

## In Memoriam

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Horst Herrlich was born in Berlin on September 11, 1937 and he passed away in Bremen after a long battle with illness on March 13, 2015. For Applied Categorical Structures Horst Herrlich had a special meaning because he was strongly involved in the creation of the journal and he had been a valued editor from the very beginning. With this volume we want to pay tribute to this remarkable man. Horst was a gifted and inspired mathematician but moreover, for many of us, he was a dear friend with a winning personality.

Horst studied mathematics and biology at the Free University of Berlin where he obtained his PhD in 1962 on “Ordnungsfähigkeit topologischer Räume” and his Habilitation four years later on “*E*-kompakte Räume” (E-compact spaces). After holding a position at the University of Bielefeld, in 1971 he moved to the University of Bremen where he was a full professor until he retired in 2002. Horst’s mathematical work ranges over a large body of material, mostly in Topology, Algebra and Category Theory.

In Category Theory he can be seen as the father of Categorical Topology, a beautiful field which inspired so many other researchers, and the genesis of which could already be seen in his monumental work “Topologische Reflexionen und Coreflexionen” which appeared in the Springer Lecture Notes in 1968. Starting in the seventies and throughout his career he developed the fundamentals of Categorical Topology, including topological functors, initial and final completions, factorization structures, cartesian closedness of topological constructs, and natural extensions. He also focused on the intuitive concept of nearness between arbitrary collections of sets, thus axiomatizing some new foundation for topology which he, together with one of his co-authors H. L. Bentley, proved to be extremely useful in the study of extensions of spaces.

His visits to the U.S. near the end of the 60’s and his collaboration with G. E. Strecker culminated in 1973 in the joint book “Category theory” which was very influential in the field. Later in the eighties together with J. Adámek the book was extended to “Abstract and Concrete Categories”. This book has the subtitle “The Joy of Cats”, reflecting Horst’s humour and love for both categories and cats. It differs from other books in the field by emphasising concrete categories because of their importance for applying categorical methods to topological problems, and became “the” reference work for generations of researchers and students working in Categorical Topology.

In the beginning of the eighties he published a paper entitled “Categorical Topology 1971–1981” with 700 references and containing many open problems. Together with

co-authors, he later added a few other survey papers on the state of the art of Categorical Topology. All of these contributions testify to the extreme thoroughness of Horst's work, digging deep into the mathematical problems and into the literature in the field, thus making these surveys extremely useful to generations of researchers. Also his work on nearness spaces which we mentioned earlier, by the end of the eighties culminated in a series of three books on Topology, where the last volume *Topologie II: Uniforme Räume* is entirely devoted to nearness spaces.

Near the middle of the nineties and up to 2015, Horst became interested in investigating the influence of the Axiom of Choice, in particular on Topology. His last major work was a comprehensive book "Axiom of Choice" which appeared in the Springer Lecture Notes in Mathematics in 2006.

Horst Herrlich published about 180 research papers, almost half of which were single-authored, and 7 books and had close to 50 coauthors. He had 24 PhD students, several of whom are now successful mathematicians. Without question Horst was an extremely gifted and inspired mathematician. But what made him so prolific was his capacity and willingness to put in the effort and long hours required to organize, polish, and present his results (and those of others) in a way that was easily understood by the audience in question. This penchant for clarity and good communication was evident not only in his scientific writings but also in his lectures whether they were in the classroom, in seminars, or in invited talks at congresses or mathematics departments throughout the world.

Horst had an extreme love for books on all kinds of interesting topics, and he liked quotes. His own books have many quotes and for years he e-mailed quotes and jokes to several of his friends. Below we cite some quotes we collected from a few of his dearest friends.

"We became friends immediately and were in regular communication for the next 40 years. When I was working on a possible paper, Horst would be aware of it and often make a suggestion or tell me a result. Sometimes the result would be a joint publication, but just as often Horst would decline my offer of making him a joint author, saying that he hadn't done enough on the paper to justify that."

"Horst was almost always smiling and cheerful and appearing to be in the best of spirits even toward the end of his life, when he was quite ill. He was easily amused."

"Have fun! was frequently the closing salutation Horst used in his letters and emails to friends. It also is apparently one of the mottos that he lived by. He had an enormous and intense curiosity and took great pleasure in discovery, whether it was in mathematics or some other field. He was a superb ornithologist and natural scientist, even though his profession was in neither of those fields. On almost all of his mathematical travels throughout the world he took some time off for bird-watching or hiking or generally enjoying the local flora and fauna (as well as for visiting the local book shops). His conviviality led to his having fun with his many friends and colleagues. He enjoyed diversions and games, and was a very strong competitor, exhibiting a fondness for the quotation "Winning isn't everything; it is the only thing". He was a polymath who loved limericks and paradoxes as well as designing and flying paper airplanes. His laugh and pleasing attitude were utterly infectious."

"Something has to be added. Horst's "Have fun" is a reflection of something more profound in his character, his light-heartedness and positive attitude."

Finally, we would like to mention that the first paper in this issue is the very last paper written by Horst together with Lamar Bentley, which we are proud to be able to publish in this issue, and furthermore we would like to thank Marcel Erne for his wonderful drawing of Horst.

Lamar Bentley  
Eva Colebunders  
Bob Lowen  
Hans Porst  
George Strecker