

HOPE - a new European Academic Network*

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Along the lines of the life of em. prof. dr. Laura Țugulea the historical developments of the E.C.'s thematic or academic networks of physics departments (EUPEN, STEPS, STEPS TWO and HOPE) in the ERASMUS, SOCRATES and LLL programmes were described with a lot of connecting anecdotes and with emphasis on the role of Laura in these projects. Finally a plea was held for a European (official) body ('think thank') so that good practices of national initiatives, w.r.t. stimulating young people becoming physicists, etc., could be spread over the whole of Europe and where a parallel series of follow-up activities to HOPE could be co-ordinated.

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What is HOPE?

The project HOPE - acronym for "*Horizons in Physics Education*" - is an academic/thematic network, which has been launched for three years from October 2013 with the support of the Lifelong Learning Programme (LLP) of the European Commission. It is effectively the sixth thematic network in physics education in a series of networks beginning in 1996 with the *European Physics Education Network* (EUPEN).

HOPE is co-ordinated by *Nadine Witkowski* (*Université Pierre et Marie Curie, Paris [FR]*), *Marisa Michelini* (*Università di Udine, Udine [IT]*) and *Ivan Ruddock* (*Strathclyde University, Glasgow [UK]*). The network comprises 71 full partners from 31 LLP-eligible countries of the European Union along with Norway, Serbia, Switzerland and Turkey; they include 65 academic partners and 6 non-academic partners, one of them being the *European Physical Society*. The consortium is further enriched by 10 associated partners including the *Institute of Physics*, the *American Physical Society*, IBM Zürich Laboratory, GIREP (*Groupe International de Recherche sur l'Enseignement de la Physique*), and various universities in both North and South America. Among HOPE partners, there are the Universities of Bucharest, Craiova and Iași, The West University from Timișoara and the Horia Hulubei Foundation.

With an overall aim of enhancing the impact of physics within Europe and its visibility in society, the network will research and share good practice within four themes:

- the factors influencing young people to choose physics studies;
- physics graduates' competences that enable them to contribute to the new needs of the European economy and society;
- the effectiveness and attractiveness of physics teaching in Europe's university physics departments and their competitiveness in the global student market;
- strategies for increasing the supply of well-trained physics school teachers and for developing links between university physics departments and the teaching of physics in schools.

Antecedents to HOPE: lessons from the past

Let me evoke some landmarks in the evolution of pan-European institutions and networks involved in physics education, inserting some personal recollections.

On 26 September 1968, the *European Physical Society* (EPS) was created by Gilberto Bernardini (1906/95) with among the goals, "*the encouragement of exchange of students and young physicists*". The EPS association extended to a total of 42 national physical societies, representing more than 120 000 members and physicists in Europe. The role of EPS in our activities will become clear and will represent a red tread up to the very end of my talk. Again almost twenty years later on 9 November 1989, when driving back home on the German *Autobahnen* from an experimental shift at the Max I accelerator in Lund [SE], I was surprised seeing such a huge

*Paper dedicated to the Memory of Laura Țugulea

number of *Trabant* cars. Soon the auto radio announced the fall of the Berlin Wall with the implication that probably one third of this audience would otherwise not have been present here today.

In the Autumn of 1992 prof. dr. Ernst Heer, former Rector of *Université de Genève* [CH], established the EMSPS (*European Mobility Scheme of Physics Students*). He previously obtained experience with a student mobility initiative among the different language groups in Switzerland. The scheme was not only relying on support from the then-more-than-100 European Community and EFTA partners via an *Inter-University Co-operation Project* (ICP, co-ordinated by *Universiteit Gent*, H. Ferdinande [BE]) but also via a set of five *Mobility Joint European Projects* in HU, PL, LT, LV & RO from the TEMPUS programme (MJEP, co-ordinated by *Leibniz Universität Hannover*, P. Sauer [DE]). It was a pure coincidence that in that period a Romanian doctoral student at UGent, Tibor Becze-Déak, from the Transylvania region and of Hungarian descent, suggested Laura Țugulea (his former professor in București) as the possible Romanian national co-ordinator *via* me to Peter Sauer. In this way both Laura and I learned our ‘*métier*’ of ‘network co-ordinator’ from our Swiss ‘network master’, prof. E. Heer. Ernst always prepared the agenda for his management meetings with such a precision that even the time to be spent on each topic was already stated in advance and also seriously observed when treated! Laura was also the co-ordinator of a TEMPUS project ‘*EMSPS with Romania*’ (1996/8).

Prior to the EUPEN Network the E.C. launched a call for a Thematic Evaluation Conference (TEC) in the frame of the SOCRATES programme. With the help of other ICPs in physics the EMSPS organised on 7/8 April 1995 in *Universiteit Gent*, Gent [BE] this bilingual meeting on “*Physics Studies for Tomorrow’s Europe / L’enseignement de la physique pour l’Europe de demain*” (see ref. 2). Representatives of 24 western, central and eastern European countries (including Laura for Romania) reported on (i) the physics studies (degree programmes) in their countries, (ii) the needs for co-operation and (iii) the implementation of those aims in a European context.

In those heroic times reimbursements for expenses to participants from central and eastern European countries (among which Laura) were not easy. Travel for those participants was arranged via the official conference carrier SABENA (*Société Anonyme Belge pour l’Exploitation de la Navigation Aérienne*). Vouchers were sent which could be

exchanged immediately to flight tickets at the local SABENA agencies. Accommodation was accounted by providing a ‘*per diem*’ cash. One has to realise that the euro currency did not exist yet, although the grant was given in ecu with a fixed exchange rate to the BEF (Belgian franc). Hence, in order to minimize exchange charges, I, the conference organiser, had to advance before the meeting a total sum for paying out these cash amounts to those participants of the order of three months of my salary. I was reimbursed by the Financial Service of *UGent* for these cash amounts a month after the meeting by providing proof of attendance by the concerned participants’ signatures.

The TEC concluded with the creation of a permanent forum and gave the start to the formation of a sustainable network, the *European Physics Education Network* (EUPEN) (see ref. 2). The consortium received a three years’ grant (1996/99), followed by a dissemination year (1999/2000) and another three years’ grant (2000/03) for an academic network project from SOCRATES. During this whole period I was the co-ordinator, scientific and financial manager, and newsletter editor. The proceedings of all the forums were published as a series of seven books ‘*Inquiries into European Higher Education in Physics*’. From the start in 2000 a close collaboration was established with the ‘*Tuning Educational Structures in Europe*’ (for short ‘*TUNING*’) initiatives. In this project universities did not look for uniformity in their degree programmes but simply for points of reference, convergence and common understanding. The EUPEN network cooperated in synergy as the Subject Area Group (SAG) in physics.

I was astonished on 4 October 2002 seeing Laura Țugulea (after a night train journey) sitting in the aula of the *Universitatea din Oradea*, Oradea [RO] where I received a **dr. h. c.** degree. Due to the ceremony we were not able to meet, but the next day Laura emailed me “*Many times and in different occasions, I emphasized your precious and continuous support for the Romanian HE in Physics in the process of ‘integration’ in the European family*”.

During the academic year 2004/05 each month I distributed the electronic magazine or e-zine *EUPEN-on-line* to inform the partners on the European HE scene and to stimulate ideas for a new E.C.’s grant application in order to revive the **network**. As a result was a network project in physics, ‘*Stakeholders Tune European Physics Studies*’ (STEPS), was funded within the SOCRATES programme by the E.C.’s Directorate

General, Education and Culture (DG EAC) (see Ref. 2). In that period Laura Țugulea represented the central and eastern European countries in the TUNING network for the physics subject area.

The STEPS TWO network (2008/11) took along the aims and goals of the Bologna declaration (see ref. 3) but extended them to include a study of the important question of the shortage of physics teachers in Europe's schools and a survey of national approaches to teacher training. The network was co-ordinated by the *Universitatea din București* (L. Țugulea [RO]) and contracted by the *Universiteit Antwerpen* (J. Naudts [BE]), a real team uniting western and eastern Europe, again with extra support by EPS. It continued to use the partnership and expertise of the EUPEN consortium. Laura showed here her mastery of efficient and transparent management and preferred working by a 'people-to-people dialogue' strategy, incorporating in all meetings a small gathering of the M.C. and the A.B. The Management Committee explicitly included the three Working Group Chairs.

Context & relevance of HOPE

In September 2013 *Université Pierre et Marie Curie* (UPMC) received the good news that the multilateral network application to the EAC EA was selected. Hence, the HOPE (*Horizons in Physics Education*) project started its activities with a Meeting of the Management Committee, the Advisory Board (of which Laura was a member) and most of the WG chairpersons in UPMC, Paris[FR] on 10/11 October 2013. These were the days most of us did see Laura for the last time. She contributed remarkably to the start of the new network. In December 2013 Laura received an offer to apply for a three-months visiting-professorship during the Summer of 2014 at the *Institute for the Advancement of Higher Education* at Hokkaido University, Sapporo [JP]. In 2011 she expressed her interest in Japan by delivering an invited talk 'Asia - Europe Education, Bridges which AAPPS & EPS have to use' at the *Asia-Europe Physics Summit 2* (ASEPS2) in Wrocław [PL].

One of her most active students in STEPS & STEPS TWO, Liviu Bilteanu, wrote "*Tens maybe hundreds of students remember how patiently Professor Țugulea helped them to get through the Erasmus Mobility Scheme. ... Through her diplomatic skills, kindness and superb attitude in critical moments, Professor Țugulea was one of the most active persons in STEPS and STEPS TWO. She*

was the one who constantly encouraged me and my fellow students to participate actively to the EUPEN meetings and she also supported the students' committee inside EUPEN".

Unfortunately she was not able to attend anymore the very successful first Annual Forum (see ref.4) of the HOPE network project on 27/30 October 2014 at the *Helsingin yliopisto/ Helsingfors universitet*, Helsinki [FI].

Messages for the future

But now it is most important to consider the future for the academic/thematic/multilateral network. In the frame of the ERASMUS+ (2014/20) programme the co-operation cannot be extended, since even the ECTN (*European Chemistry Thematic Network*) has to stop after eighteen years of continuous existence from 1996 on till now. In the April HOPE WG2 Meeting in Villeneuve-d'Ascq/Lille [FR], in the July GIREP/MPTL2014 Conference in Palermo [IT] and in the August ICPS2014 Conference of the physics students in Heidelberg [DE] I explained in my two last slides how the continuity of the network could be established with the help of EPS.

In both slides I wanted to plead for the establishment of a European (official) body ('think tank'). This could probably be realised with the help of the *Physics Education Division* of EPS and with the 42 national member-societies of the EPS. In the beginning one could start with perhaps a regional grouped representation of those 42 societies. In such an organisation the good national initiatives (e.g. *Stimulating Physics Network* in the UK or the *Konferenz der Fachbereiche Physik* in Germany) could be spread over the whole of Europe. This pan-European body would be able to co-ordinate a parallel series of follow-up initiatives to HOPE in the most effective way.

Indeed just like the AIP (*American Institute of Physics*) with the APS (*American Physical Society*) and the AAPT (*American Association of Physics Teachers*) can offer a general view on physics education and its policies in all US states together, EPS should try to mimic this for an overall view on the whole of Europe. Luckily some nice aspects of the complete view at the national/regional level exist in the largest national member-societies, e.g. the *Deutsche Physikalische Gesellschaft* (DPG), the *Institute of Physics* (IoP), the *Società Italiana di Fisica* (SIF) and the *Nederlandse Natuurkundige Vereniging* (NNV) of which the first three are HOPE

partner-members. However, a permanent body consisting of 2-to-3 years-rolling national/regional representatives from all European countries should be feasible.

Recently the consultation on the *Horizon 2020 Science with and for Society programme* has been closed:

http://ec.europa.eu/research/consultations/swafs/consultation_en.htm

Quite soon we will we eagerly look at the preferences to the support the *Work programme 2016/17* for this part of Horizon 2020, as expressed by individuals and by organisations and networks. Indeed many of the topical lines completely focused on the specific themes and subjects, which were presented by the WGs of HOPE during the above-mentioned Annual Forum.

We are sure that in the coming year we will see some of the results of HOPE's first year's activities being announced in preliminary deliverables.

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