An International Doctorate in Natural Intelligence:
a Proposal for Trisociety Collaboration

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The doctorate degree was historically introduced by von Humboldt at Berlin University in 1810. In the USA, the first student that received the Ph.D. was at Yale University in 1862.

The university students that conclude the study program (typically in three years) are awarded the Doctor of Philosophy (Ph. D) degree. The doctorate has the main objective of forming researchers through training in relevant centres and under the supervision of an experienced, somehow recognized, supervisor. Recently, the possibility of having a pool of supervisors has emerged somewhere, in particular, in the USA. This is the purpose of my editorial writing.

BACKGROUND: Recently, the European Universities Association (EUA) fixed the core competencies to be acquired at the 3rd cycle level through the Salzburg recommendations, in order to avoid reducing the standard of the Ph.D. and to refocus on the importance of research. At an European level, there was an impetus for increasing the Ph.D. education till thinking at a model of doctoral training incorporated as a third level course within the programs of many Universities.

Among the relevant points to be achieved, there was the indication of some principles of innovative doctoral training. A significant emphasis was given to interdisciplinary for reaching research excellence. The Ph.D. students should follow an articulate path that includes opportunities to work in industry during the training as well as to develop generic, transferable skills. Ultimately, the training of doctorates should be finalized to improve the ability to cope with emerging economy's requirements. To be competitive there is a need for international networking also with the aim of recognizing modern and varied perspectives of different countries. However, the network of excellence is mainly intended at a "regional" level (say, European, or US-based Universities).

OPPORTUNITY: As more and more scientific, medical and engineering applications and innovative researches involve natural intelligence, and since *our Society is "naturally" networked in the world (through INNS, ENNS, and JNNS)*, I think it is now the right time to think and, possibly, design an *International Doctorate in Natural Intelligence*. Of course, the programme should lead to transform excellent qualified students from all over the world in successful researchers. Thus, they should spend part of their training time involved in researches which are carried out in different laboratories in the world, with supervisors proposed and selected by, for example, our societies' governors.

MOU: An international Memorandum of Understanding (MOU) agreement should be signed among different involved parties in order to define a commonly accepted plan of lectures and research topics. The students should be involved in preparing and being first authors of internationally peer-reviewed papers within the Ph.D. course, under the directions of a pool of supervisors.

SCOPE: Once assessed the involvement of different international research centres and guaranteed the mobility through the centres with mutual recognition of the training activities, with regards to the content of the course, a detailed study should define the core competencies to be acquired within the wide range of **Natural Intelligence** coverage. They should certainly include basic symbolic and computational intelligence (natural language processing, search, agents, knowledge based systems, social agents and signal processing); machine learning (neural networks, evolutionary computation, swarm intelligence, kernel machines, hybrid signal processing); software and hardware implementation of bio-(brain-)inspired circuits from design to realization (e.g., olfactory, vision, tactile-recognition systems); automation and robotics; neuromorphic engineering; but also some high-level topics of modern mathematics, statistics, physics, management/economic/financial matters, and perhaps psychology and certainly Brain-like computational tools.

GOVERNESS: The applications and the research topics to be developed as individual assignments/projects should be proposed by the Steering Committee of the Ph.D. Course that would include outstanding scientists from our societies covering all the world by focusing on different aspects of the various economies/cultural models involved. The students will be encouraged to meet at the IJCNN conferences, each year, to discuss the advancement of their activities, to present written

reports and to collectively analyse their achievements. INNS/ENNS/JNNS could grant a special awards to the best reports. This could help in growing a group of future leading researchers within our Societies that finally will guarantee the survival of our associations through the years to come.

FINANCE: It would not be difficult to find the grants coverage for a limited number of excellent Ph.D. students within the research projects we individually carry out at our Universities. The clear advantage for our own organizations will be multiple recognitions at world level. Our NI Magazine could be a privileged publication site for the advancements of doctorates' activity.

ACTION: We shall continue the discussion to sketch a DALLAS MOU while enjoying a great IJCNN 2013, Dallas, TX, USA! ∎