**Energy: The Essence of Existence**

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In July 2012, Rolando Peña was part of the euphoria of a grand scientific discovery: the Higgs boson. We had been working since 2000 on the Higgs field, a basic universal field proposed by the theoretical physicists Robert Brout, François Englert, and Peter Higgs that interacts with the fundamental particles of nature to give them mass. In this process, mediated by the field’s acting particle (its boson), the symmetry of the physical forces is spontaneously broken. This phase transition originally took place in the early stages of the Big Bang expansion as the universe progressively cooled down, but the basic mechanism can be deduced nowadays from the accelerated particle collisions at the CERN Large Hadron Collider in Geneva.

While Director of Fermilab, Leon Lederman used to refer to the Higgs boson as the “God particle,” which Rolando quickly translated in his artistic endeavors as the “God barrel.” In this respect, a video installation of Rolando’s barrel-induced symmetry breaking was shown in several cultural events in Europe: Observatori 2001, Valencia; Festival Salamanca 2002; London Biennale 2002; Istituto Italo-Latinoamericano, Rome; Museo Amadeo Modigliani, Follonica; and in 2003, at the White Elephant Gallery of Paris. We celebrated this epoch-making discovery in November 2012 during the LXII Annual Convention of the Asociación Venezolana para el Avance de la Ciencia (AsoVAC) with the unveiling of Rolando’s mural, *El Barril de Higgs*, at the Universidad Metropolitana in Caracas.

I started exploring art-science themes at the IBM Venezuela Scientific Center in Caracas in the mid-1980s, the beginnings of the digital revolution. The powerful computational equipment in this experimental lab offered a new capability, the graphic color display, which soon enchanted the avant-garde artists. Rolando, with a well-developed sixth sense he refined in NYC in the 60s and 70s to be where it is at, followed the initial steps of Alejandro Otero to produce pioneering digital art: *Mene Digital* (IBM, 1993). With his work I became familiar with two innovations: *ray tracing*, a numerical technique that allows the generation of realistic three-dimensional images through a computational implementation of Leonardo’s one-point perspective; and Mandelbrot’s *fractals*, the self-similar geometry of randomness. With these two techniques we managed to reproduce digitally the inherent components of Rolando’s sculptures: modular structures, multiple reflections, texture, and virtual spaces.

When I moved in 1994 to the Physics Center of the Venezuelan Institute for Scientific Research (IVIC) in Caracas, I continued the art-science projects with Rolando for over a decade treating key topics in contemporary physics and astronomy such as the standard model of matter, the Higgs field, and the Big Bang, which he extended in 2009 to include the important issue of climate change with Juan Carlos Sánchez as a Guggenheim Fellow. All this body of work was extensively analyzed by Margarita D’Amico and Humberto Valdivieso at the Andrés Bello Catholic University of Caracas by means of student forums, exhibitions, and publications.

However, the seminal creative conception that allowed us to sail through all these digital adventures, and which is the epicenter of Rolando’s sculpture works, the golden barrel, took place well before our joint projects; namely, during his exhibition *Santeria* in 1975 at the Annex Room of Sofía Imber’s Caracas Contemporary Art Museum. That day, as he walked home from the show after lunch through the nearby...
Los Caobos Park with one of his many girlfriends, he found a dumped and soiled oil barrel that he washed and baptized in the Venezuela Fountain to eventually convert it into his main devotional object. He intuitively and unknowingly discovered a versatile module to represent energy in a sculpture. In my opinion, that is a significant contribution.

We all talk about energy, but most of us do not know what it really is as it takes many different forms. It is the essence of existence, the currency of the natural economy, of life, of civilization. In physics we talk in energy terms; in fact, we have found that, despite all the energy transmutations that occur in physical processes, the total energy is conserved without exception. Moreover, from Emmy Noether’s theorem of 1915, conservation laws are associated to basic symmetries of nature. Energy conservation implies invariance with respect to the passing of time, it is a unifying concept that determines the capacity of a system to change.

In Rolando’s works we are related to barrels containing oil energy. We all fully understand as oil has been the energy of 20th century, the fuel of the unbound progress and growth of the modern era, the central motive of many armed conflicts. His golden barrel choice, on the other hand, must have been an enlightenment of the Buddha as it has allowed him to develop a unique and critical discourse on energy politics, particularly in Venezuela where the fleeting and deceptive character of the oil wealth, the devil’s excrement, has destroyed the country, and in a broader context, on ecology as oil burning has globally damaged the Earth’s climate. His monumental golden-barrel structures – spirals, walls, totems, labyrinths – denounce the greedy and polluting growth of the past century and advocate a new era in which we must make oil greener to save the planet and clean our act.

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