WHEN HIGH-TECH AND HUMANITIES TOUCH

Toespraak José van Dijck, KNAW-president, bij gelegenheid van de opening van het academisch jaar aan de Universiteit Twente op maandag 5 september 2016.

On a recent trip to California, I was sitting next to a woman on the plane who told me her life story. She had obtained a PhD in philosophy from a Dutch university, had moved to San Francisco ten years ago and now worked for a fintech company. A once prototypical humanities graduate, she now collaborated on a daily basis with engineers and data scientists. Her American husband, who had a degree in engineering and was working a daytime job at a Silicon Valley start-up, was going the reverse way. He had decided to go back to graduate school in the evening and pursue a Humanities degree at Stanford; he was apparently inspired by his wife, but also by the conviction that it would make him a better engineer. Technology married to the humanities, literally absorbing each other’s expertise: this mixed couple embodies an increasingly common practice. Looking at my own graduate students, I can see how a successful fusion of humanities and engineering (and also social science) leads to a mutual fertilization of insights and knowledge. So I am very honoured and pleased to give this opening address today at the University of Twente in which I will try to add a new dimension to its motto: “High tech, human touch.”

Let me start by saying that this speech is not an apology for the need for humanities as such; the intrinsic merit of its disciplines, as far as I am concerned, is beyond any dispute. In a recent book (Why we need the Humanities: Life Science, Law and the Common Good), Donald Drakemen sums it up pretty concisely: a modern high-tech economy that promotes a fair and just social system—a system that protects the rights of its citizens and defends the common good—requires a substantial contribution from the humanities. I certainly agree with Drakemen, and I would like to add that a modern university needs to invest in a marriage between technology and humanities. The children that ideally come out of such connection share the DNA of both parents and mix them up properly. As the late Steve Jobs once said: “It’s in Apple’s DNA that technology alone is not enough—it’s technology married with liberal arts, married with the humanities, that yields us the result that makes our heart sing.”

Now let me first explain why I think Steve Jobs’ argument in favour of bringing humanities to high-tech was correct, but also rather limited. He was right because it is obviously impossible to produce and design high-tech products without an adequate knowledge of users, their habits, tastes, social practices and aesthetics. Technology does not just need a human “finishing touch” in terms of design or applied aesthetics; instead, everything that is produced—from buildings to environments to gadgets—needs to be human-oriented from the moment of conception. And vice versa, the spectacular innovations in ICT would not have been possible without specific insights from linguistics; the first programming languages are based on the theoretical models that were developed for human language but appeared to be more appropriate for coding computers. Technology has become so thoroughly part of who we are and what we do, that it cannot be seen apart from the social and cultural practices from which it arises. In order for their expertise to converge, humanities scholars and engineers need to work together from the very start. For instance, I am currently involved in a project where computer scientists and humanities scholars...
collaborate in pursuit of a better search engine for online video archives. It is intriguing how postdocs and PhDs educated in entirely different academic stratospheres are gradually defining a common language to discuss algorithms and interface design, based on user habits and skills. Looking down from his cloud, Steve Jobs would smile at these graduates and welcome them as a breed conceived in heaven.

But Jobs’ view, as I said, was also limited: there are two other important assets that may come out of the wedding between technology and humanities (and social sciences, for that matter). The first is critical thinking: the ability to take nothing for granted, to think through any consequences of technological pursuits and analyze their implications. With a longstanding tradition of critical scholarship, humanities and social science researchers are the ideal investigators of responsible engineering. What does society want from technology and what does technology contribute to a better society? Indeed, bringing humanities into the basics of studying technology means to acknowledge the legal, social, and moral perspectives inscribed in its design. With the invention of drones and robots and their implementation in everyday situations, we need to raise questions that go beyond their immediate use. Questions of responsible engineering and social context start at the stage of conception, so these insights have a chance to gestate along with technology’s design and development.

The second thing that hopefully comes out of the intimate relationship between humanities, social sciences and engineering will be a collaborative mindset: an essential precondition to solve Big Science problems and meet complex social challenges. Collaboration cannot be taken for granted; technology needs the humanities as much as the humanities needs technology if we are to solve today’s daunting problems. Just look at what challenges scholars (and citizens) are facing today in terms of complexity: from climate change to terrorism and from cancer to economic inequality. When people tell us the world is full of problems, we cannot respond by simply saying: ‘the university has six divisions (faculties)’ or ‘my division has four departments’. Of course we need the individual disciplines to build academic strengths; but we also need to absorb each other’s strengths in order to become more relevant in a society that desperately needs its scientists to build bridges.

Such absorption of mutual strengths is for instance at stake in the project to design better search engines for online video archives; the project is part of a much larger pursuit that we now commonly call ‘digital humanities’. Digital humanities deals with large cultural data sets – textual, audio and visual. It combines qualitative methodologies from traditional humanities disciplines with new computing tools that help analyze digitized or digitally-born data. New tools help raise new questions. Just as the Hubble telescope triggered new insights about the stars, digital tools allow researchers to seek new insights, for instance by combining human and machine-mediated interpretation of textual, audio and visual signals. Computer scientists and humanities scholars increasingly learn how to co-design new questions, such as how to identify meaningful signals from noise in large data sets. The cooperation between humanities scholars and computer scientists that is quickly leading to new scholarship has recently been given a boost by a national coalition of forces under the name of eHumanities.nl. A group of 12 universities (including the University of Twente) and 7 Humanities Institutes operating under the Royal Academy-umbrella have joined forces to develop this new national effort and position The Netherlands to become a serious international contender in the field of digital humanities. This is hopefully the beginning of a long-lasting cooperation between several breeds of academics who have been raised in separate worlds. It may take a while to adjust to each other’s academic language and comprehend what part of the elephant each of us is touching. But in essence, this project is about a new breed of academics, a marriage that ‘makes our hearts sing’ as Steve Jobs would have it.

One of the grander goals of this and similar collaborative efforts is to apply a multi-sided view to articulate a common curiosity while taking on some of the world’s major challenges. One such challenge is to organize a responsible and fair digital society. “The digital society” has become an important overarching themes all Dutch universities have put on their research agenda for the years to come. Let me use this theme as an example of how academics from all disciplines and backgrounds can engage in communal scholarship. For the past few years, I have been intrigued by discussions between computer scientists and
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philosophers, legal scholars and media experts, yielding substantial differences in how to interpret or evaluate big data sets. In doing so, we are gradually learning why interpretative questions form the basis of computational thought and how legal or moral questions may be woven into algorithmic design. Such debates reveal what is really at stake in embracing Big Data as an organizing principle in our (future) society; we are just beginning to face not just the technological challenges, but also questions about privacy, security, accessibility, and openness of data – to name just a few.

But collaboration in academia does not just happen spontaneously, especially if the institutional environment was never designed to accommodate interdisciplinary work. Departments and faculties can be hotbeds of academic power and inspiration, but they can also be obstacles to multidisciplinary collaboration – the kind of collaboration that is imperative when trying to meet Big Challenges and solve Big Problems. And that is why we should not just look at our universities to define a common denominator or theme, but we need to critically assess the entire national setting for scientific research and education, including its current funding schemes. For the larger part, that system has served us well when it comes to conventional disciplinary work; The Netherlands performs excellently in terms of international standards for quality in education and research. But if this country wants to create an academic climate that is more conducive to mutual inspiration and solving big problems together, we need to build coalitions.

Over the past year-and-a-half, all Dutch research universities, applied universities and industrial partners have worked on putting together a National Research Agenda (NWA). This process that started last year with 12,000 questions from citizens resulted in the identification of 140 questions grouped under the umbrella of some twenty-five challenges. Big themes like ‘sustainable food production’, ‘personalized medicine’ and ‘healthy aging’ ‘Using big data responsibly’ and ‘resilient societies’ may strike you as themes that could have been easily identified by an appointed committee, based on the themes identified by the European Research Council. However, the value of this NWA is not just in the identified themes per se, but in the bottom-up process that involved at least 2,000 academics and other interested people who helped broaden each other’s horizon.

And that, I think, is where the real value of the NWA lies: not in the outcome of the Agenda itself or even the identified themes, but in the process that set in motion interdisciplinary collaboration on a scale that is unprecedented in Dutch academic history. By identifying common concerns, researchers from all disciplines were invited to join communal efforts, and pair their skills to take on one or more Big Questions. Some of you may have been involved in the ‘making of’ the National Research Agenda and thought it was an interesting experience, but were not inclined to pursue it any further. That is just fine and totally understandable. I myself was positively struck by the energy that came out of the workshops – workshops that brought together engineers, philosophers, medical scientists, lawyers, and a host of other disciplines to define their common interests and settle on common concerns. Once questions get bigger, their complexity grows in size and the need for cooperation and coordination increases accordingly.

In most countries, a small committee or government agency decides which priorities deserve funding and which themes are most relevant economically, rather than scientifically. While politicians and industries commonly prefer investing money in very few predictable priority areas, the Dutch academic community that represents the NWA proposed to identify a relatively large number of interdisciplinary themes. This unusual process and its outcome may confuse some political stakeholders, but it should not surprise anyone involved in the NWA because all thematic challenges are intricately interwoven. Big challenges like climate change and personalized medicine could both profit from systematic approaches to analysing big data patterns; and a resilient society is a society that comes to grips with sustainable food production as well as with refugee crises.

The next step in the agenda-setting experiment will be announced next week: we will ask the government – that is: the next elected government – to invest an extra billion euros per year. This extra funding is desperately needed to give a systematic boost to research funding. Half of that extra money should go to reinforce the universities’ investment in fundamental (often disciplinary-based) research, to attract young
talented researchers and to enhance large infrastructures. The other half of this extra investment should be spend on the collaborative themes identified through the National Research Agenda. Needless to say, we cannot take on all challenges at the same time, and we may have to define an additional process to define priorities in this list of pressing themes. But the urgency of our list of pressing themes should convince politicians that this nation’s scientists are eager to take on the challenges of the 21st century.

Of course we can quibble about these themes and dispute which theme needs to be funded more pressingly than others. However, I think one of the most interesting outcomes of this experiment may well be how the NWA may become an instrument for facilitating bottom-up connections and collaborations. The NWA triggered a series of activities. Hopefully, the result is a platform that is never finished – a platform that triggers new collective insights, unexpected alliances, and novel routes through unknown territories. More than that, the process will exemplify why the power of academia rests not with a handful of (pre-)selected disciplines, themes, or brilliant scholars; the power of academia lies in its vibrant ecosystem sustained by collectives of researchers from all disciplines.

If we, as a society, really want to take on Big Questions, investments are needed across the board: in fundamental as well as applied sciences; in humanities and social sciences as much as in the fields of natural sciences, medicine, and engineering. Weaving research interests into collective commitments requires mutual curiosity and respect. Evidently, there are no guarantees for returns on investment, but science has always been more than a zero-sum game. Therefore, we urge the Dutch government (and particularly the next government) not only to invest in the themes that we have identified, but to invest in people who are preparing the academic ecosystem for the next generation of scientists. People who can collaborate and mutually inspire on another, like the couple I started my talk with. We need spaces in academia where high tech, sciences and humanities touch. I think the University of Twente has long set an example of expansive thinking about academic structures and research practices. As for our politicians, I hope they have the wisdom to look at young generations of scientists as the best possible investment in the future of this country. That would certainly make our hearts sing.