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“The art of co-creation” Knowledge that matters!



Inaugural address, spoken by
Prof. dr. Dike van de Mheen

Dike van de Mheen (1963) is professor Transformations in Care and director of Tranzo, Scientific Center for Care and Wellbeing at Tilburg University. She studied Health Sciences at Maastricht University, The Netherlands, and is epidemiologist. In 1998 she successfully defended her PhD thesis “Inequalities in health, to be continued? A life course perspective on socio-economic inequalities in health”. She worked as researcher and senior advisor at the Rotterdam Area Health Authority, and as researcher and assistant professor at Erasmus University Rotterdam, Department of Public Health. She was director of IVO Addiction Research Institute Rotterdam from 2000 to 2017. From 2007- 2017 she was professor “Addiction Research” at Erasmus University in Rotterdam. From 2012- 2017 she was also professor “Care and prevention of risky behaviour and addiction” at Maastricht University.

She has extensive experience in research (both quantitative and qualitative) on public health, care research, vulnerable groups and addiction (on both substances like drugs, alcohol, tobacco, and addictive behaviours such as gambling and video gaming). She provides education in the field of health and wellbeing.

Dike van de Mheen has a vast national and international network in her field. She has (co)-authored ca. 150 international publications and ca. 150 other publications. She is member of several committees and (advisory)boards.

“The art of co-creation”

Knowledge that matters!

Prof. dr. Dike van de Mheen

Inaugural address,

delivered in adapted form by Prof. dr. Dike van de Mheen, Professor of Transformations in Care at Tilburg University on Friday 29 March 2019.

“The art of co-creation”

Knowledge that matters!

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Introduction

Mr. Rector Magnificus,
Mrs. Dean,
Colleagues, family and friends,
Ladies and gentlemen,

“Knowledge is power. We all know that saying. But what is knowledge exactly, and what is power? And how do we want to use them? Our trusty old English dictionary gives us the following definitions: Knowledge is “the sum of what someone knows,” and power is “influence and significance.” So when we say “Knowledge is power,” we mean that “the sum of what someone knows” leads to “influence and significance.”

One English translation of the Dutch word “*invloed*” is “impact.” If we use Google Translate to translate that back into Dutch, we get “*krachtige invloed*” (powerful influence). So we are effectively saying that we can use knowledge to exert powerful influence. And that is just what Tilburg University wants – to have an impact on society.

In this address, I will contend that knowledge is more than scientific knowledge alone, and that knowledge resulting from co-creation between science and society has greater impact – it’s all about knowledge that matters!

In November 2014, the then government presented a report entitled “2025 – Vision for Science choices for the future” to the Dutch House of Representatives (Ministry of Education, Culture and Science, 2014). The government’s stated goal was “science with maximum impact.” According to the report, “Science and research produce structured knowledge of our world... A characteristic of science is that it constantly asks questions: each question and each answer prompts a further question.” But such knowledge only acquires societal value if it is shared with society and applied to tangible solutions or products. Two core concepts in this context are knowledge co-creation and valorization (or impact creation). The report broadly defines valorization as referring “... not only to the use of knowledge to gain some economic advantage, but also its use with a view to solving societal issues or contributing to the public debate.” The report advises against waiting until the end of the knowledge-development process before addressing the issue of valorization. After all, at that point the knowledge is already fully developed. People need to be aware of the need for knowledge

– and of the potential end users – at the very beginning of the development chain. The principles of knowledge co-creation require scientists to develop new knowledge of practical relevance, together with their societal partners. The scientists can then draw on the end users’ unique knowledge and skills. Close and frequent interaction with members of the public and with stakeholders is crucial. In this vision report, the government specifically states that “We firmly believe that effective interaction will not only increase the relevance of scientific research but also its quality.” In this connection, the report says that one major challenge is “to be able to make full use of the enormous potential which broad public participation in science offers” by 2025.

Those in political circles, at least, are in no doubt that co-creation is not only necessary, but that it also leads to better and more relevant research. So I am not just a lone voice crying in the wilderness when I say that science and everyday practice can and must reinforce one another. I work at Tranzo, a department of the Tilburg School of Social and Behavioral Sciences. There, we are working towards this very goal, in the field of care and wellbeing. So now, the big question is – how do we do that? How do we organize that co-creation? And more importantly, how can we be sure it really works? Is the conviction that co-creation leads to research that is not only better and more relevant, but which also has greater impact, fact or fiction?

Let us briefly re-visit the Dutch government’s viewpoint. In January 2017, the State Secretary for Education, Culture and Science sent a letter to the House of Representatives about the situation concerning valorization¹, setting out the government’s ambitions for better ways of exploiting knowledge. The subject of the letter was “Science with impact.” The conclusion was that, while it is firmly on the agenda, valorization needs to penetrate further into the heart of scientific work. “We are ready for the next step,” the State Secretary wrote. At a later point in this narrative, I will revisit the issue of how we might structure that next step, in what is known as the “fourth-generation” university. But enough of that for now.

¹ The letter supplemented the above definition by adding that it is an interactive process, in which those who develop knowledge and those who use it engage with one another (Ministry of Education, Culture and Science, letter no. 1120816, 19 Jan. 2017)

What is impact? And how do we measure it?

In 2017, the serving State Secretary for Education, Culture and Science asked the Royal Netherlands Academy of Arts and Sciences (KNAW) for advice on the most effective way of identifying the societal and economic impact of science. KNAW's advisory report was published not long ago, in the autumn of 2018 (KNAW, 2018). A short summary:

We generally understand “societal impact” to mean the exploitation of scientific results beyond the world of academia. Of course, fundamental research does have an impact. It delivers new knowledge and insights that can then be used to further refine other areas of knowledge, but it is not primarily intended to have a societal impact. However, recent publications have indicated that the distinction between fundamental and applied research is becoming less and less relevant. These days, fundamental research can also support long-term societal goals (Bruil, 2018, LERU 2017). KNAW's working definition of societal impact is: “The contribution made by scientific research, in both the short and the long term, to changes in, or the development of, sectors of society and to societal challenges.” Here, the term “sectors of society” refers to the economy, culture, public administration, and healthcare, for example. Societal challenges can include issues such as climate change, immigration, quality of life, the human environment, the rule of law, and security. This definition treats economic impact as an aspect of societal impact.

KNAW also notes that one of the most important forms of societal impact generated by institutions of higher education is education itself. After all, in addition to research, education is our core business. The education of young people, who go on to apply the knowledge they have acquired in companies and societal organizations. However, they can also employ their newly acquired critical capacities to trigger societal innovations. These academically trained people will be our future counterparts within societal organizations. During their course of study, it is important to prepare them not only for lifelong learning but also for “lifelong co-creation.”

According to KNAW, societal impact is not a linear process that proceeds directly from fundamental research through applied research to the ultimate applications. Indeed, this is confirmed by many publications in the scientific literature. The development of new knowledge is an iterative process that involves partners, including societal partners. It is not purely the result of

scientific research, it is also the result of interactions between science and society. The report states that these interactions involve “productive interactive networks.” I will return to this later on. For now, suffice it to say that we use the term “Academic Collaborative Center” in this connection.

How do we measure impact? How can we be sure that co-creation really works?

Let me return to my previous question – “How can we be sure that co-creation really works?” Does it lead to research that is not only better and more relevant, but which also has greater societal impact? If so, then, in addition to scientific quality, we should also be able to measure its societal impact. Broadly speaking, there are two ways of doing this. We can either make an advance estimate or we can try to identify its impact retrospectively.

Retrospective measurement is not a simple matter. There is usually a long interval between the completion of a research project and any resultant societal impact. In the literature (Munro, 2017), this is generally estimated to be about 17 years. Interestingly, about the same amount of time has passed since Tranzo was established. Since then, our workforce has grown from zero to 200. If nothing else, that gives an indication of our impact. There is clearly a demand for this approach to research.

We perform three types of retrospective measurement. Firstly, in terms of output, which involves short-term results such as publications or guidelines. Secondly, we use outcome, which involves medium-term results. In our area of research, for example, this would include topics such as more smoke-free school playgrounds, or better chain care for cancer patients. Thirdly, we use societal impact. This involves long-term effects, in the field of care and wellbeing, a healthier population, and lower mortality from cardiovascular diseases, for example, or a better quality of life for dementia patients. Many measurement methods focus on output and outcome, rather than on societal impact. KNAW recommends that, when measuring impact retrospectively, a range of different methods should be used. This is known as a mixed-method approach. For instance, measurements could be supplemented by “narratives,” as a way of visualizing the societal impact. I, too, will be using the latter approach in this address, in the form of a few video clips.

Attempts to assess an expected societal impact in advance are even more tricky, if that is indeed possible. How exactly do you demonstrate the existence of a causal relationship over a period of 17 years? And how can you prove that a given societal change can be attributed to a specific scientific result? It simply can't be done. Nevertheless, KNAW states that it is possible to estimate a result's *chance* of producing a societal impact. This involves describing what are known as “impact pathways,” based on a “theory of change.” A theory of change is a step-by-step description of how a change process will take place, in a specific context (Van der Meulen et al., 2018). An impact pathway is simply an expectation, so it must be possible to modify and refine it in the course of the process. According to KNAW, this impact pathway can only be developed in conjunction with end users. In the care and wellbeing sector, these are clients, patients, and members of the public, as well as other stakeholders such as policymakers and the professionals working in everyday practice.

Thus, the process of identifying societal impacts is not simply – or exclusively – a matter of “to measure is to know.” Here, “to measure” refers to a quantitative evaluation. In fact, KNAW specifically states that “to measure is *not* to know.” A qualitative evaluation is essential.

KNAW's statements in this regard are not entirely unsupported. The League of European Research Universities is a partnership of 23 renowned European universities, including Oxford and Cambridge in the UK, as well as the University of Amsterdam, Utrecht University and Leiden University here in the Netherlands. The League has issued a position paper emphasizing the importance of cooperation with societal partners in open, non-linear network systems, in which these partners contribute expertise, knowledge, and insights of their own. Remarkably, for a partnership that aims to promote fundamental research, these universities also emphasize that the distinction between fundamental and applied research is no longer adequate. They describe societal innovation and societal impact as the outcome of a creative process that involves each and every stakeholder. Cooperation must be involved at the very beginning of a research project and throughout all of its subsequent phases. These universities emphasize that we need to develop new quantitative and qualitative evaluation criteria, with an emphasis on the process and the impact pathway (LERU, 2017).

They weren't the first to realize that we need to do things differently. Back in 2011, the Rathenau Instituut and the Technology Foundation STW published a report on indicators for valorization, on behalf of the National Valorization Committee (Drooge et al., 2011). Their definition of valorization was similar to the one used by KNAW². The authors proposed using a 4D valorization model³. For further details, I recommend that you read the report itself. Given the limited time available today, I will restrict myself to a discussion of the “phase” dimension, an essential aspect of co-creation. The authors emphasize that, in the process of valorization, awareness and interaction are vital aspects of every phase of research. Starting with the phase in which details of the project's mission and management policy are formulated, this includes the development of research, agenda setting, implementation, and dissemination, right through to application. Back then, the Rathenau Instituut and the Technology Foundation STW came to the same conclusion as KNAW: valorization is not measurable by means of simple counts. This is because counts give insufficient insight into the *process* itself (which is purposely interactive), nor does it show which *values* are *created*. They, too, argue that a blend of quantitative and qualitative data is needed to arrive at a well-founded opinion. And, even then, every situation is unique and dependent on its context. Interestingly, they express this in much the same way as KNAW: “Measuring is not possible; measuring is not the same as knowing “(Drooge et al., 2011).

The authors propose that any evaluation of valorization should be used as a formative evaluation rather than as a summative evaluation. In other words, the goal should be to learn and improve, rather than to express an opinion. However, because specific contextual factors are taken into account, this does make it more difficult to compare individual performances. This limitation has also been acknowledged by the League of European Research Universities.

² Knowledge valorization is the process of value creation from knowledge. It involves making knowledge suitable and/or available for economic and/or societal use and translating it into competing products, services, processes, and new activities. Knowledge valorization is a complex and iterative process. Importantly, it features interactions between knowledge institutions and the business community or societal institutions in every phase, including the knowledge development phase (Drooge et al., 2011).

³ The four dimensions involved are the party, the aggregation level, the academic discipline, and the phase.

What is co-creation?

Co-creation, like “societal impact,” is not really a concept that everyone immediately understands. My preparations for this inaugural address included a systematic literature search – with the aid of various colleagues – into the concept of co-creation. We started by searching various databases, using the keyword “co-creation.” This yielded 1,123 hits, 23 of which were articles that ultimately proved to be quite useful. Most articles were rejected because they gave no insight into the *process* of co-creation itself, simply stating that co-creation had featured in a given project, not how it worked. We also looked up related keywords, such as “cooperation,” “collaboration,” “engagement,” “partnership,” and “working together.” It was, of course, necessary to combine these keywords with the words “science,” “scientist,” “research,” or “academic” *as well as* with the terms “society,” “practice,” “stakeholder,” or “practitioner,” and with both “s” and “z” spellings of the word “organization.” That yielded 1,237 hits, 28 of which were articles that ultimately proved to be quite useful. Here, most articles were rejected because they described different forms of cooperations as alliances, chains and networks, but did not describe collective “creating”. In these two searches, only three articles showed any degree of overlap. This demonstrates the lack of clarity surrounding this concept. Because the second search also unearthed relevant articles, describing the same process of co-creation.

Thus, the initial conclusion is that many different terms are used to describe the concept of “co-creation.” I’d now like to briefly summarize our findings⁴. Firstly, we found numerous publications about the “engagement of knowledge users” (including Trico et al., 2018). However, this was not about co-creation – in the sense of making something together. Instead, it was about involving users in different phases of research, while the leading role was clearly reserved for the researcher in question. E.g., experiential experts are only asked to assess a health app, instead of being involved in the app’s design; or professionals are only involved in conducting the interviews. Another term that we frequently encountered was “Knowledge Translation,” which is the translation of knowledge into everyday practice (e.g. McKibbin et al., 2010). The term “Integrated Knowledge Translation” specifically refers to cooperation between researchers and knowledge users. However, this is not quite the same thing as co-creation, as it mainly concerns the final phase of the research process.

⁴ You will be able to read more about this in an article that we are preparing to submit for publication.

A third commonly used term is “co-production of knowledge.” Of all the above terms, this one is the most closely related to co-creation. The principles of co-productive knowledge are based on the ideas of Elinor Ostrom (1990). Elinor Ostrom was an American political scientist who was awarded the Nobel Prize for Economics in 2009. She was – and still is – the only woman to receive this particular honor. Her research focused primarily on environmental issues and climate change. She concluded that polycentrism, unlike centralization, was a promising strategy for those using shared resources. She pointed to the necessity of involving local stakeholders’ experiential knowledge and skills when tackling climate issues (Ostrom, 2009). Thus, in her view, the involvement of experiential knowledge corresponds to co-productive knowledge.

Our literature search also yielded a report on co-production by the N8 Research Partnership, which consists of the eight largest universities in the north of England (Campbell & Vanderhoven, 2016). The partnership’s research program explored closer, more effective cooperation between universities and societal partners, also known as the co-production of knowledge. The aim was to determine whether this could also lead to scientific excellence and to societal returns. The emphasis here is on the word “and.” Co-production must lead both to excellent science and to relevant returns for society. Broadly speaking, it must deliver “more bang per buck.” It should be clear, however, that this will require changes to the traditional academic mindset. The N8 Research Partnership investigated five pilot projects in the fields of decentralization, outreaching mental health, urban development, and theater. They identified a number of characteristic elements.

In the literature on this subject, the term “characteristic elements of co-creation” refers to assumptions that are both essential and a key to success. Based on all of the material uncovered by our literature search, we have identified the following characteristics:

- a structured, long-term partnership;
- equality and reciprocity between researchers, users and professionals;
- mutual trust;
- mutuality, both for science and for those in everyday practice;
- personal contact, co-creation is built on relationships;

- blurring boundaries between those involved in research and their societal partners, which means that the academic world will lose a degree of control over the nature and direction of its research capacities;
- knowledge exchange rather than knowledge transfer;
- it concerns improvements to everyday practice *and* scientific output;
- the research process is not linear, but is instead cyclic and iterative in nature – the process is key;
- and last but not least, co-creation takes time.

Threats to co-creation

Thus, successful co-creation features the above characteristics. However obvious they may be, putting these characteristics into practice is far from easy. There are, of course, a number of threats. One of the primary threats to co-production is an unequal allocation of power, in the form of funding or resources, for example. It is, therefore, important to maintain the right balance.

Another threat is a lack of support for the infrastructure. The co-workers of all the partners involved must be given the time and resources they need. Sometimes there is simply hardly any budget in practice organizations to spend on scientific research. Trust can take years to build, but only a second to shatter. The process takes time, lots of time. As one researcher sadly remarked, “Who on earth is going to pay me just to sit around and drink coffee?” In the initial phase, this will temporarily reduce scientists’ direct output, in the form of countable scientific articles. But, as the saying goes, “If you want to go fast, go alone. If you want to go far, go together.”

Also, the readiness of decision makers and professionals to gather evidence about their own work can be a threat. It asks for an open mind and readiness and power to change, to co-create in scientific research (Garretsen, 2007).

So a number of characteristics are essential for co-creation. But our search of the literature did not turn up any standard formats on how to tackle this. Which makes sense, given that contextual variation and the associated flexibility are essential. In a while, I’ll tell you how we did this at Tranzo.

But first an intermezzo. Co-creation between science and everyday practice is not restricted purely to the care and wellbeing sector, which is Tranzo’s area

of research. There are excellent examples from other sectors, such as climate research. Research carried out in Canada has shown how cooperation between researchers, traditional indigenous hunters, and local authorities can deliver a successful harvesting program. This concerned narwhals, a whale species that occurs in Greenland and Canada, and the goal was to maintain the population at an optimum level (Armitage et al., 2011).

Examples can also be found in the art world. Right now, Professor Peter Peters is giving his own inaugural address at Maastricht University. This meant that some of our guests had to be in two places at the same time. In addition to being a professor occupying an endowed chair in Innovations in Classical Music, Peter is the Director of the new Maastricht Centre for the Innovation of Classical Music (MCICM). This center is a joint venture between Maastricht University, Zuyd University of Applied Sciences and the South Netherlands Philharmonic. The latter was created by a merger between the Brabant Orchestra and the Limburg Symphony Orchestra. It is also an Academic Collaborative Center that provides a platform for co-creation, in this case between scientists, students, and members of the South Netherlands Philharmonic. So here is a sample of what co-creation in this field can do.

[music fragment]

Tranzo

Which brings me back to Tranzo. How does Tranzo tackle co-creation? Tranzo is a scientific center for care and wellbeing. It is part of Tilburg University's School of Social and Behavioral Sciences. Its main research themes are quality of life, quality of care, and evidence-based working practices.

Tranzo's mission is to link science with everyday practice in the field of care and wellbeing. A major aspect of this mission is the interaction between three parties concerned – the researchers, the professionals working in everyday practice, and members of the public/clients, who represent the demand side. Its objectives are knowledge development and knowledge exchange. To this end, we have formal working relations with various institutions operating in the field and with other societal partners. All of this takes place within the context of Academic Collaborative Centers.

Tranzo defines an Academic Collaborative Center as a *sustainable partnership* between the university and institutions operating in the field. Its goal is to develop scientific knowledge and to deliver innovation in the provision of healthcare in the sector concerned. It involves a formalized, long-term partnership, based on a jointly agreed long-term research program. Thus, the partnership is voluntary, but it is not without obligation. The university and the other partners make a firm commitment to one another. A research program like this includes innovation projects in which scientific insights are developed, refined, applied and adjusted, based on evaluations (Garretsen et al., 2005; Van Regenmortel et al., 2013). Throughout this process, research programs are also recalibrated in terms of the links between everyday practice and science (Embregts, 2017). Both academic excellence and working on value for those in everyday practice are important. Here, co-creation is used to work on knowledge that matters. The goal is not only to prove, but also to improve. The three basic principles are complete equality between the university and its partners working in everyday practice, personal contacts at different levels within the organizations concerned, and mutuality for all those involved. The Academic Collaborative Centers are managed by a steering group, whose members are drawn both from the university and from the other partners involved. In line with our findings in the literature, Tranzo has no standard format for developing an Academic Collaborative Center, nor for determining the scale and intensity of cooperation with its partners (Siesling & Garretsen, 2014; Verbeek et al., 2013).

Our goal, in engaging in co-creation with those in everyday practice, is to promote evidence-based working practices. “Science practitioners” have a pivotal role in this. These are researchers who work partly in the field and partly in the areas of research or knowledge exchange, within the university. They are the “living bridges” between science and everyday practice.

In addition to quality of life and quality of care, “evidence-based working practices” feature among the Academic Collaborative Centers’ most important themes (Tilburg University, 2017). Three sources of knowledge are essential to evidence-based working practices. These are a) scientific knowledge, b) professional expertise, and c) the knowledge and expertise of members of the public/clients (Garretsen et al., 2007, Van de Goor et al., 2017). The interaction between scientists, professionals (such as care providers and policy officers) and the demand side (members of the public/clients) is enormously important here.

We are proud of the fact that we have now established twelve Academic Collaborative Centers and knowledge networks. These enable us to cover a large part of the care and wellbeing sector. Within this framework, we have established formal working relations with more than 70 societal partners. These include as hospitals, mental healthcare institutions, addiction care institutions, social work institutions, residential care homes, nursing homes, youth care institutions, other institutions for young people, institutions for the mentally disabled, employment care institutions, community health services, health insurers, local authorities, and provincial authorities, as well as other knowledge institutions and training institutions.

I’d now like to show you a clip from a film made for the “Living with an Intellectual Disability” Academic Collaborative Center. It starts with a boy who is taking part in the “Stronger than the Kick” program, developed by my colleague Petri Embregts. This program is intended for people with a mental disability and an addiction. It shows how the scientists involved, those in everyday practice, and the clients all cooperate with one another.

[fragment film Academic Collaborative Center Living with an Intellectual Disability]

<https://vimeo.com/172564779>

Thus, Tranzo wants to be the bridge between science and everyday practice. That’s not easy. Researchers, professionals working in everyday practice, and policymakers all have different interests, incentives, and timelines. Scientists have to publish, obtain a Ph.D., and plan for the long term. Professionals in everyday practice want to provide successful treatment and to satisfy their clients. Due to the demands imposed on them by society and by politicians, policymakers generally want quick answers and results (Van Regenmortel et al., 2013). But together we’ll get there. And the key to it all is co-creation.

At a lunch in the Academic Collaborative Center for Quality of General Practitioner and Hospital Care, the Ph.D. students spontaneously came up with their own view of what constitutes a co-creation process. They stated that a broad-based research question should lead to a tangible result that, when implemented, can have a major impact.

Involve the users themselves

Our efforts to involve societal partners and professionals have met with success. As yet, however, insufficient consideration has been given to the involvement of members of the public and of clients. This applies to co-creation in general and within Tranzo in particular. Clients and members of the public are often less organized. They also lack the necessary financial resources and other opportunities to cooperate on an equal footing. Fortunately, we already have a number of good examples. For instance, the Academic Collaborative Center for Living with an Intellectual Disability has its own experiential expert. This person, who has an intellectual disability, is a member of the steering group and of the coordinating study group. That same center recently appointed two experiential experts as co-researchers. Based on their experiential knowledge, these co-researchers consider the relevance of research questions, for example. They can also conduct interviews during the data collection phase, and reflect on the significance of research results (Embregts, 2018). In the Academic Collaborative Center for Young People, a client representative has a seat on the steering group. Similarly, the Academic Collaborative Center for the Elderly has appointed an end-user advisory board, whose members are themselves elderly. The Academic Collaborative Center for Social Work is another fine example of how to get clients involved, not only as experiential experts but also as co-researchers. The Collaborative Center is not just about bringing people together, its goal is also to empower the target group. A pivotal item on the empowerment

research agenda is the quest for greater social justice, equal opportunities, and equal access to support and resources. This will enable everyone to participate fully in society and to enjoy a good quality of life (Van Regenmortel, 2013). There is an extra focus on groups that are often sidelined in terms of research. These include people with psychiatric problems, homeless people, or vulnerable elderly people. The point is that research is not conducted “about” but rather “with” – or even “by” – the people involved. Participating in the research process is an empowering experience in itself. This does not automatically mean that empowerment is the main purpose of research (Van Regenmortel et al., 2016). One way to achieve empowerment is to engage experiential experts as co-researchers. This is beautifully illustrated by the following video clip.

[fragment film co-researchers] <https://www.youtube.com/watch?v=oVkc1wWRzR8&t=9s>

Towards the fourth-generation university

So what about the fourth-generation university that I mentioned earlier? Our society faces complex challenges, such as the costs of care, climate change, and the refugee crisis. If we are to deal effectively with these issues, we can and should expect universities to contribute more to the debate on possible solutions. Indeed, this is an absolute necessity. My predecessor and esteemed colleague, Henk Garretsen, spoke about “the fourth-generation university” at his farewell symposium on March 24, 2017. We have pursued this concept further, in cooperation with another colleague, Ien van de Goor (Garretsen and Van de Mheen, 2017, Garretsen et al., submitted for publication).

There are – quite rightly – demands for universities to become more socially relevant. At the same time, world leaders like Donald Trump (Lewis, 2018), and the media, too, are attacking science. By now, statements like “Science is just another opinion” have become all too familiar. But to reassure the scientists here in the auditorium, a survey carried out in 2018 showed that the Dutch public still have every confidence in science. Science scored a 7.1 out of 10 on trustworthiness, more than any other institution in the survey! Law came second, with a 6.5. Politics scored a 5.5, and large corporations were at the bottom, with a score of just 5.4. That trust in science is based on the hope and expectation that science will make our lives healthier, longer, more interesting, and more pleasant. In 2018, the percentage of people who expected science to help solve a range of problems was actually higher than it was in 2015. And almost four in every five Dutch people believe that scientists work carefully, that they are experts in their own field, and that they can be trusted (Rathenau, 2018). Good to know. Although a recent column in the daily newspaper “NRC” on integrity of science with the revealing title “Knowledge, Expertise, Cashier” (Kennis, Kunde, Kassa) suggest otherwise (NRC, 2019). Politicians and other societal stakeholders are asking universities to show what they are doing to help resolve societal issues. Carlos Moedas, the European Commissioner for Research and Innovation, has adopted three policy priorities. These are “Open Innovation,” “Open Science,” and “Open to the World” (Moedas, 2016). So, more than ever before, science will have to prove that it has value for society. How can we boost our research efforts? How can we stay connected with society? In what ways are we being genuinely innovative? And how do we create impact?

The only way to effectively tackle these issues is to evolve into a fourth-generation university.

Ever since the Middle Ages, education has been the universities' most important task. In 1088, the University of Bologna became the first institution of its kind. The Humboldt University of Berlin, which was founded in 1810, is a good example of a second-generation university – one that focuses both on education *and* research. Today's institutions are mostly third-generation universities – focusing on education, research, and valorization. In its current form, however, valorization is often a one-way street. A university develops something for society without a proper understanding of what society itself wants or of what people really need. There are two major “gaps” in this arrangement. Firstly, it takes too long for ideas emerging from fundamental research to be transformed into new products or new approaches, such as treatment methods. Sometimes this doesn't happen at all. Secondly, when new products are developed they are not properly implemented (Walsh and Davies 2013). These factors undermine a university's ability to contribute solution strategies for societal challenges. This is simply not good enough, given the current societal challenges and the pace at which they are developing. It is essential to achieve dynamic and open innovation, together with those in everyday practice. Maarten Steinbuch of the Eindhoven University of Technology neatly describes this situation as “growing towards a fourth-generation university” (Steinbuch, 2016).

A fourth-generation university is one that reaches out and does more than just make knowledge available to those in everyday practice. The diagram below summarizes the characteristics that, according to Steinbuch, fourth-generation universities must display.

	1st Generation	2nd Generation	3rd Generation	4th Generation
Objective	Education	Education & research	Education, research & know-how exploitation	Education, open innovation (research)
Role	defending the truth	Discovering nature	Creating value	Enabling value creation
Method	Scholastic	Mono-disciplinary science	Inter-disciplinary science	Multi-actor innovation
Human capital development	Professionals	Professionals & scientists	Professionals, scientists & entrepreneurs	Professionals, scientists, entrepreneurs, artists, customers, ecosystem participants
Orientation	Universal	National	Global	Ecosystem
Language	Latin	National languages	English	English
Organization	Colleges	Faculties	Institutions & centers	Innovation spaces
Management	Rector & Chancellor	Part-time academics	Professional management	Disruptors

Based on: Steinbuch, 2016

There must be dynamic and open innovation. Scientists and those in professional practice must each work partly in one another's realms, as interdisciplinary teams. At Tranzo, in addition to Science Practitioners, we have professionals working in everyday practice who also work at the university. Then, there are "research brokers": scientists who are based at the university but who spend part of their time working at organizations operating in the field. A fourth-generation university is a networked university, one in which innovation takes place in a cooperative framework that includes researchers, professionals working in everyday practice, and users. Value creation should not be the sole focus here. It should also be about enabling local networks to deliver value creation themselves. In addition to scientists and professionals, it must involve cooperation with those that Steinbuch describes as "participants in the ecosystem." These are entrepreneurs, artists, members of the public, and users. In our sector, the latter would be our clients and patients. The principles of a fourth-generation university require us to cooperate within a given ecosystem – a network in which parties built up skills together. That means that the focus of the university is global on the one hand, but that she has a strong regional or local network on the other hand, and with that lead up the local ecosystem. Also, none of this work must be monopolized by individual organizations or institutes. Instead, there must be "meeting spaces," where the parties involved encounter one another. The final characteristic is something that Steinbuch refers to as "disruptors." In other words, provide opportunities for those who think and act outside the box.

We could, following our colleague De Jong, Professor of Practice in Business at our university, compare this to the fourth industrial revolution, a concept in the world of economics (De Jong, 2018; Schwab, 2015). The first industrial revolution took place in the 18th and 19th centuries. Rural societies were transformed into industrial and urban societies, a change triggered by the invention of the steam engine. The second revolution took place between 1870 and 1914. This involved a period of growth as a result of mass production, and the emergence of new industries due to factors such as electricity. The third revolution occurred from about 1980 onwards. Also known as the Digital Revolution, this centered around communication and the internet. The fourth industrial revolution builds on this. It concerns the way in which new technologies become part of society, and even part of the human body. De Jong (2018) argues that companies must waste no time in engaging with the fourth

revolution. If they don't, they could pay the ultimate price or, as Professor de Jong puts it, "disrupt or be disrupted". He shows that large, well-known companies whose presence we once took for granted have now vanished without a trace – or are about to – simply because they failed to notice the changes taking place in the world around them. These include international companies like Nokia and Kodak, as well as Dutch household names such as V&D, Blokker, and, lest we forget, the Slotervaart Hospital. As a university, we must ensure that we do not suffer the same fate. We have to change and respond to the changing context. While it may seem unimaginable, "we too could be disrupted, if we do not change."

I'd like to make one final comment about language. Contrary to the views expressed by Steinbuch, I feel that there is a place for both English and Dutch in our higher education. For this reason, you will be given copies of this address in both languages. Our experiences at Tranzo have shown that the use of both English and our native language is essential to achieving science with impact. On the one hand, global positioning is essential. Science knows no boundaries, which is why major scientific publications and Ph.D. theses are written in English. On the other hand, co-creation takes place in Academic Collaborative Centers, many of which have a local or regional orientation. The language used there is Dutch. Quite a few of our partners, clients, and members of the public communicate in Dutch, either because they are unaccustomed to using English or because they simply don't speak the language. This is certainly true of our more vulnerable target groups. Furthermore, any products we develop, such as guidelines and health interventions, also have to be written or made in Dutch. If we try to present English as the only – or best – working language, this will not advance the process of co-creation. If anything, it will undermine the basic principle of complete equality. As a result, wherever possible, articles and products should be presented and produced in two languages. Accordingly, funds should be reserved within the university for translations and for bilingual production processes. Something that is still considered to be a form of self-plagiarism.

Are we achieving our goal? Are we having impact?

In the words of Shakespeare, the answer is “To be or not to be, that is the question.” The very fact that both the university and its societal partners found it worthwhile to invest 20 years of effort in this endeavor confirms the validity of this approach. Co-creation obviously generates scientific output, in the form of outstanding Ph.D. theses and excellent articles in international peer-reviewed journals. All of our evaluations to date confirm that this approach generates the same *kind* of scientific output as the more traditional avenues of knowledge development, both in terms of quality and quantity. The extra yield of its impact, however, can be seen in terms of the *content* of these articles and Ph.D. theses, which are the fruits of a process of co-creation. Due to the contributions of users and professionals working in everyday practice, this knowledge development has a greater chance of creating an impact. The very *process* of co-creation guarantees that the results will be socially relevant. This is what the KNAW means when it says that impact should not be evaluated by measurement, but by describing impact pathways. In other words, an advance evaluation of the probability of societal impact. As an example, I’d like to mention the topics of a few Ph.D. defenses that took place in the course of 2018, and that could have a major impact. These were mapping the support needs of people with a mild intellectual disability, the creation of smoke-free school playgrounds, dealing with sexuality and intimacy among dementia patients in nursing homes, the costs and cost-effectiveness of infectious-disease control, the role and success of the “exercise lottery” in promoting a healthy lifestyle, and implementation of the local health-policy guideline.

In addition to scientific output, co-creation delivers practical products, such as eHealth interventions, screening instruments, guidelines, manuals, toolkits, etc. In fact, each and every Ph.D. project in the Academic Collaborative Center for the Elderly also includes a project to translate its results into everyday practice. This is all part of a greater effort to ensure that research results will actually be used in everyday practice. In the context of these short-term translation projects, which last about one year, researchers work with employees and elderly people in the care system. The aim is to translate the results into an instrument or method that can be used in that system.

Our experiences at Tranzo are in line with major worldwide developments in the field of care and wellbeing and in recent research. First and foremost, of course, are the developments with regard to evidence-based working

in healthcare. Sackett's (1996) ideas concerning evidence-based medicine underpin the basic concept behind Tranzo. According to Sackett, evidence-based decisions in healthcare integrate the best available scientific evidence with clinical experience and patient preference. Quite a revolutionary idea at the time. Our working method is also in keeping with the concept of community-based participatory research. This approach involves community members (i.e. experiential experts and, in a broader sense, "citizens" and members of the general public), representatives of the organizations involved, and researchers in all parts of the research process. All of the partners contribute expertise, bear shared responsibility for any decisions (shared decision-making), and show ownership (Israel et al., 1998).

I believe we can say that Tranzo can be considered to represent best practice, and that it contributes to Tilburg University's development as a fourth-generation university. We are a network organization that successfully "reaches out" to society at large. The Collaborative Centers are highly valued by the university and by their many partners in everyday practice. We work in interdisciplinary teams, together with professionals and the clients of organizations in the area of care and wellbeing. Academic Collaborative Centers can indeed be seen as innovative spaces where science and society encounter one another and co-create. It is there that value creation occurs and is facilitated. Innovative professionals can bring about changes in everyday practice, based on the latest scientific insights. They can also monitor these changes by means of evaluation research which, in turn, encourages innovation in everyday practice. We are not alone in this. The Academic Collaborative Center model has now been introduced in the sector of health and wellbeing and in other sectors, as well in the Netherlands (a.o. Molleman & Fransen, 2012; Jansen et al, 2008, Hoeijmakers et al, 2013), as abroad, in a range of comparable designs. A good example in the sector of health and wellbeing are the English "Collaborations for Leadership in Applied Health Research and Care", the so-called CLAHRCs (Heaton et al, 2016).

There is a pressing need for this approach, or something similar, if the university is to become more socially relevant. In addition to its role in education, fundamental research, and traditional valorization, it is essential for the university to form sustainable partnerships with those in everyday practice. This will enable universities to be more effective in helping to find solution strategies for the major societal challenges we face!

Education

It is vital for scientific research to achieve an impact: after all, our goal is to create “knowledge that matters.” However, we must not lose sight of the fact that universities also exist to educate students. As has been said, “good education is a form of impact in itself!” Which is why I am also touching on that subject in this address.

As Tranzo’s departmental chair, I manage about 175 employees, many of whom are science practitioners. As I have said, I find their knowledge to be of inestimable value in scientific research. They have shown that evidence-based work draws not only on scientific knowledge but also on other sources, such as those of professionals, clients, or members of the public. This experience, as Chair of the Tranzo department, has helped me to further refine my vision of education. Before taking up this position, my experience of education had been limited to my degree program at Maastricht University (like every other student) and to the courses I had developed and taught in previous positions. My personal experiences and observations have shown me that educational institutions make insufficient use of knowledge from everyday practice. While students are imbued with theoretical knowledge, they are not fully prepared for everyday practice when they graduate. They have learned too little in the course of their studies to make use of these theoretical resources to discover, define, and solve relevant problems for themselves. Moreover, we have not sufficiently impressed upon students the need to access knowledge from sources other than those used in formal scientific practice. They are still ill equipped to unlock other sources of knowledge that – while very different in nature – are equally valuable. The interaction between scientists, professionals (such as care providers and policy officers), and the demand side is also enormously important in terms of education. For instance, we cooperate with people with intellectual disabilities in classes at the university, in post-Master’s programs, and in VET (Vocational Education and Training).

In my view, we must train students to be new professionals. At fourth-generation universities, the emphasis is on dynamic and open innovation in co-creation. There, students can be molded into skilled professionals equipped with both science-based theoretical knowledge and practical expertise.

As I have said, there are – quite rightly – demands for universities to become more socially relevant and to have value for society. However, universities have

insufficient knowledge of the practical context to mold students into well-rounded professionals. It is essential for higher education to form sustainable partnerships with those in everyday practice, not only in the field of research but also in the educational arena. In medicine, for example, this is reflected by the University Medical Centers. This will enable universities to be more effective, by producing students capable of working on solution strategies for dealing with the major societal challenges we face!

Education must focus on enhancing the breadth and depth of students' knowledge. Students must learn to translate scientific knowledge into change, innovation, and assurance. They must be able to acquit themselves adequately in the dynamic arena of everyday practice, politics, policy, and science. They must be bridge builders who are capable of bringing different parties together. They will acquire these skills by dealing with problems in everyday practice.

We must see students as unique individuals who are keen to develop and learn. To this end, in the context of the educational programs we are developing for the new Health, Wellbeing & Society Master's specialization, together with the Sociology department, I will endeavor to motivate students by appealing to their autonomy and curiosity.

In my view, education is all about courage, thought, and action. Thus, a pivotal feature of Tilburg's educational vision is that its students are trained to be "thinkers who do good" or, in other words, "thinkers with character." Tilburg's educational vision defines this as knowledge, skills, *and* character (Tilburg University, 2017).

My current chair will help me to fulfill my ambition of achieving the above goals, and being part of a community of people with a common vision will motivate and inspire me still further.

Word of Thanks

Ladies and gentlemen, finally, a few words of thanks. This is not my first inaugural speech, so many words of thanks have already been said. But the most important people also go with me, so my thanks to them only increases. They deserve that it is said again.

First of all, I would like to thank the Executive Board of Tilburg University for the trust they have placed in me. I hope to be able to make it happen. I thank the Dean of the School of Social and Behavioral Sciences, my fellow head of departments and other colleagues within the faculty for the pleasant way of working together. I feel like a valued colleague and that's great. Within the Simon Research Institute I see great opportunities for cooperation between the various departments. I am also very happy with the cooperation with the Department of Sociology in the mastertrack Health, Wellbeing and Society that will start in September. I look forward to it!

I am very grateful to all my Tranzo colleagues. I can not imagine a more pleasant group of people to work with. I felt welcome from the first day. Despite the fact that Feyenoord remains the nicest football club and I am really not going to celebrate carnival, I feel at home in your Brabant cosiness. But the most important thing is the common goal we have, that is why I enjoy working with you so much.

There are two Tranzo colleagues that I want to mention specifically. That is, first, my predecessor Henk Garretsen. Dear Henk: already mentioned before: during my study in Maastricht, it must have been somewhere in 1984, I asked you a question during a guest lecture, on which your answer was: "Good question, you have to get an internship on that." The next day I called you and since then our paths crossed multiple times. I have tremendous admiration for what you have set up here and I am happy to be able to continue your work.

The second person who deserves a special word of thanks is Jacqueline Frijters. Business Manager and my right hand. Without your professional knowledge, I would have been completely lost. In addition, you have also an infallible memory, without any problem you know how to tumble on emails and appointments of eight years ago. Thank you for all your efforts.

Besides my colleagues, I am also grateful to all partners with whom we work in our Academic Collaborative Centers. I hope that I have made clear today how important this cooperation is.

The older you get, the more persons to whom thanks are due in a scientific career. “It is by standing on the shoulders of Giants”. Three people I would like to mention by name here, that are Johan Mackenbach, promotor and mentor, Karien Stronks, peers through thick and thin within the Department of Public Health at the Erasmus Medical Center, and Miranda Audenaardt, with whom I approx. 15 years have led the IVO, Institute for Addiction Research.

Then I come to the most important thing around me: my family and friends. The basis for my scientific career started with my friends from the study Health Sciences in Maastricht. The Maastricht Kliek: thank you for your very special friendship for almost 35 years!

My parents, Jan van de Mheen and Betsy van de Mheen - Pjipers: you gave me every opportunity, and encouraged me to “develop my talents”, as befits a good Calvinist. My father can unfortunately no longer experience this, but he would have been incredibly proud of his daughter. Thank you both.

Finally my family. Joost, thanks for your support and your love, and especially for giving me the freedom to do all of this. Fien and Rosa: what would it be boring without you. I am proud of you, your perseverance, who you are and what you do. Although I don't like the fact that you beat us with playing jass (“klaverjassen”) now. With you around me I am a happy person.

I have spoken.

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