

PREFACE:

SPECIAL ISSUE DEDICATED TO MASAMI ITO AND PÁL DÖMÖSI

Although it is perhaps somewhat unusual to honor two researchers with the same special issue, it was a natural development in this case, as I will attempt to illustrate below.

The idea of collecting the papers for the volume came on the heels of the satellite workshop of the 22nd International Conference on Developments in Language Theory (DLT 2018, Tokyo), organized in Kyoto between September 5–7, 2018, in honor of the 77th birthday – 喜寿, pronounced ‘kiju’, meaning happy age in Japanese – of Masami Ito and the 75th birthday of Pál Dömösi.



Masami Ito and Pál Dömösi, Tokio 2018

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Apart from the lucky coincidence of significant birthdays, the reason for the joint celebration was that Masami and Pál have been close friends for decades and they collaborated extensively on one of the defining themes to both of their academic legacies, the language of primitive words. Before getting to primitive words, however, allow me to present a – necessarily far from comprehensive – overview of their academic careers.

Masami Ito was born in 1941, in Kyoto, Japan. He graduated from Kyoto University with a degree in mathematics and completed the postgraduate course at the same institute in 1967, after which he spent two years at the Henri Poincaré Institute in France. Upon returning to Japan, he became a lecturer at Kyoto Sangyo University, the institution which was to be his professional home until retirement and which named him Professor Emeritus afterwards. He obtained his Doctor of Engineering degree from Tohoku University in 1978.

Masami was a visiting researcher/professor at universities all over the world, among them in Germany (Hannover), Canada (London), Hungary (Szeged and Debrecen), Spain (Tarragona) and Thailand (Chiang Mai). He edited several prestigious journals, such as *Theoretical Computer Science* and *JALC*, and was a program committee member of numerous international conferences. His role as a community organizer is just as important as his scientific writing. He was an initiator and chairman of the organizing committee of the two editions of the International Colloquium on Words, Languages and Combinatorics (1990 and 1992) that later transformed into what is known today as the aforementioned International Conference on Developments in Language Theory, one of the main professional forums of the field, which he also organized under its present name, in 2002 and 2008.

He has written over a hundred academic papers and edited numerous conference proceedings. He wrote the monograph *Algebraic Theory of Automata and Languages* (2004) and co-authored with Pál the book summarizing their relentless pursuit of the proof for the non-context-freeness of the language of primitive words, *Context-free Languages and Primitive Words* (2015).

Pál Dömösi was born in 1943, in Munkács, Hungary (now in Ukraine). He studied mathematics and physics at József Attila University (Szeged) graduating in 1966. After working as an ‘early adopter’ of computers at the Computer Center of the university in Szeged and then as a mathematician at the Building Company of Southern Hungary, he received a scholarship at the University of Economics in Budapest, leading to his PhD in 1983. He became a Doctor of the Academy in 1994, after joining the University of Debrecen, where he spent most of his professional career and where he is employed now, too. He has been Professor Emeritus of Nyíregyháza University since 2013.

Pál was a visiting researcher/professor at universities spanning continents, among them in Germany (Hamburg), Japan (Kyoto and Aizu), the Netherlands (Twente), Finland (Turku), France (Paris) and Spain (Tarragona). He has been editing mathematical journals, such as *Publicationes Mathematicae* (Hungary) and *Mathematica Japonica* (Japan), for over two decades, and was a program committee member of numerous international conferences. As chairman of the organizing committee of five editions of the International Conference on Automata and Formal Languages (AFL), he contributed to preserving a tradition with roots going back forty years.

He has written over eighty academic papers and served as editor for several conference volumes. Together with Christopher Nehaniv, he co-authored *Algebraic Theory of Automata Networks* (2004), the first monograph ever published on the topic. His second monograph is the book mentioned earlier, a comprehensive treatise of the (many) approaches that have been employed to prove the non-context-freeness of the

language of primitive words.

Masami and Pál met in Hungary in the early 1980's at the then biannual Salgótarján conference started by István Peák (Pál's doctoral advisor), which later became the AFL conference series mentioned above. They started collaborating a few years later and their first joint article, 'On the connection between formal languages and primitive words' appeared in 1991. The topic, as a sign of things to come, was primitive words. They co-authored 15 papers, most of them fully dedicated or at least touching on the question which inspired their monograph: is the language of primitive words over a given alphabet context-free? In 1993, they conjectured that the answer is no, but the problem resisted all attempts to date. While at first sight possibly an academic question, the numerous attack angles denied by it have shone a bright light on the limits of our knowledge concerning the context-free class. It also inspired generations of researchers to try to develop tighter conditions of context-freeness, and its effect may well keep rippling for years to come.

Last but not least, I am lucky to have had them both as professors during my studies, and I experienced first-hand the amazing attitude that both Masami and Pál demonstrated towards students over the years. Their generosity with their time and effort when it comes to advising and otherwise helping in professional, as well as personal matters, is a testament to their personal qualities beyond the limits of scientific pursuit.

The workshop which served as the starting point for this special issue, was in serious danger of being cancelled due to the weather conditions at the time. That it finally happened and was a success according to the participants is in large part due to the tireless work of organizers Kayoko Shikishima-Tsuji and Masafumi Toyama – both long-time friends of Masami's and Pál's – who did everything to hold the event together while the strongest typhoon to make landfall in Japan in two decades wreaked havoc on the area and our preliminary plans.

Naturally, key to the success of the workshop was the high-quality and wide range of interesting work presented there which prompted the organizers to ask the editors-in-chief of JALC to host a special issue dedicated to it. With the indispensable help of Bianca Truthe, we assembled this volume, which, I think is not only interesting, but has a refreshingly wide scope, including various aspects of language and automata theory, as well as number theory and cryptography.

I would like to thank all the contributors, as well as the reviewers, for their effort in producing this special issue.

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