

Foreword

In recent times, an ever increasing number of success stories have emerged which focus on the patent and licensing activities of US universities, who, for example in 1997, filed a total of approximately 6000 patent applications, obtained more than 2400 issued patents, and made about 611 million US dollars in profit from roughly 7000 license agreements. This situation has now also been replicated in Germany, with these achievements placing non-industrial and particularly university-conducted research efforts at the center of research politics and public interest as a potential source for innovation. The German Research Society (DFG), the University Presidents Conference, and the Federal Ministry for Education and Research (BMBF) have all reevaluated their position on the issue of patent protection for the results obtained from publicly-funded research. Their previously rather guarded view of patents as an avenue for knowledge and technology transfer has yielded to an understanding that in order to make any research results commercially profitable, it would be essential, as a rule, to have the research results protected by either a regular or a utility design patent.

In order to enable universities to build up an infrastructure of patent rights and to commercially exploit their research results, plans are being considered to revoke the so-called professor privilege of Section 42 of the Employee Invention Law and have it superseded by a regulation which guarantees universities a share in any inventions made by a professor during the time of his employment. At the same time, any university personnel are to be guaranteed a 30% participation in the exploitation of their research results. Should these plans become a reality, then the technology transfer arms of universities would join the ranks of the patent department handling the German research of the Fraunhofer Gesellschaft, Garching Innovation GmbH of the Max-Planck-Gesellschaft zur Förderung der Wissenschaften, e.V. (Max-Planck Society for Promotion of the Sciences, r.A.), and Studiengesellschaft Kohle GmbH, who, for many years, have successfully taken care of the protection and exploitation of research results.

The ups and downs that may challenge any future exploiter of university-derived inventions are descriptively illustrated in Dr. Heinz Martin's book. Dr. Martin, a co-inventor, together with Professor Karl Ziegler, Dr. H. Breil and Dr. E. Holzkamp, of the Ziegler polyolefin catalysts, invented in 1953/1954 and was honored with the Nobel Prize in 1963. Since 1970 Martin has been Co-Director of the Studien- und

Verwertungs GmbH which was established in 1925 (known as Studiengesellschaft Kohle mbH since 1955), and in this book he recounts a story that is unique in many ways.

- It is unique in that the technology established by Professor Ziegler in the 1950s dominated the worldwide production of polypropylene and polyethylene, the materials on which the entire plastics industry is based, for a period of more than 40 years.
- Unique because Professor Ziegler was able to obtain worldwide patent protection for the basic inventions of his research team despite a difficult starting position.
- Unique because, due to the significance of his inventions and through his extraordinary negotiating skills, Professor Ziegler was able to enter into option and license agreements with such industry giants as Farbwerke Hoechst, Hercules Powder, Gulf Oil, Dow Chemical, Union Carbide or, for instance, ESSO, Du Pont, Mitsui Chemical and others, and this he managed to achieve at a very early stage in the development of the inventions, practically within 20 months of inception, that is, even before he obtained patents for his inventions in either Germany, Japan, the United States, or many other countries. In 1954 these agreements earned him and the Max-Planck-Institute for Coal Research a total of almost 19 million Deutsch Marks (compared to the Institute's then annual budget of 1.2 million Deutsch Marks) and, thus, established the financial basis for his subsequent activities centering around the protection and defense of his patent rights.
- Unique because practically all of his license partners, as well as a large number of others, later moved heaven and earth to prevent the granting of his patents, or to limit their scope, and/or to challenge their validity, and Professor Ziegler, always firmly supported by Dr. Martin's energetic assistance, never hesitated to engage in legal disputes with these industry giants and to persevere to the end.
- Unique also because after Professor Ziegler's death, Studiengesellschaft Kohle and Dr. Martin, together with their US and German attorneys, were able to successfully exhaust the special remedies available under US patent law, but only as a result of their extraordinary perseverance up to the end. The situation was only resolved after 45 years, when in 1999 a final settlement of 1.65 million US dollars was agreed with the Formosa Plastics Corp. of Texas. Among other things, they were able to compel Japanese automobile manufacturers to pay royalties for the period from 1988 through 1995(!), because their automobiles which were imported into the United States contained parts made of polypropylene which was produced in Japan with Ziegler-catalysts.

- Finally, the story is also unique because the most recent changes in US patent law now mandate a patent term of 20 years beginning on the date on which the application is filed, as compared to the earlier 17-year term running from the day of final patent issuance, which would thus make it virtually impossible for the history of the Ziegler-catalysts to be repeated.

Even if Dr. Martin ultimately fails to give the reader a complete account of the achievement, he nevertheless illustrates, arguably the most successful worldwide commercial exploitation of all time of inventions based on non-industrial research.

After all, he does reveal that the Max-Planck Institute for Coal Research in Mülheim was sustained for more than 40 years on the proceeds of the exploitation of its patent rights dating back to 1953/1954. This information would certainly enable any math wizard to gain a pretty clear picture of the total license fees collected.

In writing this book, the author certainly satisfies in a very special manner, an apparently decade-old desire to help clarify the issue of the not entirely undisputed and at least partially obscure scientific priority of the achievements attained by Professor Ziegler and his Mülheim team.

One of the author's main concerns was to shed light on the relationship between Professor Ziegler's team and Professor Giulio Natta and his team in Italy. Natta had been awarded the Nobel Prize jointly with Professor Ziegler, and while Dr. Martin in no way challenges Natta and his team's scientific achievements, he traces the roots of these achievements back to the research results which Natta had previously accessed at Mülheim on the Ruhr. The author has also observed that the battle for the acknowledgment of priorities was most often conducted on a less than highly moral or ethical level, and that the scientific community, for various reasons, ignored a specification in its reference to the origin of the Ziegler-catalysts, (see Section (p. 30). Therefore, in his final analysis, Dr. Martin has endeavored to establish the scientific truth by using the innumerable decisions handed down, particularly those made by the US courts – which not only determined patent priority but also scientific priority, thus acknowledging the dominant position which Mülheim's research occupied in this field.

This book makes suspenseful reading, sometimes almost reminiscent of a crime story. It allows insight not only into the developments within the complex field of polymer chemistry and the equally complex arena of patent jurisdiction, which, in the United States particularly, is marked by anomalies, but also highlights in particular the downright phenomenal negotiating skills demonstrated by Professor Ziegler and Dr. Martin himself, although the author and his activities always remain discreetly in the background. This is clearly illustrated in the following single excerpt: "In May of 1967" – that is, 10 years after the controversy with Du Pont had started – a "settlement agreement between Du Pont and Ziegler" was finally negotiated, under the terms of which Du Pont paid 2 million dollars as a settlement sum for its polyethylene license in the United States. In addition, patents that Du Pont had issued in the meantime from various interference proceedings, among others for the production of isoprenyl aluminum and its utilization in the polymeri-

zation of ethylene, were assigned to Ziegler on a worldwide basis. Thus, Ziegler had made up for the cost of the concessions he had made in connection with the settlement with Du Pont concerning the “Lachar-Pease Polyethylene product patent rights”. A significantly sizeable profit was, however, realized due to the fact that Du Pont had neglected to include Canada, even though the major portion of its polyethylene production had been established there in the meantime. Ziegler once again collected the same amount in settlement for the Canadian production.

Within a very short time the transfer of the Du Pont patent rights in the isoprenyl aluminum field would prove to be a propitious arrangement for the Max-Planck-Institute for Coal Research. Farbwerke Hoechst in Frankfurt had decided to use this product for the manufacture of its ethylene polymerization catalysts, being unaware, however, that it was the Max-Planck-Institute which now owned these patents in Germany as well (see p. 123). The effect of this transfer of rights from Du Pont to Studiengesellschaft was that, as Martin notes elsewhere, “it could be urged that Hoechst was obligated to pay royalties for the longer running Du Pont patent rights which Ziegler had acquired in Germany” (see p. 157), and that, in the early 1980s, Hoechst had to pay Studiengesellschaft/MPI royalties supposedly in the eight figure range. Imagine, a German research organization prevailing against Hoechst on the basis of patent rights acquired from Du Pont! This was certainly an unprecedented achievement.

Dr. Martin’s book should be required reading for anyone involved in the protection and utilization of results obtained from publicly-funded research, and in fact anybody who would like to learn what enforcement and utilization of patent rights mean in actual practice, or in any event, what they can mean. Where else could one find more abundant material to illustrate this point. This book offers eloquent testimony of how difficult and costly it is to convert even those research results that have been awarded the Nobel Prize into commercial success stories. If Professor Ziegler had not been able, within a very short period of time, to collect millions from option and license agreements based on inventions that, at the time, had not even matured into patents, money that later on assured him a solid basis for the defense and enforcement of his rights, in other words allowed him to engage first-rate patent attorneys and general legal counsel, it might very well have happened that the Max-Planck-Institute would have either made no profit at all or derived only a modest income from these epoch-making inventions.

Martin was not only a co-inventor, but because of the battles he waged for decades against any potential infringer, he also contributed materially to the commercial success of the exploitation of the Ziegler-catalysts.

The author takes us on a historical journey through the events surrounding the development and commercial exploitation of this technology, events which up to now had barely penetrated public awareness in Germany but which decisively shaped the second part of the 20th century, whilst at the same time offering invaluable object lessons. If anything, this treatise should enlighten both universities and other non-commercial research organizations as well as the Ministries for Research and Education about the fact that successful commercialization of research findings requires peak performances not only by researchers, but also by those who are re-

sponsible for the patenting and commercial exploitation of such research results. But even the latter are helpless if they do not have enough “cash” to vigorously pursue the enforcement and defense of the patented inventions. If these factors are not properly appreciated, any hopes carried by the proposed revoking of the university professor privilege may prove illusionary and may even act as a boomerang. Exceptional individuals of the caliber of Professor Karl Ziegler and Dr. Heinz Martin, who are capable not only of conducting top quality research, but also of commercially exploiting their research results in a highly successful manner, are extremely rare even today. They deserve our praise, appreciation and highest esteem.

The law makers, universities and other non-commercial research institutes, when considering future revisions not only to the law but also to institutional infrastructure and its funding, should not rely on the ready availability of such exceptional individuals.

Munich, June 2001

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