H. Stachel: From Professor to Partner

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Abstract. Everybody knows his biography because we can easily read it in a number of references of his works. However, one that has attended one of his thousands lectures can much easier identify that these words, well chosen by editors, are not enough. There is much more than a passionate geometer, a deep researcher, a dedicated professor or a colleague for cooperation; there is in the man a promoter of productive relationship among persons from all over the world. This is what I intend to show you and demonstrate here by images (because this is my testimonial and image processing is where I work and feel most comfortable).

Key Words: structure, degrees of freedom, structural shape

1 Introduction

Everyone knows the official biography that we can easily read, for instance in the Amazon sites, or any other reference of one of his hundreds works. For example, this is one you certainly known well: "Prof. Dr Hellmuth Stachel, born 1942, got his PhD and habilitation in geometry in Graz. 1978 full professor at the Mining University Leoben, 1980–2011 full professor of geometry at the Vienna University of Technology. Coauthor of several books on mathematics and computational geometry and of more than 120 articles on geometry" [1]. However, one that has attended at least one of his lectures (Figure 1) can easier identify that there is much more than a very good geometer, researcher and professor behind his spectacles. In fact, he goes beyond a good traditional speaker (Figure 2), he is a colleague, a human being, a promoter of personal relationships, cooperation and productive interchange between the participants of scientific societies and a good friend, that you can trust and ask for help.

That help, I have asked him, in 2008. I would be at the 15th International Workshop on Systems, Signals and Image Processing (https://www.iwssip.org), in the nearby city of Bratislava (Slovakia). But my flight from Brazil would arrive and return via Vienna, so I thought this would be a good opportunity to visit his department and university and, of course (I must confess) why not see the wonderful parks, palaces and museums of the city again. With that in mind, I wrote to him asking for an invitation letter to visit his university, and so I knew his office where, that time, I had pleasure of being introduced to the wonderful models of structures concretized in pieces to touch and play (Figure 2, right).

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Figure 1: Example of a professor for all the other professors (left). His invited lecture in the IWSSIP 2010 in Rio de Janeiro (right).



Figure 2: Images that are familiar to everybody only changing the background: a marvelous lecturer holding full attention (left). Showing one of his models or folding a piece of paper to made a structure (right).

2 How to leave a sheet of paper standing?

In such a visit, I do not remember now when, if during the conversation in the office, or at lunch afterwards, we ended up talking about the importance of shapes in structure. There is a number of well-known examples. For instance, the arches that can sustain themselves and great weight from upper materials. However, the simplest, banal and present in our daily lives, I liked the most. It is a fragile sheet of paper, which apparently never stands upright, but become a self supported three-dimensional structure, only after a single vertical fold in its middle. Since then, this very usual and simple example I repeated a lot to my students.

At the end of the conference in Bratislava, I was convinced to organize one of the same series in Rio in two years. The idea of seeing more about forms and structures, their flexibilities, and resistances, seemed to me to be something that everyone, even from another area, would like to hear more of, as well. By organizing the event in Rio de Janeiro, then, after some dialogue and message exchanges, we managed to get our host of Vienna to be our guest in Rio.



Figure 3: Some beautiful figure and drawings from his lecturer in IWSSIP 2010.

3 The challenge to cross the Atlantic was accepted!

The invited lecture was based on an article submitted before the conference started and to be included in the proceedings published before its opening. The title is: "The Influence of the Geometry in the Rigidity or Flexibility of Structures". It is still available today, with all sort of incredible well-made drawings and examples of linear structures which, even without a part being deformable by itself, because they are made of bars, are deformable as a complete structural element made from collections of one-dimensional bars. Some of the drawings that illustrated the lecture and article can be seen in Figures 3 to 5 (in these figures, the titles that appear in the images are the ones that can be read in the invited article). The conference audience so received this incredible beautiful projects, and also these amazing structures in reduced physical models presented with explanations, linking geometry to structural engineering.

4 The live lecture

Congress could not be imagined without having presentials speakers at that time. Thus, we had in Brazil the visit of this wonderful professor and we were able to attended his lecture. The complete article is still available in the conference library: http://www2.ic.uff.br/i wssip2010/Proceedings/nav/paper.htm. There was a film of the lecture, which in the comings and goings of these 12 years, ended up strayed but some photographs like those presented in Figures 6 and 7 remain to remember those moments.



5 Conclusion: We miss this time

The congress ended up going well (it was the first time that I was chair of an event). In this series, as in the ICGG, there are also social activities. In addition to the coffee breaks, lunch and traditional dinner, some cultural and other tourist activities were planned [2]. On the weekend after the event, we had a boat trip through Guanabara Bay with all the participants and their companions. Hellmuth was with us (Figure 8). He also received during the dinner of the event a plaque expressing the organizer's gratitude for his lecture (this was given to him by Prof. Branka, the honorary president of the event and one of the founder of this series of conferences).



Figure 6: Prof. Stachel explaining how to transform paper in structure: Folding a piece of paper

Figure 6: Prof. Stachel explaining how to trans- Figure 7: Using a model to explain displacements.



Guanabara Bay by boat (example of a colleague).



Figure 8: After event informal tour around the Figure 9: The IWSSIP 2010 and 2020 honorary chair and the silver plate.

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