Journal of Research Practice
Volume 13, Issue 1, Article M1, 2017

JRP
ISSN: 1712-851X

Main Article:

Reflecting on Collaborative Research Into the Sustainability of Mediterranean Agriculture: A Case Study Using a Systematization of Experiences Approach

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Abstract

This article describes how a research institute went about reviewing the relationship between its members and external research partners in engaging in collaborative research. A systematization of experiences (SE) process was implemented to enable such review and draw implications for the institute's strategy regarding research into the sustainability of Mediterranean agriculture. The SE exercise included four workshops attended by selected researchers, one questionnaire survey targeting the institute's research community, and three focus group discussions with external research partners. The rate of participation by researchers decreased during the process; however, those that followed through to the end of the SE exercise found it to be useful in clarifying both individual and institutional perspectives. Further, SE was seen as a vehicle for increasing the level of understanding between researchers and their willingness to engage in collaborative actions. However, the rapid pace of today's academic world and the dominant mode of evaluating scientific performance were identified as hindering the conditions needed to allow the necessary space and time for reflection and collaborative efforts. Therefore, the results highlight the

current tension between the production of scientific knowledge according to existing patterns and the development of socially meaningful research.

Index Terms: systematization of experiences; science and society; collaborative research; participative reflection; reflexive research; sustainable development; agricultural knowledge system; learning and innovation network

Suggested Citation: Guimarães, H., Fonseca, C., Gonzalez, C., & Pinto-Correia, T. (2017). Reflecting on collaborative research into the sustainability of Mediterranean agriculture: A case study using a systematization of experiences approach. *Journal of Research Practice*, *13*(1), Article M1. Retrieved from http://jrp.icaap.org/index.php/jrp/article/view/557/470

1. Paradigms of Science–Society Relationships

The relationship between society and science is one of the critical elements of the protracted epistemological debates that have challenged the core assumptions of the modern construction of science. From postmodern critics (Santos, 1988, 1989) to postnormal science (Funtowicz & Ravetz, 1993), second-order science, Mode 2, and transdisciplinarity constructs (Alrøe & Noe, 2014), different paradigms regarding the science–society relationship have emerged. “Society” and socially meaningful research have been understood in different ways and as responding to diverse goals, varying from social transformation and emancipation (Fals Borda, 1979; Santos, 1988) to the achievement of more useful results (Dax, 2014; Russell, Wickson, & Carew, 2008) and/or efficient science (Funtowicz & Ravetz, 1993). Such social meaningfulness relies on two premises. First, the involvement of enlarged peer communities and/or the co-construction of knowledge (Alrøe & Noe, 2014; Russell, Wickson, & Carew, 2008) will enrich scientific investigation (Funtowicz & Ravetz, 1993). Second, acknowledging the central role of forms of human knowledge other than the scientific form will empower other groups of society (Santos,

1989). In any case, both assumptions supposedly trigger an inner analytic endeavour of academic actors on their course of action, referred to as “reflexive” (Melucci, 1998).

In the policy realm, policy-makers and institutions are also paying increasing attention to enhancing the science–society relationship. In this case, policies (in the European Union context) are more likely to pursue normative and substantive goals (inclusivity, accountability, and new meanings for research). Such policies may be guided by instrumental goals aiming to increase research legitimacy and effectiveness in terms of innovation and economic growth (Rodríguez, Fisher & Schuurbiers, 2013).

1.1. Science–Society Relationships in the Agricultural Sector

In the agricultural sector, particularly after various well-publicized food scares and the questioning of biotechnologies, policy-makers have gradually emphasised the need to strengthen science–society relationships (Dax, 2014; Rodríguez, Fisher & Schuurbiers, 2013). However, the discussion about these relationships is not new in the agricultural sector, especially with regard to knowledge transfer, which has been historically framed as “extension” (Kristjanson et al., 2009). Extension in agriculture has evolved from the technology transfer and linear diffusion models, which came to prominence during the 1960s, to network and systems approaches (Cristóvão, Koutsouris, & Kügler, 2012; Klerkx, van Mierlo, & Leeuwis, 2012). During the 1990s, the concept of agricultural innovation systems emerged in parallel with that of agricultural knowledge systems to form agricultural knowledge and information systems. Both concepts share a system and collective approach, that is, they recognize that different actors are involved (Cristóvão, Koutsouris & Kügler, 2012) and come from different subsystems: agricultural research, extension, and education (Baptista, Cristóvão, Koehnen, Madureira & Pires, 2014). According to Brunori et al. (2008), the state-funded research and extension model has been criticized for being inefficient and it has been gradually privatized. The privatization led to numerous different organizations being involved, to farmers paying for services, and to competitive bids being made for research and extension activities (Kidd,

Lamers, Ficarelli & Hoffmann, 2000). In recent years, the concept of learning and innovation networks for sustainable agriculture (Augustyn & Nemes, 2014) has emerged, acknowledging that research and extension services have been experimenting with new methods and practices related to facilitation and brokerage within networks.

In Portugal, where our case study is located, public extension services were set up by the State in the late 1970s, covering technical assistance in particular. However, such services quickly declined (Baptista et al., 2014). Public agricultural services became progressively specialized in supporting farmers to comply with European Union (EU) rules and to apply for agricultural subventions. Today, extension is secured in some farming sectors by private organizations, although in other sectors it is non-existent. The current agricultural knowledge system comprises a large number of actors: (a) the regional offices of the Ministry of Agriculture, (b) universities, (c) governmental research centres, (d) farmers' organizations, (e) consulting firms, (f) industries, and (g) local development associations. This fragmented nature of the knowledge system results from the lack of coordination and the prominence of farmers' organizations. In this context, universities are identified both as knowledge sources and as partners. However, universities play a weak role in the overall agricultural knowledge system (Knierim et al., 2015), and cooperation usually occurs through sporadic projects with a few organizations involved (Baptista et al., 2014).

1.2. Changing Role of Universities

The advantages of the changing role of universities, as knowledge sources and partners, are becoming increasingly recognized. Addressing this new demand is expected to shape the universities of the future and their contributions to both knowledge production and society (Cristóvão, Koutsouris, & Kügler, 2012; Räsänen, 2008; Russell, Wickson & Carew, 2008). Several authors have discussed the implications of this shift at the institutional level, including the configurations of networks and the operationalization approaches required by such

knowledge production (Alrøe & Noe, 2014; Cristóvão, Koutsouris & Kügler, 2012; Knierim et al., 2015; Räsänen, 2008; Russell, Wickson & Carew, 2008).

Considering that institutions are composed of people, changes can be triggered only by those people. The standpoint of the present study is that researchers help shape knowledge institutions such as universities and research centres, while their decisions and actions are influenced by the structure and functions of the organizations of which they are a part, by the academic system, and by society as a whole.

2. Case Study: Reviewing the Impact of Research on the Sustainability of Mediterranean Agriculture

This case study describes a process of reflection on the collaboration between researchers at an academic research institute and their external research partners (i.e., people and entities outside the academic realm) in an exercise of *systematization of experiences* (SE). To the best of our knowledge, such an application within the scientific context has not yet been reported in Portugal or elsewhere in Europe. Therefore, the goals of the present work are to describe this SE exercise and to present the main lessons learned as well as the challenges of the process.

2.1. Systematization of Experiences

SE is a participatory and collective process that aims to promote action-oriented learning based on the ambiguities, subjectivities, and lessons that lie in lived experiences. More than solving a specific problem, the SE process brings to light the causes of that problem through collective reflection. The SE process is about understanding how different components and factors act together in a way that the experience can be faced with a vision of transformation (Jara Holliday, 2004). SE involves formulating categories, classifying and ordering empirical elements through analysis and synthesis, and induction and deduction, yet it does not draw from positivist epistemologies. It implies instead relating processes to their respective contexts and

framing the praxis in the specific theoretical and social-historical frameworks. That is, expressing inner and outer relationships and dealing with their contradictions—a dialectic approach (Jara Holliday, 2012). By structuring a rigorous and clear process, the systematization allows the lived experience to be made objective without devaluing its subjective dimension and thereby enables practices to be critically transformed and improved in future (ActionAid, 2009; Jara Holliday, 2004). Therefore, SE extracts learning and generates new knowledge. SE is predominantly a reflexive exercise (Vidal, 2004). The people involved in the experience are those who take the lead and engage in the entire process (Jara Holliday, 2012). The group of people participating (i.e., the SE group) organizes the SE process, identifies the questions that it wants to ask itself, and drafts the working plan. However, moderators can facilitate and guide the SE process.

2.1.1. SE Process: Steps and Guiding Questions

Jara Holliday (2006) suggests five steps with guiding questions:

Step 1: Departure Point. Who participated in a given experience and who wants to systematize the experience? And, what information about each experience is available?

Step 2: Central Initial Questions. Why do we want to systematize (i.e., identifying the objectives)? Which experience do we want to systematize (i.e., delimiting the discussion within space and time)? Which aspects of the experience do we want to systematize (i.e., specifying the focus of the systematization)?

Step 3: Rebuilding the Lived Process. What is the story behind the experience? How do we structure and classify the information?

Step 4: Reflection. What happened and why did it happen? This is a key element of the SE to critically analyse, synthesize, and interpret the process, going beyond a mere description of the process (Vidal, 2004).

Step 5: Arrival Point. What are the conclusions and the findings? How do we communicate what we have learned from this process? At this stage, participants are able to express their insights relating to the initial objectives of the systematization.

2.2. Context of Application

The participants in the SE exercise were part of the Institute of Mediterranean Agricultural and Environmental Sciences (ICAAM), a public research institute created in 1991, integrated into the University of Évora in the Alentejo region of Portugal (Figure 1).

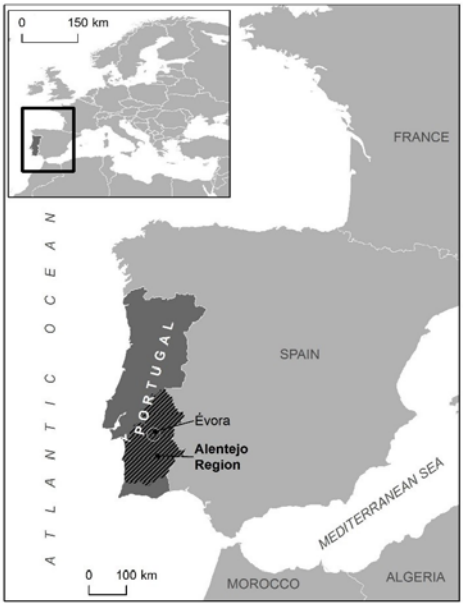

Figure 1. Location of the Institute of Mediterranean Agricultural and Environmental Sciences (ICAAM) of the University of Évora, Portugal.

The mission of the institute is to develop research that contributes to the sustainability of agriculture and related ecosystems and landscapes in the Mediterranean region. In 2013–2014, ICAAM set up a strategy grounded on its dual role: to produce excellent and cutting-edge scientific research outcomes on the functioning and management of Mediterranean agriculture

and rural ecosystems and to engage in problem-solving research applied to regional needs that supports and interacts with both private and public sectors. This strategic positioning recognizes: (a) the need to progress into interdisciplinarity and transdisciplinarity when addressing increasingly complex real-world problems and (b) the role of reputation and trust, as well as the importance of sharing resources throughout networks of different actors, in the co-production of relevant knowledge (Brunori et al., 2008; Nowotny, Scott & Gibbon, 2004). To create conditions for improving the processes of co-construction between research and external partners, the ICAAM governing board implemented an internal assessment of how these interactions occur by using an SE process.

2.3. Systematization of Experiences at ICAAM

The SE process at ICAAM took place between January and June 2014 and was structured in five phases (Figure 2). It included four workshops attended by selected researchers, one questionnaire survey targeting the institute's research community, and three focus group discussions with external research partners.

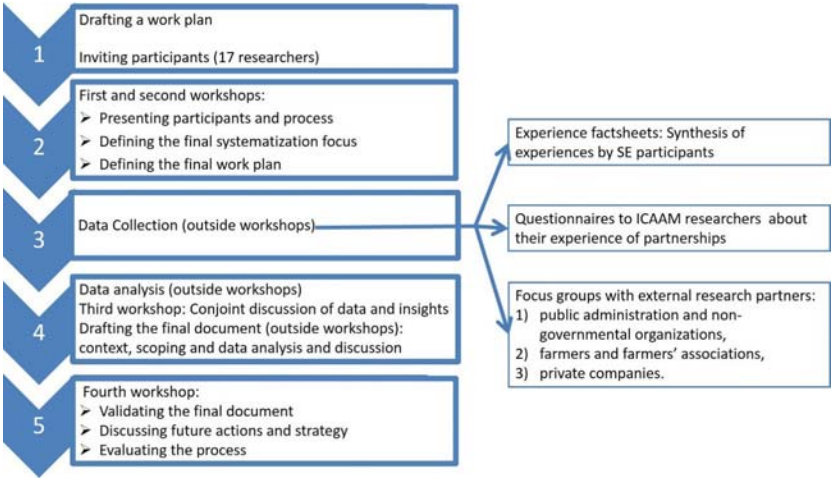

Figure 2. Five phases of the systematization of experiences process undertaken at ICAAM.

The ICAAM governing board set the objectives and constructed the list of participants in the SE exercise. Seventeen researchers were invited to participate, and, together with the Director of ICAAM, they composed the SE group. The selection of participants took into account the need to cover the different research domains of ICAAM and the researchers' experiences in collaborating with external research partners. Only one participant, the then Director of ICAAM, was engaged in drafting the initial working plan, collecting additional data, and drafting reports on the SE process. That participant worked together with four other persons, who facilitated the SE process but were not participants. For the purpose of this article, we designate these five people "the promoters" of the SE process. The promoters drafted the

reports for each phase, shared those with the SE group, and used the information contained in each report to set up the structure of the subsequent phases.

In the first workshop, an open discussion format was used and, in the second, the participants were divided into smaller groups. The dialogue in the second workshop was guided by questions proposed by the SE promoters based on the outcomes of the first workshop. By the end of the second workshop, the SE group agreed that it was important to formulate a comprehensive characterization of the regional context, the university's scientific and teaching praxis, and, specifically, the history of rural extension in ICAAM. Further, participants decided that more information was needed about the experience of collaboration with external research partners. Therefore, the work plan guiding the subsequent steps of the SE exercise included the following tasks:

(a) Perform context description and scoping

(b) Construct factsheets for systematizing the participants' experiences of collaborating with external research partners

(c) Conduct a questionnaire survey among all ICAAM researchers to collect their perspectives on the theme of the systematization

(d) Run focus groups with external research partners to collect their perspectives on past collaborations with ICAAM

(e) Analyse the data collected and produce a final report document

In the third workshop (Phase 4 in Figure 2), the SE participants analysed the information collected through the factsheets. Before the fourth workshop, the remaining tasks were undertaken so that the report could be analysed and discussed by the participants in that workshop. The fourth workshop represented the final phase of the SE. Through a collective

reading of all data and of the main points that had arisen in the previous workshops, the group identified the advances made as well as the perspectives and dilemmas regarding ICAAM's relationship with external research partners. All suggestions were included in a final version of the SE report, which also included participants' identification of future actions and their evaluation of the entire systematization process.

The authors of the present article were involved in the SE exercise in the following ways. The first author (Guimarães) designed and conducted the focus groups with the external research partners. The second author (Fonseca) was not part of the SE process but was involved in data analysis and writing. The third author (Gonzalez) was one of the promoters of the SE process. The fourth and final author (Pinto-Correia) was one of the participants of the SE process.

2.3.1. Factsheets for Systematizing Experiences

Fifteen of the seventeen participants completed the factsheets. The factsheets included: (a) identification of the external research partners, (b) roles of ICAAM and the external research partners, (c) objectives of the collaboration, (d) approaches used in the collaborative research, (e) results for society as a whole and for ICAAM, and (f) positive aspects of, obstacles to, and impacts of collaboration. A factsheet could refer to one or more experiences of a particular participant within ICAAM.

2.3.2. Questionnaire for Collecting a Broader View

A questionnaire targeting all ICAAM researchers (160 in 2013) was administered both online and by e-mail. Respondents were asked about the importance of collaboration with external research partners and the existence of interactions with such actors in the last 5 years. Respondents were also requested to identify and locate these actors and to characterize them according to the following categories: (a) private companies, (b) associations, (c) producers, and (d) public administration bodies. Finally, respondents identified the most important partnerships, the reasons behind each of these partnerships, and their durations.

2.3.3. Focus Group Discussions for Capturing an External View

The focus group discussions were designed as a consultation process with external research partners identified and invited by the SE participants. Three separate focus group discussions were conducted with: (a) public administration and non-governmental organizations, (b) farmers and farmers' associations, and (c) private companies. Discussions lasted 2.5 hours, were audio-recorded, and included six participants per focus group. Meetings were guided by the following questions:

(a) How did the collaboration with ICAAM occur?

(b) What were the impacts of such collaboration?

(c) Has this collaboration been beneficial to you?

(d) In future, how would you like this collaboration to take place?

(e) Given that ICAAM would like to improve its current collaboration with external research partners, what would be your recommendation(s) to achieve that goal?

2.4. Results and Interpretation

2.4.1. Guiding Questions

Table 1 provides details about the application of SE at ICAAM in response to the guiding questions proposed by Jara Holliday (2006, pp. 71-73). By the end of the first two workshops, the focus of systematization was defined as: "How have we been building our relationship with external research partners, and what impacts do we believe to have had?"

Table 1. *Guiding Questions Pertaining to the Initial Phases of the Systematization of Experiences Process at ICAAM*

Phase	Guiding Questions	Answers
1	Who participated?	Seventeen researchers working with ICAAM in diverse scientific areas: • Farming economy • Food science and technology • Forestry • Landscape research • Oenology • Ornithology • Plant genetic resources • Plant protection • Rural development • Rural engineering • Science communication • Viticulture
	Who wanted to systematize a given experience?	Participating researchers were invited by the then Director of ICAAM.
	What information was available?	There was a near-absence of any record of experiences. Therefore, one of the tasks was to synthesize and communicate selected experiences for collective analysis.
2	Why did we systematize (identifying the objective)?	The goal was to reflect upon ICAAM's experience in extension services and its collaboration with external research partners. And, in this way, to (a) map the institute's experience in this regard and (b) discuss the potential relevance of this experience to the institute itself and to the region in future.
	Which experience did we want to systematize (delimiting the object of analysis within space and time)?	Participants were invited to share their experience of collaboration with external research partners in the regional context and identify the advantages and shortcomings associated with these experiences.
	Which aspects of the experience did we want to systematize (specifying the focus of the systematization)?	The focus of the systematization was defined by the following questions: • How have we been building our relationship with external research partners and what impacts do we believe to have had? Other relevant questions were also raised: • What is scientific work? • Why should we work with external research partners? • What are the advantages and disadvantages of working with external research partners? • What is the perspective of external research partners with respect to past collaborations? • Are there different types of collaboration and, if so, how can these be prioritized?

Note. For the remaining phases, the guiding questions were: What happened and why did it happen? What were the conclusions and the findings? How did we communicate what we

learned from this process? These questions have been answered below (Subsections 2.4.2 to 2.4.6).

2.4.2. Results of the Factsheets

The SE participants reported 19 experiences at the local or regional level. The reasons behind the search for collaboration included: (a) need to fulfil the requirements for grant applications in which partnerships were paramount, (b) realization of mutual needs, and (c) desire to seek funding for joint initiatives. Most reported experiences (Table 2) refer to collaboration with the private sector, where it was ICAAM researchers who often made the initial contact.

Table 2. *A Synthesis of Data Collected in the Factsheets*

Type of External Research Partners	Number of Experiences	Role of External Research Partners	Role of ICAAM
Private companies	11	• Equipment and/or staff transfer • Funding • Testing technology • Product dissemination • Knowledge sharing and discussion of issues • Project management	• Guidance of experimental activities • Project proposal design, implementation, monitoring, and evaluation • Provision of research internships • Testing and laboratory analysis • Knowledge sharing and discussion of issues
Educational institutions	4		
Public authorities	4		

When considering the results of research collaboration for society, researchers mentioned advances in technology, increased integration, ecosystem recovery, and mutual learning, among others. In academic terms, partnerships resulted in materials for scientific publications, closer relationships with other universities, and funding. Even when SE participants reported that funding opportunity was the driver for collaboration they clarified that applying and validating scientific knowledge, experimenting, and sharing knowledge were the expected outcomes. The most cited drawback of collaboration with external research partners was the amount of time needed to make it happen.

2.4.3 Results From Surveying ICAAM Researchers

Data collected through the questionnaire sent to all ICAAM researchers provided a broader overview of the collaborative experiences. The questionnaire was sent to 160 researchers, and 45 replies (28%) were received. All respondents considered the collaboration with external research partners to be important and reported their own experiences. Figure 3 provides an overview of the types of external research partners identified in the questionnaire. Most reported collaborations took place with private companies, followed by producers (e.g., farmers, olive producers, and wine producers) and public authorities and associations (e.g., forestry unions and wine producers' associations). The collaboration with private companies was considered the most important (private companies may also refer to single producers/farmers legally constituted as an enterprise).

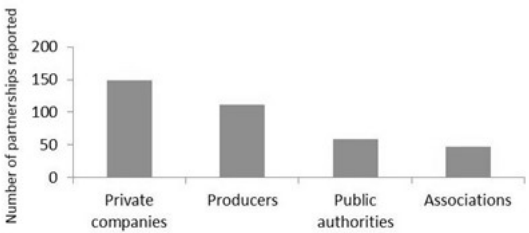

Figure 3. Number of external research partners (by organizational type) reported in the survey of ICAAM researchers.

Note. The values were obtained by summing the numbers provided by each respondent. Hence, double counting occurred, as multiple respondents could report the same institution.

Most respondents considered collaboration with external research partners to be important because it increased the applicability of the research developed at ICAAM and brought researchers closer to society. Funding sources were less frequently cited as a reason for collaboration (Figure 4).

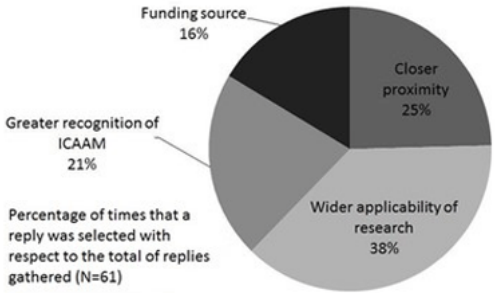

Figure 4. Reasons why collaboration with external research partners is considered important.

With regard to the drawbacks when seeking collaboration, the most commonly cited problem was the lack of funding. This was followed by: lack of time to develop this kind of work, partners not searching for ICAAM collaboration, and academic priorities not matching this type of initiative (Figure 5).

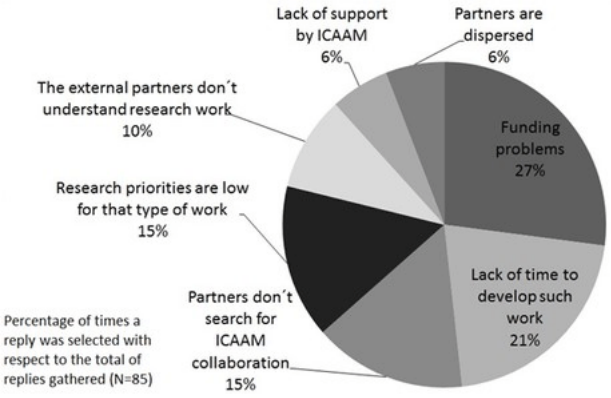

Figure 5. Barriers to collaborating with external research partners.

2.4.4. Results of the Focus Group Discussions

Table 3 provides an overview of the key concluding remarks of the consultation process with external research partners. Three focus group discussions were conducted, but most of the points raised were common to the groups. The main point raised by external research partners was their inability to visualize ICAAM as an institution: although all participants had collaborated with ICAAM, they were unaware of the specific profile of ICAAM within the University of Évora. Some participants described their collaboration with a specific researcher but were not able to define ICAAM as a whole.

In general, the provision of direct support to the primary sector was considered necessary, and the University of Évora and/or ICAAM were identified as key providers of such support in the

region. One point raised specifically in the focus group with the private sector was the need to build trust so that direct funding for research could be obtained.

Reported barriers to collaboration were the following: (a) fragmented replies given by researchers to the complex questions posed by external research partners, (b) burden of administrative red tape for small projects funded by private entities, and (c) mismatch between the timings of scientific responses (i.e., the production of information/knowledge) and external partners' needs for decision-making.

One of the key issues raised was the need for a coordinated support structure that is able to respond to external partners' demands. It should not be constrained by the availability of a specific ICAAM researcher, as is currently the case. Further recommendations included the need to develop a marketing strategy based on the needs of the different potential partners in a more proactive way, coupled with a tailored communication strategy (i.e., defining a strategy based on the needs of each specific external partner). Although the goal of the focus group discussions was explained beforehand, some participants arrived at these meetings with a list of projects, indicating their interest in continuing to collaborate with the academic research community in future.

Table 3. *Key Points Discussed in the Focus Groups*

Topics for Discussion	**Key Points Mentioned by the Participants**
How did the collaboration happen?	• Former students collaborated with their teachers • Common projects financed by funding agencies • After the public presentation of the results of a research project • Through internships of students during graduate studies • As a result of the need for specific services (e.g., soil analysis)
Barriers to collaboration	• The need for results that might not be achieved during a research project • The difficulty of knowing what is being developed in research (i.e., not having access to scientific results • Scattered knowledge and researchers (without a clear integration among specialist domains) • Difficulty in matching the timing between the production of scientific knowledge and decision-making in the private sector

	• Limited funding to support research partnerships • At times, partnerships were built to fulfil requirements of funding schemes without genuine collaborative intention • Hesitation of the private sector to invest in research, due to low confidence in research capacity • The red tape (administrative) burden hinders small projects (i.e., those financed by the private sector) • Researchers being unable to respond to all needs of potential partners • Difficult personalities in the academic community • Lack of involvement of external research partners in the everyday life of research and teaching
Recommendations for ICAAM for improving future collaboration with external research partners	• ICAAM should be more proactive in establishing collaboration • A tailored collaboration strategy should be created for each partnership • The needs of each potential external research partner should be identified • There is a need to establish a system dedicated to collaboration with external research partners so that follow-ups and answers to requests do not depend on only one researcher • Provide integrated answers, as most of the needs are complex and scientific knowledge is fragmented (external research partners should not have to do the integration themselves) • Governmental extension services no longer exist; research institutions should use this opportunity and fill the gap • There is a need to view the production of scientific outcomes as business opportunities • There needs to be a promotion of events for informal knowledge sharing that could promote trust and understanding between the two sides

2.4.5. Concluding Remarks of the SE Participants

Figure 6 illustrates issues and concluding remarks further to those already described above. One of the main issues raised by the SE participants was the difference between fundamental and applied research, both of which are undertaken at ICAAM. Most participants agreed that both are desirable as they are the key function and vocation of the institute. Further, the group considered that different researchers understand the institute differently. Thus, a common understanding should be achieved prior to looking for further collaboration with external research partners. Finally, funding was highlighted as an important issue and an important driver of research. Still, it was stressed that funding could privilege more applied or more fundamental research at different times, ultimately hindering the development of both. The SE group did not identify possible answers to all questions; however, it was agreed that researchers'

strategies should correspond to a balanced adaptation between available funding and ICAAM's objectives.

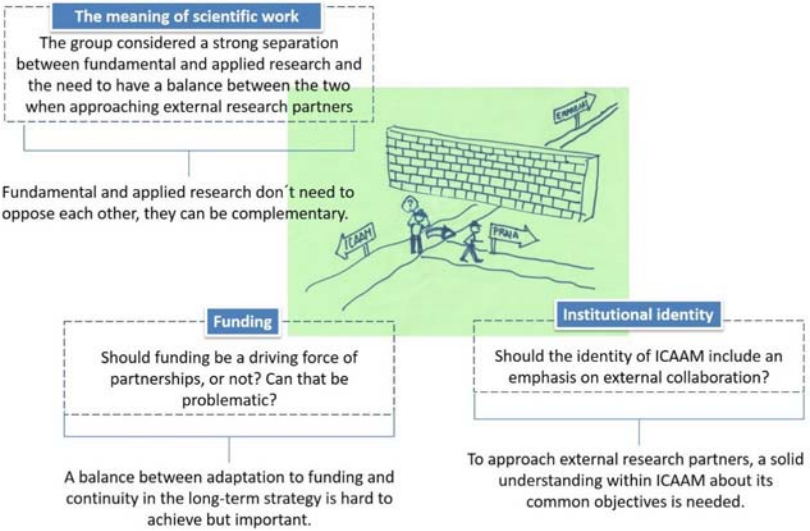

Figure 6. Critical issues with regard to the goal of enhancing collaborative research.

Note. One of the participants produced the drawing during the systematization of experiences process. The drawing represents the difficulty in collaborating with external research partners (represented by the wall blocking the path) and the lack of incentives for researchers to invest in collaborative efforts towards supporting ICAAM's long-term strategy.

2.4.6. Reflecting on the Systematization of Experiences Process

The SE enabled participants to acknowledge their relationship with external research partners. It also represented an opportunity to think about the limits and potential of a reflexive approach such as the SE. Participants were not familiar with SE, and that might be the reason why some reported not having any expectations about the process. Their expectations related instead to the contents of the discussion and to the issue at stake (i.e., future collaboration with external research partners). The almost total lack of experience of participants in participatory processes —across teams and disciplinary boundaries—might also have influenced the outcomes. For various reasons, some participants did not fully engage in the process from the beginning and took some time to understand and actively participate in it. However, when evaluating the SE process in the final workshop, some relevant insights came up both at the individual and group levels. Participants mentioned that SE boosted the "awareness" as well as "a new consciousness" of a group of researchers interested in debating collaborative research. As such, the SE allowed a collective reflection, a new practice for the participants. Through this experience, participants understood that this type of approach is beneficial but requires time and the capacity to listen.

Participants also discussed the reducing level of engagement through the SE process. In their opinion, this was because: (a) there was a top-down selection of participants (i.e., selected by ICAAM governing board), (b) those who gave up did not understand what the process was about, (c) some participants did not consider this to be a priority, and (d) some participants did not think that they truly belonged to the institute. Those researchers who stayed until the end of the SE process considered that it was important to share the results of the process and to mobilize others to engage in this discussion. Subsequently, SE results were presented to all ICAAM researchers.

From the point of view of the SE promoters, the exercise did not reach its full potential, namely a deeper conceptualization, theorization, and communication of the results, and, above all,

ownership of the whole process by the participants themselves. This may have been due to: (a) the long intervals between workshops, caused by the resistance to participation; (b) the initial setup of the SE process; and (c) the lack of participants' engagement in data collection, in instrument design, and in collectively developing the reports. It was realized that during the SE process, the more experienced and well-established researchers dominated the discussions, establishing hierarchical relationships within the group. Despite efforts to open up more horizontal discussions, such a balance was hard to achieve, probably because of the different roles that the participating personnel play in their everyday academic interactions.

3. Discussion

Although the goal of the systematization of experiences (SE) exercise was to reflect on the collaborative relationship between ICAAM researchers and external research partners, the overall process was successful in promoting an internal discussion that shed light on the internal and external academic conditions that hinder such collaboration. We argue that this discussion is not particular to the present context but is part of the overall research panorama certainly in Europe and possibly elsewhere. European and national research policies advise scientists to forge closer links with society, but the conditions to operate in this mode are not present (for instance, inconsistent public funding and staffing, rigid administrative norms and procedures, and research evaluations based mainly on academic publications).

3.1. Need for a Collective Definition of the Long-Term Research Strategy of ICAAM

The SE triggered different layers of discussion, from the meaning of scientific work—conceptualised mainly in terms of "fundamental science" and "applied science"—to the relationships experienced with external research partners. When prompted to reflect on their past and present experiences of working with external partners, researchers dived into complex and structural questions regarding the sense of scientific work and, consequently, regarding

ICAAM's own identity and strategy as an institution of knowledge production. Figure 6 shows that the SE participants agreed that a balance is needed between fundamental and applied research and that a strategy for this balance needs to be formulated and followed. Such a strategy should set work priorities and enable the plurality of understandings, goals, and skills of ICAAM's researchers to flow in a common direction in the long run. More time and greater resources need to be allocated to achieve a cohesive institutional identity.

In addition, ICAAM is not recognized as an institution per se by external actors. This fact is related not only to the poor communication about the institution but also to the lack of internal consciousness and fusion among researchers, which has not allowed a coherent strategy to arise. The recognition that working as a team requires time, the lack of engagement of researchers in the SE process, and the barriers summarized in Figure 5 suggest that researchers' routines are not easily reconciled with the achievement of better collaboration with external research partners (Table 3 and Figure 6).

3.2. Research Individualism vs. Collaboration

Figure 6 highlights the tension that exists between the time- and resource-consuming interaction with external research partners and the lack of recognition of such work. This lack of acknowledgement by the traditional academic system is leading an increasing number of researchers to envision their career goals primarily in terms of producing excellent research and generating high-impact publications (Räsänen, 2008). The SE group argued that working in collaboration with external research partners is not commonly recognized as a valuable academic practice contributing to scholarly merit. Several authors have argued that the tradition of specialization, authorship, and individualization in the production of knowledge remains dominant (Alrøe & Noe, 2014; Augustyn & Nemes, 2014; Caruso et al., 2016; Räsänen, 2008) and that such a tradition is not easily replaced by another.

The existence and impact of hierarchical structures in the traditional academic system was also made clear. Augustyn and Nemes (2014) have called for researchers to transcend the "walls" of universities and to shift from their "ivory towers" to delivering benefits to communities. In the SE workshops, it was frequently observed that the most senior researchers often dominated the discussions. Further, there was an implicit distinction between academic research and research performed in collaboration with external research partners, with the former being perceived as more valuable. External research partners, in turn, mentioned the existence of difficult personalities within academia and regretted not being able to be more involved in higher education, which is currently developed solely by academics (Table 3). Hence, the hierarchical structure imprinted in academia might influence the way in which partnerships between academics and external research partners are established and conducted. At present, several funding schemes call for such partnerships, which can be seen as an opportunity to increase collaboration with external partners. However, as our results suggest, there are signs of funding-driven partnerships and the question remains whether this will foster long-term and genuine collaboration.

3.3. Challenges of a Paradigm Shift

Participants' final evaluation of the SE exercise indicates that they acquired an increased sense of purpose regarding researchers' roles within ICAAM and regarding ICAAM's role in the region. The process brought about an awareness that the University of Évora and ICAAM are key academic institutions in research and scholarship concerning agricultural and environmental topics in the Alentejo region. However, some of the barriers identified by external partners (Table 3) are in line with the literature, which describes public research as often being inefficient, bureaucratized, and not responding to societal needs (Brunori et al., 2008). With respect to the Portuguese agricultural knowledge system, the SE results seem to support the findings of Baptista et al. (2014) on the erratic nature of collaboration between national universities and other actors in that knowledge system.

The present case study also reveals the inertia involved in changing individual and institutional perspectives, which might slow down the process of change. The new challenges of agricultural and rural development demand a transition of extension paradigms, shifting from the reductionist diffusionist paradigm (teaching, knowledge transfer) to one of co-construction of solutions, recognizing the value of all actors' cognitive autonomy and praxis (Cristóvão, Koutsouris, & Kügler, 2012). Academia can play an important role in this shift. However, this would imply organizational changes, including in the inner academic structures. Despite the inertia identified in this first endeavour towards effecting change within ICAAM, the outcomes of the SE exercise signal a possible pathway for enhancing collaboration. Reconstructed experiences seem to point out that much has been achieved in past collaborations and that these achievements could be reinforced in future.

The SE exercise provided a clearer picture of the diversity of interlocutors and common projects, the reasons for interactions between researchers and external research partners, and the perceptions of both sides. The approach helped to identify and express dispersed or implicit knowledge (Jara Holliday, 2004), while simultaneously starting to develop a sense of group and, as participants phrased it, "a collective consciousness and group objectives." The new sense of belonging to a group, the awareness of needing better communication among different actors, and the fine-tuning of the expectations of researchers and external partners were perhaps the most relevant outcomes of the process. It is acknowledged in the literature that a reflexive research paradigm, together with truly interdisciplinary collaboration and co-construction with external research partners is unusual and one that is difficult to develop (Alrøe & Noe, 2014; Augsburg, 2014; Brunori et al., 2008; Nowotny, Scott, & Gibbon, 2004). However, these authors also state that only with a deep, ongoing investment and a common construction of positioning through time can this different scientific paradigm be built.

4. Conclusion

Science–society collaboration is being increasingly proclaimed as a way to advance sustainable development. Therefore, ICAAM conducted an internal reflection on its collaboration with external research partners through a systematization of experiences (SE) exercise. This process was able to provide relevant insights into ICAAM's future strategic goals and into the need to construct a collective identity.

The decreasing level of researchers' participation throughout the SE process, as well as the reserved attitude of some of those who stayed, might suggest a lack of interest in internal reflection processes. Nevertheless, it might also indicate uncertainty with regard to a new process. Therefore, the allocation of resources to pursue SE or similar reflexive processes is important in order to continue developing ways forward for both academics and external research partners.

The fact that 45 of the institute's 160 researchers replied to the questionnaire and considered collaboration with external research partners to be important shows that future SE efforts could be more inclusive. All researchers should be more actively involved rather than merely consulted. The involvement of external partners from the beginning of the SE process would also be useful.

The SE process highlighted the importance of individual action within academic institutions and the need for positive reinforcement when collaboration with external research partners is developed. This implies the need for creating support systems and recognizing collaborative work (e.g., when evaluating researchers' performance).

The potential of the SE approach for promoting wider social transformation was limited in the present case, and the methodology had to be adapted to the specific scientific context and to the objectives of ICAAM. Therefore, although the strategy under development might neither signify nor propose an extreme change, it represents the SE group's own particular way of moving towards improved collaboration with external research partners.

Acknowledgements

We thank the researchers who agreed to participate in the systematization of experiences (SE) and who reported so many interesting aspects. We express gratitude to Ana Cristina Agulheiro Santos, António F. Bento Dias, Augusto Peixe, Carlos Godinho, Cristina Maria dos Santos Conceição Pinheiro, Joana Perdigão, João Manuel Mota Barroso, José Godinho Calado, José Oliveira Peça, Maria João Cabrita, Maria Leonor da Silva Carvalho, Mário de Carvalho, Miguel Elias, and Nuno de Almeida Ribeiro e Rui Fragoso. We also acknowledge the work developed by Ana Dubeux during the SE process.

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Received 13 December 2016 | Accepted 13 February 2017 | Published 7 April 2017

ISSUE NAVIGATION

Vol. 1, 2005 (1.1, 1.2) Vol. 2, 2006 (2.1, 2.2) Vol. 3, 2007 (3.1, 3.2) Vol. 4, 2008 (4.1, 4.2)
Vol. 5, 2009 (5.1, 5.2) Vol. 6, 2010 (6.1, 6.2) Vol. 7, 2011 (7.1, 7.2) Vol. 8, 2012 (8.1, 8.2)
Vol. 9, 2013 (9.1, 9.2) Vol. 10, 2014 (10.1, 10.2) Vol. 11, 2015 (11.1, 11.2) Vol. 12, 2016 (12.1, 12.2)
Vol. 13, 2017 (13.1, 13.2) ALL ISSUES SPECIAL ISSUES

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