

Retrospect to My Early Professional Career



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Several weeks ago, my former students organized a party for congratulating beforehand my 80th age, during the Asia-Pacific Electromagnetic Week held in Xi'an, China. That induced me to make a systematic remembrance of my professional career in the most changeful stage with intricate social and survival environment.

I was born into a typical intellectual family in Shanghai on Dec. 15, 1937, while just the 'Nanjing Massacre' by Japanese invaders happened. Four years later, Japanese army invaded Shanghai and occupied my kindergarten for setting a military hospital, thus I entranced primary school so early. Then I graduated from Nanjing Institute of Technology and also started my teaching career in 20th age, just before the overheated 'Great Leap Forward' movement started in China. While the Degree System had not existed, hence no regular research project is required in the university. Thus I tried to do some monographic study just by interest from preparing lessons and reading references. The mathematical methodology of electromagnetism with antenna and microwave applications becomes my major, which were independent of funding.

Unfortunately, the teaching and research career had been interfered by political movements frequently, even completely interrupted during the tumultuous 'Great Cultural Revolution'. That carried off our golden time almost ten years, while the international progress just experienced from classical EM based on analytical methods to computational EM by means of various numerical methods.

However, I believe that science and culture will be necessary for any king of social system. So I tried to practice my bifacial life as a manual worker monitored under the 'Red Guards' in day-time, and a hard self-learner in dark- hours at home. Since Mid 1970s, a manuscript with the title of <Differential Equations in Radio Engineering> was written under an oil-lamp inside a 10 m² farmhouse. Afterwards, it was published as a Chinese textbook (424p.) in 1982, which was continually and widely adopted for graduate course until now.

Furthermore, in order to summarize many kinds of numerical methods with approximately analytical solution under a unified functional framework, another Chinese

monograph with the title of <Functional Methods for Electromagnetic Engineering> (185p.) was published in 1985. Its extended English edition <Engineering Electromagnetism: Functional Methods> (315p.) was published at UK in 1991, which led my entry into domestic and then international academic community, and be recognized and encouraged by famous senior scholars in China as H.C. Huang, H.K. Chen, L. Jen, *et al*, and in abroad as Y.T. Lo, C.T. Tai, R.F. Harrington, D.G. Dudley, *et al*, respectively.

Besides, my research interests cover the antennas, waveguides and scattering with various applications supported by science foundations and industrial projects. Among them, some interested ideas had been studied as: Grooved NRD(*Non-Radiative Dielectric*) waveguide system, FSS(*Frequency Selective Surface*) with mechanically or electrically tuning, FZP(*Fresnel Zone Plate*) reflector or Lens zoned by optimal-rule, TSA(*Tapered Slot-line Antenna*) with Σ - Δ beams or shaped beam, Printed CAFA(*Compound Air-Fed Array*) family involving RA(*Reflectarray*) & TA(*Transmitarray*) & FPR(*Fabry-Perot Resonator*), various antennas for broadcast or communication, wave propagation in/on Chiral medium or EBG(*EM Band-Gap*) structure, ... etc. For response the invitation of Publishing House, I had translated English textbook <Antennas---for all applications> (3rd edition, by J.D. Kraus & R.J. Marhefka) into Chinese edition (785p.), which is more prevalent in Chinese universities and industrials, the sales volume had approached to 50,000 copies.

In order to catch technical progress and apply for research project, I was gained and enjoyed from the technical symposia, lectures, visits and personal discussion. As my feedback, I also served as an active volunteer to the technical societies. In addition, I encouraged and guided my students participate in technical exchange and service frequently. About 10% of my (~500) published papers were introducing the research status with applications in China to international community, such as <Antennas Development in China> (*IEEE A & P Magazine 1996, No.6, pp. 49-63*), and conversely, such as <The Antenna Technology Faced to the 21th Century> (*Chinese Journal of Radio Science 2000, No.1, pp.97-100*). To pay great effort for these activities were worthwhile and delightful for me, but also be restricted to the lack of financial support and the trouble in visa process!

Fortunately, along with exoteric policy and rising economy in China, the research conditions of both software and hardware for computation-simulation- optimization and fabrication-testing-assembling have been obviously improved, and the fresh younger generation has more opportunity of training from post-graduate education interiorly or in abroad, they have more achievements in both theoretical and practical studies. Even I would like to return youth and re-experience my professional career again! Of course, that is impossible due to the time-coordinate is nonreversible. However, I have had adequate comfort for that many of my former students already contributed more and better than me whether in technical research and service. Just as a Chinese proverb said: 'the color of sky-blue is made up from the blue but is graceful than the latter'. I really expect their further achievements, generation by generation!

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