

Honorable Rector Magnificus, Prof. Dr. Danijel Rebolj,
Honorable Dean Spectabilitas, Prof. Dr. Natasa Vaupotic,
Honorable most learned Prof. Dr. Marko Robnik, Director of CAMTP,
Honorable Members of the Senate,
Honorable Deans,
and honorable most learned Professors of the
Univerza v Mariboru in Fakulteta za naravoslovje in matematiko,
[[Honorable Mayor (Representative) of the City of Maribor,]]
Ladies and Gentlemen,
Dear Colleagues and Friends!

Kindly accept my sincerest gratitude for awarding me this outstanding honour of the Doctorate honoris causa, the Castni Doktorat of the Fakulteta za naravoslovje in matematiko. - I am very moved. - It is a great honour for me to receive this high award from a University and a Faculty, whose excellent scientific contributions I highly respect and admire since many years. University, Faculty, and their precious stone and jewel, the internationally very well-known and visible CAMTP, stand for scientific excellence and originality, for stimulus and emanation. Thus I can be and I am very proud to be your Doctor honoris causa! - And I am particularly grateful to all, who so wonderfully ornamented this ceremony with their presence and so very kind and warm words in my honour. All this will make this event quite unforgettable for me.

Please accept as a sign of my highest appreciation of the University of Maribor and the Faculty of Natural Sciences and Mathematics, and as an expression of my highest respect for the audience, for the award and my deep gratitude, if I follow the old tradition for doctoral graduation of presenting and defending some (three) general theses. My more extended physical thesis I already have explained and defended in my talk this morning as the opening lecture of this Christmas symposium.

Theses for the doctor h. c. disputation

Siegfried Grossmann

Maribor, 8th of December 2011

Thesis 1. Physics educates. - Physics is a part, indeed is **one** part in the great, masterly "Symphony of General Education".

If I address physics in particular, I also have in mind the other sciences as e.g. chemistry etc. And I should include the humanities too, but I better refrain, since that is clearly beyond my expertise.

a) Education through physics means trust in rational mind and the experience of solid law: Law, valid for everything and all, holding without exception, and seemingly of eternal validity. Physical insight protects our souls against fear and anxiety, enlightening by ratio, insight and explanation instead of thread by avenging ghosts and sable demons.

b) Education through physics gives the wonderful experience of a truth which can be proven, which can be conveyed to others as simply being true. It is a truth of tolerance, a truth beyond belief, a truth founded on experiment, thinking, and clear law.

c) Education through physics rouses our instinct for the new, for being curious, being open-minded. It strengthens our human wishes to create and to design. It enables a responsible life, the participation in modern technical society and our present culture.

d) Education through physics is the experience - which was very influential for me - that the language of Nature is mathematics. That Nature can be dealt with by mathematics, is both, a miracle and deeply satisfactory.

Introducing the next thesis I recall that the physics departments are responsible for the progress in our science but also for a modern teachers' education. My **Thesis 2**: **We shall educate our physics teacher students such that they later on educate and inspire all young people through physics.**

a) The future teachers shall learn physics in a manner, which must be oriented on their future task of "education through physics". They shall address not only the future physicists, but also the future lawyers, bakers, farmers, politicians, bankers, administrators etc.

b) Particularly the young kids are enthusiastic in learning physics. They observe phenomena, on the background of modern every-day life with television, computer games, and so on. Thus teachers' training should emphasize curious observation and vivid experiment, from **all** physics, classical **and** modern, instead of multitudes of calculations and abstract thoughts in traditional fields only.

c) Teachers will teach their classes in just the same way in which they themselves have enjoyed learning at University. Therefore our lecturing at University should be paradigmatic and good stimulus for their own future tasks, which is education through physics and not science.

d) The content of the teachers' curriculum has to be oriented on their genuine future task, as just described. To professionalize teachers' training a curriculum *sui generis* has to be offered, i. e., *a curriculum of its own right*. This will differ from being just a reduced part of the professional physicists' curriculum.

Thesis 3. Humboldt's ingenious idea and heritage of the unity of research and teaching deserves our care and protection.

Teaching is continuously influenced and renewed from current research and vice versa, research is always fed by ideas born from teaching. This unity of teaching and research defines a university teachers' profession.

a) We shall not overemphasize research if that leads to disregard of teaching. Time consuming strategies for research grant application shall not take over, despite the shortage of financial supply.

b) But also, a burden of too large teaching duties will not leave enough room for research, the deep source of our creativity.

c) Both, teaching and research may be weakened by too many administrative duties and an increasing flood of evaluation, accrediting, assessing. It is the same community which has to write *and* to read all that, to do *and* to suffer from it. But our time is available only once and has to be devoted to research and teaching.

d) We have to protect both, teaching and research for the sake of the Sciences, of the Universities, of Society, and - last not least- for the sake of our Culture.

I thank you very much for your kind attention and close with expressing once more my sincerest gratitude for the great honour of being awarded the doctorate honoris causa of the Fakulteta and the Univerza.