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links in a Public Research Organization

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Abstract

This study analyzes the characteristics of knowledge transfer in the Social Sciences and the Humanities in the Spanish Council for Scientific Research (CSIC). CSIC is the largest public sector research organization in the country and has a substantial set of activities in the Social Sciences and Humanities. We analyze the variety of users and beneficiaries that access some of the results of CSIC's research in this field, and the different forms of use. We identify a wide range of transfer processes and discuss the organizational and analytical challenges that such variety poses. The study shows that a substantial number of research groups had links with non-academic beneficiaries and were looking for ways to increase such relationships. Many of these links were informal and occasional in nature, of limited reach, and invisible to the parent organization (CSIC). We derive some policy and management implications from these conclusions. The variety of transfer processes suggests that, to support efficient knowledge transfer, policies and knowledge transfer management processes must be differentiated and tailored to the specific characteristics of knowledge production and use in the Social Sciences and Humanities.

Keywords

Knowledge transfer; Humanities; Social Sciences; Public Research Organization; Policy; Informality.

1 Introduction

The way in which academic researchers establish extra-academic links with potential users and beneficiaries of their research has long been a matter of study and research. Initial interest in technology transfer (Matkin 1990) has given way to more complex perspectives emphasizing the interactive nature of relationships, broadening the focus of “technology” to encompass the knowledge and capacities required to implement solutions (Autio and Laamanen 1995), and the analytical scope beyond commercial exchanges to include other forms of collaboration (Molas-Gallart et al. 2002).

The models developed to analyze these issues have also grown in complexity. The Triple Helix approaches see organizations linked through complex sets of ties that increasingly blur the boundaries among the roles of institutional spheres, with one type of institution increasingly assuming the role of another. Thus, for instance, universities develop entrepreneurial activities and become more commercial in their approach while firms get involved in academic research (Etzkowitz et al. 1998). However, the many organizational arrangements that can be identified do not reproduce equally in all academic disciplines and institutional contexts (Etzkowitz 1994). Therefore, it is common for analysts to focus on specific sets of activities in a limited range of scientific fields. In practice, most attention has been paid to the analysis of the relationships between natural sciences and engineering scientists on the one hand and industry on the other. In these areas, research often requires important investments (both capital and current research expenditures), and is linked with the development of technologies with substantial commercial potential. In this context firms contracting research activities will be seeking exclusivity in the use of the research results and will aim to impose confidentiality conditions on the researchers. The combination of large economic costs and potentially large economic rewards calls for the institutionalization of the transfer

processes, mediated through contractual arrangements and legal instruments. These leave clear traces that can be used as indicators of activity, performance and economic impact. The number of R&D contracts, patents, licences, and spin-offs and the income derived from them are commonly used as indicators to be analyzed in the study of university-industry relations (European Commission 2009). Dedicated institutions and instruments have been created to stimulate and manage these activities often with the support of government funding. Technology Transfer Offices and Industrial Liaison departments are now common features in most universities. Specific autonomous institutions like “Cooperative Research Centres” (CRCs) in Australia, “Cooperative Research and Development Agreements” (CRADAs) in the USA provide also examples of the very diverse institutional arrangements aiming to bring together private firms and public research organizations. Again, the “disciplinary” focus of these initiatives remains in the natural sciences and engineering.

While the natural sciences and engineering frequently produce knowledge that can be embodied in products and processes protectable through Intellectual Property Rights, the knowledge generated in the Social Sciences and Humanities is often much more difficult to trace to specific products. Indirect contributions in the form of “knowledge creep” into decision-making have long been identified as one of the processes through which knowledge generated by the social sciences find its way into application (Weiss 1980). In the case of “knowledge creep” what is being “transferred” can be knowledge of processes and causal chains of events, conceptual frameworks, the results of evaluative research, or specific recommendations for action based on academic research (Molas-Gallart et al. 2000). Yet, specific skills and tacit knowledge can also be the subject of transfer to non-academic environments, and the Social Sciences and Humanities can also yield methodologies and instrumental techniques applicable to the

solution of specific problems. Many of these contributions cannot be legally protected for exclusive use, and are not amenable to the application of the contractual tools used to transfer well-defined, technology-based products and processes.

There have been several strands in the literature addressing how specific fields in the social sciences have engaged with potential users and beneficiaries. They typically stressed the indirect way in which the results of the social science research find use and application outside academia. For instance, public policy analysts concerned about the apparent disinterest with which practitioners were treating the results of their “applied” disciplines analyzed the types, conditions and factors under which the results of academic policy analysis could find practical application (Weiss 1979; Knott and Wildavsky 1980). This was a specific concern triggered by the contextual conditions of knowledge generation and application within a discipline: the problem was the use of social science research within the public policy process. Weiss, for instance, argued that the knowledge generated by policy research is seldom used in direct and instrumental fashion in the formulation of policy; instead, research knowledge it usually affects the development and modification of policy in diffuse ways providing a background of empirical generalizations and ideas that creep into policy deliberations (Weiss 1980).

From a wider perspective, however, the analysis of the application of social science research outputs remained a marginal concern until more recently, when the demands of the so-called “new social contract” for science extended to the social sciences. Often responding to requests from government departments and agencies, analysts have developed different techniques to study the impact of humanities and social sciences. In the UK, for instance, the Economic and Social Research Council (ESRC) has overtime funded a series of impact assessments of the different programs, projects and centers it

funds (Molas-Gallart et al. 2000; Molas-Gallart and Tang 2007; Wooding et al. 2007; Meagher et al. 2008).

These studies coincide in stressing the special difficulties that evaluation and impact assessment face in these fields and deploy methodologies that attempt to trace the specific processes through which impact takes place. One of the issues they emphasize is the diversity in the forms of transfer across different fields of knowledge and contexts of application. Therefore, they typically focus on a specific initiative, and they construct specific analytical frameworks applicable to the specific situations they address. In our case, however, our aim is to analyze the knowledge transfer activities of an organization covering a very broad range of research fields. Focusing on the experience of the Spanish Council for Scientific Research (CSIC), we aim to analyze how researchers in the Social Sciences and Humanities engage in knowledge transfer with non-academic users and potential beneficiaries of their research, and the way in which the institutional context affects these linkages. The analysis cannot provide a detailed story of how different examples of transfer and application have taken place, but will rely on an aggregate study of practices and attitudes illustrated with specific examples of transfer we have identified through face-to-face interviews.

The Social Sciences and Humanities (SSHs) constitute a very broad area attracting a substantial research effort. In Spain, for instance, more than 30% of publicly-funded academics work in these fields, an average figure within the European Union,¹ where percentages range from 44% in Cyprus to 20% in Romania. Potential beneficiaries of their research can be found in key social and economic areas, from almost every aspect of public policy, to industry, services and cultural organizations. Our aim is to analyze

¹ Source: EUROSTAT, Science, technology and innovation database. The figures refer to 2007.

the knowledge transfer activities undertaken by all CSIC research groups working on the SSHs in order to:

1. identify the types of knowledge transferred by these groups, and the means through which knowledge is being transferred and exchanged;
2. identify the beneficiaries of such transfers;
3. determine how these activities are related to the organization of research, and the policies and management practices implemented by CSIC.

Our study was the first attempt ever to analyze the engagement of CSIC SSHs scientists with potential non-academic users and beneficiaries. We first introduce our approach and describe the context of our study, in particular the way in which CSIC is structured and the role that the SSHs play within it. We close by making an explicit link between the characteristics of the transfer processes we will identify and the organizational and policy challenges that such variety poses.

2 Our approach

Our basic unit of analysis was the “research group”², which was the basic unit articulating research within CSIC when we conducted our study (see below). We based the study on a program of face-to-face interviews with representatives of the research groups, covering all the points addressed in our framework. The representatives were typically the group leader or a researcher “appointed” by the group. We conducted interviews with researchers belonging to all of the 97 groups working in SSHs at CSIC. We identified the groups through the web pages of the institutes and after the consultation with the institutes’ directors. The directors identified the contact person for

² We define a research group as a team of researchers working on a common research area within larger institutions and recognized as an entity by their colleagues or partners (Larédo and Mustard, 2000).

every group and provided information on the group members. The interview program used two instruments:

- A *questionnaire* composed of 23 open questions to guide a semi-structured face-to-face interview. The interview addressed three main topics: (1) identification and description of the group; (2) its research activities and capabilities; and (3) its knowledge experience, non-academic partners and potential beneficiaries of its research results. After the interview we sent its transcripts to the interviewee for validation.
- At the end of the face-to-face interview, we gave the group representative a written questionnaire with 48 questions organized as a “*checklist*” using four-point³ Likert scales for most of the items. The checklist had 4 main sections addressing the (1) characteristics of the group and their scientific collaboration activities, (2) its knowledge transfer activities and attitudes towards them, (3) the perceived characteristics of existing and potential user communities, (3) the characteristics of the research institute to which the group belonged, and (4) CSIC’s policies regarding knowledge generation and transfer. For each item in the checklist we asked two questions: one on the current situation and another enquiring about the views of the interviewee on what the optimal situation should be. We explained the checklist and left with the interviewee who returned it by mail.

We first carried out 15 sets of pilot interviews. After the pilots we adjusted some questions and clarified some of the concepts used in the checklist questions that could have been interpreted in different ways. The revised version was circulated to all the

³ To prevent respondents to “escape” the question through the selection of the central answer (Nunnally 1978).

group leaders we had identified, including those who had participated in the pilot. We carried out the full interview program between May 2006 and March 2007.

We received a total of 94 questionnaires and 86 checklists after the corresponding interviews, but we only consider those groups from which we have received both documents, therefore, our final sample is 83 groups, 63 working in the humanities and 20 in the social sciences. The checklist responses (mostly ordinal data) were analyzed using simple descriptive statistics (mean, frequency distribution).

Table 1 Research groups covered in the interview program

	Humanities	%	Social Sciences	%	Total
Total number of research groups (whole population)	73	75.3	24	24.7	97
Questionnaires received	72	76.6	22	23.4	94
Checklists received	64	74.4	22	25.6	86
Number of research groups analyzed	63	75.9	20	24.1	83
Sample (%)	86.3		83.3		85.6

3 The institutional context: Social Sciences and Humanities within the CSIC

CSIC is the most important public research organization in Spain. When we conducted our study, in 2007, it had a staff of 12,885, out of which 21% were tenured scientists, 35% contracted and doctoral researchers, and the remaining 44% technicians and administrative personnel (CSIC 2008). Research activities were conducted by a large number of research groups organized in research institutes (126 in 2007 for the whole of CSIC). The research institutes constitute the administrative units within CSIC.

The SSHs represent a relatively small part of CSIC's total activity accounting for only 10% of CSIC employees, including 280 tenured scientists and 225 doctoral and contracted researchers, working in 17 research institutes (6 in social sciences and 11 in

humanities). Within these institutes, researchers organize themselves into smaller research groups: our research identified 74 research groups in the humanities and 23 in the social sciences.⁴

The tenured scientists constitute the core of the organization. It is common for these researchers to develop most of their research careers in the same institute, and to enjoy ample freedom in the selection of their research topics and the design of their research strategies. The main focus is in the pursuit of academic interests and there is no economic pressure to seek additional sources of funding. The stability provided by a tenure system has led to an aging demographic profile: in the majority of groups (78 %) the average age of the researchers was over 40. Further, in fields where there is no need for centralized research infrastructure and where research can be carried out individually, the freedom to develop individual research strategies can naturally lead to a fragmented structure. Most research groups were very small, with only 15.7% involving more than 10 researchers (see Table 2 below).

⁴ The main research lines of these institutes include Landscape Archaeology; Edition and study of Greek and Latin Texts; Hebraic, Sephardic and Arab Studies; History of Hispanic Literature; Current Spanish and its linguistic variance; Theory of Literature, Theatre and Media; Literary Criticism; Musicology; Moral Philosophy; Science, Culture and Society; International Relations in the Modern World; Population Movements and Interethnic Relations; Social and Cultural Change; Cultural Heritage; Science, Technology and Society Studies; Environmental, Rural and Urban Economies; International and Development Studies; Demography; Globalization; Comparative Politics; Evaluation of Scientific Activity; Economic Analysis; Innovation studies; Bibliometrics and Cybermetrics of Science and Technology.

Table 2 Size of CSIC Research Groups in the SSHs analyzed in our study

	% of research groups
One single researcher (*)	0.0
Between 2 and 4 researchers	33.7
Between 5 and 10 researchers	50.6
More than 10 researchers	15.7
Valid	83

Source: Checklist responses

(*) There were 3 individuals working alone in “individual groups”. These were not considered in our analysis as we did not receive their checklist questionnaire. Therefore, the results presented in this paper do not take into account single-researcher “groups”.

4 Knowledge transfer and transfer mechanisms

There is a broad variety of channels through which knowledge can be disseminated, modified and applied by potential users and beneficiaries (Molas-Gallart et al. 2000). Dissemination through the media, publications and reports, can all convey information and knowledge relevant to non-academic users. Instead, tacit knowledge and skills are typically conveyed through the provision of specialized services.

Over half the respondents seldom used the media to disseminate the results of their research (see Table 3). The percentage of groups who engaged directly with non-academics through specific collaborative and knowledge transfer activities was slightly higher but polarized: while a quarter of respondents “almost never” engaged in these activities, close to 13% did it very often. It is therefore to be expected that a small number of research groups will be responsible for a substantial share of the collaborations and knowledge transfer activities of the SSHs researchers within the organization. The majority of groups (58%) stated that only “sometimes” or “almost never” had they engaged in collaboration and knowledge transfer with other non-academic organizations (see Table 4). The attitudes towards this type of activities are, however, positive: 84% of the groups thought they should be “quite often” or “very often” involved in knowledge transmission (but only 42% were), and 61.4% stated that

they considered (a lot, or significantly) the potential economic or social benefits of the potential research results when selecting research activities. In addition, groups that participated in national and international research networks displayed a more positive attitude towards knowledge transfer.

Table 3 Dissemination of knowledge through the media (TV, radio, newspapers, magazines)

	% of respondents
Almost never	7.2
Sometimes	47.0
Quite often	36.2
Very often	9.6
Valid	83
Lost	0
N	83

Source: Checklist responses

Table 4 Engagement in collaborative and knowledge transfer activities with firms, public sector, foundations, NGO, etc.

	% of respondents
Almost never	25.3
Sometimes	32.9
Quite often	29.1
Very often	12.7
Valid	79
Lost	1
N (*)	80

Source: Checklist responses

(*) This question has been answered only by the groups that stated they knew potential users of their results.

These relationships were channeled through a variety of mechanisms (see Table 5). The tools that were used more often were research contracts and consultancy and technical advice (the latter could be given both formally and informally). Here, we found differences between the social sciences and the humanities; research groups in the humanities engaged mostly in consultancy, while research contracts were the most

common choice in the social sciences. Significantly, the transfer of property titles was not an important transfer tool for any of the groups interviewed.

Table 5 Main knowledge transfer mechanisms used by respondents

	Mean of respondents
Consultancy and technical advice	31.5
Contract research	36.7
Joint research activities	12.8
Personnel exchange	4.5
Training activities	14.3
Transfer of Intellectual Property Rights	0.0
Valid	46
Lost	14
N (*)	60

Source: Checklist responses

(*) This question was only answered by groups that stated they knew potential users of their research results *and* had engaged in collaborative and knowledge transfer activities with non academic entities.

We found evidence suggesting the importance of informal arrangements among the knowledge transfer mechanisms; i.e. collaborations that were not mediated by a contract or any other formal agreement and which therefore were conducted without officially registering their existence. First, during the semi-structured interviews we asked for a list of organizations with which the group collaborated. These lists were much longer than the list of organizations with which the institutes had officially contracted work or established formal collaborative agreements. There appears to be a large number of collaborations that are not registered in any formal document.

Second, when discussing specific instances of collaboration and impact (more about this below) with researchers, the cases that were brought to our attention were often based on informal linkages and relationships. For instance, we found instances where help was being offered to museum curators, and theatre and movie directors and producers. Here, the role of the researchers was oriented to the provision of advice on specific issues, typically helping with the accuracy of the cultural products that were being developed (a movie, a play or an exhibition). Further, although there is an intrinsic value in the

accuracy of a movie or a historical exhibition, there is no link between accuracy and economic or commercial value. For instance, in a theatre play or a movie set in the XVIIth Century, most of the audience would not realize whether the objects used in the sets belonged, instead, to the XVIIIth Century, and the commercial success of the movie will not depend on it being more or less accurate when it comes to historical details. Therefore, the direct user of the advice has no incentive to incur economic costs in exchange for it: the rewards are intangible, not pecuniary.

The combination of intangible rewards and open-ended collaboration based on direct personal contacts are the three characteristics that define the collaboration as informal (Schiller 2010). The relationships we found were typically based on long-term personal links, and were recursive and open-ended collaborations; when taking each instance of collaboration and transfer in isolation, they were of limited duration, and required the accumulated knowledge of the researcher who often devoted little time to solve the specific problem on which her advice was sought.

Another related type of support given by humanities researchers involves a stronger collaborative link with their non-academic users: instead of limited occasional advice in the generation of a cultural product the researcher becomes deeply involved in its generation through a collaborative relationship with its producer. One example is the collaboration of CSIC musicologists and literature specialists with a music producer in the development of a collection of XVIth Century Spanish poetry set to music of its time. This collaboration required the transcription of old Spanish music sheets to modern notation in such a way that the musicians of today could play the works, composed by Spanish authors that had not been heard for centuries. Here the relationship between researchers, musicians and producers was more complex: they had to work together in many stages of editing a new CD (selection of authors, selection of

text and music pieces to be played, transcription, instrumental accompaniment ...). Nevertheless the relationship retains the three characteristics of informality defined by Schiller: they are based on personal contacts, do not lead to pecuniary rewards and are open-ended in nature. The potential markets for these products are typically very small, and unable on their own to sustain a profitable commercial operation. The immediate “clients” supporting this work lie in public sector organizations sponsoring the production of each CD.

Another example of informal links between research groups and non-academic beneficiaries can be found in the links between an anthropology group working on heritage, memory and conflict and some civil society groups (victims of terrorism, neighborhood associations around large prisons, etc ..). The anthropologists are trying to explain how social processes are used by communities to manage uncomfortable or painful situations. Within the framework of their R&D projects they have helped the civil groups by providing ways of interpreting their reality and past, help them gather information, and articulate and disseminate their views through exhibitions, books and other media. Again, the way in which this link between researchers and beneficiaries develops is through long-term personal contacts, developed overtime in an open-ended manner and without any pecuniary rewards.

Further, in all these situations the non-academic beneficiary will seldom require confidentiality: the object of the transfer is not a design, a tangible product, a component, or a piece of information to be incorporated in a commercial production or in its design and production processes. Instead, the “object” of transfer were contributions that help develop and improve (mostly public) services, decision-making processes, and cultural events and products.

It is interesting to note that when contracts were issued, particularly with the public sector, many groups often encountered contractual difficulties and delays in receiving payment. From a contractual standpoint researchers were either unfamiliar with the CSIC contractual processes, or considered them ill-suited for the specificities of the humanities and social sciences. Specifically, the contract templates include clauses that are crucial for experimental research areas (confidentiality and disclosure clauses, patent ownership, royalties,...), but do not consider those aspects that are crucial in the humanities, like the recognition of contributions and authorship in written and audiovisual products and the distribution of copyright payments. Therefore, contextual factors are probably compounding the trend to use informal means of knowledge transfer.

When the task has higher visibility, like the drafting of a law or the development of a policy proposal, or requires research work to be conducted by a group of experts the process of collaboration becomes more formalized. Official agreements signed between public sector organizations and research institutes are a common tool to underpin in a formal way a research or advisory service provided by a CSIC group. The agreement may or may not involve economic compensation; when they do they are very similar in form to research and consultancy contracts.

Finally, in a few but relevant cases, the formal link with non-academic users and beneficiaries transcends the single contract or agreement for a specific task and extends to other types of long-term arrangements. The most relevant example is the Instituto de Estudios Sociales Avanzados (IESA), a joint research centre between CSIC and the Andalusian regional government. In addition to signing many agreements for IESA to carry out specific studies for the regional government, the latter supports the Institute providing core infrastructural support. The relationship between IESA and the regional

government is very closely, with the former acting almost as its social research centre. As an organization, IESA emerges as “cross-sector”; i.e. sitting across the institutional boundaries that traditionally separate the academic world from other social organizations.

5 Users, beneficiaries and instances of use

There was a general perception among research groups that potential customers and beneficiaries were not aware (20.8%) or had only “some awareness” (48.1%) of the results generated by academic research and of their relevance. Over half the respondents perceived there was a demand for the type of knowledge their research groups generated, but that potential users had scant knowledge of how to access research results (Tables 6 to 8).

Table 6 Possible non-academic users of our research are aware of the results produced in our field of knowledge

	% of respondents
I don't know	2.6
Almost not at all	20.8
Some awareness	48.0
Quite aware	24.7
Very aware	3.9
Valid	77
Lost	6
N	83

Source: Checklist responses

Table 7 There is a demand among possible non-academic users of our research for the knowledge our research group generates

	% of respondents
I don't know	0.0
Seldom	4.8
Sometimes	39.7
Often	44.4
Very often	11.1
Valid	63
Lost	4
N (*)	67

Source: Checklist responses

(*) This question has only been answered by respondents who thought that possible non-academic users had at least some awareness of the research results generated in their field of knowledge (Table 6).

Table 8 Possible non-academic users of our research know how to establish links with academic groups in our field of knowledge

	% of respondents
I don't know	11.3
Almost not at all	22.6
Some knowledge	45.2
Substantial knowledge	16.1
Very familiar	4.8
Valid	62
Lost	5
N (*)	67

Source: Checklist responses

(*) This question has only been answered by respondents who thought that possible non-academic users had at least some awareness of the research results generated in their field of knowledge (Table 6).

These results suggest that interviewees were disappointed with the level of engagement they had with potential non-academic beneficiaries of their work; yet, they did not attribute this failure to any specific trait of the user communities. On the contrary, during the interviews, many respondents pointed out that potential user organizations had personnel with university degrees able to engage in research collaboration, and attributed the failure to engage these communities to the parent organization: often interviewees blamed CSIC for not disseminating adequately the capacities existing in the organization (this aspect will be treated in the next section).

Focusing on the users and the receivers of the knowledge generated by SSHs' researchers, those were, in the main, public sector organizations, foundations, NGOs, and other non-for-profit organizations. In our face-to-face interviews, government departments and agencies emerged as the main "clients" for the Social Sciences, although we also found instances of interactions with firms (in banking, tourism, telecommunications, construction, the media, cultural sectors, etc.), trade unions, business associations, and international organizations (OECD, International Monetary Fund, World Bank). In the humanities, most clients and collaborators were in the cultural field (both private and public organizations): cinema, music and audiovisual producers, publishers, museums, ministries and departments of culture, tourism, cultural heritage, and media.

Many of the examples of collaboration we found revolved around the provision of advice. Particularly in the humanities, CSIC researchers have provided advice to movie and theatre producers, organizers of exhibitions in a wide variety of areas (scientific instruments, scientific expeditions, Sephardic culture, the art and history of Al Andalus ...), and ONG's (anthropology of violence,...).

In the policy front, CSIC SSHs researchers have been involved in the design and implementation of science and innovation, international relations, road safety, gender equality, culture, and educational policies among others. The most common task is the provision of advice in policy design. Government officials have asked researchers to produce discussion papers, participate in commissions drafting laws and regulations, or to join formal discussions to develop policies and consider the development of new laws. SSHs researchers have contributed to the commission drafting the Spanish science law, and have played a part in the policy work of international organizations like the OECD. These contributions are personal and integrated within complex policy-making

processes where the impact of a specific individual is difficult to assess, or even identify (sometimes the requests to participate in an advisory group is done informally, without leaving “paper trails”). Sometimes, the contribution to policy definition and implementation is more direct and traceable. CSIC researchers have drafted public policy programs like the regional science and technology plans of two Spanish regions; in these cases the use of the researchers’ work is direct and clear.

CSIC researchers have also provided support in a wide range of operational contexts; that is, helping with the running of production and service operations, or supporting maintenance tasks. These can be very close to the field of academic research: specialists in Coptic language have helped a monastery in the upkeep and maintenance of its collection of old Egyptian papyri. Yet, we have also found instances where the help is given in areas distant from the field of academic research; for instance, CSIC linguists have helped specialized police units identify the region of origin of individuals involved in criminal acts by analyzing records of their conversations (as it has been explained previously).

Not all the “uses” of research results and capacities were outside commercial contexts. In some cases, the markets were fully commercial. We found examples of collaboration with the private sector triggered by regulatory compliance; for instance, archeology groups have entered into many contracts with construction firms to carry out the cultural heritage impact assessments that the Spanish law requires before any major civil engineering work can be started. This type of work has turned into a substantial source of income for academic researchers in archaeology who compete with specialized private consultancies. In a few cases we have also found examples of technical assistance provided to firms in the development of commercial products; for instance,

CSIC linguists have collaborated with telecommunication companies in the development of voice recognition software and machine translation devices.

In summary, we find a very diverse range of users and types of use of the research and skills of CSIC SSHs researchers. To an extent, this is to be expected: the variety of uses accompanies the diversity of fields of research, geographical locations, and research orientation of a large and diversified organization.

6 Organizational issues and the role of CSIC

Despite the variety and relevance of the practical applications given to CSIC's capacities in the SSHs, it must not be forgotten that only a part of the researchers participate in these activities. As we have discussed above, 58.2% of the groups only occasionally or almost never engaged in knowledge transfer activities. From the point of view of the managing organization, such diversity becomes a difficult problem, particularly when there is a preference, as it is in the case of CSIC, for centralized, unified procedures. Many of our interviewees were critical of CSIC *de facto* practices; although official CSIC literature stresses the importance of engaging with social actors and supports knowledge transfer, in practice researchers felt that neither personnel policies nor managerial practices encouraged such activities. Almost 80% of the respondents stated that CSIC barely takes into account the specificities of the SSHs when promoting knowledge transfer activities.

Although the perceived lack of CSIC's support would be a general problem affecting all CSIC researchers, in the SSHs the problems are compounded by the type of performance indicators in use in the whole of CSIC to evaluate the activities of individuals and research groups. In practice, the most important criterion for individual promotion and the assessment of group performance is academic publication as

reflected, mainly, in refereed journal articles. The indicators that refer to knowledge transfer activities focus on commercial activities (spin offs, patents and licensing revenues); these are relevant for some areas in the natural sciences and engineering but do not reflect most of the knowledge transfer activities conducted by SSH researchers. This approach to individual and group assessment drew almost unanimous criticism from the scientists we interviewed; only 12% of the respondents stated that their knowledge transfer activities were taken into consideration when allocating resources to their groups (human, infrastructure, etc.).

Researchers found management procedures to be cumbersome and CSIC bureaucracy overwhelming. Many interviewees felt that there was a lack of simple and transparent procedures to manage knowledge transfer, that there were no quality support services available, and that the available contract models were not suitable for their own situation.

Central procedures were not the only element that came under criticism. The group representatives were also critical of the research institutes to which they belong. In particular, we heard complaints about institute directors offering very little help to establish links outside academia, and pointing out that the institutes lack “brand image” that could help them establish links with potential users. More than 80% of respondents stated that institute directors were not involved in the external promotion of the capabilities of their groups, while a similar percentage (78%) believed that their active involvement would be very important.

7 Conclusions: Organizational and policy challenges

The application contexts for the knowledge and capacities generated in the social sciences and humanities are very diverse but display some common characteristics.

There is a strong presence of the public sector, commercial markets for knowledge are not well developed, and informal knowledge transfer is very common. From an Intellectual Property perspective, users in these sectors seldom require exclusivity or confidentiality. Typically, the users of humanities and social science research are interested in the application of knowledge to a specific situation or problem: the preparation of an exhibition, the production of a music record, the design of a new policy or the writing of a tourist guide, for instance. In other words, in the cases we analyzed, the user gave value to the transferred knowledge through a specific form of expression, or by including it in its production or management processes. Take for instance the contribution of a historian to a movie: the form in which the movie is expressed (its script and the movie itself) can be protected by copyright, but this is not the case for the knowledge that the historian has used to make sure that the movie is accurate in terms of its historical context. Even the final products are often in sectors where a normal commercial market does not exist: the customer for a scientific or art exhibition, for instance, will seldom bear the cost of its organization. Although this type of activities has social value, it is not typically associated with a commercial market value.

Further, the dissemination of research results seldom reduces their value for a potential user; for instance, the application to public policy of the results of social and economic research needs further elaboration and it is not affected by whether these results are generally known. From the researcher point of view, these activities often require any additional investment other than his or her own time.

Under these conditions, knowledge transfer channels can revolve around informal mechanisms. We have found that the three dimensions of informality identified by Schiller (2010) clearly hold for many of the relationships we have identified: the

“governance” of the relationship revolves around the direct contacts established by individual researchers, the scope of the collaboration tends to be open-ended, and its rewards are intangible rather than pecuniary. In a context in which the appropriable economic returns and the additional economic investments required are low, there is relatively little pressure to engage in the formal institutionalization of the relationships between academic researchers and potential users and beneficiaries of their research.

The informal nature of such relationships makes them invisible to the institution within which they take place. In fact, many of the instances of knowledge transfer we identified could not have been detected had we used traditional indicators of knowledge transfer like patenting, licensing, licensing income, contracts, or spin-offs. They were conducted, as it were, “under the radar”. The problem was not, as we could have expected, that links did not exist; but rather that they were informal, of limited reach and almost always invisible to the parent organization (CSIC).

The dominance of informal means of exchange and the relative absence of contractual relationships processes contrasts with the substantial role of formal contractual relationships and long-term commercial exchanges in many natural sciences and engineering disciplines. The low visibility of knowledge transfer in the social sciences and humanities has important organizational implications. First, in practice, these activities are not taken into consideration for institutional and individual assessments. In a context like the Spanish where assessments revolve exclusively around claims that can be audited, knowledge transfer activities in the SSHs will seldom be taken into consideration when, for instance, assessing individual academics for promotion. Second, to be effective in the SSHs, policies in support of knowledge transfer should be tailored to the specific characteristics we have identified. CSIC’s concerns about IP management in formal contracts do not address the problems encountered in knowledge

transfer in the SSHs. In the cases we have studied, scientists felt that knowledge transfer activities were not a priority in their parent organization and that there were hampered by the lack of awareness among potential users and beneficiaries of the capabilities they research groups could offer.

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