Marko Turina Interview

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Marko Turina Interview

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1. Most surgeons I spoke with in the US told me that they went to medical school to become surgeons or that they became interested in surgery during their rotations in surgery. How did you become interested in surgery?

I must disappoint you: when I was finishing medical school in Zagreb, only a research career was something which I imagined to be my future work field. In the beginning, I just happened to come into surgery by chance, as a matter it was my only possibility to get out of Yugoslavia, when I realized I stood no chance there.

2. During your student days did you do anything extra to indicate that you want to be a surgeon and thus become more qualified for a surgical residency?

I happened to work with Prof. Bozovic in physiology, and he and his wife were interested in the non-perfused lung. I learned to perform pulmonary artery unilateral ligation in rats, with long term survival, and I even modified some instruments to facilitate this single-surgeon work. There I first realized that I have some inborn dexterity, which was later very helpful in my career

3. You did some basic science research even as a medical student. How important was that early exposure to research for your future life?

The path to surgery became very logical after my work in experimental laboratory.

4. At the time after you finished the medical school it was not easy to get a training position in surgery. Is that why you left Zagreb and moved to Switzerland in 1962?

My move to Switzerland was facilitated by intrigues of the communist party among students. I was given a poor characteristic ("Karakteristika"), I was known for my anticommunist views, and still sometimes attended church services, mostly to please my parents. I was not allowed to attend SOS (medical officers school, then usual path for doctors after graduation), and was sent to infantry regiment as a common soldier- for one year! But someone realized this waste of opportunity and I was allowed to work as a company physician, but still without rank, missing some small privileges going with rank of "trainee sergeant".

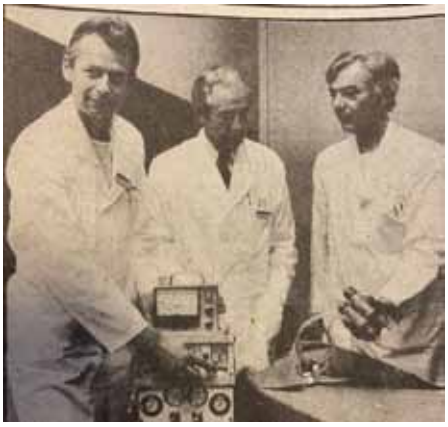

Figure 1. From New York Times 1979: Presentation of our artificial heart (AH) system, with first long-term survivors: From left to right: Prof. Turina, Prof. Senning, Roberto Bosio, designer of the AH system

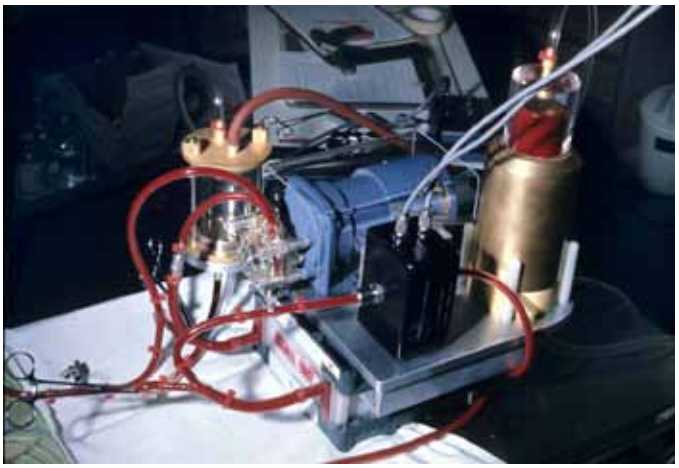

Figure 2. Pump oxygenator for infants, 1971

Figure 3. First newborn open-heart operation in Zurich

5. How hard or easy was it for you to adjust to Switzerland? What were the most difficult moments during your first year in Switzerland? Most difficult challenges? Any memorable events that you still recount to your children and grandchildren?

Switzerland was – superficially speaking – a heaven after communist Yugoslavia; everything plentiful, people pleasant to work with. But still I was a foreigner, a stigma which stays with one for lifetime in Switzerland, where everybody knows everybody else, from school, studies, army service, etc. When asked who I am and where I come from, I used to answer, "I am nobody from nowhere". Croatia was at that time practically unknown as national entity.

6. You opted for an academic career. What did it mean to you to become an "academic surgeon"? Did you have some role models to follow?

After basic training in surgery in a small community hospital, in Flawil, where I enjoyed rapid advancement, earning a solid envy by several others colleagues ("envy must be earned"), I was invited to a closed-circuit color television transmission of a heart operation from Zurich university hospital, the surgeon being my future teacher Prof. Ake Senning. I was profoundly impressed by the combination of his surgical technique and – simultaneously – profound knowledge of cardiopulmonary bypass and heart anatomy. I went back to my hospital and immediately applied for training there. My chief in Flawil gave me obviously – at that time unknown to me – a very solid recommendation, and I was immediately accepted in Zurich.

7. Did you ever consider leaving academia for a less hectic life in private practice? Are Swiss surgeons working in private hospitals better paid than those in academia? Is their life easier and less hectic than the one that you chose?

Private surgeons in Switzerland still earn much more than academic surgeons. When the first surgeons with whom I trained went into private praxis in cardiac surgery, their income was several times higher than mine – and please note, as a professor and chief of the clinic I was not exactly badly salaried. This is changing now, but still in some areas private surgeon can earn by a single operation the monthly salary of a resident. For me, there was never any discussion about going into private praxis.

8. Instead of going directly for a diploma in surgery and finishing your specialty training in the prescribed time, you decided to spend a year in biochemistry and an additional year in internal medicine studying cardiology. Why? Did somebody persuade you to do it or was it just part of a plan that you designed for yourself?

I realized that I am grossly deficient in several scientific areas, and I decided to broaden my knowledge. I had excellent student training in Zagreb, and I still remember some imposing figures, such as Profesor Pavle Sokolić in patophysioloy at Rebro. Nevertheless, I felt that something was missing from my education and that my knowledge of some aspects of medicine was incomplete, especially in modern cardiology.

9. What did you accomplish during these two years away from surgery? Was it a good investment of your time? What did you learn that was important for your future career? Would you recommend such a "detour" to your surgeons in training who are planning an academic career?

Nowadays medical school graduates, at least here in Switzerland, are much better trained than we were some 60 years ago. Nevertheless, the primary goal of medical schools is still to prepare students for general practice. Accordingly, most students have only rudimentary knowledge about various specialties and subspecialties and advances in basic science. Thus I felt that it would be good for me to spend some time away from surgery. My advice to young surgeons contemplating a scientific career is still to take this detour, as a good investment for future life in academia. I strongly advised my son, during his surgical training, to spend some time in research, which he did in Louisville and Cleveland Clinic. He is now, at 48 years of age, full professor of abdominal surgery at the University of Zurich, and co-chief of the Clinic for Visceral Surgery in my old hospital. I would strongly advise similar career steps for ambitious young surgeons considering a scientific career.

10. You went for two years for additional training in the USA. did you do it for some special reasons? Why did you choose to go to medical centers in San Diego, California and Birmingham, Alabama? What did you do during those two years? Did you develop some special interests or skills during your stay in America?

My work in the USA was a crucial step in my career. I was poorly paid, but I had at my disposal a grant of at least half a million US dollars. I spent a substantial sum on the development of the heart-lung machine for newborns: open-heart surgery was at that time mes impossible on small infants. This device I used later in Zurich, where we performed one of the first series of total corrections of congenital heart anomalies in infancy, a truly surgical breakthrough, about which I published several important articles. My stay in US opened my eyes to a wholly different system of surgical education, and showed me the values of learning complex surgical procedures by strictly supervised work.

11. In 1976 you became the Head of Experimental Surgery, University Hospital Zurich. What was your role and assignment in that function? How common is it for the Swiss university hospitals to have an experimental surgery division? Was it a novel position designed just for you, or a historically well-established position from nay years ago?

Establishment of an experimental surgery laboratory was one of the conditions which my teacher, Prof. Senning, requested when he moved to Zurich from Karolinska in Stockholm. It took the government more than 10 years to fulfil this request, but that laboratory finally gave us a tremendous opportunity for new developments. This experimental surgical laboratory remains an important establishment in Zurich, now at a much higher level. For example we are very proud of our modern hybrid experimental operating room, which is so sophisticated that many practicing surgeons would love to have it for their operations.

12. How important was experimental surgery in your life? Did you continue your experimental work even in later life? What were your most important accomplishments in that field?

I am a firm believer in the necessity for continuous research in all medical specialties and that, of course, includes surgery. Even as a full professor and dean of the university, I was always supervising large swaths of experimental work of my staff, doing rounds with them on the wards, discussing most if not all clinical and experimental work that was going on in the department. I always asked my coworkers preparing meeting presentations to first present their data for critique in front of their departmental colleagues. I participated almost always in these meetings not only because I was interested to hear what they have to say, but also to show all concerned that I promote and support research, science and excellence . Finally, I should add that I took very seriously the presentations and lectures that my collaborators were preparing for various meetings. Before they left for such meeting they were all required to make a rehearsal presentation in the department in front of all of us, and I almost never missed to be there in the audience.

You asked me to name some of my most important accomplishments. Cognizant of the fact that time is a great equalizer and that with the passage of time many of my published work may not sound so important as ity appeared to me or my peers many decades ago, allow me to list just a few that meant a lot to me then, and even now. Here are four of my endeavors, which I think promoted the practice of modern cardiac surgery: 1. Baby pump oxygenator for infant open-heart surgery; 2. Biventricular artificial heart; 3. Innovations in heart transplantation ("Reuse of the human heart", as an example, although an oddity in medicine), and 4. Support and assistance provided to Andreas Grüntzig while he was developing the percutaneous transluminal coronary angiography (PTCA), including experimental work in coronary dilatation, and later helping him in establishing a clinical program. Only massive surgical help in salvaging his early failures led to the breakthrough of this revolutionary method in the treatment of coronary heart disease.

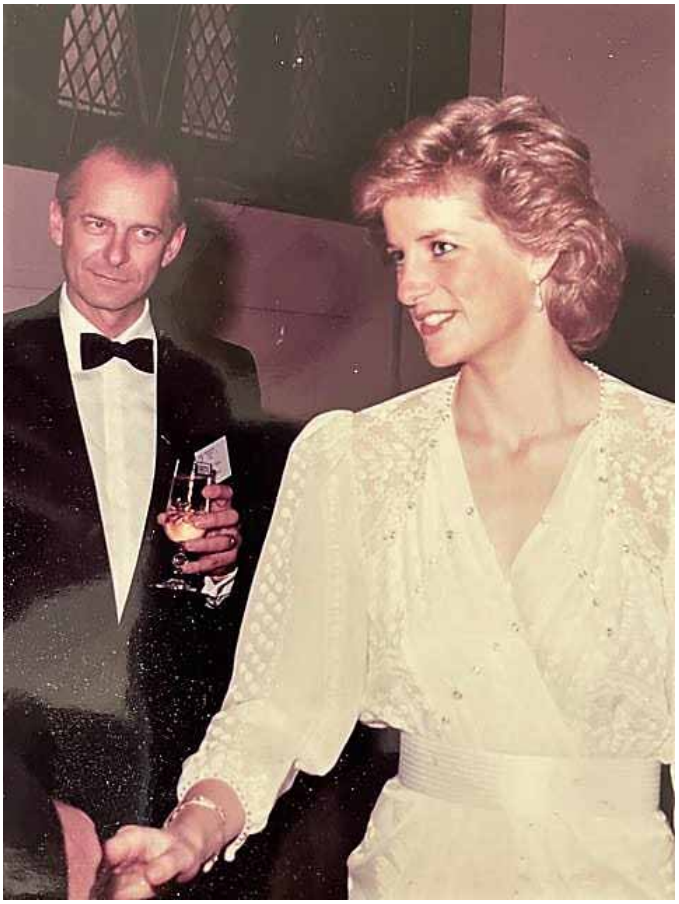

Figure 4. Audience with Princess Diana

Figure 5. Honorary membership in Croatian Cultural Society in Zurich

Figure 6. Audience with Pope John Paul II

13. As a cardio-thoracic surgeon you covered the whole gamut of your specialty. However, there were a couple aspects of cardiac surgery that attracted more of your attention than other fields. Is that true?

Yes: Surgery of congenital heart anomalies, assisted circulation and transplantation, arrhythmia surgery, grown-up congenital surgery preoccupied me the most and for the longest period of time..

14. Looking at your curriculum vitae and the list of your publications I chose some of the key words for my next questions. Let's start with your pioneering work on the artificial heart. Tell us a bit more about your contributions to this fascinating aspect of cardiology, please.

As many new developments, this is a strange story. In late seventies, an Italian bioengineer Roberto Bosio came to Zurich with his own artificial heart model. Too large to fit into the chest, but capable of pumping up to 5 L/min. At those times, quite a number of patients were dying after an initially successful heart operation, due to poor or non-existent myocardial protection (aorta must be clamped during many procedures). After extensive testing in the laboratory and many modifications, I implanted this system in a series of patients which we could not detach from pump oxygenator after otherwise successful open-heart surgery. And we had first survivors; one of them survived more than 15 years after surgery, and I was getting thank you letters from him every year. We even made it to the New York Times Fig.1 …

15. You had a long-lasting interest in the treatment of myocardial infarcts: repair, revascularisation, resection and other modalities of cardiac surgery figure prominently in the titles of your papers. How would you summarize your contribution to the treatment of coronary heart diseases?

Probably best by extensive training of my co-workers, first by example, then by assisting them at these complex, time-consuming procedures following strictly my own protocol. Clinical success of their work awoke their interest in the field, and they started publishing data about our work. And inspiring them by pushing the limits of surgical procedure in critical situations, e.g., under continuous reanimation, infarction VSD, ascending aortic and thoracoabdominal aneurysms, and similar critical situations. Our salvage of all disasters after first PTCA belongs here as well.

16. You did a lot of cardiac valvular surgery and experimented with various artificial valves and bioprostheses. Why did this aspect of cardiac surgery fascinate you so much?

In sixties and seventies, even into early eighties, valve prostheses were far from perfect. We have established a long-term follow-up facility, and we knew exactly how each patient was were doing after surgery, and we followed them all for many years. Therefore, many deficiencies became evident, and we shared our experience in the literature, and helped in developing modified or newly designed valve prostheses.

17. Valvular reconstruction is important for children with congenital heart defects. I understand that you have done quite a lot in that field as well. Give us one or two examples of your work with paediatric patients.

I have worked with children with congenital heart defects for many years. First open-heart surgery in neonates in the seventies, systematic follow-up and long-term evaluation of surgical procedures for complex malformations like transposition of great arteries, heart transplantation after previous correction of congenital anomalies, to mention a few.

18. Surgery or arrhythmia, is yet another interest of yours. I read somewhere that 30-40% of men and women over the age of 70 years have arrhythmia or some other conduction system problems. Most of them are treated with drugs. Who are those that will need surgical treatment? Is this type of treatment based on standard protocols or still in an experimental phase, when all else fails?

Due to my work in the experimental laboratory, I was involved in many heart-stimulation experiments. My teacher, Prof. Senning, earned his place in history as the first surgeon to implant a pacemaker, in a patient who incidentally survived for more than 40 years - that is a true surgical success! Following in his steps I also developed and interest in arrhythmias and continues implanting as well as testing various pacemakers. As an aside,allow me to mention that I was the first scientist to produce an artificial total atrioventricular (AV) block by catheter. However, I never thought this might become a new field of studies, and, apparently, I kind off missed the boat there. Look at the vast number of arrhythmia procedures done now by cardiologists! And their techniques are very good, much better than our surgical control of Wolff-Parkinson-White (WPW) syndrome in those early times, although we had a substantial positive experience, probably the most extensive in entire Europe in early eighties.

19. As a pathologist , I could not resist asking you about the heart tumors, which you treated and wrote about them in medical journals. Was your Department a Swiss reference canter for those rare tumours and tumour-like conditions, such as fibroelastoma, lipomatous hyperplasia of the atrial septum or sarcoma of pulmonary veins?

I must confess that we came into this field by chance. Our Department was for many years the largest and the best known cardiosurgical centre in Switzerland.Thus we were receiving truly

difficult cases,and by necessity we started performing surgery on heart tumours, pulmonary artery sarcomas, and similar problems few people wanted to deal with. These cases just came to us at random. Still, tumour surgery of the heart and great vessels remains a difficult and complex field, and some of the extensive procedures used in those operations , such as resection of pulmonary artery sarcoma, had poor long term outcomes..

20. As a surgeon you are interested in blood coagulation and how to prevent it. You are not only interested but you also did some research in that field. How important is it for surgeons to be involved in coagulation research?

Today less than before: it is the anaesthetist who manages perioperative anticoagulation, and we enter the picture only in procedures involving left ventricular assist device (LVAD) , artificial heart, or extracorporeal membrane oxygenation (ECMO). And here we again completely adhere to the advice of haematologists. Proper anticoagulation in difficult situations like heparin-induced thrombocytopenia and thrombosis syndrome (HITTS) remains a challenge.

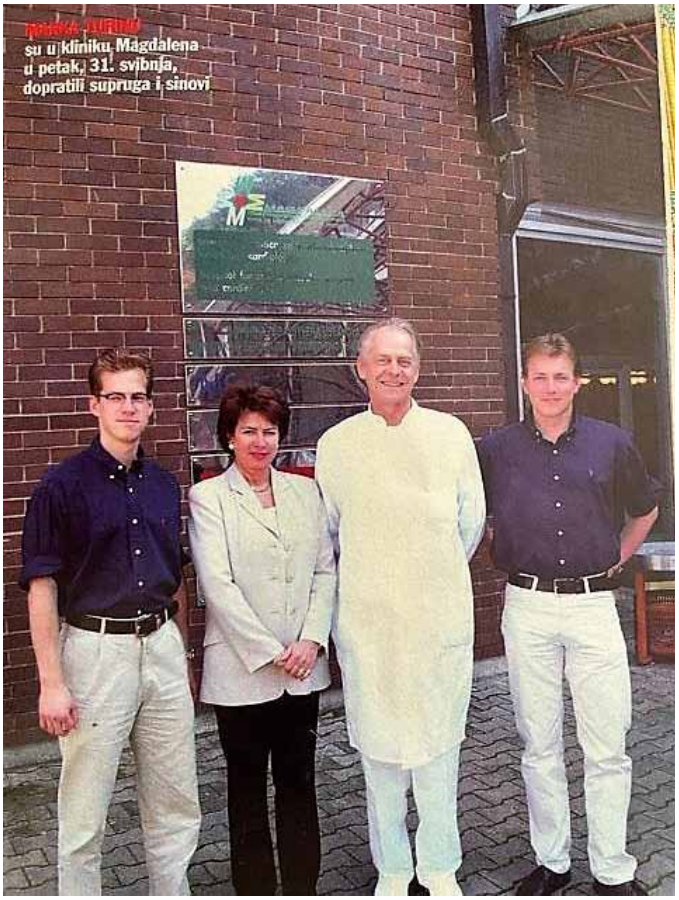

Figure 7. With my family, at the newly opened Hospital for Cardiovascular Diseases Magdalena, in Krapinske Toplice

21. To switch gears and lanes, let's turn to some other aspects of your career. You have an impressive list of publications attached to your CV. Could you give us some statistics and tell us how many papers did you publish, how many citations did they garner and what is your H-index?

OVID shows presently 974 publication under my name. I just looked up my recent H index which now stands at 87. Of course this number might be inflated due to the inclusion of publications of some other author's, who might have the same name. I am sure that some of these papers were written by my son who is also M Turina. The same holds true for Ovid count: difficult to preen out other authors with same name.

22. What is your most often cited paper?

It is ridiculous to say, but my highest quoted paper stems from the days when I was the editor of the European Journal of Cardio-thoracic Surgery (EJCTS). In that function I participated in a working group formulating "Guidelines for Reporting Mortality and Morbidity After Cardiac Valve Interventions", Ann Thorac Surg 2008;85:1490–5. Here is a hint to young physicians who want to increase their citation index: Try to join professional bodies or groups that are formulating guidelines. These guideline are usually published and are often cited , which will increase your citation and H index. My paper on guidelines for reporting the outcome of cardiac valve procedures is such a paper; it is cited often since every author dealing with cardiac valve interventions feels obliged to cite these guidelines.

23. You were editor of a very prestigious journal and were member of editorial boards of several journals. Tell us about this aspect of your career.

With the number of my publication increasing, I was asked by many notable journals to become a reviewer, and then a member of the editorial board. I served at editorial board of the Journal of Thoracic and Cardio-vascular Surgery (JTCVS) and European Heart Journal. In 1993 I took over the editorship of the EJCTS., which I had to abandon in 1999 when I became the President of the European Association of Cardio-thoracic Surgeons (EACTS) 2001/2002. Being the editor is a time- and intellectually- consuming task, but it is also a rewarding activity: one knows everything which happens and is due to happen in your won filed of expertise. But you must invest a lot of time in this work. As an oddity, I became the Editor of the EJCTS and just shortly thereafter I became the Dean of the Medical School in Zurich. My weekends were spent in the office working. And I had to give up my only hobby, private flying: no time to keep the necessary hours.

24. As a surgeon and Head of the Department you have trained a small regiment of surgeons. How does one teach young men and women to become surgeons? List please your 3 most important principles.

It is like military: the only way to lead in a difficult field is to lead by example. Three times daily, at 8 AM, 3 PM and 8 PM careful rounds in ICU and discussion of all problems emerging during the day or in the night. And in surgery, you teach first by demonstrating, then by carefully assisting in the procedures, and thirdly by continuously monitoring your associates' (and your own) results.

25. And old adage is that surgery is learned by doing; it cannot be learned from books. Is apprenticing or "on the job teaching" still the best way of transmitting your knowledge and experience to your trainees? Does modern IT technology help you in teaching new generations of surgeons?

Old saying among American surgeons was the infamous "See one, do one, teach one". Luckily, we are past that stage. Teaching in the operating room remains an essential component of all training programs, but the development of new simulation systems, surgical models and PC assisted training is making major changes. Modern simulators enable the trainees to practice different steps of the procedure repeatedly, until they are almost automatic, and the work can be monitored from distance, by TV observation and recording of all steps of the procedure. I was involved repeatedly in such teaching, and I was always surprised that some basic steps, like tying quickly and safely the standard surgical knot, seems not to be properly taught anymore.

26. Do you keep a list of your previous trainees and do you know how many surgeons did you train?

With only one exception, all my senior associates made an excellent career in cardiovascular surgery. And the one exception rose even higher: he is now the director of our University Hospital, one of the highest positions in the strictly controlled Swiss medical system. I supported 18 of my associates to the "Privatdozent" level, approximately PhD equivalent, and 7 of them became full professors in other centres. This fact I consider to be one of my greatest achievement, of which I am very proud even today.

27. Among your trainees is also Dr.Tomislav Mihaljevic, who is now the Director of Cleveland Clinic. Did he consult you before he took that job?

Tom Mihaljevic came to us from Zagreb via Vienna, without any previous experience in heart surgery. We were short of staff, we noticed his quick mind, and put him shortly after his arrival to be resident in charge of the intensive care unit(ICU), a difficult and responsible position. His stay in ICU was a huge success, and all nurses loved him, and they are difficult to please. It was difficult to extend his Swiss residence permit, and I arranged for him to continue his training in Boston with late Dr. Larry Cohn, that he completed with enormous success. At the end of his residency in Boston we had a long phone talk: he impressed everybody at Harvard, and they wanted him to stay; simultaneously he was offered a top position at the Cleveland Clinic. I strongly suggested to accept the latter offer. I told him that it is difficult to have a career in the same place where you started at the bottom of the ladder. After Tom left for Cleveland, Larry Cohn refused to speak with me for many years.

29. During you long career you were the Chairman do the Department of Surgery and the Director of the Cardiovascular Clinic of the University Hospital Zurich. Huge administrative jobs and enormous responsibilities! How did you manage to do it all at the same time, while you were so busy in the operating room and research?

I am afraid that I neglected my family considerably. Luckily for me , my wife, an anaesthesiologist, knew how imports for me is my works , and was extremely supportive. Both my sons, when attending the school, told us that they will never become doctors; still, one of them is now professor of surgery!

30. And then you became the Dean of the Medical School. To paraphrase it from the article that you wrote for the website *mef.hr* , "as the first graduate of the Medical School in Zagreb who became a dean in Zurich". What did you accomplish during your Deanship? What did you learn from that experience?

Working as the Dean of medical school is like walking through a minefield: so easy to make a misstep. And at the end of my tenure, many of my colleagues in the hospital would not greet me passing by me in the corridors as if they never knew me. A friend of mine mentioned that in any higher administrative position, every time you make an important decision , at least 5% of your colleagues will be mad at you. By the time you made 20 decisions, you can do the math yourself: everybody is against you … My luck was in part related to the strange authority vested in the academic position that I held as the chief of a major surgical department; it helped me to assert myself as a dean,even though I started working outside of my own narrow field of professional competence. Soon after assuming that position I realized that the existing organisational structure of the Dean's office in Zurich, mostly due to poor administrative support , was totally inadequate for these changing times in medicine. I succeeded in reorganizing Dean's office and I would consider this as my major accomplishment during my Deanship. I expanded the personnel and reorganized the structure of the office to make it

more functional. Unfortunately, most of these changes were fully implemented only after I left the office. Dean's term of office in Zurich was in those times limited to 6 years, and thus I did not have enough time to fundamentally change all things that were not functioning..

31. In the same article you said that you accepted that honour "for my Zagreb". Obviously Zagreb and Croatia are deep in your heart. Could you list just a few things that you did for Zagreb and Croatia?

I was always proud of my heritage, although being a Croat was not easy, even in old Yugoslavia. When Croatian independence was announced, I helped various Croatian association, and became even the honorary member of the Swiss Croatian Cultural Association. When I visited President Tudjman in Zagreb, he offered me immediately the position of Croatian Consul in Zurich. But my Swiss authority, Minister of Science and Education in Canton Zurich, advised against it: it would not be compatible with my professional standing. And that was the end of my diplomatic career. But the minister was probably right to advise against such a position which would have required dealing with a number of mundane everyday problems such as getting drunk Croat citizens out of jail.

Later, I helped with the organisation of the new cardiac center Magdalena in Krapinske Toplice. The Magdalena team was trained in Zurich, and I was traveling to Croatia on my a weekend for several years, performing cardiac operations or assisting my Croatian colleagues while they were performing them. I am very proud of that achievement, since I think that I have helped establish a modern heart hospital in Croatia. Furthermore I taught my Croatian colleagues how to apply up to date cardiothoracic surgical techniques that we have been using in Zurich. Using the well established team approach that we have perfected in our department in Zurich. I am proud to report and very plased that my Croatian colleagues, who are using the Zurich approach to cardiac surgery, have been achieving excellent results which are comparable to those in my department in Zurich.

Figure 8. At my visiting professorship at Harvard, 2003: from left to right Prof. Larry Cohn, Dr. Tomislav Mihaljevic, Marko Turina