IIASA

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1985 YSSPer Peter Lohmander

Former YSSPer Peter Lohmander currently cooperates with Linnaeus University, Mid Sweden University, and Guilan University and is researching: *how should natural resources be managed when we do not know everything about the future?* **Below he shares how the YSSP impacted his career and the importance of his work.**

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"It is not easy to tackle the many large scale and multidimensional problems of our world. It is necessary to explicitly recognize and handle dynamic development, risk, uncertainty, and applications in the best possible way while focusing on the relevant long term objectives. In my opinion, IIASA has been the most prominent institute in the world for international cooperation in this area.

I came to IIASA in 1985 as a participant of the Young Scientists Summer Program (YSSP) in the Systems and Decision Sciences (SDS) Program. Academician Professor Alexander B. Kurzhaski was the program director then as well as the deputy director of IIASA. Prof. Kurzhanski gave a very inspiring series of lectures on mathematical systems theory, and Prof. Jitka Dupacova gave important lectures on stochasic optimization and applications. Dr. Gaioronsky contributed with new findings in the field of stochastic problems. I was very grateful for the opportunity to present my own work during the SDS seminar series during my YSSP in the summer of 1985. My two papers where then also published at IIASA:

Lohmander, P., Continuous extraction under risk, IIASA, International Institute for Applied Systems Analysis, Systems and Decisions Sciences, WP-86-16, March 1986

Lohmander, P., Pulse extraction under risk and a numerical forestry application, IIASA, International Institute for Applied Systems Analysis, Systems and Decisions Sciences, WP-87-49, June 1987

Later these papers were marginally adjusted and published as articles in a journal IIASA recommended:

Lohmander, P., Continuous extraction under risk, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol. 5, No. 2, 131-151, 1988

Lohmander, P., Pulse extraction under risk and a numerical forestry application, SYSTEMS ANALYSIS -MODELLING - SIMULATION, Vol. 5, No. 4, 339-354, 1988

These papers were extended with more results and applications, and the latest versions of the two studies are found in my PhD thesis:

Lohmander, P., The economics of forest management under risk, Swedish University of Agricultural Sciences, Dept. of Forest Economics, Report 79, 1987 (Doctoral dissertation), 311p

Now, in 2018, our planet still faces dynamic and stochastic decision problems of many kinds. The management of our global natural resources, the energy sector, and international trade are a few examples. International cooperation is more important than ever before, in both research and in industrial development.

I hope that my suggestions in the following articles can give some inspiration and become useful tools in the management of present and future decisions.

Lohmander, P., ICMDS 2016 Conference report, Fuzzy Information and Engineering, Vol. 9, Issue 2, June 2017

Lohmander, P., Applications and Mathematical Modeling in Operations Research, In: Cao BY. (ed) Fuzzy Information and Engineering and Decision. IWDS 2016. Advances in Intelligent Systems and Computing, vol 646. Springer, Cham, 2018 Print ISBN 978-3-319-66513-9, Online ISBN 978-3-319-66514-6, eBook Package: Engineering

Lohmander, P., Optimal Stochastic Dynamic Control of Spatially Distributed Interdependent Production Units. In: Cao BY. (ed) Fuzzy Information and Engineering and Decision. IWDS 2016. Advances in Intelligent Systems and Computing, vol 646. Springer, Cham, 2018 Print ISBN 978-3-319-66513-9, Online ISBN 978-3-319-66514-6, eBook Package: Engineering

Lohmander, P., Two Approaches to Optimal Adaptive Control under Large Dimensionality, INTERNATIONAL ROBOTICS AND AUTOMATION JOURNAL, Volume 3, Issue 4, 2017, DOI:10.15406/iratj.2017.03.00062

Lohmander, P., A General Dynamic Function for the Basal Area of Individual Trees Derived from a Production Theoretically Motivated Autonomous Differential Equation, Iranian Journal of Management Studies (IJMS), Vol. 10, No. 4, Autumn 2017, pp. 917-928,

Lohmander, P., Mohammadi Limaei, S., Stochastic Dynamic Programming with Markov Chains for Optimal Sustainable Control of the Forest Sector with Continuous Cover Forestry, Iranian Journal of Operations Research, Vol. 8, No. 1, 2017, pp.91-96

Lohmander, P., Optimal Stochastic Control in Continuous Time with Wiener Processes: General Results and Applications to Optimal Wildlife Management, Iranian Journal of Operations Research, Vol. 8, No. 2, 2017, pp. 58-67

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