

Prof. Dr. Em. Helmut Lieth **The man and his life for global ecology**

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Abstract: In response to the invitation by the editor of this volume I tried to compile the life work of Prof. Lieth as complete as possible. I worked for him and with him during the last ten years as secretary and manager of his many projects. For the time between 1990 and 2001 I witnessed personally what he did under what circumstances. For the last 30 years I tried to gather information from his former secretaries and students and what I could get from citizens of Osnabrueck. Being so well known in that small city, there were ample stories told about him. I tried to sift the true events from the anecdotes and asked Prof. Lieth occasionally what had really happened, at least as he saw it. Starting with the official CV, which he used for a long time and is available through the internet address www.usf.uni-osnabrueck.de, I completed the event listing of his later years and then tried to add some explanations for some of the major topics hidden in the CV.

Resumen: En respuesta a la invitación hecha por el editor de este volumen, hice el intento de compilar la obra de vida Prof. Lieth de manera tan completa como me fue posible. Yo trabajé para él y con él durante los últimos diez años como su secretaria y administradora de sus numerosos proyectos. Durante el periodo comprendido entre 1990 y 2001, atestigüé personalmente qué fue lo que él hizo y en qué circunstancias. Para los últimos 30 años intenté reunir información de sus antiguos estudiantes y secretarías y los que pude obtener de ciudadanos de Osnabrueck. Siendo tan bien conocido en aquella pequeña ciudad, se contaban numerosas historias acerca de él. Yo intenté tamizar los acontecimientos verdaderos a partir de las anécdotas y ocasionalmente preguntaba al Prof. Lieth lo que realmente había sucedido, por lo menos como él lo había visto. Partiendo del CV oficial, que él usó por un tiempo largo, y que está disponible a través de la dirección de internet www.usf.uni-osnabrueck.de, elaboré la lista de los acontecimientos de sus últimos años y entonces intenté añadir algunas explicaciones para algunos de los aspectos principales ocultos en su CV.

Resumo: Em resposta ao convite que me foi feito pelo editor deste volume tentei compilar, de forma tão completa quanto possível, o trabalho do Prof. Lieth. Trabalhei para ele e com ele durante os últimos dez anos como secretária e gestora dos seus muitos projectos. No tempo que mediou entre 1990 e 2001, testemunhei pessoalmente o que ele realizou e em que circunstâncias. Durante os últimos 30 anos tentei colher informação das suas secretárias anteriores e estudantes bem como o que pude obter dos cidadãos de Osnabrueck. Sendo tão bem conhecido naquela pequena cidade havia bastantes histórias sobre ele. Tentei separar os acontecimentos verdadeiros dos anedóticos e, ocasionalmente, perguntei ao Prof. Lieth o que tinha realmente sucedido, pelo menos como ele os via. Começando com o CV oficial, que ele usou por muito tempo e está disponível através do endereço de Internet www.usf.uni-osnabrueck.de, completei a lista de eventos dos seus últimos anos e fiz uma tentativa para adicionar algumas explicações para alguns dos principais tópicos escondidos no seu CV.

Key words: Helmut Lieth, curriculum vitae, biography, ecology.

Introduction

As the last manager and personal secretary for Prof. Dr. Helmut Lieth I have the privilege to report about his life history. Lieth's family can be divided into three main sections from 1950 to 1966 where they were living basically in Germany although at different places, the time in North Carolina between 1966-1977 and the time from 1977 onward where Dr. Lieth and his wife lived in Germany in two places, their native Kuerten and the professional site Osnabrueck where Dr. Lieth held the position of Prof. of Ecology and was Director of independent scientific projects of various kinds. For one of these projects, Environmental Research on Lake Baikal and Its Surroundings, he hired me as secretary/manager/translator.

Prof. Lieth still keeps a normal life as a family man who, at the age of 76, still lives in a country home (where he was actually born) and keeps the place neat, rakes the leaves of his beloved, over 150 years old Linden tree, keeps the garden in shape so that his wife, age 80 can plant some vegetables, and where he himself makes repairs on walls and roofs of their house using skills which an ordinary craftsman of today would shake his head. At present he still has projects in the Arabian Gulf region, in Usbekistan and in Russia. All are intended as contributions to either convert deserts into arable land or to improve regional environmental conditions.

Some Notes about the Life of a Scientist

Dr. Lieth obtained ecological experience as a country boy from his grandfather who took him along ploughing the field, mowing grass and hearing the cattle. His grandfather taught him the difference between heavy and light soil or between basic soil and acid soil or flowers that are found only in calcareous woodland.

His father Heinrich, who had been wounded during World War I, could not continue farm work and moved as revenue officer to Gotha/Thuringen when Dr. Lieth was of age 7. From his school education Prof. Lieth remembered 3 teachers who gave him basic skills; one how to spell correctly high German, one how to organise a paper, and one how to calculate. When he was 14 he moved with his family closer to their

native Rhineland. The new place was Gelsenkirchen, in the very heart of the world famous "Ruhr Revier" where the combination of coal mining, chemical industry and steel making caused environmental problems everywhere in water, air and land. The problems were discussed in school with all their ramifications: Health, Social, Nature and Politics. "It was in this environment where he decided to devote his life to science, to environmental biology and to what was later on called global ecology.

The young boy overcame year by year the setbacks of new schools and language environments and gradually advanced towards the upper half of the class, when World War II broke out and by 1943 he and his classmates were drafted for military service. He volunteered for the navy, a choice which had again relevant impact upon his later choice of studies. He volunteered for a position as communication specialist and learned much physics including wireless transmission and electronics. When the computer age arrived a decade later, the military service had primed him already and radar images under the German name "Funkmess" were nothing new for him.

During his University education directly after World War II he came in contact with Prof. Noddack, the then well known geochemist (discoverer of Rhenium) and his "doctor father" Prof. Knapp, who guided him in organising field work.

He was rather poor at that time; his father had died and his mother could not afford to pay for his education, and he had to work for it. He repaired motorcycles, installed electricity in country houses and most prominent of all he started, together with his then fiancée, a knitting job. They bought a hand knitting machine and offered sweaters and jackets knitted from home spun wool to the neighbours. During this time they married.

After obtaining the Ph.D. degree Prof. Lieth stayed for two more years as assistant in the Botany Department of the University of Cologne.

1955 - 1966 The Hohenheim Period

Towards the end of 1955 Prof. Lieth left the University of Cologne and went to Stuttgart-Hohenheim, the famous Agricultural University where Prof. Heinrich Walter taught botany with ecology as the main focus. It was here where Prof. Lieth laid the foundation for his later research.

He undertook several projects simultaneously, began to write research proposals and soon received first grants much to the pleasant surprise of his professor who at that time had begun to write his world famous treatise *Vegetation of the World*. It took about five years of research on light influence upon plant growth and development until Prof. Lieth presented his paper about the light compensation point in land plants, the paper with which he obtained the teaching certificate in Universities. This was in 1959/60. Simultaneously he worked with Prof. Walter on the compilation of the famous "*Climate Diagram World Atlas*". The first part of this atlas made him well known in Europe.

Prof. Lieth went to Montreal/Canada from May 1960 - May 1961 to work in the Université de Montreal with Prof. Dansereau whom he had met in 1958 during the International Biological Congress. This year marked the change in Prof. Lieth's life from a mainly European scientist to a globally oriented Ecologist.

Entering International Ecology

It must have been in Stuttgart-Hohenheim when Prof. Lieth developed his interest in global ecology. His work on light compensation point in plants and competition among grassland species were discussed in several European countries and when he started to work on net primary productivity he succeeded in organising his first international symposium. Backed by Prof. Walter he brought many well known scientists to the meeting and compiled their papers into a book. Up to now he must have authored and published more than 60 books and can still not resist to publish and edit. During the time in Hohenheim Prof. Lieth was also called for foreign aid projects by several ministries. This brought him several times to South America and to the first trip around the world in 1963. He was asked to check on ecological problems with *Hevea brasiliensis*, the main rubber tree species in Malaysia, Central America and tropical South America. At the same time appeared the *Climate Diagram World Atlas* which made him known in vegetation science all over the world. Out of the 8000 diagrams in the atlas, he probably drew 7000 rough drafts in the course of six or eight years. Much of this work was done in the research laboratory of Prof. C.W. Thornthwaite in New Jersey.

International Activities

Conferences

Besides the many events Prof. Lieth organised himself, he also attended numerous scientific meetings, delivered invited lectures and seminars in Universities all over the world and gave speeches to the public. He appeared on successful Radio and TV programs at home and abroad.

One of the major events was his presentation of the "Miami model", which he developed together with Elgene Box: The "Net primary productivity of the biosphere predicted from annual temperature and precipitation averages", first presented at the AIBS meeting in Miami and then during the 1st Intecol conference in the Hague/Netherlands. Within one year this paper was absorbed by the ecological community of the world, appearing in several languages. The attraction at that time was the combination of a correlation model between climatic parameters and allowed the rough quantity calculation. The mapping routine was a forerunner of the modern GIS.

Publication Activities

He accepted editing journals and book series, initiated new ones and handed the job over to other colleagues when he saw that others might do a better job at it.

While this biography is being published he is still an active writer and editor and I hope that I can assist him in that activity for many more years.

The Time in Chapel Hill/NC/USA 1966 -1977

During the time in Hohenheim Prof. Lieth had visited Canada twice. For a period of one year in 60/61 he travelled with his family and met so many friends in North America that he and his wife were persuaded to leave Europe and move to America in case a suitable place were offered. In 1966 a position was offered to an ecologist in the Botany Department of the University of North Carolina at Chapel Hill, a campus that just had initiated a new department "Computer Science" based on an IBM 360. Dr. Lieth accepted the posi-

tion and was the first biologist in Chapel Hill to use the computer for his research. The data were punched on Hollerith cards. It took few semesters and a group of students came to. Within a few years the Chapel Hill plant ecology group became well known for their output regarding phenology and primary productivity. Within two years they used about 1 ton of Hollerith cards.

He was sent as US IBP representative to many international seminars and workshops where he could present the latest computer outputs of his group in Chapel Hill. The majority were new thematic maps which were made with the SYMAP program which allowed quantitative evaluation of geographic maps.

During this time all four children of the Lieth's family went through college and entered one by one Universities, leaving home and their mother lonesome. In 1973/74 Dr. Lieth had the possibility of sabbatical leave, which he took, as a visiting scientist in the then very active KFA Jülich/Germany, close enough to his old home town where his wife could meet with her brothers and sisters. It was a very active time during which a co-operative program was developed, between UNC and KFA, with student and faculty exchanges involving unusual research topics including multielement analyses and biophysical topics.

Prof. Lieth decided to try a return to Germany if a reasonable University position could be found.

A new position was open at a newly founded biology department at the University of Osnabrueck and took the job in 1977 and travelled for the next three years between Europe and America finishing up old students in Chapel Hill and attending to new ones in Osnabrueck.

The Time in Osnabrueck 1977-2001

The time in Osnabrueck began very turbulently. The German students had started unrest since 1968 often interrupting classes and curricula. However, a group of them gathered around him and helped him to initiate a new nucleus of computer oriented studies.

Prof. Lieth was involved in the planning and constructing of the new biology building which included a new botanical garden. In the meantime this garden had developed into a fine research cen-

ter and a major tourist attraction for the city of Osnabrueck. Prof. Lieth's colleagues had put enormous effort into the development of the garden which, by its natural condition, was a lime stone quarry before, combining interesting geological features with a very attractive collection of plants and a very effective teaching program.

When his botanist colleague took over the work for the botanical garden, Dr. Lieth concentrated on the development of an interdisciplinary study group for a computer based environmental systems research for which he received help from his colleagues Prof. Müller from sociology and Prof. Witte from economics. The three together developed a prototype of multidisciplinary environmental research and teaching. Their major project concerned the impact of battery farming upon the groundwater in NW Lower Saxony a project that brought the University a large amount of research funds from several funding agencies, and brought the three directors of the study lots of problems with politicians and regional administration because of the modelling results.

Out of this project developed the Institute of Environmental Systems Research (IES) which is steadily increasing in size and importance under its new director Prof. Dr. Matthies.

Prof. Lieth worked also on elemental analysis in ecosystems, phenology and nature protection. During twenty years he went to the UAE and developed saline irrigation systems in deserts with halophytes and stunned his colleagues by successfully planting mangroves in the desert. He did this work together with his youngest son Armin, who after six years of the work there went home to continue his landscaping business in the environs of Chapel Hill.

In 1990 Prof. Lieth undertook a field trip with 60 students from Osnabrueck to Yokohama for the Intecol conference across Europe, Russia and Siberia. He stayed for several weeks on the shores of Lake Baikal and decided to put major effort into ecological investigations around Lake Baikal. It was in 1991 when I first met Prof. Lieth during a field trip with students to Olchon Island. During this trip he asked me to join him for six months. He needed a translator to Russian and there I remain until today. He called me his "Russian voice". Together we spent days and weeks of negotiations in administrative offices in Moscow, Novosibirsk and Irkutsk. It was a very turbulent time until conditions in Irkutsk changed and the European

Community funded his project for Sustainable Utilisation of Halophytes.

The multielement analysis, which Prof. Lieth had learned through contacts with colleagues in the physics department of Duke University and North Carolina State University and in greater detail at the Nuclear Research Institute in Juelich, encouraged him to analyse complete chemical element circulations through the biota. He postulated that this might have the same importance for the minor elements as it had for the major elements and the comparative frequency analysis might bring a better understanding about the ecological importance of all chemical elements in ecosystems.

For this work he found an excellent student, now Prof. Markert at the IHI Zittau, who developed with Dr. Lieth the element cadasters in ecosystems and from his own work the biological system of chemical elements.

The President of International Scientific Societies

During his time in Chapel Hill, Prof. Lieth was called to become a member of a group "Ecosystems Analysis" which was generated through the American involvement in the IBP, International Biological Program. This group undertook the task to model live major biomes of North America. Dr. Lieth was asked to first chair the Eastern Deciduous Forest Biome and later to chair the Tropical Forest Biome. It was within this group's work where Prof. Lieth developed the "Miami Model".

On his return to Germany, the development of the University of Osnabrueck certainly became noticed by colleagues in other European Universities and Prof. Lieth found himself elected to influential positions in government advisory committees, academic society presidencies and invitations for international co-operations.

He apparently revived the slackening International Society of Biometeorology (ISB) and the International Society of Ecology (INTECOL). He became the president of ISB and of the Society of Tropical Ecology as well as the editor of the *Handbook for Vegetation Science*.

Prof. Lieth and the Society of Tropical Ecology

Tropical vegetation had always interested

Prof. Lieth. When he had the first contact with it in Venezuela in 1961 he had even planned to move to Caracas and work at the Universidad Central. This did not materialise but he was asked subsequently by the German Ministry of Agriculture to go to Colombia several times to teach at the Universidad del Tolima.

In moving to North Carolina in 1966 he travelled via Hawaii, because he had accepted a temporary position there prior to the offer from Chapel Hill. This gave him the chance to show his family tropical vegetation

It was natural, therefore, that he was offered later on the directorship of a tropical forest biome in the US IBP and membership in the Organisation for Tropical Studies.

During this time he joined the Association for Tropical Ecology, at that time the only English speaking scientific society he knew representing Tropical Ecology. He co-operated closely with the research group developed in Varanasi by the "nestor" of Indian Ecology, Prof. R. Misra in their projects analysing net primary productivity. He visited Varanasi several times and became close friend to all faculty members of the botany department. It was natural, therefore, that he was asked to accept the presidency of the International Society for Tropical Ecology (ISTE) when the time came that a new president had to be elected.

He served the society for many years and worked during that time on the Indian subcontinent during projects in Kashmir, Pondicherry, Rajkot and Sri Lanka. He was invited to preside over several meetings in New Delhi, Varanasi and other places in India and Sri Lanka.

He continued his service to ISTE from home, building links to other societies interested in the tropics and reviewing student papers and contributions to the journal *Tropical Ecology*. When he resigned as President of ISTE, he was pleased that a former student of his from the time in Chapel Hill, Peter G. Murphy, became the new President.

He was very sad that he could not include Indian colleagues when he developed the project on halophyte utilisation, but he made sure that the interested colleagues in India received information about new developments.

He reflected to me that the association based in India had a very important role to play in the ecology of that country and in the entire tropics. Especially when south-south co-operation is re-

quested within the mandate of UNESCO and UNEP, his colleagues in New Delhi and Varanasi and in the other important research centers in India have a significant role to play.

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