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Evaluation Report of the Effectiveness and the Process of the Co-operation Between UNESCO and the Basic Sciences Research Networks in Latin America and the Caribbean (1994-99)

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EVALUATION REPORT OF THE EFFECTIVENESS AND THE PROCESS OF THE CO-OPERATION BETWEEN UNESCO AND THE BASIC SCIENCES RESEARCH NETWORKS IN LATIN AMERICA AND THE CARIBBEAN (1994-99)

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* Based on the Report prepared by the External Evaluator (Dr. Luis Sanz Menéndez, Scientific Research Council (CSIC), Spain, November 2000).

Executive Summary

1. PURPOSE AND OBJECTIVES

The purpose of this evaluation is to determine the effectiveness and the co-operation process between UNESCO and the basic sciences research networks (BSRN).

UNESCO had defined a set of objectives regarding cooperation in the field of basic sciences that were, however, a set of general principles rather than basic elements for action integrated into a specific strategy. Thus, UNESCO's relationship with the BSRN has not been an exercise of planning and programming, but a mechanism to respond to the interests, demands and needs for support (and recognition by UNESCO) of a group of academic actors that claimed to be the representatives of Latin-America's scientific research. This situation greatly hindered the development of a standard evaluation exercise, through simple comparison of objectives and results with an established criteria, due to the multiplicity of objectives and actors, which are constantly changing.

2. UNESCO AND THE BASIC SCIENCES RESEARCH NETWORKS (BSRN)

From UNESCO's point of view the networks emerged or were consolidated as an answer to a generic call for scientific–technical cooperation in the region. The strategy adopted by UNESCO had been to satisfy the demands of the scientific community, however, its attitude was reduced to cover a few academic endeavours with whom it established a symbiotic relationship, and, because of the lack of capacity to define its own strategy, it went on adopting the fragmented propositions and initiatives that it received from the networks. The modestly defined co-operation with the BSRN and its limited representativeness and visibility has projected UNESCO –in the eyes of the scientific community- as a poor financing agency. In that respect, UNESCO co-operation was developed at a rather high price of neglecting a large majority of the academic and scientific community in Latin America and the Caribbean. UNESCO's action has not been directed neither to government officials, its natural counterparts, nor to academic and research institutions. On the contrary, it has been concentrated in specific individuals, relatively closed groups of individuals and professional associations (that cover only a part of the region).

That symbiotic relationship has led some research actors involved in those networks, to consider UNESCO as a small source of financing that guarantees the development of some of their own activities. The essence of the co-operation has consisted in the transfer of resources from UNESCO to the BSRN that defined, in many cases, excessively generic initiatives deprived of focus and goals. As for UNESCO, there was a lack of explicit criteria on which networks to fund and what activities to follow up and how much support they should receive . This apparent obscurantism is linked to persons and contacts, as well as to the processes of social capital formation. Consequently the allocation of resources for the development of regional scientific-techn

cal co-operation has not been undertaken using open bids, evaluation processes and on the basis of scientific relevance.

3. THE NETWORKS: ORGANIZATION AND OPERATION

The basic sciences research networks (BSRN) subject of this evaluation do not respond to a single pattern, they are very diverse entities. In addition, the BSRN are not the only networks or multinational academic groups that can be identified in the region. The UNESCO-related BSRN, are not "research networks" as such, but entities organized for obtaining funds that channel their research interests and act as an academic pressure groups or in the promotion of science policy and cooperation.

The BSRN supported by UNESCO can be classified in four types: a) The "CLOSED GROUP" model (Latin American Network of Biological Sciences, RELAB; Latin American Chemical Science Network, RELACQ). This type of structure is built upon the gathering of so-called national representatives (governmental and scientific). It is characterized by strategies that exclude the participation of other scientists that do not belong to the group. b) The "SCIENTIFIC SOCIETY" model (Mathematical Union of Latin America and the Caribbean, UMALCA; Latin American Federation of Physics Societies, FELASOFI; Latin American Astronomy Network, RELAA). This type responds to the more traditional formats of scientific societies or federations of scientific associations, with electoral mechanisms and representation in their national organizations; their strategies normally are inclusive. However, the level of organizational maturity is diverse (absence of structure of the RELAA). c) The "INTERNATIONAL CENTER" model (Latin American Centre of Physics, CLAF). This type of arrangement responds to a model derived from an intergovernmental agreement backed by Latin American Governments, it is therefore a model of intervention and, overall, of co-ordination with governmental support. d) The "VIRTUAL" model (Latin American Earth Sciences Network, RELACT). This is a model that arises because of the failure to establish a material network of relations and attempts to simply respond to the idea of promoting the connection, production and interchange of information openly which has eventually evolved into a "virtual" space.

Even though there is diversity, the majority of the BSRN attempt to respond to the academic or scientific society model, with great desire for representation. The BSRN have maintained diverse privileged relationships with UNESCO and the financial support received has also been different. Some of the networks have been "redistributive" in their activities, more open to the financing of researchers' activities, including scientific competitors, while others have been more "distributive" utilizing UNESCO funds to feed their groups and fortify their own position within their disciplinary environment.

For the majority of the entities subject to evaluation, their age is barely five years. The level of independence and autonomy of the networks with respect to UNESCO also varies, as well as the level of financial dependence of the BSRN with respect to UNESCO allocations. In summary, there are three BSRN that barely have had any activity (Latin American Earth Sciences Network, RELACT; Latin American Astronomy Network, RELAA and Latin American Chemical Science Network, RELACQ) and their role has been limited, in the best of cases, to simply administrating UNESCO funds. The other BSRN have been capable of developing more activity: the Latin American Network of Biological Sciences (RELAB) has diminished at the same rate as the decrease in UNESCO funds; the Latin American Centre of Physics (CLAF) has had some revival within the context of the training activities funded by the Brazilian government; and the Latin American Federation of Physics Societies (FELASOFI) and the Mathematical Union of Latin America and the Caribbean (UMALCA) continue to be guided by a strategy of consolidating a professional association.

Thus, only a few BSRN have undertaken explicit strategies to extend themselves, using the research community as their framework, rather than based on the idea of "government recognition" (or academic institutions); only a few strategies are "inclusive" and not "exclusive". The networks allocate their resources using criteria that attempt to combine "the relevance of the activities" with a certain "redistributive" principle among the countries.

If we consider the networks in terms of the adaptive capacity to the environment, we observe that the group of networks supported by UNESCO has been able to either survive or has been the victim of a "natural selection" process, and from this we can formulate some conclusions: It seems that the Mathematical Union of Latin America and the Caribbean (UMALCA) and the Latin American Federation of Physics Societies (FELASOFI) have passed the test of survival, which implies that the organization models that they represent and also the standard goal they have set for themselves, to become professional societies, have resulted to be effective. UNESCO has contributed to the launching of the BSRN, and has invested seed money which, in some cases, it is evident that they have not been able to grow.

4. SOME FOLLOW-UP COMMENTS

UNESCO does not need to systematically delegate to the same actors the activities that the development of its objectives implies. UNESCO should develop collaborations regulated by the definition of precise aims and activities based on a mutual agreement and only during a predefined period of time. UNESCO should develop and promote relationships with other actors whom which it can collaborate in the elaboration of its strategies.

UNESCO should promote a direct relationship with researchers and research institutions in the region. Nevertheless, this requires a severe reformulation of its intervention modalities. If UNESCO is to continue with any form of scientific collaboration we suggest a radical change and a strengthening of the co-operation, with precise objectives, with institutional level actors such as universities and research centres.

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UNESCO should concentrate its efforts in direct cooperation with research

centres (and their researchers), with governments, national science and technology bodies (ONCYTs), and other multinational organizations and including private foundations that fund research, to coordinate, or to promote a new action that results in more and better support for research and cooperation.

Furthermore, UNESCO should take advantage of its role of leadership and articulation between the different actors, to contribute to identify centres and programmes of excellence, and also to maintain and disseminate regional data bases on R&D centres and programmes.

0. Background

For years now, UNESCO has been developing activities in Latin America, both as regards the promotion of technical and scientific cooperation initiatives, and the support it has given to the basic sciences. In the beginning, the organization advised the Governments in the implementation of scientific research-oriented policies; later on, it identified problems of regional interest in the research area; and, finally, it gave direct support to certain regional scientific and technical cooperation activities.

One of the highlights of UNESCO's involvement in the field of basic sciences cooperation and support, taking into account both the resources applied and the significance it has adopted in the present discourse of UNESCO (see, as an example, the chapter on Latin America and Caribbean in the World Report on Science, 1998) is the close cooperation relationship between UNESCO and some of the so-called basic sciences research networks (BSRN) in Latin America, and, in particular, the attempts to set this kind of joint efforts into a broader plan of support to the creation and consolidation of a particular group of "networks". The BSRN supported by UNESCO are: Latin American Network of Biological Sciences (RELAB), Latin American Chemical Science Network (RELACQ), Mathematical Union of Latin America and the Caribbean, (UMALCA), Latin American Federation of Physics Societies (FELASOFI), Latin American Astronomy Network (RELAA), Latin American Centre of Physics, (CLAF) and Latin American Earth Sciences Network (RELACT).

Moreover, UNESCO has being paying more and more attention to the evaluation of its technical cooperation activities, with the purpose of implementing its frameworks for action in a more specific and effective way. These frameworks have been explained in documents such as the Medium-term strategy (1996-2001), and biannual budgets and programmes, and have received the support of the recent General Conference (October-November 1999).

In this context, on one hand, UNESCO expressed the convenience of performing an external evaluation of its cooperation with the basic science research networks in Latin America. On the other hand, coordinators of BSRN had also shown their interest and talked about the convenience of carrying out an evaluation process regarding the network activities. Thus, during the meeting organized by UNESCO-ROSTLAC with basic sciences research coordinators (Montevideo, March 13, 2000) the need to perform an external evaluation regarding the cooperation work of UNESCO with basic sciences research networks in Latin America was mentioned again and a decision was adopted to put such evaluation process into practice.

UNESCO agreed with CYTED and OEI that the evaluation would be conducted by an external evaluator proposed by the Higher Council for Scientific Research (CSIC), of Spain, who accepted to be in charge of the implementation of such evaluation.

The preparatory works for the production of information have involved three frameworks for action: a) Visit to the area and in-depth interviews with active researchers (members and non-members of the networks), with directors and authorities of research centres and universities, as well as with heads of ministerial departments and bodies in charge of science and technology policies of the different countries. b) A survey was rolled out for experimental and natural sciences researchers with the purpose of reinforcing the results emerging from personal interviews and giving them a broader perspective. c) Finally, some interviews with UNESCO officials were carried out, in the Montevideo office and in the UNESCO office located in Paris.

As a consequence of these activities, the information provided by the interviewees and its comparison with the terms of reference adopted throughout the evaluation, a document including the specifications mentioned by the reference document of this evaluation is presented. Thus, this document derives from the "*Evaluation Report* on the cooperation of UNESCO with basic sciences research networks in Latin America".

1. The organization of the evaluation activity

1.1. Terms of reference: "The cooperation between UNESCO and the basic sciences research networks (BSRN) in Latin America"

In its simplest definition, an evaluation is the effort to judge something in relation to a certain established criterion, whether in absolute or compared terms. The purpose, therefore, is to define some questions and to gather evidence that can help answer them. The terms of reference established for this evaluation were included in the title: "to evaluate the effectiveness and the cooperation process between UNESCO and the basic sciences research networks in Latin America (1994-99)".

This statement is relatively generic because even though the essential parameter of work ["the cooperation between UNESCO and the basic sciences research networks in Latin America between 1994 and 1999"] is determined, the criteria on which a judgment must be made are not clearly specified ["the effectiveness" and "the process"]. Effectiveness, in the field of evaluation, means establishing an opinion based upon the comparison between the objectives and the achievements regarding such objectives; the question arising from this might be: Is there an adequate relationship in the accomplishment of the established objectives? or: Have the objectives been met in an appropriate way? The second aspect on which an opinion must be issued is the "cooperation process". In this case, upon the obtainment of the information, the cri

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terion to be adopted in order to judge the cooperation process must be a comparative one; in an ideal way, vis-à-vis other possible methods to carry out this cooperation. In this kind of cooperation, in fact, the existence of counter-facts or the consequences of hypothetical situations must be taken into account.

In any case, the mere literality is not enough for the evaluation. For this reason, we must look for the questions arising from it and the areas it includes, through a detailed reading of the UNESCO reference document. This document defines the main areas to be evaluated, as follows:

a. "Objectives and results of the cooperation between UNESCO and the basic sciences research networks in Latin America (1994-99)". That is, the aim is to compare the results achieved with the objective that had been defined for the networks.

   Therefore, in this area, the purpose would be to document the objectives agreed by UNESCO and the NETWORKS and to follow up their fulfilment. However, we must state that not only the objectives were not clearly defined, but furthermore, they had not been quantified, all of which contributes to making the accomplishment of an evaluation in the traditional terms more difficult and complicated.

b. "Nature, organization and performance of the networks (level of definition – formalization and programming-, decision making, choice of coordinators, etc.), representation and participation in the networks, strategies and programming, etc."

   That is, the objective is to describe aspects regarding the organization, the performance and the operation of the networks. In this case, the judgment or the opinion must be established through the comparison of the networks amongst themselves, and with some ideal type or model which can be used as a reference. The purpose, in consequence, is to see the way in which they operate, but always within a comparative framework.

c. "Evolution of UNESCO's cooperation with basic sciences research networks in Latin America (1994-99)". In this case, the aim appears more clearly: to describe the evolution of the cooperation between UNESCO and the networks.

   The motivation would be to judge if the relationship has been advantageous for the fulfilment of the general objectives of UNESCO, even to determine if there existed or there exist alternative strategies or better ways of participation for the fulfilment of the objectives of UNESCO. Once again here, the use of counter-facts becomes an essential element.

These three areas highlighted by UNESCO as the main axis for the evaluation will be taken as the trouble issues which define the three main sections of this document. However, in the creation process of the research questions, we desire to go one step further and specify what should be understood from the reference document when "some issues that the evaluation should address" are mentioned. This will be included in the questions to be answered. They are:

a. "What is the role played by these networks in the cooperation of UNESCO in Latin America and the Caribbean, in particular in the promotion of R&D and the training of researchers in the region?" We are explicitly asked to reflect on the role of the BSRN in the cooperation strategy of UNESCO in Latin America, especially regarding the activities for the promotion of research and the training of researchers in the Region. We must define our evaluation in terms of the surrounding reality.

b. "What is the added value of the networks to UNESCO's cooperation regarding R&D in Latin America and the Caribbean?" This is the key question asked by UNESCO, and it must shed light upon whether for UNESCO, working in a preferential way with a set of BSRN adds any special value to its cooperation with research activities in the region, or whether the efforts and resources of UNESCO would be better used in more productive assignments in order to meet its final goals.

c. "What significant results have been contributed by the networks to UNESCO's cooperation with research programmes in Latin America and the Caribbean?" This is also a key question in order to find out if the determination of results and the impact of BSRN activities on the scientific research in Latin America is significant. However, this evaluation lacks the financial resources necessary for such determination, especially once it has been proved that there is no monitoring system for the network activities and that there is no connection between this system and the parameters of the science system in the region.

d. "Are there any efforts of trans-disciplinary work, aiming at solving significant problems in Latin America?" Finally, there is a request to explicitly address the cooperation problem in the development of activities common to some of the networks or initiatives of some of them aiming at promoting the progress of knowledge when regional problems are dealt with. In an indirect way, the question is whether the existence of activities in multiple networks for specific disciplines has created conditions which contribute in an effective way to a substantial, not merely rhetorical, coordination, arises.

With all these elements defined in order to outline the evaluation works, a list will be built with the questions and objectives established for this "evaluation of the effectiveness and the cooperation process between UNESCO and the basic sciences research networks in Latin America (1994-1999)". These questions will be answered throughout the text and the attached annex. The questions are organized in sections or blocks.

Which were the objectives and the strategy of UNESCO vis-à-vis the cooperation process and to what extent can we identify them?

How are the networks born? Which are the objectives established and to what extent are they fulfilled? How are the networks organized and how do they work? Which is the degree of independence and autonomy of the networks vis-à-vis UNESCO? Which are the different models? To what extent a main model can be found? What criteria do networks use to assign their resources? What is the relative capability of the different networks to adapt themselves to the environment?

How has the relationship between UNESCO and the networks evolved? What is the role assigned to the networks in the cooperation strategy of UNESCO in Latin America? What criteria has UNESCO used in the decision making as regards financing? What is the value added by the networks to the cooperation of UNESCO in the areas of R&D in Latin America? What has been the contribution of networks to scientific research in Latin America? Are there interdisciplinary work efforts focusing on the solution of problems affecting Latin America? What is or what are the most effective models or kinds of network for the regional scientific cooperation?

Which must be the strategy for the future cooperation between UNESCO, the networks and other NGOs in Latin America and the Caribbean? What methodological lessons do we learn that can help us in the evaluation of other UNESCO activities?

1.2. Evaluation methods: "Interviews, surveys and documentary analysis"

The design of this multicriteria evaluation has been made according to the definition of objectives. The plan for gathering information was structured in an operative way combining several data collection techniques: a) processing of secondary information provided by the different network coordinators, by UNESCO, and the public information in servers or Web pages of the different networks; b) interviews with the relevant actors in the scientific-technical cooperation process in Latin America; c) survey among researchers and people in charge of research activities in Latin America.

From the point of view of the universe of reference, one of the defects of many so-called evaluation exercises (obtaining information only from the programme clients or the beneficiaries of UNESCO aids) was avoided:. In this way, the process was specially designed so as to combine in the group of interviewees the coordinators and the different beneficiaries of the aids, as well as other people related to the subject by their research-oriented career or their institutional position, and of which no specific relationship with the networks in question was assumed a priori.

The methods developed to gather information adopted different strategies, and have generated a framework appropriate for a multicriteria evaluation. Below we include a breakdown of the different steps and methods used in the generation of information which will be used as a basis for the judgment of the cooperation between UNESCO and the BSRN.

A) Obtainment of written documents and secondary analysis. In this section, the information given on networks and their activities can be found; this information, however, has a diverse nature, volume, and quality. This section also includes the strategies and positions of UNESCO. The sources here are two:

a. Coordinators prepared brief specific reports on the nature and the activities of the networks which were sent to UNESCO before the evaluator's visit. This case includes the networks CLAF, RELAA, RELACT, FELASOFI and UMALCA. Two other networks (RELAB and RELACQ) handed in bulky reports to the evaluator, including bylaws, minutes of the meetings, lists of activities, seminar and course programmes, financial reports, etc. Besides, Web pages of the different networks were accessed to analyse their content and the description of their activities.

b. UNESCO-ROSTLAC provided brief summaries on the networks activities (their members, activities, transferred resources, etc.), as well as an edited general booklet which describes ROSTLAC's general activities including a succinct description of the networks. Other sources of information were the resolutions of the 1999 General Conference, the declarations of Budapest and Santo Domingo. The Paris office provided reference documents on the whole of UNESCO's strategic activity, such as the Medium-term strategy for 1996-2001 and the Programmes and budgets.

B) Personal interviews by the evaluator. The evaluator has interviewed more than one hundred people (see Annexes) in personal and group meetings, in 7 countries of the region (Argentina, Brazil, Costa Rica, Chile, Mexico, Uruguay and Venezuela). The interviews had two stages: The first one began on July 16 and ended on July 30, and reached Uruguay, Argentina, Chile and Brazil. The second stage, which began on August 6 and ended on August 15, took place in Venezuela, Costa Rica and Mexico. This was followed by a visit to the UNESCO office in Paris.

The interviews targeted essentially four groups:

Type 1.-Active researchers and heads of scientific research centres in Latin America

Type 2.- Authorities and directors of the main universities and research centres of the visited countries.

Type 3.- Heads of the Ministries in charge of research, directors of the Research Councils and officials of the ONCYTs or agencies for the financing of research and scientific cooperation.

Type 4.- UNESCO heads and officials both in the Montevideo office (ROSTLAC), and in the Paris office.

The in-depth interviews were carried out using a semi-structured questionnaire, and their length, according to the standing and relevance of the interviewees, ranged from 30 minutes to two hours.

C) A survey with a structured questionnaire. To complete the preparation process of the evaluation and mostly to produce a general framework for the understanding of the scientific and technological cooperation problem in

Latin America, it was decided to make a survey via the Internet.

2. UNESCO's general objectives and strategy (in the field of "Science") in Latin America: the promotion of technological and scientific cooperation

As it has been stated above, this evaluation intends to determine the efficiency and define the process of cooperation between UNESCO and the set of networks for research in basic sciences. Therefore, in order to understand the strategic framework its cooperation with the networks is set in, it is first necessary to specify and identify what were or what are UNESCO's objectives. The cooperation between two parties (the networks and UNESCO) requires the reconstruction and delimitation of UNESCO's frameworks for action in this field. In order to identify UNESCO's objectives, various general documents have been used, including:

a) Medium-term strategy for 1996-2001 (Doc 28 /C4) (UNESCO, 1996)

b) Approved programme and budget for 2000-2001 (Doc 30/C5) (UNESCO, 1999)

c) Declaration of Santo Domingo "Science for the 21st century: a new vision and a framework for action" (UNESCO-ROSTLAC, 1999)

d) Declaration of Budapest "On science and the use of scientific knowledge". Science for the 21st century: a new vision and a framework for action (UNESCO-ROSTLAC, 1999)

In addition, other documents from UNESCO-ROSTLAC have been used, from a booklet commemorating the 50th anniversary of the office, to several texts, reports and letters from recent directors thereof.

As a general evaluation of the documents examined, it can be stated that UNESCO has defined a set of objectives regarding cooperation in the field of basic sciences that are, however, general frameworks for action rather than basic elements integrated into a strategy. These frameworks lack a hierarchy and a systematic order, as well as a clear definition.

Let's try to provide the grounds for such statement. UNESCO's *Medium-term strategy for 1996-2001* labels the section corresponding to Science with the title "contributing to the advancement, transfer and shared use of knowledge". To attain this objective, the significance of *"training, research and cooperation in order to foster the enhancement of scientific and technological knowledge"* is insisted upon. So then, there are three key words appearing as the highlights: a) training, b) research and c) cooperation.

More specifically, it is established that the *Medium-term strategy for 1996-2001* aims at fostering the advancement of scientific and technological knowledge, as well as at increasing and speeding up the transfer and diffusion thereof. To such purpose, 5 frameworks for action are defined:

- To improve the quality and relevance of higher education and training in specific disciplines and in an interdisciplinary approach, by updating curricula so that they satisfy present and future needs;
- To foster research initiatives and coordinate advanced training and research activities;
- To establish or strengthen links between production and services sectors on the one hand, and higher education and research institutions on the other hand;
- To strengthen national, regional and international entities and networks which are responsible for gathering and spreading scientific and technological information;
- To support and expand all forms of regional and international cooperation among scientists, scientific institutions and specialized non-governmental organizations.

It is clearly stressed that "regarding basic sciences (Mathematics, Physics, Chemistry, Biology and Biotechnology) and social and human sciences, this strategy will be based upon the development of human resources (the main goal of the Medium-term strategy) and the development of national capabilities, with the purpose of helping reduce the current divide between industrialized and developing countries in the field of science. Special attention will be given to strengthening university education and basic research in less developed countries" (UNESCO, 1996:94).

It is also established that "cooperative research projects will be carried out in order to guarantee an actual transfer of knowledge and the advanced training of specialists within key sectors of basic sciences that have an important impact on development. At the same time, it will be stressed that the results and information regarding social sciences should be made available to decision makers, in order to create a solid basis for the formulation of socio-economic policies (...)" (UNESCO, 1996: 95)

Then, it may be concluded that the central axis of UNESCO's strategy, also in the field of Science, is based upon two key elements: an educational effort, aiming at improving national capabilities regarding science and technology, and the promotion of cooperation.

In fact, there are no references to the basic sciences networks in this strategic document and, therefore, they do not appear as a central axis for the principles of the intervention. The few references therein to the term "networks" seem to be set within a different context. Thus, it is stated, for example, that "the existing networks that take care of the gathering, storage, retrieval and communication of the information regarding exact and natural sciences and human and social sciences (...) are important elements of UNESCO's strategy aiming at speeding up the transfer and spreading of knowledge. Special attention will be paid to giving researchers from developing countries access to scientific communication electronic networks" (UNESCO, 1996: 98).

A clearer idea arises from the biannual documents of "Programme and Budget", since specific interventions and actions can be identified. In the description of Major Programme II (Science in the service of development), there is the programme and sub-programme map, as well as some connec

tion between goals and means. It is stated that "Programme II.1, Promotion, transfer and shared use of scientific knowledge, aims at improving university education, increasing national capabilities concerning research, and enhancing regional and international cooperation in the field of exact and natural sciences (Sub-programme II.1.1) and in the field of human and social sciences (Sub-programme II.1.2), **mainly through technical assistance and advanced training provided in cooperation with regional networks, competent non-governmental organizations and specialized institutions, and through UNESCO Chairs and centres of excellence**" (highlighting LSM). Then, it is clear that, for the accomplishment of UNESCO's strategic objectives – increasing national scientific capabilities and promoting regional and international cooperation – the doors to the cooperation with all kinds of organizations and individuals participating in the scientific and technological system are open.

In the ROSTLAC-UNESCO document entitled "*UNESCO's scientific and technological cooperation in Latin America and the Caribbean: recent actions and challenges for the 2000-2001 period*", it is stressed that UNESCO's main objective in the region is to "enhance multilateral technical cooperation in science and technology in Latin America and the Caribbean, as part of the regional strategy seeking to encourage a sustainable development and a Culture for Peace". This document also sets forth principles that define the "technical cooperation strategy", among which are (and obviously it is expected that UNESCO-ROSTLAC's actions comply with them): subsidiarity and sustainability; concentration of efforts and seed money; excellence training; specific support to women and youth; exchange and communication of information; multinational and inter-agency cooperation".

In the description of activities, in basic sciences, "the support to the activities of scientific networks in Latin America and the Caribbean" is mentioned, and 6 of the 7 activities under analysis - RELAB, RELACQ, RELAA, FELASOFI, CLAF and UMALCA - are referred to. No other official documents of a programmatic nature have been found or accessed to help determine and define, clearly enough, the objectives UNESCO seeks to achieve, and to what extent the action concerning basic sciences through the support to the networks could be considered a central element in UNESCO's initiatives, as compared to cooperation methods with other players from the region mentioned in general documents of UNESCO. Consequently, no documents in 1994 established clear and quantifiable objectives for the development of cooperation with the networks – with these ones in particular and not with others.

There is lack of a precise definition of UNESCO's objectives in a programmatic document and absence of a "contract" contributing to define the "programme" of collaboration regarding the BSRN financed. This situation is coherent with the way of creation of the networks, and with he existing ambiguities and even contradictions both in the documents and the insights gathered through the interviews.

From the interviews, a certain confusion can be concluded about the nature of the relationships and goals of UNESCO regarding the networks, and even about their standing and "dependency". In some cases the networks are perceived as related to UNESCO and ICSU (COSTED-IBN), in others, a relationship with UNESCO is hardly perceived. In addition, there are contradicting views as to the foundational and functional fact, as to the circumstance of the networks being "networks to which UNESCO provides support just like to any other institution or group" or "networks promoted by UNESCO", since they are also defined as "networks of UNESCO". Consequently, many interviewees who were not coordinators had doubts about the exact relationship between the networks and UNESCO.

As stated above, this relationship, particularly ambiguous in the case of some networks – specifically the Latin American Network of Biological Sciences (RELAB) – is based upon facts that will be analysed in greater detail in the following section, but whose consequences are advanced here.

The model of the cooperation between UNESCO and the networks seems to be based upon the lack of definition by UNESCO of a set of objectives that are quantifiable and proportional to the resources provided. The relationship with the networks has never involved planning or programming; it has rather been a mechanism aiming at satisfying the interests, requests and search for support (and recognition by UNESCO) of a set of players who claimed to represent Latin American scientific research community.

From the documents received and the statements of some interviewees, it is evident that the road to defining UNESCO's interventions does not start at UNESCO, that the initiative belongs to one of the networks (RELAB). And thanks to its "special relationship with UNESCO officials", and within the framework of a very symbiotic relationship between ICSU and UNESCO, the latter adopts the proposal aimed at enhancing and giving support to these specific group of networks. It seems clear, from the Committees' minutes, that because of such symbiotic relationship between some people from UNESCO and some people from the networks, the selection of counterparts (what networks will be involved in the cooperation process) did not result from a "competitive selection" process, but from particular relationships.

Thus lacking formalization and institutional definition, during the 1994-1997 period the Montevideo Office accepted these forms of intervention as being appropriate. Why didn't they develop alternative institutionalised connection strategies with the main regional research centres? We believe that it was due to the limited resources and the need some officials felt to show their connections with the academic community in the region. The task of establishing a direct relationship with the whole scientific community throughout the continent surely was overwhelming, so they adopted – just like UNESCO Paris has been doing through the years – strategies that reduced the complexity of the cooperation process, which basically meant establishing a link with some researchers and the delegation onto them of the execution of tasks. In such a way, UNESCO authorities showed their "connection" with the scientific community and eliminated – by delegating –

the difficulties of having to provide serious grounds for their decisions regarding allocation of resources and the organization of UNESCO's institutional support. Once this choice was made, for example not to organize cooperation through the collaboration of governments and ONCYTs or with the academic centres of excellence in the region, the most economical solution for the efforts it demanded was to select some counterparts, grant them the power of "representing" the scientific community and allow them to act quite freely.

This symbiotic association of UNESCO authorities and BSRN created the conditions under which the research players involved in the launching of the different networks ended up regarding UNESCO simply as a small financing source able to guarantee the development of some of their projects. This leads to the assumption that the main motivation of the promoters of some networks was to profit from the opportunity offered by the process of obtainment and mediation in UNESCO funds for the development of very specific projects regarding scientific and technical cooperation in the region.

In fact, most networks were born or started working upon such motivation and, except those that evolved into independent professional associations – which has enabled them to generate their own autonomous financial systems -, the networks have languished with the decline of UNESCO's funds allocated to these matters (see Annex 1).

Therefore, the traditional vision of a previously defined measurable programme is not applicable in this evaluation, since UNESCO's intervention resembles a set of specific and uncoordinated actions in response to requests from particular players, rather than a process where goals, programming and measurement of the same are defined.

Then, it seems that, regarding said networks, UNESCO never provided a plan or programme with measurable goals: cooperation consisted mainly of granting resources to networks that in most cases defined extremely generic actions, courses, seminars, internships, etc., but where no specific objectives were defined for the allocation of said funds. Thus, the networks received the resources and their decision making structures or their coordinators allocated the same in a very diverse way, with a greater or lesser openness, transparency or clarity. This situation poses serious difficulties to the execution of a traditional evaluation - understanding by such the confrontation of the objectives and the results considering the criteria established-, because there are changing, multiple objectives for diverse players.

3. Characterization of BSRN in Latin America: Organization, functioning and operation of networks

In this section, we analyse those networks object of this study. We begin by establishing some basic ideas that help us to provide a context for the judgement on the efficacy of the cooperation process between the BSRN and UNESCO.

The basic sciences research networks object of this assessment, do not follow a single pattern, but are very diverse entities, in their nature and in their genesis, structure and functioning. Therefore, to talk about networks in general implies a degree of inaccuracy.

Secondly, it must be said that the BSRN included in this assessment are not the only networks or the only multinational academic organizations that can be identified in the region. There are other networks or entities, some of which even operate in the same fields of scientific activity, having equal or similar scientific importance.

Thirdly, those BSRN connected with UNESCO "are not exactly research networks", and do not strictly follow the European research network style. They are mostly entities organized to obtain resources, that channel research interests, carry out academic *lobby* or the promotion of "scientific policies and cooperation" in the countries of the region.

There is much diversity in the structure of these entities, although most of them seem to follow the academic or scientific society model, claiming to represent Latin American scientist, while some others even lack the election structures of said model.

BSRN not only are quite diverse, but also their relationship of privilege with UNESCO and the financial support received are substantially diverse, ranging from an almost nonexistent support to RELACT to a more generous financial support provided to RELAB, which concentrates more than 35% of resources transferred by UNESCO.

Some of these networks have focused their initiatives on supporting activities of cooperation and research, such as congress sponsoring, educational courses, diffusion workshops, internships, short stays, publications, web pages, etc. Further, it is true that, depending on their nature and organization structures, some networks have performed more "redistributive" activities, and have been more open to provide financial resources to researchers' activities, even those of scientific competitors. While there are others that have been more "distributive" by using UNESCO resources to feed closed groups and strengthen their own position in their environment.

The life of most entities being assessed hardly exceeds five years. However, some of them have reached a balance between ensuring continuity and encouraging renewal, while others (RELAB is the most representative case) have failed to expand themselves and to renew their first promoters. Thus, they transmit a feeling of strong personal appropriation, while there are others that did not achieve even a minimal institutionalisation structure.

The degree of independence and autonomy of networks in relation to UNESCO is also quite diverse. While some entities developed their own independent activities, other BSRN only exist to give sense to UNESCO's financing policy. In fact, a significant part of them were created as a result of an increase in the expectations caused by the hope to obtain financing from UNESCO and have hardly developed other activities apart from managing the limited resources that UNESCO has transferred to the BSRN.

Lastly, it must be said that, five years after their creation, the degree of BSRN financial dependence on

UNESCO transfers is very diverse. While UNESCO's provision of funds is not considered significant as regards the financial situation of some entities, it can represent 100% of income for others. Undoubtedly, obtaining UNESCO's brand image has always been a legitimating asset before national governments and other financial entities, and some BSRN have failed to take the most out of that.

Thus, there exist some networks that are independent of UNESCO, while others have developed symbiotically with the organization. All of them, to a larger or lesser extent, have become intermediate parties in UNESCO actions in terms of scientific cooperation, and the possibility of losing the said relationship could cause the discontinuity or reduction of activities to a minimum.

To assess means to answer the question on the activity levels of each network in relation to the resources received from UNESCO. It should be necessary to know whether UNESCO's provision of funds made a difference, and what impact the networks' activities had on the development of research in their disciplines in Latin America. Lastly, there is another question to be answered: from UNESCO's perspective, does it make sense to have a strategy of such nature, involving direct interaction with singular actors in the academic world, or a new strategy should be considered?

3.1. The Emergence of networks

In 1994, when financial scenarios started to allow improvements in research conditions for most important countries of the region, an initiative was approved, after an individual effort supported by ICSU and COSTED, for the extension of the Latin American Network of Biological Sciences (RELAB) model to other sciences. It consisted of academic entrepreneurs who claimed delegation of funds to finance scientific cooperation, and to manage said funds at their discretion.

On analysing the success achieved by RELAB on fundraising -the main problem of science in the region- it seemed that the expectations for improvements in financing regional cooperation were finally given an opportunity. Personal contacts of RELAB managers with UNESCO authorities seemed to achieve positive results

Therefore, on June 7-8, 1994 a "meeting on scientific networks in Latin America" was held in Santiago de Chile, organized by RELAB and the Chilean Sciences Academy. The meeting was sponsored by UNESCO, ICSU and COSTED/IBN (Committee on Science and Technology in Developing Countries /International Bioscience Networks)[1]. Some regional scientific networks were generally defined there as "associations of individuals, groups or institutions in different countries of the region that share a discipline of science and the objective of boosting the development of this science by means of an agreed plan of activities". COSTED allocated some funds to launch activities for the creation of networks where there only were disperse individuals. At that moment, there only existed RELAB and physics associations (CLAF and FELASOFI).

[1] They had merged during ICSU General Meeting, held also in Santiago de Chile in October, 1993.

In fact, this operation intended to promote the creation and consolidation of financial frameworks that would help regional scientific cooperation, and expected to turn those networks into representative and intermediate parties of the countries and organizations that started cooperation initiatives. The real focus of this operation was on science policy and not on research.

The expectations of some scientific-academic sectors and individuals increased and they found the opportunity to "insert" their initiatives in a more general context that seemed to guarantee fundraising for maintaining cooperation activities, and by means of said activities, to obtain a privileged supply of resources for research activities. This is the case of the other networks that were formed by the first mentioned actions. It may be said, and it was admitted by the pioneers, that some of the new organizations were either formed ex novo or were launched again as new initiatives in order to take advantage, to hold and to be the almost exclusive intermediate parties of those funds.

This "raising expectations" process determined the entry of new actors in other disciplines, whose network-type organizational frameworks were at an embryonic stage, and some of them were even created or constituted *ad hoc* on the basis of managing funds provided by others (UNESCO, for instance). It was said that networks would channel their efforts to "institutions interested in regional scientific development".

In the development of networks, there were two possible situations: in the first place, those networks created "ex novo", with the sole objective of managing and being intermediate parties of the funds (RELACQ is the most representative case). In the second place, those initiatives that were in a gestational or emergence phase (i.e., UMALCA), which took benefit of support and resources received during their launch phase, which can be considered "seed" resources.

Some UNESCO authorities of that time contributed to promote the expectations of some groups of scientists.

3.2. A basic typology of Networks

After having briefly described the organization structures and function modes (see annexes), there follows a typology of the BSRN. It was already said that those networks included in this evaluation do not follow the same organizational model; even though the generic objectives defined for them are similar and, undoubtedly, there are many of them that could be shared by governments. Thus, this analysis intended to group networks into diverse categories by highlighting some of their features and mostly, by disregarding the fact that some of them could be included in more than one category. This exercise intends to highlight similar characteristics as well as differences:

a) "CLOSED GROUP" model (RELAB, RELACQ). This structure type, built on the aggregation of supposed national representatives (governmental and scientific), is characterized by strategies that hardly include other scientists from participating if they are not part of the group.

b) "SCIENTIFIC SOCIETY" model (UMALCA, FELASOFI, RELAA).

This kind of structure follows the most traditional formats of scientific societies or scientific society federations, with election processes and representation of their national organizations; their strategies are usually inclusive. However, the degree of organization maturity is diverse, as we observe from the lack of structure in RELAA.

c) "INTERNATIONAL CENTRE" model (CLAF). This kind of arrangement follows a model derived from an intergovernmental agreement entered into by Latin American governments and, therefore, it is an intervention and coordination model with governmental support. Its legitimacy does not stem from the representativeness of its associations, but from the effectiveness and management of the activities performed.

d) "VIRTUAL" model (RELACT). This is an entity model consolidated upon failure of a material network of relationships and that intends to develop a connection, production and information exchange instrument in an open manner. It may be a service provider for its community. Undoubtedly, this was not the project in its inception, but it has evolved into a rather fragile "virtual" space.

Although the typology intends to set the grounds for a better understanding of the observed phenomena, it must be pointed out that the boundaries of the classification of networks in different types are relatively vague. Furthermore, there exist transitions and dynamics which, under other parameters, come close to the networks studied by us.

If we observe networks from the perspective of their institutionalisation and organizational formalization level, it can be seen that the boundaries are in a different place: while UMALCA, FELASOFI and CLAF have institutionalisation and legitimacy levels that emerge from the community and the government, we may say that RELAB is at an intermediate level and the other three existing networks (RELACQ, RELAA y RELACT) are at the limit of an almost total lack of institutionalisation and organization base. If we consider the autonomy levels that networks keep with respect to UNESCO, we may say that CLAF, UMALCA y FELASOFI are quite autonomous, RELAB and RELACT follow suit but to a lesser extent, and RELACQ y RELAA are completely dependent on UNESCO.

3.3. An evaluation of the BSRN

This section intends to draw conclusions in the light of the available information about organization structures, activities and financing of networks and to this end, their degree of adaptation to their environments was used as the criterion for judgement and comparison. The combination of the three stated criteria is important because we are aware that it is not difficult to maintain a ghost entity, with zero or almost zero activity, especially if there exist financing sources that allow to pay the printing of advertising brochures or the maintenance of empty web pages.

Our analysis revealed that there exist three BSRN with almost zero activity, although the causes of that minimal activity are diverse. RELACT could never organize itself, nor acted like the other networks. Consequently, it did not receive resources from UNESCO, thus becoming an embryonic "virtual" network. The situation is different in the other two networks with low activity levels (RELAA y RELACQ), whose role consisted only on managing funds provided by UNESCO. The reason of their existence was the distribution of funding. However, while RELAA seems to have interacted in its field of action with zero costs of administration and entity management, RELACQ did not show regional impacts in its field: chemistry. Further, certain documentation gives evidence that their fund allocation practices may have not followed the academic codes that could be expected and had substantial management and coordination expenses.

The situation is different for the remaining four BSRN because they have shown some level of activity and have further evidenced a certain independence from UNESCO funds.

RELAB seems to have languished while UNESCO funds decreased. Although it is true that its authorities made up for infrequent payments of instalments from national partners with occasional support from ONCYTs, mostly from Chile. However, from the evaluator's perspective, BSRN organization models based on the idea of "closed groups" financed by external funds with the sole mission of distribution (usually mainly between members and related parties) cannot be regarded as desirable. The first step is to avoid an organizational model based on the idea of a "closed group", such as the one represented at present by RELAB and RELACQ.

In our opinion, the best positioned BSRN are: CLAF, that has had a certain revival in educational activities in the fields of physics, thanks to support provided by Brazilian government (and its partial conversion into a strategic instrument for influence). In the second place, FELASOFI and UMALCA continue with their action-oriented strategy and intend to consolidate the organizational basis of professional society.

CLAF appears to be a centre of intergovernmental nature, but mostly supported by Brazil government and is suffering a long decline. In recent years it has intended to launch again activities based on two main pivot areas: education in physics (retaking Latin American School of Physics); and, building, connecting or supporting the creation and consolidation of a network of special experimentation sites, based on large equipment, for physics interests.

In view of their structures, those two entities that have shown a positive evolution and a better capacity for adaptation and autonomous survival are, in view of their structures, UMALCA and FELASOFI. These two organizations were created and intended to become "Latin American scientific societies" or "regional associations of national scientific societies". These two networks have been able to define programmes for integration and creation of action structures and financing instruments, derived from instalment payment systems applied to members, besides actively searching for help from other organizations, by diversification and, thus, by increasing their adaptation capacity.

However, this organizational structure is limited to what a professional society may do in terms of research

and international scientific cooperation promotion, which have been more and more in the hands of governments and agencies for promotion and support of research, or directly in the hands of universities and research centres. Another interesting issue is that these societies have performed works in complementary and necessary activities for the progress of science, although they may not be directly scientific research, such as scientific diffusion, education in secondary schools, promotion of regional scientific meetings, etc.

The only BSRN that merit UNESCO's attention in the future are those that followed explicit extension strategies, taking the community of researchers as a framework, and have not been based on "government recognition"; those inclusive BSRN that do not require "exclusive access"; those BSRN that passed the autonomy test and have been able to build a sustainable institutionality, that outlives founders. UNESCO could collaborate with them, but this collaboration should be referred to those aspects of mutual interest, and should always be delimited. It should not be referred to what could be called ghost aids ("$250 internships", "support to $1000 symposiums", etc.).

In any case, if UNESCO intends to develop cooperation in research, its pivot actions should not be oriented to these BSRN type networks, but to research institutions of the countries, or if necessary, to institutional networks of research centres that mutually cooperate for research. In short, UNESCO should focus its objectives and should not cooperate with all disciplines (it does not have the resources nor the capacity) but only with specific ones.

In all BSRN, besides the discipline particulars, a national specificity was found, a local base that served to make the activity sustainable. However, on occasions, that base becomes very stable and becomes a limit for the extension of activities due to community fragmentation. The consolidation task of really regional entities is complicated in a continent like Latin America and the Caribbean. Conflicts related to CLAF with the opening of Mexican CLAF; the scarce participation of Argentine physics in FELASOFI activities; Costa Rica mathematicians complaints on the operation mode of UMALCA, are just examples of those difficulties. Only the generosity of researchers of diverse sub-regional spaces, the scientific leadership recognized on a regional scale and the capacity to form integration coalitions may serve to set the grounds for the difficult endeavour of creating the conditions for the emergence of an integrated scientific cooperation system in Latin America.

In the course of time, some of these networks have forgotten to formulate their tasks and their current mission seems to be surviving. However, it is surprising to say that no network covered by this evaluation follows the organizational model that, from our perspective, represents the most viable model for the effective cooperation in scientific-technical research. This is a model based on the inter-institutional cooperation (that could be represented generally speaking by the university networks included in the "grupo de Montevideo") or, more specifically, in inter-institutional cooperation networks for research execution (like the Botanic Network). These initiatives bear no relationship with UNESCO's strategy for scientific-technical cooperation and undoubtedly, are alternative models that methodologically appear in our evaluation as counterfactual to the initiatives and strategies to be supported.

4. Cooperation terms between UNESCO and the BSRN in Latin America

Once identified UNESCO's objectives and BSRN main features, we must examine the cooperation terms between UNESCO and the networks for the fulfilment of its own objectives in the field of scientific research in Latin America. In this case, the guiding questions are: how does UNESCO cooperate, and to fulfil which objectives.

It has already been said that during the information production process, this evaluator has not found any document that systematise the terms of the relationship between UNESCO and the BSRN. Yet, it is true that in a few documents wide orientations for action are accepted, as well as general models for the programming and follow up of activities.

Unfortunately, it seems impossible to rebuild -reflecting thus the absence of criteria- the reasons why UNESCO decided to support these different entities under the name of "networks" as a way of developing the principles of support to scientific-technical cooperation, instead collaborating with other types of mechanisms; why a framework for action was established that included the seven said BSRN; or why some networks received more resources than others.

In this exercise of identifying the collaboration relations between UNESCO and the BSRN we will follow three steps, taking for granted that the option made was direct action with research actors. Doubtless is to say that the search for legitimacy from both sides was an important element.

The first question that arises is: why UNESCO should finance these entities or BSRN and not others that already exist or that could be promoted in the region? The second one refers to the reasons why some networks were allocated more funds than others. Support given to the different networks has been considerably unequal along time, and it has not been possible to explicitly state an objective criterion based upon which UNESCO would decide to allocate more funds to some networks than others, or "upon which the network coordinator office", during the period when this instance received financial help, would have done it. It seems then that there exists a significant lack of explicit criteria on which networks to fund or which activities follow up and through how much funding.

Apparently, there are no general answers or principles to respond to these questions. Nevertheless, different approximations emerge from the information analysed and from the interviews, depending on the implication of the interviewees in the networks. Yet, it could be well accepted that the blurred situation is related to people, contacts, to the social capital building process, that facilitate or hinder the "access" to funding.

This practices of institutional closure or partial "symbiosis" have been criticised by a considerable number of in

terviewees, who have pointed out that resource allocation for the development of regional scientific and technical cooperation activities "should not be done on the basis of available social capital or relationships, but through open bids, evaluated processes and, in short, on the objective basis of scientific relevance". Going into more detail, some of the interviewees pointed out that the cooperation work should be left in the hands of centres of excellence, researchers of the highest level possible, guaranteeing thus that the activities developed by the networks, such as advanced courses, workshops, seminars, etc., are carried out to build capacity and perform activities in the boundaries of knowledge, instead of presenting scientific dissemination as a research activity.

The third question refers to the criteria that the entities funded by UNESCO follow in terms of expenditure, contribution and distribution of resources transferred. This matter refers to which specific activities have been funded with transferred resources and how were they chosen as subject of expenditure and, in the case of existing beneficiaries, how were they identified.

If we found that the procedures or the variables taken into account by UNESCO in the election of the activities to be funded and the amount of the transfers to each one of the entities were not transparent, even less clear and explicit were, in some of the networks, the criteria for distributing the funds received. In general, it can be said that the funds have been applied to substantive activities, even if, as pointed out, in some specific cases generous "operative expenses" have been covered.

The BSRN have enjoyed ample discretion on what to spend available funding and how. However, that discretion is expressed in very different ways, formalised through an open and competitive process managed by a Scientific Committee (such is the case of UMALCA), by the own regional Directive Committee (such is the theoretical case of RELAB), by the coordinator (RELACQ, CLAF) and even by national coordinators (RELAA).

In general, it can be said that the networks allocate their resources based upon criteria that intend to combine the "relevance of the activities" with a certain "re-distribution" principle among the countries; however, these criteria are not explicit, frequently too informal and rest on the mutual trust of the group members. This trust, according to their own documentation, has even left the decision of distributing funds in the hands of one particular person (generally the coordinator). Therefore, more often than expected, resources have been used to fund personal travel expenses associated to the coordinators or have been included, without breaking them down, in the professional organizations budgets and with no reference to UNESCO origins.

This situation of scarce institutionalisation, together with the absence of a true contract that link funds to fulfilled objectives, which is observed in some of the entities, constitutes a potential ground for poor management.

Thus, it can be observed, for instance, that within the list of support given to funded courses and seminars, there is a certain concentration of receptor centres and an exclusion of others. This is one of the critics directed to RELAB in Chile and Argentina, or to RELACQ in Chile. This situation becomes specially critical in the case of some networks, because, without a doubt, no criteria on " conflict of interest" was applied in the fund distribution among those who decided the fund allocation and the beneficiaries, who were often the same ones.

Whereas for some BSRN members this situation was normal for UNESCO these closed practices brought serious problems, since "exclusive" activities are being financed, that give the rest of the research community the perception that UNESCO is not a universalist organisation, but offers funds to be managed at one's discretion.

On the other hand, several activities have been developed with funds received from UNESCO such us training, young researchers exchanges, workshops, symposia, conferences, publications, etc. But it is also true that several interviewees have declared not knowing about them, or even have been excluded upon request for financial support.

Without a doubt, the closed group-type networks, specially the more "personal" ones, despite their claim to "represent" Latin American science, have tended to become almost personal endeavours, through a mechanism of legitimacy and relevance, in tribute to the representation of its own activity. In the meantime, many other researchers have used, or claimed to have used the criterion of publication in first level international journals and the number of citations received, to point out the importance of their activities to the rest of the scientific community or their governments.

There is no doubt about the fact that these entities (the BSRN) are autonomous and independent from UNESCO. From UNESCO's point of view, the networks emerged or were consolidated upon a generic call for scientific-technical cooperation in the region that arose with the aim of filling an existent gap of promotion of initiatives. UNESCO's strategy seemed to answer to the demands from the bottom, from the scientific communities, however, the problem appeared to be deeper. From the interviews and the documentation it can be clearly deduced that UNESCO's attitude has been limited to cover some academic endeavours with whom it established a kind of "symbiotic" relationship; that, faced with the lack of resources to define its own strategy, UNESCO adopted the proposed one. We could say that the situation responds to a typical case of a "open-pot"-based decisional model, where the problem of the lack of (institutional) capacity to develop an adequate intervention -due to resource limitations in UNESCO and faced with the definition of excessive objectives compared to the human and financial resources available for action- is overcome by adopting the solution offered by the future clients of the activity. From the point of view of financial resources consumption, the activity almost inevitably ends up by being accomplished under no more requirements and objectives than the development and execution of the subvention -expenditure- as a mechanism of intervention.

The problem of UNESCO decision-makers in search of intervention strategies (generally characterised by too generic and excessive objectives) tended to be solved in an economical way for them, without seeking alterna

tive activities, thanks to the availability of Latin American scientists willing to act in the field of science policy and tanks to the support provided by academic entrepreneurs.

At a general scale, ICSU offered the solution to develop activities in the field of Basic Sciences, to penetrate and directly relate with institutionalised Science through scientific societies, not with active researchers and their institutions. Actually, the operation of establishing or supporting the BSRN in Latin America is one of the possible solutions that are consistent with a strategy of this kind. The problem that appeared was that UNESCO sponsored and contributed to some activities that were presented as UNESCO, and which, however, were not exactly UNESCO. Moreover, in spite of being the main funding source of some of them (and the only one in some cases) UNESCO lacked of capacity to verify the fulfilment of objectives. It was limited to uncritically support other people's initiatives, in the lack of specific strategies, programmes by objectives and mechanisms for follow up of results.

In short, the majority of the entities included in the BSRN have limited themselves to the management of available funds. Only some of them have established plans or lines of action, but not programmes by objectives that enable external analysis.

4.1 The evaluation of the cooperation between UNESCO and the BSRN

In regard to the added value and the impact of the networks on the development and the execution of the scientific research activity in Latin America, the networks object of this analysis (certainly some more than others) are marginal. Available data on the scarce recognition, their limited impact, or, in some cases, personalism involved etc. provide the central elements for a reformulation by UNESCO of the scientific-technical cooperation activities in the region.

On the other hand, one cannot be indulgent with UNESCO's action in the region, from ROSTLAC, and particularly from Paris, whose orientation and impact resulted also extremely marginal and even lacking of structure in the Latin American research and developmentactivities. In general, within the scientific community, the organisation is known by its name, yet its initiatives of support to scientific cooperation or promotion in the field of Basic Sciences are mostly unknown; generally speaking, those who know about UNESCO activities are precisely the beneficiaries of the support it provides.

The extension of the RELAB model, its acceptance and sponsorship by COSTED/IBN within the context of the BSRN, emerged as a project to satisfy the demands of the members of international scientific organisations related to UNESCO. However, the kind of project that the BSRN represent has somehow turned UNESCO -in the eyes of the research community- into a simple and modest funding agency for research in the region, yet with an absolutely marginal financial weight. Practices developed by UNESCO have turned it (also in the eyes of the actors of the region and the clients) into one more agency or financial operator in the region, of a rather modest category, that facilitates direct support to groups or academic bodies.

Often, the allocation of support by UNESCO lacks of explicitness of the minimum criteria of openness, transparency and competition exigible to them and to the collaborating entities. Since support to sciences is part of the general objectives of UNESCO, with this type of intervention, resources have frequently been transferred to collective bodies or closed groups, and in the best of cases to professional societies, leaving aside research organisations in Latin America: universities and research centres.

UNESCO's action has not been directed neither to governments, its natural counterparts, nor to academic and research institution. On the contrary, its has been concentrated in individuals and groups of individuals, closed in different degrees, and in professional societies.

What have the BSRN done to advance the objectives, even generic, that UNESCO intended through its cooperation? What can UNESCO do for the fulfilment or the advance of its general objectives through cooperation with the networks?

From the financial, institutional coverage, etc. point of view, UNESCO has made an extraordinary effort of support to the BSRN. It is true that RELAB has clearly enjoyed a special treatment, for it has received more that 35% of the transfers. After 6 years of operating, and having transferred an amount of more than 500.000 U.S. dollars, we are able to revise how "seed money" (since UNESCO has explicitly stated that systematic financial dependence cannot be established) has been used and to see whether if new capacities have been generated by the BSRN for promoting activities (of spending funds) and obtaining additional funding.

In short, networks can be examined in terms of their capacity to adapt to the environment (an environment that requires mobilisation to capture cooperation resources). It also can be observed how the network groups financially supported by UNESCO have been able to survive or have been the victim of "natural selection", constrained to inactivity in case of lack of funding by UNESCO. As we all know, the metaphor of natural selection applied to this case is nothing but the ability of an organisation model to survive within the existent environment.

That is, to try to determine whether if the networks have made the effort of freeing themselves from dependence and, therefore, of surviving. If they have not done it for lack of initiative, then they do not deserve more support; if they have tried but failed, the problem could be the inadequacy of the organisational design. From our analysis, it arises that one of them received funds too low to become seed money (RELACT). Other two (RELACQ and RELAA) do not seem to have even made the effort of parallel search of resources to survive. CLAF devotes its efforts, in the majority of cases, to act as a coordination and training centre. Its direct dependence on the governments that undersigned its constitution brings up the question why a government-funded organisation (UNESCO) shall systematically contribute and shall become a source of income of a multilateral centre which its own member governments frequently do not want to fund. UNESCO should not substitute the countries in specific decisions of funding a centre that correspond to the countries.

RELAB is a special case, because it is said that, in order to guarantee its flexibility it became a Corporation according to the Chilean law, a corporation presided by its founder, and whose full members are the Chilean individuals that formed it for the development of their activities. Funds are received by an organisation owned by a few citizens, which remains therefore outside the capacity of control of the public sector over research system bodies. It is true that RELAB has tried to survive since the moment it created a system of membership fees that the different institutions or countries should pay, or through the search of funding in other organisations (such as the Pan American Health Organisation, PAHO/OMS). Nevertheless, there is some criticism derived from the fact that just a few "members" of RELAB pay their fees. This has led some institutions that would pay the fees of their nationals entities (e.g. CONACYT Mexico) to withheld their payments to the RELAB Corporation, "because ONCYT'S proposals were not being taken into account".

It seems that UMALCA and FELASOFI are the ones that have best passed the test of survival. This makes us suppose that the organisational models they represent are the more adapted ones to the environment and to the generic mission they have set to themselves. To become professional societies with members that pay fees or with institutions that contribute to its maintenance constitutes a strategy that was not adopted by others.

UMALCA and FELASOFI are organisations that have their own life, independent from UNESCO, and collaboration with UNESCO could be considered as aimed at developing specific actions such as capacity building tasks of professors training, dissemination, etc.

UNESCO has contributed to the launching of the BSRN, however it seems that it has already paid enough and now suggestions should be made to these networks to undertake a process of re-dimensioning and re-definition.

4.2 Some future options

Is it reasonable for an organization as UNESCO to continue funding other people's initiatives under a structural way? Maybe UNESCO, as it occurred in another moment of its history, should make efforts to experience new initiatives. In order to do this, it must recover the freedom of allocating funds that it does not have now. Seed money transferred during years, which has not been able to reproduce and consolidate, should be questioned. After several years of support to the BSRN, with an accumulated investment of nearly $ 500.000 U.S. dollars, it might be time to let these praiseworthy initiatives to live the lives that started more than five years ago, evolved and consolidated in different modalities.

RELACQ and RELAA, which have become mere re-distributors of UNESCO funds, without making efforts for obtaining additional resources, are an example of efforts that failed, according the sustainability criterion. These BSRN have demonstrated that, after 5 years of existence, they have not reached a minimum sustainability.

Structural participation of UNESCO within CLAF is not recommended, if established principles of time limitation in the interventions are applied. UNESCO has directly supported CLAF for decades, therefore, the latter counts on high captured resources without the possibility of starting new projects. These are the models of intervention that should be changed.

RELAB has received hundreds of thousand dollars to be re-distributed, most of the time through non-competitive mechanisms. UNESCO as an universalist organisation, should not continue supporting this type of closed groups.

UMALCA and FELASOFI have a different nature, within them services to the community by researchers in their field of expertise seem to have a certain added value. Curiously, they are the structures that enjoy the greatest independence from UNESCO. With this type of scientific societies, collaboration should be established on exceptional basis, for specific actions and limited in time, such as the elaboration of directories of researchers or research centres, popularisation programmes, dissemination of science, etc.

RELACT could reduce its wide scope, concentrating on the production of knowledge for specific problem solving in the region. However, earth sciences and geological emergencies as a problem do not correspond to the traditional field of Basic Sciences within UNESCO.

Given the considerable improvement regarding the modalities of the relationship with the scientific community, more important movements of change are put forward. In our opinion, and in the opinion of several interviewees –with the exception of clients of the BSRN funding- UNESCO, confronted with the dilemma of continuing to maintain this marginal funding on the system, should change its focus and concentrate its efforts on other lines of action. After having examined the relation between the effort made by UNESCO and the impact it had and, considering the new regional context of research, it is proposed that UNESCO's action stops consisting of marginal funding to training, research, exchange and cooperation activities, specially if it is not carried out through institutional channels with Latin American research organizations: universities and research centres.

UNESCO does not need to systematically delegate the realisation of the activities that the development of its objectives implies: UNESCO should develop collaboration regulated by the definition of specific objectives and mutual agreement. Moreover, the collaboration that UNESCO could put into practice is not necessarily limited to already proved and settled instruments in the region. UNESCO should develop and strengthen relations with other actors that could collaborate in the development of its strategy. Therefore, the image of "intermediary manager" adopted by some networks does not seem to be reasonable to continue and of course does not seem to be of UNESCO's interest.

The essential lesson of this evaluation is that UNESCO should concentrate its efforts in cooperating directly with research centres (and researchers), governments, science and technology bodies (ONCYT's), other multilateral organisations, and even private foundations that fund research in the aim of coordinating or promoting ar action that result in more and better

support to research and cooperation. For instance, coordination with these Foundations of private nature, that found research in the region in a smart way, would constitute an interesting step, because jointly UNESCO could develop cooperation.

Furthermore, UNESCO should prioritise its leading and articulating role over different actors, contributing to identify centres and programmes of excellence, as well as maintaining and developing programmes and disseminating R&D regional databases of centres and programmes.

UNESCO should consider engaging in the development of another type of activities of interest for the fulfilment of its objectives. If ONCYT's and funding agencies of the region require the fulfilment of objectives to allocate their subsidies, why UNESCO should ask for less than that?

There are several activities in this field, for instance, associated to the filling up of information to identify centres of excellence for the elaboration of directories, etc. Finally, it is a question of defining collaboration with other multiple actors in terms of concrete and specific actions with quantified objectives, subject to possible follow up and evaluation, which effectiveness enable control; ensuring thus the effective fulfilment of UNESCO's objectives.

ANNEX 1. Characteristics of the networks

This annex starts with a summarized historical description of the process of creation of the networks. After this description, the annex includes an outline of the networks' characteristics.

1. The appearance of RICBs: A little history to understand the present situation.

The Latin American Biological Sciences Network (RELAB, by its acronym in Spanish) is at the origin of almost every structure whose relationship with UNESCO is evaluated; it also generated the idea of turning these structures (the networks) into an action mechanism for the regional scientific-technical cooperation and for the promotion of scientific policy. It is true, however, that at the beginning of the 1990s several multilateral scientific cooperation models had already been spread (for instance: COST, CERN, CYTED, etc.)

From the interviews and the documents received it appears that RELAB is, mostly, the result of the personal initiative of a researcher who became an enterprising academic in the field of scientific policies promotion. Sources close to RELAB say that its operation and characteristics, its successes and failures are largely connected to the personal and organizational efforts of said researcher.

The organizational effort was supported from the beginning by international scientific entities –ICSU- symbiotically associated to UNESCO, and aimed at gaining recognition and legitimacy from their governments as well as from foreign countries. Recognition and legitimacy are essentia mechanisms to obtain funds for the development of research projects and fo the implementation of cooperation a a regional or, at least, an internationa level.

As it is clearly stated, "the Latin American Network of Biological Sciences (RELAB) was born in 1975 as the Regional Programme for Postgraduate Training in Biological Sciences (RLA 78/024), sponsored by the UNDP (United Nations Development Programme) and supported by UNESCO." The UNDP long term funding allowed RELAB to consolidate and develop a kind of work mainly focused in spreading knowledge and teaching. There was some overlapping with other activities financed by UNDP, such as the extinct "Latin American Network of Biotechnology" (RELABIO, by its acronym in Spanish), which played a significant role in the first efforts aimed at spreading biotechnological techniques at the beginning of the 1980s and which would converge in RELAB.

RELAB has been active and playing a public role since the 80s. However, it is essential to see the birth of RELAB within its context. When it came to life, the financial crisis in Latin America had threatened the development of minimal activities in the field of research and cooperation promotion; within this situation, the international funding ended up being the best guarantee for the continuity of the scientific activities. The unique situation in which these phenomena appeared combined certain facts: a) severe crisis of the national institutions financing research within the framework of the external debt

problem; b) appearance of academic entrepreneurs, having a certain local academic legitimacy, as well as leadership capabilities to conquer through political action what was not available within the national institutional context; c) the existence of funds provided by foreign entities or multilateral funds for covering, as much as possible, the shortage affecting the science workers.

For years, initiatives such as RELAB, born from the personal efforts of scientific entrepreneurs, obtained an implicit "delegation" in the execution of cooperation actions, given the relative incapability of international organizations (UNESCO, OAS, UNDP, etc.) to implement direct action and the structural lack of funds for research and parallel activities (such as training, seminars, etc.). However, these characteristics, which had been a clear advantage for the adaptation to an environment hostile to Latin American science (the personal effort of its scientists) would become, in time, a source of weaknesses in an environment which had changed.

One of the variables appearing from the interviews is the high degree of identification of RELAB with its founders. This has become a double-edged argument: members of RELAB entities generally highlighted some achievements, their effort and personal initiative, even though they also said that "RELAB's glorious times" had passed; other active researchers, however, talked of RELAB as the "Allende network" (or Allende and Grau). It is well known that the identification with a person who has been the source of vital energy in the first stages of the growth cycle may become a blockage mechanism for an institutionalization process allowing entities to outlive its creators.

For some years, especially in the Biology area, the impression was that RELAB had enough funds to allow for the development of a certain level of cooperation activities. This availability of resources, in times of shortage, provided the network with a significant legitimacy and a perceivable power to act. However, what was an advantage, due to the organizational design adopted, turned into the origin of its future weakness, because its leaders were not able to open up, democratize and transform the network.

The idea that during its first years RELAB was effective derived, according to the interviewees, from the fact that with the network, many academics of the region became part of a mechanism of regional socialization in the science field. The less developed the scientific level of the country was, the more enthusiastic these academics were. A common fact in researches on science sociology, in situations where the information and the judgment capabilities are limited, one of the traditional mechanisms for obtaining legitimacy is the involvement in international activities, that is, being legitimated, in time, by peers from other countries. All the academic actors involved in multinational cooperation benefit because their activities gain legitimacy vis-à-vis their governments, and the few resources received under the cooperation system become investments which will, in turn, lead to the obtainment of more national resources. Likewise, in the short term, national science entities reduce their information needs due to the collective acceptance and legitimacy given by the networks.

This mechanism guaranteed a certain level of success within the context of extremely weak research institutions (universities and research centers), and of ONCYTs characterized by few information resources. In this way, the limited funds of UNESCO (and/or other multilateral entities) became a fortune (it is true they were significantly higher during the eighties) in the context of the severe poverty affecting the Latin American academic community.

The improvement in the financing situation of R+D, the multiplication of national and international operators in the region, have increased the independence of scientists and their natural work institutions (universities and research centers) and, therefore, have reduced their need to join scientific policy adventures, which cost much time and effort, and which have uncertain results. While in the past the only choice was cooperation, as alternative resources began to flow, UNESCO aids became less important in the regional context and their mission was gradually reduced to meeting the needs of the cooperation structures, which little by little make cooperation (or, more exactly, the management and mediation of cooperation) their only reason of being. Today, there is a new situation regarding the funding of research activities and the creation of support frameworks for the research cooperation which has broken the historical conditions of RICB operation. As an example, we would like to point out that in Chile a 30 million dollar loan from the World Bank has made it possible to create three "Millenium" institutes, after a process of international evaluation of the quality of the proposals, in the Biology field (as a matter of fact, it is rather surprising that the national representatives of RELAB are not among the selected candidates).

In 1994, once again as a result of a personal initiative, under the protection and with the support of ICSU and COSTED, an initiative extending the RELAB model – which had at its base a request submitted by academic entrepreneurs asking for the delegation of funds for the financing of the scientific cooperation process so as to manage them to their discretion – to other sciences, was approved. Thus, on June 7-8, 1994, in Santiago de Chile, a "meeting on scientific networks in Latin America" was held, organized by RELAB and the Academia de Ciencias de Chile (Science Academy of Chile) (both under the presidency of Mr. Allende). The meeting was sponsored by UNESCO, ICSU and COSTED/IBN (Committee on Science and Technology in Developing Countries /International Bioscience Networks)[2]. There, some regional scientific networks were defined extensively, as "associations of individuals, groups or institutions in different countries of the region having in common a scientific area and the goal to increase the development of this science through an agreed plan of activities". COSTED assigned some funds to allow the implementation of the activities aiming at creating networks where there were only isolated individuals. At that moment, only RELAB and Physics entities CLAF and FELASOFI existed.

[2] Which had merged during the ICSU General Assembly held in Santiago de Chile in October 1993.

2. The networks: structures, goals and actions.

This section aims at answering those questions of the evaluation pertaining to forms of organization, decision making structures, formalization levels, actions carried out and financial aspects of the different networks that have developed cooperation processes with UNESCO. The information below is a summary of the documentation provided by the networks, as well as by UNESCO.

2.1. Latin American Biological Sciences Network (RELAB)

As mentioned earlier, RELAB was born in 1975 as the Regional Programme for Postgraduate Training in Biological Sciences (RLA 75/047, 76/006 and 78/024) sponsored by the United Nations Development Programme (UNDP) and UNESCO. The programme ended ten years later with participants from 15 Latin American countries that decided that RELAB should continue existing. Between 1985 and 1994, RELAB relied on more limited funds, focusing less on scholarships and projects, and more on "intensive courses, workshops and symposiums". RELAB declares to be part of COSTED/IBN's activities in Latin America.

RELAB's goals are very generic, for example: "to speed up the scientific and technological development of the participating countries in the field of basic biological sciences; to promote the scientific research of biological problems related to the development and well-being of the nations in the region; to foster the scientific and technological cooperation among the participating countries through the collaboration of biologists in their research and training efforts".

RELAB's functional structure is complex, since it articulates, on the one hand, a system of "National members", who are scientists "appointed" or "backed" by their respective national governments and who are representatives of "National Committees" that, in many member countries, hardly exist. Then, there are also "Regional and associated members". The highest body within RELAB is the Regional Board of Directors (CDR) that, on paper, is formed by: a) a government delegate from each participating country; b) a scientific delegate appointed by each National Committee; c) a delegate from each regional and associated member, d) the President and the Technical Coordinator of RELAB; e) permanent observers from RELAB's sponsoring institutions.

Overlapped with this structure of "national representation" there exists another structure that is the "official holder" of RELAB's rights and finances, which is in the hands of the Chilean citizens that, under the Chilean laws, formed the "Corporación RELAB" (RELAB Corporation). This structure is exclusively Chilean and is not legally responsible, although it may voluntarily render accounts before the Regional Board of Directors. It is a structure that has no mechanisms for regional elections, that considers itself to "represent Latin American Biological Sciences", that cannot be accredited, and where the basic access mechanism consists of the appointment by the members themselves and, later, the search for national support.

The impression an external observer may get from the documentation and the interviews to its members is that RELAB is a rather closed group of academicians from various countries, but intending –through the mechanism of requesting the payment of national contributions from the governments of the different countries- to be considered a multilateral agency for scientific cooperation. Notwithstanding, it is not responsible before those governments, as it is evidenced by the decline of the participation of government delegates in the CDR (Board of Directors' Regional) meetings and the suspension of contribution payments, in some cases by an explicit decision (such as Mexico's CONACYT).

The CDR meets at least every 18 months and proposes a list of possible actions, which has become shorter in the last few years. Minutes of the meetings where decisions are made or delegated upon RELAB's technical coordinator are kept.

It must be noted that, according to UNESCO's sources, RELAB has been a privileged receiver of financial assistance. Between 1994 and 1999, it has received over 150 thousand US dollars, which have been used basically for financing or as financial help for its own courses, workshops, seminars, conferences or publications and for granting scholarships and internships in order to participate in such activities. In the distribution of said assistance, a certain concentration of funds for the activities of certain centres can be observed, as well as the absence of financing for the activities of Latin American centres of excellence in the field of Biology.

We believe that RELAB is rather closed and selective. This is evidenced by the repetition of the same beneficiaries' names regarding financial assistance, courses or reception of interns, which makes us think that the CDR never analysed "conflict of interests" clauses in order to make decisions about proposals where frequently the same members of the CDR were the beneficiaries. This seemed to be so because somehow they have considered that the funds they relied upon were not to be used for general financing tasks of scientific research, but for self-financing tasks.

2.2. Latin American network of Physics (RELAFI)

In the aforementioned meeting held in Santiago de Chile, on June 6 and 7, 1994, where COSTED/IBN's proposal was introduced for the launching of other networks, RELAFI was created. However, this network has not actually existed, but it has been the framework for an intended coordination of two organizations of a very different nature within the field of Physics: the Latin American Center of Physics (CLAF) and the Latin American Federation of Physics Societies (FELASOFI), and whose joint action was never achieved.

Its goals are the integration of both organizations' objectives, such as: "the communication of activities in the field of Physics", "the creation of a database and a directory of Physicists and Latin American institutions in the field of Physics", "the promotion of scientists exchange", "the promotion of youth training", "the organization of events such as congresses, seminars, etc.".

2.2.a. Latin American Center of Physics (CLAF)

CLAF is a multilateral intergovernmental organization, created in 1962 upon a resolution by UNESCO, whose members are those countries from Latin America and the Caribbean that subscribed the international agreement under which it was established. At present it has 13 members. CLAF was created in Rio de Janeiro at the headquarters of the "Centro Brasileiro de Pesquisa Físicas" (Brazilian Center for Research in Physics) which has become its main support over the years. CLAF has gone through much trouble during its almost 40 years of existence. However, some kind of re-launch has been observed in the last few years, within the context of an improvement of the financial situation in the region and a greater dynamism in the search of resources complementing the contributions by the participating countries, which are not always paid.

Its main goal is to promote, execute and coordinate research initiatives in the field of Physics in Latin America and the Caribbean, as well as the special training of youth, at the postgraduate level, in the region.

CLAF's structure is ruled by its foundational multilateral agreement. It has a General Assembly, a Board of Directors and a Secretariat. It must be noted that UNESCO has had a strong institutional involvement, not only because it is a member of the General Assembly and the Board of Directors, without a right to vote. Decisions and daily activities are under the scope of the Board of Directors, although the Director of CLAF has important competencies delegated upon him.

At present, CLAF's strategy consists of the definition of interventions for the coordination of "large facilities" in the region (National Laboratory of Light Sincrotrón, Microtrón of La Habana, Chacaltaya Observatory, etc).

During the referred period, UNESCO has transferred funds amounting to over 65 thousand US dollars, which have been allocated to funding, in a small amount, courses, seminars, workshops, congresses, etc., carried out in different countries.

The analysis of the information available evidences UNESCO financial support to CLAF during more than thirty years. The question is whether UNESCO can maintain this kind of strategy of structural links and permanent financing, and thus block the development of new initiatives. What is true, is that CLAF purports to be a serious and rigorous structure in its functioning and, alternatively, it may become a collaborative entity for the development of specific initiatives.

2.2.b. Latin American Federation of Physics Societies (FELASOFI)

FELASOFI represents the coordination effort of Latin American physics societies and associations. FELASOFI's bylaws determine that its goals and objectives are "to promote the coordinated development of physics in the Latin American region in order to contribute to the general progress of the region, especially by fostering: a) The exchange between the physicists of the region by means of meetings, conferences and other activities of international status; b) The diffusion of publications related to physics within the region and the promotion of Latin American publications on Physics; c) The regional discussion of common interest issues related to physics; d) The improvement of the teaching of physics in the whole region; e) The relationship of FELASOFI with similar Latin American entities, as well as with those of other regions around the world and with international organizations."

The members of the Federation are national physics Societies and Associations, and its ruling bodies are: the Board of Directors, formed by a representative from each one of the physics societies affiliated to FELASOFI, and which meets once a year to approve the Annual Report, the Work Plan and the Budget. FELASOFI's Board of Directors consists of the President, the Secretary General and one representative per geographic region, who are elected among the members. The ruling bodies report their meetings in the pages of the Boletín de la Sociedad Mexicana de Física (Mexican Physics Society Bulletin).

FELASOFI finances are very much supported by the Mexican Physics Society and the Mexican CONACYT, which are the ones that maintain its activity levels. In the referred period, FELASOFI received from UNESCO more than 25 thousand dollars for the development of its activities. One of said activities is the almost annual publication of the "Catálogo Latinoamericano de Programas y Recursos Humanos en Física" (Latin American Catalogue of Programmes and Human Resources in Physics), even though it is quite incomplete, it is the only one with a regional status. It is surprising that no acknowledgement is made on those directories to the funds received, especially those from UNESCO. Apparently, the funds received by FELASOFI have not been applied to specific and determined purposes, but they have been incorporated to the normal financing of FELASOFI's activities. The activities related to the Latin American Physics Olympics are also of importance.

2.3. The Latin American Chemical Sciences Network (RELACQ)

RELACQ's structure emerged ad hoc after the launch of the network initiative. Its activities began on June 26 and 27, 1995, at the Chemistry Institute of the University of São Paulo (Brazil). In said founding meeting academicians from Bolivia, Brazil, Chile, Mexico, Peru, and Uruguay participated. Curiously, RELACQ is a subproduct of the increase in UNESCO's financing and intermediation expectations that took place in 1994-95.

The founding agreements among the more than half a dozen participants, expressed their will to devote to "fund raising" from ONCYTS in order to appear as representatives and intermediaries that wanted to "give scholarships to people aged under 40 to participate in meetings, internships, etc."

RELACQ does not have a known organizational structure. There are only some references to names of entities from different countries, mainly those of chemistry societies or associations. However, we have not been provided with any bylaws or internal operation regulations. Funds allocation decisions seem to have been made in a centralized manner by the coordinator.

RELACQ has received, according to UNESCO, approximately 50 thousand dollars in the reference period, which amount it has mainly applied to the granting of some dozens of "research internships" and "active participation scholarships in congresses". Besides, significant funds have been used for financing coordination trips, and to management and infrastructure expenses. In the description of activities the non compliance with its own foundations is detected when help is provided to Chileans for their participation in conferences and seminars in Chile, or when the direct benefits of the reception of students with scholarships is the same centre.

In this network, coordinators meetings do not seem to exist and it seems that the decisions regarding the application of funds are individually made by the coordinator. The impression one gets is that of a sui-generis network whose purpose is to manage the funds provided by UNESCO (no other funding resources are reported), and which are mainly used to sustain the network legitimacy.

2.4. Latin American Mathematical Network

The Mathematical Union of Latin America and the Caribbean (UMALCA) was created on July 26, 1995, at the premises of IMPA (Rio de Janeiro) and it was formed by the national societies of mathematics from 9 countries (Argentina, Brazil, Chile, Colombia, Cuba, Mexico, Peru, Uruguay, and Venezuela). UMALCA's bylaws establish that UMALCA shall operate the Latin American Mathematical Network.

UMALCA wishes to promote mathematics in the region, collaborate in the students and researchers exchange, training centres of excellence, promote the development of mathematics in countries with lower development levels, and support the improvement in the teaching of mathematics.

Its bodies are: the General Assembly, which meets once every 2-3 years, and which is formed by representatives from national societies; the Executive Committee, meeting once a year, and which consists of 5 elected members; and the Scientific Committee, in charge of reporting the granting of exchange scholarships, post-graduate studies scholarships and the identification of the best training centers in the region.

According to UNESCO, in the reference period UMALCA received almost 60 thousand US dollars. Since members pay affiliation fees and funds are received from other national and international bodies, said contribution from UNESCO does not surpass 20% of UMALCA's budget. UMALCA's finances seem to be more independent and have obtained, apart from the payment of membership fees by National Societies of Mathematics from the different countries, financing and contributions from the French cooperation and other entities.

UMALCA, as a traditional scientific society, has also had an active participation in the organization of the Latin American Mathematicians Congress, recently held in Rio de Janeiro. Besides, UMALCA promotes the Latin American School of Mathematics and carries out activities for the creation of a directory of researchers and centers in the region. Apart from these activities, trips to courses and seminars are financed.

In conclusion, UMALCA is a potential collaborator for the development of cooperation actions with UNESCO, as long as the objectives of said actions are delimited in time and follow-up mechanisms are applied.

2.5. Latin American Astronomy Network (RELAA)

The Latin American Astronomy Network is another network which appeared due to the financing possibilities. RELAA was established in November, 1995, at the Regional Meeting of Astronomy, sponsored by the International Astronomy Union (IAU), and was joined by IAU members from six different countries (Argentina, Brazil, Chile, Mexico, Uruguay and Venezuela).

It has generic objectives, such as encouraging the development of astronomy in Latin America and fostering multinational projects.

Its organization is quite informal. The RELAA Coordinating Committee is the ruling body of RELAA, and it elects a coordinator for 3 years. Generally, the Committee meetings have been held at the regional scientific meeting of astronomers which is carried out every three years. The renewal of the Committee is practically done by cooptation. The structure is almost nonexistent and its sole purpose is to guarantee the distribution process of the funds provided by UNESCO. There only exists a "Bylaws" proposal available on a web site slightly updated during the last two years.

During the period in question, UNESCO's funds have reached a sum beyond $35,000 (American dollars), which have been normally distributed in equal sums among the six countries. They have been generally used for the payment of plane tickets to travel to other countries in the area, internships and meetings and seminars support. The selection of the young beneficiaries is made in a decentralized way, each coordinator selects the beneficiaries from his/her own country; the scholarships are usually of little amount, of $500 and sometimes $250.

RELAA is another example of a body which emerged under the intervention strategy of UNESCO, with the sole purpose (and associating incentive) of spending the granted subsidies.

2.6 The Latin American Network for Earth Sciences (RELACT)

RELACT was established in 1994 in order to facilitate and foster personal and professional contact among earth scientists in Latin American and the Caribbean, in a meeting held at the San Pablo University. At the beginning, it appeared to be a network established in order to gather funds. However, those funds never arrived.

In fact, the RELACT Board of Directors met for the first and only time in Mexico in 1995, thanks to a $10,000 aid granted by the Network Coordinating Committee, which has sporadically covered minor expenses of the network. At the meeting, the constitution of national committees in the countries of the region, which are considered almost non-existent, was decided. Since then, RELACT never received funds from UNESCO. As a work scheme, RELACT merely pointed out that it would focus on the construction of an e-mail list and a web page during the 1998-1999 period. The UNAM (Autono

mous National University of Mexico) and the OAS-CONACYT granted a $5,000 aid for the creation of a new Internet site.

Therefore, RELACT has no organizational entity, but a merely virtual body as an information exchange and supply place. This "network" has no members (or Board of Directors). In practice, during the following years, RELACT has been reduced to an Internet space which aims at facilitating connections with the International Geological Congress of Rio which has returned to Latin America this year and other activities within the scientific community in this field.

Besides, RELACT has had to fight against the excessive diversity of the research community in this area. Thus, it would be useful to define and focus more its objectives as an information exchange network. One option could be by focusing, as an interdisciplinary network, on research and knowledge production activities about regional problems, such as natural disasters. Nonetheless, RELACT field of activity seems to fall beyond the basic sciences.

Annex 2.
List of interviewees and contacted persons

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