

Memories of Daniel

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Daniel and I became friends starting to work together. One part of Daniel's thesis, with Claude Roiesnel, was on gauge fields on lattices and the other one presented explicit, exhaustive constructions of representations of q -deformed $SU(3)$ for q a root of unity. I was constructing q -deformations of a class of inhomogeneous algebras implementing "truncated" Guelfand-Zetlin bases which I obtained before for the classical case. I proposed to Daniel, let us try to adapt the $G - Z$ bases to the case of q a root of unity. He became interested and started to explore the problem with his typical power and resourcefulness. I remember walking up the tree-shaded slope from Lozère to Polytechnique, with its about three hundred steps, marshalling in my mind ideas to propose to Daniel and wondering what he might have thought up in the mean time. We finally forged our "formalism of fractional parts" which led to success. Here the parameters of the $G - Z$ bases were no longer ordered integers but had fractional parts satisfying specific constraints. Several papers were published and were rather well received. During this period we developed warm friendly relations which never faltered.

Daniel went away and finally settled in Annecy. We kept in touch and his brief visits were welcome. We worked on various, different problems. But a part of our interests overlapped throughout.

Then came Boucif Abdesselam and started preparing his thesis with me. I felt the need of Daniel's help and proposed a threesome collaboration, inviting him to come over. He responded generously. Our work progressed nicely. We kept on publishing papers together. But it was more than that. We were now three friends together.

There is a memory of the three of us strolling down boulevard Saint Michel to a fine algerian restaurant where Boucif had invited us. The evening was

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pleasant and warm. So was our rambling conversation. We never talked about our work that evening. There was so much else to share.

After that period we and our work came together again thanks to the initiative of Vladimir Dobrev in coordinating a collaboration Annecy-Sofia-Palaiseau. Daniel and I arrived together in Sofia and started working with our friends there at the Academy.

We started by scrutinizing what was then proposed in certain papers, some of them well-cited in other papers and even in some text books, as "hybrid deformation" combining the standard (q) deformation with the non-standard (or Jordanian) one introduced by Manin and others. We showed that in their case the non-standard parameter (h) can be transformed away leaving only q . Thus we demonstrated to start with that the above-mentioned reputed papers contained only heavily disguised trivialities. Then, after having thus cleared the ground, we moved on to more positive developments. Before coming to that let me evoke some memories crowding in.

Daniel and I went to dine at a restaurant not far from our rooms provided in the Academy residence. Daniel studied the menu and ordered the most elaborate dish proposed - boeuf Stoganoff. The garcon muttered something and went away. We started waiting not suspecting a communication gap. We waited and waited. The restaurant started getting empty leaving the two of us. Hostile glances from the staff indicated that we were preventing them from closing up. We asked - what about our order ? The garcon said, clearly this time, "I told you that we do not have it". That was that. We gobbled up quickly whatever they had and came back laughing at our "Stroganoff evening".

We left Sofia together. At the airport restaurant Dauntless Daniel ordered Stroganoff. This time he was served and could thus return appeased, frustration shaken off.

Our ways parted at Frankfurt airport. Before passing through different gates Daniel stopped, looked at me seriously and said " It is good to start working together again." I could have said the same.

Our collaboration continued via systematic study of "exotic" braid matrices - their "Baxterizations", associated RLL algebras and noncommutative spaces. The last paper of this series is still to be written up.

I once visited Annecy for a week. But by then I was already a retired person. Daniel had to cope with administrative problems of inviting such an individual. So I decided to stay put at Polytechnique, where I am still generously provided with an office, and send over my ideas and computations to Annecy and Sofia. Quite recently I sent one last set of results to Daniel. He sent a message - "I promise to study your solutions". He did not have the time.

In some of my recent papers, even when I am the sole author, Daniel's presence can be felt via the acknowledgements. In one I write

" This work owes much to sustained and reassuring help from Daniel Arnaudon. It goes beyond results explicitly attributed to him. "

Daniel said in a telephone conversation that he really appreciated my words. In a paper published very recently (June issue of Jour.Math.Phys.) I add

"It is a pleasure to thank Daniel Arnaudon. Using a program he verified for the first member of our hierarchy of solutions that the constraints obtained are not only sufficient but also necessary. This was reassuring."

"Reassuring" is indeed the word. In two consecutive papers in this issue I present new classes of braid matrices for all higher dimensions. In one, with multiple parameters I had to implement a class of constraints. I was worrying about its scope. I asked Daniel for his judgement. The prompt reply was " Your matrix satisfies the braid equation. If your constraint is removed it does not." Two sentences - necessary and sufficient. He was the only person to whom I could thus appeal for help. Staring at the intricacies of the problem I am struggling with at present I think from time to time - I wish I could ask Daniel for help.

I asked him twice how he was responding to his therapy. Each time he sent a detached, lucid reply , that of a person observing himself.

Recently we, my wife and I, were at Tours. We took long walks. In the botanical garden of Tours following the arrows pointing towards " the plants of the month" we arrived at the enclosure for medicinal plants and trees. Three of them have been chosen for the same reason. Their molecules are useful in chemotherapy. Standing there I thought I must ask for news of Daniel as soon as I am back. I came back, opened my e-mail and learnt that he has passed away.

I was once, a few years ago, in Poland for a winter school (Karpacz). I met Prof.Rittenberg, started talking and somehow the name of Daniel came up. He said "So you know Daniel Arnaudon quite well". I replied " I am happy to say yes. When you get to know a person like him you have a bit more confidence in humanity". Rittenberg: " You are right. I agree with you".

As I grow old and older I live more and more with my memories. Memories of Daniel wil now become a part of them.