Wisdom, scientific expertise, and laypeople: some remarks on Paul Feyerabend's philosophy of expertise

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Abstract: Throughout his career, Feyerabend was seriously concerned with the authoritative role claimed by experts within democratic societies. He repeatedly argued that citizens should not be intimidated by the authority of science, and they should resist any attempt to strip themselves of their right to have a say in important social matters of public concern. We do not share Feyerabend's anarchist approach to philosophy of science; nevertheless, we believe that some aspects of his philosophy of science can easily be incorporated into a constructive philosophy of scientific expertise. The aim of this essay is to argue for two theses that we believe have an unequivocal Feyerabendian "flavour": a) that to be a good scientific expert, the scientist must be endowed with *wisdom*; and b) that public opinion is not limited to setting the goals that the scientific expert should take as exogenous data. In this way, we outline a normative model of the epistemic contributions that citizens and scientific experts can make to solve public problems.

Keywords: Feyerabend, Scientific expertise, Public problems, Separability thesis, Wisdom, Thick concepts, Citizens as epistemic contributors.

1. *Introduction*

Feyerabend had a very high opinion of the Founding Fathers of modern science, starting with Galileo, who managed to undermine established ways of thinking using all the means at his disposal, including rhetoric and inconclusive arguments. Feyerabend's admiration for modern science concerned its liberating effect from tradition. As he wrote: "in the 17th, 18th, even 19th centuries […] science was one of many competing ideologies […] In those years science was a liberating force, not because it had found the truth, or the right method […], but because it restricted the influence of other ideologies and thus gave the individual room for thought" (1978: 75).

The situation has radically changed today. Indeed, Feyerabend believed that "Ideologies can deteriorate and become dogmatic religion […]. They start deteriorating when they become successful, they turn into dogmas the moment the opposition is crushed: their triumph is their downfall. The development of

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science in the 19th and 20th centuries, especially after the Second World War, is a good example" (1978: 75).

From these remarks we can understand the deep antipathy that Feyerabend had towards the presumed authority of scientific experts: "I think very highly of science, but I think very little of experts, although experts form about 95 percent or more of science today" (1970/1999: 112). Against the arrogance of scientific experts, Feyerabend suggests two remedies. The first concerns precisely scientific experts. In a free society, the scientific expert must go beyond the narrow scope of their specialization, open up to humanistic culture and become a *dilettante* (1970/1999: 117-118). The second concerns citizens. In a free society, citizens need not be intimidated by the authority of science: "science", Feyerabend writes, "is not beyond the reach of the natural shrewdness of the human race. I suggest that this shrewdness be useful to all important social matters which are now in the hand of experts" (1978: 98).

Feyerabend's suggestions appear naïve to us. Understanding the highly complex language of much of contemporary science seems to require a lot more than the "natural shrewdness of the human race". On the other hand, the idea that the scientific expert must be a *dilettante* is fascinating, but a little too vague. Even though we shouldn't give too much weight to the semantic origin of words, it is perhaps worth remembering that in Italian the word *dilettante* also has a pejorative meaning: it means a novice, a beginner or even an incompetent.

Nonetheless, we believe that the spirit of Feyerabend's suggestions should be accepted. Here we intend to defend two theses, which have an unequivocal Feyerabendian "flavor".

The first thesis is as follows: In order to be a good scientist, it is not enough to just be a good scientific expert. To be a good scientific expert, the scientist must be endowed with *wisdom*. The attribute of wisdom is not usually included among the qualities that a scientific expert must have. The first goal of our essay is to clarify the meaning of "wisdom" and show why it is necessary for the scientific expert.

The second thesis is as follows: public opinion is not limited to setting the goals that the scientific expert should take as exogenous data. Rather, in a well-functioning democracy, laypeople can and, in some cases, must a) help the scientific expert to better define socially relevant problems, and b) help the scientific expert, even epistemically, to solve socially relevant problems.

We will proceed this way. As for the first thesis, we will first briefly show, in Section 2, why it is not enough to have adequate scientific competence to be a good scientific expert: in other words, we will argue that we should distinguish between scientists and scientific experts. Second, in Section 3 we will clarify the concept of wisdom in the context of the philosophy of expertise. Then,

through the literature on wisdom, which is very extensive in moral philosophy, we will show how wisdom can perform different functions. To this literature, we will add a directly relevant topic for our discussion: each function of wisdom corresponds to a different figure of the scientific expert. In Section 4 we will tackle the second thesis. We begin by introducing the notion of "concerned citizen" and then go on to outline a set of desiderata that an account of citizens' contribution to inquiry must meet in order to be considered as genuinely epistemic. Finally, in Section 5 we will use the notion of thick scientific concepts to articulate the idea that citizens can act as semantic contributors by helping scientific experts and policymakers define the meanings of at least some of the concepts used in public inquiry.

2. *Scientists and scientific experts: the separability thesis*

We believe that there are good reasons to distinguish the activity of scientists, engaged in pure or basic research, from that of scientific experts, who instead have the task of helping the policymaker to solve problems of public importance. To understand these reasons, a brief historical review of the antecedents to the current debate on what is called the "separability thesis" between scientists and scientific experts is probably appropriate. It concerns a theme of central importance for evaluating Feyerabend's position.

According to the most traditional view, scientists can and should ignore moral values even when acting as consultants to a policymaker. The acceptability of the end, it is argued, is decided by the client using the scientist's experience. The latter, as a scientist, only has the task of evaluating the feasibility of the end and the means to obtain it. This is the ideology that Feyerabend complains about when he talks about the narrowness of scientists, incapable of opening up to humanistic culture.

After a seminal essay by Rudner (1953), the traditional conception was subjected to severe criticism within the sphere of analytical philosophy itself. The criticism is based on the "inductive risk" present in the *acceptance* of a theory: this not only depends on the empirical evidence but also on the importance, in a typically moral sense, that we give to the consequences of a wrong decision. For example, Rudner notes that marketing a medicine requires much more empirical support than marketing a machine for making buckles. The difference lies in the different importance we attribute to the possibility of erroneously accepting the two theoretical hypotheses underlying the decision to market the respective products. Rudner adds a second argument in favor of the thesis of the moral value-ladenness of scientific research, which was much less discussed by the several interventions that followed Rudner's essay (cf. Jeffrey

1956; Hempel 1965, 1981; Levi 1960; Lacey 2005; McMullin 1983).[1] Developing Quine's holistic theses against Carnap, Rudner states that in scientific research there is no way to separate practical choices from theoretical ones. As Rudner wrote, "I think that the statement that Scientists *qua* Scientists make value judgments, is also a consequence of Quine's position" (1953: 6).

Feyerabend certainly would not have accepted Rudner's proposal (not surprisingly, we are not aware that he ever made use of it). At the end of his essay, Rudner ventures to imagine a *science of ethics* to safeguard the objectivity of theoretical choices. A thesis that Feyerabend would certainly have branded as yet another case of chauvinism and imperialism of the scientistic mentality.

We have therefore reached the present day, where there has been a revival of Rudner's argument on inductive risk initially proposed by Douglas (2000; 2009). Douglas does not refer to holism to defend the thesis that all science is loaded with moral values. Rather, she prefers to refer to the undoubted authority of science in the contemporary world. Her argument is sociological, rather than epistemological. As Douglas writes: "Scientists hold a broadly authoritative position in our society, regardless of whether they are functioning in a formal advising role or not. Thus, when scientists make empirical claims, whether in scientific conferences, in science journals, or on an advisory panel, those empirical claims carry with them a prima facie authority [...]. The authority of science in society makes a distinction between scientist qua scientist and scientist qua advisor untenable" (2009: 82).

It is in all likelihood the sociological turn imposed by Douglas that suggested the thesis of the separability between the role played by scientists from that played by scientific experts. Mitchell (2004) and more markedly Gundersen (2018) have proposed a series of Merton-like behavioral norms that distinguish the activity of the scientist from that of the scientific expert engaged in the role of consultant.

We accept the separability thesis, even though we prefer to follow a different path. We will not delve into the topic here and will not attempt to justify the separability thesis from our perspective. It is sufficient to note that Gundersen does not appear convincing when he states that: "experts need not perform research to contribute to policymakers. Rather, they tend to apply already *existing knowledge* for the policy area in question" (2018: 56, italics added). There is no doubt that experts must apply the existing *theoretical* knowledge of one or more disciplines. However, experts must also acquire *new* knowledge to solve particular public problems and, most of the time, even unique in their complexity and characteristics. Theoretical knowledge must be articulated to

[1] Douglas (2009) provides an extensive overview.

take into consideration the social values at stake (sometimes, these values are expressed too vaguely to constitute the aim of a policy) and the physical particularities of the situation (knowledge of which is sometimes possessed only by the laypeople who live in the area; see, for instance, Wynne 1996; Barrotta *et al*. 2018). The role of scientific experts is, therefore, much richer and more *epistemically* sophisticated than how Gundersen depicts it. The scientist must demonstrate both epistemic and moral skills when she acts as a scientific consultant and expert.

In Section 3, we will develop this conclusion and introduce the concept of *wisdom* within the philosophy of expertise.

3. *Wisdom and scientific expertise*

The reference to the wisdom that scientists should have as experts may perhaps appear surprising (wisdom is not usually associated with scientific activities) or (symmetrically) an empty rhetorical device. In this paragraph, we intend to dispel these impressions.

The literature on wisdom has a long tradition connected to the Aristotelian concept of *phronesis*. In *Nicomachean Ethics*, it was Aristotle who emphasized that wisdom consists in knowing how to apply the "universal" to the "particular", to use his terminology (Aristotle 2002, especially Book VI). The Aristotelian conception of wisdom is therefore not only moral but also epistemic since it includes a good deal of cognitive ability to know whether the particular falls under the universal. The application and articulation of general theoretical knowledge are not a matter of deductive or mechanical activity. They require wisdom.[2]

If this is the case then being a good scientist, namely having reliable and updated general theoretical knowledge (the knowledge of laws, models, empirical uniformities, and the like), is a necessary but not a sufficient condition for being a good scientific expert. Scientific experts must also have the skill to apply and articulate general theoretical knowledge when facing particular situations.

This is the Aristotelian idea that we want to preserve in our discussion of the relationship between wisdom and scientific expertise. However, we will depart from the Aristotelian idea of wisdom from other points of view, which are not

[2] Although not the topic here, today various arguments support the thesis, very close to Aristotle's standpoint, that the explanation or prediction of a particular event is never strictly deducible from theoretical knowledge (along with initial conditions). Some of them could probably be traced back to John Stuart Mill (1843, especially Part III, Ch. XI), but they have been especially well clarified in one of Hempel's last works (1988). More recently, the point has also been raised by Nancy Cartwright (1999, especially where she criticizes the "received view"), albeit following a different line of reasoning, based on a different conception of scientific laws compared with that upheld by Hempel.

directly relevant here. For example, we will not deal with Aristotle's theory of emotions. Furthermore, another very important aspect of wisdom in Aristotle, which is not relevant for our purposes, is the connection between wisdom and happiness or eudaimonia. On the positive side, we are also interested in aspects that are absent in Aristotle. First of all, we would like to connect wisdom to public inquiries aimed at solving public problems. This is why in this paper we do not limit ourselves to the Aristotelian discussions of the concept of wisdom.

In the extensive literature on wisdom, we find that wisdom performs several functions. We will show how each function corresponds to a different figure of scientific experts: an interesting and so far unnoticed connection between moral philosophy and the philosophy of expertise.

We do not intend to offer an exhaustive list of the different functions that wisdom performs in public inquiries. The central point, important here, is that all these functions concern how scientific experts might apply their scientific competence to particular circumstances. These are the most important functions, which may overlap when addressing a particular public problem.

– *The instrumental function*. In this case, the purpose of the action is clearly defined. The expert only has to choose the most suitable means to achieve the goal. Although, in its concrete aspects, this function of wisdom very often requires delicate and complex evaluations, in its conceptual aspects it represents the simplest form of wisdom, since the goal set for the expert is already very clear and defined. In this case, the role of the expert is similar to that of the engineer. At least in its stylized form that we often find in literature, the engineer is the typical scientific expert who simply has to find in the given circumstances the most suitable means to achieve a well-defined end. She is not concerned with the end and the constitutive values underlying that end. Not surprisingly, it is the role of the expert that we find mainly in the empiricist or Humean tradition, where there is a clear-cut separation between ends or values, on the one hand, and technical-scientific evaluations, on the other. However, this is a very impoverished version of the function of wisdom and of the role that scientific experts often play. It is not by chance that in this context Aristotle does not use the word wisdom or *phronesis*, but rather the word cleverness or *deinotēs* (Russell 2009: 7, 24; Roberts *et al*. 2007: 306).
– *The function of specifying values*. Values are sometimes expressed too broadly to serve as an end (Russell 2009: 8-10; Richardson 1994: Ch. VIII), and this is especially true for the end of a policy. Take the welfare of a population as an example. To transform this value into an adequate goal, it is necessary to specify it better by carefully analyzing the preferences of the community. Or, take the environmental defense required by a community. Again, the

value can be specified in different ways to become the end of a policy. For example, the end could be implemented by preventing the urbanization of an area or by safeguarding green areas and minimizing pollution. Unlike the instrumental function, in this case the end is not given, since it must be carefully reconstructed by the expert starting from the particular situation in which she acts. It should be noted that laypeople's preferences are often given in a very confused way. In many circumstances, political decision-makers do not help at all to clarify the values at stake. Consequently, the task of scientific experts requires considerable skills in helping a community to transform values into specific ends.

– *The function of justifying the end*. This function of wisdom or practical intelligence has an obvious importance in ethics (Russell 2009: 7-11, 21-22; Richardson 1994) but it also plays an important role in scientific expertise. Perhaps for this reason, as a tribute to the empiricist and Humean tradition, the task that this function of wisdom plays in one of the possible roles performed by scientific experts has often been overlooked. However, this role is difficult to underestimate. For example, the goal of reducing carbon dioxide present in the atmosphere today is politically justified by climate experts who bring to light the negative consequences that a high percentage of carbon dioxide has on the climate. In cases like this, the scientific expert acts as an advocate for specific ends. Note that in these circumstances she violates the fact/value dichotomy and the alleged moral neutrality of scientific experts. However, she is not necessarily a bad expert. A scientific expert may act wisely by defending a certain purpose. More so than a layperson, it is the scientific expert who can understand the consequences of not achieving a certain end.
– *The function of handling conflicts among several ends*. One of the tasks assigned to wisdom in ethics literature concerns the best way to behave when two or more ends are incompatible in the given circumstances (Russell 2009: 25-26 and 31; Zagzebeski 1996: 221-224). Again, this function of wisdom provides a possible role for scientific experts. In many circumstances, public opinion and policymakers face real dilemmas. Conflicts of this kind are usually thought to be addressed through compromises, especially if different components of society support each end. However, scientific experts can have the role of showing that compromises are not necessary because there are technical and scientific tools that make compatible ends in apparent conflict. For example, at the beginning of the recent pandemic, the need to trace the movements of Covid patients was advocated. Many objected that traceability was incompatible with the value of privacy. However, scientific experts designed tracing methods that safeguarded both the need for health

and the value of privacy. Note that the role of the scientific expert as a reconciler between conflicting ends is also important when complete reconciliation is not at hand. Through this role, the scientific expert may be able to reduce the need for compromise, showing the partial compatibility of the ends. This happens regularly when, for example, the need for industrial development in an area clashes with the need to protect the environment.

– *The function of evaluating the overall means-end relationship*. Even if the means are adequate to achieve a given end, wisdom has the task of assessing whether the end achieved has unintended negative consequences. It is therefore the overall means-end relationship that must be evaluated. This function of wisdom or practical intelligence is underlined by Dewey's philosophy of values (cf. Dewey 1939), and clearly defines a further task of the scientific expert. To take a recent example, public opinion and policymakers may want a lowering of interest rates to favor businesses and families in difficulty. The aim is commendable, but the scientific expert might point out that, under certain circumstances, lowering interest rates leads to an increase in prices and therefore inflation. An end which, although positive, has further negative consequences is not necessarily a good end. This is why Dewey argues that often a good decision-maker should not limit herself to evaluating the means towards an end, but the overall means-end relationship.

Wisdom certainly has other functions and properties, some of which are not relevant to our discussion. For example, the wise person must not only know the reasons for a certain action but must also have the right psychological motivations to act consistently with those reasons. In any case, we believe it would be pointless to provide an exhaustive list (as long as an exhaustive list is possible). More interesting is to remark that every possible function of wisdom involves the ability to apply and articulate general theoretical knowledge to circumstances that are often unique and unrepeatable in all their details.

We hope we have managed to show the Feyerabendian "flavor" of this proposal. To be a good expert, the scientist should not take refuge in specialized knowledge. He should be able to understand the complexities of particular situations, including the social and moral values at stake. As we have shown, this requires a good deal of wisdom, a quality which today is rightly associated with humanistic culture and sensibility.

4. *The concerned citizen: framing the question*

To recall the general thesis from which we started, we argue that, in a well-functioning democracy, lay people can, and in some cases must, a) help the scientific expert to define socially relevant problems better, b) help the scien-

tific expert, even epistemically, to solve socially relevant problems. Now, the formation of the scientific expert – in the technical sense that we have just clarified – goes hand in hand with the formation of a particular kind of citizen who can actively participate in the process of public inquiry. We call this new kind of citizen "the concerned citizen".[3]

To remain faithful to the approach we have taken so far, we frame the question as follows: we ask what kind of epistemic function the concerned citizen is expected to perform and what kind of epistemic contribution they are expected to make in the context of public inquiry. It is important to note that we are concerned here exclusively with the *epistemic* nature of citizens' contribution. There is no doubt that citizens can make other relevant, non-epistemic contributions to public inquiry: for example, to mention only the most obvious one, they can provide political legitimacy to the decision reached through public deliberation. This is certainly an important aspect of the whole picture – one that should certainly not be underestimated if the aim is to develop a full and comprehensive account of citizens' public activity. But the recognition of the political role of citizens would hardly be a significant result, to say the least.

Our aim is, therefore, at the same time more limited and more ambitious: we want to show that citizens can act as epistemic agents when they are involved in a certain kind of public inquiry. We want to argue for something even stronger: we want to prove the stronger thesis that citizens can make an authentic epistemic contribution to public inquiry. For a contribution to be authentic, we assume that it must be proper to a certain group: in this sense, the contribution of scientific experts is authentic because they only have the skills necessary to generate relevant theoretical knowledge and apply it to the specific situation under consideration. Similarly, if citizens are to be viewed as genuine epistemic agents, they must be capable of making some epistemic contributions that scientific experts cannot make.

One possible way to account for such a contribution – which we are not going to pursue in this essay – would be to focus on the phenomenon of lay expertise or indigenous knowledge. Lay expertise refers to the fact that people who do not have any formal training or qualification – for instance, they do not have a degree – can nonetheless provide relevant pieces of information for solving the problem because of their rather unique experience of the situation: for example, the Cambrian farmers studied by Wynne (1996) were experts on both the composition of the soil and the behavior of their sheep because of their acquaintance with them.

[3] In this sense – and it is worth noting – our approach is openly and self-consciously normative, since we are trying to outline new social figures that could improve the overall quality of public problem-solving.

Now, the reason we don't want to go down that road is that lay expertise, though lay, is still a full-fledged form of expertise. It is a form of expertise that is acquired by being immersed in the situation rather than by undertaking a formal course of study. It also differs from scientific expertise in some other relevant respects: unlike scientific knowledge, for instance, lay knowledge does not claim to be universal or applicable to any context whatsoever. Its limits of validity are therefore quite narrow: they coincide with the limits of the experience made by lay experts. And yet, no one can reasonably deny that lay experts have relevant knowledge and that they should be involved in public inquiry.

Citizens or lay people are not lay experts. Or rather, it is not clear what kind of experience lay citizens could rely on to provide the equivalent of the local knowledge provided by lay experts. So, what other option is there available?[4] The idea is to shift the attention to the concepts through which a public problem is defined.

5. *Thick scientific concepts and public inquiries*

We begin by proposing a taxonomy. Concepts fall into many different categories, but for the purposes of our investigation, we focus on three that are particularly relevant.[5] Some concepts can be said to be purely scientific or tech-

[4] One might argue that citizens should be treated as experts in values, and that their lay expertise in values is the reason why they should be involved in public inquiry. Now, a reply along these lines is problematic for a number of reasons. First, it looks a bit like a trick. It is true that it is far from clear whether there are moral experts, let alone what such an expertise might look like. Nevertheless, it seems fair to say that if we want to use the term "experts" in its proper meaning, we should acknowledge that there must be some line separating experts from non-experts. If it is assumed that every citizen *qua* citizen is a moral expert, that amounts to a refutation of the very idea of moral expertise. One could try to reply that citizens' moral judgement is to be considered more authoritative than that of the experts and the professionals. But authoritative in which sense? If by "authoritative" we simply mean that in our societies decisions on values ultimately belong to the citizens, this is certainly true, but it does not show that the reasons why this is so are epistemic, namely, that citizens have a better and more reliable knowledge about values than experts and professionals. We still need an argument to prove this thesis. Anyway, we are not interested in taking a position on this point, as it is orthogonal to the issue we are discussing: if there is no moral expertise, citizens are not experts and, consequently, it is not clear how they should be able to give any relevant contribution to the inquiry. Even in the case in which citizens were considered moral experts, it would still be necessary to give an argument in support of the thesis that such an expertise could enable them to make an *epistemic* contribution to the inquiry.

[5] For instance, we do not consider here what may be called "commonsense concepts", namely, the set of concepts – factual or axiological – by which we conduct our daily business. Commonsense concepts are of the utmost importance in that they provide the source of semantic intuitions that citizens and laypeople use in every inquiry in which they participate. The reason why we decided to leave them aside is that they do not fit into the taxonomy, which is built around the thick/thin distinction. We do not consider it a problem since we do not see our taxonomy as anything close to a natural

nical: "lepton" is a scientific concept in the sense that its meaning is fixed by the restricted community of physicists working on elementary particles. No one – we believe – could seriously argue that someone who is not a specialist in said field has the right to have a say on the meaning of "lepton". We are not interested in putting forth an account of why this is and should be the case: we pass the buck to those who reject this intuition.

Other concepts are thin, which also means that no group of people is recognized as having any exclusive and undisputed authority over their meanings. Examples of thin concepts are good, bad, fair, and many of the general ethical and axiological notions that we use to evaluate actions and performances. There might be arguments proving that there are or there should be moral experts – to name only the most structured debate – but our institutional settings as well as our conceptual practices do not align with that insight.

Still other concepts – which are the most interesting ones from our point of view – encompass scientific and axiological elements. We call them thick scientific concepts: thick scientific concepts are those for which the adoption of a normative standpoint is needed to fix the meaning of the concepts (Barrotta *et al*. 2024; on thick concepts, see Kirchin 2013). Some rather uncontroversial examples of thick concepts are those of happiness, well-being, disease, inequality, violence, or aggressiveness (see, for instance, Alexandrova 2012; Alexandrova *et al*. 2022; Keil *et al*. 2017; on the importance of thick concepts for social research, see Abend 2019). It has been argued that biodiversity can also be conceived of as a thick concept (Barrotta *et al*. 2020; see also Makineni *et al*. 2021). Risk and sustainability are other remarkable examples of thick scientific concepts (Möller 2012; Norton 2005).

Thick scientific concepts pose some serious challenges to the received view of value-free science. It is not just that scientists qua scientist make value judgments to accept or reject a certain hypothesis; more radically, the very concepts that they use in their inquiries are value-laden through and through. While there may be some serious philosophical debate about their nature, however, there is no doubt that thick scientific concepts can be made objects of rigorous scientific investigations. The economy of happiness or the economy of well-being, not to mention the numerous different approaches to the study of human behavior or the theories of risk assessment, are well-established fields of research.

At the same time, these concepts play an important role in public policy. And while their content is – at least in part – determined by scientific inquiry, there is a sense in which their meaning also depends on how citizens and lay peo-

classification.

ple use these concepts to understand their actions and social interactions. Take the concept of happiness, for example: everyone – we guess – has an opinion about what a happy life should be like, and it would be hard to argue that their semantic understanding is completely irrelevant to the question of determining what happiness means – especially when it comes to an understanding of what public happiness or the happiness of the public should look like.[6]

It is important to stress the difference between scientific and public inquiries. To the best of our knowledge, a comprehensive and satisfactory theory of inquiries is still lacking, although the topic has recently received more and more attention, especially in the epistemological debate (Friedman 2023; Kelp 2021). For our purposes, however, some general and preliminary remarks on the structure of inquiries will be enough. We assume that scientific inquiries are those whose criteria of success are set and judged by the community of scientists; public inquiries, on the other hand, are those whose criteria of success are to be set by the larger community, which includes scientific experts, citizens, politicians, stakeholders, etc. This means that it is up to the wider community of inquirers to decide how the problem should be defined. Accordingly, while it can be argued that in scientific inquiry scientists should be free to define thick scientific concepts as they wish – for example, by choosing whatever indicators they feel are appropriate to the task – public inquiry, which aims to solve real-world problems, requires a different attitude towards meaning determination.

So, for instance, the public inquiry of ensuring the well-being of a com-

[6] Two remarks can be useful here. First, we don't mean to suggest that a person or a group of people cannot be wrong about the meaning that they ascribe to a word of a concept: if someone said that the greatest happiness in life is being beaten to death, we would assume that they were either mad or didn't properly grasp the meaning of happiness. We are not advocating semantic infallibilism. Our point is rather that a very strong argument is needed to support the idea that the meaning of thick scientific concepts such as happiness or well-being – when they are used in the context of policy-making – should be fixed and determined by the experts alone, and that citizens and laypeople do not have right to have a say on them. And we don't see how such an argument can be made unless you are prepared to buy into the idea of scientism in its strongest version possible, namely, the idea that "science" is the measure of all things, even of the meanings that laypeople use to understand their own place in the world. Secondly, we don't want to limit the scientists' freedom of research and their right to self-determination: of course, a team of scientists can freely decide which proxies or indexes to choose to measure happiness, well-being, and so on, and operationalization is one of the ways in which the meaning of a concept is fixed, or explicated if you prefer. Nonetheless, there should intuitively be some constraints on the choice they are allowed make if their aim is to understand the phenomenon (or some aspects of the phenomenon) that goes under that name. If, for instance, the only indicator considered when measuring the well-being of a population were their average height, we would be hesitant to say that such a measurement has to do with well-being. We would probably say that they are using that concept in a somehow idiosyncratic way or that we are talking past each other because we are referring to two different things.

munity cannot come out with a solution that meets the standards of a certain discipline but is completely unsatisfactory to the members of the public. The same point can be made in a slightly different way, by saying that the object to which the public problem refers cannot be reduced to one of its possible components: our favorite example is the decision to build a dam in a certain place. The intuition that we would like to capture is that such a problem is not merely an engineering problem or an economic problem or a hydrogeological problem or a real estate problem. When properly conceived a public problem is all these problems and many others taken together (Barrotta *et al.* 2022).

From these observations and remarks, we derive our semantic conclusions. Our thesis is that when thick scientific concepts are used in a public inquiry, their meaning is open to negotiation: citizens, as well as scientific experts, stakeholders, and policymakers, have the right to have a say on what those concepts mean in that particular context. One risk that must be avoided is that the meaning of thick scientific concepts be fixed in purely disciplinary or technical terms, thus betraying the publicity of the public inquiry. We guess we are here as close as we can get, moving from our background, which is strongly indebted to classical pragmatism, to Feyerabend's agenda of removing the obstacles that intellectuals and specialists erect to prevent laypeople from questioning their authoritative role.

One genuine *semantic* contribution that citizens can make to the public inquiry – we don't want to rule out, in principle, the possibility that other contributions can be singled out – is, therefore, to help clarify and define the thick scientific concepts that are used in the course of inquiry. Such a contribution is genuine in the sense that it cannot be made by any of the other groups participating in the public inquiry: citizens – who are in most cases not only the immediate or ultimate object of public inquiry, but also one of the main drivers of change when it comes to public inquiries – may have, and usually have, a specific understanding of what those concepts mean which is grounded on their experiences, social standpoints, private or community interests. In other words, the contribution that concerned citizens can make to public inquiry is to ensure that the specificity of the situation is properly taken into account by the scientific experts who are called in to solve the public problem by resisting any use of the (thick scientific) concepts that goes against their understanding of them. In Habermasian jargon, this means that citizens can help scientific experts exercise their wisdom by rejecting any forms of colonization of their life-worlds that scientific experts may more or less inadvertently introduce.

To conclude our argument, we would like to add a few clarifications that can be useful to avoid potential confusion. Firstly, at this stage we are not ready yet to put forth a stronger thesis, to the effect that thick scientific concepts are

either a necessary or a sufficient component of a public inquiry *qua* public. We strive to get there – we believe that their presence in an inquiry could be stated as a necessary condition for its publicity – but we don't have enough material to back up that claim: we therefore rest satisfied with a moderate and pluralistic approach, according to which that of making a semantic contribution is one of the functions that citizens can perform within public inquiry.

Secondly, it may be worth adding a few more words about the kind of constraints that the understanding that citizens have about the meaning of thick scientific concepts imposes on public inquiry. We do not want to argue that the meaning that citizens attribute to a thick scientific concept is to be accepted as a fact by all the other participants in the inquiry. That would entail a form of infallibilism that is at odds with the self-corrective nature of inquiry. Our point is rather to suggest that by participating as genuine contributors to the inquiry citizens may undertake a process of semantic self-clarification at the end of which they can eventually revise or even reject their original understanding of the concepts used within the inquiry. Such a process of semantic revision is made possible by, and goes hand in hand with, the wise application of scientific knowledge to the specific conditions under consideration made by scientific experts. Our ultimate goal, therefore, is not to make an argument for replacing scientists with citizens at the center of society – to use, once again, Feyerabend's formula – but to argue for the (epistemic) necessity of enlarging and enriching the community of inquirers by including citizens and non-experts.

6. *Conclusion*

In this essay we have tried to show that despite his self-professed anarchism and dadaism, some aspects of Paul Feyerabend's philosophy of science can easily be incorporated into a constructive philosophy of scientific expertise. In particular, we have relied on the theoretical resources made available by traditions of thought as different as American pragmatism (broadly conceived) and an Aristotelian-inspired account of wisdom to translate Feyerabend's reasons of distrust in scientific experts into a set of requirements that citizens and scientific experts must meet in order to participate in the public life of a well-functioning democracy.

Our analysis has resulted in a normative model of the different epistemic functions that laypeople and scientific experts can be expected to perform to contribute to solving a public problem. We take it as a way of preserving an important Feyerabendian thesis, namely, that science – or, rather, scientists, since science is nothing more and nothing less than what scientists do as a group – should not be allowed to decide alone on matters of public importance. In this

sense, Feyerabend's plea for a proliferation of points of view is still a remarkable and valuable insight: adding voices to the public debate is certainly useful to keep at bay the more or less conscious temptation of scientists to gain total control over the public sphere.

However, we have also argued that something more needs to be added to this rather minimal insight. By focusing on the epistemic contributions that the scientific expert and the concerned citizen can make to public inquiries – from the very definition of the public problems to the evaluation of the different possible plans of action – we have tried to show that there are sound epistemic reasons for enlarging the community of inquirers, thus outlining an epistemic justification for citizen participation in the activities of public problem-solving.

There is a point, however, about which Feyerabend is unquestionably right. In our democratic societies, the use of scientific knowledge to solve socially relevant problems is far from being flawless: public inquiries often tend to slide either towards technocratic solutions or towards a general and chaotic involvement of citizens, with no interest in the epistemic outcomes of their participation. Both alternatives are deeply unsatisfactory. In this sense, our model is self-consciously normative: we are aware that scientific experts (as we understand them) and concerned citizens are not well-established roles in our democratic societies. The importance of these figures for the public sphere can be defended and advocated from a philosophical point of view; however, their actual existence depends only on the decision of the public to educate and train its members to perform those functions that are needed to successfully carry out inquiries aimed at solving socially relevant problems.

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