

PHD THESIS OUTLINE

THE ANALYSIS OF AN EMERGING SECTOR: COMMERCIAL ARCHAEOLOGY AND ITS RISING AND DEVELOPMENT FROM THE SECTORAL SYSTEM OF INNOVATION

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1. INTRODUCTION

1.1 BACKGROUND AND BROAD INTRODUCTION TO THE FIELD

In the 1960's a major expansion began in Spain's largest towns and cities, which continues to this day. Initially, speculation and lack of control meant that a great deal of archaeological heritage that had never been examined was destroyed. As a result, in the early 1980's concerns were voiced about this problem that was being dealt with in Europe, and the need arose to regulate this situation, leading to passing of **Spain's Historical Heritage Law (1985)**, with the aim of protecting, preserving and enhancing the country's heritage. From this moment a series of requirements for the protection and management of heritage assets was developed.

In this moment there is also another important event: the **transfer of competence in heritage matters from the central government to the Spanish regions** between 1979 and 1983. This means that Spanish regions start to develop their own ways of management, creating seventeen regional heritage administrations and publishing regulations controlling archaeological activities in their respective territories. Each region start to implement the management of the archaeological heritage in an original way, the only previous model was the central that had one department to authorize, fund and publish the archaeological activity developed by universities, museums and public research bodies but didn't have expertise people or experiences in this kind of management

The acquisition of these new obligations required regional governments to obtain a large and specialized staff dedicated to the management of archaeological heritage at the same time that public works and earthworks are arising, the stores of museums are full and there is little time or budget to restore the materials and publish the results. At the end, these new requirements could not be handled in full by the public authorities (limiting their work to regulating activity in the area), nor by academic institutions (that realize this work with research ends), as it had been until this moment. These institutions could not afford all of the costs and effort derived from protecting and preserving cultural heritage.

This led to the appearance of small-scale heritage management companies which gradually acquired experience in the management of archaeological heritage, diversifying their expertise and creating value, opening a new labour market in which cooperatives, companies and self-employed specialists gradually took shape, structuring a new area of market: **Commercial Archaeology**. This activity implies a study in the cases of exist a project that its incidence on the territory could affect to the Archaeological Heritage. For this reason is important develop criteria, procedures and working tolls to manage the Archaeological Heritage in a comprehensive manner, which means: describe, inventory, protect, meaningful as a historical product, add value as Heritage, add value as a cultural resource, making it accessible to the public, diffuse it. That means understand this activity as an environmental impact assessment which includes plans for managing land use (Criado, 1996).

We are interested in carry out a study of this sector because doesn't exist empirical studies in Spain. As we explain before with the publication of Spain's Historical Heritage Law (1985) start a process of implementation of seventeen regional laws, this

situation implies different experiences of management the archaeological heritage depending on the region that have different consequences in the development of the commercial archaeology. Moreover, it is very difficult to access to history and results of each regional administration and market experience because very few studies was carried out on this topic.

As an example about these different regional models we know regional laws published after 1998 are broader and detailed adding new kinds of cultural assets and concepts, then the protection is broader in these cases and usually is connected to land laws, urban planning and environment. A deeper analysis on the different laws related to the management of cultural heritage places us in a somewhat problematic: in some cases cultural remains are treated depending on their geographical location, more or less controlled or treated more rushed or superficial. For example, the inventory of cultural goods has reached a different rate depending on the region; if we review the regulations can distinguish three models:

- Regions that have two register types: declared and inventoried and cultural assets (Castilla La Mancha, Basque Country, Catalonia, Madrid, Balearic Islands, Extremadura, Asturias, Castilla Leon, Andalusia).
- Regions that set a record type for all kinds of remains (Galicia, Valencia, Cantabria, La Rioja and Navarra).
- Regions that have more than two units or official registration units (Aragon and Canarias).

This means that there are different ways to register the goods and the consequence is there are more or less protected goods depending on the region. Differences on terms imply different levels of protection. In turn, the quantity and quality of data required by region to inventory and record the archaeological remains as well as the delivery are very different.

In other way, if we thing in sanctions on the looting or destruction of cultural heritage, laws of different regions establish different fines for the same irregularity. For example, in Basque Country not deposit the casual archaeological findings on schedule expected is punished with a fine greater than the rest of Spain. Casual archaeological findings belong to the governments of the regions, but the Spain Historical Heritage Law don't explain anything about we should do with casual findings. Some regions as Basque Country or Catalonia explain this situation.

These are some examples about the differences in Spanish regional laws but, moreover, we could find differences between the structures of the departments of cultural heritage. Depending on the region there are more or less people working in these departments with different trainings and skills, there are different budgets and different volumes of activity.

At final, all factors that we are explaining have consequences in development and structure of the commercial archaeology depending on the region. Then, we are working on real problem in relation to the need of protect and manage archaeological heritage and the market linked to this topic. At the moment, there aren't enough knowledge about this sector and its differences by regions and the present study is carried out to contribute to add knowledge about this sector realizing an empirical analysis and promoting political discussion about the different ways on manage archaeological heritage.

The problem is each region establishes its own rules and management models so archaeological heritage is not treated equally in one region than another and the rising of the commercial archaeology is different. In this study we want to highlight the various existing models for add knowledge in this sector and promote the political discussion about the different experiences and models.

The Public Sector is the agent that has to ensure adequate levels of conservation and proper use of Heritage is to assume their production through ownership of the assets and/or spending on their acquisition, preservation, maintenance and Management. We understand for the concept of archaeological management the efficient administration of the archaeological resources: heritage, human, economic, equipment and so on.

To start with our analysis we have some references in other countries about the exploration in commercial archaeology, for example in USA, Ireland and England, these are: Profiling the Profession. To survey of archaeological jobs in the UK (Aitchison, K. 1999), Archaeology Labour Market Intelligence: Profiling the Profession 2002/2003 (Aitchison K. & Edwards, R. 2003), Profile of the Archaeological Profession and Education Resources in Ireland (The Heritage Council & The Institute of Archaeologists of Ireland, 2002), The American Archaeologist: Results of the 1994 SAA Census (Zeder, M.), The Invisible Diggers: A Study of British Commercial Archaeology (Everill, P. 2008). There is another kind of bibliography that it could be useful to our study about the Cultural Resource Management, for example: From campus to Corporation: The Emergence of Contract Archaeology in the Southwestern United States (Roberts, H.; Ahlstrom, R.; Roth, B. 2004), Doing Archaeology. A Cultural Resource Management Perspective (King, T. 2005). Following these studies we could analyse other ways to organize commercial archaeology in other countries and compare with the Spanish case.

1.2 INTRODUCTION TO THE SPANISH COMMERCIAL ARCHAEOLOGY

As a result of the implementation of the Spanish Historical Heritage Law (1985), the diversification of responsibilities in heritage management and the structural problems to assume the responsibilities involved with the law by the government agencies, a new demand appeared supporting the creation of a service whose area of activity was based on archaeological services. Due to these factors a new labour market was opened, the **commercial archaeology activity**, in which cooperatives, companies and self-employed specialists gradually took shape, structuring a new area of commerce in the field of archaeology, in which developed following the regional guidelines of cultural heritage laws and management. From 1985 to this moment, this activity was growing, was gradually acquired experience, diversifying their expertise and creating value.

We are going to define the **commercial archaeology** as *an activity generated around Archaeological Heritage when a correct control of the same calls for the undertaking of specific actions that are generally developed as part of a contract, providing a specific service and charging for it* (Criado, 1996). This concept includes the protection of archaeological remains in places that are in danger of being bulldozed, flooded, bombed, plowed, or otherwise screwed up through the management by government agencies. Most of money that supports Commercial Archaeology comes from

government agencies and private companies whose plans and projects threaten to destroy or damage archaeological sites, reflecting a principle that is sometimes articulated as “*Let the destroyer pay*”.

As an example, when somebody wants to realize a project that may change cultural resources or any other aspect of the environment, the responsible government has to figure out what damage its action really will do, and then take steps to control or make up for such damage and the costs are supported by the institution that is going to benefit from the work. So, if the a company wants to construct a new power plant, for example, needs get a public permit, the company is likely to be required by whatever government agencies are involved to identify its environmental impacts and do something about them. Identifying impacts will usually include hiring archaeologists or archaeological companies to do surveys, find sites, and figure out how important they are. If there is no better way to take care off them, to “avoid, minimize, or mitigate adverse effect”, then the company will probably be required to pay for archaeological excavations, analysis, reporting of results, and long-term care for recovered artifacts, other material and data.

The product of the archaeological activity is the **report of archaeological impact**, this is a service demanded by a company (construction, engineering), the government or a private client when their work have an impact in the territory, that could harm the Cultural Heritage which is protected by the law. Is in that moment when an archaeologist is contracting to establish the viability of the action. To begin with his work the archaeologist must apply for permission to the regional authority of the Heritage. This authority will assess the viability of the archaeological actions depending on the activities and the deadlines for implementation.

The end result of **Archaeological Impact Study** will result in a **Technical Report**, that is, administratively, the final report of any archaeological work. It is all written material and graphics obtained as a result of the implementation of a specific methodology and some archaeological specific techniques (Criado, 1996). Therefore, how to register information such as how to translate the results in the report should produce knowledge and a way of facilitate its use by other researchers or technicians.

At final, the remains can be moved to museums for preservation, protection or preparing the place in they are for sightseeing, this is the maintenance of the structures, thus converting it into a tourist destination.

1.3 STUDY OBJECT AND OVERALL ANALYTICAL APPROACH

As we remarked in the title of this work, the **object** of this study is the **analysis of the Spanish Commercial Archaeology, its emerging and development and its analysis from the sectoral system of innovation**. That means, firstly, an analysis of the activity in the general terms, due to the lack of empirical studies about this market. For this reason we want to collect quantitative and qualitative information about the size and structure of this sector and we want to understand the factors that promote the emerging and the development of this sector. Secondly, we want to analyse this activity following the theoretical approach of Malerba and develop an analysis through the sectoral system of innovation; that means the focus of the next aspects: in knowledge and technological domain, the actors and networks that are involved in the sector and the institutions; to understand the innovation processes that are involved in this activity.

We are interested in carry out this study for two main reasons. The first one is this study implies the analysis of the Spanish Commercial Archaeology, a new “niche” of market on which there aren’t empirical studies. We want to study this sector because the private professional sector which works in the field of the archaeological heritage is a relatively new sector in Spain and no systematic or wide-ranging studies have been made to date on this sector, and amongst its other objectives, this study attempts to fill this gap.

The second reason to develop this study is in relation to the analysis of the Commercial Archaeology from the sectoral system of innovation approach. In terms of Malerba (handbook) are necessary to define concepts in order to identify empirical correspondents to theoretical constructs of sectoral systems of innovation; there aren’t too many studies about this. This is our specific contribution in this research line, to realize an empirical study applying this framework to the commercial archaeology because we are interested in know the innovation processes that are involved in this activity, if there are.

We choose a systemic perspective of innovation because these kinds of theories are based on the belief that the firms do not normally innovate in isolation; they innovate in collaboration and interdependence with other organizations (Fagerberg). We are interested in the analysis of a commercial activity in which there are a lot of agents that are influence its structure and development; it could be very interesting to understand the processes of innovation linked to this sector and what agents are involved in these processes.

There are different theories about SI as – national, sectoral and regional – may be clustered as variants of a single generic “systems of innovation” approach. We are going to apply the perspective of the **sectoral systems of innovation** of Malerba to the analysis of the Spanish Commercial Archaeology because this theory is based on a proposal of a multidimensional, integrated, and dynamic view of innovation in sectors. Following Malerba, sectors differing terms of the **knowledge base**, the **actors involved** in innovation, the links and relationships among actors, and the relevant **institutions**, ant that these dimensions clearly matter for understanding and explaining innovation and its differences across sectors.

The Malerba’s approach is very useful to this study; we are interested in **how the factors (knowledge, actors and institutions) that are involved in sectoral systems of innovation are affecting to the innovation processes in the Spanish Commercial Archaeology and what are the differences by regions**. For this reason we will analyze the **role of the agents** that are involved in the Commercial Archaeology in relation to the development of innovation processes, the **knowledge and technological domain** of this activity and the role of the **institutions** in this activity.

Another argument to select this framework to apply to our sector is in relation with the boundaries of sectoral systems of innovation. While national and regional innovation systems take innovation systems as delimited more or less clearly by national and regional boundaries, a sectoral system approach may have local, regional national, and/or global dimensions. Often these different dimensions coexist in a sector. In addition, national and regional innovation systems result from the different composition of sectors. We focus our interest of study in the analysis of the commercial archaeology

that is involved in the archaeological sector that is embedded in a regional and national dimension. In the next figure we could appreciate that the Spanish archaeological sector is framed at a national level and a regional level as we explain before.

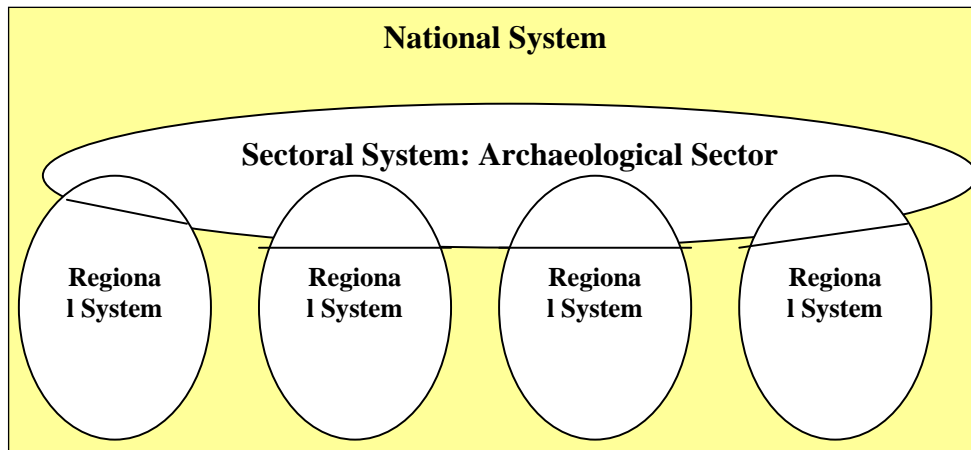


Figure1: Boundaries of the Spanish Archaeological Sector
Source: Own elaboration

At the same time, the Archaeological sector is formed by three main components: commercial archaeology, academy and government departments that have responsibilities in archaeological heritage. Our focus in this study is the analysis of the commercial archaeology but we have to keep in mind that the actors that are involved in all dimensions of archaeological sector are conditioned by different interests and that means that are conditioning the commercial archaeology. The main agents involved in this sector are the next ones:

- **Firms:**
 - **Private /public industry.** Is formed by companies, self-employees, professional archaeologists and public institutions that offer archaeological services developed as a part of a contract.
 - **Clients.** Those are companies that demand archaeological services as promoters, constructors or engineerings.
- **Non-firms:**
 - **Government** (International, National, Regional and local level)
 - It is the **regulator player** of the Heritage, represents the formal institutionalism and generates environments and contexts by means of the legislation that could push to the growth of the Commercial Sector.
 - At the same time, this agent is the responsible of the **management**; this means the efficient administration of the archaeological resources: heritage, human, economic, equipment and so on. The government is the agent that has to ensure adequate levels of conservation and proper use of Heritage, the government has to assume their acquisition, preservation, maintenance and Management.
 - **Academy.** This agent is formed by public research bodies, universities and museums; these are institutions that realize activities linked to the production of knowledge and learning.

- **Non-firms clients.** Government and particular clients could demand archaeological services.

Then we are interested in **how the factors that are involved in the sectoral systems of innovation are affecting to the innovation processes in the Spanish Commercial Archaeology and what are the differences by regions.** For this reason we will analyze the **role of the agents** that are involved in the Commercial Archaeology in relation to the development of innovation processes, the **knowledge and technological domain** of this activity and the role of the **institutions** in this activity. For these reasons the background designed by Malerba is very useful for this work because give us the framework to analyze the key actors, knowledge development and knowledge sharing, focusing on role of institutions.

We collect information about the size and structure of the Spanish Commercial Archaeology by regions. This empirical research is implemented in two sequential phases:

- Exploratory **Qualitative Phase.** Data has been collected from secondary sources and from exploratory interviews
 - **Secondary sources:**
 - Archival and **literature** review about Commercial Archaeology
 - Analysis of the about Archaeological Heritage's legislation
 - **Exploratory interviews** have been conducted:
 - We interviewed to seven **business executives** of archaeology in Galicia's region.
 - We interviewed a **professor** in the Department of Archaeology of the University of Valencia.
 - We interviewed a **responsible of the management** of the Archaeological Heritage in the Valencia's government
 - We interviewed an Archaeological **spin-off** in the Andalucía's region.
 - We interviewed the professional bodies of **doctors and graduates in philosophy and literature** that have archaeological departments in Spain.
- **Quantitative Phase.** This phase of the study was based in the collection of primary socioeconomic data and in the survey.
 - We identified and located companies of archaeology in the Spanish context to create a **database.**
 - We realized an approach to **social and economic** characteristics about a sample of these companies and we introduced the data in our database.
 - We realized a **questionnaire to the regional archaeological heritage departments** in Spain to collect information about the structure and the work of these departments.
 - We are developing a questionnaire to Archaeological Companies.

2. ANALYTICAL FRAMEWORK

We want to understand the innovation processes in relation to the appearance and development of a new “niche” in the market: Commercial Archaeology and its differences by regions. For that task we are going to construct a theoretical background and analytical framework to analyze this commercial activity in the relation with the innovation perspective.

As we told before we are going to construct our analytical approach following the Malerba’s framework about **sectoral systems of innovation** because we are interested in analyze the dimensions involved in this approach in relation to Commercial Archaeology and understand the conditions that promote or could be promote innovation processes in this study case and what are the differences by regions.

Sectoral system is a theory about innovation systems, this is a theory conceived at the end of the 70s and structured in the early-90s (Freeman, 1987; Lundvall, 1998; Nelson, 1992). It is based on an interactive model that highlights the importance of enterprise in the innovation processes and the importance of the actors involved in innovation processes. Theories about systems of innovation highlight the importance of knowledge flows through the relationships between different actors in innovation processes and their constant feedback. The perspective of the SI is based on the belief that the firms do not normally innovate in isolation; they innovate in collaboration and interdependence with other organizations (Fagerberg).

A sectoral system framework may allow for detailed **analyses of innovation** in sectors in terms of **knowledge and learning processes**, structure as a network of **relationships**, and **institutions**. This approach could provide us a way to examine the dynamics of the archaeological sector in relation to innovation and technological change taking place in three main dimensions: knowledge, actors, and institutions.

Malerba defines a sector as “*a set of activities that are unified by some linked product groups for a given or emerging demand and which share some common knowledge. Firms in a sector have some commonalities and at the same time are heterogeneous*” We apply this definition to the Archaeological Sector, this is the set of activities that are unified by the linked of the archaeological services for a given or emerging demand and which share some common knowledge. The firms in the archaeological sector have some commonalities and at the same time are heterogeneous.

This perspective focuses on the firms as the key actors in the generation, adoption, and use of new technologies, which are characterized by specific beliefs, expectations, goals, competences, and organization, and are continuously engaged in processes of learning and knowledge accumulation (Nelson and Winter 1982; Malerba 1992, Teece and Pisano 1994, Dosi, Marengo and Fagiolo 1998, Metcalfe 1998). But the innovation processes and technological diffusion could be supported by other type of agents which are non-firms organizations such as universities, financial organizations, government agencies, local authorities, and so on.

Following this ideas our main hypothesis is:

“Spanish Regional Governments which have responsibilities in Archaeological Heritage support innovation, technological diffusion and production by Spanish Archaeological firms”

So we are interested in understand how the factors that are involved in the sectoral systems of innovation are affecting to the innovation processes in the Spanish Commercial Archaeology and we are going to realize our analysis constructing a taxonomy that establish differences by groups of regions taking three study cases as examples.

Now we are going to explain the three dimensions that characterize the sectoral system framework: knowledge and technological domain, actors and networks and institutions.

2.2.1 Knowledge, technological domain, and sectoral boundaries

Any sector may be characterized by a specific knowledge base, technologies and inputs. In a dynamic way, the focus on knowledge and the technological domain places at the centre of the analysis the issue of sectoral boundaries, which usually are not fixed, but change over time.

Knowledge plays a central role in innovation. Knowledge is highly idiosyncratic at the firm level, does not diffuse automatically and freely among firms, and has to be absorbed by firms through their differential abilities accumulated over time. The evolutionary literature has proposed that sectors and technologies differ greatly in terms of the knowledge base and learning processes related to innovation. Knowledge differs across sectors in terms of domains. One knowledge domain refers to the specific scientific and technological fields at the base of innovative activities in a sector (Dosi 1988; Nelson and Rosenberg 1993), while another comprises applications, users, and the demand for sectoral products. Accessibility, opportunity, and cumulativeness are key dimensions of knowledge related to the notion of technological and learning regimes (Nelson and Winter 1982; Malerba and Orsenigo 1997), which may differ across sectors.

In our study, we know that commercial archaeology was developed because of the requirements of the Spain Historical Heritage Law and the guidelines of the regional departments that have responsibilities on archaeological heritage. Then start to develop a new knowledge and a new learning process to be used in the production of this new service as a consequence of an interactive process in that commercial and government agents have to structure this new service.

It is important to define the inputs and the outputs of our sector in relation to knowledge:

- **Knowledge base.** Archaeological knowledge is based on piecing together little clues to develop a general picture of something that happened in the past, to answer some general question or set of questions.
- **Learning process.** In Spain doesn't exist a specific degree in Archaeology, this fact makes difficult to define the profession and the learning process that involved. By law, specific interventions must be carried out in the name of

individuals, who are referred to in professional terms as archaeologists. This definition is considered as referring to graduates in History specialised in Prehistory and Archaeology, or individuals who are able to justify training in archaeology through their professional experience.

- **Technology fields**
- **Archaeological methodology.** There a methodology to search and dig and record places (taking notes, making maps and plans, drawing pictures, taking photos).
- Diffusion
- Transfer of knowledge

We are going to study four types of knowledge: **know-what** (it is information, knowledge about facts), **know-why** (factors that we have to know about a problem or action), **know-how** (refers to the ability o capacity to do something) and **know-who** (implies development of information to use efficiently). Know-what and know-why can be acquired through training, while the other two are available only with experience. Know-how is transmitted and know-who is the product of social experience and relationships

In our case know-what and know-why is for instance by law and regional requirements to develop the management of the archaeological heritage and by universities. It is developed reading books, attending lectures and accessing data bases. The archaeological companies offer their archaeological reports under the guidelines of the government agencies and archaeologists are trained in universities. Know-how and know-who are rooted in practical experience, in the relations between the agents that are involved in the sector, know how is characterized through skill workers and it is learnt in social practice.

Know how it could be acquired in two ways:

- It is based on science, technology to promote innovation processes (expenditures on R&D, employment of personnel with third-level degrees, and the cooperation with researchers attached to universities or research institutes. In our case this way is very difficult because the relations between universities and companies are very weak.
- Finding solutions to problems, it is based on learning by doing and learning by using, the learning in this way refers tacit and often highly localized. In this way, organisational practices can contribute positively to innovative performance. The measure is about learning by interacting through the relationship between the firm and the customers, is often connected to the routine procurement, production and sales activities to the firms, and to normal communication between firms. This might be called **learning-by-producing**, indicating that its basic components may be though of as **learning-by-doing**, **by-using** and **by-interacting** in relation to normal production activities. In our case we should analyze these processes to know the innovation processes that could be exist in this sector.

2.2.2 Actors, relationships and networks

A sector is composed of heterogeneous agents that are organizations or individuals. Organizations may be firms (e.g. users, producers, and input suppliers) or non-firms

(e.g. universities, financial institutions, government agencies, trade-unions, or technical associations), and include subunits of larger organizations (e.g. R&D or production departments) and groups of organizations (e.g. industry associations). Agents are characterized by specific learning processes, competences, beliefs, objectives, organizational structures, and behaviours, which interact through processes of communication, exchange, cooperation, competition, and command.

Firms are the key actors in the generation, adoption, and use of new technologies, are characterized by specific beliefs, expectations, goals, competences, and organization, and are continuously engaged in processes of learning and knowledge accumulation (Nelson and Winter 1982; Malerba 1992; Teece and Pisano 1994, Dosi, Marengo, and Fagiolo 1998, Metcalfe 1998). Selection increases homogeneity, while entry and technological and organizational innovations are fundamental sources of heterogeneity. Firm heterogeneity is also affected by the characteristics of the knowledge base, specific experience and learning processes, and the working on dynamic complementarities.

Non-firm organizations such as universities, financial organizations, government agencies, local authorities, and son on. In various ways, they support innovation, technological diffusion, and production by firms. In several high technology sectors, universities play a key role in basic research and human capital formation, but in our case the academic world is away of the industry. Is very important the role of the government agencies that have responsibilities on archaeological heritage.

Thus, in a sectoral system framework, innovation is considered to be a process that involves systematic interactions among a wide variety of actors for the generations and exchange of knowledge relevant to innovation and its commercialization. Interactions include market and non-market relations.

As we told before main agents involved in archaeological sector are:

- **Firms:**
 - **Private /public industry.** Is formed by companies, self-employees, professional archaeologists and public institutions that offer archaeological services developed as a part of a contract.
 - **Clients.** Those are companies that demand archaeological services as promoters, constructors or engineerings.
- **Non-firms:**
 - **Government** (International, National, Regional and local level)
 - **Academy.** This agent is formed by public research bodies, universities and museums.
 - **Clients.** Government and particular clients could demand archaeological services.

Once that we know the agents we analyse the **relationships** between them due to they are connected in various ways through the market and non-market relationships. It is possible to identify different types of relations, linked to different analytical cuts. First, traditional analysis of industrial organizations have examined agents as involved in processes of **exchange, competition, and command** (such as vertical integration). Second, in more recent analyses, processes of **formal cooperation or informal** interaction among firms and non-firms organizations have been examined in depth. Finally, the evolutionary approach and the innovation systems literature have also paid a

lot of attention to the wide range of formal and informal cooperation and **interaction among firms**. Thus, the networks integrate complementarities in knowledge, capabilities, and specialization (see Lundvall 1993; Edquist 1997; Nelson 1995; Teubal et al. 1991). Relationships between firms and non-firms organizations (such as universities and public research centers) have been a source of innovation and change in several sectoral systems.

Networks: The key role played by networks in a sectoral system leads to a meaning of the term “sectoral structure” different from the one used in industrial economics. In industrial economics, structure is related mainly to the concept of market structure and of vertical integration and diversification. In a sectoral system perspective, on the contrary, structure refers to links among artifacts and to relationships among the agents: it is therefore far broader than the one based on exchange-competition-command. Thus we can say that a sectoral system is composed of webs of relationships among heterogeneous. In summary, the types and structures of relationships and networks differ greatly from sectoral system to sectoral system, as a consequence of the features of the knowledge base, the relevant learning processes, the basic technologies, the characteristics of demand, the key links, and the dynamic complementarities.

In our study we want to analyze the types of interaction (Edquist): **competition**, which is an interactive process wherein the actors are rivals, and which creates or affects the incentives for innovation; **transaction**, which is a process by which goods and services, including technology-embodied and tacit knowledge, are traded between economic actors; and **networking**, which is a process by which knowledge is transferred through collaboration, cooperation and long term network arrangements (OECD 2002a:15). Moreover we will establish if the types of cooperation are **formal** or **informal** and **stable** or **instable**.

Until that moment we know that the most of relations between the agents involved in the archaeological sector are informal and instable unless those which are regulated by law.

- **Firms:**

- **Private /public industry.** Is formed by companies, self-employees, professional archaeologists and public institutions that offer archaeological services developed as a part of a contract. They develop their activity under the guidelines of the law and the management of the government agencies. Companies establish competition relations between them. Companies establish formal and stable relations with the government agencies but informal and instable relations with other companies.
- **Clients.** Those are companies that demand archaeological services as promoters, constructors or engineerings; have formal relations with archaeological companies and government agencies.

- **Non-firms:**

- **Government** (International, National, Regional and local level). Have formal relations with archaeological companies, clients of archaeological companies and academy.
 - It is the **regulator player** of the Heritage, represents the formal institutionalism and generates environments and contexts by

means of the legislation that could push to the growth of the Commercial Sector.

- At the same time, this agent is the responsible of the **management**; this means the efficient administration of the archaeological resources: heritage, human, economic, equipment and so on. The government is the agent that has to ensure adequate levels of conservation and proper use of Heritage, the government has to assume their acquisition, preservation, maintenance and Management.
- **Academy**. This agent is formed by public research bodies, universities and museums; these are institutions that realize activities linked to the production of knowledge and learning. Have informal and instable relations with archaeological companies.
- **Clients**. Government and particular clients could demand archaeological services.

2.2.3 Institutions

Agents' cognition, actions, and interactions are shaped by institutions, which include norms, routines, common habits, established practices, rules, laws, standards, and so on. Institutions may range from ones that bind or impose enforcements on agents to ones that are created by the interaction among agents (such as contracts); from more binding to less binding; from formal to informal (such as patent laws or specific regulations vs. traditions and conventions). A lot of institutions are national (such as the patent system), while others are specific to sectors (such as sectoral labor markets or sector specific financial institutions).

In all sectoral systems, institutions play a major role in affecting the rate of technological change, the organization, the organization of innovative activity, and performance. They may emerge either as a result of deliberated planned decision by forms or other organizations, or as the unpredicted consequence of agents' interaction. Some institutions are sectoral, i.e. specific to a sector, while others are national. The relationship between national institutions and sectoral systems is quite important in most sectors. National institutions have different effects on sectors. For example, the patent system, property rights, or antitrust regulations have different effects as a consequence of the different features of the systems, as surveys and empirical analyses have shown (see for example Levin et al. 1987). However, the same institution may take different features in different countries, and thus may affect the same sectoral system differently.

In our study we will analyze the institutions that are involved distinguishing formal institutions, national and regional law and regulations that are affecting to the management of the archaeological heritage and the development of the commercial archaeology; and informal institutions as routines established between the agents, for example the different routines established by regional governments agencies.

3. SOME PRELIMINAR FINDINGS

To address the main hypotheses and implement this study, a mixed research strategy is suggested, where qualitative and quantitative methods are combined.

- First, we want to realize an **analysis of the Commercial Archaeology in general terms**, due to the lack of empirical studies about this market. We want to collect quantitative and qualitative information about the size and structure of this market and we want to understand the factors that promote the emerging and the development of this market.
- Secondly, we apply to the Spanish Commercial Archaeology the analytical approach about Sectoral Systems of Innovation of Malerba through two or three study cases of Commercial Archaeology by region

Now we are going to present some key characteristics of our study in relation to the archaeological sectorial system of innovation and some regional differences.

In Spain there is a private professional archaeological sector which forms a market that start to work in 1985. Since that moment a large number of companies work in the field of the archaeological heritage. The structure of those companies is often small, usually formed by one owner or two partners and they have one employee in a permanent position and contract temporary workers depending on their work. Until now we have registered a population of 376 companies in Spain and in this graphic we can see its distribution by regions:

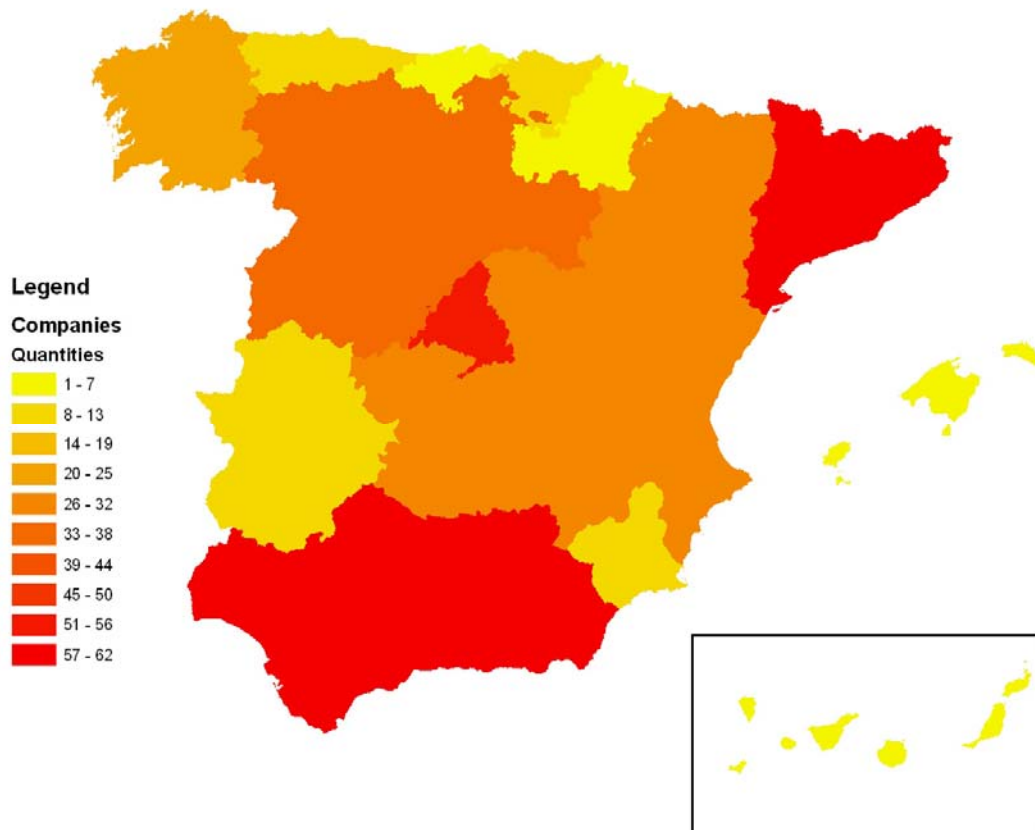


Figure 3: Number of companies by region

Source: Own elaboration through the information facilitated by the regional archaeological heritage departments

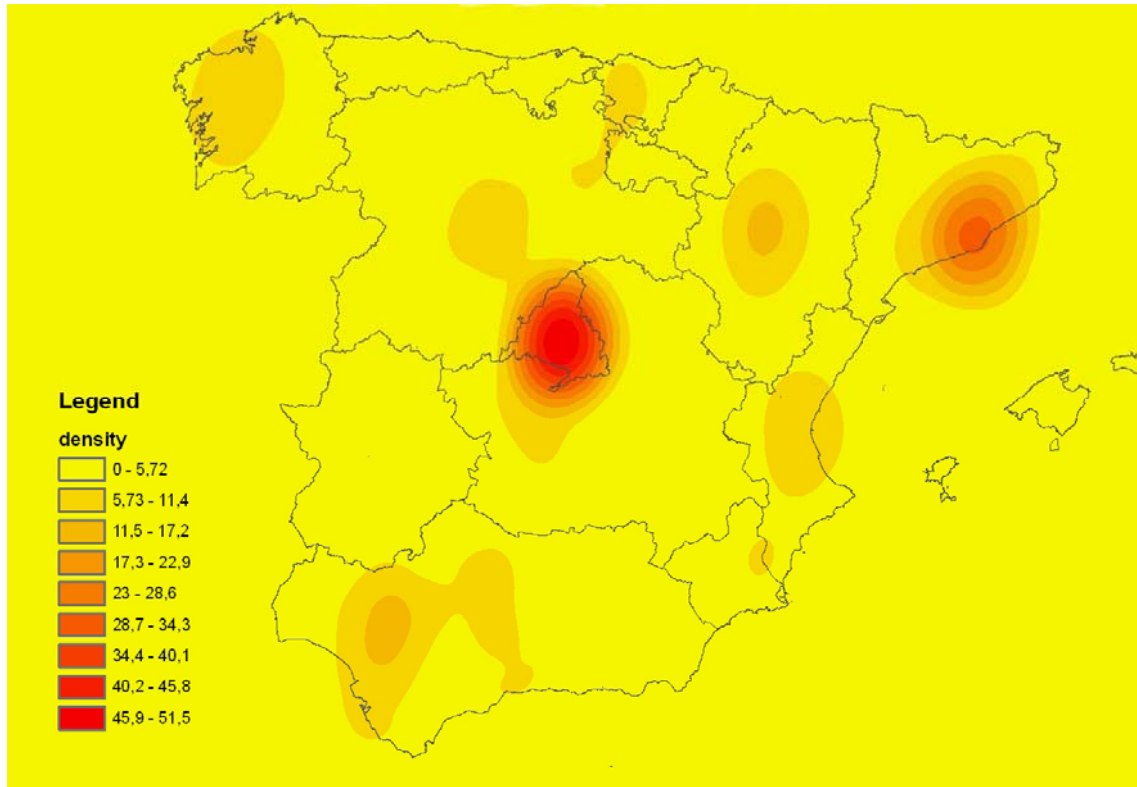
In this graphic we distinguish between three big groups of regions:

First, the red regions are the areas that have the largest number of the registered companies. This means that the regions of Catalonia, Andalusia and Madrid have more than 39 archaeological companies.

Secondly, the orange regions have between 20 and 38 archaeological companies.

Finally, the yellow regions that have less than 20 archaeological companies.

Now we analyze these data seeing the density of companies in relation with the territorial unity in the next graphic:



Graphic 2: Density of companies

Source: Own elaboration through the information facilitated by the regional archaeological heritage departments

In this graphic we can see the areas in that there is the major density of companies. As we can observe there are two regions with a high density, these are the areas around to Madrid and Barcelona, two important cities in Spain. We can see that the concentration of companies is higher in the city and covers other regions (in Madrid cover the region of Madrid and a part of Castilla León and Castilla La Mancha).

Then we have other areas where there are fewer companies but where there is a significant density, it is on in the southwest of Spain, around Seville, another around Saragossa and Valencia, another area occupies the southern part of the Basque Country and the Atlantic zone in the region of Galicia.

Once analyzed the quantity and the geographical distribution of these companies, we wonder about the incidence of the quantity of existent companies in this sector in

relation to the total number of companies linked with the realization of services in Spain.

Active companies according to economic sector by region 2007				
	Total of companies	Companies dedicated to the rest of services¹	Companies dedicated to the Archaeology	Companies dedicated to the Archaeology in relation to the companies dedicated to the rest of services
Total	3.336.657	1.758.661	376	2,13799
Andalusia	511.728	265.396	61	2,298452
Aragon	92.162	46.680	26	5,569837
Asturias	72.276	38.971	11	2,822612
Balearic	91.254	50.110	2	0,399122
Canaries	140.414	78.250	3	0,383387
Cantabria	39.560	20.958	3	1,431434
Castilla y León	170.319	82.789	35	4,227615
Castilla la Mancha	132.906	56.783	28	4,931053
Catalonia	612.404	331.499	62	1,870292
Valencian Community	368.586	187.771	31	1,650947
Extremadura	66.232	30.104	10	3,321818
Galicia	200.020	98.936	25	2,526886
Madrid	503.000	302.853	55	1,816063
Murcia	97.374	46.761	9	1,924681
Navarre	43.142	21.848	4	1,830831
Basc Country	164.431	84.574	10	1,182396
La Rioja	23.404	10.914	1	0,916254
Ceuta y Melilla	7.445	3.464	0	0

Table 1: Number of archaeologists

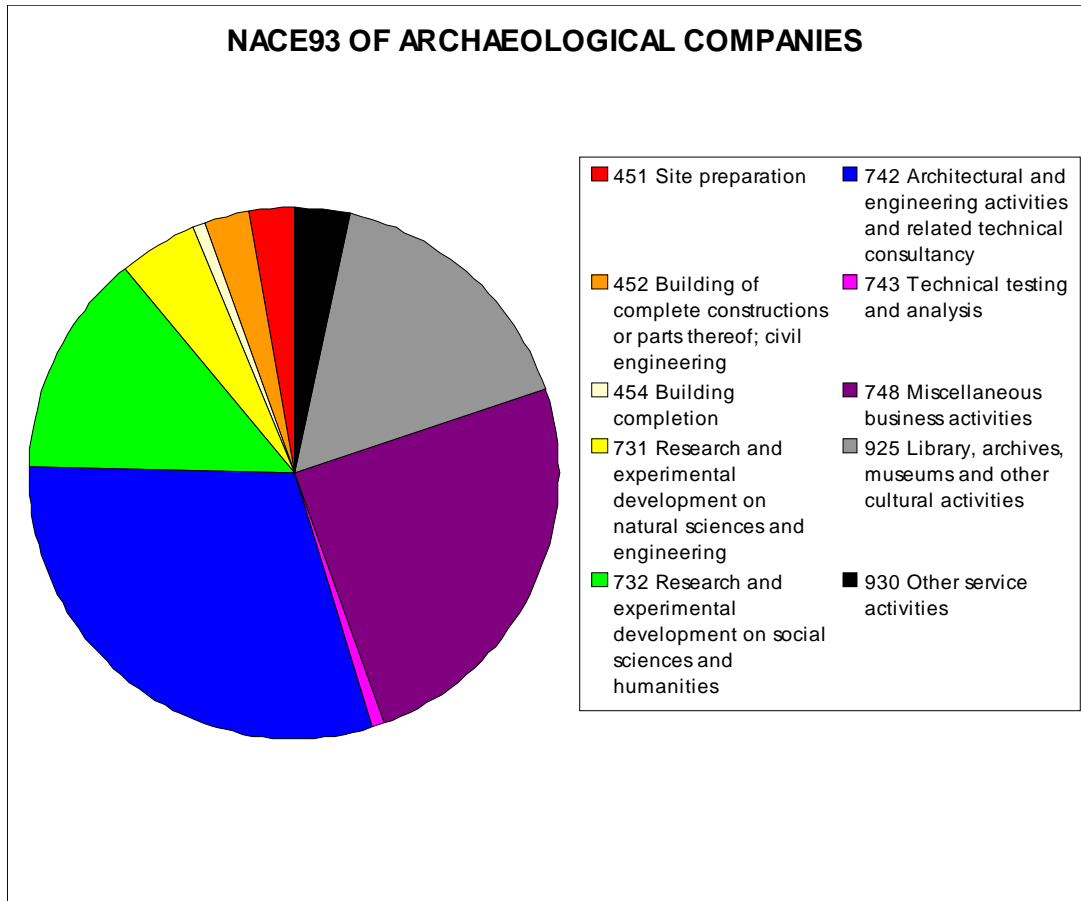
Source: Own elaboration through the information facilitated by Spanish Statistic Institute

Through this table we can see that for each a thousand companies dedicated to services in Spain (excepting those dedicated to hostelry), two of that are dedicated to the archaeology services.

We can also indicate those regions in that there is a higher number of archaeology companies in relation to the total of companies that offer services; these are Aragon with five archaeology companies for each thousand dedicated to other services; Castilla Leon and Castilla la Mancha, for each a thousand companies dedicated to other services there is four of archaeology; the next is Extremadura with three archaeology companies for each thousand dedicated to other services. This table shows the regions that have a higher incidence the archaeological sector.

¹Rest of services means that we account all companies that offer services except those dedicated to hostelry

Another taxonomy that we realized about the archaeology companies is a classification in relation to its national code of economic activity (NACE93). We could see that this type of companies is bounded under different codes, the archaeological activities doesn't have a proper code. In the following figure we could observe the number of archaeology companies in relation to the national code of economic activity.



*Graphic 3: NACE Code of Spanish Archaeological Companies
Source: Own elaboration*

The most of companies that offer archaeological services are registered as architectural and engineering activities and related technical consultancy companies; as miscellaneous business activities; as library, archives, museums and other cultural activities; and as research and experimental development on social sciences and humanities. As we can see the archaeological activities don't have a proper code, this means a difficult to find these companies.

Finally we have to account the number of archaeologists that work in the public sector; this is in the departments of cultural heritage of the regional governments, universities, museums and public research bodies.

1. Now we are realizing interviews to the departments of cultural heritage of the regional governments, and we don't have the complete data but we could estimate that there are around 200 people working in these departments in activities related to the archaeological heritage.

2. In the Spanish Council for Scientific Research, the largest public research body in Spain that plays an active role in the scientific policy in all the regions, there are around 92 archaeologists working in these centres.
3. Until now we don't have data of universities and museums.

In the next table we present the Spanish laws about cultural and historical heritage:

Spain's Historical Heritage Law (1985)
Castilla La Mancha's Historical Heritage Law (1990)
Country Vasc's Cultural Heritage Law (1990)
Catalan's Cultural Heritage Law (1993)
Galician's Cultural Heritage Law (1995)
Valencian's Cultural Heritage Law (1998) (2004) (2007)
Madrid's Historical Heritage Law (1998)
Cantabria's Cultural Heritage Law (1998)
Balear's Historical Heritage Law (1998)
Aragon's Cultural Heritage Law (1999)
Canarian's Historical Heritage Law (1999)
Extremadura's Historical and Cultural Heritage Law (1999)
Asturian's Cultural Heritage Law (2001)
Castilla Leon's Cultural Heritage Law (2002)
La Rioja's Cultural, Historical and Artistic Heritage Law (2004)
Navarra's Cultural Heritage Law (2005)
Murcian's Cultural Heritage Law (2007)
Andalusian's Historical Heritage Law (2007)

Table 1. Spain's Laws on Historical and Cultural Heritage

4. PLANS FOR FURTHER STUDY

4.1 Thesis structure

Abstract

Chapter 1: Introduction

1. Presentation and justifying the study. Why is important to study the archaeological sector? How we are going to approach the study?
2. State of the art and contextualizing. Growing interest in cultural aspects and its privatization; is the mercantilization of culture. Description about the emerging demand for preservation of heritage. Importance of public authorities to establish criteria and scales of control in the market. Cultural resource management approach.
3. Research object and definitions: **the archaeological sector from the innovation systemic perspective**. Explanations about what is the archaeological sector and why we wan to analyze through a systemic perspective (define concepts, what is systemic, what innovation is and what imply to analyze the sector from this perspective).
4. Recapitalization. Explain the thesis and the contents of the chapters.

Chapter 2.The Archaeological Sector and the Commercial Archaeology

1. Archaeological product and process
2. Description of the archaeological sector, broad historical description. Emergence of the commercial archaeology. How arise the feeling and the need to protect? (Cultural Resource Management)
3. Different experiences, the commercial archaeology in UK and USA

Chapter 3.Theoretical approach

1. **Theoretical framework.** We start with the systems of innovation, that is the broad framework and then we explain what aspects are more interesting for our study and what approach we choose to this research line, we have to argue for the different approaches. Why take these different approaches, understand the different literature. What is my contribution to the theoretical part and analysis of sectoral systems of innovation. (Institutional change and learning processes)

Chapter 4.Methodological and analytical approach

1. Question tasks
2. Hypothesis
3. Type of analysis
4. Techniques
5. Activities, workplan and timeline

Chapter 5. Analysis

1. Structure of the Spanish commercial archaeology. Knowledge, agents and institutions
2. Differences between regions and construct a typology following three study cases

Conclusions

4.2 Workplan

The proposed workplan for this study is designed on the basis of past activities and activities that we are going to do.

To date we have conducted a preliminary analysis on the archaeological sector. These are:

- **Analysis of the literature and the legislation about archaeology** (international, national, regional). We have gone to secondary sources for studies conducted in the European archaeological context. It has also carried out a first approximation to the Spanish archaeological sector analyzing the rules and regulations related to the field of Cultural Heritage and Archaeological Heritage

- Secondly, we have **identified and located the companies and self-employees of archaeology in the Spanish territory** by regional government departments responsible for Cultural Heritage
- Thirdly, we made an initial **approach to social and economic characteristics** of a sample of archaeological companies, through databases available online. We collect data as corporate name, address, phone, codes of Business (IAE, CNAE93, CSO), description of the activity, legal form, date established, European ratios, number of employees, accounts, and so on.
- Then, we have **interviewed to ten business executives of archaeology** in the region of Galicia as a first approach to capturing qualitative information.
- We have interviewed through **questionnaire to the regional archaeological heritage departments** to collect data about the differences in archaeological management in Spain.

In line with the guidelines of the study we suggest the following activities:

Activity 1: At the moment, we are working in the **theoretical perspective and analytical approach**. As we told we are studying the different innovation approaches that we could apply to our research:

- Systems of innovation
 - Sectorial systems of innovation, Malerba's approach.
 -

Activity 2: Obtain socio economic data about the activities of Spanish Commercial Archaeology:

- 1) **Get information about the social and economic characteristics of self-employed and archaeological companies** through the databases of the Market Register, through this activity we can gather reliable information in relation to a specific time period to review developments in the sector on the market.
- 2) **Design of a questionnaire** for entrepreneurs and self-employed working in the field of archaeology to collect data and analyze the archaeological market.
- 3) **Realization the questionnaire to the sample under study**, that consists in ask to entrepreneurs and the self-employed in the Commercial Archaeology. Through this questionnaire will seek to collect information on the current situation of the sector as well as the attitudes and behaviours to change, the processes of learning and innovation. It is expected that this process will contribute to the reflection on the challenges and potentials of the sector, as well as the definition of strategies that help boost the collective toward activities that are conducive to learning, the use of knowledge and innovation process.

Activity 3: Analysis of the data collected and establishes differences by regions. We want to construct taxonomy based on three study cases

Activity 4: Outreach of the results of the study

ACTIVITIES / Tasks	2008			2009			2010																	
	Months			Months			Months																	
	E	F	M	A	M	J	J	A	S	O	N	D	E	F	M	A	M	J	J	A	S	O	N	D
Past Activities	E	F	M	A	M	J	J	A	S	O	N	D	E	F	M	A	M	J	J	A	S	O	N	D
1. Analysis of the literature and legislation	■	■																						
2. Identifying companies and self-empolees	■	■																						
3. Searching data in databases					■	■																		
4. Interviews to the business executives of archaeology	■																							
5. Design and realization of a questionnaire to the regional archaeological departments					■	■	■	■	■															
1- Theoretical and analytical approach	E	F	M	A	M	J	J	A	S	O	N	D	E	F	M	A	M	J	J	A	S	O	N	D
Task 1.1 Construct the theoretical perspective and the analytical approach					■	■	■	■	■				■											
2- Collecting data																								
Task 2.1 Gathering information in the Market Register																								

REFERENCES

- AITCHISON, K. (1999): Profiling the Profession. A survey of archaeological jobs in the UK. Council for British Archaeology, English Heritage, Institute of Field Archeologists.
- AITCHISON, K. & EDWARDS, R. (2003): Archaeology Labour Market Intelligence: Profiling the Profesión 2002/2003
- ÁREA, S. Coop. Madrid. (Viejos Dilemas de la Arqueología (en Madrid)).
- BARREIRO, D. (2006): "La Aureola Perdida (Propuesta para una Arqueología Aplicada)". Arqueoweb, Núm. 8 (1). Art. 8.
- BARREIRO, D. (2006): "Conocimiento y acción en la Arqueología Aplicada". Complutum, Núm. 17, pág. 205-220.
- BEAUDRY, D; RÉGNIER, L.; GAGNÈ, S. (2006). Development chain for the results of university research with a potential for use. Québec. Conseil de la science et de la technologie.
- BOUCHARD, C. (1999) « *Contribution à une politique de l'inmatériel (research in humanities and social sciences and social innovations: contribution to a policy of the non-material)* ». Conseil québécois de la recherche social (Québec social research council).
- BOZEMAN, B. (2000): Research Policy, 29. "*Technology transfer and public policy: a review of research and theory*".
- CASTRO MARTÍNEZ, E y FERNÁNDEZ DE LUCIO, I (2001): Innovación y Sistemas de Innovación.
- CASTRO MARTÍNEZ, E.; FERNÁNDEZ DE LUCIO, I; GUTIÉRREZ GRACIA, A.; AÑÓN MARÍN, M.J.; Ponencia: "La estrategia de dinamización en la cooperación investigación-empresa: desarrollo conceptual y aplicaciones".
- COSTAS, A. Y BEL, G. "Privatización y posprivatización de servicios públicos: riesgos regulatorios e impuestos ocultos. El caso de España" en CEPAL-SERIE Seminarios y Conferencias nº3 pp. 231-251.
- COTEC (2005): Estudios, 31. Panel de Innovación Tecnológica. PITEC.
- CRIADO BOADO, F. (1996): "El futuro de la Arqueología ¿la Arqueología del futuro?" Trabajos de Prehistoria 53, nº 1, pp. 15-35.
- CRIADO BOADO, F. (1996): "Hacia un modelo integrado de investigación y gestión del Patrimonio Histórico: la cadena interpretativa como propuesta". PH Boletín 16.
- CRIADO BOADO, F. (1996): "La Arqueología del Paisaje como programa de gestión integral del Patrimonio Arqueológico". PH Boletín 14.
- DÍAZ DEL RÍO ESPAÑOL, P. "Arqueología Comercial y Estructura de Clase". Gestión Patrimonial y Desarrollo Social. CAPA 12.
- DOMÍNGUEZ ALONSO, R. M^a; FERNÁNDEZ UGALDE, J. L.; HERCE YUSTE, M.; MENASANCH DE TOBARUELA, M.; PRESAS VÍAS, M. M^a (1992): "Arqueología Profesional e Intervención. Reflexiones desde una experiencia cooperativa". Reunión de Arqueología Teórica, AREA Sociedad Cooperativa.
- FERNÁNDEZ DE LUCIO, I., CASTRO MARTÍNEZ, E.; CONESA CEGARRA, F; GUTIERREZ GRACIA, A (2000). "Las relaciones universidad-empresa: entre la transferencia de resultados y el aprendizaje regional" en Revista Espacios, Vol. 21(2), disponible en <http://www.revistaespacios.com/a00v21n02/60002102.html>.

- LUACES ANCA, J. (2000): “*La Arqueología desde el sector privado: actividad profesional o empresarial*”. Cursos de postgrado impartidos en la Universidad de Santiago.
- LUNDEVALL, B. A. (1992): National System of Innovation, London.
- LUNDEVALL, B. A. (2001): “*Innovation Policy in the Globalizing Learning Economy*”. The Globalizing Learning Economy, Oxford University Press.
- MALERBA, F. Sectoral Systems. “*How and Why Innovation Differs Across Sectors*”. The Handbook of Innovation (2008).
- MUÑOZ DE ESCALONA, F. (2006): “*Arqueología, patrimonio cultural y ... ¡Turismo!*”. Contribuciones a la Economía.
- OECD & EUROSTAT (2005): Oslo's Manual
- OLAZARÁN, M.; GÓMEZ URANGA, M.; (2001). Servicios Editoriales de la Universidad del País Vasco. “*Sistemas Regionales de Innovación*”.
- QUEROL, M.A. & MARTINEZ, B. (1996): La Gestión del Patrimonio Arqueológico en España. Alianza Universidad, Textos.
- ROBERTS, AHLSTROM, ROTH, B. (2004); From Campus to Corporation: The emergence of Contract Archaeology in the Southwestern United States.
- SAMANIEGO, F. “*La Cultura deja de ser florero*”. El País, 13 de noviembre de 2006.
- THE HERITAGE COUNCIL & THE INSTITUTE OF ARCHAEOLOGISTS OF IRELAND (2002): Profile of the Archaeological Profession and Education Resources in Ireland.
- THOMAS F. KING (2005); Doing Archaeology. A Cultural Resource Management.
- VENCE DEZA, X. (1995); Economía de la Innovación y del Cambio Tecnológico, Madrid.
- VENCE DEZA, X. (2001): “*El sistema de innovación de Galicia: debilidades y especificidades de un sistema periférico*” en Sistemas Regionales de Innovación. Universidad del País Vasco.
- VENCE DEZA, X. (2005); O Fracaso do Neoliberal na Galiza: reconstruír a sociedade e o país, Vigo.
- ZEDER, M.: The American Archaeologists: Results of the 1994 SAA Census

APENDIX

Variables collected in a database per company (142 companies) and per year (2000-2006)

- **Identification data of the company:** Name, Address, Telephone, Web, Mail, NACE code, constitution date, legal form, description of the activity, president.
- **Information per years**

PROFILE
- Revenues of exploitation
- Ordinary results before taxes
- Active total
- Own Fund
- Economic profitability (%)
- Financial profitability (%)
- General liquidity
- Indebtedness (%)
- Used number
BALANCES OF SITUATION
- Immobilized
- Immobilized immaterial
- Immobilized material
- Other fixed assets
- Circulating asset
- Existences
- Debtors
- Other liquid assets
- Treasury
-Active total
- Own Fund
- Capital undersigned
- Other own funds
- Passive fixed
- Passive liquid
- Financial debts
- Commercial Creditors
- Other passive liquids
- Total passive and own capital
- Manoeuvre Fund
- Employees' number
BILLS OF LOSSES AND EARNINGS
- Revenues of exploitation
- Care net in Figure of Sales
- Consumption of merchandises and of materials
- Gross result
- Other expenses of exploitation

- Financial revenues
- Financial expenses
- Financial result
- Ordinary results before Taxes
- Taxes on societies
- Ordinary Activities
- Extraordinary revenues
- Extraordinary expenses
- Extraordinary activities
- Result of the Exercise
- Materials
- Expenses of personal
- Endowments for paying-off of having immobilized
- Financial expenses and assimilated expenses
- Cash flow
- Added value
- EBIT
- EBITDA
BALANCES OF SITUATION
- Shareholders for not demanded payments
- Immobilized
- Establishment Expenses
- Immobilized immaterial
- Immobilized material
- Immobilized financial
- Expenses to distribute in several exercises
- Activate Circulating
- Shareholders for demanded payments
- Existences
- Debtors
- Investments financial storms
- Actions characteristic to C.P.
- Treasury
- Active total
- Own Fund
- Capital undersigned
- Emission Cousin
- Reserve and previous exercise
- Result (Losses and Earnings)
- Divid. to bill surrendered in the exercise
- Own Actions for net. of cap.
- Revenues to distribute in several exercises
- Provisions for risks and expenses
- Financial Debts
- Commercial Creditors
- Other non commercial debts

- Provisions for risks and expenses to C/P
- Used number
BILLS OF LOSSES AND EARNINGS
- Expenses exploitation
- Consumptions of exploitation
- Expenses of personal
- Other expenses of exploitation
- Revenues exploitation
- Amount of figure of sales
- Other revenues of exploitation
- Exploitation
- Financial expenses
- Financial Expenses and assimilated expenses
- Financial investments
- Difference negative of change
- Financial revenues
- Financial Revenues
- Positive Difference of change
- Financial result
- Ordinary Activities
- Extraordinary expenses
- Extraordinary revenues
- Extraordinary activities
- Results before Taxes
- Taxes on societies
- Other taxes
- Result of the exercise
RATIOS Informs
- Activity
- Growth of the Figure of sales (%)
- Rotation of active
- Productivity
- Growth Added Value (%)
- Profitability
- Economic Profitability (%)
- Financial Profitability (%)
- Financial Expenses (%)
- Balance
- Manoeuvre Fund (Thousand)
- Necessity bottom manoeuvres (Thousand)
- Treasury (Thousand)
- Balance
- Kinetic Ratios
- Manoeuvre Fund (days)
- Necessity manoeuvre bottom (days)
- Treasury (days)

- Credit clients (days)
- Credit suppliers (days)
- Solvency
- Indebtedness (%)
- Capacity refund
- Liquidity
- General Liquidity
- Immediate Liquidity
EUROPEAN RATIOS
- Profitability
o Return on Shareolders Funds (%)
o Return on Capital Employed (%)
o Return on Total Assets (%)
- Operations
o Net Assets Turnover
o Interest Cover
o Stock Turnover
o Collection period (days)
o Credit Period (days)
- Structure
o Current Ratio
o Liquidity Ratio
o Shareholders Liquidity Ratio
o Solvency Ratio (%)
o Gearing (%)
- Per employee
o Profit per Employee (thousand)
o Oper. Rev. per Employee (thousand)
o Costs of employee/Oper. Rev. (%)
o Aver. Cost of Emplo./ Year (thousand)
o Share funds per Employee (thousand)
o Work. Capital per Employee (thousand)
o Total Assets per Employee (thousand)
RATE OF VARIATION (%)
- Care net of Figure of Sales
- Results before Taxes
- Consumptions of exploitation
- Expenses of personal
- Immobilized
- Active total
- Own Fund
- Long term creditors
- Fund maneuvers
- Necessity bottom maneuvers
- Treasury
ACTIVITY

- Description of the activity
- Codes NACE93
- Codes NACE93 Rev. 1
- Codes Rev is BORN. 1.1
- Codes IAE
- Codes US SIC
- Codes NAICS 2002

QUESTIONNAIRE FOR ADMINISTRATIVE DEPARTMENTS RESPONSIBLE FOR THE MANAGEMENT OF ARCHAEOLOGICAL HERITAGE

Name of interviewee _____

Administration to which they belong _____

Name of department _____

Post held _____

Contact details (address, telephone and e-mail) _____

BLOCK A: ORGANISATION AND APPLICABLE REGULATIONS IN RELATION TO THE MANAGEMENT OF ARCHAEOLOGICAL HERITAGE

A1.-Firstly, we would like to know if within the structure of this Autonomous Region/province/consortium/foundation there are any departments working with archaeological heritage management. If so, please fill in the following details:

A.1.1.-Name of the department(s):

A.1.2.-Ministry/Department they belong to:

A.1.3.-Administrative level (for example: directorate/section):

A.1.4.- What are the qualifications or profession of the person responsible for this/these department(s)?

A.1.5.-Number of members working for this/these department(s):

- Central:

- Territorial:

A.1.6.-Date of creation of this/these department(s):

A.1.7.- Is there a special group of archaeologists (special administrative body)?

4. Yes (Proceed to A.1.8) _____

5. No (Proceed to A.1.9) _____

A.1.8.-Indicate the legal framework that regulates the body and the date it was created:

A.1.9.-If there is no special group of archaeologists, who produces reports and carries out inspections?

A2.- Is there an Environment Department in your Regional Authority?

1. Yes _____

2. No _____

A3.-Indicate the **specific** legislation covering matters of Cultural Heritage, Archaeological Heritage and Environmental Impact in your Regional Authority:

CH _____
AH _____
EI _____

A4.-If there are any special regulations at regional level, indicate any relevant features in comparison to national regulations/legislation:

A5.- Are there any Special Plans for the protection of Cultural and Archaeological Heritage assets in your Regional Authority? How many, and which?

BLOCK B: FUNCTIONS OF THE ADMINISTRATIVE DEPARTMENTS RESPONSIBLE FOR CULTURAL HERITAGE IN REGIONAL AUTHORITIES

B1.-Below is a list of the administrative functions related to Archaeological and Cultural Heritage. Please indicate those carried out by your department:

- inventory of archaeological sites _____
- authorisations for archaeological activity _____
- environmental impact and/or environmental affect reports _____
- enhancement projects _____
- diffusion and public presentation of AH _____
- urban planning reports _____
- general information for individuals and companies _____
- other (please specify) _____

B2.-Indicate if your department carries out any of the following activities in collaboration with other agents involved in the heritage sector such as universities, museums, public research bodies, companies, self-employed professionals and/or users of these services. The list below should be filled in based on activities over the last two years (2005-2007).

- Technical assistance _____
- Consultancy or support _____
- Joint research as project partners _____
- If you have a line of funding for projects*² _____
- Organisation of congresses, meetings and symposia _____
- Creation of technical and/or methodological guidelines _____
- Others (specify) _____

B3.- We would like to know more about the type of relations your body establishes with other agents involved in the heritage sector, such as universities, museums, public research bodies, companies, self-employed professionals and users of these services. Please fill in the table below based on activity in the last two years (2005-2007)

	Indicate if any type of agreement has been established	Main objective of the agreement	Average duration of agreement	Indicate if you receive any type of funding and its origin, detailing by: 1. Contractual with third parties 2. Institutional (agreements/contracts) 3. Framework programmes (grants and funding)
UNIVERSITIES				
MUSEUMS				
PUBLIC RESEARCH				
COMPANY				
SELF-EMP.				
ARCH. SERVICE USERS				

2

This refers to research projects and Cultural Heritage management

BLOCK C: REQUEST FOR DETAILS AND INFORMATION

C1.-Provide a **list of companies and self-employed professionals** dedicated to Archaeological Heritage management in this Regional Authority, together with their contact details. This information is used to identify the existing offer of archaeological services and access public databases such as the SABI (*Sistema de Análisis de Balances Ibéricos*), ARDAN or the companies' registry, in order to have information on the data registered in this sector.

C2.-Indicate the necessary knowledge, training, abilities and capacities are required to work as an archaeologist in your Regional Authority.

C3.-We would like to know your opinions about the following information: this does not need to be precise data, just an estimate:

- Number of archaeology companies:_____
- Average number of full-time employees:_____
- Number of self-employed professionals:_____
- Other situations (e.g. part-time contracts):_____

C4.- Is there any association or official organisation for archaeologists in your Regional Authority?

C5.- What percentage of the total work carried out in your R.A. is given over to universities, museums or other public research bodies?

C6.- We are interested to know **data on the volume of archaeological activity** and would like you to provide us with information that is systematised for the period covered about:

- The type and number of actions.
- The number of authorisations issued on a yearly basis.
- The funds or budgets destined for these activities.

We would like to emphasise that any data you have registered about this is important, and the need for your collaboration in order to try and estimate the amount of activity carried out in this field. If you do not have this data on hand, we would be prepared to carry out archiving work to find it.

BLOCK D: OPINIONS ABOUT THE EXISTING SUPPLY/DEMAND IN THE FIELD OF ARCHAEOLOGICAL HERITAGE MANAGEMENT

D1.-Give a brief summary of the difficulties you think exist in the correct management of Archaeological Heritage:

D2.-Give a brief outline of what solutions or measures you would support:

D3.-What is your opinion about the Archaeological business sector in your region? Do you think it is in a moment of expansion, recession, or at a standstill? Why?

D4.-What do you think about general archaeological activity in your region? Do you think it is in a moment of expansion, recession, or at a standstill? Why?

QUESTIONNAIRE FOR PROFESSIONAL ARCHAEOLOGISTS

Date: _____

General information about the socio-economic profile of the interviewee and their relation with the labour market:

Sex:	
Age:	
Place of residence:	(region)
Level of studies (please give detailed information on the type of studies carried out)	Low
	Primary
	Secondary
	University
	Doctorate/Master's Degree/ Postgraduate Studies
Monthly income*	Less than 600€
	600 € to 1000 €
	1000 € to 1500 €
	1500 to 2000 €
	2000 € to 3000€
	More than 3000€
*If your salary does not coincide with this structure, indicate your approximate yearly net salary	
Do you currently carry out work related to archaeological activity?	Yes
	No
If yes, indicate your current situation:	Active
	Inactive
	Unemployed
	Other (specify)
If you are active in the archaeological sector, please indicate which best describes your situation	Full-time contract
	Part time contract
	Civil Servant
	Grant holder
	Self-employed
	Business owner
Other (specify)	

Indicate the type of institution you work for	Public Administration
	University
	Museum
	Public research body
	Commercial organisation
	Trade Union
	Other (specify)
Indicate the area where you work	City/Region:
Level of satisfaction with your current position	Not satisfied
	Relatively satisfied
	Quite satisfied
	Very satisfied

QUESTIONNAIRE FOR ENTERPRISES AND COMPANIES CARRYING OUT WORK IN CONNECTION WITH ARCHAEOLOGICAL HERITAGE MANAGEMENT

IDENTIFICATION

Business name _____

Registered office (town/city/postcode) _____

Telephone / Fax/ E-mail _____

Website _____

Number of partners _____

CONTACT DETAILS

Mr./Mrs./Ms.: _____

Post held in company: _____

Telephone: _____ Fax: _____

E-mail: _____

BLOCK A: GENERAL CHARACTERISTICS OF THE COMPANY

A.1 Please indicate the legal status of the company

- | | |
|-----------------------------|--------------------------|
| 1. Individual company _____ | <input type="checkbox"/> |
| 2. Limited Company _____ | <input type="checkbox"/> |
| 3. Corporation _____ | <input type="checkbox"/> |
| 4. Private company _____ | <input type="checkbox"/> |
| 5. Cooperative _____ | <input type="checkbox"/> |
| 6. Co-ownership _____ | <input type="checkbox"/> |
| 10. Others _____ | <input type="checkbox"/> |
| 88. N/K _____ | <input type="checkbox"/> |
| 99. Not answered _____ | <input type="checkbox"/> |

A.2 Does your company form part of a group of companies?

1. Yes (proceed to A3)
2. No (proceed to A4)
88. NK (proceed to A4)
99. NA (Proceed to A4)

A.3 Indicate the province (or region) where the parent company is located

Province (or country) _____

A.4 What is the main economic activity of your company?

Description of main activity: _____ CNAE-93

Description of activity that produces most turnover

_____ CNAE-93 _____

A.5 Year when business was founded

Year _____

A.6 Which is the most important geographical market for the company?

1. Local/ regional _____
2. National _____
3. Other EU countries _____
4. All other countries _____
5. NK _____
6. NA _____

A.7 How many people work in your company?

	2000	2003	2005	2007
Full-time personnel				
Part-time personnel				
Unpaid personnel				
Total				

A.8 Number of employees by level of studies

	2007
Postgraduate studies, doctorates and master's degrees	
University degrees	
Secondary studies or lower	

A.10 Number of foreign or immigrant employees

BLOCK B: ECONOMIC ACTIVITY OF THE COMPANY

B.1 We are interested in obtaining data about the volume of activity of the company in order to estimate the impact of this sector in the marketplace and society. For this reason we request any type of information you may have in relation to your turnover.

Indicate the total volume of sales of goods and services, noting if the amount shown includes VAT.

	2000	2003	2005	2007
Total sales in €				

B.2 We are interested in obtaining data about the expenses generated by your company in order to estimate costs for the sector. For this reason we request any type of information you may have in relation to total annual expenditure.

Indicate the total volume of expenditure and if the amount shown includes VAT.

	2000	2003	2005	2007
Total expenses in €				

B.3 Distribution of costs in activities by socio-economic objective

If the company allocates amounts to the following categories, please tick the corresponding box, and indicate the amount for 2007 if known

1. Payment to researchers (include payment to grant holders) _____
2. Payment to technicians and auxiliary staff _____
3. Purchasing of equipment and machinery _____
4. Internal or external training of personnel _____
5. Acquisition of specific software _____
6. Quality control programmes and for modernising organisational aspects _____
7. R&D in the company _____
8. Production of reports and memoranda _____
9. Other expenses (please specify) _____

B.4 During the period 2000-2007, did your company receive any type of public funding (grants, subsidies etc.) from the following public bodies?

Include funding from credits or fiscal rebates, subventions, funded loans and loan guarantees.

1. Local or regional authorities _____
2. National authorities _____
3. European Union _____

BLOCK C: TRAINING AND DISSEMINATION

C.1 Indicate if you carried out training activities during 2007

1. On-site training _____
2. Training outside the company, sponsored by the company _____
3. Personally motivated training outside the company _____
4. None of the above _____

C.2 Indicate which training activities you would demand that contribute towards increasing the competitiveness of companies in the productive system

1. Establishing specific qualifications for archaeology _____
2. Professional qualification and technical training programmes _____
3. Programmes facilitating access to technical consultancy _____
4. Programmes on the use of ICTs _____
5. Programmes on marketing and publicity techniques _____
6. Others(specify) _____

C.3 Was any type of dissemination activity offered in the company in 2007?

- 1. Yes (proceed to C.4) _____
- 2. No (proceed to C.5) _____
- 88. NK (proceed to C.5) _____
- 99. NA (proceed to C.5) _____

C.4 If yes, detail the type of dissemination work carried out by your company in 2007.

What kind? _____

C.5 In 2007, did you take part in any dissemination activity on an individual basis?

- 1. Yes (proceed to C.6) _____
- 2. No (proceed to block D) _____
- 88. NK (proceed to block D) _____
- 99. NA (proceed to block D) _____

C.6 If yes, indicate the type of dissemination activity made in 2007

Dissemination: publications, seminars, talks, websites, advertisements, contacts with the media – newspapers, magazines:

D. ANALYSIS OF CONTACTS BETWEEN AGENTS

D.1 Has your company signed any type of cooperation agreement?

The general meaning of cooperation is working in common, implying relationships of mutual confidence and coordination at different levels between agents. Cooperation may occur through the integration of abilities between companies and with other institutions, by carrying out joint projects, through the systematic exchange of productive information, information on technology and about the marketplace; and through interaction thanks to common training programmes, offering different events, trade fairs, courses, seminars, etc.

- 1. Yes (proceed to D.2) _____
- 2. No (proceed to D.4) _____
- 88. NK (proceed to D.4) _____
- 99. NA (proceed to D.4) _____

D.2 If yes, indicate the interlocutor

- 1. Another company dedicated to Archaeological heritage management _
- 2. Another company dedicated to other activities _____
- 3. Suppliers (of equipment, materials, components or software) _____
- 4. Consultancy firms _____
- 5. Clients _____
- 6. Universities and other educational centres _____
- 7. Public research bodies _____
- 8. Technology centres _____
- 9. Commercial laboratories / R&D centres _____
- 10. Associations _____
- 11. Trade unions _____

12. Bodies offering economic promotion and support _____
13. Financial agents _____
14. Administrative departments working with Heritage management _
15. Others: describe _____

D.3 Indicate type of cooperation established

1. Purchasing of materials, equipment, etc. _____
2. Soliciting of external services _____
3. Joint actions _____
4. Actions on request _____
5. Technical assistance _____
6. Development of techniques or processes _____
7. Presentation, design and marketing of services _____
8. Human resource training _____
9. Obtaining funding _____
10. Claims/demands _____
11. Joint participation in trade fairs, congresses and symposia _____
12. Joint publications _____
13. Design of technical and methodological standards _____
14. Others (describe) _____

D.4 If agreements for collaboration have not been established, please indicate why

1. Unawareness of the knowledge or abilities of other agents _____
2. Unawareness of the channels used to materialise collaborations _____
3. Lack of confidence in the success of the collaboration due to difference of interests between agents _____
4. Others _____

D.5 Has your company subcontracted out any type of activity, equipment or personnel for undertaking any kind of intervention?

1. Yes (proceed to D.5) _____
2. No (proceed to D.6) _____
88. NK (proceed to D.6) _____
99. NA (proceed to D.6) _____

D.6 Type of sub-contracting

1. Activities _____
2. Equipment _____
3. Personnel _____
4. Others: _____

D.7 How would you evaluate the importance of the following relations on the management of archaeological heritage in the following activities?

Indicate the level of importance using the following key: 1 Very important, 2 quite important, 3 relatively unimportant, and 4, not relevant

1. Stimulus in the perception of future possibilities for strategic action ____
2. Availability of information (materials, equipment, technical assistance, consultancy) _____
3. Identification of sources and methods of financing _____
4. Promotion of cooperative activities _____
5. Defence of shared claims _____
6. Creation of forums for debate _____
7. Promotion of actions to improve the technological level of companies _____
8. Maintaining and increasing marketing abilities _____
9. Stimulating the development of an educational system and research adapted to the requirements of the sector _____
10. Organisation of technical and commercial events _____

D.8 How important are the following productive factors in hindering your activities or projects?

Indicate their level of importance, where 1 is for a high level of importance, 2 for an intermediate level of importance, 3 for a reduced level of importance and 4 where not applicable

1. Lack of company funds _____
2. Lack of qualified personnel _____
3. Lack of information about techniques _____
4. Lack of information about business management _____
5. Difficulties in finding partners for cooperation _____
6. Market dominated by established companies _____
7. Lack of certainty about demand for goods and services _____
8. Lack of institutional support _____

