Chapter 1: This History, Professions, and their Ethics[1]

Old men forget: yet all shall be forgot,
But he'll remember with advantages
What feats he did that day.
—Shakespeare, *Henry V*

1.1 Assumptions

In the chapters following this one, I assume that the Software Engineering Code of Ethics and Professional Practice is both a code of ethics and a professional code. I also assume that what I describe is the process by which software engineering became a profession (more or less). Those assumptions are controversial. On some widely-accepted conceptions of "profession", software engineering still lacks crucial attributes of profession, such as licensure or workplace autonomy; and on some widely-accepted conceptions of ethics, the content, form, or origin of the Code rules out its being "ethics".[2] Yet the story told here is not (primarily) about licensure, autonomy, or the like but about a code of ethics. To tell that as the story of an occupation becoming a profession (a story of "professionalization"), I must employ what are (still) controversial conceptions of ethics and profession. To admit controversy is, however, not to admit that these conceptions are *ad hoc* or without impressive defense. The evidence that they are not *ad hoc*, like their defense, is to be found in part in what follows—insofar as the story I tell relies on these conceptions and seems the better for doing so—but primarily in what I have written elsewhere.[3] This chapter is not the place to defend these conceptions; it is only the place to explain them in enough detail to assure that readers may read on without feeling lost either because they do not understand the conceptions at all or because they do not understand them well enough to conclude, however tentatively, that "there must be something to them".

1.2 Ethics as Special Standards

"Ethics" has at least five senses in ordinary English. In one, it is a mere synonym for ordinary morality, those universal standards of conduct that apply to moral agents simply because they are moral agents. Etymology fully justifies this first sense. The root for "ethics" ("ethos") is the Greek word for custom or character just as the root of "morality" ("mores") is the Latin word for it. Etymologically, "ethics" and "morality" are twins (as are "ethic" and "morale"). In this first sense of "ethics", software engineers could not have a distinct code of ethics because no one can. Since ethics is universal, it is the same for all. This sense of ethics would rule out the very undertaking we are to study. It cannot be the sense of "ethics" that concerns us.

In four other senses, "ethics" contrasts with "morality". In one, ethics is said to consist of those standards of conduct that moral agents *should* follow (what is sometimes also called "critical morality"); morality, in contrast, is said to consist of those standards that moral agents actually follow ("positive morality"). "Morality" in this sense is very close to its root "mores"; it can be unethical (in our first sense of "ethics"). "Morality" (in this sense) has a plural; each society or group can have its own moral code, indeed, even each individual can have her own.

There can be as many moralities as there are moral agents. You can have "your morality" (in which, say, abortion is wrong) and I can have "my morality" (in which it is not). But even so, ethics remains a standard common to everyone (or, at least, *may* be such a standard, depending on how one understands "critical morality"). The application of critical reason may (in time) yield a definite answer (say, that abortion is wrong, that it is not, or that it sometimes is and sometimes is not).

"Ethics" sometimes contrasts with "morality" in another way. *Morality* then consists of those standards every moral agent should follow. Morality is a universal minimum, our standard of moral right and wrong. Ethics, in contrast, concerns moral good, whatever is beyond the moral minimum (for example, "how we should live our lives"). Ethics (in this sense) is whatever is left of morality (in our first—universal—sense, which includes both the right and the good) once we subtract morality (in this third—minimum right-only—sense). Since (as we shall see) professional ethics consists (in large part at least) of moral *requirements*, this cannot be the sense of "ethics" with which we are concerned here.

There is, however, a connection between ethics in this sense and ethics in the sense that does concern us. What goes into a code of professional ethics should include some of ethics in this sense. Codes of professional ethics convert conduct that is morally good but optional for an ordinary person into a moral requirement for members of the profession in question. (I shall say a bit more about this in section 1.4.)

The second (or "should") sense of ethics is closely related to a fourth, a field of philosophy ("philosophical ethics"). When philosophers offer a course in "ethics" ("applied ethics" as well as "moral theory"), its subject is various attempts to understand morality (all or part of morality in our first sense) as a rational undertaking. Philosophers do not teach morality (in our first, second, or third sense)—except perhaps by inadvertence. They also generally do not teach critical morality, though the attempt to understand morality as a rational undertaking should lead students to dismiss some parts of morality (in its second, descriptive, sense) as irrational or to feel more committed to morality (in its first or third sense) because they can now see the point of it.

"Ethics" can be used in yet another sense, to refer to those *special, morally-permissible standards of conduct governing members of a group simply because they are members of that group*. In this sense, Hopi ethics are for Hopi and for no one else; business ethics, for people in business and for no one else; and legal ethics, for lawyers and for no one else. Ethics—in this sense—is relative even though morality is not. But ethics (in this sense) is not therefore mere mores (or ethos). Ethics must—by definition—be morally permissible. There can be no thieves' ethics or Nazi ethics, except with scare quotes around "ethics".

This fifth sense of "ethics" is, I think, the one implicit in the claim that one profession's ethics differs from another (or, at least, the sense that yields the most interesting interpretation of that claim). So, for example, while a philosophy course in Computer Ethics might differ from a philosophy course in Engineering Ethics in many ways, most of those differences would be irrelevant here. What is relevant is that the special standards governing software engineers can differ from those governing other engineers and other "computing professionals". Without this special-standards sense of ethics, what now seems an ordinary undertaking—the writing of the Software Engineering Code of Ethics—would be mysterious: Why would software engineers devote years to writing their own code of ethics? Why did they take so much trouble with the

exact wording of so many provisions? Why did they claim their code differed from others? And why does their code seem so different from others? We must sometimes dismiss the reports of participants as self-deception, misunderstanding, cover-up, or exaggeration, but we are not entitled to do that without strong evidence, evidence that I have found neither in the documents I have studied, nor in what participants have told me, nor even in what I myself saw. We must therefore assume that the sense of "ethics" relevant here is this special-standards sense.

Ethics in this sense resembles law insofar as both apply only to members of a specific group (rather than to everyone). Both are *special* standards. Ethics also resembles law insofar as both are *standards* to guide conduct (in prospect) and to judge it (in retrospect). Neither law nor ethics is a description of how people act (in the way a "scientific law" is a description). Both law and ethics tell us only how people should act. Having a standard is consistent with occasional violations. Indeed, we are unlikely to speak of standards, whether of law, ethics, or even skill, unless there are (or, at least, are likely to be) occasional violations. If, however, the violations become too numerous ("the rule rather than the exception"), the standard, whether legal or ethical, ceases to be an actual standard. It does not therefore die. The standard may live on as a "model" or "ideal". Ideal legal standards are standards that should be incorporated into legal practice. Ideal ethical standards are standards that members of the relevant group can recognize as what should (all else equal) be the actual standards of the group. The standards are *merely* ideal when they do not in fact govern practice. An ideal code of ethics is a possible or model code, a source of inspiration; an actual code of ethics, a living practice (as well as an ideal), a powerful claim on conscience.

These similarities between law and ethics do not preclude a fundamental difference. Law applies to people whatever they want. It originates in a formal authority (answering the question "Who is to say?") and carries with it means of enforcement (of which police, courts, and criminal punishment are the most prominent). Ethics (in our fifth sense) applies to members of the relevant group only because of something they want (the benefits of the voluntary practice the standards in question create and maintain). The claim that ethical standards have on conscience depends on what the standards actually say. There is no "ethics authority" in the way there is legal authority. Ethics is a standard of conduct that everyone in the group wants everyone else to follow even if their following it would mean having to do the same. The members of the group in question, all of them, are the ethical equivalent of the law's formal authority. A code of ethics binds those it governs in the way an ordinary promise binds its maker, not in the way a formal contract does.

1.3 Sociological Definitions of Profession

Distinguishing that fifth sense of ethics from the other four suggests the question: What is *professional* ethics? How do the special standards of professions differ from other special standards (if they do)? The answer to such questions depends on what we mean by "profession". Unfortunately, "profession" resembles "ethics" in having several senses. "Profession" can, for example, be used as a mere synonym for "occupation"—an occupation being any typically full-time activity defined in part by an easily recognizable body of knowledge, skill, and judgment (a "discipline") by which one can (and people

typically do) earn a living. It is in this sense that we may, without irony, speak of someone being a "professional thief". "Profession" can, instead, be used for any occupation one may openly admit to or profess, that is, an honest occupation: "Plumbing is a profession; thieving is not." "Profession" can also be used for a special kind of honest occupation (for example, "knowledge workers").

There are at least two approaches to defining this special kind of honest occupation. One approach, what we may call "the sociological", has its origin in the social sciences. Its language tends to be statistical. The definition does not purport to state necessary or sufficient conditions for some occupation to be a profession but merely what is true of "most professions", "the most important professions", "the most developed professions", or the like. Every sociologist concerned with professions seems to have a list of professions the definition must capture. Law and medicine are always on the list; the clergy, often; and other professions, such as architecture, accounting, or teaching, sometimes.[4]

We may distinguish three traditions in the sociology of professions (what we may call): the economic, the political, and the anthropological. Though individual sociologists often mix them in varying degrees, distinguishing them as "ideal types" here should help us to think about them more clearly, even in their less ideal (and more mixed) forms. What is wrong with all three ideal types, their failure to understand how central ethics (in our fifth sense) is to profession, remains even when the types are mixed.

The economic tradition interprets professions as primarily a means of controlling market forces for the benefit of the professionals themselves, that is, as a form of monopoly, guild, or labor union. The economic tradition has two branches: Marxist and free market. Among recent sociologists in the Marxist tradition, the best is still Magali Sarfatti Larson (*The Rise of Professionalism*, 1977); among sociologists in the free-market tradition, Andrew Abbott (*The System of Professions*, 1988) is a good example. For sociologist in this tradition (whether Marxist or free market), it is the would-be members of a profession who, by acting together under favorable conditions, create their monopoly, more or less forcing (or tricking) society into going along. Successful professions have high income, workplace autonomy, control of who can join, and so on; less successful professions lack some or all of these powers (more or less). These signs of success, like the monopoly itself, may be embedded in law, but need not be. What matters for the economic tradition are market arrangements ("economic realities"), not (mere) law. The success in question may be independent of what participants in events sought. The economic tradition delights in discovering "the invisible hand" at work.

For the political tradition, however, the law matters more. Often associated with Max Weber, the political tradition interprets profession as primarily a legal undertaking, a matter of (reasonably effective) laws that set standards of (advanced) education, require a license to practice, and impose discipline upon practitioners through formal (governmental) structures. To be a profession is to be an occupation bureaucratized in a certain way. For the political tradition, it is the society (the government) that creates professions out of occupations, and the society (the public) that benefits (whoever else may benefit as well). A recent work in this tradition is Robert Zussman's *Mechanics of the Middle Class* (1985). This tradition seems to have considerable influence among members of professions when they are trying to convince colleagues of the importance of supporting licensure: "We cannot be a profession if we are not licensed—as doctors and lawyers are."

The anthropological tradition, often associated with Emile Durkheim, interprets professions as primarily cultural facts, the natural expression of a certain social function under certain conditions. Neither the professionals nor society can have much to say about whether a certain occupation will be a profession. Professions are a function of special knowledge used in a certain way, a community created by a common occupation. Among recent sociologists, the best of those working in the anthropological tradition seems be to be Eliot Freidson (in, for example, *Professionalism: The Third Logic*, 2001).

Distinguishing these three traditions helps make the point that the sociological approach has not yet yielded a single definition of profession and, more importantly, is not likely to. Sociology's way of developing a definition, that is, abstracting from a (short) list of clear cases whatever is common to most or all, is unlikely to yield a single definition—or, at least, is unlikely to until sociologists agree on a list of clear cases sufficiently long to produce a plausible definition. Today, only two professions appear on all sociological lists. That is much too few to derive a plausible definition—or even a "statistically" reliable one. Whatever the utility of a particular sociological definition for a particular line of social research, no such definition is likely to seem definitive to more than a minority of sociologists. Why sociologists continue to generate definitions in this way seems to be a question best left to the history (or sociology) of sociology. It need not concern us further.

1.4 Professions and Codes

The other approach to defining "profession" is philosophical. A philosophical definition attempts to state necessary and sufficient conditions for an occupation to count as a profession. While a philosophical definition may leave the status of a small number of would-be professions unsettled, it should at least be able to explain (in a satisfying way) why those would-be professions are neither clearly professions nor clearly not professions. Philosophical definitions are sensitive to counter-example in a way sociological definitions are not. Philosophers cannot use the standard defense of sociologists: "I said 'most', not 'all'."

There are at least two kinds of philosophical definition. One, the Cartesian, answers the question, "What do *I* think a profession is?" It attempts to piece together in a coherent way the contents of one person's mind. There may be as many Cartesian conceptions of profession as there are people who ask themselves what they mean by "profession". The Cartesian method has no procedure for mediating between the definitions that individuals generate. Some of the definitions are startling.[5]

The conception of profession I shall be assuming here is not Cartesian but, as I like to call it, Socratic. It answers the question, "What do *we*, practitioners and philosophers, ('really') think a profession is?" Such a conception must be worked out through a conversation. The members of various professions say what they mean by "profession". Philosophers, or other practitioners, test those definitions with counter-examples, with consideration of consequences adopting the definition would have, and in other ways typical of philosophical examination of definitions. Any problems discovered in this way are fixed by revising the definition. The definition is again tested. And so the process continues until everyone participating in the conversation is satisfied that no problems remain. It is this "critical conversation" (what the Greeks sometimes called "dialectic") that underwrites the claim that the resulting definition is "what we *really* think a

profession is". After many years of applying this method, I have reached the following definition:

> **A profession is a number of individuals in the same occupation voluntarily organized to earn a living by openly serving a moral ideal in a morally-permissible way beyond what law, market, morality, and public opinion would otherwise require.**

According to this definition, a profession is a group undertaking. There can be no profession of one. The group must share an occupation. An occupation is something more general than a job description. Indeed, the term is useful only where it gathers together a family of job descriptions under a single heading while still distinguishing that family from others. So, for example, a group consisting of accountants and engineers cannot form a profession, though accountants can form one profession and engineers another. There is little or no movement possible from one family to the other (without a new degree). The discipline required of one is too different from that required of the other. That is what makes them distinct occupations. Engineers, on the other hand, do form an occupation, even though some engineers work in large firms and some in small, some in government and some in business, some overseeing the construction of bridges and some designing microprocessors. Movement between one field of engineering and another, one sort of practice and another, is still sufficiently easy (and common) for engineering to count as a single occupation. Much the same is true of accounting (with respect to its fields).[6]

Since what counts as a single occupation will depend on how much movement is possible between jobs of various descriptions, there will always be a question whether some group consists of one occupation or two. For example, do physicians and surgeons form one occupation or two? The answer to that question may depend on the reason it is asked. For purposes of membership in the AMA, physicians and surgeons are (today) one occupation. But for some purposes, say, the study of marriage patterns across occupations, it might make more sense to treat them as two.

To undertake to make software engineering a profession is to answer yes (however tentatively) to the question, "Is software engineering a single occupation?" To answer that way is, however, not to rule out important differences between the jobs software engineers hold, only to assert that the similarities are (on balance) more important than the differences for the purposes in view. Such an assertion of relative importance may well be controversial—within the occupation as well as outside of it. There is no way to resolve that controversy here. For us, what is important is that the controversy does not prove that software engineering is not (yet) a profession or even distinguish software engineering from "the true professions".[7]

According to the definition of profession to be used here, the group in question (the would-be profession) must organize its occupation to work in a morally permissible way. Where there is no morally permissible way to carry on the occupation, there can be no profession. There can, for example, be no profession of thieves or torturers (since living by theft or torture—in general, at least—is morally wrong).

The would-be profession cannot, however, rest content with avoiding acts that are morally wrong. A profession must set standards beyond what law, market, (ordinary) morality, and public opinion would otherwise require. That is, a professtion must set *special* standards.

Otherwise the occupation would remain nothing more than an honest way to earn a living (as plumbing is, for example). These special standards will be ethical (in our fifth sense of "ethics"). They will be morally permissible standards that apply to all members of the group simply because they are members of that group.

That professional ethics (in our first sense) applies to members of a profession simply because of that membership is no surprise. It is true by definition. What is surprising, I think, is that the standards in question (the profession's ethics) will be *morally binding* on every member of the profession simply because of that membership—and therefore ethical as well in both our first and second sense. Each profession is designed to serve a certain moral ideal, that is, to contribute to a state of affairs everyone (every rational person at her rational best) recognizes as good (that is, as what she wants to be). So, physicians have organized to cure the sick, comfort the dying, and protect the healthy from disease; lawyers, to help people obtain justice within the law; accountants, to represent financial information in ways both useful and accurate; and so on.

These moral ideals must be pursued openly; that is, physicians must declare themselves to be physicians, lawyers must declare themselves to be lawyers, accountants must declare themselves to be accountants, and so on. The members of a (would-be) profession must declare themselves to be members of that profession in order to earn their living by that profession. They cannot be hired as such-and-such (say, a psychologist) unless they let people know that they are such-and-such. If their profession has a good reputation for what it does, their declaration of membership will aid them in earning a living. People will seek their help. If, however, their profession has a bad reputation, their declaration of membership will be a disadvantage ("I am a phrenologist"). People will shun their help. In general, if the members of an occupation are free to declare themselves or not, they will declare themselves only if the declaration benefits them overall (that is, serves at least one purpose of their own at what seems a reasonable cost).

Where members of a profession declare their membership voluntarily, their way of pursuing the profession's moral ideal will be a moral obligation. They will, that is, have entered a voluntary, morally permissible cooperative practice (by declaring their membership in the profession—"I am an engineer"). If hired (in part) because of that declaration, they will be in position to have the benefits of the practice, employment as a member of that profession, because the employer sought a so-and-so and they declared themselves to be one. They will also be in position to take advantage of the practice by doing less than the standards of the practice require, even though the expectation that they would do what the standards require (because they declared the appropriate profession) is part of what won them employment. If cheating consists in violating the rules of a voluntary, morally permissible cooperative practice, then every member of a profession is in a position to cheat. Since, all else equal, cheating is morally wrong, every member of a profession has a moral obligation, all else equal, to do as the special standards of the profession require. "Professionalism" is (strictly speaking) simply acting as the standards of the (relevant) profession require. To be a "professional" (or "a real pro") is to be a member (in good standing) of the profession—or (by analogy) to act as if one were (that is, to act in the way the relevant standards require).

Like a promise, a profession's ethics—the special standards of the profession—impose moral obligations. Professional standards may, and generally do, vary from profession to profession. They are, at least in part, a function of opinion within the profession. Since opinions

vary, it is possible to have several professions sharing a single occupation, one profession distinguished from another only by its distinctive professional standards (arising from differences of opinion concerning important matters of practice). This is not a mere possibility. Professional standards, including somewhat different moral ideals, seem to be all that make physicians (MD's) one profession of medical healer and osteopaths (OD's) another.

The special standards of a profession generally appear in a range of documents, including standards of admission, practice, and discipline. A code of ethics is, however, a central feature of a profession, a statement of the most general standards of practice. So, for example, in the United States, publication of a formal code of ethics is the signal that an occupation has organized itself as a profession. A profession is organized insofar as these special standards are realized in the practice of its members, in what they do and how they evaluate one another.

Since formal codes of ethics were almost unknown outside English-speaking countries until well after the Second World War, some may object that this definition of profession is too "Anglo-centric".[8] I have two (compatible) answers to this objection. The first is the professions have a history much as does the steam engine or parliamentary democracy—and, like the steam engine and parliamentary democracy, much of that history seems to have occurred in English-speaking countries. For a time, the industrial revolution and parliamentary democracy were "Anglo-centric". Why, then, not professions too? Second, my point about codes of ethics concerned *formal* codes. In many countries lacking such a code, technical standards may incorporate the same standards a code of ethics would in England, Australia, or the United States (though implicit in details rather than explicit in the more general terms characteristic of a code of ethics). The code of ethics may, in this sense, be both in writing and still "unwritten". Whether the technical standards of a given country in fact serve as a code of ethics will depend on the attitude that members of the (candidate) profession generally take toward those standards (assuming the standards to be morally permissible). If they regard them as external impositions, they count as law, not as an (unwritten) code of ethics. If, however, they regard them as standards they want everyone else in the profession to follow even if that would mean having to do the same, the standards do constitute a code of ethics (even if an unusually detailed one and even if enacted as law).

An occupation's status as a profession is (more or less) independent of license, state-imposed monopoly, or other special legal intervention. Even a country with licensed attorneys may have no profession of law (just as the United States has licensed plumbers but no profession of plumbing). Indeed, professions should maintain a certain independence of law. While professions often commit themselves to obey the law, the commitment must be contingent. Insofar as the laws of a particular country are unjust (or otherwise fall below the moral minimum), any provision of a professional code purporting to bind members of the profession to obey the law (whatever the law says) would be void in that respect (just as a promise to do what morality forbids is void).[9]

1.5 Learning about professional ethics from history

To deserve to go down in history is a good thing, but actually to go down in it may not be. In common speech, "You're history" is bad news, the information that the person addressed is about to die—involuntarily and long before her biological time. Generally, to write history is

to write about the dead; the living belong to journalism and the social sciences. That was, however, not always so. When Thucydides wrote *The Peloponnesian War*, he wrote about events in which he had taken part. Even Herodotus, the "father of history", wrote his great work, *Persian Wars*, about events within living memory. It is with these Greeks in mind that I have written this case study. Though the story I tell is not about the collision of great armies or economic systems, events deciding the future of nations, it is nonetheless about a crisis in an important human institution (software engineering), a crisis within living memory. It is the story of how software engineering became a profession (in our preferred sense)—a story, not a sociological study, yet a story having significance for the sociology of professions—and for professional ethics.

One way to read this book is as an investigation of how well the sociological approach to profession fits what we know of software engineering. For me, what is striking is how poorly sociology's three ideal types (or any mixture of them) fits the story I tell. My characters are not (primarily) concerned with the conquest of markets, raising their income, or protecting themselves from competition; nor is there reason to believe that an unseen hand guided them to act as if they were so concerned. They were already doing well in the market—and expecting to do better. Though governmental intervention in the market, especially licensing, does have an important part in the story, its part is extrinsic, often threatening the movement toward profession. And, like most histories, mine is not (primarily) about cultural forces achieving the inevitable, but about contingent events, the interplay of personalities, and the place of words, organizations, and actions in human achievement. Of course, just as one cold day does not make a winter, so the failure of the sociological approach to fit one profession does not constitute a refutation. It does, however, constitute evidence against any theory of profession relying on one or more of sociology's three traditions. Sociological theories of profession should fit the professions they claim to explain. My story is a challenge to the sociology of professions as so far developed.

That challenge would not be important if we had many studies like this one, and most of the others pointed in the opposite direction. In fact, we have no others. Few (if any) professions have an archive for the writing of a code of ethics to match that saved for software engineering. The absence of such archives may explain—in part at least—why, so far, historians have paid so little attention to professional codes. It is hard to write history without documents. Another part of the explanation may be that historians of professions, lacking any alternative, have followed sociology in emphasizing other features associated with professions, features easier to document than writing a code. Nonetheless, the closest to a book-length study of a code of professional ethics before mine seems to be a collection of studies, *The American Medical Revolution*, describing the entire (fifty-year) career of the first code of ethics of the American Medical Association. That collection draws much the same conclusion I do. Its leading editor, Robert Baker, also uses recent work in the philosophy of professions to sharpen the questions his historians ask the records they have.[10] Our books seem to stand at the beginning of a new line of research.[11]

When I started this book, I thought of it as sociology (or journalism) rather like Kidder's *The Soul of a New Machine* (a classic study of engineers designing, building, and testing an early computer).[12] What made this book history rather than sociology, insofar as it is one rather than the other, is the evidence on which I came to rely. Much of the activity Kidder observed

consisted of people working with certain machines, conversations between those people, and so on. Most of what I observed were emails. Kidder augmented his observations with interviews, mostly interviews carried out while the people worked. Although I too interviewed participants, I interviewed them several years after the work I studied had ended. I did not, until then, have a grant to pay the expenses of interviewing. I could not even make a good case for such a grant until what I wished to study, the writing of an important code, had indeed produced a code likely to be important.

I therefore had documents of a sort Kidder did not, hundreds of emails. I did not have to depend on notes I had taken at the time. I had the events themselves, the emails (or, at least, printouts of them), piled a foot high on my desk. That was an advantage. I also had interviews of a sort Kidder did not, interviews conducted several years after the events they were to help reconstruct. That proved a disadvantage. I was often in a position to check my interviewee's memory against emails (and other documents). I soon realized that the emails were a much more complete and accurate record than anyone's memory, indeed, than all of the memories put together. I could not rely on interviews in the way Kidder had.

The Greeks wrote history about events within living memory (at least in part) because they lacked the archives that would have allowed them to write much about earlier events. For them, where memory, and the few surviving documents, ran out, history also ran out, and legend, myth, and fable (the playground of poets) began. Perhaps their memory was better than ours, or the events they studied, being more central to their lives, made a deeper impression, or perhaps much the Greek historians tell us did not happen—or did not happen in anything like the way they recount. I do not know. What I do know is that I have been deeply shaken by how much my interviewees forgot or misremembered. (They could report that they had never been reimbursed for travel when their own files showed they had; they could recall an important event that occurred in 1995 as occurring two years before; and so on.) I soon learned to bring a timeline to interviews (to prompt their memory and mine). Even so, I came to think that interviews can tell us much about what people are, what they think, and what they are doing, much less about what they were, thought, and did, even a few years before.

Though I first noticed this failure of memory in others, I soon noticed it in myself as well. Not only did I sometimes forget events indifferent or even unpleasant to recall, but some I was happy to recover as documents proved me better than I supposed. Whatever the law of memory, it is not simply self-interest or pleasure (the "advantage" Shakespeare alleges at the head of this chapter).There is no mechanical way to recover memory; indeed, often no safe way even to distinguish between true memory and false—apart from looking for harder evidence. Memory, even of recent events, is as much phantom as ghost. I have occasionally used interviews to fill gaps in the record, especially when two or more interviewees agreed on what happened, but I have preferred to use interviews to help me understand the documents. What memory seems to preserve best is the feel of things.

To write about the living is always to risk hurting someone's feelings and, these days at least, to risk a suit for libel as well. To write, as I have, about people most of whom are still in good enough health to care what I write, literate enough to read it, and sufficiently lacking in diffidence to challenge me any time they think I have gotten something wrong, may seem even more risky. Yet, the risks here are, I am happy to say, much lower than in most studies.

Apollo 13 was an unusual success among movies. It lacked violence, sex, and even a villain. Its commercial appeal seems to have rested on nothing more than watching three moon-orbiting engineers, each imperfect enough to be likeable, successfully solve a complex practical problem (with the help of other engineers back on Earth). This book resembles *Apollo 13* in lacking violence, sex, and villains. Those looking for scandal will be disappointed. This is a story of intelligent people successfully solving a complex practical problem. Part of the dramatic interest is watching good people trying to do good things. There are many small failures of knowledge, skill, and judgment, something to be expected in any human undertaking—and, something rare, a great failure just avoided. Much of the rest of the dramatic interest is in the conflict of ideas. Many of the disagreements between my characters are about what a code of ethics is, how it should be written, and what it should contain. We can see how theories of profession affect practice—and how practice can support some theories and raise doubts about others.

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[1] Portions of this chapter were presented at a workshop, "Toward a Common Goal: Ethics Across the Professions", Sierra Health Foundation, Sacramento, California, August 26, 2006; to the Research Group of Ethics, Faculty of Letters, Hokkaido University, Sapporo, Japan, February 14, 2007; Second ASPCP International Conference on Philosophical Practice, Purdue University Calumet, Hammond, Indiana, May 19, 2007; Philosophy Section, Faculty of Technology, Policy and Management, University of Technology-Delft, The Netherlands, September 24, 2007; Center for Ethics and Technology, University of Technology-Twente, The Netherlands, September 27, 2007; and the Center for the Study of Ethics in Society, Western Michigan University, Kalamazoo, Michigan, October 4, 2007. Versions have also appeared in print: "How is a Profession of Engineering in China Possible?" [in Chinese] *Engineering Studies* 2007, 132-141; "Is Engineering a Profession Everywhere?" *Philosophia*, forthcoming; and Christopher Meyer, ed., *Journal Ethics* (Oxford University Press: New York, 2009), pp.-—-; and Elliot Cohn, Michael Davis, and Frederick Elliston, *Ethics and the Legal Profession, 2nd* (Prometheus Press: Buffalo, 2009), pp——.

[2] See, for example, John Ladd, "Collective and Individual Responsibility in Engineering: Some Questions", *IEEE Technology and Society Magazine* 1 (June 1982): 3-10.

[3] See, especially, Michael Davis, *Profession, Code, and Ethics* (Ashgate, Aldershot, England, 2002).

[4] For a better sense of the enormous variety of sociological definitions, see John Kultgen, *Ethics and Professionalism* (University of Pennsylvania Press: Philadelphia, 1988), especially, pp. 60-62.

[5] My favorite in this category is: John T. Sanders, "Honor among Thieves: Some Reflections on Codes of Professional Ethics", *Professional Ethics* 2 (Fall/Winter 1993): 83-103, in which "profession" is defined so as to include the *mafia*.

[6] I have, please note, chosen two occupations where licensure is optional (for most purposes). When licensure is mandatory, as in law or medicine, we are likely to suppose the license, not the discipline, creates the boundary.

[7] For those who think I should take a firmer position on whether software engineers form a profession, I can think of no better response than to quote David Hume, *Dialogues Concerning Natural Religion*, Part XII: "there is a species of controversy which, from the very nature of language and of human ideas, is involved in perpetual ambiguity, and can never, by any precaution or any definitions, be able to reach reasonable certainty or precision. These are the controversies concerning the degree of any quality or circumstance. Men may argue to all eternity whether *Hannibal* be a great, or a very great man…"

[8] I say "almost" because there were certainly some codes of ethics outside the English-speaking world before the Second World War. For example, the Japanese Society of Civil Engineers adopted its first code of ethics in 1938 ("Beliefs and Principles of Practice for Civil Engineers"). Perhaps if we looked, we would find many more such examples.

[9] I should like to thank Seumas Miller for questioning me until I saw the need to make this point. The point is, I take it, consistent with that made in Eugene Schlossberger, "Technology and Civil Disobedience: Why Engineers Have a Special Duty to Obey the Law", *Science and Engineering Ethics* 1 (June 1995): 163-168. While I doubt that engineers have the special duty that Schlossberger argues for, my point now is simply that its existence is independent of the claim I am making here. Engineers might both have that special duty and still have a reason to violate it if the laws are unjust enough.

[10] Robert B. Baker et al, *The American Medical Ethics Revolution: How the AMA's Code of Ethics has Transformed Physicians Relationships to Patients, Professionals, and Society* (Johns Hopkins University Press: Baltimore, 1999). For more about development of medical codes generally, see: Robert Baker, Dorothy Porter, and Roy Porter, editors, *The Codification of Medical Morality*, Vol. I (Kluwer Academic Press: Dordrecht, 1993), which covers the period before the writing of the AMA code, emphasizing developments in England in the eighteenth century; and Robert Baker, editor, *The Codification of Medical Morality*, Vol. II (Kluwer Academic Press: Dordrecht, 1995, covering the nineteenth (and early twentieth) century, with an emphasis on the United States.

[11] It is surprising how little has changed since Ivan Waddington, "The Development of Medical Ethics—A Sociological Analysis", *Medical History* 19 (January 1975): 36-51, observed in his opening paragraph: "It is a curious fact that despite the rapidly growing volume of literature on professions, little work has been done by sociologists on the development of professional ethics. This omission becomes doubly curious when one considers the central importance attributed to professional ethics in much of the literature on professions".

[12] Tracy Kidder, *The Soul of a New Machine* (Atlantic-Little, Brown: Boston, 1981). Perhaps it is worth pointing out that Kidder *is* a journalist.

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