Lecture by Gottfried Schatz on 12 March 2015: Universities – Guardians of our Future

On 12 March 1365, Duke Rudolf IV and two of his brothers signed the foundation charter for a Vienna University. The foundation's goal, abridged and translated into modern English, runs as follows:

"… in order to increase and foster common welfare, fair justice, human reason and modesty, and … for each wise human being to become more reasonable and for each unwise person to see reason ..."

The charter's great humanistic vision becomes apparent when compared with the various austere Anglo-Saxon foundation charters of the University of Cambridge. The charter of 1231, for example, granted the teaching staff the right to determine the (level of) rents for housing on the university campus, to punish university members and to abstain from paying certain taxes. A few years later, a document issued by the Pope gave university teachers and graduates additional permission to teach in any Christian country.

Rudolf IV and his brothers were followed by Immanuel Kant as well as the university reformer Wilhelm von Humboldt, which allows me to venture the following interpretation of the foundation's goal: The university shall endow people with confidence in their own reasoning and encourage them to question generally accepted dogmas and preconceived opinions. It should function as a bath, cleansing us of instilled prejudices.

In this quotation of the core part of Rudolf's foundation charter, the word "knowledge" is lacking. This is quite remarkable. The founders of the University of Vienna did not so much emphasise instruction and training but education. But what is education? The British statesman Lord Halifax defined it as what remains after you have forgotten what you had learned. Education is modesty and openness vis à vis something new. Even though the path to education is reached via knowledge, knowledge does not have much in common with education. Our universities would be well advised to adopt the message of Rudolf's foundation charter as their current motto.

To start with, let us congratulate today's birthday child on its long and remarkable success story. Very few universities have had so many outstanding teachers. Even more impressive is the list of those who attended the University of Vienna as their "alma mater"; nothing represents Austria's grand heritage and genius more convincingly than these graduates. That said, has the University of Vienna turned us Austrians into more modest and reasonable people? Has it saved us from irrational dogmas, fascism and racist hatred? Universities, as places of science and research, should have been immune to these threats, since science asks for emotionless, rational and critical thinking. However, by the beginning of last century most universities started to put a unilateral focus on training and to neglect their mission to educate. They have increasingly become places of pure knowledge transfer – vocational schools – and it seems that the Bologna reform has speeded up this development. This, in turn, has resulted in well-trained but uneducated scientists. Our universities forgot that knowledge and science have very different characteristics that often hinder each other. Maybe this development is an unfortunate heritage of the university reform that Maria Theresia and Joseph II initiated in 1749. This reform put

its emphasis solely on a rigorously organised knowledge transfer and neglected scientific research – that is independent and critical thinking.

Science, however, is not primarily about what we know but about what we do not know (in German, science is not about “Wissen” but “Unwissen”). The scientist’s goal is to convert a lack of knowledge into knowledge, and the process of conversion is generally more important than the result itself. Most scientists regard the knowledge they generate as a side-product, the administration and dissemination of which they gladly leave to others. They would not refer to a textbook of biochemistry as “biochemistry” itself but rather the history of biochemistry, a summary of what they already know or at least should know. They call real biochemistry a surprising result in the lab, a crucial hint from their fellow colleagues or a lecture on a new discovery. A scientist’s home is not secured knowledge but its most extreme frontier, where what is known blurs into what is not known.

Yet, despite this, on a day-to-day basis, most scientists deal with the administration and dissemination of knowledge, and only a small minority – the active researchers – generate knowledge. Of this minority, only a tiny elite reaches a scientist’s ultimate goal, which is to discover something that we did not even know we did not know. When Gregor Mendel discovered the units of inheritance, Sigmund Freud the unconscious and Albert Einstein the principle of relativity, they opened up mysterious new worlds, the study of which has decisively changed our conception of our world.

Science is not the guardian of stability and order but an incorrigible revolutionary that incessantly generates creative restlessness. It does not render our lives more organised or peaceful, yet freer and more interesting. Innovative science and research disregard dogmas and unsettle us, as does innovative art. Both, therefore, are suppressed by totalitarian states. The Soviet poet Ossip Mandelstam has been quoted as having commented on Stalin’s cultural terror by using the following bitter words: “How much luckier can we get living in a state that loves poetry so much that it is killing its people because of a poem.” And Ivan Maisky, the Soviet ambassador in Great Britain at that time said, in 1941, without any bitterness and with full conviction, “There is no place for independent science in the Soviet Union.”

Knowledge is not goods that can be neatly packaged, labelled and securely filed for the times to come. Rather, knowledge can be compared to a zoo of untamed animals that bang against the bars of their cages, often tear them down and then produce unexpected offspring. Jean Paul Sartre said, “It is not us who make war; war makes us.” This is also true for knowledge. Scientific research is constantly changing our knowledge, and thus, in turn, is changing us. Even if we are able to keep our knowledge under control for a while or even distort it, in the long run, it will be stronger than us. It obeys its own rules, which we do not exactly know and which we are not able to change either. Even though the following quotation was wrongly ascribed to Victor Hugo, it is still true: “Nothing is as irresistible (and powerful) as an idea whose time has come.”

Our knowledge is never ultimate, which to scientists does not appear as threatening as it does to others. As already mentioned, our relationship to knowledge is divided: We do everything to generate it but mistrust and constantly question it as soon as we have it. Possession of knowledge does not mean much to us, since we know that by observation and critical thinking we are always able to produce new knowledge.

Knowledge is a child of the past and will never secure the future in this incessantly changing world. This is left to the enduring youthful strength of scientific thought, which seeks the hypothesis of everything to come in everything present. This needs people with new ideas who challenge traditional knowledge and dogmas and who are ready to swim against the tide, since only those who do so are able to discover new sources of knowledge. It requires people who see what everyone sees but who at the same time think what no one else has thought before them, people who intuitively recognise that the path from A to C does not lead via B – as imagined – but via X or Z. All this calls for intellectual courage. This is a scientist's most important gift, a gift predominantly found in young people. In science and art, this carefree naivety of the young is often smarter than the knowledge of old age. Real scientists do not waver when steering into dangerous waters if these promise them new knowledge. The American scholar John A. Shed reminded these scientists that "a ship in harbour is safe; but that's not what ships are made for."

How can our universities teach this courage? Lectures and seminars do not teach it; only the teachers themselves, who – by serving as role models – are able to inculcate their students with courage. Such personal role models are the most precious gifts a university may offer its students. Unfortunately, however, universities nearly always select their teachers according to their scientific track record. There is no particular reason why this should not be changed. Yet, old habits and lack of courage tenaciously persist and it will probably be a while before search committees start to pay more attention to the candidates' personalities.

Science involves the dissemination of knowledge and thus always includes teaching. Teaching, however, should not be restricted to a mere transfer of knowledge. It should teach students how to analyse problems rationally and to solve them independently and innovatively. This cannot be done without scientific research, which directly leads us to the thinking of von Humboldt and his unity of teaching and research.

Knowledge is precious, but we should not overestimate it. Our schools, our universities and our politicians responsible for research focus too much on knowledge and thus often drown independent and critical thinking, that is science. The public and also, unfortunately, many research experts believe that research is a strictly logical process, which requires the researcher to patiently put stone upon stone until the meticulously planned building is finished. Innovative research, however, works exactly the other way round: It is intuitive, rarely predictable, full of surprises and sometimes even chaotic, all of which also applies to innovative art. Both innovative art and science cannot be compared to strolls on fully cleared streets but rather to expeditions into unknown territories, where artists and scientists often get lost. Where peace and order prevail, the maps have already been drawn, and the creative scientists have already moved on to where their intuitions are leading them.

Reason – as defined by Rudolf IV and his brothers – also involves long-term thinking. Humans are probably the only living creatures who are consciously able to think long term. Yet, our human species has only existed for 200,000 years and our still youthful brains have to make an effort to grasp slow or exponentially accelerating processes intuitively. Hence, short-term thinking rules our world. Politicians and economists rarely think further ahead than a few years – up to the coming elections or the imminent nomination of an administrative board. In this world and time of short-term thinking, universities should make it their main responsibility to think and do research on a long-term basis. Where, if not at universities, do people think about what will happen in 50 or 100 years' time? If our universities start forgetting about long-term thinking and

allow themselves to be exploited for short-term goals, they had better close. I herewith address the representatives of politics and administration present and urge them to allow today's birthday child to do research and not to offer it programmes or other financial incentives to tempt it to search for something specific. Long-term basic research sows the seeds for tomorrow's technological novelties. Basic research does not grow more innovative if you force it to follow narrow and thus short-term goals. On the contrary, genuine innovative research creates its own goals. If research has these goals dictated, it will no longer be able to be innovative any more. Do you call this scientific arrogance? No, it has nothing to do with arrogance; it has to do with the idiosyncrasy and vulnerability of human creativity. A society that, out of impatience, relies on applied research will soon have nothing more left to apply. Applied research is certainly important, too, but it should not be carried out at universities but in private industry, at technical colleges and at non-university research institutes.

And finally: A dynamic and successful university should not try to hide differences existing within but should accept and consider them as strengths. Age differences should not be misused to justify hierarchies but taken as sources of inspiration. At an ideal university, it should be almost impossible to distinguish teachers from students. Both should do research and learn together and from each other. Also, differences between individual universities should not be regarded as a problem but considered an asset. Unfortunately, politics and administration seek to balance out these differences as much as possible by over-excessive efforts at organisation and coordination. However, organisation is the enemy of innovation, and coordination the enemy of motivation. Therefore, nearly all of these efforts at organising and harmonising are dangerous. At a well-managed university, every decision should ultimately be made 'ad hoc' and hence be unique. This might reduce efficiency to start with, but, in the long run, it will enhance the effectiveness and thus the sustainability. That kind of decision-making, however, not only requires a functioning administration but also a strong and decisive government. It is one of the most testing challenges of a modern university to create such a strong government with the consent of both teachers and students.

May the University of Vienna succeed in living up to the foundation charter's goal of Rudolf IV and Immanuel Kant's heritage to teach not only knowledge but also reason, modesty and the courage to think independently. This is proving more difficult now than ever before, since science for great parts of our society only represents a source of new technologies, efficient drugs and economic growth. However, science is much more; it is a long-term contract between the generations. Only this contract guarantees the continuation of our Western culture. Universities are guardians of this contract and thus guardians of our future.

Rainer Maria Rilke reminds us of this with the following words:

Was unser Geist der Wirrnis abgewinnt,

kommt irgendwann Lebendigem zugute;

wenn es auch manchmal nur Gedanken sind,

sie lösen sich in jenem großen Blute,

das weiterrinnt...

Und ist‘s Gefühl: wer weiß, wie weit es reicht
und was es in dem reinen Raum ergiebt,
in dem ein kleines Mehr von schwer und leicht
Welten bewegt und einen Stern verschiebt.

Which roughly translates into modern English as:

What our intellect gathers from the confusion will
eventually be of benefit to everything alive;
even if it sometimes only comes down to thoughts,
which dissolve and merge into the one big blood
that continues flowing ...

And if it is sentiment: who knows how far it reaches
and what it will add up to in the pure space,
in which a tiny drop more or less
may move worlds and shift a star.