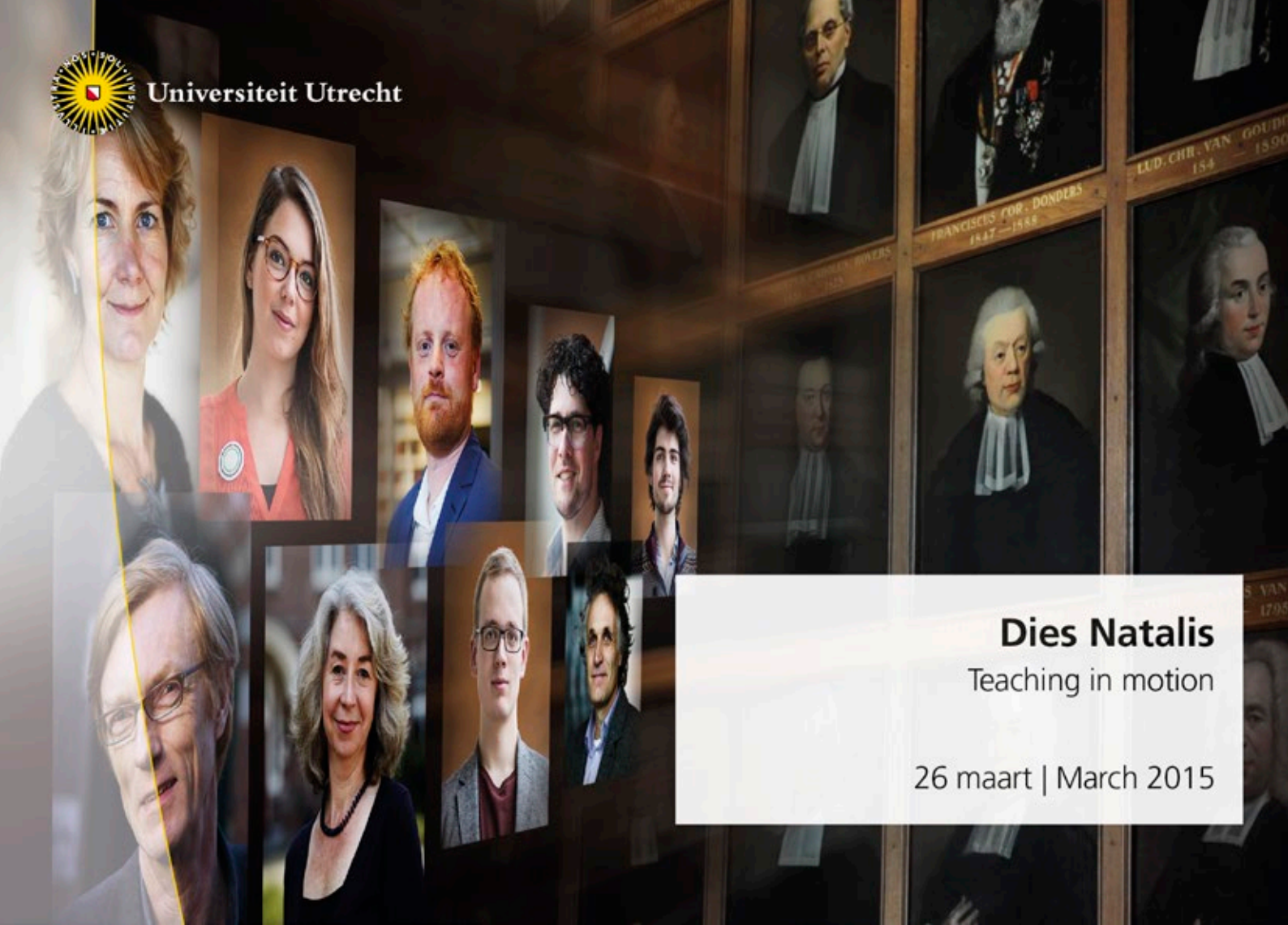




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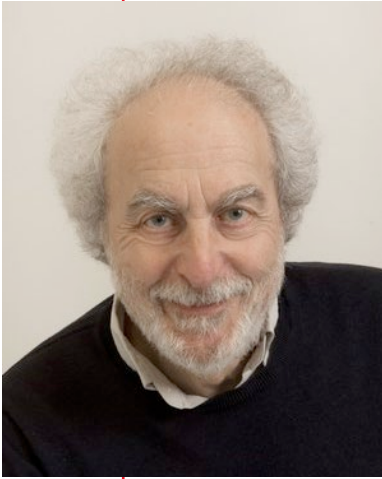
Dies Natalis

Teaching in motion

26 maart | March 2015

HONORARY DOCTORATES
Professor Douglas G Altman
Professor Kurt VanLehn

Honorary doctorates



**Professor Douglas
G Altman, Professor of
Statistics in Medicine at
Oxford University**

Honorary Supervisor:
Professor Carl Moons

In the field of life sciences,
Professor Doug Altman,
founding director of the

Center for Statistics at University of Oxford, needs no introduction. His work and achievements have had and still have world-wide impact, even far beyond his actual discipline: Bio- or Medical Statistics. He has impacted the field by providing pure theoretical improvements, to improving patient care, to developing guidance on good scientific conduct and preventing poor conduct in medical research.

When speaking about scientific impact, it is tempting to start counting. Counting numbers of publications, books, book chapters, and even the so-called Hirsh-Index. Over 850 publications, over 15 books and book chapters, a Hirsch index of 163, and numerous prizes and medals. But with simple counts we do no right to the actual influence and impact Professor Altman has had on medical research in particular, and scientific research in general. As representative of the UMC Utrecht and Utrecht University I would say anno 2015: he advocated science in transition *avant-la-lettre*.

Already his first publications in the 1970's were in the internationally renown journals in Medicine, Lancet and BMJ. In the 1980's he wrote a series of papers in BMJ entitled, 'The Statistics and Ethics in medical research', addressing good conduct and reporting, a topic he keeps addressing until today. In 1986 he brought unprecedented fame to himself and to the Lancet. Together with Professor Bland he published the paper 'Statistical methods for assessing agreement between two methods of clinical measurement', where they explained how to determine agreement and disagreement between two different methods to measure, e.g., blood pressure or any other biological parameter. This paper led to the well-known Bland & Altman method, which is now incorporated in almost every statistical software package. This paper also brought prosperity to the Lancet itself: it became its most cited paper ever. A few years later he did the same for BMJ by advocating another statistical method, consequently becoming one of the most cited authors of BMJ as well. Simply counting one's scientific publications is not necessarily illustrative for one's actual impact: but being the most cited author in Lancet and BMJ does.

Besides his methodological work, professor Altman is also unrivalled by bringing difficult statistical concepts to live for the practical researcher and practicing healthcare professional. Almost every physician has heard or seen his Red Book: 'Practical Statistics for Medical Research'. In this he explains in simple language the essentials and use of biostatistical methods in medical research to support evidence based medicine. Last but not least, he dedicated much of his career to wake-up the world about good and bad conduct in clinical research. He is convenor of about every important guideline for transparent reporting of medical research, a frontrunner for registering protocols of planned clinical research and preventing research waste, and of 'open access' of research data.

With this honorary Doctorate Utrecht University honors an extraordinary scientist, who undoubtedly has inspired medical researchers worldwide, and impacted medical science and practice in numerous ways.

Karel GM Moons

Professor of Clinical Epidemiology, Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht.

Word of thanks
Professor Douglas Altman

Unfortunately this speech is not available. But it can be looked back at www.uu.nl/video - Dies Natalis 2015.



Professor Kurt VanLehn,
*The Diane and Gary Tooker
Chair for Effective Education
in Science, Technology,
Engineering and Math in the
School of Computing,
Informatics and Decision
Systems Engineering of the Ira
A. Fulton Schools of Engineer-
ing Arizona State University*

Honorary Supervisor: Professor Carl Moons

How do people learn? This is a question not only asked by parents, teachers, and children, but also by thousands of researchers all over the world. It is an important question: learning is at the heart of human development. It is also a question that is very hard to answer. Learning depends on many factors: previous knowledge, teacher, instruction, task, feedback, collaboration, peers, and many more.

Technology pervades all aspects of modern life. In education, technology is used to provide and present information, to interact with students, to work on tasks, to construct artifacts, to assess a student's work, or to play. But what kind of learning is supported by technology? How should technology support students?

What is the effect of using technology in education?

In his career, Kurt VanLehn has studied many aspects related to learning, and to using technology to support learning. In this laudatio I cannot mention all his contributions, but let me mention three. For his PhD thesis and his first book, VanLehn studied how people acquire procedural skills in instructional settings, and in particular how they develop erroneous procedures. One of the novelties of this work lies in the linguistic method used to determine the acquisition of problem solving skills. Secondly, building upon this and other work, VanLehn and his colleagues developed Andes, an intelligent tutoring system providing homework problem-solving support for physics. Experiments with Andes provided many useful insights and hypotheses. For example, requiring a student to hand in error-free solutions to homework problems, and helping her produce such solutions by giving immediate feedback and hints, helps learning. Finally, when a student interacts with technology, the technology interprets the actions of the student, and assesses a student. Information about actions of a student is usually stored in a student model. But how can we assess a student based on her actions? When a student makes an error, is it a careless mistake, or does she fail to understand the underlying concept? Modelling a student necessarily involves uncertainty.

VanLehn was the first to address uncertainty in student modelling, and to use such a model in an intelligent tutoring system.

Kurt VanLehn has contributed to fundamental understanding of how people learn, and how technology can contribute to learning. His work on cognitive skill acquisition, student modelling, feedback, and intelligent tutoring is used by, and provides inspiration for, many researchers and educational tool developers to further improve and support student learning. And by improving learning, we improve the lives of people and their environment. I'm very happy to award an honorary doctorate to Kurt VanLehn for these achievements.

Johan Jeuring

Professor of Software Technology for Learning and Teaching at the Institute of Information and Computing Sciences, Faculty of Science, Utrecht University

Word of thanks

Professor Kurt VanLehn

The work that I have produced, and even the person that I am, are the product of the efforts of my mentors including especially my wife, Micki Chi, a renown learning scientist, as well as my colleagues, my students and many others. On their behalf, I am proud to accept this honorary doctorate from Utrecht University.

However, my work, or perhaps I should say, our work, is not yet done. The work is to understand the difficulties that students have in learning mathematics and science, and how we can use technology to increase their learning.

I became interested in this problem as a graduate student. I began by studying how young children learned simple arithmetic procedures, such subtracting two multi-digit numbers. I discovered that many of the errors that children make can be explained by assuming that when they get stuck, they don't just quit. Instead, they invent a reasonable way to continue which, unfortunately, is not always correct.

This discovery suggested that a good way to teach would be to provide help at the instant a student got stuck and was seeking a way forward. Perhaps technology could provide students just exactly what they need to know at exactly the time they need to learn it. Such systems are now called intelligent tutoring systems, because like a human tutor, they know the right ways to do things but only reveal their knowledge when the student has tried, failed and needs help.

By now, I was an assistant professor, full of confidence and perhaps even arrogance at the potential power of intelligent tutoring systems. So my colleagues and I built a tutoring system that could help students solve homework problems in introductory physics classes. Data from semester-long classroom studies showed that the system worked quite well, raising student grades substantially. However, it appeared that there was room for improvement because human tutors do many other things besides giving just-in-time feedback and hints.

Now an associate professor, my colleagues and I tried to improve tutoring systems by studying human tutors and making our computer tutors approximate them even more closely. For instance, we built systems that could carry on a pedagogical conversation with the student in typed or even spoken English. Confident now that our computer tutors would be nearly as effective as human tutors, we ran experiments

comparing them. It turned out that all the tutors-human tutors, ordinary intelligent tutoring systems and the new, improved intelligent tutoring systems-produced the same learning gains. Results from other labs found the same pattern of results.

Of course with any success there are limitations. Perhaps the major limitation of intelligent tutoring systems is that they teach a certain class of cognitive skills such as solving well-defined problems in math, science and other fields. In retrospect, this limitation makes sense. Acquiring a high degree of cognitive skill requires hours and hours of deliberate practice. Such repetitious activity is ideal for computer tutors. They are like the robots in a factory. They are essentially perfect at what they do, but they can do only that one thing. Viewing these systems as "robotic" rather than "intelligent" may help us see where in society they are most likely to be useful.

Nowadays, I consider the teaching of cognitive skills to be a "solved" problem, so my recent work, along with others in the field, has focused on using intelligent tutoring system techniques to increase collaborative learning, where small groups of students try to help each other learn. It is an exciting time, and Utrecht is one of the world leaders in this new development. I am honored to be receiving a degree from this great university.



**Anniversary Address
'Teaching as conversation'
Professor Frits van
Oostrom**

Mijnheer de Rector
Magnificus, Dear audience,

In our day and age, it's hard to think of anything that has not changed fundamentally in recent times. But having said that, it is my firm conviction that teaching still is, as it has always been, essentially a charismatic process. Teachers should be not merely a fount of knowledge but also a source of inspiration to their pupils. And to a certain extent a role model, setting an example through their behaviour - even if each pupil will then interpret that in their own way. Charismatic teaching is not a question of the pupil simply imitating the teacher, it's about showing that expertise is so much more than just a toolkit but how it is embedded in an attitude.

Such teaching works best in a format where the teacher and the pupils can engage in conversation. Books should be kept preferably on the shelves and give way to verbal interaction between teacher and pupils. Socrates and Jesus, of course, are celebrated examples of charismatic teachers who relied on the spoken rather than the written word. They gathered their pupils around them and inspired these people for life with their words, and through them enlightened posterity until today. These two men were of course exceptional figures who tower far above any of us. But the importance of charismatic teaching is all the more evident precisely because it so often reveals itself in little ways.

When I arrived at this university in 1971 as a freshman, the department of Dutch language and literature had just started something new. Each member of the staff was assigned a group of first-year students for what was called a tutorgroep, tutorial. It was to serve as an informal monthly discussion group next to the regular teaching programme. There were no grades or certificates hinged on the outcome. The gatherings were an end in themselves, a free-ranging conversation about whatever the participants wanted to share. I was put in the group tutored by Professor Gerritsen. We would come together in his office where he gave us insight in the research he was conducting at the time and that was due to appear in book form one year later. This was a two-volume edition of the Antwerps liedboek, or Antwerp Songbook, from 1544 that Gerritsen edited in collaboration with Utrecht musicologists. The texts in the Antwerp Songbook

seemed deceptively straightforward at first, but when examined more closely, they turned out to be quite complicated, even for an expert like Professor Gerritsen. I can't remember us agreeing on a definitive interpretation of a single song in our meetings, but that wasn't the objective in the first place. The Antwerp Songbook was really a catalyst, the camp fire around which we sat and that invited us to talk about our discipline, our studies, our related interests and life in general.

One of the students in our group was a shy and socially inept person, but he felt safe enough in this setting to open up. Another student decided mid semester that Dutch Language and Literature wasn't for him after all and he switched to Medicine. "Jan Bernard will become a psychiatrist," said Professor Gerritsen - and that's exactly what he went on to be, fifteen years later. And then there was me. I can't help it - I found it all utterly fascinating from day one. In the first place that medieval Dutch, with its intriguing mixture of the strange and the familiar. But equally fascinating was it to see an impassioned scholar at work, to witness how he weighed up his interpretations and involved us in his considerations, welcoming our humble attempts to provide some input. It came down to the transfer of knowledge, skills, and love at the same time, with happy opportunities for an occasional laugh, and the experience touched both our hearts and minds.

In retrospect it was a classic example of what Frans de Waal calls BIOL: bonding and identification-based observational learning. And it was highly contagious in my case. I decided to study further in this specialist field, becoming Professor Gerritsen's student assistant a few years later, and his PhD student after that. And when Professor Gerritsen gave the Utrecht Diesrede on this very same day in 1978 from this very same pulpit - in prachtig Nederlands - I was one of the people in the captivated audience, undisguisedly proud of the orator I could by then consider, as I still do today, my leermeester.

Dear audience, I'm sure many of you have similar memories of charismatic teachers who made a difference in your lives. Our most intense memories of our education are nearly always of a teacher, not a textbook. In particular, the togati among you will surely all have had their mentors like I did. The history of our university is paved with stories about predecessors and successors, the latter more often than not taking a different direction or even rebelling against their erstwhile mentors; but if they were honest, always remaining grateful to them. And the most precious memories were often not what these mentors wrote but what they said and what they so to

speaking embodied: that their work was not just what they did, but who they were.

Nowadays, the Internet gives us round-the-clock access in our own homes to some of the most formidable teachers in the world. When I was working at Harvard, our recent honorary doctor Michael Sandel was already famous on campus for his Justice course, which he used to give every year to a thousand students in Sanders Theatre. Ten years later, the course was turned into a book, which enabled me to recommend Michael Sandel to students here. As a medium, however, that book has now been eclipsed by the MOOC (or Massive Open Online Course) version of Sandel's lectures that became available in 2013. According to YouTube, more than eight million viewers around the world have now been able to experience Sandel's Socratic mode of teaching - I suppose even Socrates himself would be impressed. Academia has only just begun to explore what MOOCs and blended learning can contribute to our teaching. We're cruising a global campus now.

This being so, should we still believe in brick-and-mortar universities? We'd better, if only because Utrecht University - even without being a residential college - currently occupies some 80 buildings with a total of 600,000 square metres of offices and classrooms, the equivalent of about 150 football fields. And if we still cherish the university as a physical entity, we will have to keep investing in teaching face-to-face. Fortunately there is also sound empirical evidence that this is the best approach. In his book *Making the most of college*, Richard Light, professor at the Harvard Graduate School of Education, asked American students to look back at their student days and identify best practices. What got the highest scores were memories of making music with fellow students, which may humble us as academic staff. But we still come a good second in a specific role, for to quote Richard Light: "Part of a great college education depends upon human relationships. One set of such relationships should, ideally, develop between each student and one or several faculty members."

In a much larger and more detailed survey, Alexander Astin, Director of the Higher Education Research Institute at UCLA, asked a cohort of 25,000 American alumni of 159 universities "What matters in college?" The findings were as diverse as the universities in the study, but one factor emerged across the board as particularly significant: the amount of student-faculty interaction. Astin found "significant positive correlations" everywhere between this parameter and "every academic attainment outcome: college grade point average, degree attainment [rendementen], graduat-

ing with honours, and enrolment in graduate or professional school". This interaction also had "a number of positive correlations with behavioural outcomes and career outcomes". Indeed, Astin concludes that "these findings highlight the critical importance to student development of frequent interaction between faculty and students".

To summarise, whether we are talking about the circles of Socrates or Jesus, or present-day music academies, sports fields, restaurant kitchens, building sites or universities, personal contact with exemplary teachers has always been and remains paramount. What we see here is actually the backbone of the old guild system - the interaction between the master and his apprentice. The VSNU, the Association of Dutch Universities, carries the master-apprentice metaphor for years now in its beauty-case. But I fear the rhetoric is increasingly out of line with actual practice. That applies in particular to the Bachelor phase, which we must not forget for most students will account for the lion's share of their academic experience.

At a conference that our university organised a few years ago as part of the Sirius Programme, the main finding was that students showed a deep-seated desire for university to be fundamentally different to the secondary school they had just left behind. Certainly in the Netherlands, secondary education is increasingly a sausage factory for testing, offering less and less room for individuality in teaching. Shouldn't we make it our mission to turn this around in higher education? But we are not finding that an easy task.

To give one example among many: take the oral exam. I remember having to regularly sit oral exams when I was a student here, even in my first years. You dreaded them; they were a challenge but they were also an opportunity to make yourself visible. Nowadays, orals are becoming increasingly rare. The OSIRIS data files at Utrecht show what proportion of assessments are accounted for by oral exams; I'm showing you the relevant table. There may be some interesting differences between our units but the general trend is clear: oral exams are going out of fashion. In 2005, one in thirty courses had them. That already seems pretty low to me compared with the old days, but ten years later that percentage has even halved.

This decline is probably due to a number of factors, especially time pressure among the faculty, plus a desire for objectivity and the equal treatment of all candidates. To achieve the latter, people have more faith in written texts than in the ephemeral spoken word. This shift from an oral culture to a written culture for examinations obviously reflects a much

wider tendency in universities and society at large. William Clark wrote a fascinating book about the transformation “from academic charisma to research university”. In the distant past, universities were predominantly oral institutions but in modern times they have become dominated by the written word. This applies to academic staff and students alike. It has led to an immense proliferation of writing. Modern academics exhibit themselves in articles, and students in their papers.

No-one can blame Utrecht for aligning with this global trend. On the contrary, it has made us more widely communicative, more productive and in some respects more impartial than before. The old university was undoubtedly more arbitrary and the scene of more unfairness. A notorious case in my student days was a certain Law professor who used to hold his oral exams at home in the old-fashioned manner. But if the professor was not in the mood, a student standing on the doorstep might hear the study window being opened and the professor leaning out to call: “U hebt een zeeeeeven....”

Nobody needs to mourn the passing of such practices. But didn't we also lose something valuable along the way? The system of oral exams may have been time-consuming and susceptible to misuse, but those old-fashioned oral exams also gave students the opportunity to show what they were really capable of and where their personal interests lay, and to talk face to face with an expert about their plans and options, however briefly. Such conversations must frequently have been of great value for both the student and the teacher involved. Our distinguished astrophysicist Marcel Minnaert - we named a building after him - certainly took this view fifty years ago, as he used to hold, on top of all his other work, one hundred and twenty oral exams a year. As well as testing students' capabilities, this would also have been an occasion for conveying passion and inspiration, more than can ever be communicated on paper. And if only today's students' papers and essays were individual work and were discussed in detail, but that too seems to be the exception rather than the rule. Sometimes it seems as if we are all so busy writing that we don't have time to talk to one another anymore.

I see the marginalisation of oral exams as indicative of a fundamental trend. For all the superb facilities offered by the modern university, its teaching has become more remote, less personal, and more programmed. We are focusing increasingly on standard procedures and are less and less willing to deviate from the designated walk. Which seems to be a pity for a creative institution.

Even when we strive for improvement in education, we are inclined to seek standardisation. A telling example is the recent nationwide effort to make our bachelor teaching more engaging. The chosen approach was to focus on the number of scheduled contact hours. The result was a rather depressing scholastic debate in administrative control rooms about the precise definition of a 'contact hour', resulting inter alia in the typically Dutch neologism of *onbegeleide contacturen* 'contact hours without teachers'. This monstrosity is probably a signal of the fact that universities are barking up the wrong tree anyway in treating the amount of contact hours as prime parameter. My feeling is that we should rather aspire to more quality time. That's right, just as in relationships and parenting. Our role is closer to those forms of interaction than we sometimes dare to admit. After all, as teachers we are not just experts in a certain field; we are also educators. We are not just passing on a body of knowledge, there are also intelligent souls to nurture, and that is precisely what makes teaching so rewarding. Or to quote Andrew Delbanco in his book *College*, “The fact that students can be touched and inspired as well as trained and informed has always been the true teacher's aim and joy”.

Conversational ways of teaching are a most appropriate format for that kind of inspiration, and I think we should explore that avenue more often. There are various concrete forms we might consider; I want to mention four options briefly just to give some food for thought. To start with, as I said earlier, oral exams deserve a reappraisal. The same applies to thorough one-on-one discussions of the paper a student has produced. Many will bear witness to the fact that such sessions can feel like a real grilling for the student. But at the same time they will often say that they have rarely learned as much in such short time. Such exercises are also a good setting for a broader conversation.

I also think we should offer far more academic internships. Many of my colleagues will testify that they have learned an awful lot by having been student-assistent - a prime example of charismatic learning. If we add to this the fact that many academic staff suffer from a lack of practical support, I see a huge potential gain here. With as a welcome add-on that students get a much better picture of what it's like to work at a university, a salutary counter-perspective to what I see as the excessive veneration for the private sector as the place to be that seems to be the accepted opinion in the Netherlands at present, even in universities. I would see no harm in putting the financial compensation for such internships somewhat below the relatively expensive student assistants; I

certainly think a scholarship approach is more justifiable here than it is for PhD students. By the way, such 'mentored internships' also featured prominently in Richard Light's survey and I fully support his conclusion that "if a one-time expenditure of this magnitude makes such a difference for student after student, how can we not pursue it?"

My third suggestion -and don't laugh - is to give each student one voucher a year for lunch with a member of staff in any university canteen. It may seem eccentric at first sight, but I know from experience that subsidised meals at Harvard and Columbia where students could intermingle with faculty staff are a widely valued benefit. And finally - why not? - we could consider setting up tutorials by senior staff for groups of first-year students. Why shouldn't it be possible to offer today's students, what I was given in 1971? Our university admits about 5,800 freshmen each year and we employ 850 professors and uhd's. Given these numbers, tutorials with (say) seven students per senior staff member seems not an unfeasible option, rather a choice. It would undeniably cost serious time, but we could decide to regard this as an integral part of our academic mission, and as much part of being a professor as the unaccounted hours we spend every year performing in our toga's (gowns).

High time to wind things down again. Of course we don't have to implement all four options, let alone all four at once. And you could think up numerous alternatives. But I do think the underlying principle deserves to be embraced wholeheartedly. If we acknowledge that teaching has an essential charismatic and conversational dimension, then we should act accordingly. Everyone will recognize that enriching learning experiences are often obtained in an informal atmosphere, just as every researcher knows that important insights often come just when you don't expect them. That is why we as researchers long for free breathing space. According to the same principle, we should cherish such free space in teaching too. Space where students can easily engage in conversations with teachers who convey not only what they know but also what inspires them. Higher education, with its concentration of talent, is ideally suited to a form of teaching that lets teachers and students be creative and I don't hesitate to say playful together, in any language they feel comfortable in.

As for me, I would have far preferred to speak to you today in Dutch, both as a matter of principle and because my mother tongue is the only organ on which I can hit every register. On the other hand, as a medievalist I can appreciate the fact that English has become the new Latin, and like in the Middle Ages

now enables scholars to communicate from Sicily to Scandinavia - and nowadays even from Shanghai to Seattle.

My discipline, the literary history of medieval Dutch, is nowadays a well-established field; but long ago, it was a novelty. In fact, it only became a subject for serious research two centuries after Utrecht University had been founded. As so often, the innovator reached us from abroad. The innovator was someone who crossed borders in every sense, in this case a young German called August Heinrich Hoffmann von Fallersleben. On 5 September 1818, when he was a twenty-year-old student, he met the famous scholar Jakob Grimm in the library at Kassel. The young student spoke enthusiastically about his ambitious plans to travel to Italy and Greece and dedicate his life to the study of Classical civilisation. To which the celebrated Grimm responded with a simple Socratic question: "Liegt Ihnen Ihr Vaterland nicht näher?"

This marked a turning point in Hoffmann's life and work. From then on, he devoted himself to the study of Germanic culture including such uncharted peripheral territory as Denmark and the Low Countries. He pawned his Homer to an innkeeper and instead of travelling to Athens, he set off for Utrecht and other Dutch and Flemish towns. Everywhere he went, he delved into the libraries and revealed Middle Dutch treasures that had been ignored by scholars until then. That was how he discovered the only remaining copy of the Antwerp Songbook; he was also to provide the first scholarly edition of this text. Hoffmann's work provided the foundation for my academic field - and it all started with a conversation between a scholar and a student.

Rector Magnificus, dear audience, on the threshold of a new year in the life of our university I have no better wish to offer for our academic community than to be the setting for many new inspiring conversations. And I am confident that this will be the case, even if we don't record these conversations in Osiris - which by no means we should start doing now. But there is a danger nowadays that what doesn't get measured doesn't count. To prevent such neglect, we should perhaps adjust the way we organise our teaching, explicitly to create room for conversation.

And if the present-day system allows too little space for this, we should consider to amend the system. And indeed we can - we are (after all) a university. I consider universities the most precious gift we have received from the Middle Ages, more precious even than cathedrals. For while cathedrals are now largely functioning as monuments, the university is a vibrant global phenomenon with new institutions emerging

each year, and hardly ever one is closed. In the success story of centuries of universities, two factors stand out: quality and autonomy. These two factors are not separate, they are deeply intertwined. In fact, they constitute the double helix of the university's DNA. Thanks to their autonomy, universities have always been able to attract what they considered the best people. And vice versa, it is the quality of universities that has always justified their relative autonomy. But: noblesse oblige. Ik heb gezegd. Dixi. Thank you.

Colophon

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