

SPECIAL COMMUNICATION

Ruth Macklin,¹ Ph.D.

Ethics and Value Bias in the Forensic Sciences

ABSTRACT: This article focuses on ethical problems that arise in the practical sphere when professionals and scholars enter the forensic arena. Two different yet related stories from the author's experience are recounted. The first is drawn from the author's membership on the blue-ribbon committee convened by the National Research Council of the National Academy of Sciences, which issued the report entitled *DNA Technology in Forensic Science* in 1992. The second is an inquiry into the role of the bioethicist in the forensic setting, based on the author's response to cases in which she was invited to serve as an expert witness. The article concludes that since the forensic sciences deal with matters of truth and justice, a commitment to uphold these important values forms the moral basis for justifying the actions of those who work in this field.

Other contributions to this symposium address problems and challenges in ethical decision-making, multiple and competing ethical theories, and concerns related to ethical justification. This article focuses on ethical problems that arise in the practical sphere when professionals and scholars enter the forensic arena. I recount two different yet related stories. The first is a tale from my own experience as a member of the blue-ribbon committee convened by the National Research Council of the National Academy of Sciences, which issued the report entitled *DNA Technology in Forensic Science* in 1992 (1). The second is an inquiry into the role of the bioethicist in the forensic setting, based on my response to cases in which I was invited to serve as an expert witness. It is my hope that both topics will stimulate reflection on the numerous ways that moral commitments, social and political attitudes, and even scientific beliefs influence thought and action in the forensic sciences.

The NRC Committee on DNA Technology in Forensic Science

Let me begin with my experience on the National Research Council (NRC) committee charged with issuing a report and recommendations on the use of DNA technology in forensic science. As DNA typing began to be used in court proceedings, an increasing number of questions and challenges arose. This study was initiated at the National Academy of Sciences in January 1990. Committee members included experts in genetics, forensic science, jurisprudence, law, and ethics. Some committee members were affiliated with academic institutions, others with independent research institutions, others with state police or state forensic departments, and one member was a sitting judge in a US district court. Although

the committee eventually reached consensus on the many technical, statistical, legal, and ethical matters on which it deliberated, one ongoing disagreement surprised me because of the ferocity of the debate and the passion with which opponents maintained their views. My surprise was further heightened by the fact that the subject of this debate was a technical rather than an ethical point of contention. Nowhere outside of the debate over abortion had I encountered such fiercely held views. Nowhere in my experience on local, national, or international ethics committees had I witnessed such deeply entrenched positions and unwillingness of opponents to budge an inch.

What was this debate about, and why was it so rancorous? The disagreement was rooted in population genetics, and surrounded the statistical basis for interpreting the results of DNA typing. Interpreting a DNA typing analysis requires a valid scientific method for estimating the probability that a random person by chance matches the forensic sample at the DNA sites examined. The technique that had been used by forensic laboratories to calculate genotype frequencies is known as the multiplication rule. This method assumes that the individual alleles comprising a genotype are statistically independent, and so their frequencies are simply multiplied. However, some leading population geneticists have argued that this assumption of statistical independence is flawed in the case of populations that have a substructure. In a population that contains groups each with different allele frequencies, the presence of one allele in a person's genotype can alter the statistical expectation of the other alleles in the genotype. The consequence of this situation is that the true genotype frequency is higher than the multiplication rule would produce using the average frequency in the entire population.

Some members of the NRC committee argued vigorously that the assumptions underlying the standard tool, the multiplication rule, were sound and there was no scientific reason to abandon them. Others argued just as strongly that the science of population genetics demonstrates without question that population substructures exist and that they must be accounted for in the statistical interpretation of DNA typing analysis. The debate over what initially appeared to be a rather esoteric point of statistical interpretation was protracted and appeared intractable. The committee eventually reached a compromise solution by adopting a modification of the multiplication rule termed the "ceiling principle." Without going into technicalities here, the ceiling principle is a conservative way of interpreting the data. It avoids making any particular assumptions about population substructure, but rests on the worst-case assumption about genotype frequencies. It is termed

¹Albert Einstein College of Medicine, Department of Epidemiology and Social Medicine, Bronx, NY.

the “ceiling principle” because it uses the maximum frequency that could occur in any subpopulation.

I lacked the scientific expertise to be a party to this debate. But I joined one side as soon as I recognized the implications. The standard tool—the multiplication rule—has a higher likelihood of producing a random match between two DNA samples than does the method using the ceiling principle. With a higher likelihood of a random match, there is an increased probability of identifying an innocent person as the one who committed a crime. The more conservative technique makes it exceedingly unlikely that DNA evidence could be used to convict an innocent person. What appeared at first to be an esoteric scientific debate turned out to have significant ethical and legal implications.

Members of the committee who were involved in law enforcement favored the standard rule, arguing that the ultra-conservative approach the committee was taking would hamper law-enforcement efforts. This stance was not limited to the law-enforcement personnel themselves, but was embraced by at least one of the geneticists who frequently testifies in criminal cases on the side of the prosecution. Arguments were voiced that adoption of this conservative approach would cause DNA fingerprinting cases to be thrown out of court (it is by now quite clear that this has not happened). Other scientists on the committee demonstrated an equally clear value bias in the other direction, arguing that a less conservative method is unfair to criminal suspects since it increases the likelihood of convicting innocent persons of crimes. It became evident that the personal political and value biases of committee members influenced their adherence to one or another statistical basis for interpreting DNA data.

Why should this be surprising? I suppose it is not. After all, people’s values on all sorts of social and political issues influence their thinking about existing or proposed public policies. Furthermore, this seems to be a matter of the psychological beliefs of individuals. What does it have to do with ethics and forensic science? I think it has a great deal to do with the integrity of experts who are called upon to testify in court, to prepare background papers for forensic purposes, or to serve on committees charged with making policy recommendations such as the NRC committee. The ethical concern is one of conflict of interest—not in the usual financial meaning of that concept but rather, in the sense that strong value biases affect a person’s ability to be fair and objective in a role that calls for fairness and objectivity.

Whatever committee one sits on or activity one engages in today, it is necessary to sign a conflict-of-interest statement. Disclosing an actual or potential financial conflict does not necessarily disqualify a person from serving on a committee or delivering a speech but it is still necessary to make the disclosure. One member of the National Research Council committee had to resign quite late in the committee’s work because he had a financial conflict of interest he had not revealed at the outset (I do not know whether this person concealed the conflict deliberately or whether it was an honest oversight until it came up). If money can unduly influence the views of people who serve on policy-related committees, surely their ethical, political, and social values are equally likely to affect positions they hold and try to convince others to adopt, as well.

Let me reiterate that I do not contend that these conflicts of interest should disqualify people from serving. The NRC committee needed the experts in forensic science who are employed by state police. The committee also needed the scientific experts who, as a matter of personal values rather than professional affiliation, sided more with law enforcement than with accused suspects. But people who serve on such committees should be prepared honestly

to assess their own value biases and acknowledge—at least to themselves, if not also to others—the way in which those biases can influence the scientific or policy judgments they are called upon to make.

Is there is a point beyond which it becomes unacceptable to hold a value bias and still serve in a forensic context? Possibly yes, but certainly in cases where a strongly held position leads to dishonest behavior. NRC committee members signed a statement promising to keep confidential all the deliberations of the committee until the final report was issued. Somewhere along the way, NRC staff informed the committee that its deliberations and preliminary conclusions had been leaked to the FBI. The FBI was one of the sponsors of the committee’s work and had a strong interest in a report that would endorse the use of DNA typing in forensic science and not throw up any barriers to the way the FBI was dealing with this type of evidence. In fact, after the committee’s final report was issued, the FBI did criticize the recommended “ceiling principle” as unnecessarily conservative (but the bureau nevertheless adopted guidelines for implementing the principle). It was presumed that a committee member leaked the contents of the unfinished report to the FBI, clearly an unethical act in violation of the promise of confidentiality. All committee members received a memorandum from the director of the NRC reporting this incident and commenting on the gravity of the infraction. Some might question just how serious a violation of ethics is involved in breaching a confidentiality agreement, but there is no doubt that it is an ethically unacceptable action that was motivated by a pro-FBI value bias.

The Ethical Role of the Bioethicist in the Forensic Setting

Let me turn next to the role of bioethics in the forensic setting. With increasing frequency, bioethicists are being asked to serve as expert witnesses in court. Many do so. I have steadfastly refused to accept that role, despite having been asked numerous times. One case involved a family in which the wife had signed a DNR Order for her seriously ill husband who lacked the capacity for make the decision for himself. Despite the existence of that valid medical order, the patient was intubated when his breathing became distressed. The family contended that placing the patient on the ventilator violated the meaning of the DNR order. The family’s attorney asked me to serve as an expert witness on their behalf.

Another case involved a company that prepares blood products for transfusion. An action against the company was initiated by people with AIDS who had become seropositive following blood transfusions. They contended that the company should have treated all blood intended for transfusion with heat factor, despite the fact that the patients were transfused and acquired the HIV infection before the virus had been identified and known to be transmitted by blood transfusions and before screening of blood for HIV was in place. An attorney representing the blood product company sought to retain me as an expert witness on behalf of his client.

A third case involved a large lawsuit brought against a tobacco company. A lawyer for the tobacco company sought my services as an expert witness in opposition to a bioethicist who had already been retained by the plaintiff; if their opponents were bringing a bioethicist to testify in court, the tobacco company wanted one also.

A fourth occasion also involved blood products but had nothing to do with AIDS. A patient had developed an allergic reaction to a substance in the blood products she received. The physicians and the blood product company knew about the risk of allergic reaction, but the probability of its occurrence was quite low, and

therefore, it was rarely if ever disclosed as part of the informed consent process. The company and the physicians maintained that since it was standard practice not to disclose this small risk, they did nothing wrong by failing to disclose. The patient who had the allergic reaction said she should have been told about the risk, albeit small.

A fifth instance was a criminal case in which a person was charged with performing active euthanasia on an incapacitated, dying family member. The attorney for the person being charged with homicide sought my services as an expert witness in bioethics.

In each of the above cases, my specific reason for refusing to serve as an expert witness was somewhat different. Yet I also have a set of general, principled reasons why I believe it is usually inappropriate for bioethicists to testify in court as experts, or at least, why I will continue to refuse to do so. I emphasize that these principled reasons apply to bioethicists only, and not to members of other professional groups who are accustomed to serve as expert witnesses. Let me begin with the reasons in each of the four cases I've described.

In the first case, my personal values about end-of-life decisions conflicted with what I would have had to say truthfully in my ethical analysis of the case. An examination of the facts and a strict ethical analysis of the series of events would almost certainly have revealed that the doctors inserted the breathing tube while the patient was in respiratory distress but that the patient's heart had not stopped nor had his lungs stopped functioning. Strictly speaking, then, this was an intubation but not a "resuscitation" according to a medical definition and the New York state law on Orders Not to Resuscitate. So the doctors and the hospital could probably have truthfully maintained that they were not violating the do-not-resuscitate order. On the other hand, those medical and legal details may well have been unclear to the family who signed the DNR order. We would have to assume either that the family was medically sophisticated enough to know the difference between intubation in the event of respiratory distress and resuscitation following cessation of cardiac or pulmonary function; or that this distinction was carefully explained to them in terms they could understand. Furthermore, when the family requested that the patient be removed from the ventilator, there was no clear legally available mechanism for the physicians or the hospital to comply with their request. The patient had not appointed a healthcare proxy or given clear and convincing evidence that he would not have wanted to be placed on a respirator. New York state has a high standard of evidence—clear and convincing evidence—of a patient's prior expressed wishes, and hospital attorneys and risk managers typically insist that the family meet this standard of evidence before life-sustaining treatment can be withheld or withdrawn. So although I believed that the physicians and the hospital were technically not in violation of the DNR order the family had signed, my personal bias lay with the family who had no other recourse in their decisionmaking surrounding their seriously ill relative who lacked the capacity to decide for himself. I believe that the New York State law requiring clear and convincing evidence is unduly restrictive of families' decisionmaking authority on behalf of their relatives. Although physicians and hospitals are bound to comply with such laws, as an ethicist I could not in good conscience defend that compliance if I believe the law itself to be ethically flawed.

In the second case, my sympathies lay with the persons who acquired AIDS as a result of blood transfusions, but here too I think the blood product company was not at fault. If the company was practicing standard procedures and had no conceivable way of knowing that HIV existed, much less was contaminating its

blood supply, surely the company should not be found liable. However, nothing that leads to this conclusion requires the expertise of a bioethicist. Any thoughtful, reflective person might reach the same conclusion. Although a form of moral reasoning is involved, it is not moral reasoning that relies on knowledge or experience in the field in which I would be called as an expert witness. It would be dishonest to pretend that my expertise as a bioethicist qualifies me to serve as an expert witness in the case. The underlying principle is that if a person did not know, and could not possibly have known, the causal conditions that led to harm, the person should not be held morally responsible for the harm.

In the third case it was easy to say "no" because I would not testify on behalf of a tobacco company. I don't remember the details of the plaintiff's charge against the company, but my refusal had much less to do with the specific details of the case than with my own integrity. Even if I thought the tobacco company, like the blood product company, should not have been found liable in the specific case at hand, I could not in conscience testify in court to defend a tobacco company. This is an instance of personal values standing in the way of what truth or justice might possibly require in the individual case. As soon as the attorney who telephoned me revealed that she represented a tobacco company, I replied firmly (but politely) that I could not testify on their behalf.

The fourth case, involving disclosure of a low risk, was also one in which a bioethicist had been retained by the plaintiff's attorney. The lawyer who called me revealed the name of the opposing bioethicist, a prominent person in my field with whom I usually, but not always, agree. He was testifying on behalf of the patient's autonomy—the right of the patient to be informed of risks, even minimal ones, as part of the informed consent process. On the one hand, I am fully aware that the standard of disclosure in the informed consent process is somewhat lower than the higher standard of "full and frank" disclosure. Physicians are not required to recite all of the side effects listed in the PDR. Why, then would I not testify on behalf of physicians (and the company) when their actions did not, in fact, fall below the standard of care? I had two reasons. First, once again, my expertise as a bioethicist did not uniquely equip me to provide such testimony. The standard of care in medicine is typically a matter on which practicing physicians are called upon to give testimony. Those acquainted with medical practice and with the legal standards of informed consent are equally if not better qualified than a bioethicist to testify about this particular matter. My second reason relates to my personal moral commitments in bioethics. I entered this field 25 years ago with a concern for promoting the interests and protecting the rights of patients. This does not imply that I am "anti-doctor." As a faculty member in a medical school, I strive to educate students and young doctors and to get them to reflect on what they are doing. If I were to testify in court against a patient who had been harmed in the course of treatment, I would feel like I was betraying my moral commitment. If the standard of disclosure of risks and side effects does not require telling patients about a risk of this frequency, perhaps there is something wrong with the standard.

Finally, the euthanasia case, which is even more complicated. What would the attorney for the prosecution be asking of a bioethicist in such a case? Laws stipulate, more or less clearly, what counts as homicide, assisting a homicide, and the other legal categories involving the death of an individual at the hands of another person. Interpretation of criminal laws is not the province of the bioethicist. Bioethicists might argue for changes in the laws regarding euthanasia, physician-assisted suicide, and the like. As a case in point, I

have recently signed on to an amicus curiae brief prepared by bioethicists for the assisted suicide case currently before the US Supreme Court. But that is not what the bioethicist is asked to do in the courtroom in a particular case of euthanasia. Suppose I took the position that euthanasia is sometimes ethically justified. No doubt the opposing attorney would ask whether all bioethicists concur on that point, and I would have to answer truthfully, "no." Suppose the attorney asked whether there exists an authoritative source in bioethics in which euthanasia is determined to be ethically defensible. Although I might answer yes to that question, I would also have to answer yes to the question whether there exists an authoritative source in bioethics in which euthanasia is determined to be ethically indefensible. "So, then, Dr. Macklin, it is merely your opinion that euthanasia is ethically defensible in some circumstances, and it is the mere opinion of other bioethicists that euthanasia is ethically indefensible in those same circumstances?"

The expertise of a bioethicist does not permit me to give the sorts of answers on a witness stand that are responsive to an attorney's or a judge's questioning. This goes to my general, principled reason for deciding not to serve as an expert witness. Bioethics is a nuanced field. Unlike most fields in science and technology, "yes" and "no" answers to questions could not possibly capture the distinctions or the conceptual subtleties required for reasoning about topics in bioethics. Being on a witness stand does not permit the expert to provide an ethical analysis, but that is precisely wherein lies the expertise of bioethicists. To act as an expert witness would either go beyond my expertise in the field or it would fail adequately to employ that expertise. Either situation would, for me, involve a form of dishonesty. What's more, in all likelihood I would not be able actually to assist the side I had agreed to testify for in the manner they would expect. An additional negative consequence is that a bad performance could make the entire field of bioethics look bad.

The five examples I just gave illustrate my second general reason for refusing to serve as an expert witness. Since I have my own ethical views about many of the topics bioethics deals with, my

moral integrity would not permit me to serve as an expert witness for a defendant or plaintiff with whose behavior, motives, or other features I disagree. Being an expert witness in the field of bioethics is not a morally neutral activity because bioethics itself is infused with moral values. Bioethicists have expertise regarding ethical theories, moral principles, and moral reasoning. But this does not make them experts *in* ethics.

Conclusions

In these remarks I have not appealed explicitly to the ethical theories Dr. Rosner sketched, nor have I referred by name to one or more ethical principles that have become common coin in bioethics. I believe those theories and principles to be relevant to bioethics but not always needed for the purpose of an ethical analysis. I have, however, employed some general ethical concepts common to everyday life—concepts such as honesty, integrity, fairness, objectivity, and moral commitment. My intention in recounting my experience on the NRC committee and in describing my reasons for choosing not to serve as an expert bioethics witness was to illustrate a form of moral reasoning and to indicate the importance of self-reflection in the moral sphere. It is one thing to explain why people do what they do: that is the sphere of moral psychology. It is quite another to justify the actions of oneself or others. Since the forensic sciences deal with matters of truth and justice, a commitment to uphold these important values forms the moral basis for justifying the actions of those who work in this field.

Reference

1. Committee on DNA Technology in Forensic Science. DNA technology in forensic science. Washington, DC: National Academy Press, 1992.

Additional information (reprints not available from author)
Ruth Macklin, Ph.D.
Department of Epidemiology and Social Medicine
Albert Einstein College of Medicine
1300 Morris Park Avenue
Bronx, NY 10461