

Agreement of Cooperation

Between:

Bar-Ilan University, Ramat-Gan, Israel, represented by Professor Moshe Kaveh, President, and Professor Yosef Yeshurun, Rector

and:

The International School for Advanced Studies (SISSA) represented by Professor Stefano Fantoni, Director.

Given that informal scientific cooperation already exists between individual faculty members and departments both parties here agree to formalize an institutional Cooperation Agreement as described below:

Article 1:

The aim of the Cooperation Agreement

The present Agreement establishes the general principles for scientific, technical, educational and administrative cooperation between the two institutions. The two institutions will unite their efforts and coordinate their actions in order to contribute to and encourage the development of research at both institutions.

Article 2:

Methods of Cooperation

The cooperation between the two institutions will comprise of the exchange of teachers, researchers, students, as well as administrative and technical staff.

In order for this to occur, the two institutions will collaborate to the best of their abilities and will place into effect all or part of the following:

A - Representatives of teachers and researchers to:

- participate in the elaboration of technical and educational projects,
- contribute to the initial formation or continuation and organization of educational curriculum or the improvement of the existing curriculum.

B - Collaboration in program within the scientific domain:

- to establish a procedure to cooperatively supervise theses in accordance with the regulations of both of the institutions,
- to establish scientific collaboration between laboratories and research centers,
- to associate themselves with international research programs.

C - Delegations of administrative and technical staff to organize the management of the administrative and financial aspects of the cooperation.

Article 3:

Organization of the Cooperation Agreement

The two parties will consult when they feel it is necessary. They will present, on a yearly basis, a list of projects that have been completed are in process, or in the planning stages.

The two parties will be able, upon mutual agreement, to change this agreement as needed.

The two parties will be able to consult in order to subsequently establish a procedure to begin a program of jointly-issued diplomas.

Article 4:

Programming and Evaluation

Setting this Agreement in motion will be the subject of annual meetings or more often if necessary with the agendas being set up by both institutions.

The two institutions will periodically address a list of issues that have been fulfilled or are in the process of being fulfilled. The concerned authorities will be kept up to date as requested or upon status changes.

Article 5:

Relation with Third Parties

The cooperation, subject of this Agreement, will be able extended to third parties that request admission. This will be executed by a mutually accepted agreement issued by the two cooperating institutions.

Article 6:

Areas of Cooperation

The methodology, the nature and the content of the programs and projects that will stem from the present Agreement will be specified and established by each of the sines or the planning committee of the two institutions.

Article 7:

Costs

Each institution will bear all of its costs concerning the cooperation as described in Article 2.

Article 8

Limitations

Joint cooperation will be subject to the budgetary requirements of each institution.

Article 9:

Validity of the Cooperation Agreement

This signed Agreement will be valid for five (5) years. The Agreement will become effective from the date of signature by the two parties.

The Agreement will automatically be renewed unless it has been canceled six (6) months before the expiration date.


This Agreement can be modified upon the written agreement of both of the parties concerned.





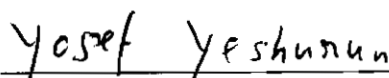
Professor Stefano Fantoni
Director, SISSA

Date: 26 APR, 2005



Professor Moshe Kaveh, President
Bar-Ilan University

Date:



Professor Yosef Yeshurun, Rector
Bar-Ilan University

Date: 19-04-2005

Appendix

Reducing Language Processing to General Cortical Computation

a joint research project, 2005-2008, within the framework of the BIU-SISSA cooperation agreement.

Rationale: How does the human brain process natural language? In the last twenty years, enormous progress has been made in understanding how the physiological structure of the brain endows it with its capacities for perception, learning, memory and for producing behaviour - at least in those domains in which animal models are available. The new technologies for observing neuronal activity in human subjects, combined with traditional anatomy and neuropsychology, clarified that there is no dedicated machinery to subservise more complex cognitive capacities, including language - for which animal models are not readily available. Thus at some level language processing has to be reduced to the operation of the same types of neuronal networks as underlie other, less distinctly human brain capabilities. The mammalian cerebral cortex, in particular, presents us with a standard microcircuitry, with relatively little variation across species and across areas, from e.g. primary sensory or motor areas in simple mammals to human cortical areas, such as Wernicke's and Broca's, traditionally associated with language. Cortical networks, with their volume overwhelmingly dedicated to synaptic contacts between neurons, have been interpreted as having evolved to serve a general-purpose associative memory function. Simplified neural network models have shown how associative synaptic plasticity, operating on distributed representations expressed by the activation of simple neuron-like processing elements, can impart different structures in the brain their specific associative memory functions. The challenge now is to develop mechanistic models of how the brain might process language, or aspects of language, which are both biologically plausible and linguistically plausible. This proposed project addresses this challenge.

Personnel involved in the project:

at BIU - Prof Susan Rothstein, Dan Nemrodov, 2 more students to be named

at SISSA - Prof Alessandro Treves, Dr André Grüning, Dr Nicola van Rijsbergen, Emilio Kropff, Federica Menghini

Support for the project is envisaged to come from the following sources:

- for the work to be carried out at BIU by Prof Rothstein and local collaborators (of the order of 100,000 Euros over the 3 years), excluding exchanges of visits with the Italian partners, from a research application recently submitted by Prof Rothstein to the Israel Science Foundation, and currently under review.
- for the work to be carried out at SISSA by Prof Treves and local collaborators (of the order of 30,000 Euros over the 3 years), excluding exchanges of visits with the Israeli partners, from a research grant already awarded to Prof Treves by the Human Frontier Science Programme, to investigate general principles of cortical computation.
- for the funding of mutual visits (total budget 20,000 over 3 years):
 - 3,000 Euro from SISSA travel funding to Prof Treves' group.
 - 4,000 Euro from BIU travel funding to Prof Rothstein's group.
 - 3,000 Euro from HFSP travel funding to Prof Treves' group
 - 10,000 Euro from a grant application to favor the internationalization of research and training at Italian institutions, recently submitted to the Italian ministry for

research by Prof Treves in partnership with Prof Rothstein, and specifically aimed, if awarded, to co-funding exchanges of visits.

Research plan. The project is articulated in a series of neural network analyses to be carried out primarily by the LIMBO research group led by Prof Alessandro Treves at the Cognitive Neuroscience sector of SISSA, in the analysis of three linguistic phenomena to be carried out primarily by the group of Prof Susan Rothstein at the Gonda Brain Research Centre of BIU, and in developmental, psychophysical and fMRI investigations to follow up in concert between the two research groups, and in collaboration with others at the two institutions, as detailed in the following flow chart:

