the privileged status of the subject. In many of Varo's images, the human subject appears surprisingly indebted to the extraordinary forces of nature and the marvelous mutability of everyday objects, whilst also exploring the unconscious forces driving experience and imagination. But if the exploration of the marvelous qualities of the natural and everyday world remains one side of the story of Varo's work, the other hints at an enduring fascination with the implications of physical laws, scientific discovery, mechanical invention, and engineerial ingenuity. As the daughter of a hydraulic engineer, Varo was early trained in mechanical draftsmanship. On the many trips with her father across Africa and Europe, she would have witnessed first hand the hubristic creations of a modernity intent on transforming the physical landscape with its geotechnical mastery. Varo's eclectic interest in the natural, physical and social sciences, as well as in mechanical design and geographical exploration, suggests that her work is very much the product of a modernity fascinated with innovation, discovery and invention.

How are we to understand Varo's relationship to the larger scientific and epistemological concerns that so radically transformed the early part of the twentieth century? Like many of her fellow Surrealists, Varo was extremely attracted to the new relationships that were being drawn between art, science, and metaphysics in the first decades of the twentieth century. In particular the theory of relativity, and later Heisenberg's uncertainty principle, introduced the concept of paradox and indeterminacy into an interpretation of physical reality. Therefore ideas of space, time and matter were radically transformed, and a traditional scientific adherence to a rationalist hermeneutic and a mechanistic view of the universe was questioned. According to Gavin Parkinson, "As a fundamentally interdisciplinary 'school,' Surrealism came to fruition in a climate of vast exploration, drawing upon and combining physics, philosophy, psychology, biology, anthropology and sociology to rethink the relationship between external phenomena and inner being, with the twin objective of transforming the world and changing human consciousness."⁶ The invisible, indeterministic world uncovered by the new sciences in the early decades of the twentieth century had a lasting impact on Surrealism, in particular on those members with whom Varo came into contact in the early days in Mexico: Gordon Onslow Ford, Esteban Francés, Roberto Matta, Wolfgang Paalen, Alice Rahon and Pierre Mabille. But even before her arrival in Mexico, Varo had shown a keen interest in conversations around science and metaphysics that preoccupied not just surrealists but many of the smaller avant-garde groups flourishing across Europe. In the 1930s, when Varo was living in Barcelona, she joined the artistic and intellectual collective, the *Logicofobistas* (literally translated as "those who fear logic"), an avant-garde group that explored the interconnections between art and metaphysics.⁷ This group began to organize exhibitions and publicity for its ideas, which were very much in keeping with the surrealist movement, and in particular with Breton's own use of publicity and public display to garner support and media attention.⁸ No doubt influenced by the anti-logic positions of Dada and Surrealism, the *Logicofobistas* coincided with Varo's growing interest in Surrealism.

Varo's initial involvement with Surrealism in 1936, and her move to Paris in early 1937, occurred at the height of its intellectual collaboration with Gaston Bachelard, and through him, an enthusiastic engagement with the new sciences.⁹ Over the next few years—in Paris and Marseilles—Varo had close contact with various Surrealists, including Esteban Francés, Oscar Dominguez, Victor Brauner, Wolfgang Paalen, Yves Tanguy, Gordon Onslow Ford and Benjamin Péret. Many of them were beginning to explore the implications of the new physics, alongside the role of objective chance in opening up the mystery and dynamism of the everyday world. In his 1939 essay, "The Most Recent Tendencies in Surrealist Painting,"

Breton explicitly references the new experimental techniques of “decalcomania” and “fumage” that Dominguez and Paalen respectively employed in order to champion a renewed interest in automatism and objective chance in the plastic arts. Breton concludes that despite a formal experimentation with techniques (involving a return to a form of automatism), a broader exploration of the new physics and in particular Einstein’s space-time concept and its implications for a four-dimensional universe drove much of this technical experimentation:

The fact that the young painters of today have opted unequivocally for automatism has by no means precluded them from devoting their fullest attention to the most far-ranging problems. Though, in their forays into the realm of science, the accuracy of their pronouncements remains largely unconfirmed, the important thing is that they all share the same deep yearning to transcend the three-dimensional universe. Although this particular question provided one of the leitmotifs of cubism in its heroic period, there is no doubt that it assumed a greatly heightened significance as a result of Einstein’s introduction into physics of the concept of the *space-time continuum*. The need for a suggestive representation of the four-dimensional universe is particularly evident in the work of Matta (landscapes with several horizons) and Onslow-Ford. Dominguez shares these preoccupations and is at present basing all his researches in the field of sculpture on the obtaining of *lithochronic surfaces*.¹⁰

According to Linda Dalrymple Henderson, Breton’s reference to the “fourth dimension” in this essay signals both a spatial and temporal understanding of the concept.¹¹ While a spatial understanding of the “fourth dimension” designates a more mystical and typically surrealist response to the implications of higher dimensions of space (Matta’s landscapes with several horizons), a temporal understanding signifies the fourth dimension of Relativity Theory (associated with Dominguez’s lithochronic surfaces, which attempt to capture the visual solidification of time). Dalrymple suggests that “Dominguez’s writings on the fourth dimension may have been the most scientific of the Surrealists.” However in terms of his understanding of the fourth dimension as a space-time continuum, his painting over this period presents an eclectic exploration of the cosmic and scientific facets of the fourth dimension. Dominguez utilizes automatic techniques such as decalcomania, as well as more illustrative symbols such as polyhedron forms (which Man Ray had photographed for the 1936 Exhibition of Surrealist Objects at the Charles

Rattan Gallery in Paris).¹² In Varo's painting from this period, *Vegetal Puppets* (1938, Fig. 1) and *The Souls of the Mountains* (1938), she experiments with the technique of *fumage*, and drips wax onto the un-primed surface to achieve an automaticity suggestive of the amorphous fourth dimension that preoccupied her close circle of friends. Although these images explore only in nascent form the scientific ideas that energized the plastic arts of Surrealism in the late 1930's, many of the scientific ideas informing these works return in her later work.

The Surrealists' absorbed interest in the work of Gaston Bachelard was responsible for much of the movement's engagement with the new science. Bachelard fostered a lasting kinship between Surrealism and the stream of new ideas that transformed the scientific world in the 1930s. Often referred to as the "philosopher of Surrealism," Bachelard's *The New Scientific Spirit* (1934) was widely read and discussed by many of the Surrealists close to Breton.¹³ Bachelard's *The Formation of the Scientific Mind*, which followed in 1938, was reviewed by Pierre Mabille. Trained in physics but also a keen reader of psychoanalysis, Bachelard drew



Fig. 1. Remedios Varo, *Vegetal Puppets*, 1938 © 2011 Artists Rights Society (ARS), New York / VEGAP, Madrid

a connection between psychology and the history of science, examining the way that certain scientific concepts are blocked by habitual patterns of psychological thinking. Bachelard combined his training in physics and his studies in philosophy to develop an idiosyncratic understanding of the relationship between science, epistemology and the imagination. His approach to epistemology privileged the imagination as intrinsic to experimental modes of science, one that opened up a formally “closed” rationalism predicated on routine forms of thinking. In *The New Scientific Spirit* Bachelard argued that science should “amplify what is revealed beyond appearance” and that science actively shapes and constructs a world, much in the same way as the poet: “Wonderworking reason designs its own miracles. Science conjures up a world, by means not of magic immanent in reality but of rational impulse immanent in the mind.”¹⁴ In other words, for Bachelard, reason and reality are interdependent entities, situated in a dynamic and dialectical relationship such that scientific method creates its own objects in such a way that seemingly irrational theories offered the possibility of a dramatic shift in scientific perspective that could radically alter how we view the world. According to Bachelard, Einstein’s theory of relativity and quantum physics seem “irrational” because they create, and interpret, phenomena that “amplify what is revealed beyond appearance.”

Bachelard’s interest in the irrational dimensions of scientific discovery captivated many of the Surrealists, who were similarly preoccupied with uncovering the absurd and non-rational experience of everyday life in order to revolutionize political and social life. According to Gavin Parkinson, “Breton and the Surrealists ... were particularly taken by Bachelard’s new dynamic history of science. In place of the smooth, logical continuity won by an assured, self-aware discipline, Bachelard posits one driven by revolutions, revisions and reconstructions ...”¹⁵ Within Surrealism the intellectual marriage of art and science reached an apotheosis in the year 1936, with Bachelard’s publication of “Surrationalism” in the avant-garde journal, *Inquisitions*. The essay responds to the dialectical foundations of Surrealism’s own attempts to revolutionize the mind by insisting on the irrationality of the dream and the unconscious as paramount to our “experience” of the world. Bachelard also calls for a “spiritual revolution” of the mind through “surrationalism,” an “experimental reason” that breaks with tradition and habitual modes of learning so that “the physical world can be experienced in new ways.”¹⁶ Invoking the automatist dimensions of surrealist poetry, Bachelard declares that “[a]n *experimental reason* will be ... capable of organizing reality as the experimental dream of Tristan Tzara organizes poetic liberty surrealistically.”¹⁷ Insisting that “[i]f in any experience, one does not risk one’s reason, that experience is not worth while attempting,” Bachelard clearly aligns his own attempts to revolutionize the scientific mind with a surrealist

revolutionary aesthetic and political impetus. We can only speculate how closely Varo read Bachelard's work, but if, as Parkinson has argued, *The New Scientific Spirit* was "read by every individual in the Surrealist group and its orbit," it would have been impossible for Varo not to have come into contact with his ideas given her eclectic and informed interest in science.¹⁸ This is especially the case in the context of her debut into the surrealist movement in 1936-37, at the height of Bachelard's influence and intellectual presence within the movement.

Mexico: Commercial Illustration, Science and Exploration

It was with Varo's move to Mexico that the ideas informing a synthesis between art and science began to crystallize in her work. The émigré artists she associated with had for some time been moving away from "pure psychic automatism" and the role of chance that had underpinned earlier surrealist praxis. Instead they incorporated an increasingly eclectic range of influences including the new physics, Jungian and Freudian psychoanalysis, the esoteric arts of alchemy and magic, and the pre-Columbian art and culture that saturated everyday life in Mexico. Under the influence of Wolfgang Paalen and his new post-surrealist journal *DYN*, a reconciliation between art and science became a defining feature of this late phase of surrealist artistic practice in Mexico.¹⁹ It would take many years for Varo to fully absorb and creatively explore these insights, as well as the ideas she came into contact with in Barcelona, Paris and Marseilles, and even then in her own idiosyncratic way. Yet these ideas were undoubtedly extremely important to the fermentation process that resulted in her extraordinary output in the last two decades of her life. Although Varo had close contact with Paalen during this time, it is clear that her interest in science was far more wide-ranging than his own pursuit of the implications of quantum physics for a new kind of pictorial representation.

Varo's commercial illustrations for the Bayer pharmaceutical company toward the end of the 1940s precipitated a radical turning point in her career. While commercial illustration is often positioned as less authentic than other forms of visual culture such as painting and sculpture, it appears that Varo derived immense pleasure and satisfaction from her commercial illustration work. Not only could she support herself and others through it, but it also provided an opportunity to utilize the technical drawing skills she had acquired as a young student at the prestigious Fernando Fine Arts Academy in Madrid.²⁰ Given almost complete artistic freedom by Casa Bayer to illustrate a range of common ailments and diseases, Varo executed around thirty illustrations that often combined medieval or gothic architecture with melodramatic scenes of torture and suffering in order to illustrate the unrelenting experience of pain and discomfort. In *Rheumatic Pain II* (ca. 1948-1949, Fig. 2), a



Fig. 2. Remedios Varo, *Rheumatic Pain II*, ca. 1948-49 © 2011 Artists Rights Society (ARS), New York/VEGAP, Madrid

fully bandaged body, arched in excruciating pain, hovers in the foreground of a barren, thorn-filled landscape. Huge needle-like nails rain down on the lonely figure, puncturing the body; a medieval castle, beckoning respite, rises from a mound in the distant thorny landscape. Varo was given the following text for this commission: “As if sharp nails are being driven into the flesh ... into the joints, into the bones, into the nerves...!! These are the sensations that one can suffer. Rheumatism ... lumbago ... sciatica...!!”²¹ In other images in this series Varo depicts a woman chained to a gothic column, a large knife piercing her right shoulder blade; in *Pain*, (ca.1948-1949), a female figure is spread-eagled on a wheel of torture mounted on a wooden platform, and surrounded by medieval watchtowers.²² Asked by Bayer to draw inspiration from medieval torture for this series on pain, Varo evokes a theater of cruelty reminiscent of the surrealist fascination with the spectacle of violence, whereby the enigmatic eruption of trauma in the everyday invariably signals the acute violence of a repressed political unconscious.²³ In drawing on a surrealist

preoccupation with the representation of the violated female body, Varo explores the way in which torture and pain, and perhaps even the medical ailments she illustrates, are feminized experiences. The macabre and gothic atmosphere established in these small gouaches hints at a sexually charged atmosphere where women are trapped in a world of cruelty and confinement. Such images form a striking contrast to the representation of women in Varo's late work, where they appear far more independent and intrepid, and invariably are the focus of industrious creative activity. It is difficult to ascertain how much irony Varo injected into this series on pain, or whether she simply felt constrained by the brief given to her by Casa Bayer.

Another illustration, titled *Amebiasis*, (ca. 1948-49, Fig. 3), was to serve as a pamphlet advertising medication for the prevention of intestinal parasites. In it Varo depicts a vegetal still life invaded by an army of machete-wielding microbes with large fangs and stick-like limbs. The contrast between the traditional naturalism of the still life and the comical army of tiny parasites conveys a surreal disjunction,



Fig. 3. Remedios Varo, *Amebiasis*, ca. 1948-49 © 2011 Artists Rights Society (ARS), New York / VEGAP, Madrid

if not a wonderful sense of black humor; it is likely to have been a particularly striking image in advertising culture of the period. According to Tere Arcq, Varo's commercial work was indeed seen as cutting-edge. The Mexican marketing magazine, *Publicidad y Ventas*, commented: "The unique characteristic of these ads is that the covers bear purely artistic themes, where the artist Uranga's [Varo's maiden name] talents offer an imaginative creation that is linked to a polished and literary text, thus associating the painted image with the written image, and building a bridge made of elegant words toward the product's name and quality."²⁴ The literary quality of Varo's illustration of a range of medical ailments resides in her ability to convey complex narratives that impart a powerful and affective response. In her combinations of traditional painterly motifs such as gothic and medieval architecture or still life tableaux with fully dramatized scenarios of pain, violence and suffering, Varo creates a powerful and unique form of surrealist advertising.

Varo produced her commercial illustration work for Bayer during her visit to Venezuela between 1947-1948, where she had secured work from the Ministry of Public Health as a technical illustrator for an epidemiological study, part of an anti-malaria campaign. The work involved drawing parasites and insects under a microscope, which required extreme accuracy and attention to detail. This work allowed Varo to utilize the technical drawing skills she had developed as a young student, at the same time revealing a magnificent hidden world of microbial life as well as the excitement of scientific research. Varo was an extremely eclectic and erudite reader—she owned the complete works of Freud and Jung, as well as books on Plato and Simone Weil, the Russian guru, Gurdjieff as well as his pupils Ouspensky and Maurice Nicoll, on the theosophist, Madame Blavatsky, and works on Buddhism, alchemy, sacred geometry and numerology. It is moreover a testimony to her fascination with the biological sciences that she also owned a copy of the classic popular historical work of microbiology, *Microbe Hunters*.²⁵ First written in 1926 by the bacteriologist Paul de Kruif (the work is still in print and regarded as a popular classic by contemporary microbiologists), *Microbe Hunters* dramatizes major discoveries and personalities in the field of microbiology, including Paul Ehrlich, Louis Pasteur, Robert Koch and Van Leeuwenhoek.²⁶ Illustrated with portraits of its subjects, detailed drawings of micro-organisms and insects, and scientific instruments such as microscopes, its riveting story casts scientists as intrepid explorers, imaginative and bold in their quest for discovery and knowledge.²⁷ The book's appeal to Varo is palpable given its rich dramatization of the world of scientific discovery and would have provided an inspiring source for her work at the Ministry for Public Health and with Casa Bayer, as well as for her later paintings. Surrounded by scientists where she worked, including her brother who was a chief

epidemiologist, Varo's world during this period was dramatically transformed. For the first time since her marriage, to Gerardo Lizarraga and then Benjamin Péret, Varo was removed from the world of poets, artists and bohemian drifters and ensconced in the everyday world of scientific investigation and exploration. According to Kaplan, "her experience at the ministry may have been a source for the elaborate scientific apparatus and laboratory experiments that fill her later paintings."²⁸

Over a decade later Varo produced a series of works that draw explicitly on the themes of science and exploration, and that reflect the year she spent in Venezuela. In *Exploration of the Sources of the Orinoco River* (1959) Varo humorously depicts a lonely woman traveler setting out to discover the source of the Orinoco River. Drawing on her own experience of traveling to the flood plains of the Orinoco basin region as well as the constant public interest in the river's seemingly elusive source, Varo creates an image that whimsically alludes to the popular fascination with the exploration and discovery of this area. At the time of Varo's visit to Venezuela speculation concerning the possible discovery of the headwaters of the Orinoco preoccupied the media as a number of explorers came close to reaching the source of the great Orinoco and thus also complete its navigation. The "source" of the river had long been mythologized as one of the possible sites for the lost city of El Dorado, which no doubt spurred opportunistic explorers. The source's discovery by a Venezuelan army Major several years later, in 1951, made headlines around the world, and would have captured Varo's attention. A richly detailed description is given of the arduous journey by *Time* magazine in December, 1951, a month after the discovery: "Most of the distance they travelled by log canoe, moving overland when rapids and falls made the river too dangerous. Swarms of mosquitoes and jejenes (a tiny black gnat whose bite raises large welts) harassed them all the way. The high, thick jungle along the river banks cut off the sun and every portage had to be hacked clear with machetes."²⁹

Varo's painting depicts a poised, confident and professionally-attired woman setting out on her solo journey. The image forms a striking contrast both to the description of the actual journey and to Varo's own fear of most forms of travel. On closer inspection the seemingly professional attire of this intrepid New Woman turns out to be an ingenious uniform-cum means of transportation, reinforcing the imaginative self-sufficiency and resourcefulness of the lonely female explorer. As in many other images by Varo, clothes are more than attributes of style or comfort; here they take on an ingenious mode of transportation as if to accommodate the practical realities of the explorer's intrepid journey. Varo's painting thus offers a rather wry escape fantasy in which a dislike of travel is overcome through the invention of a perfect travelling garment that shields the traveler from harsh

external conditions. The detailed design of the uniform, which also doubles as a boat, demonstrates Varo's fascination with mechanical design, albeit with a rather fantastical interpretation of the possibilities of engineerial ingenuity.

In her earlier painting *Discovery* (1956), Varo more accurately captures the densely foreboding atmosphere of a "high, thick jungle." Visible through a canopy of trees, a two-story boat with an internal staircase and billowing sail navigates its way down a river while three men in long overcoats stare out toward its banks at an illuminated ball, which glows and hovers above the ground. Varo achieves the richly textured surface of the vegetation in this painting through the use of decalcomania, and a painting technique in which thinned paint is blown across the canvas in random directions and which gives the dense jungle and tangled mangroves an eerily anthropomorphic feel. In many ways *Discovery* encapsulates the quest for the magical source of the Orinoco, revealing the curiosity and bravery but also the imaginative leap of faith necessary to navigate uncharted territory. In many of these geographical expeditions—as well as in the various trips Varo made to the Delta region of the Orinoco—teams of scientists, each specializing in a different area of the natural sciences, would accompany the explorers and work together to investigate plant and animal life, and newly encountered geological formations and climatic conditions. The theme of the journey has often been read as a reference to Varo's own experience of continued flight and exile during the years of war and unrest, prior to her arrival in Mexico. But these paintings also recall her early childhood travels across Spain and North Africa as well as the marvelous year of travel and "discovery" she spent in Venezuela.

The possibilities of multi-disciplinary scientific investigation afforded by the great geographical explorers of the nineteenth and early twentieth century becomes the focus of the wryly-titled *Discovery of a Mutant Geologist* (1961, Fig. 4), completed a year after *Exploration*. In this painting Varo depicts a hybrid insect-human standing in the midst of a cathedral-like rock formation. Wearing an explorer's helmet and with a telescope protruding from an eye, the "mutant geologist" intently studies a large purple daisy that has sprung up from the otherwise barren sandy ground. Rather than examining geological formations, this insect scientist has set up a portable laboratory in which young seedlings, the only other form of plant life, grow in test tubes. Against the uniform patina of the rock formation, achieved with the technique of decalcomania, the scientist and the flower appear out of place, as though they are the only life forms left on the earth. In describing this work Varo herself invokes an apocalyptic theme: "In a landscape that has been devastated by an atomic bomb, a geologist who has mutated because of radiation stares at a gigantic flower."³⁰ The mutation Varo evokes here suggests not only a mutation from human

to insect and animal form, but also from geologist to botanist, as the scientist's work involves the study and propagation of plant forms as well as rock formations. Varo's scientist is thus cast as an intrepid explorer in pursuit of new life forms. In striking ways Varo's painting is also reminiscent of the many post-apocalyptic landscapes executed by Max Ernst during the war, and that also utilize decalcomania to eerily evoke the theme of civilization's ruin and decay. And yet Varo's image is clearly much less ominous, imparting, instead, the natural world's capacity for metamorphosis and self-renewal. Although Varo's painting alludes to the disastrous effects of scientific experimentation, recalling the real and hideous effects of atomic warfare, the quality of mutation itself, depicted through the ingenious adaptability and resourcefulness of the scientist, hints at the potential for science to redirect its energies toward more creative ends and the possibility of the earth's salvation.³¹ It also hints at the seemingly adaptive nature of living organisms in the face of mankind's destructive drives. The ambiguity of this image in casting science as both destructive and



Fig. 4. Remedios Varo, *Discovery of a Mutant Geologist*, 1961 © 2011 Artists Rights Society (ARS), New York / VEGAP, Madrid

creative is evident in many of Varo's other works and conveys her keen interest in the marvelous quality that science brings to our understanding of the world, in spite of its hubristic and misguided attempts to control and conquer the natural world.

In *Unsubmissive Plant* (1961), Varo again brings an unrestrained irony to the fore in her depiction of a lonely botanist who sits puzzled at his worktable, attempting to unlock the mathematical mysteries of plant specimens he has collected in laboratory flasks. As in *Mutant Geologist*, Varo humorously explores the rebellious qualities of the natural world and the process of mutation, playfully evoking a new kind of hybrid science. In describing this image Varo informs us:

The scientist conducts experiments upon a variety of plants and vegetables. He is baffled at coming across a rebel plant. All the other plants sprout branches in accordance with mathematical forms and equations, but this one insists on putting forth a flower, while the one mathematical shoot it put out at first and has just dropped off onto the table was awfully sick and withered, as well as mistaken, because it said "two plus two almost equal four." Every hair on the scientist's head is a mathematical formula.³²

The figure of the "rebel plant" in this new hybrid science insists on its material status as a flower, in defiance of the laws of mathematical equation, since it doesn't quite add up to the sum of its parts ("two plus two *almost* equal four") as well as its capacity for life: it is the abstract mathematical shoot that withers toward its own death. While critics often read these images as anti-science, this undermines the sophistication and canniness with which Varo grapples with the interconnections between art and science, whereby the figure of the "rebel plant" might be read as a subtle invocation of the creative and intrepid spirit of the new physics and its challenge to traditional Newtonian physics and Cartesian reason. According to Kaplan,

As compelling as Varo found the intuitive and irrational aspects of mystical philosophies, she was also attracted to the logic and order of scientific investigation. Still very much the engineer's daughter, she read science as avidly as she read metaphysics, and her personal journey was propelled as much by her interest in scientific phenomena as by her study of the mystics. Turning to the sciences, she recognized in the newest developments in medicine, biology, chemistry, physics, astronomy, and botany infinite possibilities for

further exploration.³³

In *Discovery of a Mutant Biologist* and *Unsubmissive Plant*, the scientist is an inquisitive and imaginative figure who uses whatever resources are available to shape and construct possible meanings and interpretations of the world. Varo's exploration of how imagination forms a primary function of scientific discovery suggestively recalls the work of Bachelard. The kind of radical critique informing Bachelard's conceptual understanding of the experimental and imaginative function of the

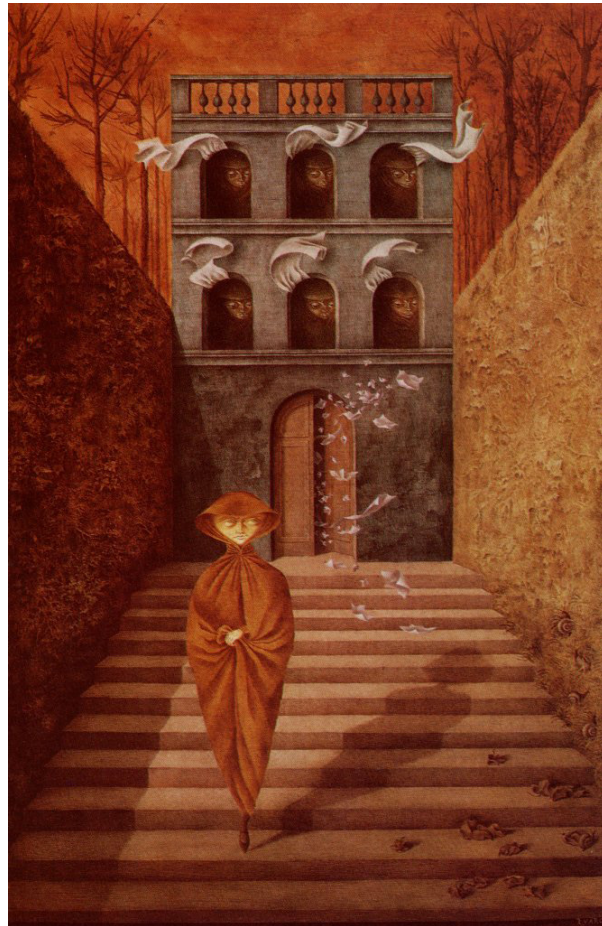


Fig. 5. Remedios Varo, *Rupture*, 1955 © 2011 Artists Rights Society (ARS), New York / VEGAP, Madrid

scientific mind strikes a resonant chord with Varo's work that I have so far examined. In many of Varo's paintings the figure of the scientist is represented as an iconoclast, daring to experiment with new models for understanding the universe. It is her painting, *Rupture* (1955, Fig. 5), however, that comes closest to illustrating Bachelard's most enduring concept, that of "epistemological rupture." In this painting a cloaked and hooded figure flees a building and descends a flight of stairs which are enclosed by tall walls covered in dense vegetation. Behind the figure a door stands ajar, allowing papers to flutter out and be carried in all directions by the wind. Watched by six identical faces with heavy-lidded eyes from six identical arched windows, the fleeing figure seems determined to escape a world of tradition and uniformity. Like Bachelard's concept in which habitual patterns of thinking or unconscious structures must be ruptured in order for scientific innovation to occur, Varo's hooded figure abandons the path to traditional, institutional knowledge, seeking instead a kind of ontological and epistemological freedom in the flight from the claustrophobic walls of mimetic and uniform learning.

The theme of rupture is again explored in Varo's now-iconic painting, *Woman Leaving the Psychoanalyst* (1960). Here it is also a psychic split that we witness in the process of a masked woman leaving the office of a Dr. F.J.A. Varo's notes to the painting inform us that these initials stand for an amalgamation of Freud, Jung and Adler, and we know that Varo was an avid and informed reader of psychoanalysis. In Varo's painting the veiled figure disposes of the past by dropping her father's head into a well, which Varo informs us is the correct thing to do when leaving one's psychoanalyst.³⁴ As with the figure in *Rupture*, Varo's veiled heroine flees the house of tradition and paternal authority, disposing her "psychological waste" as part of the process of "epistemological rupture" and self-analytic catharsis. In the process a mask drops from her face to reveal eyes alive with curiosity and a canniness that forms a striking contrast with the mask's lifeless visage. In this sense psychoanalysis becomes a tool of rupture, through which a renewed knowledge of the world and the self might be obtained. Like Varo, Bachelard's interest in psychoanalysis was not confined to the Freudian theory of the unconscious; he was as interested in the ideas of Jung and Adler as he was in the ideas of Freud.³⁵ Indeed Bachelard's unorthodox application of psychoanalysis made him, like the Surrealists, an early improviser of psychoanalytical theory.³⁶ The subtitle—"A Contribution to a Psychoanalysis of Objective Knowledge,"—of Bachelard's *The Formation of the Scientific Mind*, conveys his idiosyncratic application of psychoanalysis to an understanding of the repressed conditions of all forms of epistemological inquiry. Since for Bachelard "the mind's preference is for what confirms its knowledge rather than what contradicts it," he argues for a psychoanalysis of the scientific mind to keep it free of the complacent

solutions it tends to fall back on—authority, tradition, habit, and automatic affective responses.³⁷ In this way, the mind may be restored to its desired state of “uncertainty,” a prelude to the conditions of a truly experimental science:

all scientific culture must begin with an intellectual and emotional catharsis ... The hardest of our tasks still remains: we must put scientific culture on the alert so that it is always ready to move, we must replace closed, static knowledge with knowledge that is open and dynamic.³⁸

In Varo’s painting *Breaking the Vicious Circle* (1962), dated two years after *Woman Leaving the Psychoanalyst*, a female figure pulls apart a closed circle of “static knowledge” in the form of a knotted rope that encircles and constrains her, revealing a hidden world beneath her body. Flayed open at the chest by the strained effort of rupturing the “vicious circle,” Varo’s female figure exposes a world “beyond appearance” in which the bare branches of a wooded forest double as the veins and arteries of the human body. The search for a hidden knowledge of the self, conducive to psychoanalysis, becomes the dominant theme in *Rupture, Woman Leaving the Psychoanalyst* and *Breaking the Vicious Circle*. This is achieved through an intellectual and emotional catharsis that is akin to Bachelard’s eradication of the obstacles that block the progress of revolutionary, scientific knowledge.

A wondrous fascination and respect for the new physics underpins Bachelard’s entire thesis in *The New Scientific Spirit*, in terms of how it imagines and creates a world unable to be encompassed by ordinary human experience. What continually fascinates Bachelard is precisely how revolutionary scientific discovery occurs—the conditions that enable the scientific mind to break free from accepted theories and develop new models of the universe. Varo’s own fascination with modern physics is powerfully illustrated in *Phenomenon of Weightlessness* (1963, Fig. 6), which explicitly references both Newtonian and Einsteinian theories of gravity at the very moment of radical epistemological rupture. In this painting a scientist figure appears off-balance as he moves between two spatial planes composing a single room, with one foot in each. A selection of orreries have been neatly placed on shelves, but an orrery of the earth and the moon has broken free of its stand and floats weightlessly into a fourth dimensional space within the room.³⁹ The fourth dimensional space has been superimposed at an angle of thirty degrees over the original, illustrating the curvature of space-time in Einstein’s theory of relativity. The phenomenon of weightlessness ascribed to free-falling bodies was the germinal seed for Einstein’s development of the theory of gravity—not as a force acting

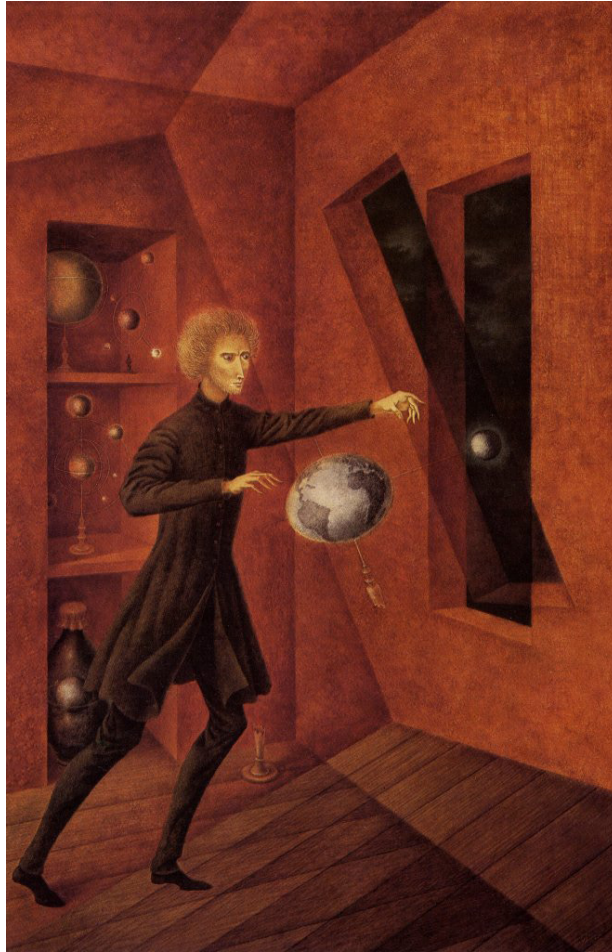


Fig. 6. Remedios Varo, *Phenomenon of Weightlessness*, 1963 © 2011 Artists Rights Society (ARS), New York / VEGAP, Madrid

between bodies, but the consequence of the curvature or warping of space-time geometry. Varo illustrates the theory of relativity at its moment of conception with sophistication and imaginative insight. This is effectively acknowledged by its inclusion as the dust jacket illustration for one of the first introductory works on the evolution of Einstein's theory of relativity, *The Riddle of Gravitation* by Peter Bergmann, published in 1968. A physicist who worked closely with Einstein in Germany, Bergmann went on to have a distinguished career as a professor of gravitational physics in the United States, and published a number of key texts

that introduced Einstein's theories and their implications to a broad audience. The inclusion of Varo's *Phenomenon of Weightlessness* on the cover of the first edition of *The Riddle of Gravitation* is an important testimony to the profound ways in which Varo's work captures the complexity and imaginative insight of the world of science.

Conclusion

The rich narratives informing Varo's paintings that explore themes of scientific discovery and exploration, as well as metaphysical and self-analytical inquiry, reveal her informed and eclectic engagement with an impressive range of philosophical and scientific fields and disciplines, including microbiology, the new physics, psychoanalysis, epidemiology, metaphysics and botany. Varo's life-long fascination with science is underplayed in much of the critical literature, which tends to valorize the oneiric and magical qualities of her painting. A closer reading of key works that explore the themes of science and exploration, however, reveals her sustained interest in the creative drive of the scientist, as a figure who, like the artist, experiments with new ways of seeing and understanding the universe. While Kaplan has given us an important record of the social and communal world of the surrealist émigrés living in Mexico, Varo's work also explores the other side of that experience—the solitary world of the artist figure, forced to invent a practical means of livelihood and an escape from the shocks of poverty, cultural dislocation and post-war psychological malaise. As Mary Ann Caws suggests in relation to surrealist imagery more generally, “the architecture of individual dream, so often invoked, calls upon the inner view. Surrealist art, like surrealist literature, often seems to arouse in the viewer a corresponding feeling of isolation.”⁴⁰ There is, however, a humorous edge to many of Varo's works from this late period, suggesting that solitude might be an important antidote to the social demands and internecine complications placed on the high-priestess of the Mexican surrealist salon. Many of the paintings bear witness to a solitary and obsessive figure, scientist or artist, who works away at some complex problem or conundrum, as though invention and industriousness might be an antidote to a world gone awry and turned upside down. In many of Varo's paintings concerned with scientific investigation and geographical exploration, we are invited into a world “beyond appearance”—Bachelard's vision of the new scientific revolution—where the secret life of “things” reveals all manner of possible ways to interpret and create the world, one that incorporates art and science, alchemy and dream, in equal measure.

1 Roberto Bolaño, *Amulet*, Trans. Chris Andrews, (New Directions: 2006), 106.

- 2 André Breton, quoted in Mark Polizzotti, *Revolution of the Mind: The Life of André Breton* (New York: De Capo Press, 1997), 454.
- 3 Bolaño is not the first literary writer to be captivated by Varo or her work. In Thomas Pynchon's *The Crying of Lot 49* the central protagonist Oedipa Maas is haunted by Varo's triptych, *Embroidering Earth's Mantle* (1961) which she comes across on a trip to Mexico City. Varo's painting depicts convent-like women in a watchtower weaving into existence an entire world under the watchful instruction of a partially veiled seer. For a discussion of Varo's painting in Pynchon's novel, see Stefan Mattessich, "Ekphrasis, Escape, and Thomas Pynchon's *The Crying of Lot 49*," *Postmodern Culture* 8 (1998).
- 4 Teresa Arcq, "Remedios Varo" in "Surreal Friends Exhibition Catalogue" (2010: 53).
- 5 Janet Kaplan, Teresa del Conde and Tere Arcq all acknowledge the influence of science on Varo's mature work, though their discussions do not connect her interest to a more general surrealist interest in science that I explore here.
- 6 Gavin Parkinson, *Surrealism, Art and Modern Science: Relativity, Quantum Mechanics, Epistemology* (New Haven and London: Yale University Press, 2008), 46.
- 7 Walter Gruen, "Remedios Varo: A Biographical Sketch," in *Remedios Varo: Catalogue Raisonné*, (Mexico: Ediciones Era, 1998), 43.
- 8 See Jordana Mendelson, 'Against Logic: The Exposició Logicofobista in Catalonia,' in Robinson et al. (eds) *Barcelona and Modernity: Picasso, Gaudí, Miró, Dalí*, (New Haven: Yale University Press and Cleveland Museum of Art, 2007), 367.
- 9 Varo had already become associated with various Surrealists in Barcelona, meeting Benjamin Péret through her close friend, Oscar Domínguez, in 1936.
- 10 André Breton, "The Most Recent Tendencies in Surrealist Painting" (1939) in *Surrealism and Painting* (Boston: MFA Publications, 1965/2002), 148.
- 11 Linda Dalrymple Henderson, *The Fourth Dimension and Non-Euclidian Geometry in Modern Art*, (New Jersey: Princeton University Press, 1983), 347.
- 12 Henderson, 347.
- 13 Mary Ann Caws, *Surrealism* (London: Phaidon, 2004), 16.
- 14 Gaston Bachelard, *The New Scientific Spirit*, trans. Arthur Goldhammer (Boston: Beacon Press, 1984), 13; first published in 1934.
- 15 Parkinson, 62.
- 16 Gaston Bachelard, 'Surrationalism,' (1936), trans. Julien Levy in Julien Levy, *Surrealism* (New York: Da Capo Press, 1995), 186; first published in 1936 in *Inquisitions* (No.1, 1936). Levy's translation first published by Black Sun Press, New York, 1936.
- 17 Bachelard, "Surrationalism," 186; italics in the original.
- 18 Parkinson, 59.
- 19 See Martica Sawin, *Surrealism in Exile and the Beginning of the New York School* (MIT Press, 1997), 255-56.
- 20 Teresa Arcq, "Remedios Varo" in "Surreal Friends Exhibition Catalogue," 47.
- 21 From Bayer promotional brochure, quoted in Janet A. Kaplan, *Unexpected Journeys: The Art and Life of Remedios Varo*, (New York: Abeville Press, 1988), 104.
- 22 See *Rheumatic Pain I* (ca. 1948-1949).
- 23 The Surrealist's fascination with the crimes of the Papin Sisters and Violette Noziere are illustrative of their fascination with a feminized spectacle of violence. See Jonathan Eburne, *Surrealism and the Art of Crime* (Cornell University Press, 2008) and Natalya Lusty, *Surrealism, Feminism*,

Psychoanalysis, (Ashgate Press, 2007).

24 Tere Arcq, "Remedios Varo and her Work for Bayer," in *Five Keys to the Secret World of Remedios Varo*, ed. Alberto Ruy Sánchez et al. (Mexico City: Artes de Mexico, 2008), 7.

25 This list was uncovered by Deborah Haynes in correspondence with Walter Gruen but does not include *Microbe Hunters*. According to Tere Arcq, Varo owned a heavily annotated copy of a 1940 Spanish edition of *Microbe Hunters*. See Deborah J. Haynes, "The Art of Remedios Varo," *Woman's Art Journal*, Vol. 16 (Spring-Summer, 1995), 28 and "Remedios Varo and Her Work for Bayer," 8.

26 Van Leeuwenhoek is considered to be "the father of microbiology" and noted for his innovations in improving the microscope; Robert Koch is also considered one of the founders of microbiology and was awarded the Nobel Prize in Medicine for his work in isolating the bacterium causing anthrax, tuberculosis and cholera; Louis Pasteur was French chemist and microbiologist who developed the first vaccine for anthrax and rabies and developed the process of pasteurization; Paul Ehrlich found a cure for syphilis.

27 Paul de Kruif, *Microbe Hunters*, (San Diego: Harcourt Brace Jovanovich, 1926).

28 Kaplan, 114.

29 "Science: River of Discoveries," in *Time Magazine*, December 24, 1951.

<http://www.time.com/time/magazine/article/0,9171,859555-2,00.html> Accessed 1/11/2011.

30 Varo quoted in Sandra Lisci, "A Poet and Seer" in *Five Keys to the Secret World of Remedios Varo*, 192.

31 Sandra Lisci notes that "It has been suggested that this painting alludes to the atomic bombs dropped on Hiroshima and Nagasaki" and thus argues that "the work becomes a condemnation of the idea of humanity destroying itself through science." *Five Keys*, 192-193.

32 Varo quoted in Lisci, "A Poet and Seer" in *Five Keys to the Secret World of Remedios Varo*, 197.

33 Kaplan, 172.

34 Kaplan, 155.

35 Edward E. Kaplan, "Gaston Bachelard's Philosophy of Imagination: An Introduction," *Philosophy and Phenomenological Research*, Vol. 33, No. 1 (September, 1972), 1-24.

36 For a fascinating discussion of Bachelard's interdisciplinary approach to the history and philosophy of science, see Christina Chimisso, *Gaston Bachelard: Critic of Science and the Imagination*, (London: Routledge, 2001).

37 Gaston Bachelard, *The Formation of the Scientific Mind: A Contribution to a Psychoanalysis of Objective Knowledge*, Trans. Mary McAllester Jones (Manchester: Clinamen Press, 2002), 25; first published in French in 1938.

38 Bachelard, 29.

39 Varo's interest in the esoteric philosophy of P.D. Ouspensky and his understanding of the Fourth dimension also provided an important inspiration for Varo's late work. Ouspensky was the author of *The Fourth Dimension* (1904) and *Tertium Organum* (1912), which were both read and taken up by those Surrealists close to Varo in Paris.

40 Caws, 17.