

ISMAR Award Acceptance Speech

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Ladies and Gentlemen:

Let me begin with the admission that I was surprised about the honor I am receiving today - and this for two reasons:

As far as my personal work is concerned, I considered myself always as a creatively contributing team worker and also a team leader, but not a solitary man sitting in his quiet den and concentrating on one issue. Actually, for this I would not have had enough time, because my work has been done to a large extent in the scientific industry, and there we have first to meet the various wishes and requirements of customers whom we serve and somehow we have also to earn our bread and butter for the people in the company family and for future developments. Consequently, the interests and activities have to be wide spread, and this presumes also an enjoyment of communications in a wide range of interests and activities which are rewarded, vice-versa, by a continuous flow of interesting hints and suggestions.

This brings me to the second reason why I was a little bit surprised about today's honor. I believe it is the first time in our community of magnetic resonance that a candidate has been nominated who has in the course of his life mainly worked as an industrial scientist, though I had the chance to spend also a good time in the academic environment.

May I, therefore, interpret the honor you extend to me today also as an acknowledgment of all the other creative scientific fellows who are gathered in our widely international team. As I believe it to be a liberal team, I almost would like to go one step further. I also believe that this honor is a bit due to our

friends and competitors who made us find our legs by their challenges, giving us no time to rest on our oars and laurels. For this I have to be grateful as well.

Let me make a basic remark in this connection. In my younger years I detested the German bureaucracy, Philistinism and traditionalism which practically divided science into two worlds-the academic complex and the industrial complex. Later on I realized that this problem was more or less existent worldwide. In former years I admired our American colleagues for keeping the interplay between industrial and academic entities obviously more lively. Over the years, in my opinion, this has slightly deteriorated, whereas it has improved a bit in other countries. Please let me use this short award address to advocate not only for improved communication but - more important - also for increased transparency and growing possibilities for periodical job rotation.

We know that success, even in so-called pure science in the traditional sense, is remarkably improved if scientific thoughts and instrumental ideas are continuously exchanged between these two worlds. How could this be achieved better than by promoting a fruitful alternative tradition? Let members of our scientific community, whose main interest lies in one field, work from time to time in the other environment if they wish so, and vice-versa. This presumes, since we all have to maintain our families and also our ambitions, that such an interchange should not hurt or delay our career but rather promote it. In addition, we as scientists should never forget that neither science nor art have the right for the ideal "l'art pour l'art."

Our colleagues in nuclear physics know this can create severe problems of conscience. This negative aspect fortunately applies less to our common field of magnetic resonance, but we also have an obligation. On the one hand, our conscience calls primarily for scientific progress but we should also contribute to the society we live in.

In my opinion this means that we are also obliged to investigate where and how our scientific results could help to solve newly arising problems - thus we have to invent new procedures and build new instruments to serve the same society which supplies us with the means for our research work. I believe we, as members of the magnetic resonance community, can be a bit proud of the results we have achieved in this direction - and we will achieve still more in the future.

One advantage of working in the industrial environment as a scientist is the experience that customers and upcoming new tasks do constantly confront us with problems which now and then cannot easily be solved but challenge us continuously. It is nearly incredible what bandwidth of magnetic resonance applications exist already in the interdisciplinary area of physics, chemistry, biology and medical science. In addition, all kinds of technical applications have been worked out and will be invented in the future. NMR is used nowadays for non-destructive food control and seed selection, for ecological applications and techniques and physics of energy exploitation, ranging from exploitation of natural resources of coal, oil or other raw materials to control methods in nuclear power technology.

We know that first promising experiments are being performed in the medical field as well, which could prove of extraordinary importance for diagnosis and therapy, in particular of diseases which today are dominating dangers to our lives.

Our field of magnetic resonance

was, historically, a consequence and part of early quantum physics of atoms and molecules and is, therefore, nearly 80 years old. We all know that a new era was born with the fundamental contributions in particular of Felix Bloch and E. M. Purcell and their teams between 1944 and 1950. We may, therefore, say that our activities today started 30 years ago. They surely have grown out of their teenage years and could - in their present dynamic phase - be compared with the "roaring twenties" of this century in art and science and in social environment.

Personally, I joined our community in a rather peculiar way. In the early 50's I became assistant for theoretical physics at the University of Tübingen. My boss, the late Prof. Braunbek - a great man - loved, in addition to his basic scientific work, to write popular articles about news in science. As typical young men we used to gossip that maybe the next installment for his home might be due.

Anyway, this side job gave me the chance to study new publications in neighboring fields, to my gusto, and to try to understand them. One of the articles I ran into at that time in our library was the famous publication by Erwin Hahn, well-known to all of us and our first ISMAR award winner. I was fascinated by this theme and because I did not understand much about electronics, I was totally fascinated. Braunbek was a liberal man, so he allowed me to choose the topic of my thesis myself. That's how I came to NMR.

Later I intended - like my co-prize winner Hans Dehmelt did - to go to the USA in order to be able to work with better equipment. My acceptance of an interesting university position, however, arrived just 4 weeks after I had signed a contract with the University of Stuttgart. There, too, I had a tolerant boss - Prof. Kneser - who left me a lot of freedom - and not only that - he also provided me with the means to realize

ideas.

So - besides the famous German school for magnetic resonance of Kopfermann - from which came my co-prize winner - there appeared a small fresh and bold NMR group in Stuttgart. I remember, dear colleague Dehmelt, that at this time, 30 years ago, we met for the first and, I believe, only time during a colloquium invitation in Gottingen. I am very pleased to meet with you just here again.

In 1958 I was lucky to have been nominated as head of the Institute for Experimental Physics at the Technical University of Karlsruhe, and in 1960 I got the chance - as co-founder of Bruker-Physik AG - to follow my inclination toward instrumentation.

As our friend Hausser already mentioned in his laudatio, I had another academic relapse in 1968 and took over the Institute for Electronics at the Ruhr-University of Bochum for some years. At this point I have to admit that - like many physicists - my appreciation for electronics was a mixture of inclination and an attempt to compensate ignorance.

That is all I would like to mention regarding my person. Just allow me one more remark: Under very favorable circumstances it became possible

in 1965 to unit two former competitors - Trüb-Täuber in Switzerland (from there on Spectrospin AG) and Bruker-Physik AG. Described biologically, this was a fine example of how the bringing-together of blossoms and bees can be fruitful, or described mathematically, it was a convincing example of some kind of non-Euclidian algebra, whereby $1 + 1$ equals more than 2.

So much about the past and the present. Allow me to add some remarks about the future: I strongly believe that interaction and cooperation between our wonderful scientific field and many other fine fields in science, technology, and society have not yet reached their top point. We are still climbing and far away from the peak of the mountain. By the way, it is really amazing how early our pioneers in magnetic resonance sensed its interdisciplinary significance.

Dear friends; to close let me thank you all, also on behalf of the members of my team, for your confidence and recognition. Let me assure you that we will continue to try hard.

Thank you very much indeed.