Scalable distributed data structures for database management
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Timeline

Once upon a time there was a MSc student. His name was Jonas S. Karlsson. One day he went out to look for some teaching jobs at the University of Linköping. He saw a notice with a half-time technical programmer job in the database group. There were two contact persons. In the scary computer science department he walked past the doors looking at the pictures. He ended up in front Tore Risch’s door. He was friendly and hired Jonas. It was agreed that he would do his Master Thesis on the Transaction Logging and Recovery for the AMOS (WS-IRIS) main memory database system. Eventually, he finished his Master Thesis [Kar94], and there was joy.

He continued for a while as a technical programmer on the AMOS project and teaching crash courses in programming using lisp. Witold Litwin visited Linköping and introduced him to the idea of SDDSs. Unknowingly Jonas was being trapped! He was going to pursue a PhD. The rest of this book is the final result. But back to the story. At IDA (the computer science institute in Linköping) the PELAB group had acquired a Parsytec parallel computer. Since it would be nice if somebody used it for something, Jonas implemented a version of Litwin’s LH* named LH*LH. In an academic environment, however, it is not enough to just do things, it also has to be published at conferences. It is not as bad as it might sound since conferences typically occur in countries far away, in combination with vacation. This was something Jonas had not imagined at the time. Tore sent Jonas to Paris to write the publication together with Witold. In total there was two hectic weeks writing the paper. Litwin scrutinized the evolving paper. The paper [KLR96] was sent away to a conference. There was a summer. Staffan Larson a colleague had a publication in the Very Large Databases conference in Zürich and Jonas was sent along. Switzerland is expensive, having a fast food snack was like going to a restaurant in Sweden, in price at least. The conference was enjoyed. Most of the talks were very interesting, and gave high inspiration. During the conference dinner Tore seated us at the table of Martin Kersten and other Dutch researchers. Tore whispered that Martin had some interest Jonas’ work. There was some interesting discussions, and a loose invitation for a visit. After the conference Jonas went by train to Rome and flew home. Now he had incentive to do some research.

The conference was Extending Database Technology and it was held in
Avignon, France. Jonas was presenting his paper on LH*LH. At the conference Wilko Quak and Peter Boncz Jonas' to become colleagues (all unknowingly).

After the conference Jonas met up with Tore Risch in Frankfurt and they drove to Schloss Dagstuhl\(^\text{1}\) They had been invited to participate in seminar on *Performance Enhancement in Object Bases*. In one of the nights while intoxication took place in the wine cellar, Guido Moerkotte and Bernhard Seeger inspired Jonas to do further work on scalable distributed data structures. Eventually, this resulted in both the hQT\(^*\) paper and the $\Omega – storage$ structure.

In the evening when Martin Kersten had arrived, again in the wine cellar, he involved Jonas into a discussion of how to implement efficient database systems, Peter was backing up Martin. Martin proposed Jonas to come and stay some weeks. Rumors retain that this is a non-forgotten event. Jonas was overwhelmed, however it could take some time, since he wanted to keep the promise (for himself) to finish the Licentiate Thesis.

Well at home, after an eastern in Heidelberg, he set out to finish the work. Not much later an official invitation arrived asking for the dates. First, it was planned to be a visit just before X-mas. Tore knowing that writing a thesis do take time suggested that the visit be made during the spring. Plans were made for mid-February and a period of 4 months.

In Amsterdam Jonas was provided with a studio-apartment at the distinguished Prinsengracht. The house belonged to a Martita Wiessing “elderly artistic lady” according to the description Jonas was told. The house is a typical Amsterdam house. Martita runs a gallery, or maybe the other way around. It was a very pleasant atmosphere with interesting people at late hours.

In a spring-trip back to Sweden, the Licentiate Thesis was finally presented. At this point Jonas was not sure if he wanted to go on with a PhD. One important reason is that a PhD:s was considered “a to high education” in the Swedish industry a licentiate was just appropriate. July, presented Jonas with the choice of staying and finishing the PhD studies in Amsterdam. So far the life in Amsterdam had provided the time to think over the situation, and it yielded the decision that this is once-in-a-lifetime chance. Furthermore, for working abroad a PhD opens some doors (and checkbooks)... So he signed up for another 2.5 years.

After a while Jonas moved to another central area the Nieuwmarktbuurt. Binnen Bantammerstraat to be more exact. For those who does not know it this is the original “Chinatown” street in Amsterdam, however, now most of the of the businesses moved to another street. Only 2 Chinese restaurants remain, otherwise the street has four bars, three which serve

\(^{1}\)At a workshop *Performance Enhancement in Object Bases* http://www.dag.uni-sb.de/DATA/Participants/9614.html.
some food, one tai restaurant, one hairdresser, one violin-bow-builder, one wine store, one dentist, one fruit shop, and a Porche shop. A later addition to the diversity of the street was just below my apartment a tattoo shop. All this in a hundred meter long street!

In the beginning the work was concentrated on showing the feasibility of adding an SDDS to the Monet database system. Differently intrusive implementation strategies were chosen from and one was selected. Experiments were performed and a paper was accepted to a parallel conference in the city of Las Vegas a crazy city. A word of advice do not stay there for longer than a week the sound of these machines... Still with some money in the pocket he returned home. Work began on a spatial structure, inspired by the often occurring sudden rainfall distress. However, this one would not stop. At home in the sofa, Jonas read papers and sketched ideas for a 2-dimensional SDDS structure later to be named hQT*. This structure ended up in a conference in Kobe, Japan FODO. For Jonas Japan was a overwhelmingly interesting experience, but exhausting. Well at home plans started for the PhD Thesis, only to be intervened by another structure Ω-storage. The structure was inspired by having a 24 processor machine with 48 GB of shared main memory. The paper was accepted to the Australian Database Conference, and presented in January 2000.

Now, the reality has caught up with the story. You are hopefully reading an approved and printed PhD Thesis. It collects the published work on the matters that Jonas pursued in his research. Jonas hopes it provides interesting reading.

Jonas was latest sighted in Silicon Valley. Someone provided a rumour that he'd been gobbled up by the giant IBM. It is being said that he's building itsy bitsy database systems for small devices like the Palm/WinCE/embedded linux.

The story will be continued, but this is outside the scope of this document...

Anonymous