In Search of the Intangible – 43 Years of Research in Electromagnetics

Wolfgang J.R. Hoefer

Magnifizenz, Spektabilität, Professor Russer, Honored Guests, Ladies and Gentlemen:

This is a day of great honor and deep emotions. Receiving this honorary doctorate from the prestigious Technische Universität München is not only a splendid professional accolade, but also a deeply gratifying and humbling distinction, bestowed on me by one of the leading academic institutions of my native country.

1 Words of Appreciation and Gratitude

I wish to open this lecture with heartfelt words of appreciation and gratitude. First and foremost, I thank the academic leaders of this university, President Herrmann, Dean Wagner, and the distinguished members of Faculty Council, for honoring me beyond all expectations. My sincere gratitude and admiration go to my colleague and friend, Professor Peter Russer, not only for initiating and promoting the bestowal process, but also for being my trusted colleague, inspiring fellow researcher, loyal friend and gracious host at his Institute of High Frequency Engineering for over twenty years. Speaking of divine justice – I was delighted to learn that he himself received a well-deserved honorary doctorate from the renowned Moscow University of Aerospace Technologies (MAI) less than a month ago.

This is the right time to pay tribute to all those who, through their love, support, friendship and collaboration have sustained and enriched my life and career. They deserve a significant share of the honor and recognition I receive today. My mother, in spite of her 91 years, did not hesitate to travel all the way from Koblenz to München so she could celebrate this event with us. After my father perished in the war in 1944, she single-mindedly and at considerable personal sacrifice, ensured that my sister and I received the best possible education. Without her unfailing love

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and determination this bestowal would not have taken place. I am also indebted to my sister Marlies and her family for their unconditional support. My dear wife Diana has redefined my life in more than one way and deserves a special doctorate of her own – amoris causa! My children Christian and Elise who cannot be with us today, have always been loving and supportive, even though I had to be away on many of their birthdays or special school events. So many colleagues, associates, students and friends have shared their talents and insights with me over all these years that it is impossible to mention them all, but I would like to single out Professor Pomon So who has been the keystone of my research team for more than twenty years. His exceptional talent for bringing electromagnetic fields alive on a computer has significantly shaped and enabled the evolution of our research and was critical to the development of the commercial electromagnetic simulator MEFiSTo. To Poman and to all my former students and associates, several of them present among us today, go my sincere feelings of gratitude and appreciation. I am delighted to share this honor with all of you!

2 The Intangible

Let me preface the account of my search for the Intangible with these mystical words:

Durch alle Töne tönet
Im bunten Erdentraum
Ein leiser Ton gezogen
Für den, der heimlich lauschet.

Beneath the thousand sounds
Of Earth’s colorful dream
There rings a constant gentle tone
For all who secretly listen.

This motto, taken from a poem by the romantic philosopher and poet Friedrich von Schlegel (1722–1829), is usually cited in connection with one of Robert Schumann’s most ambitious piano works, the Fantasy in C Major, Op. 17. Like many works of poetry, these lines transcend their immediate context and convey a much deeper insight. Clearly, they capture the essence of romanticism and appear to relate more to the esoteric than to the scientific. However, I could not think of a more fitting way to describe the secret attraction that entices not only the artist but also the scientific researcher to reach for the Intangible. Research is not merely a professional occupation but a life-long passion and commitment. Its evolution is therefore closely intertwined with the phases of the human existence. Again I have chosen a rather romantic aphorism – not entirely without tongue-in-cheek – namely, a series of four paintings by Thomas Cole (1801–1848) titled “The Voyage of Life” to paraphrase this evolution. I leave it to you to make your own connections between Thomas Cole’s paintings and my journey as we go along.