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Debating on scientific and technical choices: The experiment of an "interactive technology assessment" On GMO vine research at INRA

As a source of innovation, INRA research has not only economic but also social, political and ethical implications. It may actually contribute to providing profits but also comprises risks. Controversies surrounding innovations have caused INRA to implement systems, which allow deliberations on research programmes by associating actors with varying degrees of involvement in the applications of this research. It is within this context that in 2001 a pilot-experiment started on GMO-vines.

Introduction

December 1999: The newspaper *Le Canard enchaîné* runs the headline "Transgenic bubbles in champagne". The newspaper reveals that the Moët and Chandon firm is experimenting with genetically-modified vine-grafts in open-field. In an environment of strong opposition to GMO, the management of LVMH, the parent company of Moët and Chandon, reacts immediately: the trial is destroyed overnight. The company's researchers then offer to give the experimental material to the INRA's researchers who had taken part in the project in order for trials to be undertaken in an INRA vineyard.

For INRA, such a decision was problematic. In the wine-producing sector, the issue of research orientations is particularly complex. Wine being a traditional produce with a high symbolic value, the introduction of new techniques is negotiated with the professionals and subject to very strict regulations. As regards GMO, and notably in France, many actors feared that introducing transgenesis would damage the wines' image. So in 2001, the INAO (the French National Institute for Protected Designation of Origin) asked for a moratorium on the commercial use of GMO in the production of protected designation wines. On the other hand, in our climate, wine is subject to numerous diseases, which require a lot of phytosanitary products. In certain cases, for instance the disinfection of soils, the only effective molecules are forbidden because of their toxicity. The use of genetic resistance (introduced or not by transgenesis) may therefore help improve vine cultivation. Moreover, due to the characteristics of varietal creation, the present scientific choices will not have any possible commercial impact before 20 years.

INRA is confronted with this problem while the legitimacy itself of the public research trials is questioned. Moreover, the new management (since 2000) considers that it is necessary to open the debate on the orientation of research programmes to non-scientific actors. In this context, it has become necessary to conceive and implement an original system of dialogue to highlight the management's decision.

The objectives of the social sciences researchers' intervention

The management made contact with our team in January 2001. We were asked to conceive and conduct an open process of dialogue about implanting trials of genetically modified vine rootstocks in open-fields. We were asked because of the research carried out since 1996 on public controversies about GMO as well as on various experiments in the participative assessment of technologies: the citizen conference on GMO organised in 1998 in France, and similar practices organised in various European countries. The result of this work was that the surveys were not adequate to deal with such questions. Although they favour statistical representativeness, these methods are not adapted to dealing with complex questions: they suppose that aggregate opinions (or preferences) are steady and that participants may express choices without any ambiguity. Conversely, the participative assessment methods allow a thorough consultation and an analysis of the various socio-technical options.

We chose to adapt an Interactive Technology Assessment (TA) method conceived, in 1980, in the Netherlands (Grin et al., 1997). It may be compared with the citizens' conference method because it is based on in-depth discussion in a small group. But the working group being hybrid (researchers, professionals, and ordinary citizens) makes it different and encourages consideration of the diversity of world-views. However, it was the first time in was used in France, even though it was a tried and a tested method, and that method had never been used on this type of question. We designed this operation like a true experiment. It was a twofold challenge: a decision-making assistance tool for the INRA management, and implementation of a system to produce

knowledge on participative technology assessment. We were in a position of "intervention research" combining a commitment to action and production of knowledge on that action. In order to manage the inherent risks of this position, three complementary devices were implemented: independent assessment, traceability, and transparency of the whole operation (insert). We also had to clearly define our relationship with the INRA management because although the researchers' intervention was justified within a rationale of capitalizing on the experience of the institution itself, the question of independence from the sleeping partner - itself an actor involved in the public debate - remained open.

The experiment of Interactive technology assessment

Form a working group

The objective was to form a diversified working group including individuals with very different ways of approaching the problem and considering the ways to resolve it. To experiment with a form of debate clearly differentiated from the "classical" debate between institutional representatives, whose public legitimacy is high but whose positions on the content of the problem are non-negotiable, precisely because they are highly institutionalised, we replaced a selection based on institutional mandates by a selection we called "world visions" . This consisted in collecting the viewpoints of professionals and scientists but also of individuals who were not necessarily concerned ("profanes") on a wide variety of questions directly or indirectly related to vine crops, assessments of a good wine, the implications of transgenesis and the status of sciences - including their positions with regard to INRA and the experiment itself.

Within the various world visions thus identified, four persons without any professional involvement, six vine and wine professionals (intentionally chosen for not being representatives of a trade union but "representing" their professional constraints through daily practice), and four researchers (from INRA or elsewhere, using various disciplinary approaches on transgenesis and/or vine diseases) were invited to the group.

The survey and constitution of the group took place from September 2001 to March 2003.

Progress and results of the experiment

The group deliberations took place over 7 working days between April and September 2002. The initial question the INRA management asked the group was about the opportunity of conducting open-field trials on transgenic vine-grafts potentially resistant to fanleaf virus, one of the vine diseases, which worry many vine-growers. At first, the group members took the question on board and reworded it, widening the framework of the issue in order to work on four major themes: the symbolic nature of the product and its implication on commercial relationships, the characteristics and constraints of production systems, the economic and political aspects, and the present state of vine and wine research, including - but not only – on GMO. The very rich debates were based on the working group members' contributions and on the experts' talks, requested by the group.

The report written over the last two days included two parts: (i) recommendations and stakes; (ii) recommendations and points requiring vigilance.

Among the many points in that report (http//www.inra.fr/Internet/Directions/SED/science-gouvernance/), a few elements give an idea of the content of the work:

- Regarding the symbolic nature of wine, there is a feeling that, beyond the diversity of products and consumption modes, there is no definite frontier between the different segments of the wine market and, consequently, that "a genetic modification of vines for "food-wines" could have effects on "pleasure" wines and "premium quality" wines;
- Regarding production systems and the attachment to the diversity of production systems (biological, technical, but also cultural diversity): in the face of threats linked to vine diseases, the working group recommends developing various methods of combat in order to contribute to the different modes of vine production;
- Regarding more specifically the state of research, the working group regrets the lack of integrated and transversal approaches and stresses the need for research allowing a better understanding of the interaction between the plant and its environment.

While these points were fairly consensual, the precise question of the opportunity of open-field trials in Colmar (Alsace, France) was the subject of tender discussions and the group was divided in two on two opposing positions: one in favour of trials under restrictive conditions, the other against open-field trials even if the conditions are fulfilled. According to several members of the group, this split was probably caricatured because it happened in the last phase of writing up the report. At this stage it could not be the subject of new discussions or of an individual positioning of each member of the group on what some of them *a posteriori* consider more as a continuum than a "for/against" polarity. Some of the "fors" subscribe to developments included in the "against" answer and reciprocally. But for the INRA, which received not only "yes" and "no" answers but also a well-argued report, the message of this split is regarded as important: regarding its capacity to establish an impenetrable frontier between research and applications, the Institution may not be granted unanimous confidence.

The INRA management's response

On September 11 2002, the INRA management was given the report from the working group. The management publicly announced its decisions on January 20 2003:

"1. Taking into account the stakes identified concerning vine diseases, INRA will undertake open-field trials on GMO vines but only on the phytosanitary aspect" (...).

On the sensitive context of vine and GMO, the INRA will not decide to develop a GMO innovation, even on phytosanitary aspects, before being clearly mandated to do so by the profession; Moreover, the profession will have to ensure the reliability and monitoring of the control systems with the various social sensitivities concerned.

2. With the professionals, INRA will create a "mixed committee on vine and wine research" composed of INRA scientists and scientific or technical officials from the profession. This committee will be in charge of building proposals on the main orientations of the future research programmes on vines at INRA. It will start its work in 2003 with the policy and strategy of research on phytosanitary aspects and practices (...).

3. Within this framework, GMO vine open-field trials on resistance to fanleaf virus will be implemented for 5 years, subject to authorisation by the competent ministers following recommendations by the biomolecular engineering commission (CBE). Indeed, this trial is a response to the priorities on phytosanitary stakes, and, within an approach involving parsimony and precaution, allows us to maintain the dynamics of the finalized research as well as public expertise (...)".

The trial procedure will be determined by scientists, then discussed by a local monitoring committee and made public.

For INRA, this announcement is a notable step forward.

In the first point, the INRA management sketches the outlines of a new doctrine on the orientation of its finalized research. Regarding open-field trials, the management completes the parsimony principle: due to the symbolic nature attached to vines and wine, the institute commits to limiting itself to objectives with proven social utility. Moreover, INRA redefines its role in the innovation processes. It is no longer the innovation promoter it was during the period 1950-1970 (hybrid maize): its role is to explore a diversity of alternative paths in order to widen the range of choices and improve knowledge on the impacts of innovations. INRA reaffirms its mission for the production of knowledge and redefines the frontier of its activities: innovation choices depend on social protagonists.

In this context, the second point is very important. The experiment stressed the lack of readability of wine research. How are priorities defined? How are necessarily specialised and fragmented approaches integrated in order to look for solutions to the problems confronting producers? As regards GMO, the fear is that an orientation, essentially conditioned by the dynamics of tools (transgenesis, genomics …), is taking precedence over integrative research. The implementation of a mixed vine-winegrowing committee for debate and analysis of research orientations must help take the diversity of the wine world into account.

Last, INRA considers that the open-field trial corresponds to the principles drawn up above. The decision to launch the trial is announced, with - and this is very new - the implementation of a local monitoring committee which will be able to discuss the research procedure and monitor the trial.

Discussion

It is still too early to discuss all the effects of this operation. At the national level, reactions are contrasted. On the one hand, important newspapers (Le Monde, Le Figaro) and specialised scientific press (La Recherche, Sciences et Vie …) gave a positive account of the operation, clearly pointing to the newness of the system.

At the same time, the experiment was severely criticized by several associations who denounced "a programme of opinion manipulation"[1]. These associations asked for a public debate on GMO and on agronomic research, a very different exercise from the one we conducted. Over the two years that the operation lasted, the question of the open-field trials became one of the divisive points of the public debate on GMO. The most mobilised associations considered the operation only from the angle of the announcement of the trial resumption. The increasing tension between the INRA management and the anti-GMO community is not extraneous to this reaction[2]. In this context full of conflicts, the construction of a robust system (statement of INRA commitments, independence of the project leader in running the operation, independent assessment committee) and explanation of the decisions by the management did not weigh much. In a context of public controversy, we observe that the results of such a system had little influence on the public debate. The same observation applies to the 1998 citizens' conference. This is the reason why one of the keys to the operation lies in the nature of the sleeping partner's commitment and in its ability to implement decisions.

The local committee following the trial was created in May 2003. It met three times and carried out real work on the research procedure. The trial, which could be conducted in summer 2004, (the request is currently being examined by the CBE), reflects these participative dynamics, based on a strong commitment from different protagonists. For the President of the Colmar INRA Centre, the co-building research experiment is a genuinely strategic stake. The Alsace winegrowers actually involved themselves in that operation; fearing negative fallout on Alsace wines, they very actively discussed the protocol (How to eliminate the possible risks? How to generate useful knowledge?), and the interaction between the trial and the Alsace environment (especially on the matter of the trial location).

The mixed committee on wine research was to be created during the first semester of 2004, after several months of institutional negotiation, reflecting the profession's difficulties in agreeing on representation modes.

In conclusion, we may say that while this operation did not have any legitimacy effect, - which is rather reassuring! - it did influence the decision-making process because the working group report shed new light on the issue. The emphasis on the link between production of knowledge and responsibility regarding the innovations produced is not completely new. But the thought on how to manage the articulation of these two dimensions is highly unusual. Last,

[1] "The vine-GMO pilot experiment: a programme manipulating opinion" - February 1 2003, written by Nature et progress, Confédération paysanne, ATTAC, FNAB, FRAPNA 07, GIET, OGM Danger (www.infogm.org).

[2] The INRA President and Managing Director's opinion column in *Libération* on 23/09/2002 was severely criticized by the same associations. See "OGM: Opinion Grossièrement Manipulée (GMO: rudely manipulated opinion)" (www.infogm.org).

as shown in the assessing committee report (see on the website), this experiment brings several findings on the interactive assessment method itself and its implementation in an important research organization.

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Frame: The context of the TA experiment

We drew several essential conclusions from our former work on participative assessment:

- The involvement of ordinary citizens sheds new light on scientific and technical matters: They define parameters more broadly than experts do, because they feel restricted by neither disciplinary frontiers nor by the technological or economical requirements of a professional chain; their questioning helps identify certain limits of expert models; their judgements reflect a sensitivity to common sense and values in contrast with a strictly utilitarian approach;

- within a rationale of procedural justice, it is necessary to define very clearly the organization rules of these experiments in order to guarantee their credibility, from both the participants and the non-participants' viewpoint, and in particular: rigour in the choice of participants, deliberation process carried out in an independent way, transparency of the system, external assessment;

- last, the articulation between the system and the decision must be clearly defined from the beginning of the experiment.

The implementation of these general principles required a long phase of conception and negotiation with the INRA management. We first defined our role as project leaders: we had an obligation to achieve a particular result (production of a report written by the working group) and total autonomy in running the project (composition of the group, working methods…). The working group report, handed in to the managing director of INRA, had to be made public. The managing director was not compelled by the working group's conclusions and remained the only person responsible for her decisions. She committed to explain, publicly and in writing, her analysis of the report, her vision of the contexts and her decisions and approaches relating to the research programme concerned as well as to the non-confined experimentation of transgenic vines. An independent assessment committee, including specialists from outside the institution, was to monitor the experiment from the design of the method through to the INRA management's announcement of decisions. Its assessment report was to be made public. This definition of the authorities' project and their relationships is essential for the good ruling of the system. It also conditions the public legitimacy of such an operation. These elements were announced on the project website at the time of the public project launch, in May 2002.

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