



Emilio Del Giudice

1940-2014

Emilio Del Giudice, a prominent Italian quantum physicist known to all in the cold fusion field, passed away unexpectedly on January 31 at the age of 74. He had worked closely with Martin Fleischmann and Giuliano Preparata.

Del Giudice was born in Naples, Italy on January 1, 1940. He received a physics degree in 1961 from the University of Naples; he was an assistant professor in the Faculty of Sciences there from 1963 to 1976. He was at the Massachusetts Institute of Technology's Center for Theoretical Physics (Cambridge, U.S.) from 1969 to 1972 and the Niels Bohr Institute (Copenhagen, Denmark) from 1974 to 1976.

Since 1976, Del Giudice worked at the Milano branch of the Italian National Institute for Nuclear Physics. He was first a research associate and became a senior scientist in 1988 until his recent retirement. His main interests were quantum field theory and physics of collective and coherent processes, but he also investigated the structure of liquid water.

Del Giudice was awarded the Prigogine Medal in 2009; the award is presented by the University of Siena and the Wessex Institute of Technology (WIT) in honor of Ilya Prigogine and is given annually for the best paper presented at a WIT conference or submitted to the *International Journal of Design and Nature and Ecodynamics* on the topic of ecological systems. His lecture was entitled "The Interplay of Quantum Field Theory and Thermodynamics of Irreversible Processes as a Conceptual Basis for Biology and Ecosystem Dynamics."

Del Giudice authored nearly 100 papers, primarily on potential scattering dual models and electrodynamic coherence in condensed matter. In 2010, he and Maurizio Torrealta authored *Il Segreto delle Tre Pallottole (The Secret of the Three Bullets)*, a book about nuclear energy with a focus on cold fusion. The book alternately uses fiction and fact to highlight perspectives about nuclear energy and the lack of attention paid to cold fusion. An English version of the book will be published in October by TrineDay Publishing (<http://www.trineday.com/>).

Below some of Emilio Del Giudice's colleagues and friends share their remembrances.

Antonella De Ninno

I met Emilio in 1992 in Nagoya, Japan. We were both there for a conference, one in the ICCF series. I was struck by his humor and his very friendly way of talking with everybody. I was especially attracted by his neapolitan accent (easily distinguishable even when he spoke English) so familiar for me. But I was literary moved when I listened to his talk:

his speech was so clear and imaginative and, for the first time, I had the impression to have really understood what cold fusion phenomenon implies in the comprehension of condensed matter. In spite of his elegance and lightness even when he talked about complex problems in physics, his descriptions were never sloppy or inaccurate; on the contrary, he knew the physics very well because he understood the real significance of the concept and the implications outside the mere scientific implications. As an example, he was the only one I have ever known able to calculate the radius of the hydrogen atom with two decimals without writing any formula but only applying first principles of quantum mechanics or able to explain how the concept of intrinsic oscillating particles in quantum mechanics compels the gauge invariance and coupling with the electromagnetic field.

After Nagoya we became good friends, or, I have to say that he became my teacher. After the years we spent together and working with Giuliano Preparata performing experiments on cold fusion in my laboratory in Frascati and, after Giuliano passing away, Emilio led me into the study of biological matter physics, his favorite subject since the 1980s when he studied this theme with his teacher and friend Herbert Fröhlich. Cold fusion has been for him just a case-study about the collective dynamics inside the condensed matter. His last participation at an ICCF was in 2003 in Cambridge, Massachusetts where he gave a talk titled "Are the Nuclear Transmutations Observed at Low Energies Consequences of QED Coherence?" The thesis exposed that nuclear transmutations at low energies are only possible considering the presence of excitations emerging from nuclear reactions (γ -rays from dd fusion). As an example, through the giant resonance mechanism, the electromagnetic field couples with the closed shells present in the nuclei of the lattice, provoking a violent shake and the consequent breaking of the nuclei along the minimum energy bounds. The underlying concept was that cold fusion cannot be a localized event.

Emilio was not interested in cold fusion applications. He was intimately convinced that human beings don't need a new unlimited and free source of energy, at least until we learn the correct way to use the energy, looking at the sustainability of the use of the resources, avoiding waste and considering the Earth as a gentle home where we are the guests and not the landlords. He was also very distressed when he understood all the possible non-civil implications of low energy nuclear reactions. The thesis of his book *Il Segreto delle Tre Pallottole* is that LENR have been known for

many years from the military apparatus of the main military powers and have already been experimented with in several war theatres. This helps to explain the wave of violent discredit launched against cold fusion since 1989 by the academic and official apparatus.

Emilio never separated his social belief from scientific activity because he was strongly convinced that scientific ideas just reflect the vision of the society and of the relationship among individuals. I have learned from him that the Copenhagen interpretation of quantum mechanics does not coincide with a mathematical formalism choice but represents instead the triumph of individualism in the twentieth century (the reality is in principle un-knowlegeable and subjective) while the quantum fields theory introduces the epistemological concept of a unitary Universe where the fields are the mattress where material bodies move, acted upon by non-local and non-causal forces.

The very powerful message of Emilio's teaching is the re-discovery and elaboration of the concept that matter is not passive but is instead capable of auto-motion and that the isolated body is only an abstraction deriving from un-confessed social individualism. The reality is instead based on a unitary concept and on collective behaviors according to the teaching of Giordano Bruno and Karl Marx, who Emilio loved to quote. His major aim was to unveil how the psyche emerges from matter and he faced this impressive purpose with the usual grace and restless enthusiasm. He worked with enthusiasm on the structure of liquid water until his last hours. A heart attack stopped his walk inspired by awe. We will miss him until we will walk on the same trail.

Francesco Celani

I first met Emilio Del Giudice around 1993 due to his collaboration with Prof. Giuliano Preparata, who had been my professor and became my colleague and friend. Both worked at Milan University (Emilio as a staff member/researcher at the National Institute for Nuclear Physics, where I was also employed; Giuliano as one of the most prestigious professors of Nuclear Physics) and were involved in research on cold fusion phenomenologies.

Emilio and Giuliano were, at first glance, opposite personalities. Politically, Giuliano was conservative and Emilio was liberal. With their dress, Giuliano was very elegant and Emilio very relaxed. In their manner of speaking, Giuliano was almost always very hot-headed, with a loud voice, often bitter with his colleagues but always very kind with students; Emilio was soft-spoken and kind to everybody.

Their differences seemed to make them "complementary" to each other. This afforded them the ability to brave even the most difficult times related to the decision to study the controversial field of cold fusion.

When, in April 2000 Giuliano abruptly passed away from an ultra-fast growing cancer in the stomach, I worried that Emilio would stop his work on cold fusion. Luckily, that didn't happen and, in some ways, he was even more active, from the point of view of sharing their experimental results and, more important, his life philosophy about making advanced researches.

I will deeply miss Emilio.

Maurizio Torrealta

There are few people whom I enjoyed working with as

Emilio. With him I could smell the pleasure of researching and reasoning. . .even that of discovery. But the discovery showed the risk of turning immediately into a dogma, and he preferred not to miss the theoretical height from which he saw the world and avoided compromising with ratings and reviews. It was the elegance of the skeleton he sought, then the skeletons could be beautiful or ugly, young or old, but did not change the evidence of their essence: they remained full of water and it was the consistency of water and its states of coherence that interested him more than still forms of bodies.

After a lot of effort, thanks to his explanations, I could vaguely understand what happens in the lattice of palladium when isotopes of hydrogen, are so close to each other, fuse together and tame nuclear fusion at room temperature. Happy about my enlightening, I asked him why he had decided not to deal with that research anymore. He told me that in the future he would research only the state of coherence of water. A nuclear process at low intensity could offer more power, but would revive an increase in consumption of energy, not a decline, and this would have been harmful and useless to mankind.

Emilio never refused to explain to me a mysterious process or a counterintuitive phenomenon. He was so interested in seeing the origin and the consequences of it for mankind, in a pattern more broad. And that was his way of considering himself a communist; he kept in mind the interests of everyone, and he really loved everyone. He always was meticulous and precise as much as generous and affectionate. For example, he could make himself understood by all, even if he explained a complicated process. One time we stopped to eat at a restaurant full of noisy students near the university and Emilio, with his voice calibrated for a lesson with hundreds of students, explained to me how "matter" had been born before "time" and that "time," being a variable of "matter," could easily be crossed by the states of coherence of the matter that were in different time situations. As he explained these steps, the voices of the students had turned into a religious silence, and when he finished the explanation of the crossing of time, he was greeted by a thunderous applause.

I am a dull and obstinate atheist who doesn't believe in any future life, heaven and hell and all that nonsense about eternal peace and universal judgment, but I do not exclude that some signal of coherence of matter through time will reach us, if not sent to us by Emilio, sent to us by the reasoning that he left to us, which is his most valuable and vital presence. I hope someone among us, or among those who will come later, will have the capacity to catch the attention of the secret imperceptible signal of coherence that matter and life sends us beyond the illusion of time passing and separating us.

I love you, Emilio. Keep in touch.

Melvin Miles

I was greatly saddened to hear about Emilio Del Giudice passing away. I had a pleasant experience in February 1997 meeting with Emilio, Giuliano Preparata and Martin Fleischmann in Milan, Italy. This trip was due to an invitation to head the LEDO laboratory in Milan and work with Emilio, Martin and Giuliano. Our object for this trip was to give presentations on cold fusion to top people at Pirelli who

were interested in funding the LEDO laboratory. This laboratory was on the fourth floor of a building on Ampere Street in Milan. The lab was large and clean and had two technicians running the experiments directed by Preparata and Emilio. I was told that Preparata could not officially run this laboratory due to his position at Milan University. I was always with Emilio during this trip. He picked Martin and I up at our hotel in the morning and dropped us off near midnight because dinner was always rather late each evening.

The busiest day was February 25, when we made our presentations to Pirelli. It was probably an Italian trait, but Emilio was always somewhat late each morning in picking us up at our hotel. Then, Preparata got into a long shouting match at the lab with one of the technicians who had made some mistake with the experiment. Martin took me into the conference room and told me that this happens often, and we should ignore them. We finally left late for Pirelli, which was a city within a city with a gate where we had to get badges. Emilio even lost his way inside the maze of streets, but we finally found the building. Martin gave his talk showing the excess heat effect in the Pd-D system. I followed showing the connection between heat and helium-4 production. A reception followed with juice and cookies and then lunch at a fancy place a few blocks away. Later in the car, Martin commented that he never really had the right team in France, but the four of us in Milan would be the right team for this research.

A film crew from Rome interviewed the four of us at the LEDO lab as well as back at the hotel. This took an entire day. I was told that this was a popular TV program in Italy, similar to "60 Minutes." Preparata and others seemed to trust them in their reporting on cold fusion. Several months later, Emilio told me that they turned this into an attack on cold fusion.

The possibility of this position for me continued for several months, but the funding of the LEDO lab by Pirelli never happened. On July 29, 1997 Emilio told me that the Pirelli Research Group feared loss of respect by becoming involved in cold fusion, therefore they pulled out. In October 1997 I wound up going to NHE in Japan instead. However, in years to come I noted some cold fusion reports from Pirelli at ICCF meetings.

Emilio was a calming influence in contrast to Preparata, and he was a very good host for this trip. I never saw Emilio get upset with anything while I was in Milan. He was a key theoretical person working with Preparata on applications of Quantum ElectroDynamics (QED). In addition to applying this theory to cold fusion, Emilio applied this theory to many other areas. He worked with Martin in an application of QED to coherence in water.

I find it sad to note that three key players involved in my trip to Milan—Preparata, Fleischmann and now Del Giudice—have passed away.

Passings

Sven Kullander, professor of high energy physics at Uppsala University (Sweden), passed away on January 28 at the age of 77. In 2011, he was one of the early observers of Andrea Rossi's E-Cat. He and Hanno Essen were the first academics to publicly endorse the technology. Kullander was a member of the Royal Swedish Academy of Sciences, serving as chairman of its Energy Committee since 2004. He contributed to the development of accelerators and published a popular piece on the Nobel Foundation site [http://www.nobelprize.org/nobel_prizes/themes/physics/kullander/index.html#footnote]. Mats Lewan, reporter for the Swedish magazine *NyTeknik*, met Kullander several times in the course of reporting about Rossi. He said, "Sven was a very open minded, enthusiastic and engaged person. He was curious and always ready to have an idea about things. His ideas were not fantasies—he had a very profound knowledge in physics and he based his ideas on this knowledge. Yet he never let this become a limit, but was instead always interested in looking ahead."

John Huizenga, professor emeritus of chemistry and physics at the University of Rochester (U.S.), died January 25 at the age of 92. He is best known to followers of and workers in the cold fusion field as co-chair of the 1989 Department of Energy Research Advisory Board panel that investigated the claims of Pons and Fleischmann. In 1994, he authored *Cold Fusion: Scientific Fiasco of the Century*.