Dies Natalis
30 April 2015, 15:00, Catharinakerk, Stratumseind 2, Eindhoven

Jan Mengelers

Ladies, gentlemen, invited guests,

In 2002 the Cannes film festival featured a very special movie: Russian Ark by director Aleksandr Sukorov. It was special in that the entire movie had been shot in a single take. The movie played out in the Winter Palace in Saint Petersburg and took the viewer through 300 years of Russian history. One location on a single day in one shot: history as an uninterrupted story constantly in motion. From the past to the present, always moving forward in time. You could also imagine such a movie of 59 years of Eindhoven University of Technology. From 1956 till now, uninterrupted, always moving forward. A movie in which you all play your own role, in the past, present and future

So I am pleased to welcome you all here to our 59th anniversary. Our students and staff, friends and partners. And a special welcome to the Mayor of Eindhoven, Rob van Gijzel, Provincial representative, Bert Pauli, the rectos of all the Dutch universities, including our partner university, Utrecht. Also welcome to the chairman of the Supervisory Board, Baptiest Coopmans, and, last but not least, a special welcome to our new honorary doctor, professor dr. Theodore Stathopoulos. Thank you for your most inspiring lecture yesterday!

Our speeches, this afternoon, will be in Dutch. Therefore we have provided handouts with English translations of all the speeches for our guests from abroad and our employees and students who do not speak Dutch.

Next year, in 2016, our university will be 60 years old. Sixty but still some way off the age of retirement, according to our current Cabinet... But this is actually very young in the university universe, which has three generations according to J.Wissema. The university of Bologna has been around for 927 years, Berlin Humbolt University for 205 years and the University of Leiden for 440 years. So we are young ... a titan infant in Academia.... but one that is not without ideals, nor without a goal and a role, nor without method and direction.

The university of Bologna and the other first-generation universities in Europe wanted to offer education. Their role was to defend the truth, their method scholastic, their direction universal in the purest form of the word and their language Latin. The goal of the Berlin Humbolt University and the other second-generation universities was not only to offer education but also to do research. Their role was to unravel the secrets of Mother Nature, their method was monodisciplinary, their direction national and their language increasingly that of their homeland. Our university and others of the third generation do not have two but
three goals: top education, top research and the valorization of scientific knowledge. Our role is to create added value for the economy and for society, our method is interdisciplinary, our direction global and our language increasingly English.

Eindhoven University of Technology was founded in 1956 because industry – and I am not referring specifically to Philips – needed more and better educated engineers. Our university therefore has had strong ties with industry and business for 59 years: they can use what we devise and invent. To develop new sources of light, to make cars more sustainable to drive, to adapt urban development to the issues of our time, to better utilize and manage our natural resources.

Our student teams in particular show the world what we are capable of: the Solar team with Stella – the solar-powered family car – and TechUnited with its soccer robots and care robots. STORM with the electric motorbike that will zoom around the world in 80 days and the students that built the Sagrada Familia in ice.

It will come as no surprise that our work, our task, our method come at a price. Nor will it be surprising to discover my conjecture that government funding will not increase despite the enormous growth in students over the past decade. A hundred thousand students more and the total budget has remained more or less the same. Perhaps – hopefully – the Dutch Science Agenda will be a wake-up call more funding will be released. But it will not raise an eyebrow when I warn that we should not count on this happening... Because it’s quite simple – the more students there are, the higher the budget has to be. And if that’s not the case, then growth will have to be restricted.

So we will have to carry on as we have been doing our whole existence: enable future growth by intensifying our collaboration and cooperation with business, industry and social institutions. Because that is where we have proven our worth: linking science and society, theory and practice, research and application. Certainly because our story, our movie, is played out in the landscape of the Brabant region. Over the past fifty years this Brainport region has become a world-class high-tech region. And for fifteen years, following on from a previous crisis, the partnership between government, research and industry has developed so well that this triple helix now serves as a model for many other regions.

But like our university this partnership between government, industry and science is an uninterrupted movie, a collaborative model for all times. Now and then there is a moment – a ‘still’ – that attracts all the attention and then the whole story seems quite new again. The current still is the direct influence of the individual, the consumer, the end user, on that collaboration and cooperation between entrepreneurs, government and research. By ICT, social media and Data Science. This changes our triple helix into a quadruple helix, the latest expressions of which can be witnessed in Living Labs.
But a note of caution: this partnership means that the usefulness of and need for science could prevail in public opinion and the question is whether a university can cope, can live with this. Because a university, our university also stands for the independence of science, for research driven by curiosity, for the upbringing of a society. Those values are increasingly coming under pressure. ‘Study success’ I think it’s called....

It’s a term that we are now familiar with in another context. It’s the term used by the students in the Amsterdam Maagdenhuis and elsewhere throughout the country to describe the shortcomings of the university organization itself. They contend that changes, which had been set in motion in the past with the best intentions, have gone too far: study success has, they believe, become more important than academic freedom. Do I agree with them? As a scientist – or as a governor? – I say both yes and no.

Yes is the answer in that I agree with their concerns about the lack of contact between teacher and student. I see disadvantages in really big universities, of the enormous ‘massification’ of some studies by overzealous governors. This has made the difference between governing and the primary process and – even worse – between student and teacher sometimes impractically large. Universities have to work on a solution for thus. Each in its own way because every situation is different. Much of the criticism levied about participation, lack of adequate contact between student and teacher, accessibility to the highest level of governorship, is less evident for our university, for our students. Because Eindhoven is not a ‘bulk’ university and because we have consciously opted for small-scale education, a lot of contact hours between student and teacher, and a flat organizational structure. The issue of insufficient participation is hardly an issue here. The issues are high workload, more bureaucracy, the duty of responsibility that overtakes trust in the professionalism of the teacher.

No is my answer to the student movement, I don’t see anything wrong in performance indicators. On the contrary, strong improvement in the education was necessary and the measurement of that improvement equally so. That improvement was vital over the past five years! Neither can we escape the accountability to have to justify what we do with the tax payer’s money. We have to be transparent about the money we get and what we do with it.

Yes, on the other hand, is my answer to the question about study success, since too many indicators, and certainly those that have no use, are an unnecessary burden for the whole organization. So there has to be a clear-out between what is sensible and what is nonsense, between accountability and management drift, between useful information and bureaucracy.

And yet another Yes, in that adopting external guidelines can present a danger, especially if the intended educational performance also has to be demonstrably improved at the same
time and thus simply confirm the beaten path. The danger exists that we fail to adequately focus on the primary process of our university: top education and top research. That’s a job for the executive team, in the broadest sense: we have to create the optimum conditions for our staff and students to be able to undertake education and research as best they can. And that means: saying no occasionally to externally imposed tasks, saying no to unnecessary and unhelpful external influences. In short: to act like a heat shield. Perhaps we have not done that enough in the past.

The British statesman Benjamin Disraeli saw a university as ‘a place of light, of liberty, and of learning.’ In other (my) words: our task is to educate, and educate even more; to help shape the academic thinking of students. Enlightened, free and unfettered. But in the light of academic tradition. This is not possible, of course, without excellent scientific research. It is important to find the right balance between education and research, between education and science. I am clear on this. Someone wants to do exclusively research can better go and work at a pure research institute. Someone who teaches without interaction with research is not teaching academic education.

Implementing these principles is, however, less clear cut; our staff have more to say on that.... But the balance has to be redressed. That is why TU/e decided to bring about this balance between education and the required research effort – I will let the new rector have an opportunity shortly to say more on this subject.

Thus we try to give our staff more time and room to be good academic teachers. Because good academic teachers are incredibly important. For our organization, for our goals and, predominantly, for our students. In their dialogue and in their collaboration they are the basis of our story, the main actors in the movie of our university. You probably know from your own experience how influential teachers are on younger generations.

Unfortunately, TU/e has been hit by the sad loss of two prominent teachers during the past couple of months: Wil Kling and Harm Dorren both died suddenly and unexpectedly. It leaves behind a huge emptiness, both privately and in the university community, something that was so evident during the remembrance services. We will miss them!

Speaking of missing, although in quite a different sense, after today another actor in our story, in our movie, will be missed: a teacher, celebrity and leading light of our university. Because today is the day when Hans van Duijn hands over as rector to Frank Baaijens.

Dear Hans, although we have worked for just a year together, it has been a real pleasure to have worked with you. But I know, also from others, that your role in our story, our movie, has been substantial and significant. In the current era you are the rector with most years behind you. Ten years Rector Magnificus. Not many can match that. Many people will long
associate your name, and quite rightly so, with the Bachelor College and the Graduate School. This educational innovation has made our studies quite a bit more attractive, has ensured that our study results are among the best in the Netherlands and has boosted our intake. As for research, excellence was always your watchword. The recent successes in the grants awarded by NWO and ERC, along with our own IMPULS program for research collaboration with industry are striking examples of this. The arrival of the FOM DIFFER institute to our campus is a tangible outcome and recognition of the quality of TU/e. There are just a couple of your feats... And you pushed through all these changes in your own inimitable style. A style that if I had to sum it up in one word – if that is indeed at all possible – as UNBLEMISHED.

I know nobody who is so prepared as you are to speak so plainly, without fuss, so honestly and directly. No beating about the bush. That can be confrontational but it’s always to-the-point and certainly very practical. In many cases (working) relationships might suffer cracks from such a style, but you manage amazingly enough to carry it off. I can’t think of anyone who gets such a high goodwill factor from those around him. I am convinced that this is largely due to your engagement. Everyone knows that you only want the best for the university and the staff.

Hans, while you have always carried the dignity of your office of rector magnificus highly, you have not always been able to hide the fact, even at official occasions, that you are a fanatical Feyenoord supporter. This has become a kind of ‘running gag’ through the movie of your ten years in office. And it is therefore fitting to typify the other members of the Executive Board as armchair supporters... And yet, every Monday morning the party began as everyone playfully pestered, complimented or consoled each other on the weekend performance of their clubs.

In a movie about a person’s life, family and friends are the most important characters. That is certainly the case for you. I know that you are looking forward after leaving here to spending more time with your wife, Mieke, your children and grandchildren and on your other passion: mathematics. No, you won’t be resting on your laurels, you will do what you usually do, some more inspiring management jobs and particularly devoting your time to what you refer to your four favorite pastimes: reading, kite-flying, soccer and fishing. With your grandchildren of course. Hans, just as many of those around me, I wish you and your loved ones a wonderful new stage in your life. And now we will have to go on without you.

Fortunately, in Frank Baaijens we have found an outstanding new rector. I look forward to working with him. Frank and I both have a connection with this university that goes back to the start of our careers. He will also play a role in the story, in the movie of our university.

In Russian Ark Aleksandr Sokurov told 300 years of history in 96 minutes. On this scale our movie is not even twenty minutes long. So we have time to make what is good even better.
Together with our students and staff, with business and industry, with other knowledge institutions and with the government and the region. Because, Sukorov warned, ‘We must not be afraid of a difficult movie but of a poor one: one that will rob humanity of hundreds of years of life.’

Thank you for your attention.

Jan Mengelers
Lecture on the occasion of the 59th dies natalis (anniversary) of Eindhoven University of Technology.
Hans van Duijn, rector magnificus, TU/e

Dear colleagues, students (my big friends), ladies and gentlemen,

Fifteen, twenty minutes is what I have. The wooden church benches won't take it for any more time. Should be enough to compress ten years of being rector – and a forty-year career. As you know, we engineers are men and women of few words. I can remember a colleague who once took an hour. We, the attendant Rectores Magnifici, took terrible vengeance by saddling the university in question with a massive drinks bill. Those rectors, ladies and gentlemen, are not for pigeon-holing.

When I started as rector in 2005 a big issue was – and you can hardly imagine it now – trimesters or semesters. The whole world was used to splitting up the year into semesters, but in Eindhoven we had trimesters. And the Executive Board wanted to shed this in order to enable our students to also study elsewhere, for instance as part of the 3TU association or at partner universities abroad. So, after some squabbling, semesters were also introduced here by virtue of the brilliant concept of $3 \times 2 = 2 \times 3$: multiplication makes it possible to change the sequence. A trimester has 2 blocks. So I said 'if we can wrap up three of those blocks and get the results either side of Christmas, then that does the job, doesn't it?' Job done then!

And so, ladies and gentlemen, pragmatism got us through the first year: small educational changes that kept our minds quite busy from time to time. Because we all had our own opinions about those small changes. And I was all right with this because I was primarily concerned with the research. We received 3TU funds, we got ready for the KIC’s and we had our own TU/e incentive program (including a well filled ‘pot’ from the rector).

Until such a time arrived that we realized education really couldn't continue in this way. Our annual intake of high-school students stagnated at 1000 – 1100, half of whom dropped out and half of who took ages to graduate. These days the word 'output' at Dutch universities was silent, but our Bachelor output was around 30%. In other words, of those that made it through their first year around 30% graduated after four years of the three-year Bachelor program. Dramatic figures. Something had to happen. In the Christmas issue of our Cursor, our unsurpassed university paper, I was portrayed in a wonderful cartoon as Scrooge, from A Christmas Carol, flogging students with a pointer. Four years ago, in this same Catharina church, I announced that our education had to
change. I said it evidently quite bluntly, in the Rotterdam manner, because many, including the Mayor, were ‘not amused’.

Between 2010 and 2012 all of us, staff and students alike, pushed through an enormous educational transition. I say quite explicitly students and staff. It demanded much from our staff. Many worked so hard and so loyally on the transition / it was quite astonishing. But without the creativity and support of the students, it would not have succeeded. At least, not at this speed and scope.

This led in 2012 to the Bachelor College, where all our Bachelor programs are clustered. The Bachelor College is led by Dean Prof. Lemmens, and we have agreed that this Dean really has a say in things. And, no, it has not become a broad Bachelor as some stubbornly keep suggesting. It is a program of Bachelors with a lot of freedom, whether you want to go deeper by choosing subjects with differential equations, for example, or want to combine mechanical engineering with business studies. The possibilities are manifold, depending on the talent and interests of the student.

In setting up the Bachelor College we were inspired by the University of Utrecht and MIT. In Utrecht we looked mainly at the form of the education (like the wide range of choices, the kind of examining, the number of contact hours) while at MIT we focused on the content. Because it was not only the form of the education and the attitude of students to studying that had to change but our studies were also in need of reform. On the road to modern engineers where the intrinsic knowledge of engineers must be complemented by an international orientation and ability to work in teams. To have an entrepreneurial attitude and be conscious of the societal and historical context of their work. At MIT they have a considerable dose of HASS (Humanities, Arts, Social Sciences) in the programs. We opted for a smaller portion of USE (User, Society, Entrepreneurship).

Our story has also changed. You used to study electrical engineering and that was difficult enough, really difficult. Now you study Electrical Engineering and can complete your studies at Philips working on the incubator of the future. That sounds rather different. Studying engineering to address societal challenges. Sounds more optimistic.

Once the Bachelor College became established, we opted to cluster all the post-Bachelor studies in the TU/e Graduate School for all our Master, designer and PhD studies. The Graduate School also has its Dean, Prof. Fransoo, and we have agreed that this Dean also has a real say in things. And at the Graduate School, too, many of the staff have worked hard to transform the Master program to get it ready for the new generation of Bachelor students. It may not have been such a radical operation as the Bachelor College, but still ....
Ladies and gentlemen, the result is that our university has become more attractive to students than ever before. Things have been turned around. Intake has almost doubled, there is much more diversity, and there are more female and foreign students. We have become a much more representative reflection of society. There is still, however, a lot of work to be done. Just read what the report of Ruth Graham about the Bachelor College has to say. Her list of recommendations (I see them as improvements) leaves TU/e with quite a bit to do. A nice job in hand for the new rector. I am proud to have been at the helm of this educational revolution.

So what has changed in the research over the past ten years? We have become much more strategic in our thinking and we have made cross-departmental choices. It may still be happening within the departments themselves but it has become much less bound within a discipline. Our three strategic research areas – energy, health and mobility – cut across all the departments. The clear choice of these areas has helped to strengthen our European position. This is evident from the Knowledge Innovation Communities, the KIC’s, in which we participate. TU/e is active in InnoEnergy, ICT Labs and recently, in cooperation with the Erasmus University, in InnoHealth. Through TU/e, the KIC InnoEnergy, the arrival of FOM-DIFFER to our campus and Solliance at the High Tech Campus Eindhoven, Eindhoven has become a real energy city.

Our best strategy has been to build strong initiatives around our top professors, like the flourishing Institute for Complex Molecular Systems, the ICMS, that is led by Bert Meijer. This interdepartmental, multidisciplinary and now leading international ICMS is housed in the Ceres building, the former boiler house of the university. Bert Meijer is therefore the boilerman that keeps things steaming there. We also have the High Tech Systems Center led by Maarten Steinbuch and Paul van den Hof, which is the link between the university and high-tech industry. And we address the highly promising field of ‘Data’ through our Data Science Center with Wil van der Aalst at the helm. These are initiatives in which a nice blend of science and engineering is at work and whereby talent attracts other, often younger, talent.

Ladies and gentlemen, universities in the Netherlands have been increasingly tending towards partnership in recent years. The two Amsterdam universities are attracted to each other and in South Holland Rotterdam, Delft and Leiden are cooperating, although generally behind closed doors. What’s the situation here?

There is a constant factor in the 3TU Federation, with our friends from Delft and Twente. Certainly in turbulent times as the in the Science Agenda, it is of great value to have partners in a specific domain, the technology domain for us. I
would sometimes buckle under the load of meetings but, looking back, we have managed to achieve quite a lot in education and research. Like the recently inaugurated CEE, the Center for Engineering Education. Educating engineers is still quite a task and in the CEE we share best practices and work on new projects.

And in Brabant we cooperate with Tilburg University. In September 2016 we aim to start up a Graduate School for data science, with a specific focus on business skills, at a great location in Den Bosch. This is new for us: a little bit of TU/e outside Eindhoven. We are only able to realize this with support from the municipality of Den Bosch and the Province of Noord-Brabant. It promises to be a great success. The companies are already queuing up!

Finally, ladies and gentlemen, our preferred partner, the University of Utrecht with whom we collaborate and cooperate on renewable energy, medical imaging, stem cells and regenerative medicine, porous media and healthy urban living. Just a few weeks ago we had a great kick-off in Utrecht to our joint Darcy Centre for porous media research. Step by step Utrecht and Eindhoven are expanding the partnership, the complementary relationship, building on success, research and education.

Ladies and gentlemen, we are in very good shape, the university is on solid ground. We have a lot of excellent research and education as well as a fruitful partnership with industry. Our incentive program together with industry currently has scope for 270 young researchers. And the number of students has increased enormously. That’s not something that has happened on its own. We demand a lot from our people, at every level. We are terribly busy and we have a lot on our hands. So workload is quite rightly a common matter of debate. Fortunately, TU/e has plenty of engaged staff in house. So let us cherish them and support them in their work. And listen to them. That is a major assignment for the future.

I studied physics here in Eindhoven at the start of the 1970’s and I remember watching a TV program on a Sunday evening and seeing a couple saying to each other “that boy of ours doesn’t jump into everything all at the same time”. And the next picture was of a somewhat confused young man crawling out of a ditch claiming that it was the umpteenth ditch he’d fallen into that day”. And we crumpled up with laughter! Those were different times but times when there was plenty of personal attention. The master-apprentice relationship, the academic teacher, we often talk about it, and it is something I experienced myself. In the Cyclotron building, in the group of Henk Hagendoorn, during my graduation phase. And later when I worked on my PhD with Bert Peletier in Leiden. Every day we would drink coffee together and analyze differential
equations on serviettes and sugar cube wrappers. I learned so much in that direct contact and I hope our students and PhDs do the same.

Ladies and gentlemen, in normal life we try our best to avoid problems. You stay away from them rather than seek them out! But scientists and academics love confrontation. Nothing beats a good problem. Where does a mathematician find his problems? They can be found in the world of mathematics or outside. After all, mathematics is everywhere! In the railway timetable, in climate models, the financial world, you name it.

I got my problems from porous soils by, as it were, sticking my head in the sand (which now and then served me well later on as rector). You see wonderful equations in the ground. Heavy non-linear, often degenerated, singularities, interfaces, multi-scale, anything and everything. And that’s what the subject of my PhD (Leiden, 1979) was. Years of mathematics combined with porous materials/media. It was a fantastic time.

In 2005, quite unexpectedly and without much management experience, I was appointed rector (experience is not really required for this job). You come in to a different world. And through all those people that helped me, I did my work with great pleasure, right up to today. I thank the whole of the university community for this.

Physics, mathematics, porous media, management – they have all determined a lot for me. But what have I missed out? I hear you thinking “when will he mention Feyenoord, he’s always talking about Feyenoord.” No, I don’t mean that. Of course, I mean Mieke! Because if there is anyone who has helped me keep my feet on the ground throughout these years, been a stable factor, no silliness, no airs and graces, it is Mieke. Being a rector means that you are often away from home. And with the added handicap of being frequently in the stands cheering on Feyenoord! Mieke, thank goodness you like to sleep in and read. From tomorrow, it’s back to mathematics and porous media, a bit of managing and much more time for each other. Know what we’ll do? Bit of netflixing!

TU/e: When I look back, then I am both proud and grateful to have served as rector of our university for ten years. I will miss it. Especially the teamwork I have experienced here. We don’t do things alone. I have made friendships in the Executive Boards in which I have been part. Ajax, Feyenoord and PSV have been strongly represented for years in the Eindhoven Executive Board. Where else do you get that – standing side by side? Only in the Dutch soccer team. I would like to thank everyone. Students (my big friends), colleagues, staff of this university, friends elsewhere, thank you all. Take care.
Ladies and gentlemen, things will only get better here. In professor Frank Baaijens TU/e gets the rector it would wish for. He is an alumnus of this university and a professor of Soft Tissue Biomechanics & Tissue Engineering at the Biomedical Engineering department. As a mechanical engineer, a real engineer, level-headed, sensible, he is someone that will nourish excellence, but also keep a focus on the human touch. Frank, please step forward.

Frank, in the past few weeks you have been a rector in training. An intensive period for both of us but a very enjoyable time. We talked a lot and laughed a lot. Now you are ready. I wish you all the best in your new role. Don’t forget to enjoy it. It really is a great job.

Salve, rector magnifice, iterumque salve!!
Dear ladies and gentlemen, colleagues and students (our talent),

As a small boy I used to drive the famous light route with my parents every year, a route that symbolizes the liberation of Eindhoven. And we would regularly make a trip to the Technische Hogeschool, as it was then. We would be amazed at the brand new buildings, especially the main building bathed in light. Never did I think that I would be entering that same main building a decade later as a student. Nor did I think that I would return as a professor after ten years at Philips Research. And certainly I could not have imagined becoming rector magnificus of my alma mater.

The changes the university underwent in its early years were considerable. From a polytechnic with relatively little research to a research-driven university of technology. From rather local higher education to a fully-fledged international university. A university at the heart of society.

This is a dream start as rector magnificus. The university is in excellent shape. Every day 12,000 students, scientists and academics and members of staff arrive at the campus. Masses of talent.

And it is a figure that will grow in the coming years. Internationally renowned scientists and academics. Students that move on to greater things in companies, in research or in government.

Which is good for us, good for this region, Brainport. And good for society as a whole.

The rapid growth of recent years has set us the challenge of continuing to offer top quality small-scale education to a much larger group of students, and to keep the short lines of communication that are so characteristic of our campus. The strong link between education and research that we strive for requires a small scale – personal contact between student and researcher. When students engage in research, and become enthusiastic about it, fantastic powers are unleashed.

Stella is a wonderful example of this. Stella is the world’s first solar-powered family car that generates more energy than it uses and was built by twenty of our university’s students.

Earlier this year they won the ‘Best Technology Achievement’ at ‘The Crunchies’ – the Technology Oscar. They even beat the submissions of Apple, NASA, ESA and SpaceX.
It will come as no surprise that I am really enthusiastic about our student teams. Their creativity, daring and determination are unprecedented. Whether it concerns electric cars, the Robocup or the medical application of proteins, our students continue to be up there with the best in the world. And regularly number 1. That really gives them an unprecedented learning experience.

When you have more students, it is tempting of course to teach in larger auditoria, especially when the level of funding does not grow in parallel with the increase in the number of students. Education is easy to scale up that way, and even more by video-recording a lecture. In itself, this is both interesting and valuable. But is not why students come to us. Here they get answers to their questions rather than to generic questions. Here they come into contact with inspired scientists and academics, and work on challenging, pioneering projects. That creates active, hands-on, small-scale education. That is our education. The education we are proud of.

None of us can predicts the products and problems our students will be working on in ten or twenty years or even what our society needs at the time. But we do know what it takes. The ability to think and to be able to abstract. To be rooted in science. To want to go beyond just knowing and learn to find solutions. You have to know your own field really well, to know where the limits lie to be able to push through them. And yet, at the same time, you must know enough of other disciplines to be able to cooperate. And to be conscious of your social responsibilities.

These are precisely the core values of the Bachelor College, to which Hans van Duijn and so many others have committed themselves. An engineer with a degree from Eindhoven has learned all of that. That’s not something you learn with a video-link, but here on campus, in the company of others.

We have completely rebuilt the education – something you can only do now and then. The whole university has delivered a fantastic performance in doing so. A major step has been taken but we are not there quite yet. Now is the time to consolidate the new development, to expand and improve it. Education of and by engaged scientists and academics, in a way that stimulates the development of students. Education in which student-teacher interaction is central, and in which our passion, love and enthusiasm for our field work best.

And I am in total agreement with Hans van Duijn: We can only provide such inspiring education if we also do inspiring research. These are inextricably connected. Every scientist at TU/e teaches and every scientist does research – myself included. Research is collaborative. With students and colleagues both
inside and outside this campus. Because what goes for our students also goes for others: if researchers collaborate, things happen that would not be possible on your own. As a team you can compete on the global stage. In a team there is room for the specific talents of every player. Operating in teams is something we are good at in Eindhoven, it’s part of our culture and complements the engineering profession. Ultimately what you create as a device, a building, an experiment or a computer program, you do in a team, often a multidisciplinary one.

Ladies and gentlemen, the university is in really good shape. But I do have a couple of concerns. Firstly, the lack of freedom in our research coupled with a high workload. For our research we are virtually entirely dependent on external funding. Our scientists and academics are constantly writing proposals to compete with others to acquire funding for their research, only 5 to 10 percent of which is awarded. So, to stand any chance, you have to take the beaten track, which gets in the way of innovation. While completely free and unfettered research can lead to exceptional results. The discovery of today is the focus of tomorrow. I found that out myself.

I started off as a mechanical engineer solving complex partial differential equations. Now, I have nothing against partial differential equations – I look over at Hans whose passion this is – but at a certain moment I became interested in a biological subject. And this fascination prompted the start of culturing living tissue. I was able to switch to a whole new field because the university had faith in me and dared to invest in me. Moreover, I was able to work with fantastic colleagues around me. It was very special, real pioneering, and made me a versatile scientist in all kinds of ways. And that field of regenerative medicine is now one of the focal areas of our cooperation with Utrecht. It is my conviction that research that is free and driven by fascination is essential to real progress.

Secondly, I am concerned about the bureaucratization of education. In a succession of audits the quality of our education has never been questioned. Committees have been unanimous in their praise of our studies and our alumni. Students and colleagues consider many of our studies to be the best in their field. But there is regularly criticism that the regulations have not been prescribed precisely enough and that we monitor and administrate too little. Of course, education has to be properly regulated, students and teachers must have good regulations to refer to and we must have insight into what goes on. But we must also resist excessive regulation. If we regulate too much, less time and money are spent of the actual education itself. That leads to frustration, especially amongst our lecturers, and ultimately the quality of the education suffers. We have professionals here that work passionately on excellent education and excellent research. Have faith in them.
Despite such concerns, the university is a place of opportunity. TU Eindhoven was born out of a growing need for well educated engineers in the 1950's, a need that continues to this day. Especially here in the Brainport region, which has become one of the world’s leading high-tech clusters. A region with a powerful tradition of public-private cooperation. Cooperation whose aim is to become stronger together and thus be globally competitive. Cooperation that we nourish. And our Impulse program, which Hans van Duijn referred to, is geared to boosting this even more.

Apart from the problems of tomorrow, we also have to work on the challenges of the day after. On issues that come out of the grand societal challenges, for example, in health, energy and mobility. Answers to which can be found via extended and high-risk research. Limits have to be breached and new concepts, products and services conceived. Both existing and new business enterprises will be engaged in doing this. Start-ups that can become the multinationals of tomorrow. Today’s large corporate were once the start-ups of yesterday. High-risk, so high-gain.

In this region we have the unparalleled bustling eco-system that makes this possible. This means that not only the research and education significance of the university is growing but also the economic importance. Breakthrough results of research will increasingly and more rapidly take root in new business enterprises. That is something I am keen to encourage.

I have experienced myself the positive effects of this in our heart-valve research. One of our spin-offs has put the results of that research to quick use in a clinical application. And that led to one of the biggest start-up investments in the Netherlands in the past year. For us this has provided very valuable feedback on the clinical application, and extended research collaboration. This is the case increasingly with research here. It is hugely stimulating and important for society, generating new élan and more economic activity. It gives shape and substance to our knowledge economy. The government can spur this on. By investing. With ambition and daring. The Netherlands needs this, our region needs this. We are ready for it.

Ladies and gentlemen, TU Eindhoven stands for excellent education and research. Key to this is the interaction between our scientists and academics and our students. That demands small-scale education. And time from our researchers. Researchers who are up to their ears in work. To alleviate this workload, we are investing €3 million in the appointment of new scientists and academics. Top scientists and academics for top education.
Ladies and gentlemen, university work is the work of human beings. Our students, scientists and academics and support staff are and make the university. I am both happy and honored to be able to work with such an inspired group of people and with my colleagues in the Executive Board to give the university further shape and substance. It is another career switch for me, and it is fantastic to have gained the trust of the university community to be able to do this. It has not been easy to cut myself loose from my research. Yet I am doing so.

For me, a decisive moment came when I cycled on to the campus from the Dommel tunnel, seeing all those students and researchers streaming on to the campus. Just like 40 years earlier. What could be better than working with all that talent on creating an even better university? When I was appointed, I heard from every nook and cranny: 'It won’t be easy to take the baton from Hans'. Just that shows how much Hans’ work is appreciated.

Hans, you leave behind a very solid university. In ten years you have done so much. A decade of highs for the university. With great successes in our research. Our key programs are fine examples of this. More than ever, you have put education on the map in Eindhoven. The Bachelor College and the Graduate School are testament to this. You saw the need to reform the education, and managed to push it through with all your management might. The impact is huge. We now have a robust intake of students, and their graduation success rate is greater than ever.

Hans, on behalf of the whole university community, let me thank you most heartily for what you have done and achieved for us. I would like to thank you personally for having helped me find my way in the executive tasks of TU/e in recent months. You mapped out a whole educational program for me and took me into the executive circuit. It means that I can begin well trained for my task. You have just regaled me with the diploma. Hans, thanks for all you have done for us. We will miss you as rector. Last, but not least, because of your unadulterated Rotterdam football humor. Fortunately, you will still be part of this wonderful university. But first you will be off on your differential equations tour. Then we’ll enjoy a beer together. Take care.