



## Preface to Klaus-Jörn Lange Festschrift

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This special issue of *Acta Informatica* is dedicated to Professor Dr. Klaus-Jörn Lange on the occasion of his 70th birthday on the 9th of July, 2022.

Klaus-Jörn Lange studied mathematics and informatics at the Universität Hamburg. Hamburg was the place where he used to live from his childhood onwards. There, he also obtained his doctoral degree with his dissertation entitled “Kontextfrei kontrollierte ETOL-Systeme” (engl. “Context-free Controlled ETOL-Systems”) in 1983, and his habilitation with the thesis “Nichtdeterministische Reduktionen und logarithmische Hierarchien” (engl. “Nondeterministic Reductions and Logarithmic Hierarchies”) in 1986. During his Hamburg years he visited McMaster University, Hamilton, Canada, under the auspices of a Canada Council Grant.

Then, he joined the team of Prof. Wilfried Brauer and left Hamburg for good to become an associate professor at the Technische Universität München. In 1994, he was appointed Full Professor at the Universität Tübingen, with a denomination on *Theoretical Computer Science/Formal Languages*, a denomination that was quite a special one, but a very good fit for Klaus-Jörn. He continued to work at the Universität Tübingen until he retired in 2021.

As a scientist, Klaus-Jörn is well known for his work at the crossroad of formal languages and complexity theory. For a comprehensive list of publications we refer to DBLP (<http://dblp.org>). His work on

“The logarithmic alternation hierarchy collapses:  $A\Sigma_2^L = A\Pi_2^L$ ,”

co-authored by Birgit Jenner and Bernd Kirsig, published in *Information and Computation*—the conference version appeared at ICALP in 1987, was a major break-through in computational complexity, in particular on space-bounded computations. There he cleverly utilized counting arguments for his proofs. Finally the story on the logarithmic alternation hierarchy ended in a complete collapse by the work of Neil Immerman and Robert Szelepcsényi, by a counting technique nowadays known as inductive-counting. His surveys on formal languages and complexity theory from the mid 1990’s are still an inspiring resource for research.

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Apart from his research activities, Klaus-Jörn took on administrative responsibilities at the Universität Tübingen. He was dean of the Wilhelm-Schickard Institut für Informatik, during the time where major changes in the structure of the computer science department in Tübingen happened. Nowadays the department of computer science hosts 45 full professors, and covers all major areas of computer science for study and research. The success of the computer science in Tübingen is mostly tributed to the effort of Klaus-Jörn during his time as a dean of the department.

One of the remarkable facts about Klaus-Jörn is that he has a significant number of academic offsprings. They can also be found within the authors and editors of this Festschrift. For instance, trying to first mention some people in a sort of chronological order as they appeared as being supervised by Klaus-Jörn, we find:

- Peter Rossmann was one of the first diploma students of Klaus-Jörn in Munich and is professor at the RWTH Aachen since 2003.
- Thomas Erlebach did his diploma project with Klaus-Jörn in München; Thomas is now a full professor at the University of Durham, UK.
- Markus Holzer did his diploma at the Technische Universität München and doctoral thesis at the Universität Tübingen under the supervision of Klaus-Jörn; now he is a full professor at the Universität Gießen.
- Henning Fernau joined Klaus-Jörn's group in Tübingen in 1995 as a post-doc, staying there (with interruptions) for ten years, finishing with his habilitation. Now he is a full professor at the Universität Trier.
- Michaël Cadilhac belonged to Klaus-Jörn's group from 2014–2017. He is now an assistant professor at the School of Computing of DePaul University, Chicago, IL, USA.
- Charles Paperman was a member of the Tübingen group from 2016–2017. Now, he is an assistant professor at the Université de Lille, France.
- Petra Wolf was one of the last master students of Klaus-Jörn. After doing her doctoral thesis with Henning Fernau, she is about to become a post-doc at the University of Bergen, Norway.

Many if not most members of Klaus-Jörn's research group(s) became professors in computer science. During the preparation of this Festschrift Klaus-Jörn's academic offspring Rolf Niedermeier passed away untimely in spring 2022; he was a full professor at the Technische Universität Berlin.

Another notable feature of Klaus-Jörn is his hospitality, leading to quite a number of visitors and/or co-authors over the years. Some of them also contributed to this volume; we again discuss them in a somewhat chronological order.

- Klaus-Jörn and Takashi Yokomori share two fun facts: for each of them, their co-authored paper from 1982 is the second paper listed on DBLP; moreover, both had a single-author paper before in Information and Control in 1980.
- Volker Diekert had good reasons to be a frequent visitor, himself living in Tübingen, as well. Yet, Klaus-Jörn and Volker knew each other already from their studies in Hamburg; Volker is currently a full professor in Stuttgart.
- Jürgen Dassow visited Klaus-Jörn in Munich shortly after the fall of the Berlin Wall. During the 1990s, Jürgen and Klaus-Jörn were both members of the steering committee of the GI-Fachgruppe "Automaten und Formale Sprachen."<sup>1</sup>
- Mikhail Volkov has been one of the first visitors of Klaus-Jörn after his move to Tübingen back in 1995.

<sup>1</sup> GI (Gesellschaft für Informatik) is the German Computer Science Society, which has a number of Special Interest Groups (Fachgruppe), and among them is the mentioned one on "Automata and Formal Languages."

- Eric Allender was quite a frequent visitor during the Munich and Tübingen years of Klaus-Jörn's research group. Eric and Klaus-Jörn worked together a lot on logspace-bounded complexity classes.
- Frank Stephan and Klaus-Jörn visited each other around the millennium several times, also resulting in a common project relating the two favorite topics of Klaus-Jörn, Formal Languages and Complexity, *via* the leaf language approach.

We would also like to thank all those who helped produce this special issue, especially the referees for their timely cooperation and Christel Baier and the team of *Acta Informatica* for their cooperation on this project.

Last but not least, we would like to thank Klaus-Jörn for his friendship and for many stimulating discussions, maybe while taking a cup of tea (Darjeeling, of course) in his office, or sitting on the veranda just outside of his office. To his colleagues and friends Klaus-Jörn is simply known as K.-J. (in German phonetic transcription [kajot]).

Dear K.-J., we all wish you a Happy Birthday and we hope you enjoy your Festschrift.

Henning Fernau, Markus Holzer, and Petra Wolf

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