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Bridging the Gap on Both Sides: Issues of an Ethical Communication of Science

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ABSTRACT: In the context of a specific understanding of ethics and communication, we discuss what seems central today for the interplay of science and society, the question of expertise. That notion is briefly presented and we then underscore some major issues that the prevalence of expertise in our society raise in the practice of hybrid forums, among which come first conditions of mutual understandability between citizens and experts.

KEYWORDS: Callon, citizens, communication, democracy, ethics, expertise, hybrid forums, science, understandability, verification

1. INTRODUCTION

Issues in science communication from an ethical perspective are numerous but they are not abundantly debated as of yet. Communication Ethics as a field has not until very recently showed a specific interest for science communication as such (Johannesen, 2008); the same goes for philosophy of communication. Even though I have been involved in research projects of an interdisciplinary nature for many years, and as such have had to reflect on the characteristics of different disciplines (Létourneau, 2008), this paper does not stem from a STS background; the writer arrived at the issues debated here by the actual confrontation with expertise either in water governance committees at the local and regional level, or by discussing with colleagues inside ethics committees, and also by having to work in interdisciplinary research teams. Having discussions about participative governance requires me to reflect on expertise as being an unavoidable part of it.

The first task of any philosophy as I see it is to clarify the terms of discussion, while presuming as little as possible in terms of shared presuppositions with readers. In practical philosophy and in ethics, there are also directions of action to discuss, which forcibly involve ends, means, values and norms (Dewey, 1939). And what would be an ethical perspective? Since the answer to that question is not so obvious, and without entering into all the details of a thorough discussion which would be impossible here, I will furnish some notes on my own perspective. I support a distinction between the ethical and the moral sides of human experience, seeing them as distinct but in a continuum. On the one side we have reflectivity, critical distance towards norms and principles that are always present, whatever they are, in practical use; and on the other side, we have precisely the normative elements as they are somehow in force in the situation, among which we should take especially into account rules and values. Furthermore, ethical reflection certainly implies reflection and choices among conceptions of the good, whereas moral issues are most of the time concerned with questions of justice and equity.

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This distinction of sides in a dynamic relationship has to do with our historical situation as social and cultural human beings, on questions where evolution is a normal part of life, while acknowledging that ethical reflection does not start in a vacuum, and neither should we understand it in purely behavioral terms (in terms of what to do or not to do). This distinction between the ethical and the moral has been forwarded by philosophers like Rawls, Habermas and Ricoeur in the preceding decades, each time with specific meanings (Dosse, 2001; Habermas, 1990; Heath, 2001; Ingram, 2010; Rawls, 1999; Ricoeur, 1984).¹ Let us assume that norms can be discussed in the context of a plurality of conceptions of the good, a situation which is normal in a democratic society, even if one's orientation towards values has somehow to come first, as Ricoeur explained. But I also hold a situational perspective that can be called applied ethics if we understand that ethics cannot be understood as a simple application of principles to situations (Létourneau, 2012). Rather, situations have to be carefully studied, researched and documented to be able to understand the contextual and normative elements that have to be considered in the specific case at hand, which also comes with its load of constraints. With ethics seen as a capacity of reflection and decision making among a plurality of normative elements, we will understand that ethical questioning has to do with our way of understanding situations and people, all elements that are better grasped either in a context of dialogue between relevant actors, or at a minimum in taking into account the meaning seen by actors in their own action, all of which is coherent with an interpretive perspective in human sciences. This is what I call a hermeneutical approach of ethical questions, and it can take the form of a hermeneutics of organizational life (Létourneau, 2013), the organization being the basic level of structured social arrangements that are the result of human organizing especially in and through communication (Taylor & Van Every, 2000).

Let us say another few words about this notion that is most of the time taken for granted and considered obvious, communication itself. For me communication is relational to people and other referents; it is not to be understood as a simple transfer of information from emitter A to receiver B, as in Shannon and Weaver's (1947) famous model (as cited in Shannon, 1993). It involves meaning, interpreting, acting with words and sentences, and interacting between communicators in a kind of proactive way (indicated already by Dewey's word of "transaction," which implies the possibility to co-organize) (Dewey and Bentley, 1948). Communication as organization, in the active and dynamic sense, is more and more the focus of attention in communication science studies (Robichaud & Cooren, 2013). Since it is relational, communication is destined and related to specific people, inside what the situation permits, and it is aimed at being relevant somehow to specific actors towards specific issues/problems.

To see in a clearer light what this means in the present discussion, let's start by some enumeration of possible situations of communication that involve people in science; we will then indicate what is in focus here. Any science communication will be directed to some public or publics, to addressees that might be specialized or not, familiarized to a variable degree with the subject treated or not at all. There is the case of a science communication in general media, like in a newspaper article; this poses specific problems and involves decisions about the level of complexity that is required and adequate for that kind of medium. I will not treat this

¹ The authors to which we refer here share the usefulness of the distinction, but do not develop the exact same understanding of the relevant notions. For instance, if Rawls and Habermas both support some priority of the right over the good, Ricoeur will give the first place to the ethical considerations. It is impossible to enter here with full details into this discussion. The question of the priority does not have to be settled here.

problem here. If the communication is destined and addressed to members of the specific scientific community to which the speaker/communicator belongs, rules of acceptability and criteria of relevance, of relative novelty inside a research community, will be expected and acknowledged normally on both sides. Members then share notably a field of investigation, which I often call an object domain, plus some common parameters, on top of basic and always relevant criteria of clarity and intelligibility that have to be met (Grice, 1989). If the communication is destined to people outside the specific scientific community, we can have a whole variety of situations to look at. For instance, the communication could still aim at scientists in a family of disciplines that have something in common with the speaker's field, even though they might not be members of his/her specific discipline. Instead, we can have cases of an informed public which has some basis in the relevant disciplines, or people that come from a variety of backgrounds and have no specific knowledge of the field outside a general and mostly vague idea. This latter situation might be quite common if we want some involvement of scientists in social debates, with people that come from a broad range of horizons and social backgrounds.

The previous remarks are only touching issues of publics in front of scientists and their communication. But what is the general frame into which this communication is situated? We can for instance imagine the communication as being situated inside the typical Technical rationality frame well-described by Donald A. Schön (1930–1997), to future users of the knowledge, people that have application interests toward the knowledge and come with specific demands (Schön, 1983; Schön & Argyris, 1991). In that perspective we have science experts that see themselves as having something to communicate to people; they have basic principles and knowledge that could and have to be applied by technicians or laypersons on the field. While nowadays this technical model might look a little suspicious because of his “air de grandeur” or paternalistic outlook, we have no reason to doubt that it is still very popular, even though the reflective practitioner model, constructed by Schön in contrast to the technical rationality model, has gained ground to rethink the professional's role and the expert's role in society. The reflective practitioner is opened to uncertainty, recognizes limitations of expertise, and takes an adaptive stance in front of difficulties, renouncing ready-made answers. Still, for most people, among whom are many government officials and research foundations, science is interesting as long as it sheds some light on some practical issue, if and when it furnishes some applicable models or concepts. For instance, and to avoid undue generalization, the industry and business communities in Canada, and the federal level of the present (2013) government of that country are certainly proponents of this perspective. Under that understanding, industrial and organizational actors are waiting for science to help them become more efficient, without ever questioning in what direction this “efficiency” is going. In such a perspective, we fail to recognize that any available data needs to be interpreted, that most of the time it requires contextualization to be correctly understood. We also then miss the phenomena of framing and naming that comes before any problem solving, always supposing that only this technical view is the relevant goal of any science.

Here the contextual question I will consider will be limited. And again, the point of departure is actual multifaceted groups that have to work together. I will look at the problem of scientific expertise in relationship to a given group of persons that are interested in a specific social issue, for instance, water issues at the regional level or ethical issues which can be treated in part by the scientist. This expert would probably not be the only one to have a say, but still his or her contribution might be of importance and required. The scientist is then

considered as particularly knowledgeable in a specific field. Citizens might be interested by this expert's communication, for instance, in the process of forming their ideas about a socio-technical controversy (let us give as an example of IVF procedures), or if they are participating in a consultation on environmental issues that are local, for instance, having to decide if the level of water in a lake can be diminished so as to facilitate repairs in a dam. On one side, quality of the lake generally speaking might be affected, causing a surplus of oxygen, plant life and bacteria, while on the other side, issues of security are present if the dam needs repairs.² The citizens might be interested and involved, but might not necessarily possess all the knowledge and experience that would be required to be able to construct an informed and personal position on a given issue, or to form a common idea that would be able to motivate collective decision.

It is the kind of problem that can be found and treated in the context of what Callon, Lascoumes and Barthes (2001/ 2011) call "hybrid forums," e.g., forums in which some public policy question can be considered not only among experts, but also with laypersons, citizens that might have other skills and expertise but outside the expert's domain as such. In Callon et al.'s (2001/2011) book, expert and layperson are face-to-face, and there is a choice to avoid generalizing the notion of expert; the expert is always the technical expert or specialist, even though the aim is to establish a new *parity* between the knowledge of the specialist and other forms of knowledge (*parité*). The proposal of an "hybrid forum" provides us with good ideas to address the issues of an ethical communication between scientists and the interested publics, in specific cases of socio-technical controversies (they will talk of a model of technical democracy) (Callon et al., 2001/2011) . For these authors, social movements that contest some socio-technical controversy like the development of genetic therapy, or the implantation of a high-speed train in a given region (TGV) do constitute such hybrid forums, but these can also be organized, e.g., structured as to be able to treat issues. Indirectly, this reflection might also shed some light on issues of ethical communication between scientists, which might just be another case of incapacity to "translate," meaning here to reformulate in vernacular language what is encoded by the expert. But to understand better this proposal, we also have to ask the question of what is expertise.

2. UNDERSTANDING THE QUESTION OF EXPERTISE

Let us recall how the question of expertise can be understood and why it is necessary to use it, even if it brings along a series of problems. Scientific expertise comes of course from a long history of development, which can be seen as a tremendous effort over generations. And for individuals who have mastered some given expertise, it represented an important investment in terms of time and money, even in a public system of education. Experts do have a privileged position in society, for they are more and more recognized as indispensable; for instance, regularly the media will call for their help in the process of trying to enlighten some difficult or controversial issue (Létourneau, 2013 b). When we need them, as citizens or public officials we will refer to experts with the aim of avoiding risks. Diverse costs are associated with those kinds of situations, whether or not we have the choice to call experts for help.

Scientific experts have particular terms and vocabularies that characterize their relatively closed communities and render their understanding complex for laypersons; inside

² An example based on a real case which cannot be presented here with details.

their respective communities of experts, they share these specific series of words and concepts, and are therefore able to understand each other easily. Their terminologies come also with acronyms and abbreviations not known by the general public; all these terms permit them to communicate rapidly between them. These languages can become particularly abstract, and obscure, a phenomenon that can be accentuated with the use of mathematical formalism. Their language will represent a challenge of translatability and of understandability; they have a challenge to be sufficiently understandable and will need to be able to reformulate themselves in the layperson's terms, which looks like a form of translation.³ As was explained by Bruno Latour, expertise (as much as scientific theories) are like black boxes; we have access to the results of their workings in terms of their prescriptions or proposed "solutions," but the general public does not understand how the scientists came to their conclusion, e.g., the inner workings of the expertise (Latour, 1988). The tricky part is given when an expert language continues to use lay terms but gives them a technical sense that is not necessarily obvious or apparent for the layperson. A good example of this is the word *governance*: it has different technical meanings in different fields of practice and reflection. For instance, the meaning of the word *governance* is not the same in management and organizational studies as it is in the field of development studies and natural resources management (Létourneau, 2009).

Expert communities have sometimes a complete monopoly over knowledge of strategic value, a fact which implies an important power. This often comes with an unspoken form of potential blackmail, even if it is not exerted: this is very sensible (but most of the times unspoken), to give an example, in health issues in particular. Obviously if we look at specific persons operating in a given expertise domain, this does not have to be intentional on their part or even conscious. But the fact is that if medical acts were to be unprofessionally executed, this would have consequences for the patients, for the credibility of the profession, and for the general health system considered. This might be part of the reason why, on the other side, as members of society, we also need to exert a certain control over the expert: their important powers and responsibilities represent important costs and risks, whether they are public or private. If asked, groups of experts will prefer some form of self-regulation; among other reasons, some will remark that you have to be an expert yourself to evaluate the experts. Fields of expertise are reserved domains, domains of practice; any expert is recognized by a community of expertise. There are social requirements and expectations in front of expertise that most of the time take the form of stereotypes, and experts also have representations of the general knowledge about their profession, on which they rely. In the case of professions, deontological codes can function as a way to express what is expected by and from these professions, since those documents are public and devised to protect and inform the public at the same time as they serve to express a profession's understanding of its basic rules. Of course, no deontological code will suffice to cover all possible situations, requirements, and contexts of practice. Establishing forms of hierarchies is a certain way to deal with issues inside fields of expertise.

³ In Callon et al. (2001/2011), translation takes a specific meaning, as they use the term to describe the process of science formation itself: from the "outside world" to the laboratory, among other phenomena in three basic steps. Here I start from a simple fact: the same word in two different vernacular languages, one formed inside an expertise domain and the other independently from it, will not have the same meaning. For instance, the word "uncertainty" does not have the same meaning in a climatologist's paper and in the politician's decision-making process. In one side, this is a normal situation; on the other, that might be a good argument to delay any action.

To be a specialist and to be an expert: these two kinds of categories can function as equivalents, but sometimes specialization is invoked as a kind of super-expertise, most of the times in a specified sub-field. To obtain, conserve and renew expertise requires time, energy and money, either on an individual level or on the level of organizations and society in general.

For many reasons, most of the time the term *expert* is not used to characterize craftsmanship, even though there is no formal reason it should be kept only for technical and scientific people. In a larger sense, carpenters and automobile mechanics are experts in the same way as a surgeon is one; in each case, you can have exemplary or extraordinary expertise in a given field. Computer technicians, philosophers, chefs and oenologists can be experts in their own way and sense; from the outside of their respective domains, they can be seen globally as experts, because the layperson is not in a position to really evaluate the expertise. To be called experts inside their field, they have to be recognized as such inside their relevant communities of practice. Expertise can then be used by *ignoramus* (relatively speaking) in front of a single person, or function as a category of preeminence inside a given field of practical/theoretical knowledge. From the outside, any knowledge that is not obvious, that is learnable, has practical relevance, and that characterizes a special group of people can be seen as a form of expertise. This being said, of course the very expression of expertise refers us to a context of social hierarchy, since by definition an expertise is not given to everybody.

Of course, professions have a status that come from an expertise that is a complex set of knowledge, competences, capacities and abilities. On one side they are learned with a certain level of difficulty, and their exercise comes with special responsibilities towards the public. The professions established themselves progressively as experts that are indispensable for treating a certain class of problems; their training is constructed as something long and complex, not easily accessible; and experts constitute a kind of caste that has special niches. Lesser practices or know-hows do not share this prestige; their field might in some cases be seen as not exclusive. There are different ways to look at experts: as a high-standing caste or as something that comes with any practical knowledge that is both non-obvious, learnable, practical and needing specialization.⁴ Relations of expertise to practice are recognized more and more and integrated, in many cases, inside the professional's formation, in the form of internships or on-the-job training. More and more, a technical understanding of expertise (Schön, 1983) is overcome by considerations of adaptability, openness to complexity, uncertainty, and issues of value conflicts, which typically cannot be resolved while staying inside the technical approach. Forcibly, conflicts of value refer to persons and situations and to judgment acts that have to be performed by individuals and by groups. Phenomena of value conflicts might lead people to hybrid forums, dialogue practices, or consensus-building conferences. However, it is not clear to which points those kinds of issues can ever be reduced

⁴ See, for instance, the English, French and German articles (among others) on Wikipedia about expertise and the expert (the list of articles is given at the end of this paper). The first group of articles (in English) suggest quite an open view, between adaptive expertise and a vision of it as a continuing process, whereas the second group pleads for the characteristics of a technical perspective: a specific group of experts expressing, for instance, a juridical point of view, on issues like insurance, intellectual property, and real estate. References to adaptive expertise are also found in the English article "Expert" (n.d.), which pursues the distinction between "artisans" and "virtuosos," the second group being in a continued learning process whereas the first one's members are in routine processes. Obviously those dichotomies are not reserved to craftsmen but are also relevant for university professors, doctors and engineers; one of the German texts ("Expertise," n.d.) works especially on art expertise, while the "Experte" (n.d.) article looks especially at cognitive science reflections, plus discussions on the passage from laity to expertise.

to being the domain of a specific and complementary form of expertise. Even if philosophers and ethicists have training to treat values and norms, obviously they do not have a recognized monopoly on those questions, no more than any other group like law officers, theologians, or logicians, to give a few examples.

3. PROBLEMS OF UNDERSTANDABILITY AND VERIFICATION

Understandability of science is especially useful when the participation of the public is deemed necessary, sometimes with the aim of sound policy making and/or of an efficient policy enactment afterwards. In science communication, people have been discussing the need for vulgarization, while others might also think in terms of translation: using other terms, giving examples, using metaphors and other figures of speech, etc., might help us, poor ignoramuses, understand better the expert's language. But this might be seen as imprecision, going with uncertainty that the message will be correctly understood; rhetorical abuse of the publics might not be impossible at an extreme of simplification. Do we then have to choose between oversimplification of issues on one side, and systematic or gross misunderstandings on the other side?

But this is only one side of the issue of understandability. The specialization that comes with expertise can be seen metaphorically as enlarging glasses; they permit to focus and provide extraordinary results, but they also come with knowledge losses that are more and more recognized. By focussing so much and by being analytical, they face the risk of excluding important aspects of specific realities. In communication contexts, experts or specialists might have difficulties in understanding the terminology of other experts and specialists, therefore missing essential parts of what they are meaning. These others happen to have their own concepts, methods, terms, or approaches. The experts might also misunderstand the laypersons that try to explain to them the specifics of their situation and that refer to some practical knowledge about the issue at hand in which they might be well-established. More than that, experts may lack a more general knowledge about the object domain in which they specialize. They might ignore dimensions of problems and situations that lie outside their field of expertise as such, for which the need for a layperson's expertise is often required.

Difficulty of accessibility of the expert's language and knowledge for the layperson is also an important problem. Non-experts have a difficult time controlling the validity, , or sufficiency of the expert's analysis or advice. They are not always in the position to know (Walton, 2006) if the expert is isolated inside his community of expertise, e.g., to which point he/she is a genuine expert. He might not even be sure of the value of that kind of expertise in general to treat specific kinds of problems. Does the layperson know, for instance, the degree of success of this or that type of intervention? In certain institutional and organizational contexts where internal experts have been laid off (most of the time to make economies on staff costs; this has been seen in governments), decision makers can find themselves depending crucially on external experts. Not only, then, do they rely on external sources, but they will sometimes have to call for the help of other experts to control the discourse of the first experts, for a number of reasons (notably, costs that get out of proportion). This situation of relative exclusivity and rarity protects the expert; his or her difference validates him and renders him or her socially useful, if not indispensable. If the translatability and understandability of the experts' language were perfect, the situation of dependence would be less important, but that would weaken the expert's position; obscurity then seems to be a requirement. Of course this is

inside some perspective and choice about expertise. Another expert might decide to facilitate accessibility to the knowledge because the expert's contribution never ends in specific advice. Transparency and openness on the part of the expert would also be a mark of respect and confidence, and this would augment the expert's credibility. But even with good intentions of accessibility, the difficulty of the expert's language will not be erased completely.

4. WHAT CAN ORDINARY CITIZENS DO IN FRONT OF EXPERTS?

Both the experts and the laypersons involved in a discussion have gaps to bridge. Let us look at that point with more detail. The experts are both required and contested; they possess valuable knowledge, but at the same time, according to Schön's (1983) classical analysis, as a technical expert they are not in a position to treat value conflicts, framing problems at the different levels at which they can surface, at least not as problems of their expertise. Foucault and others have taught us that knowledge and power go hand in hand, that there is a distribution of knowledge which is at the same time a distribution of powers. But these readings in terms of power do not account for situations where expertise is not sufficient to really help decision makers transform their way of thinking and deciding. For business people, investors and political decision makers, science and expertise tend to be only a piece in a vast production system that has made the thirty glorious years; they are not advisers and decision makers. Expert knowledge might give advantages when it is the property of certain actors, but it does not have the required power of influence to modify substantively our ways of producing, as we can see with our very slow coming to terms with issues like loss of biodiversity or climate change. The "power" of the experts on those issues is quite relative and limited. Experts that can help build or rebuild a chain of production and distribution for users are much more listened to than those who just say that we have to reorient the whole of economic and political life piece by piece. Radical claims toward value (in line with another important figure, that of the *intellectual*) have the force of their clarity and expression, but they would be much more efficient if they were not lonely voices. They would need to be something like the result of a common set of expressions, built from actual dialogue among a multiplicity of partners, for instance, in face of socio-technological issues.

In concrete collaboration settings, relationships are not always obvious things to have with experts. People first have to overcome the gap of the differences that separate them from the expert; e.g., they have to go from relative silence and listening postures to voicing questions and issues. Confronted with difficulties, they can ask for clarity and explanations of the expert's language, which sometimes comes down to admitting one's relative ignorance. The expert might have to be forced to open him or herself to the preoccupations of the people and to come to recognize their competence that can be formulated in terms of practical knowledge, different fields of expertise or otherwise. We can confront experts and push them outside their specialized categories inside the ordinary language into which at the end, any expert language has to be translatable. Reformulations of expert language can also be tested in open discussion, provided we have alternative expertise to put in front of that specific group of experts. Multiplication of relevant perspectives might help us relativize and resituate otherwise the expert's language and pretensions of exclusivity.

Let us say we have a group of people that are required to work together to confront a common problem or set of problems; it could be many different things. Here are some examples: 1) A Watershed committee having a determined number of representatives of

specific groups of users to implement Integrated Water Resources Management. For instance, in the Quebec province, according to the Politique nationale de l'eau (2002), the committees have to establish a Head Plan on their relative watersheds, and then come up with action contracts.⁵ 2) Ethics committees in a health care institution: they have sometimes to decide on difficult issues from an ethical point of departure. 3) A group of citizens in a community having a consultative role for helping the municipality construct its urban planning for the next ten years would also be a case in point, requiring architecture experts, urban planners, economists, etc. All these situations involve experts of different kinds working together, and having to come to terms sometimes with decisions, sometimes with clear propositions for decision makers. Gaps of knowledge and gaps in comprehension are numerous and on all sides; they will have to be breached if people are to become able to work efficiently together. Their dialogue will have to be constructed in such a way that it will permit each participant to express his or her levels and domains of expertise while they all share a common goal, whether it be the health of patients or the wellbeing of a water reservoir and of the communities that depend on it. We have just reviewed a few strategies that can be used by citizens in case of difficulties of understanding.

The discussion about interdisciplinarity (Thompson Klein, 1996) is relatively helpful to avoid having a too narrow understanding of the competences of the actual listeners in scientific communications. That discussion started with the understanding of the limits of actual disciplines, constructed with very specific objects and premises. In the discussion on collaboration and exchanges between disciplines, we recognize those limits, even though academia and research are based on them and constantly refer us back to them. This is why a call to interdisciplinarity is not easily met in practice. One problem is that to be able to construct significant results, people have to be ready to exchange and partake in methodologies and approaches that are genuine to their respective fields. In doing that, they necessarily enter into the other's field of expertise, which might be okay for this particular researcher who is willing to do it, but at the macro level, such exchanges easily become controversial, since they attack exclusivity and privileges of access. Second problem: most of the time, the difficulties that are handled on the field of participative governance are more of the inter-professional kind than of a pure problem of scientific complementarity of approaches. The problems are practical, not epistemological, even though they bring with them a number of epistemic postures (for instance, the sheer existence of this "problem" treated by this "discipline" in those "terms" relate epistemology to ontological suppositions that come with the theory-in-practice that is operational, even though kept in the background, in a disciplinary approach). At the inter-professional level, recognition of experts on the field on specific problems does not require an important transfer of methodologies and approaches; on the contrary, it can still respect frontiers of the different expertise.

We might wonder if Grice's (1989) maxims of conversation, his famous theory of implicatures, might help us to discuss those issues of communication and translation in a meaningful way. Quality, quantity, relation, and manner under the cooperative principle imply a conversational setting and express reciprocal requirements among partners of a

⁵ See for instance explanations and documents from the network of these organizations, the Regroupement des organismes de bassin versants du Québec, at <http://www.robvq.qc.ca/>. In the neighbouring province of Ontario, to address water issues at the regional level we have the Conservation Authorities, which are older groups that are structured differently than in Québec; see <http://conservation-ontario.on.ca/>. Countries and regional governments arrange themselves around different formulae.

conversational exchange. Certainly, we have to aim at the right quantity and the right relevance, and the same goes with quality and manner (for instance, what we already mentioned about intelligibility), but the criteria evoked are just giving a general idea of what is required. By failing to meet the criteria, for instance if the scientist speaking to a public would enter into too much detail, therefore lacking quality and relevance, some person might notice that this particular criteria has not been met. But that evaluation might differ according to who listens and at what time, so the usefulness of Grice's categories is probably limited if we do not specify details about audience, time allowed, and other practical and contextual considerations.

5. CONCLUSION

If we understand ethics as an orientation of action based on reflection and discussion, and if we understand communication as a complex process that involves co-creators of meaning and of actions, it follows that ethical questions about science communication will mostly be concerned with relationships between science and society, which means adequate communication between people who have specific expertise and others who might have a plurality of competences and expertise, but not necessarily that of the scientist. This reading of the situation seems *prima facie* preferable to function only with the dialectic of experts and laypersons in a face-to-face situation, which is often supposed in Callon et al. (2001/2011). That move on their part is certainly understandable: we overemphasize so much the importance of the experts that we fail to recognize other levels of capacities, knowledge and competences. A critique of a technical vision of expertise implies and requires the recognition of different forms of expertise, among which practical expertise is of the utmost importance. In the context in which informed advice of experts seem to be falling on deaf ears, the question of communicability of science must again be treated from the many different *topoi* of social life that are relevant. While looking only at one type of situation, suggested by the notion of hybrid forums, we think that a basic reflection (as the one offered) can already help identify some difficulties and gaps that are faced in those contexts, and maybe furnish some clues as to how we can overcome them.

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