CHEMICAL HERITAGE FOUNDATION

DORON LEVIN

Transcript of an Interview
Conducted by

Ron Reynolds

at

ExxonMobil Research Center
Annandale, New Jersey

on

1 December 2011 and 19 January 2012

(With Subsequent Corrections and Additions)

ACKNOWLEDGMENT

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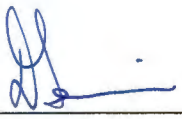
(Signature) 
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DORON LEVIN

1970 Born in Johannesburg, South Africa on 25 January

Education

1991 BS, University of Witwatersrand, Engineering (Chemical), Cum Laude
1993 BS, Honors, University of South Africa, Pretoria, Operations Research, Cum Laude
1995 MS, Massachusetts Institute of Technology, chemical engineering Practice
1997 PhD, Massachusetts Institute of Technology, chemical engineering

Professional Experience

1989-1990 Sasol 1, Sasolburg, South Africa

SASTECH Research and Development, Sasolburg, South Africa
1992 Assistant Process Engineer

Exxon Research and Engineering Company, Annandale, New Jersey
1993 Corporate Research

MIT Practice School
1993 Merck & Co., West Point, Pennsylvania
1993 Dow Chemical Company, Midland, Michigan
1993 Dow Corning, Midland, Michigan
1995 MIT, Department of chemical engineering, Teaching Assistant
1993-1995 MIT, Department of chemical engineering, Research Assistant

1997-2000 Mobil Technology Company, Paulsboro, New Jersey

2000-present ExxonMobil Research and Engineering Company, Annandale, New Jersey

Honors

1988	African Explosives & Chemical Industries Book Prize
1989	OB Volckmann Silver Medal and Prize
1990	SA Soap Detergent and Candle Manufacturers' Association Book Prize
1991	J. Arthur Reavell Medal and Prize for chemical engineering
1991	South African Institute of Chemical Engineers Medal
1991	SASOL Medal and Prize
1991	Engineering Council of South Africa Merit Medal and Certificate
1992	University of South Africa Senate Medal
1995	Edward W. Merrill Outstanding Teaching Assistant Award
2002	ExxonMobil Chemical Company Global Technology Award
2003	ExxonMobil Chemical Company Global Technology Award
2004	ExxonMobil Catalyst Enterprise Discovery Award
2009	ExxonMobil Process Research Innovator of the Year Award
2010	ExxonMobil Process Research Innovator of the Year Award
2011	ExxonMobil Research and Engineering Senior Technical Council Technical Achievement Award
2011	SCI Gordon E. Moore Medal

ABSTRACT

Doron Levin grew up in Johannesburg, South Africa, one of four children. His father was an auto mechanic and his mother a bookkeeper. Levin followed the science track in high school, and he was inspired to study chemistry when he attended an after-school program focused on geology, paleontology, and petrochemistry. He entered the chemical engineering department at the University of Witwatersrand with a bursary from Sasol. After completing his bachelor of science degree in chemical engineering, Levin obtained an honors degree in operations research from the University of South Africa while simultaneously working at Sasol. Since there was limited scope for advanced degrees in South Africa, Levin entered the Massachusetts Institute of Technology's (MIT) PhD program. During a summer internship at Exxon he worked with Stuart Soled, who has remained a friend as well as colleague and mentor. Levin obtained a master's degree in chemical engineering practice from having attended the David H. Koch School of Chemical Engineering Practice and a PhD in chemical engineering from MIT.

Levin accepted a job with Mobil Oil Company working on catalysis in the corporate research department. After Mobil merged with Exxon Corporation, Levin continued to do basic and applied catalysis research and was assigned to a team working on methanol to olefins (MTO). He was transferred to Process Research to support the manufacture of catalysts and was tasked with developing the next generation of catalysts. He discovered TransPlusNG. From there he moved to Hydroprocessing, where he worked with Soled to develop next generation bulk metal hydrotreating catalysts similar to Nebula, which is based on his summer intern work with nickel molybdates. Nebula's catalytic effect is enormous, and finds wide-spread application in the production of cleaner fuels and lubricants. Levin is now an integrated project team leader (IPTL), but he will soon return to Catalyst Technology, this time as a Section Head, responsible for developing the professionals in his section as well as his own leadership qualities. He explains that this is typical of ExxonMobil's career development process, but he anticipates a great deal of added stress. Levin discusses patenting and publishing in the petroleum industry; competition, especially from China; and current research in the catalysis field.

Levin is married and has three young children. He and his family live in Highland Park, New Jersey, close to New York City and to his work in Clinton, New Jersey. He has started a hobby of woodworking, making an oven for his twin daughters. He talks about his view of Americans and of cyclical anti-science attitudes. He says he would go into science again and would recommend it for his children, as he has found his career intellectually engaging, fun, and practical. He is definitely glad to have emigrated. Levin still works with Soled, whom he regards as his first mentor; José Santiesteban is another mentor and his current boss. Levin is proud of receiving the Moore Medal; it means outside recognition. His goals include raising his children well and one day being a global expert in catalysis. He believes that there is still room for much more development in the catalysis field.

INTERVIEWER

Ron Reynolds was the director of CHF's old Center for Contemporary History and Policy. Before joining the organization, he spent a long career in the refining and chemical industry with a broad range of responsibilities that included research, manufacturing, logistics, and business development. He holds a BS in chemical engineering from Lafayette College, an MS in chemical engineering from the University of Massachusetts, and an MS in environmental engineering from Drexel University. His current research focuses on how policy decisions are made in areas of complex and evolving technological systems, such as energy and climate change.

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Early Years 1

Born in Johannesburg, South Africa, one of four children. Parents' Lithuanian backgrounds. Father mechanic, no high school; mother bookkeeper. Education very important. All siblings well-educated. Life under apartheid comfortable; no knowledge of other way of living. Education system like British. Science track; good at math. Johannesburg College of Education: after-school programs for gifted children; liked geology, paleontology, and petrochemistry. Took class several times, was inspired to study chemistry. No television in South Africa until 1975; then only one government-produced hour per day. Long school year. Liked hiking, soccer, Dungeons and Dragons. Read a lot. Inhibited by scoliosis.

College Years 26

Entered chemical engineering department at University of Witwatersrand. Lived at home, like most students. Curriculum predetermined; no electives. State-subsidized. Bursary from Sasol Corporation. Compulsory army service, evaded by continuing education. Summer work on Fischer-Tropsch synthesis. Synthol catalyst. Keith Lawson. Reavell Medal. Intense study life. Three or four black chemical engineering students. Began thinking about graduate work in England. Would have to buy way out of commitment to Sasol; had saved his stipends, scholarships. Worked for Sasol for seven months and attended University of South Africa to avoid conscription. Apartheid changing, upheaval in South Africa. Decided to try United States graduate programs, as England did not provide funding.

Graduate School Years 54

Not accepted at California Institute of Technology; heavily recruited by Rensselaer Polytechnic Institute. Chose Massachusetts Institute of Technology (MIT), major in chemical engineering and minor in materials sciences. Summer internship at Exxon Corporation; four courses at MIT; research work; including David H. Koch School of Chemical Engineering Practice. Jackie Ying his advisor, new professor. Met Stuart Soled, who gave Levin summer internship, working on nanostructures of layered materials. "Unbelievable" experience; huge, wonderful lab with much equipment, many colleagues. Practice School: Merck; then Dow Chemicals; learned project planning, execution, working with others, communication skills, report writing. Obtained MS in chemical engineering practice. Wanted job in US, so needed PhD. Worked on nickel molybdates, partial oxidation; long days, long weeks. Funding from National Science Foundation. Won best teaching assistant award. Thought about academia, but did not like grant-seeking, networking, etc. First experiences in Boston, Massachusetts. MIT and other students challenging. South African study more practical.

Employment 88

Almost all companies required US citizenship; his only site interview with Mobil, but got job; began at Paulsboro, New Jersey; moved to Clinton, New Jersey, after Mobil-Exxon merger. In Corporate Research, so allowed to do own lab work, very important to him. Zeolite catalysis with Clarence Chang, then José Santiesteban. Mobil smaller, research applied; Exxon large, mostly basic research. Cumene hydroperoxide decomposition. Baytown, Texas, and methanol to olefins (MTO). Comparison of Mobil and Exxon. Worked with a team after merger; GTO (gas to olefins) still, but now more devoted to goal. Seventy or eighty team members. Transferred from Corporate Strategic Research to Catalysis Technology within Process Research. Supported manufacture of catalysts in Beaumont, Texas. Also developed next generation of catalysts. Discovered TransPlus NG; now commercial. Next move to Hydroprocessing. Progressed research on Nebula (discovered by Soled), based on summer intern work with nickel molybdates; only bulk hydroprocessing catalyst on market; provides much higher activity; especially useful with low-sulfur specifications. Now working on next generation of Nebula.

Moving Up 126

Begins day with check of overnight data; more data at lunchtime. Checks pilot plants himself. Now an integrated project team leader (IPTL), responsible for coordination of all team members. His work ninety percent experimental; does not like high throughput. About to become Section Head, so back to Catalyst Technology. Assignment to develop ten professionals in section, as well as the technology; intended also to develop him as leader in company. Typical of ExxonMobil's career development process. Details of classification structure. Expects much more stress; people not his strength.

General Information 136

Corporate Research does most of publishing; conferences for academia. Time lag necessary for petroleum industry to secure patent protection, so not much new technical information publicly available. Studies patent landscape to avoid risk of infringement. Research mostly in-house, not much collaboration with universities. Some networking and promotion required. Stage gate system; even a system for serendipity. Series of seminars to promote interaction. Competition from Chevron, China. Chinese patent infringement. India. Current research in the field. Still finding new applications for ZSM-5; many molecular sieves, but only five or ten in commercial use.

Personal Life 150

Lived in Bala Cynwyd while at Paulsboro site. Met wife at party in New York City. Wife a journalist, but now home with three young children. Moved to Highland Park, New Jersey, near Rutgers, the State University of New Jersey. Woodworking hobby. Views of Americans in general. Opinions about cyclical anti-intellectualism, journalistic responsibility. Has found science challenging,

interesting, practical; would encourage his children to enter science if they want to. Soled's mentoring; still works with summer internships. Santiesteban another important mentor. Still very good scientist, but now also excellent manager, and Levin's boss. Nomination for Moore Medal. Medal means outside recognition. Giving his acceptance talk in numerous places. Has found chemical engineering very satisfying; would do it again. Definitely glad to have emigrated. Objectives for rest of career: hopes to raise his children well, give them good training and opportunities. Wants to develop management skills but ultimately wants to get back to technical side. Hopes one day to be global expert in catalysis. Room for much more development in catalysis.

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