

## **Karsten Jacobsen - 80 years old and still going strong**

Dr.-Ing. Karsten Jacobsen celebrated his 80th birthday on 30.01.2024. One year later, his friends and colleagues in Istanbul organized a workshop in his honour on the topics that have occupied him scientifically for more than 50 years: bundle block adjustment, generation and validation of digital elevation models and topographic mapping from space. His scientific career and achievements are briefly reflected here.

After completing an apprenticeship as a surveying technician and studying surveying at the former Hamburg School of Engineering (until 1966) and at the then Technical University Hannover (until 1971), he successfully went through the surveying and mapping traineeship of the State Survey Authority of Lower Saxony until 1973, before joining the former Institute of Photogrammetry and Engineering Surveying (IPI) as a research assistant in 1974.

From the very beginning, he devoted himself to aerial photogrammetry and in particular to bundle adjustment. For his dissertation, which he completed in 1980, he wrote a software system which he named BLUH. BLUH stands for **BundLe** Block Adjustment **U**niversity of **H**annover - since the university was renamed in 2006 perhaps also for **BundLe** Block Adjustment **Leibniz U**niversity of **H**annover. BLUH and its auxiliary programs may not have become the be-all and end-all for Karsten Jacobsen and the staff and students he supervised in the years that followed, but they certainly became the core of what has now been almost 50 (!) years of successful work, which continues to this day. The big advantage of the programme system is that any additions can be integrated as additional parameters. Successively, all innovations and extensions of image orientation were integrated, from self-calibration to gross error detection, from GPS observations for the projection centres and gyro measurements for the angles of exterior orientation to automatic procedures for image coordinate measurement. Of course, he did not stop at aerial images - especially since the advent of high-resolution satellite images, questions about image orientation have also arisen in remote sensing, and Karsten solved them in an exemplary manner. At times, BLUH was installed at around 150 institutions around the world. Karsten Jacobsen has always greatly appreciated feedback from practice and has used it to make his programme system more robust, more versatile and easier to use. Even today, he is still regarded worldwide as a major authority in bundle adjustment.

In addition to BLUH, he was also very successful in other areas of photogrammetry. These include his many works on the derivation and evaluation of digital terrain models from aerial and satellite images and the area of the workshop mentioned above, Mapping from Space. He has also devoted himself to more exotic topics such as the measurement of grasshoppers, the automatic evaluation of video camera images in soccer (long before the introduction of the video referee now common in the Bundesliga) and the calibration of thermal cameras.

However, one should not think that Karsten Jacobsen neglected his "normal" institute duties due to all these activities. Sometimes it seemed as if the other things were running on the side. But anyone who knows the amount of administrative work involved in managing a university institute with 40 or more employees at times will be amazed. With overview, experience, precision in detail and his own efficiency, he devoted himself to the tasks at hand. In doing so, he relieved Prof. Konecny for a good 25 years and then the author of these lines until he retired in 2009. At the same time, he represented IPI at scientific congresses in Germany and abroad, in scientific

organizations (ISPRS, EARSeL, DGPF, etc.), and of course he was also one of the pillars of the institute's teaching activities. He always had an open ear for the students' concerns - he explained even the trickier aspects of our subject to them in simple terms, listened to them very patiently and thus inspired many of them for photogrammetry. For the last more than 25 years he was also active internationally in further education and training, with lecture tours taking him to Sri Lanka, Cambodia, Brazil, Guatemala, repeatedly to India, Thailand and, of course, Turkey - there is a reason why the workshop for his 80th birthday was held in Turkey.

What is the secret of this career? It is probably the symbiosis between a deep theoretical understanding, practical experience and interest and unbridled diligence that accounts for a large part of the unique success that Karsten Jacobsen has enjoyed - and still enjoys. As by now he has proven in the meantime that age limits do not apply to him, so we are looking forward to his next activities with great anticipation.

It is remarkable that, despite all his outstanding successes, Karsten Jacobsen has always remained a very modest, reliable, loyal, straightforward colleague who can be relied upon for advice. We at the IPI hope that Karsten Jacobsen will continue to enjoy his work at the institute for a long time to come and that he will continue to support us in word and deed. We would like to thank him wholeheartedly for the harmonious and extremely successful collaboration over the past decades and wish him health, happiness and all the best for the future!

On behalf of all the IPIans,

Christian Heipke.

