

▀ A Passion for Math

Working across disciplines and regions, AGYA members actively engage in the field of education by initiating projects on the boundary between science and society.

Mathematics is a fundamental instrument of human and societal development. For thousands of years mathematics has contributed to progress in technology and science and keeps on doing so. This is the reason why the AGYA Working Group *Arab and German Education* focuses amongst other topics on 'Mathematics – the queen of sciences' (Carl Frederick Gauss).

To discover and to support young students in Qatar, who are talented in mathematics, AGYA members organized the first 'Math Olympiad Camp' in Doha in January 2017. 'Looking from a psychological point of view, exposure to mathematics

mathematical problems, and to enjoy learning together.

Aged between 14 and 16, the participants were guided and trained by experts from Germany and Qatar with vast experience in national and international math competitions and olympiads. In lectures and problem solving sessions, the young math talents were challenged with problems ranging from modulo arithmetics to systems of equations. Additionally, 14 teachers from schools in Doha were invited to be inspired to enhance their skills and to build general support structures for math high school students with an interest in mathematics. This approach helps in the long term to establish a mentorship network connecting high school math and science teachers to Arab and German scientists.

'We now have a deeper understanding of mathematical principles', summarises one of the young female talents. The project was



helps children in acquiring an analytical understanding and facilitates their overall development as it assists them in better concentrating and expressing their thoughts more accurately', explains Ahmad El-Guindy, AGYA member and Associate Professor of Mathematics, Texas A&M University at Qatar, who organised the camp together with his fellow AGYA colleagues Maha Al-Hendawi, Laith Al-Shawaf, and Kalman Graffi.

■ AGYA'S FIRST MATH OLYMPIAD CAMP IN QATAR

24 high school students – among them 15 girls – with different nationalities and backgrounds met for the first AGYA Math Olympiad Camp in Doha from 29 January to 2 February 2017 at Texas A&M University at Qatar. The aim of the camp was to qualify and prepare the participants for international math competitions such as the International Mathematical Olympiad (IMO). The IMO is one of the oldest and most respected international competitions for young talents and Germany has regularly participated in this camp. 'So far, Qatar has not taken part in the International Mathematical Olympiad. With the Math Olympiad Camp in Doha we want to motivate and train young math talents for future math competitions', explains El-Guindy. Furthermore, the math camp allows students to develop new skills, to have fun solving



also presented to Former German Federal President Christian Wulff, who visited Doha for the Opening of the Germany Qatar 2017 Year of Culture in the beginning of February 2017.

Due to the great success of the camp and the high demand, AGYA member El-Guindy will organise a one-day-event at his university in April to attract young high school students to science and in particular to his favourite subject: mathematics.

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AGYA Addresses Challenges in Health and Society

Obesity, type 2 diabetes, heart conditions, chronic lung diseases, and various types of cancer, among other non-infectious diseases' prevalence has increased dramatically at a global scale. Especially in Arab countries, these non-infectious diseases are the leading cause of two-thirds of the total deaths. Contemporary research has attributed these developments to both genetic predisposition as well as changing lifestyles, such as 'unhealthy' nutrition, psychological stress, and insufficient physical activity, implying that the diseases in question can be partly contained or even prevented altogether.

sectors. A critical step would be to effectively implement the recommendations of international treaties for health improvement, such as the World Health Organisation (WHO) Framework Convention on Tobacco Control. Many public policies affect the health status of a society. Therefore, lack of policy coherence across government sectors can lead governments to promote trade, industrial development policies and initiatives harmful to citizens' health and well-being. The AGYA Working Group *Health and Society* in collaboration with the World Health Organization Regional Office for the Eastern Mediterranean (WHO/EMRO) conducted



THE NEED FOR MORE EFFECTIVE HEALTH AWARENESS PROGRAMMES

It is thus no wonder that several of those countries, in which non-infectious diseases have spread in the last decades, have established special health programmes with the purpose of instructing the population about 'healthy' nutrition, the importance of physical activity, and the dangers of tobacco consumption. Although many of these health programmes have been running for several years, the prevalence of these diseases has not decreased. The first project of the newly established AGYA Working Group *Health and Society* is generating first-hand statistical data on health awareness and its influence on the prevalence of non-infectious diseases in six Arab countries and in Germany. It tackles the question of how to improve health awareness programmes in order to enhance the health of local societies.

HEALTH POLICY REQUIRES A COORDINATED STRATEGY IN ALL SECTORS

Beyond the individual level, countries can combat non-infectious diseases through health-oriented policies in different governmental

a workshop in Cairo in February 2017 on 'Applying Health in All Policies (HiAP) Approach to Achieve Sustainable Development Goals'. Around sixty renowned experts and government officials in different sectors from eight Arab countries (Egypt, Jordan, Lebanon, Oman, Saudi Arabia, Sudan, Tunisia, UAE) as well as representatives from the League of Arab States and Germany were invited to reflect on how policies in various fields affect the general health situation of societies. The workshop provided participants with practical tools to assess, monitor, and improve the agenda set by the health sector in other policies. This joint training clarified the trade-offs that are at stake and the possible policy responses to minimise negative impact on health.

The **AGYA Working Group Health and Society** was established in October 2016 by its members in charge, Laila Prager and Mohamed Abou El-Enein. These two members joined AGYA only last year and immediately created a new Working Group. With their fellow members they conducted several workshops in the framework of AGYA research projects.



Algeria



Germany



Libya



Morocco



Tunisia

▀ Dialogue 'with the Other', Not Research 'on the Other' – The Need for a More Intensive Maghrebi-German Cooperation

For historical reasons, Maghrebi academia has closer ties with France than with other European countries. Recently, this is starting to change. Particularly in the aftermath of the so-called Arab Spring, new programmes of research cooperation have been implemented. Reflecting two different disciplinary and academic contexts, Algerian nanophysicist Samir Lounis and Tunisian philosopher Sarhan Dhouib discuss the opportunities and challenges of Maghrebi-German cooperation.

■ HAS THERE BEEN A TURN IN THE MAGHREB TOWARDS MORE ACADEMIC COOPERATION WITH GERMANY?

Sarhan: Definitely, cooperation has increased, especially after 2011, when many German science and intermediary organisations, such as the DAAD, have expanded their activities. The joint endeavours to establish a German-Tunisian University is another great example. Generally, Maghrebi academia is opening up to other scientific cultures, especially given the rise of English globally. This sharp increase of collaborative research in the social sciences and humanities would not have been possible however without the Arab Spring.

Samir: Indeed, the German-Maghrebi cooperation has intensified in the past years. However, there is a critical mismatch in this cooperation. The interest from the German side seems to be more in social and human sciences, while the interest from the Maghreb is more in natural and technical sciences. In general, joint publications with German scholars involve natural sciences, energy, and environment related fields. Increasing efforts have been made to bring Germany and Maghrebi countries closer together, but these are still insufficient. Looking at the past 10 years, France has always been the first academic partner (ca. 25%) in collaborative scientific publications, the U.S.A. and Germany (2%-6%) lagging far behind.

■ HOW HAVE YOU EXPERIENCED MAGHREBI-GERMAN COOPERATION?

Sarhan: After the Arab Spring, I was responsible for bilateral programmes supporting young scholars in the fields of social sciences and humanities. In Tunisia, we organised one of the

largest conferences in the history of Arab-German cooperation on culture and identity, democracy and diversity, tolerance and justice. Regarding humanities, German philosophy is highly respected, and I witness a special interest in schools of social critique as shown by recent translations of German key authors such as Habermas or Forst.

Samir: I am currently based at the Research Center Jülich and together with other AGYA members, I am organising scientific visits between Morocco and Germany to establish new networks and collaborative projects. Regarding my homecountry Algeria, the Pan African University is an excellent example of collaboration with Germany in the field of water and energy sciences. Generally, I believe that Maghrebi countries offer rich possibilities for academic exchange with North Africa and beyond.

■ HOW COULD MAGHREBI-GERMAN COLLABORATION BE IMPROVED?

Samir: Maghrebi students and scholars are very often not aware of possible funding schemes for cooperation with Germany. Building academic networks is essential in this regard. Strong stimulus is needed to direct German students and scientists to Maghrebi universities. Improvement requires strong promotion at all levels. The political developments in the Arab countries are for sure of interest to German scholars; the question remains whether the same academic community in the North African countries is interested to collaborate on these topics with German colleagues.

Sarhan: I see a lack of real dialogue: the non-European scholar is often treated as a research object instead of an equal interlocutor. Findings of Maghrebi researchers are plugged into pre-existing theories. In philosophy, Islamist writers are given more attention than works by secular and critical Arab intellectuals. This amounts to a selective representation and construction of the other, perhaps even an implicit silencing of the 'voice of reason' in 'the other'. Self-criticism is required from both sides, and we need an open dialogue 'with the other', not research 'on the other'.

Sarhan Dhouib is Assistant Professor for Philosophy at the University of Kassel with a background in German Idealism, Political and Intercultural Philosophy, and Arabic Philosophy. His current research focuses on the philosophy of human rights from a transcultural perspective. Within AGYA, together with his Algerian colleague Fayçal Djefal (Microelectronics), he organises the Tandem Project 'Voices of a New Enlightenment'.

Samir Lounis is Junior Professor at the RWTH Aachen University and leader of the Functional Nanoscale Structure Probe and Simulation Laboratory (Funsilab) at the Research Center Jülich. His core expertise lies in the field of theoretical solid-state physics of realistic materials, particularly magnets, magnetic materials for spintronics, surfaces and interfaces with a focus on nanostructures.



Spotlight on Survival Artists: Saltwater Plants as Biomass for Energy Production?

Halophyte plants are able to survive and to reproduce in environments with high salinity levels. It is time to spotlight these tough survival artists. AGYA members Ahmed Debez and Skander Elleuche invited their fellow members Jan Friesen and Carsten Montzka to take on this mission and investigated if halophytes could constitute a valuable resource in the bioenergy sector.

■ HALOPHYTES ARE OBVIOUSLY PLANT OUTSIDERS – WHAT MAKES THEM SO ATTRACTIVE TO FOUR RESEARCHERS OF DIFFERENT DISCIPLINES?

Carsten: The topic of 'Halophytes for biofuel production' can only be addressed from an interdisciplinary angle. Within AGYA there is a wide range of scientific expertise provided by the members of our academy. We were amazed by the fact that this little outsider is a connecting element of our quite diverse research backgrounds. The topic of 'Halophytes for biofuel production' is a common denominator.

■ HOW DID YOU APPROACH THE TOPIC FROM YOUR OWN DISCIPLINARY BACKGROUNDS?

Carsten: Ahmed's expertise is biotechnology, and specifically, bio-physiological adaptations. His contribution started by providing key information about halophyte plants.

Ahmed: Halophyte plants are native of saline ecosystems, whether coastal or inland, with a particular emphasis on their salt-tolerance limits. These limits are known to vary significantly between and even within species. Therefore, I identified halophytes with bioenergy potential.

Carsten: Jan addresses the topic from a geographer's perspective and has focused on the global distribution of halophyte habitats.

Jan: One major challenge is, of course, that there is a large number of different halophyte species with different characteristics regarding their regional distribution. I therefore generated maps that show the distribution of saline soils and coastal regions. I have worked closely with Carsten, who focused on saline soils and their properties.

Carsten: In my research area—remote sensing of soil moisture for climate simulations—hydraulic soil properties are of utmost importance. However, these hydraulic characteristics are closely linked to the physical and chemical composition of the soil inherited from the sediment and modified by climatic influences. Skander is a biotechnologist with an expertise in biomass degradation. He determined biocatalysts which are capable of decomposing plant materials from halophytes.

Skander: Since halophytes exhibit certain salt concentrations that influence further industrial processing by corrosion of a production plant and inhibition of salt sensitive enzymes, I focused on the production of biocatalysts from halophilic microbes. These bacterial and archaeal species do not only survive but also thrive in high salt environments. Their enzymes might be most suitable for halophytic plant biomass degradation.

■ HOW CAN THE ARAB COUNTRIES AND GERMANY BENEFIT FROM THE RESULTS OF THIS RESEARCH?

Ahmed: Halophytes are distributed all over the coasts of most Arab countries but are neither utilised nor recycled. Sustainable technologies that establish such processes still need to be developed.

Jan: The discussion regarding renewable energy and especially bioenergy is currently gaining momentum. In view of plan-based energy products, there are issues that affect both the Arab world and Germany, for example, the food-versus-fuel debate in regard to bioenergy. As to the potential regions for halophyte production, those are mostly found in the Arab countries, especially in the southern Mediterranean.

Ahmed: Halophytes could play a role in sustainable biomass production in the Arab world but more interdisciplinary research is needed to identify the technically and economically feasible solutions.

The results on the potential of these plants will be published in a scientific article. As a preview, the four researchers came together for an interview.

Ahmed Debez is Assistant Professor at the Center of Biotechnology of the Technopark of Borj-Cedria, Tunisia. His field of research is agriculture and plant biotechnology.

Skander Elleuche is a researcher at Miltenyi Biotec GmbH.

Jan Friesen works as a researcher at the Department Catchment Hydrology at the Helmholtz-Centre for Environmental Research in Leipzig. His research concentrates on eco-hydrology, remote sensing, and sensor development.

Carsten Montzka works at the Research Center Jülich in the field of Computer Sciences and Environmental Studies.



Launch of the AGYA Policy Report on Migration at the Salon Sophie Charlotte 2017

It is our great pleasure to announce the publication of 26 policy recommendations which address opportunities and challenges of migration in the context of Arab-German cooperation in education, research, and innovation. The AGYA policy report presents best practices and strategies for integrating migrants and refugees into higher education systems from a distinct Arab and German perspective. These policy recommendations are the results of various AGYA projects and especially of workshops and meetings that took place at the AGYA conference on Migration and Transnational Cooperation in Education, Research and Innovation held in Berlin, in May 2016. On the occasion of this event, AGYA brought together 200 high-ranking Arab and German scholars and leading university representatives from 19 countries to discuss challenges and potentials of migration in regard to education, research, and innovation. We hope that these recommendations will provide a fresh Arab-German perspective on migration. We wish you an inspiring read at agyainfo.info.



IMPRESSIONS FROM THE SALON SOPHIE CHARLOTTE 2017

'Rebellion, Transformation, Re-Configuration' – AGYA participated under this title in the prestigious "Salon Sophie Charlotte"

on 21 January 2017, a public event yearly held at the Berlin-Brandenburg Academy of Sciences and Humanities (BBAW). The event was hosted by AGYA Principal Investigator and AGYA member Verena Lepper.

The event began with an input from Arabist Stephan Procházka, who outlined the great significance of pop music for the Egyptian revolution in 2011 and gave a theoretical background of the music-installation 'Pro – Contra – In between', which followed his talk. This video installation provided a lively impression of the unrelenting opposition between the advocates and opponents of the Arabellions in Egypt. AGYA members Hanan Badr, Sarhan Dhouib, Fatima Kastner, and Florian Kohstall, in conversation with journalist Anne François Weber, reported on the impact of the political uprisings on various academic disciplines in the MENA region. Their findings can be found online on the AGYA website. In a second panel, Syrian celebrity chef Fadi Alauwad first gave a sample of his culinary skills offering highlights of Syrian cuisine and talked about his personal migration history. Then, AGYA member Vanessa Lux presented AGYA's 'Policy Report on Migration' (see above) to the interested audience. Several recommendations on how to adequately respond to the recent migration movements within the higher education sector were discussed. As another result of AGYA's initiatives in the field of migration the new project 'Adopt An Academic' was presented. It is a mentoring program that was designed by AGYA member Florian Kohstall, which seeks to reintegrate refugee scholars into the academic landscape of their host countries. The Egyptian-German TARKIBA band concluded the evening and invited AGYA's guests to experience the sound of the "Arab Spring".



'MAKE a Difference!' Launch of Idea Challenge for Innovative Products

'MAKE a difference!' is an international idea challenge of the Arab-German Young Academy of Sciences and Humanities (AGYA) in collaboration with the Helmut Schmidt University (HSU). The aim of 'MAKE a difference!' is to enhance creativity, social commitment, constructive collaboration and knowledge exchange between students, engineers, designers, makers, labs, and other innovation drivers. Interested applicants are invited to submit ideas for the development of artefacts that could create social and ecological impact in these 4 focus areas: (1) meeting the needs of refugees, (2) sustaining health, (3) supporting learning and (4) enhancing ecological sustainability. Participation in the idea challenge will be open from 27 March until 1 June 2017. In October 2017, 10 applicants with the best ideas will be invited to a one-week development workshop at the OpenLab digital fabrication facility at HSU to transform their ideas into products. For more information on the idea challenge contact info@make-a-difference.info or visit make-a-difference.info

Latest News

■ On 1 February 2017, **Jan Völkel** joined the Institute for European Studies (IES), Vrije Universiteit Brussel, as Marie Skłodowska-Curie Research Fellow, funded by the European Commission. His two-year research project focuses on 'The role of national parliaments in the Arab transformation processes'.

■ In January 2017, **Mohamed Abou El-Enein** was appointed Junior Professor for Clinical Development with a focus on Regenerative Medicine at the Charité - University Medicine Berlin.

■ **Salma Balazadeh** successfully completed her habilitation in Molecular Plant Physiology in 2016, and started her new position as Private Lecturer at the Faculty of Science, University of Potsdam.

■ One of the main goals of the Academy of Scientific Research and Technology in Egypt (ASRT) is the appreciation of excellence and recognition of outstanding contributions to the advancement of science. In this context, ASRT has awarded **Verena Lepper** the ASRT golden plate award and certificate of appreciation. This ASRT award is an honor awarded to recognise outstanding achievements with national and regional impact.



■ **Assem Abu Hatab** and two colleagues at the Department of Economics, Swedish University of Agricultural Sciences have received a research grant of 700.000 euros from the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS) for their research project 'The dynamics of urban sprawl: land-use changes, food supply and sustainable agricultural production systems in the arid and semi-arid zones'.

■ In January 2017, **Tareq Osaili** started his new position as Professor at the Research Institute of Medical & Health Sciences at the University of Sharjah, United Arab Emirates.

■ **Bilal Orfali** has joined the editorial boards of the Journal of Islamic & Religious Studies (JIRS) and al-Machreq al-Raqmiyya.

■ General supervisor of the Grand Egyptian Museum and AGYA member since 2013, **Tarek Tawfik**, welcomed Parliamentary State Secretary to the Federal Minister of Education and Research (BMBF), Thomas Rachel, who led a delegation of the BMBF in March 2017 at the Grand Egyptian Museum in Cairo, which is currently one of the largest museum development projects in the world.



About Us

The Arab-German Young Academy of Sciences and Humanities (AGYA) has been established in 2013 at the Berlin-Brandenburg Academy of Sciences and Humanities as the first bilateral young academy worldwide. AGYA promotes research cooperation among outstanding early-career researchers (3-10 years post-PhD) from all disciplines who are affiliated with a research institution in Germany or any Arab country. The academy provides partnership-building opportunities and funding to support the innovative projects of its members in various fields of research as well as in science policy and education. Four public Calls for Membership have been issued to date addressing excellent early-career scholars from various disciplines based in the 22 Arab countries and Germany. From among hundreds of applicants, fifty eight members—in equal number Arab and German scholars—have been selected to join AGYA.

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