

A Plea for Judgment

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Abstract Judgment is central to engineering, medicine, the sciences and many other practical activities. For example, one who otherwise knows what engineers know but lacks “engineering judgment” may be an expert of sorts, a handy resource much like a reference book or database, but cannot be a competent engineer. Though often overlooked or at least passed over in silence, the central place of judgment in engineering, the sciences, and the like should be obvious once pointed out. It is important here because it helps to explain where ethics fits into these disciplines. There is no good engineering, no good science, and so on without good judgment and no good judgment in these disciplines without ethics. Doing even a minimally decent job of teaching one of these disciplines necessarily includes teaching its ethics; teaching the ethics is teaching the discipline (or at least a large part of it).

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Judgment is central to engineering, medicine, the sciences, and many other practical activities.¹ One who otherwise knows what engineers know but lacks “engineering

¹ By “practical”, I mean an activity occurring in space (as well as time). The practical in this sense is opposed to mere thought, which occurs only in time (or, if one is a materialist, only “in one’s body” rather than in any public space). *Writing* is a practical undertaking; thinking about writing is not. This sense is much broader than “a practice”—as in, for example, Alasdair MacIntyre’s often quoted sense, “any coherent, complex form of socially established cooperative activity through which goods internal to that form of activity are realized in the course of trying to achieve those standards of excellence which are

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judgment” may be an expert of sorts, a handy resource much like a reference book or database, but cannot be a competent engineer. Similarly, one can know a great deal about physics without being a good physicist. To be even a minimally competent physicist, one must be able to identify fruitful problems, investigate them in the appropriate way, and draw useful conclusions. There is no reliable algorithm for doing such things in physics—or in any of the other sciences, medicine, engineering, or the like.

The central place of judgment in the practice of engineering, medicine, the sciences, and the like may explain why students of the corresponding discipline seem to need teachers to learn from, teachers who themselves are reasonably adept in the discipline they teach—and why so much of the teaching must be “hands on”. To know what engineering, the sciences, or the like can tell us (“the body of knowledge”), we need only books—or their equivalent, such as lectures on DVDs or YouTube. But to learn the discipline, we must solve problems, participate in discussions, work in labs, write reports, and otherwise *practice* the discipline, under the supervision of those who are adept at it. We must develop a certain kind of judgment, that is, the *disposition* (including the ability) to *act* as competent members of the discipline act. As we develop that judgment, learning “the facts” of the discipline (including its theories, general truths, and tacit knowledge) becomes easier—until we can teach ourselves. Schools (universities, institutes, academies, and so on) are, therefore, not mere aids to learning these disciplines; they are—except for a few prodigies (autodidacts)—necessary for learning them.

Though often overlooked or at least passed over in silence, the central place of judgment in engineering, the sciences, and the like should be obvious once pointed out. It is important here because it helps to explain where ethics fits into these disciplines. While we think of these disciplines as primarily knowledge, we find it hard to see much room for ethics. Ethics seems an add-on, something associated with the *application* of the discipline in question, not part of the discipline itself. Once we see judgment as central to the discipline, we can also see how central ethics is to its competent practice. There is no good engineering, no good science, and so on without good judgment and no good judgment in these disciplines without ethics. Doing even a minimally decent job of teaching one of these disciplines necessarily includes teaching its ethics; teaching the ethics *is* teaching the discipline (a large part of it at least). Or so I shall argue here.

To avoid a likely misunderstanding of what I just said, let me make clear what I mean by “ethics”. I mean neither morality as such (one common sense of “ethics”) nor moral theory (another common sense of “ethics”). Rather, I mean those (morally permissible) standards of conduct (rules, principles, or ideals) that apply to members of a group simply because they are members of that group. Engineers need to understand (and practice) engineering ethics to be good engineers, not moral

Footnote 1 continued

appropriate to, and partially definitive of, that form of activity” (MacIntyre 1984) Engineering, the sciences, and so on are, of courses, practices in MacIntyre’s sense, though some disciplines may not be—those that are not complex enough, or not socially established but individual, or without internal goods. Judgment may be necessary for disciplines that are not practices in MacIntyre’s sense as well as for practices that are. For that reason, I adopt this very broad sense of “practical” (and “practice”).

theory, medical ethics, or the like. Physicians need to understand (and practice) medical ethics to be good physicians, not moral theory or engineering ethics. And so on. Ethics in this special-standards sense presupposes ordinary morality but is itself “a special morality”, that is, something specific to the discipline, roughly, those morally permissible standards of conduct everyone in the discipline (at his rational best) wants everyone else in the discipline to follow even if that would mean having to do the same. These special standards are morally guiding insofar as voluntarily participating in a (morally permissible) cooperative practice gives one reason to follow its standards (as well as, in some cases, giving reasons simply because they are also special cases of ordinary moral standards).

This paper is quite preliminary. So little has been written about judgment that I must leave many important questions unanswered—and some not even asked.² But to plead for judgment to have the attention it deserves, all I need do is establish the plausibility of the claim that anyone interested in understanding engineering, medicine, any of the sciences, or the like should take an interest in judgment—as should anyone who wants to understand the central place of ethics in any of these disciplines. I shall do that here in part by explaining what judgment is, how we recognize, and how it is maintained, but in part too by distinguishing it from related concepts.

I shall not argue that programs in engineering, medicine, science, or the like do not teach judgment. In fact, I believe that the most important part of what they now teach is judgment. Rather, I shall argue that teachers of engineering, medicine, science, the like, not just those who teach the ethics of these professions but those who teach the technical courses, might do a better job if they were clearer about what the judgment they teach is and how it can be taught.

Judgment as Both Personal and Objective

Judgment is personal both insofar as it is a disposition to act (and must therefore be embodied in a person) and insofar as it is not wholly objective (cannot to be equated with a database or algorithm). Judgment is personal in at least three other ways as well: First, different people may have good judgment of different sorts. For example, I am a good judge of philosophical arguments; my son, though a much better judge of airfoil design than I am, is not such a good judge of philosophical arguments. Part of this difference is doubtless upbringing: I studied much more philosophy and much less engineering than he did. But part of the difference may be inborn. I already loved big ideas and abstract arguments in my early teens, while my son showed a special affinity for machines instead. (When asked on the first day of pre-school what he wanted to be when he grew up, he answered, “An airplane.” Further questioning confirmed that he did not mean, “A pilot.”)

² The best general discussions of judgment that I know of are (Jonsen and Toulmin 1988; Brown 1988; Dienhart 1995). While I have learned much from all three, my concern is (as will soon be plain) somewhat different.

Another way in which judgment is personal is that we assess judgment, both particular judgments and a person's overall judgment in some domain, in part at least by that person's biography. We are more likely to trust the medical judgment of someone who has an M.D. than, say, a Ph.D. We are more likely to trust a judgment concerning the design of a biological experiment if the person making the judgment has worked for a decade or two as a biologist than if she is new to the field. And so on. We are also more likely to trust an engineer's judgment of, say, the safety of a certain bridge if she has walked the bridge, crawled among its girders, and otherwise familiarized herself with its particulars. Good judgment is judgment taking into account all relevant considerations, even those we may not know in advance are relevant. For that reason, the judgment-maker's biography, including education and experience, is always relevant to deciding whether we should rely on her judgment—and how much we should rely on it. Her biography helps us gauge her ability to take all relevant considerations into account.

One more way in which judgment is personal is that two practitioners, though equally skilled in the discipline in question, may reach different judgments without either making a mistake. For example, two structural engineers may disagree on which of several designs for a skyscraper is best (while recognizing the other engineer's differing judgment as competent). We who rely on the judgment of engineers should take the competing designs seriously because each design has the backing of the right sort of person. We should not dismiss either recommendation (or both) just because they are inconsistent.

Though personal in these five ways (and perhaps others), judgment is subject to evaluation. Judgment is (more or less) objective in this respect. How objective may vary somewhat from discipline to discipline, however. In some disciplines, we have relatively clear criteria for evaluating a judgment's *outcome*, if not the judgment itself. There will not be much room for reasonable disagreement. For example, a good chess player is someone who regularly wins matches even against players identified as "expert", "master", or "grandmaster"; a good weather forecaster is someone who predicts the weather correctly more often than the average person or even the average weather forecaster; and so on.

While assessing judgment in chess, forecasting, and other disciplines having clear outcomes is (relatively) straightforward (once we have enough outcomes), other forms of judgment are harder to assess. The criteria of success are both open to dispute and in competition. So, for example, a good poet is someone who regularly creates good poetry. But what makes a poem good? Certainly, there are several relevant criteria and therefore much room for disagreement about many poems (and so about the status of their authors). How do we, for example, balance the emotional power of one poem against the abstract beauty of another? Still, the status of poems is not entirely a matter of opinion. There is little dispute at the extremes. Robert Service is no Shakespeare; Ezra Pound is good while Minnie Louis Haskins is not. Much the same is true for many other disciplines, such as acting, singing, and composing popular songs. We, "the laity" (those without the discipline), can—relatively quickly—identify good work (and therefore those who have the good judgment to produce it). What we dispute are generally "matters of degree", such as

whether Meryl Streep or Johnny Depp is the better actor, not whether they are both good actors.

Though matters of degree, when close, are notoriously open to dispute, judgments concerning them are not therefore arbitrary or wholly subjective. We generally expect to give reasons for our judgments, reasons that can be assessed for both relevance and weight. Even when the reasons themselves seem far from conclusive, they can help us assess the judgment of the person offering them. For example, we are (and should be) more likely to trust a judgment concerning acting, poetry, singing, or the like if the person making the judgment can give many relevant reasons than if he can give few or none.

In other disciplines, the laity cannot (directly) assess achievements in the discipline or even the reasoning for an assessment. For example, a good mathematician is (roughly) someone who regularly develops interesting new proofs, solutions, or problems in some field of mathematics. But only a few people, mostly other mathematicians, can tell the difference between an interesting proof, solution, or problem and a trivial or incompetent one (and they may disagree concerning a significant number of cases). For the rest of us, achievement in mathematics, or even the reasoning that supports a claim of achievement, is as open to our understanding as the messages that whales are said to sing to one another as they prowls the deep. How then can we, the laity, distinguish those judgments concerning such a discipline that we should trust from those we should not?

Generally, we make the distinction in two steps. First, we sort out those *disciplines* that seem to produce reliable results of the sort that concern us from those that do not. To some degree, the notion of “reliable result”, such as reliable result in advanced mathematics, is itself a matter of judgment, though not necessarily a matter of mathematical judgment. Most of us trust the judgment of professors of mathematics but not the judgment of, say, cabdrivers concerning advanced mathematics. A few lay people may disagree, of course, and may even be right, but—on the information most of us have—they seem to be wrong. Those of us who trust professors of mathematics more than cabdrivers on questions of advanced mathematics may do so in part because professors of mathematics seem over time to be much better than cabdrivers at helping us with problems of advanced mathematics. (In this respect, professors of mathematics are like chess players or weather forecasters—they have a win-loss record easy to assess.) We may also prefer professors of mathematics over cabdrivers in part because their theories (revealed in their explanations to us) fit better with what else we believe about mathematics than do the wild speculations of a cabdriver. We may even prefer professors of mathematics over cabdrivers in part because the training of the professors seems better for making mathematical judgments than that of cabdrivers (more extensive, demanding, and fitted to understanding mathematics); or because professors of mathematics are more likely to agree among themselves on more questions of mathematics than cabdrivers are; or because the lay people whose judgment we trust take their problems in advanced mathematics to professors of mathematics rather than to cabdrivers; or because some authority of another sort (perhaps even cabdrivers) recommends professors of mathematics rather than cabdrivers for help with questions of advanced mathematics.

However we come to conclude that a particular group of practitioners (for example, professors of mathematics) may be trusted (for certain purposes, to a certain degree, and so on) because the members of the group are indisputably adept in the required discipline, we may then use that group to identify other members of the discipline we may also reasonably trust with tasks of the appropriate sort (for example, advice concerning how to solve a practical problem using advanced mathematics). The discipline, an ongoing institution or practice, tells the rest of us who we may count among the reliably adept (for example, as “real mathematicians” rather than amateurs, dilatants, or charlatans). This identification may be highly formalized, for example, involving degree, exam, license (or certification or registration), and continuing supervision (as with physicians or Certified Chemists).³ We may also identify members of such a discipline in less formal ways, for example, by examining college transcripts (especially, grades in the relevant major), letters of reference from those indisputably adept, and so on. We may even let the discipline identify the competent *whatever their formal credentials*, as we still do now and then in a few disciplines, including mathematics and history.

While some engineers and scientists are licensed, most are not. They are identified as members of their respective discipline by transcript, letters of reference, and the like. We can reasonably trust the judgment of the individual engineer or scientist we do not otherwise know (insofar as we do trust it) because the discipline vouches for that judgment. We may trust the discipline because it has somehow proved itself. That trust is, of course, subject to revision. To maintain trust, a discipline must continue to win it. It wins it by continuing to seem both useful in itself and at least as good in that respect as any competitor. A discipline can seem to deserve our trust over many years only if it maintains enough uniformity of the right sort. It must, in short, remain a good discipline. Otherwise, it is likely to go the way of alchemy, divination, mesmerism, phrenology, and the like.⁴

I have spoken here of discipline, not profession, for at least two reasons. First, a profession requires an underlying occupation, that is, a way to earn a living. Not every discipline provides a living. Chess and poetry are, for example, among those disciplines that (generally) do not provide a living; they are amusements, hobbies, avocations, or at most callings rather than occupations and so are not even candidate professions. Second, even among those disciplines that do (generally) provide a living, many are not professions. Indeed, professions seem to arise only among disciplines in which the laity cannot judge directly the quality of the work. Engineering, mathematics, the sciences, medicine, and so on are therefore good candidates for profession while acting, popular singing, and so on are not. Some disciplines fall between these two extremes. So, for example, architecture, carpentry, nursing, and policing are *not*—like acting, chess, singing, and so on—

³ Licensing, though done by government, is nonetheless predominantly in the hands of the discipline; for example, members of the discipline typically prepare questions for the screening exam, grade the exam (or, at least, determine the right answers), predominate on disciplinary boards, and advise on overall policy.

⁴ Jack Snapper has pointed out to me that this explanation of how the authority of disciplines arise (or fall) is close to Hume’s defense of critical judgment in aesthetic appreciation (Hume 1757).

merely what the laity sees or can assess relatively directly (for example, by checking a win-loss record).⁵ Though more open to lay assessment than are engineering, the sciences, and medicine, they too are candidates for profession. To be a candidate for profession is, however, not to be a profession. While architecture and nursing certainly are professions and policing may be, carpentry seems (for now at least) no more than an honest trade. Why that is, is a subject for another paper (Davis 1999).

The list of likely candidates for profession is similar to the list of those disciplines in which success seldom comes early. In acting, chess, poetry, singing, and so on, even the very young may rise to the first rank. For example, Macaulay Culkin was 10 years old when he starred in *Home Alone*; Bobby Fischer won what became known as “the Game of the Century” at age thirteen; Arthur Rimbaud had completed his life’s work as a poet before his twenty-first birthday. In engineering, the sciences, medicine, and the like, there are no similar prodigies. Even Albert Einstein was twenty-six before he published the four papers that first made his reputation in physics.

The list of candidate professions is, however, not entirely congruent with the list of those disciplines in which success generally comes late. For example, mathematics seems to have a fair number of practitioners already great before twenty-one (Blaise Pascal, Évariste Galoi, Carl Friedrich Gauss, and so on), though perhaps none recently. In some of the sciences, including theoretical physics and some branches of mathematics, the young take longer to prepare than actors, chess players, singers, and so on, but still must achieve something by forty or not at all.⁶

Success, Technical Standards, and Ethics

What makes a discipline succeed in its competition with other disciplines? Why, for example, do we now prefer civil engineers to architects, carpenters, iron mongers, and the like when seeking someone to design a large bridge (but not a small house)? That is an important question, but one we need not answer here. The question we need to answer here is: how might ethics contribute to a discipline’s success?

Terms like “engineering ethics”, “research ethics”, and “medical ethics” tend to call to mind “code of ethics”—whether so called or called instead “code of conduct”, “rules of professional responsibility”, “principles of ethical practice”, or the like. There is a good reason such documents come to mind. Generally, they are statements of ethics. For example, the “Chemist’s Code of Ethics” (American Chemical Society) seems to most chemists to consist of their ethics, that is, morally permissible standards of conduct they in fact want (and probably would still want at their rational best) all other chemists to follow even if that meant having to do the same.

⁵ For more on the various senses of profession (and the special salience of this one), see Davis (2009).

⁶ The affinity of the young for certain disciplines was already obvious to Aristotle, for example: “It is notorious that young persons are capable of becoming excellent geometricians and mathematicians and accomplished students in subjects of that nature.” (N. Ethics VI-8) (Aristotle 1953) Aristotle also noted that, in contrast, the young generally lack *phronesis*. The young can have good judgment (in some disciplines) but not (as a general rule) *phronesis*. This, then, is one respect in which *phronesis* is distinct from judgment. We shall consider other ways later.

Nonetheless, the *equation* of a discipline's ethics with its code of ethics is a mistake. So, for example, almost the entire discipline of chemistry, everything from the names of chemical elements to how research labs should be managed, also satisfies our definition of ethics (the one appealed to in the paragraph above). Consider, for example, chemical notation: each chemist wants (or at least should, at her rational best, want) every other chemist to record data using the *standard* chemical notation. If every chemist uses that notation, then chemists need learn only that one notation. They will be able to study the work of other chemists without first having to translate it from one chemical notation to another. The standard notation may be the best conceivable. But, even if (as seems likely) it is not, chemistry would be harder to practice with every chemist choosing the notation she found most useful for her purposes, with every country having its own, or with chemical notation diverse in some other way. Much the same can be said for most, if not all, the other standards of chemistry—and of the (sometimes quite different) standards of other sciences, engineering, medicine, and so on. The standards belonging to a (morally permissible) discipline will (generally) satisfy the definition of ethics. Technical standards are (in general at least) ethical standards, though a few ethical standards, such as those concerned with advertising or human rights, may (strictly speaking) not be technical (depending how “technical” is defined).

So, the question about how ethics contributes to a discipline's success is in fact, in large part at least, a question of how technical standards contribute to a discipline's success. This transformation of the question may strike some readers as a slight of hand, the deceptive substitution of an easy but irrelevant question for the one they are interested in. It is not—though I agree that most disciplines are taught (more or less) as if their technical standards were not also ethical standards—that is, as if the technical standards were a divine gift, happenstance, or deduction from first principles of knowledge too obvious to teach. The student is told (in effect), “This is how we do things. Learn it or flunk.” That, I think, is a mistake for at least two reasons.

First, most practitioners of the discipline (for example, chemists) know better. They understand (or, at least, could easily figure out) how important the discipline's standards are to them—and how important they should seem to all other practitioners. Practitioners could explain the standards if they wanted to. So, those who teach the discipline (professors of chemistry) know enough to teach the technical standards as ethics (even though they do not now teach them that way). Inability does not excuse their failure to teach the standards as ethical.

Second, presenting the standards without explaining their ethical rationale is a poor way to teach them. In general, students learn faster when they see the point of what they are learning. Much has been written about integrating ethics into the technical curriculum. There is general agreement that one good way to do that is to explain, or otherwise help students see the point of, technical standards—to help them understand the discipline as a cooperative undertaking from which each benefits in part because other members follow the same disciplinary standards. Once students understand that, they can see that a violation of the technical standards is unethical (as well as forbidden) (Davis et al. 1996).

These two reasons carry over even to the teaching of those ethical standards that might be explained as “simply moral”, for example, the prohibition of publishing

made-up results (fabrication). Knowingly to publish made-up results is to present as results what in fact are not; it is a conscious attempt to obtain the benefits of research (a justified claim to have learned something new) without the burden (the work that would justify the claim). It is, in short, simply lying—and (all else equal) *morally* wrong for that reason.

But publishing made-up results is *ethically* wrong *as well*. Other members of one's discipline are entitled to rely on those results—not on their correctness, of course, because humans, including members of the discipline, often err—but on the results having been developed in the way results of that sort normally are, that is, in the way described in the publication. If engineers, physicians, scientists, and other researchers could not rely on their colleagues to develop results in the normal way, they would have to establish a network of colleagues they could trust to do that (a sub-discipline), institute some formal system for checking results before publication (for example, by having each journal reproduce results in its own lab before accepting submission), simply not rely on the results of others at all until reproduced in their own lab, or find some similar alternative. Each of these alternatives would take a good deal of time that might be better used; each might, depending on the equipment required, be quite expensive as well. Routinely checking for made-up results would be a burden making the discipline less efficient than it might otherwise be, providing an opportunity for a more efficient discipline to displace it. Every member of the discipline would, in the long run at least, be better off if others in the discipline never published made-up results. To see that is to see that each member of the discipline has a reason to avoid this sort of lying (fairness to colleagues who maintain the standard) even when ordinary morality might allow the lie as an exception (for example, to protect one's family from poverty).

Teaching students the rationale for a discipline's standards has another advantage noteworthy here. Most technical standards require interpretation. Teaching a standard should include, beside familiarizing students with the standard itself, teaching them how to apply it in ways that serve its purpose, especially when one standard seems to conflict with another. To do that, the student must know what that purpose is. In general, the purpose is, in part at least, ethical (that is, helping to maintain the mutually beneficial cooperation on which the discipline depends).

Value Judgment, Decision, Discretion, and some other False Leads

We must now consider some interpretations of judgment that would make it seem an old topic in no need of this plea. These interpretations are, though attractive to some at first glance, mistaken for one reason or another. They are, in fact, not about judgment at all (in the relevant sense). To see why they are not about judgment will further elucidate what judgment is.

For much of the twentieth century, moral theory treated moral judgments in general, and ethical judgments as an afterthought, as “value judgments” (as in the expression “That's just a value judgment”). Value judgments in this sense are arbitrary, resting on nothing more than personal opinion or feeling; they are expressions of one's “values” (that is, the things one happens to care about). To

criticize someone else's value judgment is (it was said) simply to express one's own. There are no privileged value judgments nor privileged criteria for assessing them—just as there is no privileged taste in food, music, dress, or the like.⁷

This emotive use of “judgment” is not what I have in mind. Indeed, it is a use denying “judgment” any distinctive meaning. A value judgment (in this sense) is just a *choice* concerned with values, not necessarily a judgment at all.

Nor does “judgment” as used here have the same meaning as in the expression “judgment call”. A decision is a “judgment call” when any of the available options, all things considered, is about as good as any other. There is no right or wrong about the decision nor anyone to overrule what one decides. One may choose as one likes. A judgment call is a decision left to one's discretion. In this use, “judgment” seems to have much the same sense as in “value judgment”. Rather than say of a decision that it is a “judgment call”, we could say instead (without change of meaning), “It's your call” (or “It's your decision”). “Judgment” is doing no work of its own.⁸

Judgment in this discretionary, arbitrary, or subjective sense may be contrasted with another sort, what we might call “objective [or rational] judgment”. What is most notable about judgment in this opposed sense is that, again, there is no judgment in any distinctive sense. An objective judgment is reached by following a “rational decision procedure”, a rule-bound routine, an algorithm. Any person who follows the same procedure will reach the same decision—unless she makes a mistake. The word “objective” (or “rational”) signals that there is nothing personal in the steps by which one reaches the (required) result. Indeed, anyone who follows the appropriate procedure will have “no choice” but to reach the same result as everyone else who follows that procedure. Arithmetic calculation is a typical rational decision procedure; the steps that should be followed to find a word in the dictionary constitute another.

Judgment (*in the sense whose case I am pleading*) is neither discretionary, arbitrary, or subjective in the way “value judgments” are nor objective, rational, or otherwise rule-bound in the way the product of a “rational decision procedure” is. Judgment in this sense (good judgment) may nonetheless seem closely related to decision.⁹ It is, of course, but less closely related than it may seem. A decision is an action (or, at least, a part of acting). Decisions are something we make or come to; they are what we decide. In contrast, judgment (in its distinctive sense) is primarily a disposition, the embodiment of a high likelihood of making certain decisions in

⁷ See, especially, (Ayer 1952; Stevenson 1944; Urmson 1968). Of course, there are other senses of “value judgment”, for example, simply a judgment of value (in the sense of “judgment” just sketched)—the sort of disciplined judgment a property assessor might exercise or a philosopher would recognize if she believes in objective value. Nothing I say here is meant to reflect on these other senses of “value judgment”. It is interesting that related terms—such as “moral judgment” and “ethical judgment”—never picked up this pejorative sense.

⁸ Readers of Dworkin (1977), esp. pp. 31–35, will recognize his distinction between three senses of “discretion”. I am here rejecting the second and third as interpretations of “judgment” (without claiming that anything is wrong with either sense as such). His first sense, which he too calls “judgment”, is the only sense that interests me.

⁹ Judgment is good judgment in much the way that all luck is good luck. Bad judgment is only judgment in a sense, much as bad luck is luck only in a sense. Hence, the joke: “If it were not for bad luck, I'd have no luck at all.”

the appropriate way at the appropriate time. The *exercise* of judgment (in this sense of “judgment”) yields *a* judgment (a kind of decision). The slide from “judgment” (mass noun) to “a judgment” (count noun) may help to explain the common mistake of equating “judgment” with “decision”. But, even as count nouns, there is an important difference between the two terms. We can *decide* whenever there is more than one option, but we can *judge* only in certain circumstances that call for decision (those circumstances allowing judgment as well as decision). For example, we can *decide* to bet on heads rather than tails but (assuming a fair coin and no unusual circumstances) cannot make a judgment that we should bet on heads rather than tails. To exercise judgment, we need something more than a situation of choice. We need a *reason* to bet on one rather than the other. Indeed, we need enough reasons, pulling in different directions, to make the decision something for which a rational decision procedure would not suffice.

To say that judgment can be exercised only in situations where there are reasons pulling in different directions may suggest that judgment must be the consequence of deliberation, a stately weighing up of reasons. While judgment is often exercised in that way, it may as often be exercised quickly—without noticeable deliberation. Much of what makes a good engineer, scientist, physician, or the like is “seeing” that such-and-such is “the only way to go”—when those less skilled can reach the same conclusion (or even one less good) only with considerable effort, if at all. I consider this sort of “seeing” to be a form of judgment, no less judgment for being virtually instantaneous. The skilled archer who discharges five arrows in less than a minute, hitting the center of a distant target each time despite variable winds, plainly has the special judgment (“the eye” or “knack”) that makes a good archer.

There is, I admit, a virtue associated with decision that resembles judgment, especially judgment of this instantaneous sort: *decisiveness*. But decisiveness is decidedly not judgment. Decisiveness is the disposition to decide quickly when presented with a choice. There is no suggestion that the decision itself is good, only that a timely decision, whatever its other merits, is better than none at all or one made too late. Unable to decide between a pile of hay or pale of water, each the same distance from it, Buridan’s ass famously died of both thirst and hunger. That ass was indecisive.

But even if Buridan’s ass had been slightly more decisive, and so not died in that way, it might have lacked judgment altogether. Judgment requires knowledge; decisiveness does not. Even a computer can be programmed to be decisive (however meager its database). Its program might, for example, simply include the instruction: *if all other criteria fail to decide between options on a list, choose the second*. Because judgment is not mere decisiveness, there is no simple computer program for judgment (as there is for decisiveness). Indeed, though there may sometimes be computer programs that can *substitute* for judgment, there can be no computer program for judgment (or, rather, there cannot be as long as computer programs consist entirely of algorithms).

Perhaps the best-known computer programs that can substitute for human judgment are those for playing chess. Though they now generally outplay humans, they do not reach their moves in the way humans do; they do not exercise judgment. Chess programs rely on the speed of the computer, performing many more

calculations than a human could in the same time; they also have algorithms for skipping some options identified in advance as unlikely to yield good moves (whether those options were identified by a human programmer or by the program's own learning function). Human players, in contrast, seem to rely on recognizing patterns, thinking through only a very small number of options. A good player has "a feel for the board". The human procedure is one for which no adequate program has yet been devised.

That is surprising. After all, chess is one of the few human activities that consists entirely of a finite number of discrete states—just the sort of activity we might reasonably expect humans to approach in much the way computers do.

The mention of "virtue" (and "disposition") may suggest that judgment is a certain kind of habit. While there certainly may be habits that support good judgment, mere habit is the enemy of both virtue and judgment. Courage, for example, is not simply the habit of facing danger. The habit of facing danger is at least as likely to make one foolhardy as courageous. To be courageous rather than foolhardy, one must appreciate when to face danger and when to run from it—as well as how to run from it, how far, with whom, and so on. To distinguish those situations where one should run from those where one should not (generally) requires judgment. Habit without judgment is stupid. A few virtues (such as decisiveness) are possible without judgment; most are not. Among moral virtues, it is hard to think of any that could exist without judgment.

Zero tolerance of all evil may seem the most likely candidate for a virtue not needing judgment, but zero tolerance of all evil cannot be a virtue because it is impractical. Often enough our only good choice is the lesser evil. Zero tolerance of *certain* evils (for example, "Just say no to drugs") is possible and (largely) avoids judgment, but the outcome of such specific intolerance may well be other evils, some worse than those not tolerated (such as death because one refuses to take medically prescribed drugs). The habit of not tolerating certain evils is likely to be stupid often enough to seem more like a vice than a virtue.

Something similar might be said of positive virtues such as open-mindedness or hospitality. Consider open-mindedness. Simple open-mindedness would include listening to every proposal to invest in a perpetual motion machine, every new argument purporting to show that the world is flat, and so on. But part of wisdom is recognizing certain questions as closed. Open-mindedness can be a virtue only if the mind is not open to whatever trash might blow in. To have the virtue of open-mindedness, one must exercise judgment concerning what should be treated as a question still open for discussion.

Judgment is also not instinct or intuition. Instinct is a sort of inborn habit, a disposition to act in certain ways to which we are genetically disposed. Some instincts, such as feeding at the breast, seem to be there at birth; others, such as language, seem to arise later. Some instincts, such as our response to suffocation, seem to be independent of knowledge; some, like the sexual instincts, seem to rely on knowledge—or at least to unfold more happily as one "learns the facts of life" (as we say). There is, nonetheless, some relation between instinct and judgment. Judgment may improve instinct. For example, a good swimmer is good in part because she can control the suffocation instinct better than most of us—she has

learned to hold her breath while under water almost to the point of suffocation before returning to the surface to take a breath.¹⁰

“Intuition” is a dangerously ambiguous term, referring to anything from instinct to intellectual insight. Some intuitions are judgments, for example, the response to particulars an engineer might express as, “My gut says that seal won’t hold.” Other forms of intuition have nothing to do with judgment, for example, any form of intuition that is supposed to provide *certainty* (as in intuitionist moral theories). No exercise of judgment yields certainty. Any judgment can be wrong. Any discussion of judgment would, I think, do well to avoid the term “intuition” in favor of more specific terms.

Is (good) judgment a virtue? A virtue is (roughly) any disposition associated with living well.¹¹ Judgment as such is not such a disposition but a family of them (engineering judgment, medical judgment, poetic judgment, and so on). It is, therefore, no more a virtue than virtue is a virtue. What about the particular kinds of judgment: are they virtues? I am not sure. On the one hand, they fit the (rough) definition of a virtue. For example, good engineering judgment is a disposition that contributes to living well (both to the engineer’s living well and to others living well). On the other hand, many kinds of judgment (such as engineering judgment) are unlike traditional virtues. The traditional virtues (courage, hospitality, truthfulness, and so on) concern the whole of life. No traditional virtue concerns only a single discipline as, for example, engineering judgment does.

***Phronesis*: Another False Lead**

There is another reason to think no particular kind of judgment is a virtue. Few virtues can exist without judgment, yet virtues are (more or less) independent of each other—or, at least, independent of all other virtues but what Aristotle called *phronesis*, the chief virtue of practice, but also a source of trouble in virtues theory (because it tends to make most other virtues unnecessary). Judgment thus seems to have the same centrality in the virtues as *phronesis* does. What relation, if any, exists between judgment and *phronesis*?

There is no good English equivalent of that Greek word. The usual translations are “prudence”, “intelligence”, and (most often these days) “practical wisdom”.¹²

¹⁰ Instinct may also improve on judgment. For example, it is probably good that we cannot control the suffocation instinct indefinitely. If we could, more of us might suffocate without meaning to.

¹¹ I avoid the now common description of virtue as “excellence” because “excellence” suggests something beyond the average (literally, running ahead). There is nothing in the idea of virtue that forbids it being a disposition almost everyone has. So, I prefer the less elitist “disposition (and ability)”. That, of course, is closer to the Latin “virtue” (literally, strength or power) and the Greek “arête” (that which is good). What explains the popularity of the superlative “excellence” as a translation of these non-superlative terms?

¹² We may dismiss two other less common translations of *phronesis*: “common sense” and “sagacity”. “Common sense” may be dismissed because *phronesis* is not necessarily common (no more than wisdom or good judgment is). “Sagacity” may be dismissed because a sage seems to be someone more given to contemplation than practical activity, a “fount of wisdom” but not necessarily a man of affairs. In this respect at least, sagacity is closer to intelligence than to *phronesis*. Another plausible candidate for

“Prudence” was once a good translation, when “prudence” meant having good sense in practical matters, but is no longer, since it now carries a strong suggestion of self-interest and caution. “Intelligence” is too general, so general in fact that we can (plausibly) say such things as, “Some of the most intelligent people I know lack wisdom.” “Practical wisdom”, though the best we can now manage, is still a misleading translation of *phronesis*—in at least two ways.

First, there is a redundancy suggesting some unspecified technical usage. In ordinary language, “wisdom” already is practical (roughly, an understanding of people, situations, and the like leading one to act well in most circumstances). If someone tends to act badly, we conclude that she is unwise, whatever she knows. Someone who gives good advice but regularly acts foolishly is merely a good advisor. Such a person is a mystery, much like an idiot savant. Why can’t she take her own advice? Equally mysterious is the “wise fool”, one whose opinions are absurd but whose conduct is otherwise what we would expect of the wise.

Philosophers seem to be the only people who routinely prefix “practical” to “wisdom”. The reason they do that (when they do) is, it seems, that they equate “wisdom” with the Greek *sophia* (rather than *phronesis*). They make the equation because they understand *sophia* in a sense sufficiently broad to include what philosophy has become, not simply (as a literal translation of the Greek *philosophia* would have it) the filial love of *wisdom* (a love of *sophia* in its ordinary sense) but instead (or in addition) the love of abstract knowledge (the love of *espisteme*). Philosophy is now (primarily) the pursuit of truth. Truth may include truths about how to live well, but not the disposition reliably to act well. Philosophy no longer promises wisdom but the understanding that comes with knowing; it is (as Kant would say) speculative rather than practical even when its subject is practical reason. While ruling out this connection between *sophia* and speculative reason, prefixing “practical” to “wisdom” suggests that wisdom can sometimes be impractical (that is, merely speculative), something not possible in English.

The second way in which the term “practical wisdom” is misleading as a translation of *phronesis* is that it at least suggests an *etymological* connection between *phronesis* (the practical) and *sophia* (wisdom). There is no such connection. The difference in etymology is evidence that even the Greeks distinguished *phronesis* from *sophia*. There is other evidence. Consider, for example, that Aristotle defines *sophia* as the ability to think well about the nature of the world, to understand why the world works as it does, and to deliberate accordingly concerning *universal* (or at least general) truths (mathematics, metaphysics, science). *Phronesis*, in contrast, is (for Aristotle) the ability reliably to respond to any situation with a course of action that makes life better (or, when that is not possible, does not make it worse than necessary). *Sophia* (we might say) is the virtue of a scholar or thinker; *phronesis*, the virtue of a politician or man of affairs. Or, as Aristotle put it: “Practical wisdom [*phronesis*] being concerned with action, we need both kinds of knowledge [particular and general]; nay, we need the

Footnote 12 continued

translating *phronesis* is “practical reason”. It has, as far as I know, never been used, perhaps because it is so strongly associated with Kant (who treats reason as equivalent to rationality).

knowledge of particular facts more than general principles [*sophia*].”(Aristotle 1953)

Rather than struggle with these problems of translation, let us just use the Greek noun itself (and “wise” for its adjectival form).¹³

For Aristotle at least, *phronesis* is not entirely independent of theoretical (universal or general) knowledge, merely much more than such knowledge. To be wise, one must know something of the sciences, but even knowing all that the sciences now teach (or ever could teach) will not make one wise—since science is, by definition, theoretical (or at least general) knowledge. To be wise, one must be able to bring such knowledge to bear on practical problems in productive ways—and that requires as well what Aristotle understood as “knowledge of particulars”, knowledge distinct from science. So, for example, one thing medical students learn from the cadavers they dissect is that an actual human body can have its organs arranged somewhat differently from what the textbook (the voice of science) tells them. That knowledge of particulars combines with general knowledge of the body (anatomy) to help a medical student appreciate how a patient may differ from the ideal supposed in standard treatments: there is no substitute for clinical knowledge (a knowledge of the particular).¹⁴

Phronesis is more than the union of general and particular truths, however. It includes as well responding to those truths in an appropriate way. That response is what makes *phronesis* practical in a way *sophia* is not. Insofar as that response cannot be scripted in advance but must be invented case by case, *phronesis* is not simply knowledge of any sort; it is, rather, a *disposition to act* that takes general and particular knowledge into account in appropriate ways (ways not necessarily predicible in advance).

Since good judgment (of whatever kind) is also a disposition to act in an appropriate way, “judgment” (or, more explicitly, “good judgment”) would be a better translation of *phronesis* than “practical wisdom”—except for a difference in scope between the two terms. *Phronesis* is (more or less) a global term; judgment is not global (even if we ignore engineering judgment, medical judgment, and the like disciplinary varieties noted earlier).¹⁵ A person can have good judgment in one area of life, say, politics, but not in another, say, family affairs. Though he has good judgment in some areas of life, such a person would not have *phronesis* (or, perhaps, have only a very defective sort of *phronesis*). For that reason, “professional judgment” is a perfectly sensible expression in English even if “professional

¹³ I prefer “wise” to *phronetic*—a term that has not caught on with anyone but a few sociologists, perhaps because it sounds too much like “frenetic”.

¹⁴ Aristotle might, of course, have found fault with this example as an elucidation of *phronesis*, since it is concerned with technical knowledge, not general good sense. I use it nonetheless because it so nicely reveals the difference between science and that knowledge of particulars that is not (according to Aristotle) science.

¹⁵ In fact, English does not seem to have a word for the disposition to good judgment in every aspect of life, speculative as well as practical, though such global good judgment is possible (as one species within the genus of judgment). The only obvious candidates—“divine wisdom” and “divine judgment”—clearly fail because wisdom does not extend to the speculative and “divine judgment” has a quite different meaning (punishment and reward by divinity).

phronesis”—as in “the *phronesis* of a physician”—is not (assuming for the moment that *phronesis* is English). The appropriate term for that specialized sort of good judgment (for someone like Aristotle at least) is not *phronesis* but *techne* (art, craft, or skill). We should speak of the art, craft, or skill of a physician rather than his *phronesis* when he shows good medical judgment.¹⁶

We might also speak of the physician’s “know-how”. “Know-how” (when contrasted with “knowing that”) is a rough equivalent of *techne*. The equivalence is only rough for at least three reasons. First, of course, know-how exists outside arts, crafts, and skills (for example, as instinctively knowing how to breathe). *Techne* does not. Second, some *techne* may be stated in words (for example, the definition of various technical terms in carpentry). Know-how is not supposed to be propositional (in principle or at least as a matter of fact); know-how is tacit knowledge. Hence, some *techne* (the propositional) is not know-how. Third, insofar as know-how is supposed to be a kind of knowledge, though not propositional knowledge, it must concern what is already true. But *techne* is also concerned with making propositions true, for example, building a bridge or repairing a window. So, insofar as it is permissible to speak of, for example, an engineer knowing how to build a (non-existent) bridge *here* or a carpenter knowing how to repair *this* door, we must include more than knowledge, propositional or non-propositional, in *techne*; we must include judgment—the ability to turn (technical) knowledge, propositional or not, into an act. Since those with good (technical) judgment often come up with creative solutions to the problems posed them, talking of “know-how” seems a misleading way to make that point about *techne* or judgment (or even to allow for it).¹⁷ Knowledge of whatever kind, even know-how, might exist without ever being used. In contrast, judgment never realized in practice seems an exercise of bad judgment.

Whatever the connections between *techne* and judgment, there seem to be at least three (related) differences—at least as Aristotle understood *techne*: First, *techne* is concerned with making, *not* doing (whether we agree with Aristotle that making and doing are wholly different activities), but judgment is as much at home with doing as with making. Second, *techne* is concerned only with arts, crafts, or skills, not with living well, but good judgment is equally concerned with both. Third, there are areas of life where there is good judgment but no (overall) *techne*, for example, politics and friendship (Aristotle 1953). True, educators often talk of “life skills”, but these skills are a small part of what it takes to live well, for example, being able to read

¹⁶ The English word “wisdom” may (or may not) be more flexible. We certainly have expressions like “the wisdom of a physician”. What such expressions mean is the question. To me, “the wisdom of a physician” suggests a wise *person* bringing to professional practice what she brings to the rest of life (as in the once popular *Dr. Kildare*). But perhaps there is also a suggestion of some merely “technical wisdom”. That mix of suggestions is treacherous enough to make avoiding the term seem prudent. We might do better speaking, for example, of “wisdom *in* a physician”.

¹⁷ Might judgment be predetermined even though creative (and therefore not to be predicted)? How are to know? We may be entitled to conclude predetermination from prediction, but what entitlement have we for such a conclusion where prediction is hit or miss (or, in the case of invention, possible only in general terms)? Contemporary science seems to acknowledge a good deal of indeterminacy in physical phenomena. A metaphysical theory implying predetermination where science did not would be implausible precisely because it had that implication.

traffic signs or count change. True too, there are whole books on how to run a government or make and keep friends, but these are generally interesting rather than helpful—or, at best, helpful in small ways. Politicians are always “rewriting the rule book” and every friendship seems to have its own rules. The best rules for living well, such as Polonius’ “Unto thine own self be true”, simply point us in the right direction. Without good judgment, we could not find our way.

Though plainly dependent on judgment, *phronesis* is also just as plainly different from it. For that reason alone, I do not include *phronesis* in my plea. Another reason is that we might understand *phronesis* better if we understood judgment better (since, just as with most other virtues, there is no *phronesis* without judgment).

What We Need Now

Let me conclude this plea for judgment by making clear how little I have done. First, I have not actually defined judgment, merely highlighted some important ways in which judgment differs from several related concepts (value judgment, discretion, *phronesis*, and so on). I have marked some, but not all, of the concept’s boundaries.

Second, while I doubt that a classic definition (genus and species) would be of much use in understanding judgment, we could, I think, do a better job of clarifying the concept than I have done here, for example, by saying more about the connection between theoretical knowledge (general, abstract, and so on) and that “knowledge of particulars” that is supposed (in part at least) to distinguish judgment from mere scientific knowing.¹⁸ While there may be some practical disciplines lacking theoretical knowledge of any sort, it is actually hard to think of one that (under the same description) also involves judgment. Judgment seems to require an intersection of abstract and particular—closely related to, but perhaps different from, the intersection of theory and practice. No practical discipline can consist entirely of theory. What is more interesting is that no practical discipline seems entirely without it.¹⁹

The traditional emphasis on knowledge—in the sciences, medicine, and even engineering—tends to obscure the creative side of judgment. While some judgment, such as that we expect from a journal referee, may involve no more than weighing

¹⁸ I think we owe to Brown (1988), p. 137, the best definition of “judgment” we have: “the ability to evaluate a situation, assess evidence, and come to a reasonable decision without following rules”. This definition is unsatisfactory insofar as it is in part negative (“without following rules”). There might be more than one way to come to a reasonable decision without following rules. Some of these might not involve judgment. I can’t think of a good example, I admit. Brown also has an overly mechanical notion of what it is to follow rules. What Brown’s definition needs is to replace “without following rules” with a positive description of the process of judgment—just what we still lack more than two decades after he offered this definition. Brown’s definition also omits the active side of judgment (the disposition to exercise the ability he identifies).

¹⁹ Journalism seems the obvious example of a discipline, indeed, profession, without theory. Journalists certainly say it is. But when I talk to journalists, I hear a lot about the general principles of their “craft”—for example, how certain ways of organizing a typical story can help keep the reader’s interest. Those general principles sound to me like theory. I would say the same about plumbing, carpentry, and other manual arts. Each seems to have a theoretical component. Of course, a lot depends on what we mean by “theory”.

up alternatives—as in a multiple choice test (publish as is, minor revision, major revision, reject)—much good judgment is exercised in creating alternatives—everything from a new research program in geophysics to a new compound in synthetic chemistry. Of course, the most important exercise of creative judgment for me is the solution of ethical problems (the ethical equivalent of engineering design) (Whitbeck 1995). I would certainly like to know more about the relation that judgment has to that sort of invention. (I take this to be the subject of Kant’s *Critique of Judgment*, though the emphasis there is on esthetic creation, not creation in the sciences and engineering, a subject Kant seems never to have considered.)

The fundamental problem, however, is how judgment is possible at all. Right now, we have two classic answers we can see must be wrong. They are (1) that judgment is possible because it is only discretion, that is, arbitrary choice (and arbitrary choice is certainly possible) and (2) that judgment is possible because it is the result of following a rational decision procedure (and even computers can follow a rational decision procedure). In fact, however, judgment is (or so I have argued here) neither arbitrary nor a kind of deductive or mechanical process; judgment is reasonable rather than rational. That much should be plain. What we need—and do not have—is a general way to think about decision-making that offers an intelligible process the product of which is neither arbitrary nor rationally required.

Common sense may seem to offer an obvious way to understand judgment, judgment as a kind of weighing. I am not satisfied—for two reasons. First, weighing is a kind of metaphor here. We have neither scales on which to weigh options nor a unit of measure. Second, if we did, what we would have is a version of rational decision, a purely mechanical, indeed, mathematical, process of weighing up and comparing weights.

Engineering design may seem to be another obvious way to understand judgment, creativity within constraints. In fact, I do think engineering design is a good model for judgment—or, rather, would be if we understood how judgment works in engineering design. I don’t know of a good theory of that. Engineering design seems to be a good example of how our ability to teach can outrun our understanding of what we teach. (Teaching a child to ride a bicycle is one of many others.)

We do, however, have at least two suggestive approaches to understanding judgment worth further examination. Unfortunately, both derive from the study of legal reasoning and therefore may not, upon examination, work well more generally.

The first is Toulmin’s “practical argument”. This sort of reasoning begins with a claim supported by evidence and a “warrant” showing the evidence to be relevant. The claim, if so supported, stands unless rebutted. The rebuttal stands unless the original argument receives further backing or qualification. And so on until one side or the other runs out of new responses (Toulmin 1958).²⁰ Toulmin thus offers a way to think about reasoning that is neither arbitrary nor deductive, a way to understand

²⁰ This form of argument seems to have been taken up (or reinvented) in moral theory by “particularists”—without much delving into moral judgment as such. See, for example, (Dancy 2004), esp. pp. 15–52.

how one sort of judgment, the choice of one alternative among those offered, might be reasonable, even if not rationally required. Unfortunately, Toulmin has nothing to say about the creative side of judgment; so, if this is a viable theory, it is at best only a partial theory of judgment.²¹ The other legal theory does include the creative side of judgment.

In *Law's Empire*, Dworkin explains legal judgment as (ideally) involving the *construction* of a description of the legal system in which all the parts fit into a coherent and morally acceptable whole—or, at least, the best approximation of that construction (given unavoidable inconsistencies in judicial decisions, the limits of human intelligence, and the practical requirement to decide) (Dworkin 1986).²² That process of construction is plainly creative. Indeed, Dworkin compares it to writing a chain novel (each judge writing a chapter). Insofar as judgment presupposes such construction, judgment must be creative. If this approach can be extended to judgment generally, it might well offer a way forward.

That we now lack a good theory of judgment is, of course, no reason to deny that judgment exists or that judgment is important to understanding engineering, medicine, the sciences, and the like, especially the central place of ethics in those disciplines. Lack of a good theory is merely a reason for philosophers to work on getting one. Hence, this plea.

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References

- Aristotle. (1953). *The ethics of aristotle* (J. A. K. Thomson, Trans.). Baltimore: Penguin Books.
- Ayer, A. J. (1952). *Language, truth and logic*. New York: Dover Press.
- Brown, H. I. (1988). *Rationality*. Routledge: London.
- Dancy, J. (2004). *Ethics without principles*. Oxford: Clarendon Press.
- Davis, M. (1999) Is University Teaching of _____ a Profession? *Professional Ethics* 7 (Summer): 41–52.
- Davis, M. (2009) Is engineering a profession everywhere? *Philosophia* 37 (June): 211–225.
- Davis, M., Harris E., Pritchard, M., & Rabins, M. (1996) Engineering ethics: Why? What? When? How? *Journal of Engineering Education* 85 (April): 93–96.
- Dienhart, J. (1995). Rationality, ethical codes, and an Egalitarian justification of ethical expertise: Implications for professions and organizations). *Business Ethics Quarterly*, 5, 419–450.
- Dworkin, R. (1977). *Taking rights seriously*. Cambridge, MA: Harvard University Press.
- Dworkin, R. (1986). *Law's empire*. Cambridge, MA: Harvard University Press.
- Dworkin, R. (1996). *Freedom's law*. Cambridge, MA: Harvard University Press.

²¹ That is equally true of his most recent work on reasoning (Toulmin 2001). The nearest Toulmin comes to discussing creativity is p. 24, where he wonders how Kant might have written the *Critique of Pure Reason* had he written the *Critique of Judgment* first. Creativity plays no part even in Toulmin's rare discussions of *phronesis*, for example, pp. 116–117.

²² Dworkin has since refined the theory in (among other works) (Dworkin 1996). Dworkin's approach seems to depend on humans searching for patterns in the law, much as human chess players search for patterns in the arrangement of pieces on a board. Is this a feature of judgment generally?

- Hume, D. (1757) Of the standard of taste. *Four Dissertations*. <http://www.csulb.edu/~jvancamp/361r15.html>.
- Jonsen, A. R., & Toulmin, S. (1988). *The abuse of casuistry: A history of moral reasoning*. Berkeley: University of California Press.
- MacIntyre, A. (1984). *After virtue*. Notre Dame, IN: University of Notre Dame Press.
- Stevenson, C. L. (1944). *Ethics and language*. New York: Ams Press, Inc.
- Toulmin, S. (1958). *The uses of argument*. Cambridge: Cambridge University Press.
- Toulmin, S. (2001). *Return to reason*. Cambridge, MA: Harvard University Press.
- Urmson, J. O. (1968). *The emotive theory of ethics*. Oxford: Oxford University Press.
- Whitbeck, C. (1995) Teaching ethics to scientists and engineers: Moral agents and moral problems. *Science and Engineering Ethics* 1 (July): 299–308.