



A militant rationality: epistemic values, scientific ethos, and methodological pluralism in epidemiology

Kelly ICHITANI KOIDE

Les valeurs de la recherche

Enquête sur la protection des données personnelles en épidémiologie

Nicolas Lechopier

Preface by Anne Fagot-Largeault

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INTRODUCTION

The word “ethos” occurs for the first time in the *Iliad* (6, 511). Homer tells us about a wild horse that struggles against the chains that keep him captive and, once he breaks loose, gallops until he finds his ethos – a place where he feels good, a place that gives him identity. In this sense, ethos is a habitat. *The values of research: inquiry about the protection of personal data in epidemiology* can be considered as a search for a scientific ethos. Its author, Nicolas Lechopier, is a professor at the Claude Bernard University of Lyon-1 (France), and formerly (2008–2009) a postdoctoral fellow at the University of São Paulo (Brazil) in the Thematic Project “Origins and significance of technoscience: on relations among science, technology and society”.

Merton’s classic formulation of the scientific ethos as a set of norms, “universalism, communism, disinterestedness, and organized skepticism (...), expressed in the form of prescriptions, proscriptions, preferences and permissions” (Merton, 1973, p. 268-9) lies behind the author’s considerations on ethics and science. This ethos, a “habitat” where scientists share a common set of epistemic and ethical values and the same goals for science, presupposes that a demarcation can be made between good and bad science, and it provides conditions for scientists to reach consensus in their judgments of the epistemic worth of certain hypotheses. The author’s own account of scientific ethos goes beyond Merton’s; it rejects the separation of epistemic and ethical values, and contextualizes any demarcation between good (authentic) and bad (pseudo-) science.

Lechopier arrives at his account of “scientific ethos” by way of an in-depth “epistemological and ethical inquiry” (p. 20) into the deliberations of the French committee, CCTIRS (Consulting Committee for the Treatment of Information in Health Research). This committee deals with the ethics of research involving human beings. It is charged with “giving an opinion – consultative – about the methodology of the projects of research, ensuring that the protocol of research is of good quality from a scientific point of view and that the personal data collected are indeed necessary for properly conducting the research” (p. 135). Lechopier devotes his attention to research in epidemiology, the field in which research is conducted on the factors that influence the distribution and variation of health-related phenomena among populations, e.g., phenomena connected with the efficacy of specified drugs and the risk factors for diseases. He analyses the evaluations made by CCTIRS of protocols shaping research projects in this field – and explores issues about demarcation that arise in these evaluations.

Lechopier points out, “as in all empirical sciences, epidemiological research is based on data”; and he continues, “however, most of the data that are relevant to epidemiology are not like [data in] other fields” (p. 17). The distinctive character of these data comes from the fact that epidemiological research involves human beings and that, to some extent, personal data must play a role in this research. Personal data, in this context, may include a wide range of information, from professional activity, through economic data and geographical location, to blood and genetic samples. Where personal data are used there is always a risk of failing to respect the right to individual privacy. Hence, according to the author, the production and use of files with personal data may be “epistemologically dangerous” (p. 74). Even if a person cannot be identified (if the data are, e.g., statistical, from the census of a country), “computational methods would allow their identification in a work analogous to that of a police investigator that matches up different information to find the singular case he trails” (p. 75). Not only does the use of personal data constitute a threat to individual privacy, but also the percentage of errors in administrative files is quite high (p. 62). Given that personal data may be used to represent citizens before the law and to affect their reputation in society, the quality of the data, as well as their usage, is particularly important.

The protocols of research projects are selected in accordance with rules that provide cognitive justification for their approval. By preventing errors when obtaining and using them, the rules ensure the integrity and quality of data; the protocols also contain measures to protect the data from abusive or unnecessary use (p. 61). Lechopier asks: on what grounds does CCTIRS demarcate scientific from non-scientific considerations, and thus appraise the sound methodological credentials of the protocols? What epistemic (cognitive) values are deployed for evaluating the scientific worth of a protocol? Is its worth sufficient to justify that using personal data is essential to the re-

search shaped by it, and hence (according to the regulations under which CCTIRS functions, ch. 5) that it is justified to use it in the research, despite the risks that using it may occasion for protecting the right to individual privacy? When addressing these questions, Lechopier argues that the domains of epistemic and ethical values cannot be separated, since “these domains are articulated simultaneously, both in the production and in the evaluation [of a protocol of research]” (p. 264). Thus, “the idea of an ethos adequate for scientific research invites us to go beyond the ethical/scientific cleavage, to annul the source of conflicts of interests, and to contribute to question the modalities in which the research can be inscribed in the social” (p. 23).

Since personal data must be used in epidemiological research, prior attention needs to be given to the legitimacy of its use and to the cognitive worth of the research. Risks that may arise from making personal data public need to be considered, and it needs to be ascertained that the research framed by a research protocol serves scientific or epistemic interests and not just commercial or industrial ones, e.g., those associated with the marketing of pharmaceutical products (cf. ch. 8). Lechopier develops these and associated themes throughout the book. In the course of doing so he explores the range of disciplines involved in epidemiological research, the contexts of the research and its applications, and he identifies three kinds of values that are used to evaluate research protocols: epistemic, ethical and periepistemic. The outcome is a significant original contribution to the debate over the role of values in science.

1 DEMARCATION AT A CROSSROADS: TOWARDS METHODOLOGICAL PLURALISM

Epidemiology, as Lechopier explains, lies “at the crossroads of many disciplines that are located in biomedicine (toxicology, pathology etc.), in mathematics (statistics, probabilities), social sciences (sociology, economy etc.) and health (clinical, public health)” (p. 17). In it, scientific research and practices to protect and improve public health come together, with the consequence that observational programs and invasive procedures are not clearly distinguished from each other. This results in the objects of investigation, methods, aims and practices of epidemiology being heterogeneous, and in the blurring of the boundaries between disciplines and levels of investigation.

The boundaries between research and action are also blurred. On the one hand, epidemiological research aims to obtain knowledge that has some degree of generality:

epidemiology, as a discipline of objective knowledge, does not aim to state what ought to be desirable or not, but to state what is. Its role is to answer questions

about sanitary issues: How many? Who? Why? What risk factors? What consequences? etc. These concern matters of fact, not of values (p. 46).

On the other hand, epidemiology aims for practical, utilitarian knowledge (p. 47) that can be used to inform interventions that efficaciously address specific problems of public health. In turn, interventions inevitably reflect ethical value judgments, especially when we consider that ethically justified procedures themselves can sometimes be invasive, since they may cause personal disturbances and problems to those who fill in questionnaires (p. 35). In epidemiology, then, it is not clear that the fact-value dichotomy can be upheld; and this underlies another tension, that between decontextualized and contextualized knowledge.

Identifying the boundaries between research and action often constitutes a problem for the appraisal of protocols, especially because some research projects have many objectives or change their focus from research to action in the course of their conduct. In order to illuminate the ambiguities that can arise here, Lechopier looks at the borderline case of Action Research (p. 48-50, 267). Action Research is well exemplified in “community-based participatory research”, a good example of which is the author’s philosophical and ethnographical investigation of the communities that live on the edge of the Tapajós River in the Brazilian Amazon region (cf. Lechopier, 2011). Community-based participatory research projects have three fundamental characteristics: they are contextualized and significant (locally appropriate and pertinent); they promote the empowerment of the communities involved in the research; and, in them, relations between the community’s participants and researchers are equitable and horizontal (Lechopier, 2011, p. 130-1). In them, quantitative epidemiological data (obtained in analytical and descriptive research) inform preventive and corrective measures that involve the participation of the affected population in public health activities. It follows that there is not a clear distinction between action and research, and consequently ethical commitments and notions of justice that shape how scientists understand their responsibilities may have impact that extends into the research projects. This does not necessarily mean, however, that what is science cannot be to some extent demarcated from what is not. Action lies within the researcher’s responsibility, and this requires consideration of the direct and indirect consequences of proposed actions, and of the available alternatives (cf. Lechopier, 2011, p. 134, 144). On the other hand, research responds to “the *intention* of producing generalizable knowledge” (p. 49), and in order to obtain theories with broad scope or generality, in a certain way it is decontextualized from its local specificities. Provided that demarcation can be made between authentic (legitimate) scientific research and other kinds of activities, and between good and

bad science, one would expect that when experts provide cognitive justification of a protocol, it would be a protocol of a research project that fits into what is properly demarcated as authentic and good science.

In a well-known work, Larry Laudan maintains that any proposal for the demarcation between authentic science and other kinds of activities is undermined in the light of his arguments that no satisfactory answers can be given to the questions: “(1) what conditions of adequacy should a proposed demarcation criterion satisfy? (2) Does the criterion under consideration provide necessary or sufficient conditions, or both, for scientific status?” (Laudan, 1996, p. 215). His arguments draw centrally upon his analysis that the hypotheses that are well tested and considered to constitute scientific knowledge exhibit “epistemic heterogeneity” (Laudan, 1996, p. 221): there are many admissible methods for their derivation and justification, and these vary from case to case, not permitting the identification of either necessary or sufficient conditions for what constitutes scientific knowledge or the scientific activities that result in it. This gives rise to the possibility that the soundness of certain methodological proposals may be appraised in multiple ways. In similar vein, Lechopier argues for “methodological pluralism” that is adequate to deal with the rich context variability of science, and hence for the necessity of choosing to use methodologies that are adequate for gaining knowledge that is relevant to the context and objective of research being pursued (p. 235) – instead of appraising scientific methods as proper or not in the light of an abstract or general cognitive value. Thus, any proposed criterion of demarcation that may come to be used in epidemiology will be deployed in a dynamic context, “in a field of social forces, in a struggle for legitimacy” (p. 280), in which scientific and ethical factors are both entertained and mutually adjusted. The author endorses not only the need for methodological pluralism (for the sake of obtaining all the relevant kinds of knowledge that are needed in epidemiological research) and the multiplicity of kinds of explanation, but also for characterizing the autonomy of scientific activity in a way that does not lead to methodological decisions favoring some perspectives of social values, rather than others.

2 PERIEPISTEMIC VALUE AND EXPERT DIVERGENCE

When experts evaluate a protocol of epidemiological research, they take into account both its social/ethical relevance and the adequacy of the design it provides for a research program that is worthy of pursuit as an authentic scientific inquiry (p. 259). Three different criteria can be pertinent to their evaluations:

- (a) humanitarian importance, judged in the light of values (shared by the experts), which favors studies of public health that are responsive to common general interests (p. 173);
- (b) utilitarian pertinence, that is, applicability in the concrete situations of study and intervention (p. 174);
- (c) epistemic relevance of the obtained knowledge, appraised under criteria such as novelty, originality, non-redundancy and generality or universality (p. 174-5).

These criteria, which can incorporate various epistemic and non-epistemic values, are deployed in experts' evaluations of protocols in order that the theories produced in the research will derive from robust methods, and contain useful and significant knowledge. Lechopier makes a distinction between epistemic/cognitive and ethical/social values that is close to Helen Longino's distinction between the constitutive and the contextual values of science (Longino, 1990, p. 4). Like her, he maintains that although these values differ in character, they cannot be separated from one another in their actual local use, where their meanings, boundaries and roles are subject to negotiation among scientists, sometimes on political grounds and sometimes with ambiguous connotations (Longino, 1990, p. 67, 1997). Lechopier provides examples of this in his analyses of experts' evaluations of protocols, where he points out the use of values, such as originality, utility or significance of the research (p. 239-40), may serve as cognitive values but with meanings that vary according to context.

To make a consistent articulation of the "intersection of the epistemic and the ethical [values]" (p. 51), Lechopier introduces an original criterion: the periepistemic value (*valeur périépistémique*). On one hand, epistemic values must be expressed in "a founding intentionality authentically scientific" (p. 259) in order to justify the use of personal data and to guarantee the dignity of people involved in an experiment (p. 74). Hence, the epistemic or constitutive values of a research project have to be structured by a scientific intention or aim to produce sound knowledge (p. 245). On the other hand, experts have to consider ethical values in order to balance "risks (predictable or not)" and "benefits (probable)" of a project (p. 262). In this sense, both epistemic and ethical values must be considered in a protocol of research, but the scientific hypothesis cannot be elaborated *a posteriori* for the sake of justifying a social or contextual interest. Since the main objective of developing a research project is to produce scientific knowledge, social or contextual interests must never precede or predominate over cognitive ones (at least in a logical sense). The periepistemic value, however, points to a boundary around epistemic ones, delimiting the scope of an investigation; "it is 'around' epistemic and non-epistemic criteria and (...) it constitutes the link [between

those criterion] in the core of evaluation” (p. 254). A research protocol has periepistemic value insofar as it is judged to have a proper balance of the epistemic and the ethical incorporated into its design, consistent with the relation it articulates between the means (research activities) and ends (epistemic values or to obtain sound/scientific knowledge) of the project, considering the ethical context in which the research project is developed.

Thus, periepistemic value serves to demarcate science from pseudo-science, appraising the epistemic intentionality of a particular research project to produce rational knowledge in a certain social configuration. However, the means to reach the epistemic goals of scientific research is to follow methodological rules, since it is not “the indifferent application of techniques to collect and analyze empirical data” (p. 250). The epistemic and the ethical values must be articulated, then, to produce useful knowledge to relevant matters – considering that “useful” and “relevant” are value laden terms – and scientists should have a disposition to attain this goal. How this goal and the appropriate balance of the epistemic and the ethical are identified will reflect the intentions and interests of a particular investigation. Then, given that epidemiology is an applied science that searches for useful truths, in its actual scientific practices there is always a spiral of mutual adjustments. This “spiral of retroaction” (p. 262) involves the epistemic and ethical values, responsive to the periepistemic value of a scientific inquiry (that may be appraised differently, depending on the intentions and interests of investigators), which “delimits from the beginning [with the adoption of a strategy of research] a field of possible researches” (p. 262).

Lechopier adopts what he calls a holistic approach to science, which has much in common with Hugh Lacey’s idea that scientific research is conducted under a strategy, which defines the characteristics of a scientific research project at the outset, constraining the admissible kinds of theories and selecting the domain of phenomena that will be investigated (Lacey, 1999). When scientists define or adopt a strategy, a perspective of epistemic and social values also has to be adopted, and the objectives of research have to be delineated in the light of them. In Lechopier’s perspective, ethical and epistemic values are inseparable and have dialectical interactions with one another at all moments of scientific activity (p. 244, 264-6). Unlike Lacey (and like Longino), he does not separate the moment of the adoption of strategy and from that of the cognitive appraisal of theory, a moment at which there should be no legitimate role for values other than epistemic ones.

The evaluation of a protocol, then, involves more than appraisal of its scientific methodological quality; it is made in the value-laden arena of scientific ethos (p. 202-4). What is authentic research can only be demarcated from pseudo-science when, in order to justify the development of a research project, experts identify a “guid-

ing question” (p. 253) which must be oriented by epistemic values that are articulated with ethical considerations by the periepistemic value of a research project to produce sound theories. We saw above that a balance must be sought in authentic research between epistemic and ethical considerations (and not the subordination of one to the other) and that, in both the production and the evaluation of protocols of research, epistemic and ethical values are both essentially involved (cf. chapter 7). A scientific ethos is constituted by this dialectic of the epistemic and ethical values. In it, the periepistemic value and, hence, the authenticity of a research project is determined:

the work of demarcation done by the experts of the CCTIRS cannot be done without their methodological qualifications or their knowledge of their scientific fields and the contexts of application. But cognitive [values] and axiological [ethical] references are joined to form a criterion that permits to unmask those “researches that are not researches”, those “simulacra of research” (p. 253).

Since how authentic science is demarcated from what is not reflects a scientific ethos, experts – depending on the intentions and interests informing an investigation – may differ in their judgments concerning demarcation. Lechopier illustrates this with an example in which two experts of CCTIRS gave different verdicts, different appraisals of the periepistemic value, of the same protocol of research. The protocol concerned an inquiry into the effects of a particular antipsychotic drug on the socialization of schizophrenic patients (p. 246), whose objective was to evaluate the impact of treatment with this drug on patients’ social autonomy over a period of six months. The experts apparently agreed that the protocol met the methodological and epistemic conditions necessary for being considered authentic research. One of them attested that the inquiry had an appropriate epistemic aim of understanding the impact of a treatment. The second expert testified, however, that the epistemic aims were subordinated to non-epistemic ones, since (in his judgment) the central goal of the study was to do market research and gain publicity for the drug so that it would be prescribed more frequently (p. 247-8). According to him, “the hypothesis was set up *a posteriori* to serve as ‘scientific’ cover for collecting these data [from patients], in a typical ‘inverse construction’” (p. 248), and so he concluded that the research proposed in the protocol is not authentically scientific and that it incorporates a conflict of interests.

This example clearly illustrates the importance of considering the ethical, social and contextual interests of scientific research, instead of evaluating only its epistemic and methodological virtues – and also that judgments of periepistemic value are not always shared by all members of a committee. In it, different experts gave diametrically opposed verdicts on the very same protocol of research, indicating that they did

not appraise the balance of cognitive and ethical intentions of the protocol using the same criteria. Experts need to scrutinize the guiding question of a given scientific research project in order to grasp its intentions, and to appraise whether they justify conducting the investigation. The project is legitimate and worthy of pursuit, provided that it incorporates a genuine epistemic motivation and ethical commitments that are in accordance with society's interests and aims. Although the experts did not share the same periepistemic criterion, they shared the same scientific ethos, that is, the same goals, epistemic and social values, and ethical rules of production of epidemiological knowledge; yet, they gave different verdicts on the same protocol, exemplifying the conflicting character of evaluations in specific situations.

3 MILITANT EPISTEMOLOGY: THE ETHICAL DIMENSION OF SCIENTIFIC ETHOS

Lechopier maintains that he is offering a philosophical, historical and ethnographical analysis of a scientific committee (p. 22, 229) and, certainly, his analyses of CCTIRS's decision-making processes go far beyond ethnographic "fieldwork" (p. 21). Each of the book's ten chapters display the acuteness of his observations, his detailed analyses of the disciplinary layers of epidemiology, and his ability to recreate the committee's history and to reconstruct the underlying structure of the values that are incorporated into its deliberations and decisions. Although the investigation concerns epidemiology, readers will not have difficulty in extracting more general epistemological and ethical conclusions that apply also to other disciplines.

In this way, Lechopier's work displays a "militant rationality" (p. 280): the making of a scientific ethos occurs concomitantly with engaging in scientific practices. In this ethos or "habitat", scientists must find rules oriented by the epistemic and ethical values and the objectives, which will determine the legitimacy of scientific research. The tension between local and generalizable knowledge produces a dialectical articulation between contingent and universal inquiries, conducting research that incorporates not only impartial observation but also local action. In this sense, an epistemological "militancy" can be interpreted as a rationality that is inscribed in a social, contingent world that poses for scientific investigation constantly changing questions that need to be investigated under a plurality of admissible methods. Scientific ethos, then, is a space for rational wandering but also for social transformation.

The book goes beyond two opposing viewpoints: that, despite the multiple interests that motivate research, science can impartially evaluate its hypotheses and produce objective knowledge; and that, because science and the applications of its products are socially situated, its results embody social relativism, so that no particular

protocol of research can be defended as neutral, worthy of support regardless of the ethical point of view that is held. By identifying a scientific ethos as an integral component of scientific practices, Lechopier is able to claim that “there are social conditions for the production of knowledge that satisfy epistemic and ethical values better than others do” (p. 282). The ethical dimension of scientific ethos, then, is not only an institutional imperative to control the character of scientific activity, as in Merton’s analysis. For, according to the author’s argument, there are no permanent, immutable criteria for making epistemological and ethical judgments about a hypothesis: scientists cannot evaluate the methodology of a research project, in view of the ethic and epistemic values embodied in it, without considering its context (p. 164). Therefore, the significance of scientific research should be open to democratic debate (p. 240), permeable to contextual justification, with a militant rationality. As the Greek ethos was a habitat that gives identity and well-being, the scientific ethos of *Les valeurs de la recherche* also has its own virtues and aims that do not permit keeping ethical considerations out of scientists’ decisions and responsibilities.🌐

Kelly ICHITANI KOIDE

Doctoral student, Doctoral Studies in Philosophy,
Faculty of Philosophy, Letters and Human Sciences,
University of São Paulo, Brazil.
kellykoide@usp.br

REFERENCES

- HOMERO. *Ilíada*. Translated by C. A. Nunes. São Paulo: Atena, 1949.
- LACEY, H. *Is science value free? Values and scientific understanding*. London/New York: Routledge, 1999.
- LAUDAN, L. The demise of the demarcation problem. In: _____. *Beyond positivism and relativism: theory, method and evidence*. Colorado/Oxford: Westview Press, 1996. p. 210-22.
- LECHOPIER, N. Ética e justiça nas pesquisas sediadas em comunidades: o caso de uma pesquisa ecossistêmica na Amazônia. *Scientiae Studia*, 9, 1, p. 129-47. 2011.
- LONGINO, H. *Science as social knowledge. Values and objectivity in scientific inquiry*. Princeton: Princeton University Press, 1990.
- _____. Cognitive and non-cognitive values in science: rethinking the dichotomy. In: NELSON, L. & NELSON, J. (Ed.). *Feminism, science and the philosophy of science*. Dordrecht: Kluwer, 1997. p. 39-58.
- MERTON, R. *Sociology of science*. New York: Free Press, 1973.
- NELSON, L. & NELSON, J. (Ed.). *Feminism, science and the philosophy of science*. Dordrecht: Kluwer, 1997.