Łódź, November 19th 2012

Rémi Langevin, IMB, Université de Bourgogne

Dziekuje wszystkim: rektorowi, dziekanowi, promotorowi, recenzentom, senatowi i kolegom-matematykom łódzkim. Doktorat honoris causa Uniwersytetu Łódzkiego jest dla mnie szczególnie wazny, bo tu, we wspólpracy z Pawlem Walczakiem i jego kolegami, uzyskalem znaczaca cześć swojego dorobku naukowego. Teraz przejde na angielski, który moze byc niedoskonaly ale jest na pewno lepszy niz mój polski.

(recenzent: rapporteur; szczególnie: particulièrement; uzyskać: obtenir; znaczyć: signifier, znaczaca significative; cześć: partie; dorobek: réalisation)

Let me first quote a nineteenth century mathematician, Gaspard Monge: *The student should early on get used to feel the correspondence between the operations of analysis and the operations of geometry; he should be ready to, on one hand be able to describe, using analysis all the movements he could conceive in space, and, on the other hand, at any time, represent in space the moving show which is written at each analytic operation.*

(Il faut donc que l'élève s'accoutume de bonne heure à sentir la correspondance qu'ont entre elles les opérations de l'analyse et celles de la géométrie ; il faut qu'il se mette en état, d'une part, de pouvoir écrire en analyse tous les mouvements qu'il peut concevoir dans l'espace, et, de l'autre, de se représenter perpétuellement dans l'espace le spectacle mouvant dont chacune des opérations analytiques est l'écriture).

More radical, René Magritte said: *I had no ideas, I just though of an image.*

(je n'ai pas eu d'idée, je n'ai pensé qu'à une image).

Friends, and I have many here, know that I prefer pictures, sometimes just sketched by a movement of the hands, than formulas. For me they are the proper support for imagination, conjectures, a first step of research. They can also be the support of proofs. Then the analytic proof becomes just a translation of an image.

I was quite lucky to "fall into the pot" (of science, not a bad magic potion) when young. There were enough people in my family to answer most of the many question of a child early interested by science. Better, often they just gave possibilities to play with tools, experiments. Books were in reach, and none was forbidden.

The choice of mathematics occurred later. In France, during the 1970's, unfortunately children went through a tough period, "modern mathematics". This spoiled the taste of many pupils for mathematics. The laudable aim was to try to give, in each situation, the most general statement possible. The result was to replace concepts by some vocabulary and proof by equivalences of sentences. Fortunately, quite a few of my teachers resisted and continued to provide significant examples and concrete proofs before reaching more general statements.

My choice, mathematics, does not exclude the taste of other topics. A leopard is not ugly because its fur has spots (this does not mean I despise stoats). Mathematics for me look as

pretty when they are applied or inspired by other fields as when they stay "pure". I had the pleasure to use integral geometry to describe the shape of sea-weeds, the six-dimensional space of rigid motions to model the movement of a hand in a sign language and Dupin cyclides in computer graphics.

Figure 1: Porphyra, Ulva and Plocanium cartilagineum. Photos M.C. Noailles, E.N.S. Paris

Figure 2: Shadow of a folded transparent sheet of plastic

I was also lucky to start research with an adviser, Harold Rosenberg, for whom a student need not to know much before trying to attack some problems. For him, the way was to learn by doing, maybe failing and trying again. He liked to take the risk to start a topic which was new for him with a student. Reading was of course necessary, but much more fruitful after a few naive personal attempts.

For me another important point is to find accomplices. I get quickly bored trying to work alone. On the contrary, a discussion in front of a blackboard with the right person
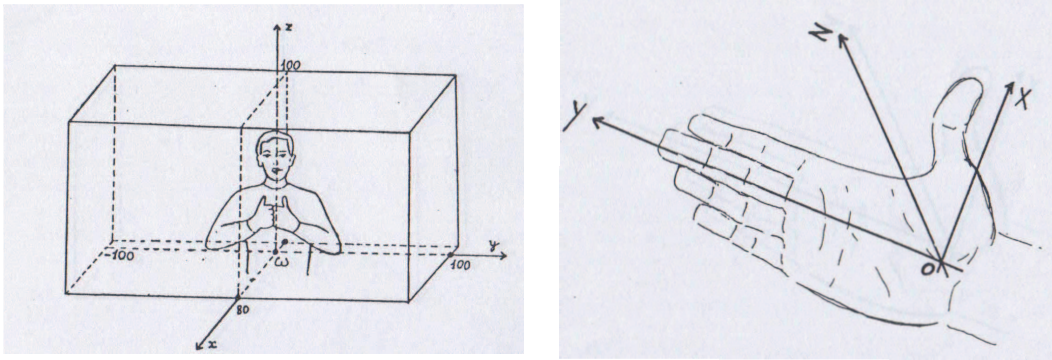
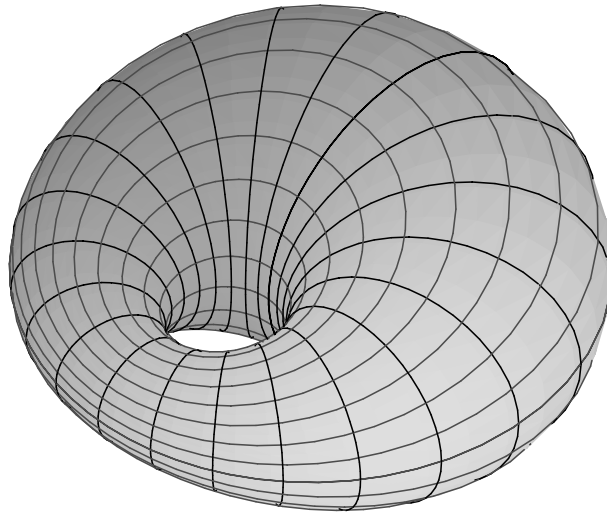Figure 3: Frames attached to the body and to the hand

Figure 4: A Dupin cyclide and its characteristic circles

speeds up incredibly the research process. This is also much more fun, Pawel, I think, will not disagree with that.

Adrien Douady conveyed a similar idea saying that a good association is that of a fox with a boar. The fox locates the question, starts a new methods, the boar overcomes technical difficulties. Outrageous optimistic dreams, systematic suspicion of the devil's advocate are also helpful. Of course, two mathematicians working together often switch roles.

As you can hear, I had fun with mathematics during... more than forty years, and hope to continue still a little.

To conclude, let me quote Marie Skłodowska-Curie: *we should believe that we have a talent to do something, and this something we should reach whatever the cost maybe. Nous devons croire que nous sommes doués pour quelque chose et ce quelque chose nous devons l'atteindre coute que coute.*