Empfang Deutsches Wissenschaftshaus

Grußwort des Präsidenten der Friedrich-Schiller-Universität Jena,
Prof. Dr. Walter Rosenthal anlässlich der Leibniz Lecture: "Photonic Technologies in Human-Machine-Interaction" von Prof. Andreas Tünnermann, 14.09.2016, Deutsches Wissenschaftshaus, New York City
(Es gilt das gesprochene Wort.)

As the president of the Friedrich-Schiller-University Jena, it is my great honour and pleasure to welcome all of you here at the German Center for Research and Innovation on the occasion of today's Leibniz Lecture on "*Photonic Technologies in Human-Machine-Interaction*", delivered by my colleague Andreas Tünnermann. Professor Tünnermann will discuss novel developments in 3D-sensing and future trends in human-machine interactions.

But, before we look ahead and take a glimpse into the future of robotics, allow me to dig into the past for a brief moment to talk about the relationship of research and innovation at the University of Jena, which is after all counted among the ten oldest universities in Germany.[1]

In the 458 years since its founding as the *Collegium Jenense*, the Friedrich-Schiller-University Jena has continuously advanced, despite challenges along the way. Founded in the 16th century by a politically disempowered duke, John Frederick Ist, who was a champion of the Protestant Reformation, the university should rise to become the center of revolutionary philosophical thought and scientific innovation in 18th and 19th-century Germany. Internationally renowned poets, philosophers, physicists, biologists, botanists, and mathematicians, like Johann Wolfgang von Goethe, Friedrich Schiller, Georg Wilhelm Friedrich Hegel, Ernst Haeckel, Gottlob Frege, Carl Zeiss, and Ernst Abbe, to name but a few, have helped to shape Jena's distinctive spirit, namely: a sense of being a close-knit scholarly community, yet one with an impressively

[1] A list of the ten oldest German universities that have been in *continuous* operation since their founding can be found here: https://en.wikipedia.org/wiki/List_of_universities_in_Germany#Universities_by_years_of_existence [accessed on August 28, 2016].

broad scope.

Innovative thinking knows no intellectual bounds: Therefore, it does not come as a surprise that Goethe should coin the term "Weltliteratur" (world literature) in the late 1820s and, hence, signal a new cultural awareness, a sense of an arising global modernity. While some 40 years later, the combined efforts of Abbe and Zeiss led to the discovery of the *Abbe sine condition*[2], which is an optical theorem that must be fulfilled by a lens or other optical system in order for it to produce sharp images. This discovery changed the way of lens manufacturing not only in Germany, but internationally.

In the 20th century, however, the university witnessed a caesura in its liberal mentality. After it became a state university during the Weimar Republic in the 1920s [Thüringische Landesuniversität, 1921], it was soon incorporated into Nazi ideology, like many other German universities. Shortly after the end of World War II, Jena University was again caught in the maelstrom of political upheaval, as it was the first university to be reopened by the Soviet occupying power and turned into a socialist university.[3]

Today, the university has returned to its core traditions of interdisciplinary and innovative research, unified under the motto "Light, Life, Liberty": LIGHT covers optics, photonics, innovative materials, and energy research; LIFE covers microbiology, the study of infectious diseases, biodiversity, and ageing research; and LIBERTY covers the Enlightenment, Romanticism, contemporary history, Eastern Europe, and social change.

However, if asked what best characterizes the University's mission nowadays, I say that Jena University is tucked into a green Thuringian valley surrounded by a thriving and innovative

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[2] Abbe's "compound microscope was a superb optical design based on a theoretical understanding of diffraction and minimization of the effects of aberrations. Abbe enunciated his famous sine condition regarding the axial point in the object plane of a centered image-forming system such as a microscope or a telescope. When this condition is satisfied, 'aberration-free' imaging of the object points located in the vicinity of the optical axis is assured." In: Masud Mansuripur: Abbe's sine condition, in: Masud Mansuripur: Classical Optics and Its Applications, 2nd Edition, Cambridge UP 2009, pp. 9-22, esp. p. 9.

[3] Cf. https://www.uni-jena.de/Geschichte.html [accessed on August 28, 2016].

industry – for example Carl Zeiss Company, Jenoptik, IT industry, and medical devices –, but its academic activities take place around the globe. This very gathering and today's lecture, as well as Jena's notable array of projects and partners – in the US, in Africa, and in Asia – may serve as cases in point that the work of Jena faculty members knows no geographic boundaries.

Since universities exchange faculty and students as never before, it seems significant to foster strong and sustainable academic partnerships of international problem-solving and innovative collaboration. With research touching on topics as diverse as "*Patagonia as a Case in Point for Transnational Change*"[4], or "*Reconciliation Research With a Focus on the Israeli-Palestinian Conflict*"[5] or on "*Photonics and Laser Research*"[6], we have established partnerships with universities around the globe, for example, with Stellenbosch University in South Africa [since 2008], with Hebrew University of Jerusalem [since 2015], or the University of Buenos Aires [since 2015], to name just a few.

As for our partners in the US, among them are the University of California Berkeley [since 2001], Princeton University [since 2014], and the College of Optics and Lasers at the University of Central Florida [since 2016]. Just two days ago, I visited the University of Rochester to sign a Memorandum of Understanding between our two universities and to further our joint enterprise of developing a transatlantic partnership in research on optics and photonics. Today's talk by Prof. Tünnermann will introduce you to what has been accomplished so far in modern optics and photonics at the Institute of Applied Physics at Jena University.

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[4] University of Buenos Aires and others, plus FSU departements: Institut für Romanistik, Institut für Soziologie, Arbeitsbereich für Arbeits-, Industrie- und Wirtschaftssoziologie, Institut für Geographie (Lehrstuhl für Sozialgeographie), Institut für Interkulturelle Wirtschaftskommunikation, Historisches Institut (Lehrstuhl für Neuere und Neueste Geschichte)

[5] Hebrew University of Jerusalem with FSU JCRS. Cf. https://www.uni-jena.de/Mitteilungen/PM151028_Israel_Hillinger.html [accessed on August 30, 2016]. Cf. http://www.jcrs.uni-jena.de/Hearts+of+Flesh+_+Not+Stone.html [accessed on August 30, 2016].

[6] Stellenbosch University with FSU Forschungsabteilung Faseroptik am Institut für Photonische Technologien (IPHT). Cf. http://www.kooperation-international.de/detail/info/doktor-in-stereo-alexander-heidt-wird-von-der-universitaet-jena-und-der-universitaet-stellenbosch.html [accessed on August 28, 2016]. Cf. http://www.leibniz-ipht.de/en/news/read-more/back/59/newsdate/2011/09/21/ipht-wissenschaftler-herbert-stafast-erneut-zum-ausserordentlichen-professor-berufen.html [accessed on August 28, 2016].

We are grateful for these productive and inspiring connections, and it is with this sentiment that I would like to thank you all for joining us here today at the German Center for Research and Innovation. I am very much looking forward to Prof. Tünnermann's talk and I wish us all lively discussions.
