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Prognostication and Bioethics

A SOCIAL SCIENTIFIC CRITIQUE of the field of bioethics can occur on at least two levels. The first involves the use of social-science theory to destabilize some of the assumptions underlying bioethics—for example, by arguing that ethics are socially contingent or culturally relative. The second involves the use of empirical social-science methods and findings to show how bioethical concerns play out in real situations or how ethical decisions are shaped by real behaviors and beliefs—a sort of "thick description" of bioethical decision making.[1] Using conceptual and empirical work on the problem of prognostication in medicine, and drawing on a multi-year research project of mine on this topic, I intend to do the latter here. My research involved numerous complementary studies that included mail surveys, psychological experiments, cohort studies, interviews, content analysis of texts, and participant observation—all directed at understanding how and why physicians do and do not prognosticate.[2]

Patients expect physicians to prognosticate in a fashion that is simultaneously—yet impossibly—honest, accurate, and optimistic.[3] Consequently, physicians find themselves in a situation fraught with "sociological ambivalence," that is, a situation that embodies contradictory demands placed on the occupants of a particular social role.[4] This social-structural ambivalence can in turn result in an intrapersonal, psychological ambivalence. Partly as a result of this ambivalence, physicians find

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prognostication, particularly about the end of life, to be troubling and stressful, and they employ approaches to cope with this stress. One is simply to avoid prognostication altogether; but physicians also adopt other compensatory behaviors, attitudes, and even ideological commitments when it comes to prognostication.

The avoidance of prognosis in medicine is quite thoroughgoing. Despite being a fundamental and important aspect of medical care, prognosis is virtually absent from medical education, medical texts, medical research, and patient care.[5] The relative absence of prognosis in modern medical thought and practice certainly cannot be explained by an absence of patient need or interest, however. Indeed, when patients are sick, their interest in diagnosis and therapy is often secondary to their interest in prognosis.[6] The avoidance of prognosis by physicians, it turns out, is neither accidental nor incidental, for there are powerful norms in the medical profession militating against both the development and the communication of prognoses. Physicians are socialized to avoid prognostication.

Remarkably, physicians tend to avoid two distinct elements of prognostication: foreseeing and foretelling. *Foreseeing* is a physician's inward, cognitive estimate about the future course of a patient's illness, and *foretelling* is the physician's outward communication of that estimate to the patient. There are several reasons that physicians avoid prognostication, including the objective difficulty of prognostication, the uncertainty and error inherent in it, the consequential nature of such error for the patient's care and the physician's reputation, the dependence of prognosis on social factors that physicians consider to be "soft," and the troublesome emotions prognosis can evoke for patients and physicians alike. Finally, physicians avoid prognostication because of a complementary relationship between therapy and prognosis in both the theoretical and the practical consideration given to disease; when therapy is available, as it usually is nowadays, prognosis is avoided.[7]

Prognostication in medicine raises questions quite beyond whether and how prognoses are developed or communicated. It also raises questions about certain ethical and moral aspects of physicians' practice. Both the avoidance of prognostication and

certain related attitudes and practices have important implications for the theory and reality of a wide variety of bioethical decisions. Pertinently, physicians respond to the challenge of prognostication in a host of ways that have magical or religious overtones not generally expected in biomedical contexts. Here, I will examine some of the implications for bioethical decision making of the role prognosis plays in medical care. I will consider in particular detail one aspect of physicians' attitudes toward prognosis: namely, their belief in the self-fulfilling prophecy. In so doing, I hope to illustrate how social-science research on medical care can, and should, inform bioethical decisions and bioethical analysis. And I will argue that a clear understanding of the role of prognosis in medicine in turn supports the notion that prognostication itself is a deeply moral aspect of the physician's social role.

PHYSICIANS' BELIEFS ABOUT THE SELF-FULFILLING PROPHECY

Physicians do not merely find prognosis stressful and worthy of neglect; they also find it dreadful. This dread primarily arises from two sources, both of which have moral and ethical implications. First, prognosis is broadly identified with death in medical care. When physicians predict mortality, they are struggling with their role in forestalling or hastening death, and they unavoidably confront their relationship both to the individual patient's death and to death in general. To the extent that prognosis is linked with death, prognostication is necessarily mysterious and dangerous, and, therefore, dreaded. Second, physicians believe that predictions can affect outcomes through a kind of "self-fulfilling prophecy."[8] The self-fulfilling prophecy is a complex phenomenon, and, among other things, analysis of physicians' attitudes and behaviors in this area demonstrates a difference between *positive self-fulfilling prophecy,* which refers to favorable predictions that cause corresponding favorable outcomes, and *negative self-fulfilling prophecy,* which refers to unfavorable predictions that cause corresponding unfavorable outcomes.

Beliefs about the self-fulfilling prophecy are illustrative of a broader class of nonrational beliefs that are evoked by and

supported by the necessity of prognostication—for prediction evokes both magical and religious sentiments in physicians. This is not unexpected, since both magic and religion are fundamental ways of coping with the strain posed by the limits of human ability and of science, especially in the face of death. The combination of high uncertainty, high stakes, and high emotional interests in medicine in general—and in prognostication in particular—produces a situation strongly conducive to magical and religious ways of thinking.[9] Nevertheless, physicians' belief in the self-fulfilling prophecy and their ideas about how it works are intriguing—and consequential for bioethical decision making—because they are found in a population of professionals who are ostensibly immune from such seemingly nonrational thinking and who are committed to, and trained for, a positivistic, biomedical perspective on illness and medicine. The transcendent outcomes that preoccupy medical care, the malleability, importance, and meaningfulness of these outcomes, and the interrelationship between technique and affect in medicine combine to provide fertile terrain for the emergence of such thinking.

Sociologist Robert K. Merton opens his classic essay on the self-fulfilling prophecy by citing a sociological theorem attributed to W. I. Thomas: "If men define situations as real, they are real in their consequences."[10] Predictions about a given situation are not only an integral part of the situation but also, more important, affect current behavior and subsequent outcomes. In affording an opportunity for self-fulfilling prophecy, social systems are unique. People can act on their predictions about the future in order to make the predictions come to pass. This effectiveness of predictions about the future is one of the main ways that social systems differ from physical ones—that is, they are *purposeful* rather than either *deterministic* or *stochastic*.[11] And it is one of the main reasons prognosis in medicine has both metaphysical significance and ethical implications: the effectiveness of prediction gives physicians greater clinical power and greater ethical obligations.

Prediction is effective on two levels. It may affect *present behavior* as a consequence of its articulation, and it may affect *future outcomes* through the change in behavior. These two

effects are in turn enhanced by the conscious knowledge among actors that prediction has these consequences. People may in fact use predictions as a deliberate means to alter the future. In other words, it is the belief that predictions *can* alter the future (as well as beliefs about *how* predictions alter the future), more than the content of the predictions themselves, that is essential to the effectiveness of prediction. If people simply had impressions of what the future held (whether accurate or inaccurate) but did not believe that these impressions should or could influence the present or the future, then prediction would not have as much influence as it does. Moreover, people may believe in the self-fulfilling prophecy and act accordingly regardless of whether, in fact, the self-fulfilling prophecy "really works." While, for example, in medicine there is some evidence that predictions actually do contribute to outcomes, the key point is that even if they did not, the majority of doctors *believe* that predictions can cause outcomes.[12]

Physicians identify three mechanisms by which the self-fulfilling prophecy works. The first mechanism is to affect *patients'* attitudes, behaviors, and physiology. For example, physicians believe that predictions can make patients anxious or depressed and so affect outcomes, can influence patients' compliance with treatment and so affect outcomes, and can modify immunological or cardiovascular parameters and so affect outcomes. The second mechanism is to affect *physicians'* attitudes and behavior. For example, a prediction of an unfavorable outcome can cause a physician to become neglectful, and so result in the unfavorable outcome that was predicted. Or, a prediction that a critically ill patient will die can result in the withdrawal of life support and so cause the predicted outcome. The third, and most provocative, mechanism is that physicians believe that the self-fulfilling prophecy can work through direct, quasi-magical means: a prediction is made, and even if it is not revealed to the patient, it can cause something to happen in a word-made-flesh sort of way.[13]

That physicians believe that their predictions may be effective heightens their sense of responsibility for patient outcomes—whether a prognosis is made or not. The negative self-fulfilling prophecy raises the frightening prospect that physicians might,

through the formulation and articulation of a prognosis, however accurate clinically or probabilistically, harm, or even kill, their patients. The belief in the negative self-fulfilling prophecy consequently places a powerful constraint on both formulating and communicating unfavorable predictions. The positive self-fulfilling prophecy is only slightly less problematic. The belief in the positive self-fulfilling prophecy raises the unsettling prospect that physicians might be expected to cause whatever favorable outcome they might predict. In other words, patients might once again hold physicians responsible for the outcome. Favorable predictions—whether volunteered by physicians or elicited by patients—considerably increase the onus on physicians.

The effectiveness of prognosis and the responsibility for outcomes it engenders cause physicians to believe that it is dangerous to make prognoses. The danger of prognosis is compounded, however, by the quasi-magical nature of the possible direct action of the self-fulfilling prophecy. The prospect that predictions might fulfill themselves in a quasi-magical way makes them all the more dangerous in that, if they are effective in a non-logico-rational way, then they are that much harder to understand and to control. Prognoses might "take on a life of their own." Physicians are much less threatened by the prospect that a prognosis might lead to changes in a patient's behavior that then might lead to a fulfillment of the prediction—a mechanism that makes logical sense—than they are threatened by the possibility that the prognosis itself, directly and obscurely, might lead to its own fulfillment. Indeed, the three mechanisms of effectiveness of the self-fulfilling prophecy identified above may be ordered from least to most dangerous as follows: the effect that predictions have on patients is less threatening than the effect predictions have on physicians, which in turn is less threatening than the quasi-magical effect of predictions. This order reflects a gradient in which the physician's responsibility for the patient's outcome steadily increases. It is one thing for physicians' prognoses to affect patients and thus outcomes; it is another for the prognoses to affect physicians themselves and thus outcomes; and it is quite another still for the prognoses to directly affect (and effect) the outcomes themselves.

The facts that physicians believe in the self-fulfilling prophecy, that this belief is widespread, and that the self-fulfilling prophecy works in multiple ways are deeply consequential. Physicians act with the hope and fear that their predictions will shape patient outcomes. This set of beliefs affects how physicians interact with patients and how they view their work; consequently, it can affect both how abstract bioethical problems are analyzed and how actual, ethically relevant decisions are made.

Physicians believe that articulating a prognosis may be a deliberate way to control patients' behavior. This is indeed one of the main ways that the self-fulfilling prophecy is believed to work, and physicians often consciously choose to articulate prognoses in order, for example, to achieve the perceived beneficial effects of improved patient compliance or better outcome. The beliefs about the self-fulfilling prophecy and its modes of action also affect how and what physicians communicate to patients. The classical reason offered by physicians for not communicating bad news to patients is a desire to "protect" the patient. Over the last few decades, this perspective has come under withering criticism, especially in the bioethics literature, as being paternalistic and self-serving. But the prohibition against articulating unfavorable prognoses may also result from the conscious or subconscious fear that the unfavorable prognosis might have an effect via the self-fulfilling prophecy. Indeed, the aversion to articulating an unfavorable prognosis within earshot of the patient can be construed as a form of "sympathetic taboo" or "negative magic."[14] This observation helps explain both the withholding of information from patients and the widespread practice of the physician giving different information to the patient and to the patient's family. Although these communicative behaviors are in part a product of the difficulties and unpleasantness physicians encounter when sharing bad news with patients, they also reflect a desire to avoid contributing to a downward trajectory in the patient's illness through a self-fulfilling prophecy. Physicians do not wish to be responsible for patients' deaths. The consideration given to the ethics of communication between doctors and patients rarely, to my knowledge, acknowledges the fact that

physicians may fear that their statements might cause outcomes.

The belief in the self-fulfilling prophecy also strongly contributes to what may be called the "ritualization of optimism" in medical prognostication.[15] Insofar as physicians believe that favorable predictions can cause favorable outcomes, they quite naturally try to "shade" their prognoses to the optimistic end of the continuum; they favor demonstrably positive ways of thinking about and interacting with their patients regarding their prognosis and their treatment; and they choose to say nothing, if possible, rather than offer an unfavorable prediction. Moreover, they have fewer reservations about articulating a favorable prognosis, if appropriate, not only because this enhances their feelings of professional effectiveness and relieves the patient's anxiety, but also because they believe that such an articulation actually serves therapeutic objectives and helps the patient.

Most generally, however, the belief in the self-fulfilling prophecy supports the norm that physicians should avoid prognosticating altogether. Because the self-fulfilling prophecy makes prognostication "dangerous," physicians often have much to lose by making predictions. If physicians did not believe in the self-fulfilling prophecy, they would be much more willing to make and state their predictions. The suppression of prognostic information in clinical care, however, impoverishes the interaction between patients and doctors and, especially since such information is often critical to ethically tinged decisions, compromises the ability of the patient (and the doctor) to make the best such decisions. Indeed, as we shall see, the avoidance of prognosis can itself be configured as a moral issue.

SOME ILLUSTRATIONS OF THE ROLE OF PROGNOSIS IN BIOETHICAL DECISIONS

Physicians' beliefs and practices with respect to prognostication in general and the self-fulfilling prophecy in particular have important implications for the ethical analysis of clinical decision making and also for the moral standing of doctors. Prognostication is in fact a major underpinning for many bio-

ethical decisions, a fact that is typically unappreciated in the theoretical (and often the practical) consideration given to such decisions. For example, bioethical reasoning about the withdrawal of life support often proceeds as follows: The patient is going to die. Life support is of no further benefit. Life support may be harming the patient. Should we withdraw life support? This type of reasoning often neglects such questions as: How do we know the patient is going to die? How do we know life support is of no further benefit? Who is authorized to make these predictions? What if they are wrong? What if factors outside the patient's case influence the predictions? What if the predictions contribute to the outcome and change the "reality" of the situation? Analogously, much of the current debate in the ethics of physician-assisted suicide in patients who are irremediably terminally ill has focused on the ethical and legal aspects of doctors' engagement in such behavior, and has unfortunately generally taken for granted that doctors are willing and able to predict when a patient will die.[16] Prognostication is, indeed, the fundamental and essential basis for a determination of "futility," a relatively new doctrine whereby physicians are not obligated to provide care that they deem futile to critically ill patients.[17] This doctrine is being increasingly invoked to justify the withholding or withdrawal of life support from patients who are being harmed by it; in rare cases, it is invoked to withdraw life support over family objections. Futility is a fundamental assertion about the intractability of the patient's disease or about the impotence of the doctor's treatment to alter the course. Both are prognostic statements. Yet the prognostic aspects—in both theory and practice—are rarely explicitly acknowledged. Moreover, the key issues of how futility is determined and by whom, as well as its inherently self-fulfilling-prophecy-like nature, are often neglected.

Prognostication is a core element not only in bioethical decisions at the end of life, but also in numerous other areas. In organ transplantation, for example, a key (though not the only) component of allocation decisions is the "greatest benefit criterion," the standard whereby organs are allocated according to who stands to gain the most from the transplant and who has the least chance of rejecting it immunologically—which are

essentially prognostic assessments. To the extent that organ allocation takes place depending on the likely success of the medical intervention, prognosis is an essential element of the ethical decision making. Indeed, organ allocation typifies a broader type of prognostically informed ethical concern, namely the allocation of scarce resources—whether ICU beds, blood products, or physician time.

Another area where prognosis is important, and is likely to be increasingly so, is in the ethical analysis of the use of genetic tests. To date, the ethical analysis of genetic testing has generally focused on the "ownership" of such information, the problems raised by revelation of such confidential information (e.g., for patients' insurability), or the threats such testing poses to our conception of collective risk and community. Yet the prognostic aspects of these tests raise special ethical questions—especially given the strong evocation of self-fulfilling prophecy that a test of one's genes generates—which might temper physicians' ardor for communicating genetic information. On another level, however, the use of genetic information for prognostic purposes will likely be more palatable for physicians than the current clinical bases for prognosis. The reason is that the genetic information will appear to be biologically preordained, scientifically fixed, unsusceptible to individual or social influences, and unmodifiable by physicians. Physicians will therefore probably feel more comfortable telling a patient with a gene associated with lung cancer that he is at increased risk for lung cancer—or even that he *will* develop cancer—than they will feel telling a patient who smokes that he will develop lung cancer, even if the risks are mathematically identical. Moreover, physicians may feel that genetic prognostication is less prone to error. The perception that genetics is a so very fundamental cause of events will help physicians to feel less responsible for both the prediction made and the outcome observed. Thus, many of the reasons that act to restrain physician prognostication will likely be less prominent when genes underlie the prognosis. Nevertheless, the use of genetic information in prognosis will heighten concerns about the role of individual destiny, concerns that may readily assume existential or religious overtones.

With respect to the basic ethical concept of patient autonomy, which is the notion that patients should be respected as persons and thus allowed to determine their own care, the accuracy and quality of the information given to patients to allow them to do so and the feasibility of developing such information are rarely examined. Much of the time, patients' decisions specifically depend on prognostic assessments, and often the quality of prognostic information they are given is poor. Many ethical decisions that arise from the obligation to respect patient autonomy, ranging from so-called Advance Directives to informed consent, involve a sort of "hypothetical prognosis" in which physicians describe various possible scenarios that patients might experience in the future. Advance Directives are documents patients complete in which they express their wishes with respect to life support should they become both critically ill and unable to speak for themselves.[18] Ideally, these discussions are initiated by physicians and guided by them.[19] But in order to elicit the patient's preferences, the physician must first predict various possible outcomes. Informed consent is the expressed, uncoerced willingness of patients or research subjects to undergo a medical intervention about which they have adequate information, predominantly through a disclosure by physicians of risks and consequences.[20] During the informed consent process, the physician characterizes the proposed interventions by providing descriptions of possible outcomes of both the intervention and the alternatives, along with possible side effects of each. Thus, every time doctors or researchers obtain consent from a patient to administer a treatment or to conduct research, they are using prognosis. The extent to which the doctor is willing and able to make accurate predictions is therefore a very important factor in both advance directives and informed consent, and it ought to be an important factor both in terms of the ethical analysis of such decision making and in terms of the behaviors physicians exhibit when engaged in such decisions.

The analysis of bioethical concerns cannot be separated from the specific social context in which both the theory and the reality of these dilemmas emerge.[21] Numerous factors influence whether and how physicians develop and communicate prognoses, and these factors would need to be accounted for in both

making and analyzing the various types of ethical decisions outlined above. What if doctors are systematically over-optimistic in their predictions of benefit from life-support technology and therefore overestimate its utility in their discussions with patients or in their actions on patients' behalf? What if doctors refuse to make predictions? What if accurate prediction is not possible? What if doctors' biases or behaviors in prognosis make it difficult for both them and their patients to make the most ethical decisions? What if predictions affect outcomes and so modify the basis for the ethical decision, even as it is being made? Surely the role of such questions cannot be ignored when considering the right thing to do in clinical decisions that have ethical dimensions. The notion that physicians have strong preferences and indeed nonrational beliefs (of one sort or another) when it comes to prognosis throws into question the extent to which prognostically relevant ethical decisions can be made or examined without also considering such "social" factors.

THE MORAL DUTY OF PROGNOSTICATION

Though the role of the physician has become progressively more secularized in American society, death itself—which remains a prominent focus of physicians' ministrations—has retained its mystical and religious properties. To the extent that prognosis is concerned with death, the act of prognostication cannot avoid highlighting the ineradicably nonsecular nature of healing. This aspect of prediction in modern medicine is only augmented by the dangerous, effective, or even quasi-magical properties that physicians believe it has.

A view of life that casts events as either random or predetermined makes the world uncontrollable, experience meaningless, and the events amoral. But in an indeterministic world—one in which at least some elements of the future can be purposefully realized—the future and statements about it are controllable, meaningful, and moral. In its ability to induce emotions and change behaviors, in its (at times self-fulfilling) effect on outcomes, and in its evocation of magic (and religion), prognosis resembles prophecy and, as such, casts the physician in the role

of prophet. Elsewhere, I have invoked these analogies for three reasons.[22] First, they shed light on aspects of the neglected prognostic role of physicians. Second, they clarify an archetypical social relation—one not restricted to medical contexts—between a "prophet" and a "supplicant." And third, the resemblance between prognosis and prophecy highlights the moral and ethical dimensions of prognosis.

As a form of prophecy, prognosis is morally, and not merely biologically or even socially, encoded. Because prediction can affect both patients' and physicians' behaviors, and because it can affect patients' outcomes, it suggests that physicians have an important responsibility when they prognosticate. Physicians have an obligation to be aware of the ways prognosis informs their ethical decisions and an obligation to prognosticate as accurately and empathetically as possible. That is, there is not only a moral duty *in* prognostication, but also a moral duty *to* prognosticate. Thus, the avoidance of prognosis that is prevalent in medical care represents the shirking not only of a clinical but also of a moral responsibility by physicians, a responsibility that pertains both to individual physicians and to the profession as a whole.

An important source of this responsibility is that prognosis often involves transcendent concerns. Death is a focus of ethical, religious, existential, and moral attention whenever and however it occurs. Similarly, the existence and remission of suffering are also foci of moral examination. Did the patient do anything to bring about the suffering? What sort of life has the dying person led? What are the implications of an awareness of death? What meaning does the individual see in his or her death?[23] The salience of these questions is heightened by the fact that physicians often can influence the course of illness and the manner of death. This raises still further moral questions. What is the meaning of this influence, and how might it best be exercised? What sorts of actions should the patient or doctor engage in to modify the course of the illness? Insofar as prognostication is linked with suffering and death, and insofar as it influences these thoughts and actions, it is inextricably connected to the most consequential and meaningful sorts of moral concerns.

The moral obligation to prognosticate is further supported by the existence of an asymmetry in the power and knowledge of the patient and physician. The patient is sick, perhaps with a terminal illness, and the doctor has technical knowledge and therapy that the patient is seeking. The physical and emotional vulnerability of such seriously ill patients is extraordinary and, coupled with the professional authority of the physician, suffuses the entire clinical encounter with the strongest possible obligations. As a result of this asymmetry, and of the trust patients put in them, physicians hold power over patients—and, literally and metaphorically, over their future. The fact that patients are so dependent on their doctors creates prognostic obligations no less than it creates diagnostic and therapeutic ones. The burden of prediction more justly falls to the one who is better able—by virtue of expert training, lack of vulnerability, and claims to authority—to bear it.[24]

In order to enhance the use of prognosis in clinical practice (in the sense of both foreseeing and foretelling) and to meet the duty to prognosticate, certain obstacles clearly must be overcome. Patients do not always want prognostic information, and physicians will have to be sensitive to this. Prognostic information can be harmful to patients. Physicians are generally needlessly inaccurate in the prognoses they develop and communicate.[25] Information regarding prognosis in educational venues and materials is currently minimal. And physicians resist generating prognostic information. These practical obstacles to prognostication, however, do not subvert the moral obligation to prognosticate.

At the level of the individual physician, there are several opportunities for improvement. Physicians should make efforts to improve both their foreseeing and their foretelling of the future. Inwardly, they should strive to more formally and more routinely incorporate prognostic thinking into their management, much as they currently incorporate the patient's symptoms or test results. In this vein, physicians might keep mental track of the accuracy of their prognoses, much as they keep track of the accuracy of their diagnostic and therapeutic decisions. If physicians were to begin a process of self-calibration in this respect, their accuracy and confidence in prognosis

might both increase. Physicians might also make greater efforts to avail themselves of prognostic resources that do exist because information is increasingly becoming available on how to formulate and evaluate prognostic information in many clinical situations.[26] Greater attention to foretelling is also clearly in order. Physicians have a very hard time communicating prognoses, and they do so poorly. Yet good resources to enhance their communication exist, and poor performance need not be tolerated.[27] In any case, no matter how difficult it may be for physicians to foretell the future, physicians can make more of an effort to foresee it. To the extent that they are able to overcome their aversion to prognosis or their propensity for error in prognosis, physicians may enhance the factual basis for numerous ethical decisions, and so enhance the specifically ethical quality of these decisions.

However sympathetic we might be to individual physicians who avoid prognosis or who make advertent or inadvertent errors in prognosis, we need not be so forgiving of the profession as a whole. As Alvan Feinstein, an authority on ways to enhance the science of clinical care, noted in 1983: "The omission of prediction from the major goals of basic medical science has impoverished the intellectual content of clinical work, since a modern clinician's main challenge in the care of patients is to make predictions."[28] The avoidance of prognosis at the professional level is particularly deplorable since at this level there is no *interpersonal* justification for the absence. Research and education regarding prognosis cannot by any means harm patients, nor can coverage of prognosis in textbooks and journals. From a policy or ethical perspective, whatever allowance we might accord to individual physicians for their avoidance of prognostication, there should be none at the professional level.

Despite the arguments that prognosis is a moral duty, it is also clear from the analysis of physicians' attitudes and behaviors with respect to prognosis that these attitudes and behaviors are deeply embedded in the practice of medicine. Consequently, the practical and ethical concerns that prognosis raises cannot be addressed simply by the invocation of ethical principles. It is not possible to ignore the phenomenological reality of the physician's social and moral predicament in prognosis. The

social scientific study of the role of prognosis in medicine illuminates the rich complexity of this phenomenon, a complexity that is not merely ethical.

ENDNOTES

[1]Noteworthy examples of such work include: Renée R. Anspach, *Deciding Who Lives: Fateful Choices in the Intensive-Care Nursery* (Berkeley: University of California Press, 1993); Charles L. Bosk, *"All God's Mistakes": Genetic Counseling in a Pediatric Hospital* (Chicago: University of Chicago Press, 1992); Renée C. Fox, *Experiment Perilous* (Boston: The Free Press, 1959); Renée C. Fox and Judith P. Swazey, *The Courage to Fail: A Social View of Organ Transplants and Dialysis,* 2d ed., rev. (Chicago: University of Chicago Press, 1978); Jonathan B. Imber, *Abortion and the Private Practice of Medicine* (New Haven, Conn.: Yale University Press, 1986); and Robert Zussman, *Intensive Care: Medical Ethics and the Medical Profession* (Chicago: University of Chicago Press, 1992).

[2]Nicholas A. Christakis, *Death Foretold: Prophecy and Prognosis in Medical Care* (Chicago: University of Chicago Press, 1999).

[3]Ibid., 90ff. See also Jean S. Kutner et al., "Information Needs in Terminal Illness," *Social Science and Medicine* 48 (1999): 1341–1352.

[4]Robert K. Merton and Elinor Barber, "Sociological Ambivalence," in Robert K. Merton, *Sociological Ambivalence and Other Essays* (New York: The Free Press, 1976), 8.

[5]Christakis, *Death Foretold.* See also Nicholas A. Christakis and Theodore J. Iwashyna, "Attitude and Self-Reported Practice Regarding Prognostication in a National Sample of Internists," *Archives of Internal Medicine* 158 (1998): 2389–2395.

[6]See, for example, Lesley F. Degner et al., "Information Needs and Decisional Preferences in Women with Breast Cancer," *Journal of the American Medical Association* 277 (1997): 1485–1492; Christina G. Blanchard et al., "Information and Decision-Making Preferences of Hospitalized Adult Cancer Patients," *Social Science and Medicine* 27 (1988): 1139–1145.

[7]Nicholas A. Christakis, "The Ellipsis of Prognosis in Modern Medical Thought," *Social Science and Medicine* 44 (1997): 301–315.

[8]Christakis, *Death Foretold,* 135–162.

[9]As social theorist Talcott Parsons has argued: "The health situation is a classic one of the combination of uncertainty and strong emotional interests which produce a situation of strain and is very frequently a prominent focus of magic. But the fact that the basic cultural tradition of modern medicine is science precludes outright magic, which is explicitly non-scientific." See Talcott Parsons, *The Social System* (New York: The Free Press, 1951), 469. This type of magical thinking about prediction is in keeping with other forms of "scien-

tific magic" seen in medicine. See Renée C. Fox, "The Human Condition of Health Professionals," in Renée C. Fox, ed., *Essays in Medical Sociology: Journeys into the Field* (New Brunswick, N.J.: Transaction Books, 1988), 581, and Renée C. Fox, *The Sociology of Medicine* (Englewood Cliffs, N.J.: Prentice Hall, 1989), 198.

[10]Robert K. Merton, "The Self-Fulfilling Prophecy," in Robert K. Merton, *Social Theory and Social Structure* (New York: The Free Press, 1968), 475–490. See also Robert K. Merton, "The Thomas Theorem and the Matthew Effect," *Social Forces* 74 (1995): 379–422. For a broader consideration of the self-fulfilling prophecy, see Richard L. Henshel, "The Boundary of the Self-Fulfilling Prophecy and the Dilemma of Social Prediction," *The British Journal of Sociology* 33 (1982): 511–528.

[11]Regarding the issue of the purposefulness of social systems more generally, see Karl Popper, *The Open Universe: An Argument for Indeterminism* (London: Routledge, 1982).

[12]For example, one study found that, by one measure, 73 percent of physicians believed in positive and 61 percent in negative self-fulfilling prophecy. These beliefs were relatively homogeneously distributed among physicians. See Christakis, *Death Foretold,* 225.

[13]Christakis, *Death Foretold,* 144–150. By "quasi-magical" I mean that the effectiveness of prediction depends partly on rational, explainable mechanisms and also *simultaneously* on nonrational, inexplicable mechanisms.

[14]Marcel Mauss, *A General Theory of Magic,* trans. Robert Brain (New York: Norton, 1972). See also Stanley J. Reiser, "Words as Scalpels: Transmitting Evidence in the Clinical Dialogue," *Annals of Internal Medicine* 92 (1980): 837–842.

[15]This term was first used by Bronislaw Malinowski. See Bronislaw Malinowski, *Magic, Science and Religion* (Boston: Beacon Press, 1948), 70. It has been previously applied to medicine by Talcott Parsons and Renée Fox.

[16]Margaret A. Drickamer, Melinda A. Lee, and Linda Ganzini, "Practical Issues in Physician-Assisted Suicide," *Annals of Internal Medicine* 126 (1997): 146–151; Melinda A. Lee et al., "Legalizing Assisted Suicide—Views of Physicians in Oregon," *New England Journal of Medicine* 334 (1996): 310–315.

[17]Nancy S. Jecker and Lawrence J. Schneiderman, "Medical Futility: The Duty Not to Treat," *Cambridge Quarterly Healthcare Ethics* 2 (1993): 151–159; Lawrence J. Schneiderman and Nancy S. Jecker, "Futility in Practice," *Archives of Internal Medicine* 153 (1993): 437–441.

[18]Ben A. Rich, "Prospective Autonomy and Critical Interests: A Narrative Defense of the Moral Authority of Advance Directives," *Cambridge Quarterly of Healthcare Ethics* 6 (1997): 138–147; Steven H. Miles, Robert Koepp, and Eileen P. Weber, "Advance End-of-Life Treatment Planning: A Research Review," *Archives of Internal Medicine* 156 (1996): 1062–1068; Lawrence J. Schneiderman et al., "Effects of Offering Advance Directives on Medical Treatments and Costs," *Annals of Internal Medicine* 117 (1992): 599–606.

[19]James A. Tulsky et al., "Opening the Black Box: How Do Physicians Communicate about Advance Directives?" *Annals of Internal Medicine* 129 (1998): 441–449.

[20]Ruth R. Faden and Tom L. Beauchamp, *A History and Theory of Informed Consent* (New York: Oxford University Press, 1986).

[21]See, for elaboration, Nicholas A. Christakis, "Ethics Are Local: Engaging Cross-Cultural Variation in the Ethics for Clinical Research," *Social Science and Medicine* 35 (1992): 1079–1091.

[22]Christakis, *Death Foretold,* 179–199.

[23]See Daniel Callahan, *The Troubled Dream of Life: In Search of a Peaceful Death* (New York: Simon and Schuster, 1993) and Arthur Kleinman, *The Illness Narratives: Suffering, Healing, and the Human Condition* (New York: Basic Books, 1988).

[24]A corollary of the asymmetry in power between patient and physician is that prognostication is open to venal manipulation by the physician for self-serving ends; it requires vigilance on the part of the doctor to avoid this.

[25]See, for example, Nicholas A. Christakis and Elizabeth B. Lamont, "The Extent and Determinants of Error in Physicians' Prognoses in Terminally Ill Patients: A Prospective Cohort Study," *British Medical Journal* (in press); Elizabeth B. Lamont and Nicholas A. Christakis, "Physicians' Preferences for Prognostic Disclosure to Terminally Ill Cancer Patients," unpublished manuscript.

[26]For illustrative reviews, see Nicholas A. Christakis and Greg A. Sachs, "The Role of Prognosis in Clinical Decision Making," *Journal of General Internal Medicine* 11 (1996): 422–425; James F. Fries and George B. Ehrlich, *Prognosis: Contemporary Outcomes of Disease* (Bowie, Md.: Charles Press, 1981); Charles M. Wattts and William A. Knaus, "The Case for Using Objective Scoring Systems to Predict Intensive Care Unit Outcome, *Critical Care Clinics* 10 (1994): 73–89; Michael Seneff and William A. Knaus, "Predicting Patient Outcome from Intensive Care: A Guide to APACHE, MPM, SAPS, PRISM, and Other Prognostic Scoring Systems," *Journal of Intensive Care Medicine 5* (1990): 33–52.

[27]See, for example, Robert Buckman, *How to Break Bad News: A Guide for Health Care Professionals* (Baltimore, Md.: Johns Hopkins University Press, 1992).

[28]Alvan R. Feinstein, "An Additional Basic Science for Clinical Medicine I: The Constraining Fundamental Paradigms," *Annals of Internal Medicine* 99 (1983): 394.