

Science is friendship

Ten years of collaboration at the International School on Mind, Brain and Education, Ettore Majorana Foundation and Centre for Scientific Culture

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<http://www.pas.va/content/accademia/en/academicians/ordinary/battro.html>

A brief history

What more felicity can fall to creature than to enjoy delight with liberty,

Edmund Spenser, (1552-1599):

The fate of the butterfly, (1591).

I would like to reflect upon the spirit of the International School on Mind, Brain and Education at the Ettore Majorana Foundation and Centre for Scientific Culture at Erice in its tenth's anniversary. It all started in 2002 at the Harvard Graduate School of Education when I was teaching as visiting professor with Kurt W. Fischer a course on the "Educated Brain". At that time Kurt was also teaching with our friend Howard Gardner a very influential course on "Mind, Brain and Education", MBE, the first of this kind in a School of Education. The same year, my *annus mirabilis*, I was nominated at the Pontifical Academy of Sciences PAS and I went to Rome to become an academician in November. It was a great event in my life. We were received by Pope John Paul II and the session of the self-presentations of the new members was unforgettable in many senses. I was humbled among

so many prestigious colleagues, several Nobel laureates and two cardinals, eminent scholars, Carlo M. Martini and Joseph Ratzinger, who was elected Pope Benedict XVI in 2005. I still keep my notes of the various conversations with fellow academicians, in particular with Pierre Léna, astrophysicist and co-founder of LAMAP, *La main à la pâte* in Paris, an expanding international program of inquiry-based science education. I was impressed by his achievements and ideas. And we became friends.

The story of our MBE School at Erice began to unfold when we decided with Pierre to organize a working group at the Academy in November 2003 on *Mind, Brain and Education* MBE and we invited Kurt to co-chair this meeting with us. The meeting was a success and elicited a series of working groups at PAS on the MBE topics in the following years. At that meeting we announced with Kurt, and one of our former Harvard students Juliana Paré-Blagoev, the launch of IMBES, the *International Mind Brain and Education Society*. Kurt became the first President of this new association and the Editor of its official journal *Mind, Brain and Education* whose first volume was published in March 2007, with David B. Daniel as Managing Editor. Since then the journal became a most appropriate platform for the publication of many of the papers presented or inspired in our meetings at Erice.

That year 2003 our Academy was celebrating the 400th anniversary of its foundation as *Accademia dei Lincei*, the oldest of the world. Many presidents of academies of sciences were also present. In the session commemorating this anniversary our colleague Antonino Zichichi, physicist and founder of the Ettore Majorana Foundation and Centre for Scientific Culture at Erice presented a topic close to his heart “Galilei, Divine Man” that became a source of inspiration for many of us who were working to build a new scientific field in “neuroeducation”. And, most

challenging, he generously offered us the opportunity to create an International School on MBE at Erice and invited me to visit the place. I went to Erice in 2004 with Marta Oyhanarte where we were hosted by Fiorella Ruggiù, the most efficient and friendly secretary of the Centre. We discovered that Erice was a unique site in Sicily where incomparable beauty, a millenary history and the most advanced sciences meet. I returned home fully convinced that this was *the* place for a MBE School. Fiorella became the key person in the organization of our meetings.

As a result of this trip we decided with Kurt to create and co-direct the new MBE School and in July 2005 we held our first meeting at Erice on the “educated brain”, which was a success. Pierre and many dear colleagues from different nations came to this meeting. We invited a former student of Kurt, María Lourdes Majdalani (Lula), to become the Program Officer of the MBE School at Erice. I was also mentor of Lula at Harvard where we became close friends. We both live in Argentina. Now Lula co-edits this book, which is also the result of her friendly support and professional effort during a decade.

We were proud that the proceedings of our meeting on MBE at the Pontifical Academy in 2003 were published in a book: *The educated brain: Essays in neuroeducation* (1) and were translated into Chinese. The inclusion of China in the MBE movement was extremely important. I was invited in April 2004 to a meeting in Hangzhou for The Sino-French Symposium on “Learning by Doing” in collaboration with LAMAP, organized by Pierre and Wei Yu, former vice-minister of education of China. And there we went to share an unforgettable experience on the teaching of science in Chinese schools. And most important we started a collaboration with the Research Center for Learning Science of the Southeast University of Nanjing under the leadership of Wei

Yu, and in another trip, this time in company with Kurt, with East China Normal University, Shanghai, organized by Jianxian Zhou, former Kurt's student at Harvard. We had the pleasure to receive Wei Yu at our first MBE School at Erice and in 2012 with her colleague Yanmei Zhu. Erice was also enriched by the significant contributions of Japan, in particular, those of our loyal friend Hideaki Koizumi, chief scientist of Hitachi, and his talented junior colleagues, who participated in every meeting of the MBE Schools since 2005.

In November 2004 Pierre organized with Edmond Malinvaud and Marcelo Sánchez Sorondo, Chancellor of the Academies, a joint meeting on “Globalization and Education” (2) at the Pontifical Academy of Sciences and the Pontifical Academy of Social Sciences in Rome, where I acted as chairperson of the session dedicated to the role of communication and information technologies. In this meeting, among many other remarkable contributions, Wei Yu presented a panorama of the education in China and my friend Nicholas Negroponte, director of the Media Lab of MIT, launched the “\$ 100 Laptop” initiative that became in 2005 the seed of OLPC, the *One laptop per child Foundation*. I became the Chief Education Officer of this international program that have reached 40 nations and more than 2.7 million children and teachers. Today the *Global Literacy XPrize*, inspired by Negroponte, is promoting new technologies and pedagogies to educate children in remote places without schools. Our dear colleague Maryanne Wolf gives a presentation of her recent experience about that issue in this volume. It is based on the evidence that “children teach”. And the “teaching brain” is the topic of the celebration of the 10th MBE School at Erice coordinated by Sidney Strauss, whom I first met at Harvard thanks

to Howard Gardner, and Elena Pasquinelli, a close collaborator of Pierre Léna at LAMAP. Our network of friends was quickly expanding.

Our ten Schools included a broad spectrum of topics, 2005: Summer School on mind, brain and education; 2007: Basic and applied topics on biological rhythms and learning; 2008: Neuroeducation: new perspectives in teaching and learning; 2009: Educational neurosciences and ethics; 2010: Learning, arts and the brain; 2011: Education in the digital era; 2012: Teaching: a new frontier of the neurocognitive sciences, education and culture; 2013: Science education in the digital era; 2014: Body, brain and personal identity and 2015: The teaching brain.

This is only a glimpse on how a remarkable international human network developed in the MBE field around Erice out of the friendly relationship of a small group of colleagues distributed in several continents. Many more actors enriched our Erice meetings in the following years and are listed in our website www.mbe-erice.org. Our School gathered participants from Argentina, Uruguay, Paraguay, Brazil, Mexico, United States, Canada, Spain, France, Italy, Germany, United Kingdom, Netherlands, Switzerland, Hungary, Austria, Sweden, Israel, Japan, China, Korea, Taiwan and South Africa. We are so grateful to all of them for their collaboration in this first decade of our Erice School, and we hope to continue to receive more participants in the following meetings. Science is friendship and Erice became a real home for all of us.

Fraterna Erycis

The magic of Erice was recognized since very ancient times. The top of mount San Giuliano, where Erice stays, was a sacred place of the Elymi native people. Virgil dedicated the Book V of his Aeneid to describe the mythical arrival of Aeneas to the beloved shores of Erice, his “*fraterna Erycis*”, with his fleet after the fall of Troy and his dramatic encounter with queen Dido of Carthage in his way to Rome. The description of the magnificent celebrations in memory of his father Anchises who was buried there is one of the pearls of the book. I always recommend its reading to our participants at Erice. The place became also famous because of the cult of Aphrodite, the Venus Ericina, the first of its kind in Sicily. The history of the successive occupations of Erice by Phoenicians, Greeks, Romans, Byzantines, Arabs and Normans has left many traces in the region. Medieval churches, monasteries and palaces, the Venus Castle in the old Acropolis, are still in place and splendid buildings of the time of the kingdom of Sicily have been well preserved. Erice is without doubt one of the jewels of Sicily.

The idea to create an international meeting place for advanced scientific studies in old Erice where senior scientists could discuss and exchange their views with junior researchers and students was the initiative of five physicists: John Bell, Patrick M.S. Blackett, Isidor I. Rabi, Victor Weisskopf and Antonino Zichichi. The Centre started in 1962 with The International School of Subnuclear Physics directed by Zichichi, who was also founder and director of the Centre. Since then more than 150 Schools have been implemented by prestigious scientists in their fields. More than 80 Nobel laureates and thousands of participants from 140 nations have joined the Erice’s Schools and ten thousand scientists the world over signed the *Erice Statement* about the peaceful use of scientific knowledge, an initiative that was taken in Erice by

Paul A.M Dirac, Piotr Kapitza and Antonino Zichichi in 1982, during the Cold War. Pope John Paul II visited the Centre in 1993 and greatly supported the “Spirit of Erice”.

Three of the old Erice’s monasteries have been incorporated to the Ettore Majorana Foundation and Centre for Scientific Culture since its inception in 1962. The San Francesco Monastery (former Viceroy’s residence) became the Eugene P. Wigner Institute with the Enrico Fermi Lecture Hall, the San Domenico is now the Patrick M.S. Blackett Institute with the magnificent Paul A.M. Dirac Lecture Hall and the San Rocco Monastery has been transformed in the Isidor I. Rabi Institute with the inspiring Richard P. Feynman Lecture Hall and the Secretariat and Directorate of the Centre. And, most remarkable, these historical buildings provide today very convenient living quarters for the participants of the different Schools that take place during the whole year at the Centre. It is important to mention that the Centre has been named after an outstanding student of Enrico Fermi, the young and remarkable Sicilian physicist, Ettore Majorana, born in Catania in 1906, who disappeared in the sea in 1938 during the crossing from Palermo to Naples. This dramatic event was described by the Sicilian writer Leonardo Sciascia in his famous book “La scomparsa di Majorana” (1975). Majorana’s legacy is still a source of inspiration for many of us in Erice.

It must be stressed that the Ettore Majorana Centre encourages in every School an intensive dialog between senior and junior participants, a friendly characteristic that is very much appreciated by young and old scientists and many times stimulates new fruitful and unexpected collaborations. And, of course, this exchange continues after the scientific sessions in the beautiful restaurants, gardens and bars of Erice. And most important, during our MBE Schools we always dedicate a whole journey to visit the

spectacular historical places of the region, the Greek ruins of Segesta and Selinunte, the Monreale Cathedral and... the beautiful beaches. Our website www.mbe-erice.org gives a vivid account and photos of these trips and gatherings.

The butterflies of the soul

I was invited in 2003 by my friend Courtney Ross, a strong supporter of the Mind, Brain and Education initiative, to become a Scholar in Residence at the school that she has founded, the Ross School in East Hampton, NY, a most advanced institution of education. During my stay I worked on a project on a metaphor about the neurons as “butterflies of the soul”. The inspiring idea came from Santiago Ramón y Cajal, the celebrated Spanish neuroanatomist (1852-1934) who in his memoirs, first published in 1923, wrote:

As the entomologist chasing butterflies of bright colors, my attention was seeking in the garden of gray matter, those cells of delicate and elegant forms, the mysterious butterflies of the soul, whose fluttering wings would someday –who knows ?- enlighten the secret of mental life.

The result was a wonderful video on the fluttering growth-cone of a neuronal axon superposed to a flying butterfly, a piece of art produced by Bronwyn Roe, a brilliant student of the Ross School, then 15 years old. I presented this video at the meeting that we organized with Kurt Fischer and Pierre Léna on “Mind, Brain and Education” at the Pontifical Academy of Sciences in the Casina Pio IV in the Vatican gardens in 2003. Courtney Ross attended this meeting and came to our first MBE School in Erice in 2005.

We incorporated the image of the butterfly in the cover of our first book on the educated brain and it became also the icon of our MBE-Erice website. We also proposed to award a work of art as an annual prize to recognize an outstanding presentation by a junior participant. The laureates in the different years were: Maki Koyama (twice), Kazuo Jano, Zachary Stein, Soraya Umewaka, Cecilia Alcalá, Vanessa Rodriguez, Yusuke Seki and Felix Schirmann. The Erice award this year to Anna-Lisa Vollmer is a painting of a butterfly. The artist, my student and friend Nico, is a right-hemispherectomized remarkable young man and this work of art reveals a feat of human neuroplasticity and a hope for education (3). Erice is certainly a privileged observatory to study Cajal's "butterflies of the soul" in a friendly environment of learning and teaching. And, most important, when we teach we learn, *docendo discimus!*

References

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