

Chapter 13

Can the diaspora contribute to the development of their home countries?

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Abstract

Classical theories on migration warn about negative effects of brain drain for developing countries. However, these flows have increased around the world as a consequence of the internationalization of science. Therefore, scientific institutions have developed interesting mobility programmes to recruit talent without taking into account nationality. In parallel, these individuals are attracted by the excellence of the institutions and their common lines of research. At the same time, challenges in information and communication technologies (ICT) have transformed global aspects of contemporary society related to the organization of scientific institutions. Firstly, ICT channel the relationship among researchers and sharpen knowledge transfer. Moreover, ICT make the contact among collaborators at home and in host countries easier. This study addresses the use of ICT tools in developing countries to take advantage of their human resources.

We will focus on the mobility actions promoted by the Carolina Foundation (FC), a Spanish non-profit organization which promotes cooperation with Latin America. This institution provides an interesting case study. First, its goal is cooperation with developing countries, especially in Latin America, through the implementation of mobility programs based on the brain circulation concept and the return of talent to its home country in order to promote development. As a consequence, the FC finances postgraduate studies for Latin American students and researchers in Spanish universities, who, once they have finished their studies, are urged to go back to their home countries. According to this institutional logic, this educational investment and training promote scientific development in home countries. Secondly, the FC feeds a certain common sense of identity among the Latin America diaspora, promoting a powerful elite of highly skilled personnel. The so called “Carolina Community” is composed of individuals who have received grants from the institution. In addition, other online networks have been created by national governments in Latin America, so students keep in touch among themselves and the power of the individuals involved in these mobility programs is emphasized.

Keywords: human resources in science and technology, international mobility, social networks, transnational identity

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A glance at the new ICT influences on scientific mobility

Knowledge transfer and the mobility of researchers are always linked with the development of science. In the past, travelers were an important source of the spread of ideas and technological advance. But nowadays, information technologies and globalization have transformed science (Nowotny et al., 2001). The goals of science are greater and necessitate multiple collaborations, for example, calculated measures that can only be carried out in a specific place, remote places or spaces with suitable characteristics, such as astronomical observatories. Specialization in science increases through contact with foreign research groups sharing common lines of research.

Competitiveness and excellence also foster the search for knowledge abroad and encourage the mobility of people (European Commission, 2008). Scientific institutions are aware of the important results obtained from the most innovative lines of research, and of the key factor that human resources play in the advancement of science. The efforts to reach top positions in the international ranking affect the strategies of these institutions, where the enrolment of the best candidates is an investment in the future.

Although higher education has always been international, flows have completely transformed the scenario as more and more students are moving around the world in search of education. European authorities are developing a common body of public policies that regulate the training of students and junior researchers. An important principle of this new model for a higher education system is the increase in international mobility, enriching the European community identity and the interchange of training between universities. With this in mind many different types of institutions, including non educational ones such as non-profits, financial institutions and local research institutions are increasing their resources and encouraging young graduates to continue their studies or training abroad.

In addition, faster and cheaper transport is making the international mobility of students and scientists easier. The spirit of adventure and training abroad are supported by favourable conditions which permit students and scientists to keep in touch with their families and their home countries. Information technologies and other electronic devices also provide more frequent interchange between research teams, fostering scientific collaboration (Gibbons, 1994). In fact, continuous contact through those tools enhances mobility, global research goals and even the building of a transnational sense of identity (Faist, 2000; Levitt and Nyberg-Sørensen, 2004), all of which will be looked at in the following sections.

Human resources policies have been inspired by the assumptions of brain circulation as a mechanism to strengthen knowledge economies (Drucker, 1969). This can be seen in both the design of European migration policies and the funding of higher education programmes. The goal of these actions consists in the recruitment of talent, independent of geographical origin, so that competitiveness among scientific institutions, R&D, innovation systems and, in general, the global economy can be fostered. These actions are based on the brain circulation approach that emphasizes the advantages of the mobility of highly skilled personnel around the world. In fact, statistical data show the multidirectional flows of this mobility and the geographical extension of the phenomenon (OECD, 2008a; 2008b).

However, this mobility could lead to a loss of talent for developing countries as scientists are attracted by centers of excellence in more competitive countries. Brain drain places developing countries at a disadvantage but ICT incorporate a new challenge in this relationship. This paper focuses on the opportunities that developing countries have when managing their highly skilled personnel diaspora abroad. In this way, although these countries are affected by brain drain, its impact can be minimized. Social networks provide a mechanism to benefit from highly skilled personnel although

they are in other countries, while ICT can produce changes in terms of access to study in tertiary education through online studies.

To sum up, this work addresses the opportunities provided by ICT tools for knowledge transfer and the development of countries through the fostering of talent, students' skills and scientific advancement by means of international training in competitive and recognized research institutions. These new elements provide an opportunity to balance the unequal relationship between rich and poor countries (Hansen, 2003; Boussaid, 1998) taking advantage of talent in the information society.

Mobility programmes in the “Age of Internet”

Higher education systems are being transformed, primarily in aspects related to mobility. First, online learning has transformed higher education because geographical limits can be overcome. This is especially important in Latin American countries as it is possible to obtain tertiary degrees from European universities even if students are not in the host country. It provides opportunities for developing countries as it increases the levels of qualification through education and training in prestigious centers abroad. It enhances scientific level indicators among developing countries and the opportunity to establish new lines of research.

Other changes come from initiatives of the institutions that lead international mobility programmes. The globalization of science and tertiary education as well as ICT tools have transformed the type of support offered to students and researchers. In the past, funding institutions lost contact with their grant-holders at the end of their stay. Nowadays, they keep in touch and follow their professional career through virtual networks, which help them reach a leading position as far as the global market is concerned. Likewise, these tools help grant-holders exchange information, contact, meet, find support and even build a virtual community.

New models of identity based on shared interests and commitment to home countries and professional goals emerge from migration. The support of ICT instruments contributes to engage highly skilled personnel and enrich transnational feeling as well as commitments (Pellegrino and Vigorito, 2009). Social networks build a bridge between foreign and local nodes generating new opportunities for both country of origin and host country through the transnationality of students and scientific flows. They also represent a political capitalization of the social, human and cultural resources for the financing institutions and governments (Nedelcu, 2008).

Flows of students and scientists are promoted by national or local governments, international agencies, academic institutions, enterprises or non-profit institutions in order to advance academic and scientific achievements. The type of institution and its corporative goals determine the program and actions to be implemented. These programs should cover many types of resources, not only those related to funding (grants and other economic support), but also linguistic and health assistance support, among others (Kelo, 2006).

Many European countries are involved in this process of change, which needs to be studied in depth. With this in mind, this study looks at the Carolina Foundation, created in 2000 by an initiative of the Spanish Ministry of Foreign Affairs and composed of both public and private institutions as founding members. This institution provides different programs, such as mobility support for travelling purposes to Latin American students and researchers. Spain has been a frequent destination of Latin American citizens from the last decades of the 20th century up to the present (Pellegrino and Vigorito, 2009). Educational credentials are well appreciated in Latin America; therefore this mobility program provides students and scientists with the opportunity to study in Spanish universities. According to the prestige of these credentials, candidates will enter the labour market or scientist community in advantageous circumstances in comparison to their colleagues from home institutions.

The cooperation mission embedded in mobility programs

Some non-profit institutions have, among other goals, traditionally developed actions intended to foster student mobility. The main objective of the FC is to promote cooperation with developing countries, especially centered on the Latin American community, with which it maintains strong historical, cultural and linguistic ties.

With this aim the FC has developed four programs for cooperation:

1.- Training Programme for graduate level, specialized studies or life long learning. It gives support to participants with funding, access to the studies and other advantages. Our analysis will be mainly carried out on this programme.

2.- Research Programme of the Centre for Studies for Latin American and International Cooperation (CeALCI), focused on the production of information and debate in developing countries.

3.- International Visiting Programme, which aims to connect VIPs and politicians from Latin American with Spanish colleagues or institutions.

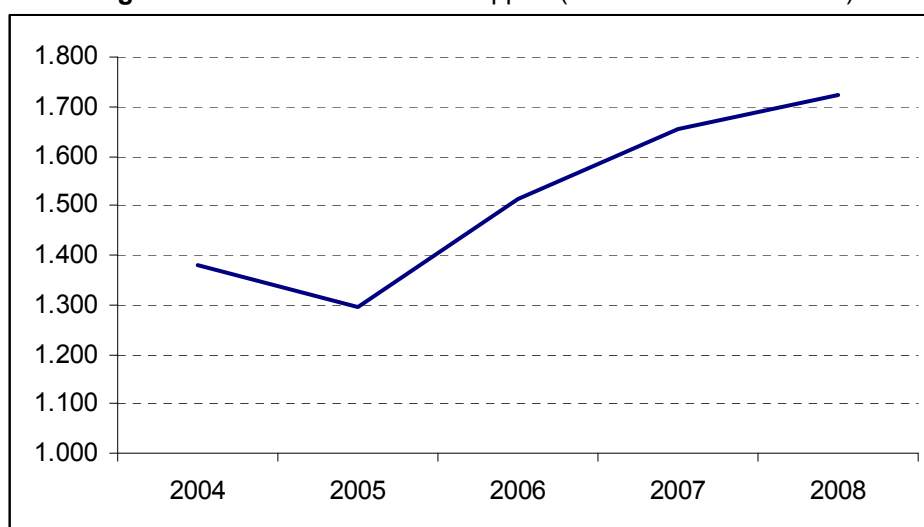
4.- Social Responsibility of Enterprises Programme (RSE) intended to promote human rights, gender equality and equality for minorities and environmental and sustainable development for social agents/in the interest of stakeholders (enterprises, consumers, organizations and associations).

As a consequence of the mobility programmes, the FC has undertaken two additional actions: the so called “Vivir en España” (Living in Spain) programme helping grant holders adapt to Spain, and the “Red Carolina” (Carolina Network) which is a device for promoting relationships, cooperation and learning among the beneficiaries of FC programmes. This first initiative opens a door to connections among the grant holders involved in the mobility programmes of the FC. In the following section, this topic will be the main focus of interest.

The support from this institution is based on different types of resources: scholarships, registration fees, travel expenses and lodging. The amount and type of support received depend on the economic conditions of the home country as well as those of the candidate's family, the university tuition fees, and other complementary funds associated with the postgraduate programme selected.

The figure below represents the evolution of the support given to the beneficiaries by the FC:

Figure 13.1. Distribution of FC support (number of beneficiaries)



Source: Elaboration from the FC Annual Report.

This data shows the effort of the foundation in encouraging international mobility among younger Latin American students and researchers. During the late 2000s the number of grants increased (with the exception of 2005) despite a drop in funds suffered for some years; this represents a growth of 25 percent in the number of grants from 2004 to 2008. Regarding the modality of the grant provided, the majority were directed towards supporting postgraduate degrees (73 percent), followed by doctoral programs (18 percent), and other short stays (9 percent).

The evaluation of candidates for grants is a long and careful process carried out by the institution which wants to select the best candidate according to these criteria: a) the grants must be awarded to individuals with economic need, b) mobility must cover all of

the period of time estimated in the studies programme and the candidate must return to his/her home country for it to be considered a successful project, and c) once back in his/her home country the grant recipient must generate a “multiplier effect”; which consists in the development of their regions through their professional careers which will be reflected in the progress of the global community. In this sense, evaluators take into consideration the engagement of candidates with their communities of origin in order to guarantee their return and positive effect on their home communities.

To promote positive effects in home communities is of great importance to the institution and this purpose is assumed by the selected candidates. The grant is almost considered as a means to obtain benefits for grant-holders’ communities, and their own personal success entails a collective benefit for their countries. This idea is expressed by the grant-holders interviewed in the FC journal Boletín C (2009):

En mi país no hay personas formadas en esta área, así que puedo aportar mucho en el desarrollo de este proyecto. Martha

[In my country there are no persons with training in this area, so I can contribute a lot to the development of this project.]

En principio, quiero colaborar en el desarrollo de mi país. Lo paradójico de Bolivia es que no hay desarrollo en algunas ramas como la que me interesa, la telemedicina, o las relacionadas con los animales, de los que soy firme defensor. Luban

[First, I want to participate in the development of my country. What is paradoxical in Bolivia is that there is no development in certain areas such as the one that interests me, telemedicine, or those related to animals, which I am a strong defender of].

Cooperation is the main inspiration for the initiatives of the Foundation. In fact, it is currently implementing a new project focused on collective research needs in

developing countries. With this in mind, it is financing collective-scholarships for groups of researchers in order to develop certain areas of research after their training period in Spain. After the return of the researchers who have been trained in their specific fields of interest, the developing countries will create strategic areas of innovation of local community or nationwide interest. In this way, the FC supplies the financial support to foreign research centers for needed specialized training of their local researchers, taking place in Spanish universities.

Although it is a pilot project, we consider it a useful mechanism for promoting research in developing countries and for guaranteeing positive effects in these countries. Brain circulation is not a perfect model for highly skilled personnel. They often return to their home countries finding precarious research environments, lacking resources and thus are unable to develop their intellectual skills (González Ramos et al, 2008). Most well trained scientists are often disappointed in a non-equipped lab or without an appropriate intellectual atmosphere. If training efforts involved a group of people and corresponded with a useful future project, such actions would have more positive effects on home countries. Thus, this may be an innovative way through collective action to promote useful research that is helpful to the community.

Managing the diaspora

Previous studies reveal the positive impact of social networks linking the diaspora of highly skilled personnel abroad with their home communities (Saxenian, 1994, 2006; Saxenian et al, 2002; Lucas, 2001; Mera, 2005; Solimano, 2008; Nedelcu, 2009). Saxenian's precursory study on the impact of Indian and Chinese immigrant communities on entrepreneurial innovation in the US and in their home countries highlights the importance of ICT in strengthening community feelings. Her analysis underlines the success of entrepreneurs and the development of home and host countries as a consequence of their personal business activity. ICT foster the link to face to face relationship (Castells, 1996).

According to Lowell (2001), during the 1990s, parallel to the increase in international mobility there was a remarkable increase in social networks that connected emigrants living abroad. We will now have a look at some examples of social networks connecting the diaspora supported by ICT devices:

1.- South African Networks of Skills Abroad (SANSA) was created in 1998. It has more than 2,200 members across 60 countries, most of them educated in South Africa. The purpose of this network is to connect the highly skilled personnel in science and technology abroad with their colleagues in South Africa, creating a collaborative environment and knowledge transfer. The main goal is the promotion of economic development in South Africa.

2.- CHISA is the acronym for China Scholars Abroad, and an example of the ethnic and strong ties of the Chinese community. In this case, ethnic and family groups are behind businesses and the origin of entrepreneurial success.

3.- Arab Scientists and Technologists Abroad (ASTA) maintains an electronic directory for scientists and technicians of Arabic origin who work in advanced industrial countries. Its goal is to create a space where scientists of whatever area and working abroad can be contacted by Arab institutions interested in their area of expertise. ASTA facilitates conferences and workshops with government or private funding and Arab institutions abroad.

4.- Silicon Valley Indian Professional Association (SIPA) attempts to support the Indian community from a professional as well as a personal point of view. SIPA provides a common platform for professionals beyond their working roles, creating a healthy climate of mutual help and personal growth. The goal of SIPA is to build a powerful network of professionals in Silicon Valley with the aim of creating an “influential mark [brand]” in their working environment for mutual benefits.

5.- Ad-Astra project, launched in 2000 by an initiative of the First Forum of Romanian students and young researchers educated abroad, along with the President of Romania and the Embassy of the United States in Bucharest. It provides a mailing list of young Romanian scientists abroad, an adequate communication tool for the diaspora. The website was created in 2001 and it is conceived as an electronic support for the *Ad-Astra* journal, a platform of scientific exchanges and a pool of expertise and skills.

All these examples illustrate cases of associations created by highly skilled personnel linking part of their community abroad. Other cases are promoted by their governments in order to maintain contacts with students and scientists studying and working abroad.

6.- In 1992, the Colombian Institute for the Development of Science and Technology "Francisco José de Caldas" - COLCIENCIAS, launched the project Red Caldas as a resource for communication to exchange scientific and technological knowledge between Colombian researchers abroad and the national scientific community. The aim is to communicate over the activities of science and technology in the home country. The Red Caldas is a national strategy, part of the international science policy developed by the National Science and Technology System. The aim of this policy is to facilitate the creation of a virtual knowledge community led by Colombian scientists and researchers in and outside the country and part of the public domain in knowledge, science and technology production in Colombia.

7.- R@íces, Network of Argentinian Researchers and Scientists Abroad, is a program of the Ministry of Science, Technology and Innovation, depending on the National Directorate of International Relations. Its purpose is to strengthen the country's scientific and technological capabilities by developing policies intended to connect Argentinian researchers living abroad, as well as to promote the stay of those

researchers and the return of those interested in developing research activities in Argentina.

An advantage of these electronic resources is that international links and networks do not require large infrastructural investments. Hence, social networks may provide significant benefits in relation to the cost of connecting the diaspora with home countries (Solimano, 2008). Accessibility to electronic devices favours their extension and the number of actors promoting such social networks. As previous examples have shown, social networks display several differences according to their promoters, the actors involved, their goals and associated resources.

An analysis of these social networks reveals that their most common functions are related to the return on the capitalization of the diaspora, the promotion of knowledge transfer, the promotion of important lines of research among international research teams, the engagement of expatriates and the reinforcement of common feelings of identity. Their main concern is the creation of fluid and multiple identities among the highly skilled personnel abroad, the so called transnationality of migrants.

Mera (2005) explains that a strong social identity is the key element to take advantage of in professional success, even in terms of personal advantages such as achievements, maturity and so on. People involved in a migratory process are involved in a “floating identity” produced by the competitiveness in the host country. In addition, these new identities can be used to reinforce their social position in the host country and connect with the home country. This phenomenon is described in a similar way by Saxenian (1994, 2006) in the case of the highly skilled Chinese and Indian personnel in Silicon Valley. These people are organized around a feeling of a common identity which allows the spread of their ideas, an entrepreneurial initiative and other positive factors that favour their success and that of their communities of origin.

In the case of developing countries, social networks are instruments to take advantage of as far as brain drain effects are concerned in order to benefit from the potential achievements, in spite of the expatriate status, of their nationals (Lucas, 2001: 22; Saxenian et al, 2002; Mera, 2005). Therefore, mobility of talented nationals represents a response to weaknesses in developing countries and strengthens R&D and innovation systems. The talent abroad drives forward scientific and economic initiatives by providing contacts and resources obtained in host countries. As a result, management of the diaspora can play an innovative role in developing countries.

Some developing countries have adopted social networks in their national scientific policies to strengthen the leadership position of their expatriates in the home community (Solimano, 2008). The awareness of the lack of resources to attract professionals to their home countries lead national authorities to adopt these measures bringing the diaspora closer, rather than fostering their physical return. Social networks are better than other actions such as mobility programmes implemented by developed countries. These instruments are cheaper and safer because they are independent of the country's ability to attract highly skilled personnel back home. In addition, social networks provide a connection between the diaspora and the home country, keeping individuals in touch with local institutions and reinforcing their national identity.

However, social networks promoted by funding institutions have a slightly different orientation regarding the purpose of their initiatives. Firstly, these organizations design mobility programmes with a brain circulation approach, but never consider the return of human resources to their home countries. Secondly, the creation of social networks is related to marketing purposes because the community represents the image of the institution. Beneficiaries sponsor the relevance of the grant obtained and the social labour carried out by the organization. Finally, the explicit arguments of these institutions to promote these types of resources are associated with instrumental purposes such as to give support to grant-holders, keep them connected, promote

cultural and social activities and create a useful database to follow their beneficiaries' success.

Three social networks associated to the Carolina Foundation

In spite of its short history, the FC mobility programme is very popular in Latin America. Many students want to receive grants and become a “carolino”, the name used to identify the beneficiaries of this institution. The FC receives a huge number of applications to evaluate each year, which demonstrates the success of the mobility programme and the type of support involved. This support is considered by candidates and home countries as an award worth winning, having a positive effect on their careers. It is also positive for the institution itself as an appreciation of its educational and scientific services and it is an accumulative factor that contributes to create a reputation for excellence.

That is why it is not surprising to discover the existence of several social networks regarding the FC mobility programmes which are supported by ICT websites. These platforms differ based on their initial promoters, purpose and functions, which is related to the type of technological support used by the social network. The analysis of these networks has two objectives: to analyze the functions and features of these networks and to address the contribution that these social networks could provide to the diaspora. The aim of this study is to look at the opportunities for development generated by the diaspora in home countries.

The FC has developed two mainstream and complementary actions focused on supporting the stay of their grant-holders. “Vivir in Spain” provides grant-holders a complete socialization process when living in Spain. Meetings, personal exchanges, conferences and weekend trips are organized to improve grant-holders' knowledge on Spanish policy, society, economy and culture. “Red Carolina” is an instrument for fostering relationships of exchange, cooperation and training growing out of the

different FC programmes (training programme, research, visiting and social responsibility) between Spain and Latin America. According to the explicit message of the institution, this social network attempts to encourage strategies of exchange, cooperation and learning generated by the FC mobility programmes and extend them to the grant-holders. Hence, the Red Carolina created by the Foundation is an instrument to connect the entire community to foster a common identity and support.

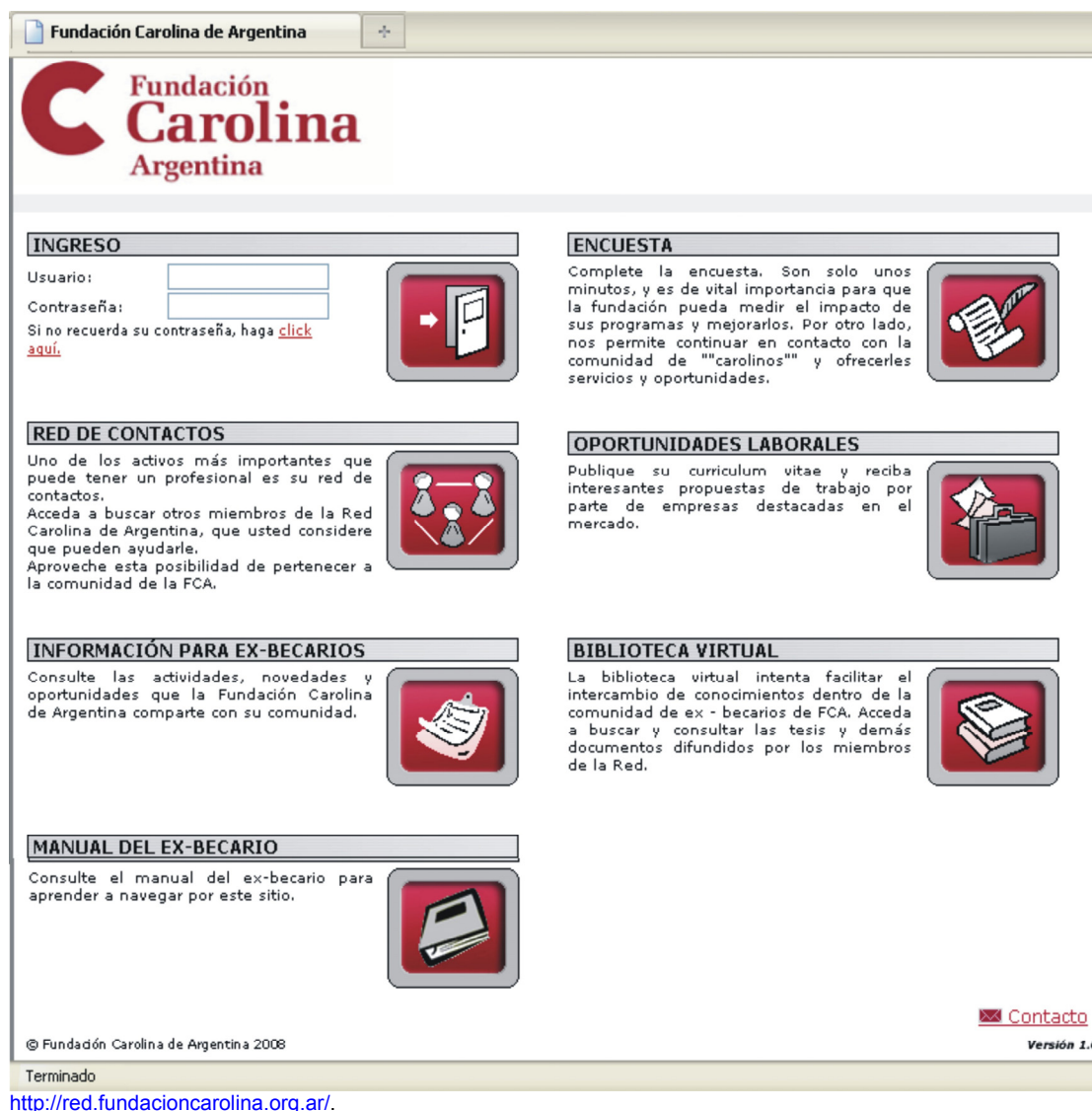
Figure 13.2. Website of the Spanish Red Carolina



This institutional network is complemented by other sub-networks associated with the FC. The platforms are promoted by ex-grant-holders from Colombia, Argentina and Paraguay and give a lift to the Red Carolina. These websites are linked with the core-website of the Foundation, which reveals a close link and shared purpose despite their different promoters. According to its website, The Red Carolina of Colombia provides workshops, training courses and other cultural and social meeting activities which

create strong ties among grant-holders. It is also an employment agency for ex-grant-holders and promotes recognition and grants honours to the new members of the community. The Argentinian website shows the different functions offered as indicated:

Figure 13.3. Website of the Argentinian Red Carolina



The Red Carolina of Paraguay website highlights the opportunity to travel. The initial message of their website clearly encourages future candidates to apply because the FC provides training, research programmes and international stays. The welcome message ends with a commitment to provide information about access to these programmes and how the network operates. The principles of the network are based on: a) the strengthening of friendships and connections among members, b) the

cultural, professional and support exchange between its members and the FC or similar institutions, c) advice for the evaluation process for candidates, d) fostering friendship between Paraguay and Spain and especially cooperation for development, e) the organization of workshops, conferences, new grants and other resources to improve the training of ex-grant-holders, f) support for the legal accreditation obtained in other countries, g) participation in conferences and national and/or international meetings for the purpose of association.

In contrast to the social networks described above, an integration initiative of grant-holders has been created through a google group in Spain. In comparison to the other networks this is the most informal due to the platform used, though the message strongly emphasizes a sense of community.

Figure 13.4. Website of the google group of the carolinos community



The welcome message of this network expresses its origin and purpose. It has been built by grant-holders with a great interest in working together, sharing experiences and becoming stronger. In practice, the tool is used by its members to help themselves, so that they can meet in certain cities and provide hospitality for those that need to travel to other Spanish regions. The motto of their website is: “United we stand, unity is

strength". Beyond the informal platform used to facilitate the movement of "carolinos" around Spain, this network is advancing toward the creation of an interest group for the future. Unfortunately, its short history does not permit us to comment on its future influence in terms of power and transformation as mentioned in its slogan: unity is strength.

Each network - although directed towards the same target group – understands the meaning of building a social network differently: whereas the Spanish Red Carolina is a strategic plan of the Foundation, the Google group is a friendly support to travel and meet people. The social network promoted by the Foundation is identified as a tool enhancing connections after the period abroad and a feeling of common identity. The Google group also encourages a sense of community identity and the cooperation and multiplier effect promoted by the FC.

The use of ICT instruments is also different, while the website is an information tool for the first one, communication is the purpose of the second one. But all of them contribute to the creation of a common identity based on support and mutual recognition as part of an influential collective.

Social networks related to the FC are different from the networks described in the previous section. They are not oriented to promote business or the scientific work of expatriates because the programme developed by the FC is inspired by the brain circulation approach. They are not built with the purpose of managing the brain drain of Latin American individuals moving abroad. They are not related to the professional activity of highly skilled personnel and scientists, but to students who use the network as a supporting tool for their early careers instead of generating new lines of innovation and research (as those examples of the Silicon Valley). The main goal of these networks boosts the actions of the FC and facilitates communication among the carolino community, generating a common feeling of identity among all beneficiaries.

These networks boost the new identity generated by the common experience and the valuable postgraduate training in prestigious Spanish universities. They are used to reinforce the social position of the grant-holders in the host country although, due to the short life of these programmes and these social networks, it is not possible to evaluate their impact on the professional careers of the participants in their home countries. We have previously shown the desire of grant-holders to become part of the development of their home communities, which links with the institutions goals for cooperation through promoting the leadership of Latin American participants in the FC programme. One important FC programme is the International Visiting Programme which finances travel and conferences for Latin American leaders and politicians. This is a very important and broad programme in Spain and Latin American countries that undoubtedly impacts the younger grant-holding students and researchers.

However, this descriptive analysis of these social networks is not enough to evaluate their impact on participants feelings and effects on their careers, therefore more research must be carried out. To give a boost to future leadership could be a powerful strategy for developing countries and strengthen R&D and innovation systems. From the perspective of cooperation, the main principle of the FC, which is leadership by the most talented people, is a way to drive forward developing countries.

Consider the above mentioned as the leadership development model in Latin American countries boosted by the FC, our analysis shows that the model splits the common identity up into separate countries because there are several national social networks. The Foundation is the gatekeeper of the global identity but every country develops its own project for a social network represented by the ex-grant-holder community. The activities of these social networks are similar and oriented to create greater connectivity among the members but their concrete projects may be different as well as the types of services and relationships they offer. Again, this topic requires additional research.

Final remarks

This work has described the transformation of science and higher education systems, where ICT tools play a decisive role in fostering the main tendencies of changes. ICT are present in the majority of the knowledge production processes, facilitating the exchange of information, creating new links among distant research groups and encouraging the mobility of human resources. Nonetheless changes would be possible without these instruments being involved in one or more steps of those processes, and therefore, ICT is a favorable factor in the current organization.

Regarding the mobility of human resources, ICT contribute to the extension of the phenomenon giving some dynamism to face to face interaction, the spread of shared information and the potential for distant communication. Hence this work is inspired by the multiple influences and effects that science and higher education systems have generated thanks to ICT in the new fluid societies. This analysis is focused on the contribution that ICT could make in developing countries through the brain circulation of their talented nationals.

ICT advances, educational achievements and even mobility programmes contribute to improve opportunities for more people. Therefore, the extension of knowledge is not a resource for a few people restricted to developed countries, as individuals in a developing community may benefit from ICT advantages and other cooperative actions. As a consequence, students and young scientists with strong skills - often derived from mobility experiences in prestigious research and educational centers abroad - may be the elites of the future independently of their geographical origin. Some segregating factors between developing-developed countries may be blurred in terms of access to strategic positions for some leaders. In this study we show that social networks of highly skilled personnel trained abroad could be the means to create the next influential local elite in developing countries.

There is strong agreement with the fact that the mobility of highly skilled personnel in contemporary societies corresponds with a brain circulation model. The literature points out that the flow of highly skilled personnel increases the advantages in home and host countries. This study highlights the contribution of international mobility to the development of countries. The extension of mobility around the world reinforces knowledge transfer and also opportunities for the development of less favoured communities by means of their national talent. This study also emphasizes the cooperative actions implemented by the FC based on mobility of Latin America elites in order to take advantage of the most skilled individuals.

Social networks provide empowers these individuals to face their personal challenges and become leaders in their communities. South African, Indian, Chinese, Romanian, Colombian, Argentinian, and Arab networks have been shown as examples of these initiatives. Some of them are networks which have aided in development of business in their communities of origin as mentioned in the literature.

This study addresses the FC as a case study that represents some differences regarding the examples mentioned above. The social networks created around the training programmes of the Foundation have developed a support system among them that is rooted in a certain sense of identity as part of a special group, the carolino community. Although there is no evidence of the existence of a floating identity, because this population returns to its home communities, they are strategically positioned as far as their training abroad and engagement with the development of their communities is concerned. Thus, the cooperation mission of the Foundation is accomplished by grant-holders who will, in the future, become the stakeholders of their home communities.

The results of this work prove that we need to collect more data about the positive effects that a community identity receives from social networks, especially in order to

boost R&D and innovation systems in developing countries. Social networks could be a powerful source of empowerment and leadership for the highly skilled. Explanations of the relationship of development and cooperation among countries in the classical literature is still insufficient as it does not include contemporary events. Social networks could foster new models of development and establish ties between developing and developed countries. And elite mobility also provides a new opportunity for development. Most of these individuals feel that they should compensate their home countries for their success, which is why social networks are a way to connect them with local colleagues and a means to give something back to their countries. Maybe, this could mean a new revolution promoted by the spread of the knowledge society.

References

- Boletín C (2009): "Entrevista a becarios de la Fundación Carolina" nº 15, marzo 2009 <http://www.fundacioncarolina.es/es-ES/areacomunicacion/boletinc/Documents/BC15.pdf>.
- Boussaid, L. (1998): L'exode des cerveaux et les pays développement, *Migration société*, n. 56, vol. 10 mars – avril: 65-71.
- Castells, M. (1996): *The Rise of the Network Society The Information Age: Economy, Society and Culture*. Vol. I. Cambridge, MA; Oxford, UK: Blackwell.
- Drucker, P. (1969): *The Age of Discontinuity: Guidelines to Our changing Society*. New York: Harper and Row.
- EC (2009): Council Directive 2009/50/EC of 25 May 2009 on the conditions of entry and residence of third-country nationals for the purposes of highly qualified employment.
- European Commission (2008): *Challenging Europe's Research: Rationales for the European Research Area (ERA)*, European Commission, European Research Area.
- Faist, T. (2000): *The Volume and Dynamics of International Migration and Transnational Social Spaces*. Oxford: Oxford University Press.
- Gibbons, M., Limoges, C., Nowotny, H. (1994): *The new production of knowledge: the dynamics of science and research in contemporary societies*. London: Sage.
- González Ramos, A. M., (dir) Muller, J., Palmen, R., Ros, A., Sainz, M., Sanz, V., Vázquez, S., Vergés, N. (2008): *Efectos curriculares de la movilidad internacional de los egresados universitarios del área TIC*, Informe final MEC-EA 2008-0153.
- Hansen, W. Ed. (2003): Brain Drain – Emigration Flows for for Qualified Scientists. Part 2: Defining Brain Drain, http://www.merit.unimaas.nl/braindrain/Part2-Defining_Brain_Drain.pdf.
- Kelo, M. (2006): *Support for International Students in Higher Education. Practice and Principles*. ACA Papers on International Cooperation in Education. Bonn: Lemmens.
- Levitt, P., Nyberg-Sørensen, N. (2004): The transnational turn in migration studies. *Global Migration Perspectives*, nº 6, October <http://www.gcim.org/gmp/Global%20Migration%20Perspectives%20No%206.pdf>.
- Lowell, B. L. (2001): "Policy responses to the international mobility of skilled labour", *International Migration Papers*, 45 (December). Geneva: International Labour Office, Migration Branch.
- Lucas, R. E. B. (2001): "Diaspora and Development: Highly Skilled Migrants from East Asia, IED discussion Paper 120", *Research Review Spring 2002*, The Institute for Economic Development at Boston University.
- Mera, C. (2005): "La Diáspora Coreana en América Latina" http://ceaa.colmex.mx/estudios_coreanos/images/mera.pdf.

Nedelcu, M. (2009): "The Romanian scientific e-diaspora: How Romanian scholars collaborate on the Internet and effect change at home" http://www.csee-socialscience.net/1989/papers/Nedelcu_InternetDiaspora_WP17.pdf.

Nowotny, H., Scott, P., Gibbons, M. (2001): *Re-thinking science: knowledge and the public in an age of uncertainty*. Cambridge, UK: Polity Press.

OECD (2008a): *A profile of Immigrant Populations in the 21st Century. Data from OECD*. Countries, OECD.

OECD (2008b): *The Global Competition for Talent. Mobility of the Highly Skilled*, OECD.

Pellegrino, A., Andrea, V. (2009): "La emigración calificada desde América Latina y las iniciativas nacionales de vinculación. Un análisis del caso uruguayo". *Pensamiento Iberoamericano*, nº 4: 189-215.

Saxenian, A.L. (1994): *Regional Advantage: Culture and competition in Silicon Valley and Route 128*. Cambridge Mass: Harvard University Press.

Saxenian, A.L. (2006): *The New Argonauts: Regional Advantage in Global Economy*. Cambridge Mass: Harvard University Press.

Saxenian, A.L., Motoyama, Y., Quan, X. (2002): *Local and Global Networks of Immigrant Professionals in Silicon Valley*. San Francisco: Public Policy Institute of California.

Solimano, A. (Ed.) (2008): *The International Mobility of Talent. Types, causes, and development impact*. UNU-WIDER Studies in Development Economics Research & Oxford University Press.