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COMMENTARY

From scientific authority to the court jester: Shedding light on epistemic pluralism within transdisciplinary research projects

Lucile Garçon^{1,2,*}  and Nathalie Couix^{1,3}

This paper aims to share and analyze the difficulties and discomfort that social scientists may face when conducting transdisciplinary research. Focusing on the case study of a research project that brought together farmers, farm advisors, social and biotechnical science teachers, and researchers interested in seed management and participatory plant breeding, it questions the use of science and the position of social scientists in processes of agroecological transformation. The paper provides an analytical insight into the knowledge ecology of stakeholders who want to move away from the hybrid maize varieties bought and grown by farmers in order to work with open-pollinated populations. The results shed light on discrepancies between different levels of interaction within the project, through an original method using video to intervene at the interface of farms, local groups, and meetings of the research project steering committee. The authors first explain how they used video recording and filmmaking to give voice to ways of doing that are often shifting and indeterminate in the face of evidence-based criteria. They then show how this methodological framework opened up an arena in which to scrutinize different ways of knowing and being, though only momentarily. They share their frustrations and the methodological questions they faced, drawing on the figure of the court jester to discuss the role that researchers might play within such configurations. The paper concludes with a critical perspective on the development of transdisciplinary research projects that truly reflect the principles of agroecology, pointing to the need to emphasize scientific pluralism by engaging participants in a collective exercise of epistemic clarification and dialogue.

Keywords: Agroecology, Knowledge coproduction, Research practices, Epistemic justice, Audiovisual research methods

Introduction

Agricultural and food systems are currently undergoing profound transformations, as reflected in the substantial growth in scientific literature on such transitional contexts over the last 20 years (Magrini et al., 2019). Despite a range of different approaches, all agree that identifying the roots of these transitions is a “wicked” problem that can be difficult to address when our knowledge is so incomplete. It is clear, however, that things cannot continue as they are: “the ensuing calls for ‘transformation’ and ‘transition’ resonate the growing consensus that business-as-usual is insufficient for keeping humanity within a ‘safe operating space’” (Hölscher et al., 2018). However, transitions are seen as open-ended processes (Lamine et al., 2021; Hazard

et al., 2022), and we know neither our destination nor how to get there.

Transition contexts are conducive to changes in knowledge production. Studies have repeatedly highlighted the role of local, tacit, traditional, or indigenous knowledge in implementing adaptive socio-ecosystem management and mitigating major changes in the face of uncertainty. As such, a growing body of literature also points to the need to develop postnormal science and engage a wider spectrum of actors than just academics, within “extended peer communities” (Meisch et al., 2022). In the case of agriculture and food systems, the transformative demands of agroecology call for transdisciplinary and participatory research (Gliessman, 2018) to foster dialogue between academics and farmers (Lopez-Garcia et al., 2021) and implement processes of co-inquiry (Frank et al., 2022) and knowledge co-creation (Utter et al., 2021).

The terms transdisciplinary and participatory research encompass a very wide range of approaches, which do not all give equal room to non-academic actors and their methods of evidence production and validation (Lacombe

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et al., 2018; Strasser et al., 2019; van de Gevel et al., 2020; Sachet et al., 2021; Roque et al., 2022; Ohly et al., 2023). Methods of knowledge production can be appropriated to varying degrees: in some cases, local collaborators are treated simply as sources of materials (data, sites, samples, etc.), but in others they colead research-action approaches. Yet even in the latter case are the epistemological foundations of the work really developed collaboratively, or for that matter even discussed? As Fages (2021) notes, “collaborations can be rich and varied, but the very notion of ‘participation’ presupposes a separation of expertise, with everyone ultimately remaining firmly in their place.” Such research ultimately invites us to challenge, to a greater or lesser extent, the scientist as an authority figure and question the role of other actors in knowledge production.

While the literature on knowledge production in agroecology recognizes that “co-creation of knowledge offers a range of benefits compared to top-down knowledge transfer” (Utter et al., 2021), questions remain about the conditions of this co-creation. Some approaches adopt critical epistemology grounded in scientific pluralism to deconstruct all forms of knowledge hierarchization and cognitive legitimacy. Others, however, do not question the de facto control that academic researchers exercise over methodological choices or their ownership of results. In fact, very few studies address the epistemological awareness of participants in these projects, that is, whether participants are conscious of how the knowledge they use is produced and how what they take for granted has been constructed. Indeed, despite growing discussion about how science is produced, few question the knowledge acquired in education and training programs, in various individual and/or collective experiences, or in the interactions between practitioners and advisors or researchers. We suggest here that epistemological work is needed on the part of all these stakeholders in order to make agroecology a tangible “alternative to the simplistic, positivist paradigm of classical sciences” (Fernandez Gonzalez et al., 2021, p. 541) and to help realize its “emancipatory potential” (Giraldo and Rosset, 2023).

Drawing on work carried out over the course of a transdisciplinary research project that we helped to design and then run from 2018 to 2021, we explore the conditions necessary to implement this epistemological work and encourage participants to recognize a diversity of forms of knowledge and knowledge production. We show that even being a politically and socially conscious scientist committed to co-creating knowledge is not enough to counter the prevailing technoscientific view of what can or cannot count as knowledge. We then show that deconstructing scientific authority is not just a matter for researchers. It is also essential that all other participants, who are often unaccustomed to such thinking, are encouraged to identify the different kinds of knowledge that they use in their activities and consider how they are produced.

After presenting our methodology, we will show how the participants’ epistemological positions, including our own, evolved over the course of the Covalience research project during interactions between farmers, farm advisors, ourselves, and other researchers. Finally, we will discuss the

ways in which conventional representations of science can hinder transdisciplinary research, and the need for researchers and other participants who are steeped in these notions to develop specific skills to overcome them.

An audiovisual approach to look critically at maize breeding practices

The Covalience research project was one of a series of multiyear European collaborations on seed management and plant breeding practices that we have undertaken in recent years with groups of farmers who produce their own seeds, farm advisors and other support workers, and researchers in agronomy and genetics. Studying participatory plant breeding encourages reflection on ways of knowing and being in agroecology (Dawson et al., 2008; Colley et al., 2021; Sperling et al., 2001), as it underlines the importance of taking into account local needs and resources and developing new ways of producing knowledge, especially situated knowledge adapted to specific situations. Participatory plant breeding also reflects a desire to move away from the dominant models of agriculture and their scientific and technical frameworks, and ultimately to regain sovereignty over food and food production. The groups involved in defending and organizing local seed systems are therefore highly critical of approaches that prioritize biotechnologies over other kinds of practices and knowledge. Like most of the stakeholders with whom we worked in previous similar projects, the participants in Covalience all identified as peasants or shared the struggles that the word implies (Van der Ploeg, 2008; Demeulenaere, 2014), especially in the context of “seed activism” (Peschard and Randeria, 2020). They shared alternative and critical positions toward agricultural modernization and wished to reduce dependence on corporate agribusiness by reclaiming materials that have been taken away from farmers through scientific methods of agrobiodiversity manipulation and seed privatization (Kloppenburger, 2010; Montenegro de Wit, 2019).

The transdisciplinary research project on which this commentary is based was called Covalience, for “Co-design of evaluation tools to assess and conduct plant breeding.” It aimed to question the effectiveness of breeding practices implemented on some farms, often on the advice of those offering guidance and supervision. Two main lines of work were conceived as complementary: on the one hand, setting up a series of experiments to compare the results of different breeding methods on various populations, and on the other hand, clarifying the values at work in peasant breeding practices in order to identify the basis on which such a comparison could be made. We were in charge of this second part of the research, but also in constant interaction with all of the participants, as the project was also focused on implementing a range of codesign practices, from co-inquiry and mutual learning in research processes, to co-leadership of work packages and tasks (see **Figure 1**).

Covalience was the result of a cowriting process initiated in 2016 by French researchers (including one of us) from the National Research Institute for Agriculture, Food and the Environment (INRAE), an applied research

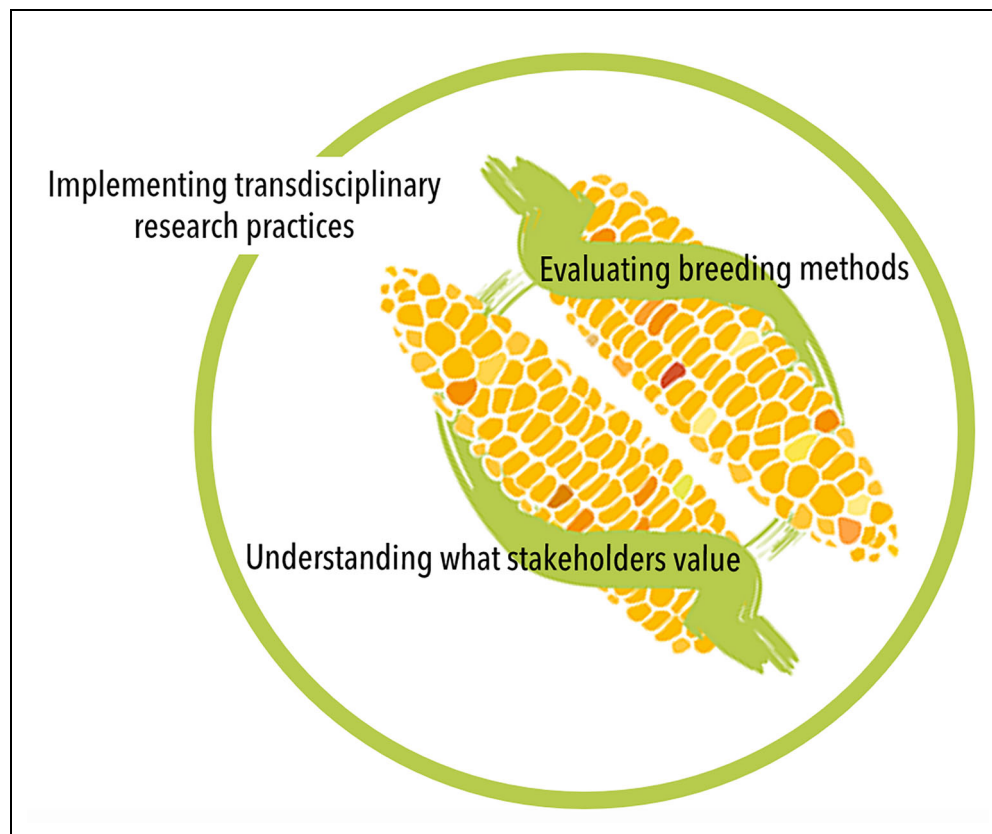


Figure 1. The 3 main axes of the Covalience project.

organization specializing in knowledge production for the development of organic agriculture and food (ITAB), the national organization for the defense and promotion of peasants' seed rights and expertise (Réseau Semences Paysannes, or RSP), and peasants and farm advisors from an association in South West France (AgroBioPerigord). The group had previously worked together on another project. As it was coming to an end, the call for projects from the national Agricultural and Rural Development Trust (CASDAR) presented an opportunity to build on existing research by engaging in more collaborative relationships, moving from the coproduction of problems to a more effective and meaningful coproduction of knowledge. After 2 years of studying local agrobiodiversity management and the self-sufficiency of livestock farms, it was decided to look more closely at one of the fodder crops under consideration, namely maize.

In France as in many other countries, seeds and maize varieties in particular have been a major driver of agricultural modernization (Bonneuil and Thomas, 2009; Fenzi et al., 2023). Agrobiodiversity, which is recognized as an important lever in the agroecological transition, has therefore declined sharply. The peasants involved in the project included dairy and meat farmers, rearing cows, goats, and calves. All collected maize landraces and wanted to develop open-pollinated varieties in order to move away from hybrid maize. Covalience brought together a wide range of stakeholders ready to help them achieve their goal by implementing specific plant breeding practices (see **Table 1**).

We present a retrospective analysis of our interventions within the Covalience project, drawing on various materials: meeting minutes, recordings of discussions, drafts of scientific papers and slideshows presented to the participants, and personal notes. The latter include our own very personal reflections over the course of the project, as well as questions, ideas, and feelings shared during our one-on-one discussions in an attempt to “illuminate the affective aspects of knowledge politics” (Puig de la Bellacasa, 2012, p. 212). We also choose to pay particular attention to the contexts of utterance, that is, to the situations in which we spoke (location, number and type of participants, agenda, team leader, format of the interventions, etc.). These were sometimes organized by others, such as when we were invited to present the progress of our work in a classic meeting format. On other occasions we were able to structure other kinds of talking spaces and test new forms of exchange. In particular, we focus on the original “material-semiotic technologies” (Haraway, 1988) that we used, namely an audiovisual approach that we conceived and implemented to conduct our part of the research (see **Figure 2**).

To be or not to be a scientist: In search of our position within a transdisciplinary research project

We present a few key moments in rough chronological order in order to illustrate the processual character of the project and the evolution in our own ways of knowing and being.

Table 1. Details of the team involved in the Covalience project

Position in Team	Organization	Job	Main Activity in the Research Project
Coordinators	ITAB	Project engineer	Project management
	INRAE	Researcher in genetics	Designing and implementing foresight workshops
Researchers	INRAE	Researcher in genetics	Designing and implementing foresight workshops
		Researcher in organization studies	Investigating the values expressed through breeding practices; implementing the audiovisual approach (screening and discussion sessions)
		Postdoctoral researcher in social sciences	Designing and implementing the audiovisual approach (shadowing peasants' practices, conducting video-based interviews, analyzing, and editing videos)
	Agricultural engineering school	Teacher and researcher in agronomy	Designing and monitoring breeding trials
	RSP	Researcher in genetics	Designing and disseminating experimental protocols
Farm advisors	Five local associations for the protection of agrobiodiversity and repeasantization of food systems	Technicians, Facilitators	Protocol dissemination; monitoring trials; organizing and facilitating local meetings
Peasants' representatives		Farmers	Discussing protocol and trial results; relaying the needs and expectations of their colleagues
Peasants			Conducting on-farm trials, taking part in video-based interviews and/or screening and discussion sessions
Agricultural extension agents	Agricultural high school	Teachers in agronomy	Designing training courses on open-pollinated maize; cultivating different populations for a demonstration plot

All stakeholders were invited to attend the steering committee meetings and to express their views on the project's strategy. However, although the peasants were the largest group in the project team, few other than their main representatives were able to attend the meetings. In the table, we have listed the participants' other important roles that are relevant to this article.

Refusing to embody scientific authority

The first phase of research used shadowing techniques to study the breeding process as closely as possible. For 6 months, Lucile literally shadowed (see **Figure 3**) 5 peasants at work sowing seeds, removing seedlings or cutting flowers, harvesting and selecting or rejecting cobs. This method allowed the observer to mimic the peasant's gestures without speaking or asking any questions, and so acquire experiential knowledge and access ways of knowing that we felt could not be communicated through words.

This method was developed at the very beginning of the project in the hope of revealing practical knowledge that was local, marginal, and thus far unknown. However, from our first contacts with the farmers, we realized that peasant practices were already heavily regulated by protocols established by geneticists and relayed by farm advisors. Before agreeing to meet us, scientists from the French INRAE, some peasants wanted to stress that they were not doing things exactly "right," that they were not the most experienced member of their group, that they were not

following the rules to the letter, and so on. When invited to speak, participants first thought very carefully about what they would say, and then made repeated references to the protocols, qualifying their remarks if they could not be validated by us or the other partners in the project. Far from the ethnographic records that we had originally envisioned, we were collecting evidence of respect for and submission to scientific knowledge.

Nevertheless, we did not abandon our method. We saw that the shadowing technique gave voice to participants' experience, and thus allowed us to examine why scientists enjoy a position of authority and why scientific knowledge is held to be superior by those who contribute, knowingly or otherwise, to its dissemination. This required us to make our position clear, literally and figuratively, to the peasants with whom we wanted to work. Epistemological work was needed to overcome their self-criticism and their reluctance to be followed by a silent observer with a hand-held camera. In most cases, this meant distancing ourselves (sometimes during long preliminary telephone

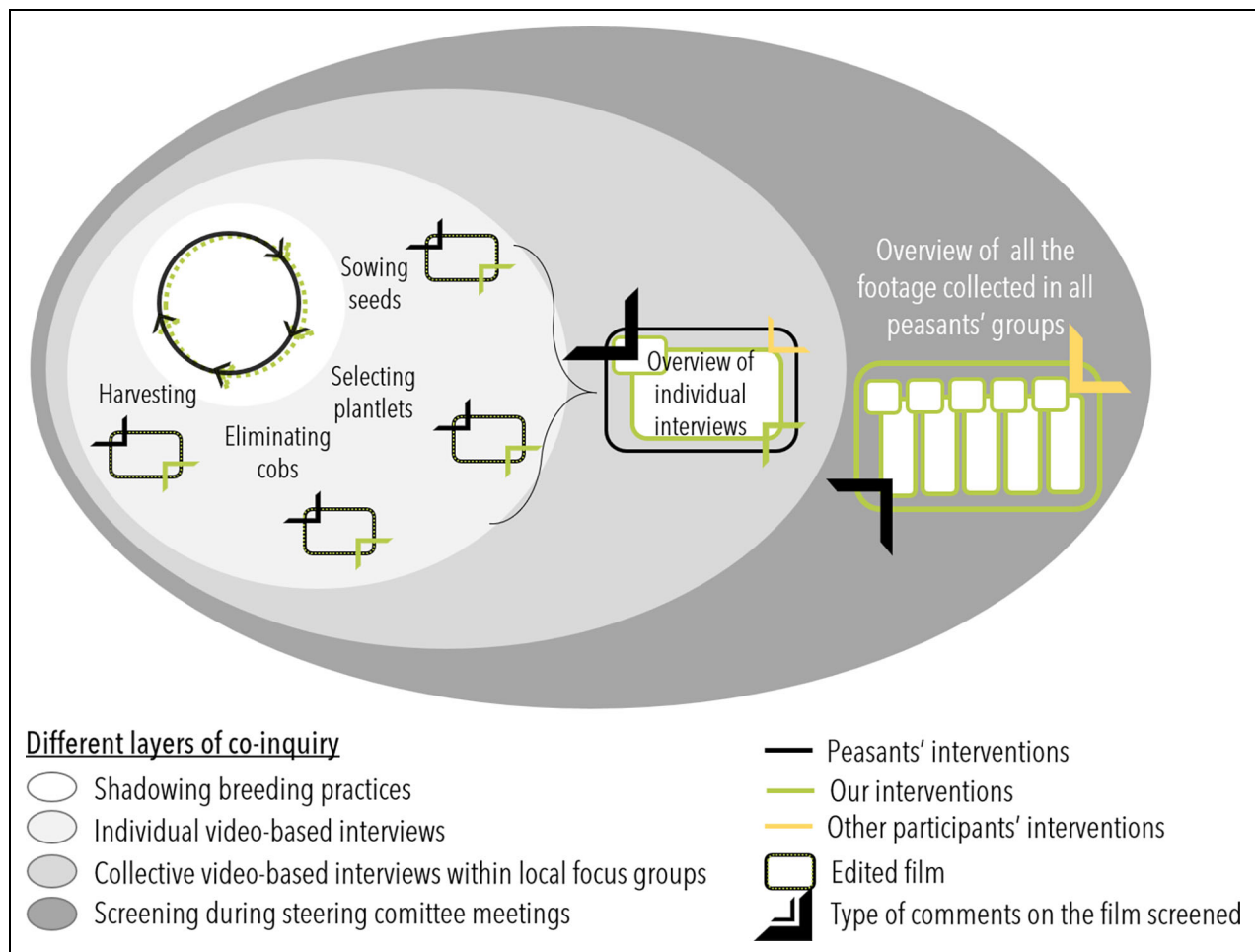


Figure 2. Outline of our audiovisual approach. Borrowing from both visual anthropology and ergonomics, we developed a methodological framework based on the production and use of video tools, while sharing our reflections throughout with the other participants in the project. Footage of breeding practices was collected and lightly edited, then used to conduct and record video-based interviews with the peasants concerned. We then organized collective screenings in local groups before further discussing this material with all project participants in steering committee meetings. The aim was to bring together different ways of seeing and thus different ways of knowing.

conversations) from our institution and its history, often by underlining the independence and dissident tradition of the INRAE department to which we belong (Cornu, 2021), or by distinguishing our disciplines from the biotechnical sciences. Then, each time that she arrived on a farm, Lucile had to make it clear that shadowing was not about monitoring or controlling, but rather an approach that allowed her to develop her understanding of maize cultivation and breeding. These introductions often took the form of ethical and epistemological statements, which were rarely sufficient to establish meaningful cooperation. While all the farmers agreed to be filmed, some took steps before Lucile arrived on the farm to ensure that she would only film the best plots and plants, and not places where they felt that the rules were not being properly followed.

Putting ourselves on an equal footing with peasants for the production of knowledge

We were able to make our position clearer in the dialogue that took place while watching the footage together. This

time no one was following or watching as during the shadowing, and there was no face-to-face interview. Rather, we were sitting next to each other, looking at the same screen and working together on the same medium. Although the working sessions were filmed to record the discussion (see **Figure 4**), researchers and peasants were watching from the same position, which allowed us to better discuss our different standpoints.

For instance, by showcasing skilled practices and skilled vision, this approach made clear what could count as knowledge (Grasseni, 2004; Krzywoszynska, 2016). It invited peasants to rectify the camera's errors and to shape the gaze of the researcher, whose early footage sometimes betrayed an aesthetic rather than technical point of view. For example, the camera would zoom in on an ultimately unimportant element, or leave important elements out of focus. The first video-based interviews clearly illustrated these different ways of seeing and helped to establish a balance between asymmetrical ways of knowing. This type of exchange helped to deconstruct the figure of scientific authority that we embodied in spite of ourselves,



Figure 3. Shadowing the selection of maize cobs, September 2018.

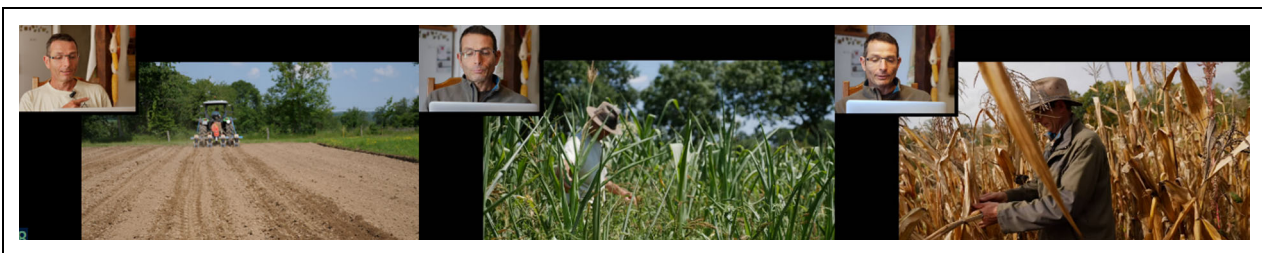


Figure 4. Three examples of films resulting from a cycle of individual video-based interviews, May to December 2018.

and thus initiated a learning process based on mutual inquiry (Lorino, 2018).

This configuration was repeated several times throughout the season and the terms of the exchange evolved as the season progressed (see **Figure 2**). In many cases, farmers working on the footage became conscious of actions of which they had previously been unaware, and which they could not explain in retrospect. They were sometimes so shocked that they had to rewind the footage to believe their eyes! These moments of confusion were crucial to our process because they revealed how complex the breeding process is and how far removed it can be from the norms that the farmers consider as models. For example, when a farmer keeps a plant that should be removed according to the protocol, it is clear that there are values at play in the breeding process other than the most clearly stated objectives.

At the end of the season and the cycle of interviews, many farmers expressed their satisfaction with the process, despite the time taken. Most recognized that they now viewed their practices differently and had also reconsidered how those practices were evaluated by others (neighbors, farm advisors or extension agents). At this point, we felt a sense of satisfaction at having succeeded

in banishing the scientific authority figure and reaching a level of mutual learning and co-inquiry. However, we soon realized that the epistemological work we had set out to do was not complete, and that the figure of scientific authority had not been completely deconstructed.

Preventing ourselves and others from knowing better

Our method entailed watching all video-based interviews conducted on a farm in order to select illustrative excerpts. We first scheduled working sessions with a geneticist involved in the project to observe what the peasants were doing when breeding and hear their thoughts. Nevertheless, we soon felt uncomfortable with this arrangement. We tended to pick up on inconsistencies in what the peasants were saying, while our geneticist colleague was critical when their practices departed from what he knew about plant breeding. We sometimes found ourselves laughing or saying, "But they don't know what they're doing!" or "They're messing up!", which led to some serious questions. Were we able to use the videos without catching farmers out for doing something wrong? Why did we give more credit to our geneticist colleague than to the more experienced farmers? Why

did we need to refer to a truth? And on what basis did we hope to establish this truth? Back in the office, and once again in control of the footage, we quickly found ourselves back in the position of outside observers who knew more or knew better than the subject under observation, undoing our hard work establishing a position that allowed for a fruitful interaction with the farmers.

To avoid a repeat of this situation, the geneticist colleague stopped participating in the working sessions, leaving the two of us, social scientists, in no position to judge the rights or wrongs of plant breeding. We began “epistemological notebooks” to monitor and try to overcome our embarrassing reactions, setting them down on paper where we could observe them with hindsight. This helped us to develop a different approach to video analysis. Instead of excluding sequences that seemed incoherent, we used them to illuminate the gap between effective practices and the protocols. By suspending our judgment, we were once again the observers we had envisioned at the start of the process, following practices rather than conducting interviews, and thus opening the research up to further collaboration.

Following these principles, we made a short film from the raw footage of each participant that we filmed, which we then showed to members of that person’s group. We followed the same procedure each time, reiterating the conditions in which the film was made and restating our objectives as researchers. We had prepared a series of points for open debate, but also invited those present to interrupt us if we had missed anything important, which was quite possible. On every occasion, peasants interrupted us at moments that we had not anticipated, and farm advisors intervened in ways that we had not expected. For example, we caught both peasants and farm advisors in the same critical posture which we had earlier tried to escape. They used the planned breaks to deliver lectures rather than initiate discussion. Some asked for the film to be rewound in order to comment on an excerpt showing a farmer doing something wrong, and another called on a more experienced peasant to restate the standard protocols for the benefit of his less experienced colleagues. We had to intervene to remind those present that what interested us was precisely the fact that the footage revealed both a gap between the practices on show and the stated rules, and, moreover, other ways of valuing plants and labor than the usual tools for measuring production. Restricting such spontaneous comments sometimes led to tensions with the farm advisors, but also allowed some peasants to acknowledge that they used practices shown on film, which were far removed from what they had been taught. After some initial tension, the screenings ultimately proved to be a very stimulating framework for sharing experiences, such as the conflicts that the farmers faced when taking action. This did not last long, however, and we soon found discussions running in the opposite direction of what we had initiated. The screenings, carried out at the end of the season, often coincided with collective evaluations. In one case, our intervention was immediately followed by a report from an extension agent, who displayed tables of figures

indicating the performance of each farmer against the evaluation criteria of hybrid varieties. We felt that this created a disconnect with the previous exchanges during the working session on the film. However, nobody reacted, so we left these meetings satisfied with the discussions that the film had generated, but bewildered that they were so quickly forgotten.

Acting as go-betweens

Faced with such a dichotomy, we decided to act as go-betweens within the project’s steering committee, and especially during the meeting that followed the cycle of video-based individual and collective interviews (see **Figure 2**). With a view to organizing a screening debate, we once again prepared an original film by compiling the most meaningful excerpts from the individual and collective interviews. This time we drew on all of the footage produced across all the groups and regions to find sequences that particularly highlighted the discrepancies between different ways of knowing and being. We showed peasants commenting on their own practices and interspersed the footage with sequences in which farm advisors also appeared on screen. Thus, we not only focused on the differences between what people said and did, but also highlighted the different positions that coexisted within the research project (see **Figure 5**).

We also wanted to encourage fruitful debate and spent some weeks thinking about how to balance what we saw as power relations between project participants. Rather than preventing stakeholders from commenting on the practices of others, we tried to find techniques to facilitate debate. As we had done previously, we scheduled breaks in the film to encourage discussion and thought about rules for giving and taking the floor. Some peasants began to speak out when the audience laughed at a peasant on film giving unusual and contradictory explanations. They laughed too, but wished to show solidarity with the object of the mockery. Many recognized their own practices in the footage of their peers, admitting that they sometimes acted in ways that diverged significantly from the protocols and more generally followed “non-logical logics” when breeding plants. Nevertheless, this happened repeatedly during the viewing and was a source of jokes for the whole afternoon. In the end, we were roundly congratulated on our work and everybody was happy to have had such a good time together. However, we were disappointed by the lack of reaction from our research colleagues, and worried about the laughter that we had provoked. Had we taken too many precautions in restricting the floor? Who was laughing at what, or at whom?

When we came to talk about project deliverables the next day, we still struggled to move beyond the hierarchical and diffusionist model of knowledge production and circulation. While brainstorming some educational videos to be published at the end of the project, we reiterated that knowledge about open-pollinated maize breeding was largely unstable and situated. We suggested that the videos should give a voice to those who are doing and questioning what they are doing, inviting the inexperienced to have their own doubts rather than look for a set



Figure 5. Highlighting the roles played by the various participants in implementing breeding protocols, September 2018.

rule or universal prescription. Despite the positive atmosphere of the previous day and the obvious interest that all the participants had shown in our findings, our standpoint remained marginal.

Discussions about the project deliverables went on for months, resulting in tensions that lasted for more than a year. In monthly conference calls and subsequent steering committee meetings, we often found ourselves at odds with the farm advisors. We realized that by acting as go-betweens, we were confusing role assignment. Many participants seemed troubled that we were not doing what was expected of researchers, and called us to order by reminding us of our role as scientists. When we tried to point out inconsistencies in the project and invited participants to reflect on the use, production and transmission of knowledge, some farm advisors asked us what results we, as researchers, were trying to produce. When we discussed our planned publications, we were challenged that they were of little concrete interest to the peasants already involved in open-pollinated maize breeding and would do little to help convince newcomers. We felt that both our work and our commitment to the project were being questioned, and we were stung to the core.

Accepting the role of troublemaker

At the penultimate meeting of the steering committee, we were quite angry about how the project was going and decided to make known our discomfort and embrace the position of troublemaker. We pointed out that while our work had afforded everybody a good laugh, it had done little to change or even challenge the project team. In a slideshow, we listed all the times that we had felt uncomfortable and the methodological and explicitly

epistemological questions that we had been discussing for months. Over and above the discrepancies between discourse and practice, we emphasized the difficult coexistence of different evidence-based regimes. We showed that, while all project participants recognized that farmers produce and validate their own knowledge in their day-to-day experience of continuous adjustment and adaptation to ever-changing situations, everybody nevertheless continued to use experimental protocols and generic knowledge production approaches that would meet academic criteria for scientific demonstration. This time, our presentation provoked a serious debate among the participants. In particular, there was a tense discussion over the role of experimentation and the type of knowledge that it produced between one of the technicians conducting the experiments and the geneticist who had first watched the videos with us. A farmer then intervened to explain that he really had no need for all this knowledge, these indexers, and so on, on his farm, as he preferred highly empirical indicators drawn from his own experience, which worked very well. The visit to his farm the previous day had made that clear. He had no need to refer to hybrid maize to show that his practices and farm management were effective. The farmer thus inadvertently reinforced our discourse by demonstrating particular ways of knowing that grow out of surprises and challenging incidents that raise doubts and questions, and invite experimentation.

All the steering committee meetings were organized as enjoyable occasions with farm visits and social events in the evening between working days, with the aim of fostering acquaintances and friendly relations among the participants. However, our new approach to the project

meant many saw us as naysayers. This was evident at the final meeting, where a wide range of results were shared in a very friendly atmosphere. Findings from the various experiments were presented, along with the results of participatory workshops on the role of open-pollinated maize in production systems. Various deliverables were also distributed, including some on how farm advisors and researchers in particular can work together. We had the opportunity to present the draft of an article. Using slides with many verbatim accounts, we were able to highlight the extent to which farmers are still strongly constrained by constant comparisons with hybrid maize and by evaluation tools inherited from modernization. We also returned to the difficulties we had faced throughout the research project. Our rather sober presentation, which used no pictures, clashed with the other more enthusiastic and appealing contributions. It was followed by a short silence. We had evidently planted seeds of doubt about not only the usual tools and criteria used in science and advisory services, but also the objectives of peasants embarking on open-pollinated maize breeding. Some peasants then commented, echoing our proposals. The peasant who had participated in the debates at the previous committee meeting recognized the value of our work and supported our proposals. He stressed the importance of developing new tools (criteria, measurements, etc.) for farm management. A lively discussion ensued. For the first time, it was clear that the project had challenged certainties and shaken up hierarchies of knowledge, opening the door to epistemic pluralism for at least some participants.

Discussion

In many respects, Covalience was an exemplary participatory research project. It was run on sociocratic principles to be as horizontal and mixed as possible, with visual methods to encourage participation. From the outset the project was designed to co-construct knowledge and promote peasants' experiential knowledge. This was in fact a *sine qua non* for some participants with a very strong political commitment, over and above their interest in the technical issue of open-pollinated maize breeding. Yet even with these precautions in place, we found that we struggled to bring together different ways of knowing.

These difficulties, and our ongoing search for a satisfactory position within the project team, have led us to 3 main points for discussion. Bringing such a diverse group of stakeholders together for this kind of deliberative process is no easy task. As social science researchers, we tried adopting various postures, even donning the garb of "court jesters" to shake up the participants and encourage them to change the way they looked at things. It is this posture that we propose to discuss now.

A pervasive vision of science

Although all project participants valued on-the-ground experience and situation-specific knowledge, most found it difficult to consider peasants' testimonies as scientific demonstrations. To our great surprise, we found ourselves in this position against our will. Although we began our research into peasant breeding practices with a kind of

"methodological populism" (Olivier de Sardan, 2015), we proved incapable of properly incorporating knowledge that was not in the academic form to which we were accustomed. How then can we move away from the usual conception of science? How can we take into account other ways of doing in the field with such a conception of knowledge in mind? How can we accept that there is no right or wrong, and that knowledge is so often situated?

Most farm advisors and researchers, and also some peasants, also struggled to refrain from criticizing peasants' practices. Our experience shows that most peasants tend to suppress their own ways of doing and knowing, sometimes deliberately concealing practices that go against the rules. They remain unaware, however, of the ways in which their behavior represents scientific inquiry and generates new knowledge. The audiovisual approach allowed us to overcome this tendency of the peasants to undermine themselves, but failed to engage all participants in a reflection on what should or should not be recognized as knowledge. Although individual video-based interviews allowed us to requalify as knowledge what was previously considered merely "tricks" or dismissed as "feelings" or "ideas," most of the collective screenings provoked laughter from the participants, and any increased awareness was only short-lived.

Inviting farmers to participate in managing a research project, whether by defining its research priorities or even leading it, does not guarantee that their specific ways of knowing will be taken into account. Covalience provides an example of how they can be neglected, including by farmers themselves, in order to meet the policy challenge of scaling up the use of open-pollinated maize. In order to provide evidence that open-pollinated maize was as efficient as hybrid varieties, peasants allowed for the implementation of experimental protocols far removed from their effective practices, rather than addressing knowledge and resource gaps. They implicitly see science as a more relevant tool than their own experience to evaluate agricultural efficiency, and thus often unconsciously reinforce the authority of science.

While some researchers recognize a diversity of forms of knowledge and knowledge production (protocols, surveys, experiments, etc.), not all participants are equally aware of them. Similarly, while a growing body of research emphasizes the notion of scientific pluralism, it remains absent from common representations of science. As a result, many of those involved in the use and production of scientific knowledge are unaware that they are imposing one way of knowing at the expense of others (Steyaert and Jiggins, 2007). Alongside the "implicit valuing of farmer knowledge and participation" inherent to agroecology (Utter et al., 2021), it is important to clearly identify the ways of knowing that underpin everyone's positioning in order to foster dialogue. Many nonacademic actors consider these epistemological issues to be a matter for researchers and nothing to do with them. That is what most participants told us when criticizing our approach as being of no use to them. By offering tools to collaborate and share our research rather than presenting results and transmitting ready-made knowledge, we departed from

the classic figure of the scientist and thus found it harder to be taken seriously. This is how we came to describe ourselves as “court jesters,” firstly out of frustration at the difficulties we faced in making ourselves heard, then as a strategic choice: if we were not being taken seriously we could make people laugh and thus catch our colleagues off guard.

The court jester: A way to catch the research group off guard

Several times in the course of the project, we found ourselves laughing or making others laugh at the discrepancy between what people on film were saying and doing. On each occasion, these incidents were conducive to epistemological work, and represented methodological resources that we felt that we could use to elaborate on the figure of court jester. We therefore propose a re-reading of our work as a series of “shows” which differ significantly from conventional presentations by researchers.

The originality of our audiovisual approach has helped inspire this rereading. Like a jester’s bauble, the videos are eye-catching and they appeal to a wide audience with a range of different worldviews, ontologies, and epistemologies. As such, they represent tangible artifacts that might facilitate “knowledge flows” (Mitchell et al., 2015), a term that describes “how knowledge moves: between disciplines; between theory and practice; between academic and professional practice; from within and outside the project” (Mitchell et al., 2015). Recognizing this helped us to break out of the tendency of researchers to stay in the shadows, and reinforced our idea to use this analogy. The court jester is a highly recognizable character who seeks to be seen for what he is, even inviting ridicule with his distinctive costume.

The jester can safely mock and ridicule power, denouncing the domination of the powerful without risking conflict so long as does not overstep the boundaries of what authority is willing to hear. The scientific authority that we aim to denounce is not a king or queen as such but authority in the academic sense. It is enjoyed by all those who exercise it: researchers, including ourselves, technicians who use scientific methods and tools, and farmers who compare their results with those obtained by conventional methods. Is it more important that they perform as well as conventional farmers or that they are able to feed their herds? This scientific authority is not simply embodied by researchers or other participants in a transdisciplinary project. Rather, it is diffuse and omnipresent because everyone is bound by it at one time or another. By positioning ourselves as court jester, rather than king’s jester, we were able to point the finger at the power and performativity of science in shaping our behavior collectively, and so open the discussion up to new questions and proposals.

Playing the jester was a way to safely debate scientific authority and its effects. There were sometimes tense discussions between technicians who were very confident in their knowledge and expertise in conducting experiments, researchers who tried to deconstruct this image of “classical” research, and a number of experienced farmers

who relied solely on their own experience and observations. In order to bring the research to a successful conclusion, it was essential that our critiques did not compromise the project itself. By denouncing the working hypotheses which we ourselves had helped develop, we were not making fun of anyone but rather seeing the funny side of what we had been led to do by the authority of science.

The king’s jesters were paid and supported by the king. Our situation was a little more complex because of the funding arrangements for transdisciplinary research projects. Operational coordination of the Covalience project was carried out by one of the partner professional bodies and scientific coordination by INRAE. Financing came from funds earmarked for agricultural development and from INRAE (the salaries of permanent researchers). The participants, including the peasants, were acutely aware of the source of the funding and how it was to be used, which explains certain demands about the work undertaken, the results obtained, and so on. Our role as critical observers did not fit with what the professional bodies and peasants expected from the project. It was therefore all the more important to highlight the contribution we could make, by playing the role of the jester. Paradoxically, it is scientists who must confront the domination of science over other forms of knowledge and encourage others to do the same. If other participants, whoever they may be, are unaware of this domination or ill equipped to denounce it, we as researchers, especially in the social and human sciences, have a responsibility to do this work and to engage our partners in a deliberative process. This is not without its risks. In this project, our respective positions were quite different: while one of us was a tenured researcher with only operating costs covered by the project, the other’s income was directly funded by the project. As such, she sometimes had to watch her words and defend the value of her work in order to ensure continued funding. After all, the jester is only allowed to say what the court is willing to hear!

Persistent difficulties and discomfort: Being a social scientist in inter- and transdisciplinary research projects

A large body of literature has shown that the social sciences often occupy positions that are “uncomfortable at best and marginal at worst” (Morris et al., 2019, p. 24), especially in research fields dominated by the natural sciences. This is particularly well documented in interdisciplinary research settings. However, we were surprised to experience this within Covalience, which was a transdisciplinary research project explicitly designed to articulate different ways of knowing and promote local and peasant knowledge.

While the figure of the court jester helps to navigate the difficulties and discomfort social scientists can face in transdisciplinary research projects, it nevertheless directly echoes the various roles that Balmer et al. (2015) describe social scientists playing in technoscience. By raising peasants’ awareness of their own knowledge, we found ourselves acting as maieutic “educators,” helping others to develop a new vision of knowledge but not really coproducing it. We then tried to adopt the position of

“reflexivity inducer” at the collective level by highlighting the discrepancies between the normative assumptions within the research team and what was actually being done. However, we ended up having the roles of “the wife” and “the critic” alternately imposed upon us by other participants. On the one hand, we were seen as “gossipmongers,” accused of sowing discord within peasants’ associations by promoting practices that contradicted the training sessions run by farm advisors. On the other hand, we were seen as a skeptical presence within the project that threatened to undermine the relevance of the experiments. Constructing the figure of “court jester” was a way for us to break out of these roles and not be seen as “joyless and humourless naysayer[s]” (Balmer et al., 2015, p. 12).

Our role as court jester gave participants a better understanding of what we were doing. Creating situations in which we could laugh not at but with participants allowed us to “dissent within,” to use Maria Puig de la Bellacasa’s (2012, p. 205) term for a pragmatic form of thinking embedded and invested in a community. It could also encourage reflexivity from an “insider perspective” (Holmes et al., 2018). But as important as the role is, is it up to social scientists to play it?

Social scientists are accustomed to regularly defending the importance of their research, and thus seem particularly predisposed to epistemological work. Some of our colleagues from the natural sciences also have extensive experience of transdisciplinary research and its specific challenges, and have already engaged in similar reflection. However, there are scientists from all backgrounds who are not capable of this kind of collective epistemological work. Could somebody else take it on? Paradoxically, in the Covalience project we found that the researchers were more willing to relinquish their scientific authority than the farm advisors or even the farmers, who were somehow more Catholic than the Pope, and often more inclined to adopt a professorial stance than academics themselves. That said, we have also taken part in transdisciplinary research projects where an external person was specifically recruited to give participants an insight into how they were collaborating and how transdisciplinary their research was. In France, a call for projects described this role as “tiers-veilleur.” It was sometimes held by researchers, but sometimes by PhDs who were no longer attached to a university, often because an epistemological reflection had led them to other independent activities at the interface between civil society and academia. This type of positioning seems particularly interesting to us, as it leads to a perspective rooted in the day-to-day practice of transdisciplinarity. However, it is essential to promote conditions under which such an emerging profession can operate, in order to preserve it from the precarity of a project-based approach and thus enable the capitalization of knowledge in the field.

Concluding remarks

Emphasizing the diversity of ways of knowing and of producing knowledge is a prerequisite for farmers’ participation in research. Failing to do so can leave them

intimidated by a project or, on the contrary, highly critical of it for not reflecting their way of doing and thinking, even though “it works,” that is, is valid as understood in American pragmatist philosophy (Peirce, 1877; Dewey, 1938). The video-based interviews allowed us to go further in describing a kind of knowledge specific to peasants. This helped us to provide evidence of particular ways of knowing that grow out of surprises and unsettling events that raise doubts and questions, and invite experimentation. Although such learning processes have been described in the literature and recognized as important, particularly for agroecology (Brédart and Stassart, 2017), they remain largely unknown to most stakeholders.

Our experience shows that it is not always easy to encourage participants in a research project to acknowledge the epistemic pluralism of the knowledge they use and produce. Many participatory and transdisciplinary research projects have made it possible to experiment with ways of producing knowledge that differ from the delegative and centralized models of agricultural modernization. However, this paper shows that in order to challenge dominant epistemologies, it is not enough to simply widen the circle of innovation beyond the conventional settings of universities and industrial laboratories. Articulating a plurality of approaches and worldviews means challenging the scientific culture in which many stakeholders are steeped, and which often informs, consciously or otherwise, a reverential attitude toward the production of evidence.

This is particularly true in agro-food studies. For example, seeds are one of the most important resources in agriculture and central to questions of food sovereignty. However, our work shows that the political issues around agroecology cannot be reduced to simply taking back material and legal control of the commons, including seeds. All systems of innovation and knowledge production are at stake, and in-depth epistemological work is needed to “keep our knowledge aware of its connections and consequences” (Puig de la Bellacasa, 2012, p. 212). Epistemic pluralism means elucidating different representations of agroecological transition and a range of approaches to managing uncertainty (Magda et al., 2019). Whereas some representations of science call for deeper knowledge of specific objects in order to reduce uncertainty, we see uncertainty as an opportunity to move away from the technoscientific mode of knowing that relies on objectifying the world as things or resources (Haraway, 1988). In order to conceive of agroecological transition as an open-ended pathway along which relationships to “objects” and other actors can evolve, it seems necessary to “re-learn to laugh” (Stengers, 2000) and to acknowledge “the agency of the world in knowledge” and its “independent sense of humor” (Haraway, 1988, p. 593). In other words, it is a question of giving up control in order to make room for unsettling possibilities.

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The authors have no competing interests to declare.

Author contributions

- Contributed to conception and design: LG, NC.
- Contributed to acquisition of data: LG, NC.
- Contributed to analysis and interpretation of data: LG, NC.
- Drafted and/or revised the article: LG, NC.
- Approved the submitted version for publication: LG, NC.

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Knowledge Domain: Sustainability Transitions

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