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3 **The limits of objective assessment of medical practice**

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7 **Abstract** Medical work is increasingly being subjected to objective assessment as
8 those who pay for it seek to grasp the quality of that work and how best to improve
9 it. While objective measures have a role in the assessment of health care, I argue
10 that this role is currently overestimated and that no human practice such as medicine
11 can be fully comprehended by objective assessment. I suggest that the character of
12 practices, in which formalizations are combined with judgment, requires that valid
13 assessment involve the perspective of the skilled practitioner. Relying exclusively
14 on objective measures in assessing health care will not only distort our assessments
15 of it but lead to damage as the incentives of health care workers are directed away
16 from the important aspects of their work that are not captured by objective
17 measures.

18 **Keywords** Clinical judgment · Pay for performance · Performance assessment ·
19 Quality of care · Rule-following · Social practice

20 Science and medicine posit a real world amenable to investigation. We demand that
21 legitimate knowledge of that reality should be objective, that is, obtained by
22 measures that are independent of the vagaries of individual perspective. This
23 laudable desire for knowledge free from bias, which has led to so many triumphs in
24 the past several hundred years, is now being brought to bear upon our practical
25 activities. We increasingly scrutinize health care or education or other practices for
26 purposes of assessment by objective means. The true value of these practices, we

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27 appear to believe, may be best judged by whatever measures of them we can devise
 28 that are both independent of practitioner perspective and suited to quantitative
 29 comparisons.

30 When we seek to objectify health care quality or physician performance, the
 31 advantages of doing so seem clear; we conceive of health care in terms that allow us
 32 to compare care episodes to one another in a quantitative way, and whatever
 33 parameter of quantity we use becomes a surrogate measure for health care quality
 34 itself. Physician competence, when objectified, allows similar comparisons of
 35 physician performances with one another in quantitative terms that correspond to
 36 greater or less competence at medical practice. We appear to be on the threshold of
 37 physician compensation according to performance so objectified from the Center for
 38 Medicare and Medicaid Services (Epstein 2006). The objectification and measure-
 39 ment of health care quality is put forward as a primary means of addressing the
 40 important problem of medical errors (Institute of Medicine 2006, *passim*). And the
 41 Accreditation Council for Graduate Medical Education is developing objective
 42 measures of physician competence for use by graduate medical training programs in
 43 the United States.¹

44 In what follows I will argue that objective measures of competence or quality
 45 cannot serve as adequate stand-ins for what they purport to measure. Medical
 46 practice can be usefully characterized as a blend of formalization and judgment;
 47 while objectification can succeed at assessing formalization, it fails at capturing
 48 judgment. This is not to say that objectification, so far as it may go, is not useful or
 49 that we ought not to attend to the comparisons it makes possible and improve our
 50 practice insofar as objective measures find it wanting. It is to point out that the
 51 aspects of quality unscrutinized by such measures may be no less important than
 52 those captured by them. Focusing on the results of objective measurement may
 53 leave us with a distorted view of the quality of medical work we seek to assess.
 54 Incentivizing conformity to objective measures may lead to the slighting of aspects
 55 of quality not so measured.

56 Medical practice and its objectification

57 What happens to the activity of medical practice when we attempt to capture it for
 58 purposes of objective assessment? The premise of objectification of physician
 59 performance is that there is a view of what the doctor does that is independent of
 60 any given observer's perspective. To objectify is to seek the reality of the patient
 61 encounter as distinguished from the reality-of-the-encounter-as-seen-from-here. Of
 62 course there is no such perspective-independent reality accessible to us and it is
 63 therefore an illusion to suppose that we can eliminate perspective from assessment.
 64 The next best thing is to alter the perspective from which the doctor's work will be
 65 viewed to an everyday perspective from which all can see it similarly: such as the

1FL01 ¹ Accreditation Council for Graduate Medical Education (2001, <http://www.acgme.org/acWebsite/home/>
 1FL02 [home.asp](http://www.acgme.org/acWebsite/home/)). Accessed 5/17/07.

66 view of the non-medically-trained chart auditor who can examine a chart, identify a
67 diagnosis code, and compare indicated interventions for that diagnosis in a time-
68 interval with those actually carried out by the physician in the interval.

69 The transformation of the doctor's work as experienced by her to that work as
70 characterized by the chart auditor is a notable gain in objectivity. The record of a
71 series of patient encounters is transformed into some degree of conformity with
72 performance indicators over a given interval for a given diagnosis. And such
73 conformity is suitable for the kind of quantitative comparisons objective assessment
74 typically makes possible. Unfortunately, the gains of objectification do not occur
75 without costs. Even for the physical world, objectification is a retreat from
76 experience. The reading on the speedometer does not convey the feeling of speed as
77 experienced, say, on a motorcycle, useful as the speedometer reading may be for
78 quantitative comparisons.² In the world of human practices, objectification is even
79 more costly; we lose sight of substantial aspects of practice when we objectify it for
80 purposes of assessment.

81 Consider the nature of practices.³ A practice is a mode of engagement with the
82 world aimed at particular purposes and governed by publicly accessible norms. Such
83 engagement occurs in terms of a particular language that provides the concepts into
84 which the practitioner transforms the portion of the world amenable to the practice.
85 In the case of medicine, the practitioner identifies illness and comes to see it in terms
86 of the specialized language of medicine for purposes of healing. This transformation
87 of the world of illness into the formalizations of medicine occurs through the
88 practitioner's knowledge of such formalizations brought to bear in trained
89 perception, the latter of which may be labeled professional judgment. Judgment is
90 coming to see the patient as a case of, say, pneumonia, "seeing the patient as x." Any
91 medical encounter is a blend of these two elements, the formalizations of medicine
92 and the manner in which the physician sees the patient in their terms.⁴

93 Formalization

94 The structure of formalization is inferential: if a, then b. The categories of medicine
95 textbooks and articles connect inferentially in various ways according to
96 pathophysiological mechanisms, differential diagnostic associations, or amenability
97 to given modes of treatment. Practice guidelines are prototypical medical
98 formalizations. The algorithms of such guidelines all begin with given scenarios
99 that must be matched by practitioners to their actual patients. Decision points extend
100 from these scenarios along implication lines to further decision points followed by
101 therapeutic options. Practice guidelines and other formalizations of medicine are

2FL01 ² An illustration owed to Cussins (2002).

3FL01 ³ The capsule account of practices offered here is not uncontroversial but is broadly consistent with the
3FL02 views of philosophers, educators, and sociologists who have been influenced by Wittgenstein. See, for
3FL03 instance, Stroud (1996), Hanna and Harrison (2004) and Schatzki (2003, 174–202).

4FL01 ⁴ The distinction between formalization and judgment made here is similar to that drawn by Nelson
4FL02 (2001). The ensuing discussion also draws upon the considerable literature on Wittgenstein and rule-
4FL03 following, particularly the work of John McDowell. See, for instance, McDowell (2002).

102 amenable to objectification. Given one end of the inferential relationship, one can
 103 assess for the presence of the other end in a non-judgment dependent manner, as the
 104 chart auditor does when looking for diabetes performance indicators given a
 105 diagnosis of diabetes.

106 As with medical abstractions and guidelines, the techniques and procedures of
 107 medicine are similarly formal and amenable to objectification when straightfor-
 108 wardly carried out. Just as adherence to guidelines can be objectively confirmed by
 109 chart auditing, textbook knowledge is assessable in multiple choice tests. History-
 110 taking, physical diagnosis, surgery, and other more or less invasive procedures can
 111 all be evaluated by isolating and agreeing upon basic elements of such stereotyped
 112 activities competently performed and setting those elements out in a checklist
 113 against which an evaluator can compare actual performance.

114 When considered apart from their use in practice, the formalizations of medicine
 115 are clear, explicit and inert, analogous to a software program or a rulebook. A
 116 merely abstract understanding of such formalizations is, however, no understanding
 117 at all from the perspective of the practitioner, who achieves a view of patients in
 118 terms of the formalizations. To do that properly requires not merely formal
 119 “knowing that” but also “knowing how,” or judgment.

120 Judgment

121 The skilled physician sees the patient in terms of medicine’s formalizations
 122 properly. The structure of such judgment is perceptual, but not perception conceived
 123 as the passive registering of a given external reality; professional judgment is active
 124 perception;⁵ in putting a sense on the particulars of patient problems, the physician
 125 transforms them into the constituent elements of the disease concepts under which
 126 he comes to see the patient when the diagnosis is made. Such “seeing as” is, for
 127 higher levels of judgment, impossible without the trained perception and
 128 perspective of the competent physician. The role of such judgment is not limited
 129 to diagnosis. In using practice guidelines to determine treatment of patients with
 130 given diagnoses, the physician must judge at each point the fit between the patient’s
 131 condition and that presumed by the algorithm, as distilled from the trial results that
 132 led to the algorithm’s construction. Judgment, or “seeing as,” accompanies the use
 133 of formalizations in thinking about patients at every point.

134 In the hands of the skilled practitioner, the formalizations of medicine change
 135 from a rigid and inert network of concepts connected by inference rules; they become
 136 the flexible instrument that natural language can be for the skilled speaker—shedding
 137 light in darkness, carving reality at its joints to lay it bare for the purposes of the
 138 practice. We often speak as if good practice followed from the formalizations; in
 139 practicing we say we are “following the rules.” The dependence relationship
 140 between rules and practice is, in fact, the other way. It is only the good practitioner
 141 who can “follow the rules” and, in doing so, make clear what the rules mean in
 142 practice. The rules cannot tell us what to do (or how to think) without judgment.

5FL01 ⁵ In regard to perception conceived as an achievement, see Noe (2005, passim).

143 “The concepts of ‘knowing that’ can pick out particulars in the world only through
 144 ‘knowing how.’”⁶ This is a familiar thought to the third year medical student
 145 venturing onto the wards after 2 years of cramming with medical “knowledge that”.
 146 The neophyte third year student finds at the bedside that she cannot readily attach the
 147 descriptions and mechanisms so carefully mastered in the classroom to their real
 148 world counterparts, and so she begins again. Guided by faculty and by more
 149 experienced trainees, she learns to recognize the clinical pictures that she had
 150 mastered in the abstract—and so comes to learn, not the meaning of “pneumonia,”
 151 but what pneumonia is in the world. She had been able to refer to pneumonia in the
 152 pathophysiology course classroom; now she learns to fix the extension of the
 153 concept—a matter of “knowledge how.” The plausibility of claims that rules are
 154 fundamental to practice follows from cases in which we are satisfied with the results
 155 of ordinary judgment engaged in rule-following. It is likely true that most literate
 156 people can follow simple instructions successfully; non-cooks can read a simple
 157 recipe and produce an edible dish.⁷ Judgment is critical even to rule-following of this
 158 rudimentary sort, but we lose sight of it because we all (or almost all) possess the
 159 ordinary judgment that informs our common coping with daily life. The role of
 160 judgment looms larger at higher levels of practice; the rules are not so much followed
 161 as illumined by the accomplished chef who can take the simple recipe and produce an
 162 extraordinary dish. In such cases the rules may signal a purpose, but otherwise serve
 163 more or less as adequate descriptions of practice rather than as direction for it.

164 Objectification and assessment

165 Insofar as objectification succeeds for medical work, it does so by eliminating the
 166 need for judgment as exercised at the higher levels of professional competence. Part
 167 of the point of performance indicators is that no special training or perspective is
 168 necessary to determine whether they have been met. Whereas whether a physician
 169 has properly perceived the condition of a given patient at a given time such that
 170 acting as demanded by the performance indicators was the right decision, can only
 171 be determined by someone with the skill necessary for medical “seeing as;” that is,
 172 by another competent physician. Professional judgment is inescapably subjective.

6FL01 ⁶ This is of course a controversial claim. The world exists apart from our concepts but we necessarily
 6FL02 apprehend it through them. The dominant tradition in linguistics and analytic philosophy views this
 6FL03 apprehension as mediated primarily through representations; we form concepts that mirror the world and
 6FL04 hence achieve a cognitive grasp of it—thus “referential realism” (to use Harrison and Hanna’s term; see
 6FL05 footnote 5) in theories of meaning and representation theories of mind in philosophy of mind. I follow
 6FL06 here an opposing tradition, upheld in continental philosophy and by a minority of analytic philosophers
 6FL07 influenced by Wittgenstein who reject the primacy of representations in favor of some variant of
 6FL08 “knowing how”—knowing how to act in a social practice for Wittgenstein and his successors,
 6FL09 “embodied coping” for Hubert Dreyfus, “sensorimotor knowledge” in the work of Alva Noë, “motor
 6FL10 intentionality” for Merleau-Ponty. As Charles Taylor contends, “our grasp of things is not something that
 6FL11 is in us, over against the world; it lies in the way we are in contact with the world, in our being-in-the-
 6FL12 world....” (Taylor 2000). See also Haugeland (1998), Devitt (2006), Dreyfus (2002), Hanna and Harrison
 6FL13 and Stroud as cited in footnote 5, above.

7FL01 ⁷ I owe this illustration to Nelson, “Unlike Calculating Rules.”

173 The differential success of objectification with formalization and judgment is
 174 reflected in our attempts to objectify assessment in medicine. We do well when we
 175 seek objective assessment of formalizations in the form of abstract medical
 176 knowledge or the techniques and procedures of medicine when these are
 177 straightforwardly carried out. Abstractions apart from judgment may be assessed
 178 through instruments such as multiple choice tests. History-taking, physical
 179 diagnosis, surgery, and other more or less invasive procedures can all be evaluated
 180 objectively insofar as one may isolate and agree upon basic elements of such
 181 stereotyped activities competently performed and set those elements out in a
 182 checklist against which an evaluator can compare actual performance.

183 Objective assessment becomes more problematic when aimed at practical
 184 performances involving judgment, when medical knowledge or procedures must
 185 reach beyond their stereotyped elements to grapple with individual cases. The
 186 medical history is a means to the end of diagnosis; if the history is taken as a means to
 187 elucidate an obscure set of symptoms and resolve a confusing clinical picture, then
 188 assessing the skill of the history-taker becomes much less amenable to comparing a
 189 given performance against a criterial checklist. So it is with any procedure in
 190 medicine when the practitioner meets with circumstances or complications requiring
 191 deviation from the routine. When the focus shifts from a stereotyped set of acts to
 192 grappling with a recalcitrant reality, it will no longer do to merely compare
 193 performance to preset criteria. One must judge the performance against the demands
 194 of the situation, demands that cannot be specified in advance. Performances which
 195 may be adequate or even excellent when judged by conformity to criteria may be
 196 seriously wanting when the situation's demands are considered.⁸

197 Objective assessment of practices thus may get at the formalizations of the
 198 practice but not at professional judgment. The chart auditor considering records of a
 199 diabetic patient visit may confirm the absence of given physician interventions, but
 200 he cannot assess the implications of other illnesses or symptoms for the needs of the
 201 patient at that particular visit or how those needs may have affected the importance or
 202 propriety of the given interventions for diabetes in which the auditor is interested.
 203 The judgment involved in bringing the relevant medical knowledge about diabetes to
 204 bear on the individual patient situation remains opaque to the objective measure.
 205 Thus objective measurement in such a case interrogates the physician's performance
 206 only in regard to a given formalization—if diabetes, then check the a1c, examine the
 207 feet, refer for ophthalmological examination, etc.—the importance of which for the
 208 given visit has not been established, as only professional judgment could do. For this
 209 reason, objective measurement of medical practice must be radically incomplete.

210 **The limits of objectification in the assessment of practices**

211 Given that practice partakes of formalizations that are amenable to objective
 212 assessment and of professional judgment that is not, how ought we to assess it?

8FL01 ⁸ This line of objection to the ACGME's approach to assessing competence in medical trainees is
 8FL02 developed further in Huddle and Heudebert (2007).

213 Objective measures such as performance indicators certainly have their place.
214 Physicians do need to carry out the interventions of secondary prevention given
215 particular diagnoses. Patients with diabetes ought to have their glycosylated
216 hemoglobins measured and attended to; patients with coronary artery disease ought
217 to be on antiplatelet therapy. Whether we perform these interventions when they are
218 indicated certainly reflects the quality of the care we offer to our patients.

219 We need, therefore, to make use of quality measures while remembering that the
220 picture of quality they offer is incomplete. In doing so, we must design these measures
221 carefully. If we fail to do so the financial and opportunity costs incurred by attending to
222 them may exceed the benefit of achieving them. Hayward et al. suggest that we ought
223 to choose process rather than outcome measures, given the difficulty of adjusting
224 outcome measures for case mix; that we focus upon interventions most likely to affect
225 outcome, especially those likely to have the greatest such effects; that we consider
226 whether given candidate interventions might be less important for subpopulations of
227 patients; and that we consider the likelihood that given measures will induce physicians
228 to game the system (Hayward et al. 2004). These are all well-taken cautions; bad
229 quality measures may paradoxically lead to worse rather than better practice.

230 But the broader question is whether a focus upon quality measures may displace
231 attention and effort from those aspects of the physician's work that are not amenable
232 to assessment through such measures at all. While part of what we do is the routine
233 care of chronic disease, for which quality measures are appropriate, we do many
234 other things that do not involve deducing therapy implications according to a given
235 formalization. We must often identify relevant phenomena from the human drama
236 we confront in the examining room and fit them, once identified, into a conceptual
237 scheme, which may be as clearcut as the algorithmic formalizations from which
238 secondary prevention measures are deduced; may be a pathophysiological scheme
239 with less definite implications, such as the neurohormonal perturbations of heart
240 failure; or may be a life narrative.

241 While algorithmic formalizations can lead to specific therapeutic implications
242 unproblematically, fitting the patient into the scheme requires expert judgment.
243 Other kinds of schemes require judgment not only in fitting the patient into them but
244 in deciding what implications follow. A patient's fit into the contemporary
245 conceptual scheme of heart failure physiology may not be easily decided upon by
246 specifiable criteria and may, once established in the physician's mind, imply no
247 given therapeutic intervention—proper therapy then following from the physician's
248 skilled perception of how the patient's condition relates to his condition in the past
249 or to that of other patients with heart failure whom the physician has treated
250 previously. In the case of end-of-life decisions the scheme into which the patient-
251 situation requires fitting is a life narrative. The physician who properly appreciates
252 the patient's story may sensitively aid the patient's decision making. Such
253 appreciation and the judgment required to act on it are not objectifiable. It is quite
254 conceivable that a physician might be sensitive to life narratives, an excellent
255 diagnostician and a good judge of what a patient's condition demands and yet be
256 deficient in meeting quality indicators. While the deficiency is a real one, the virtues
257 of such a physician will be undetectable by assessments of quality based simply
258 upon indicators.



259 Encouraging physicians to attend to secondary prevention, as attention to quality
 260 measures will certainly do, is a worthwhile goal. But if we are making judgments
 261 about the quality of physician practice in toto, we need to make sure that we are
 262 indeed assessing practice in all of its aspects. And, insofar as we limit our
 263 assessments to particular aspects of practice, we need to make sure that our focus
 264 does not discourage other aspects outside its scope. Insurance payors have been
 265 quick to trumpet the success of hospitals in meeting quality indicators and thus
 266 meriting pay for performance as evidence of “improving health care quality.”⁹ Such
 267 claims would be better understood as identifying improvement in the aspect of
 268 quality reflected in quality measures. What effect these programs have on overall
 269 health care quality is unknown. Even as regards the benefit of better adherence to
 270 quality measures, pay-for-performance has produced modest improvements above
 271 that of quality reporting alone for significant increased cost (see Rosenthal 2005;
 272 Lindenauer et al. 2007).

273 So long as the incentives offered to physicians for adherence to quality measures
 274 are limited to encouragement in the form of quality reporting, the level of
 275 distraction from other important aspects of patient care is likely to be low. A
 276 monetary incentive to meet quality indicators is a stronger incentive and thus more
 277 likely to distract, the more so as greater monetary incentives are provided; penalties
 278 for failure to meet quality indicators are more likely yet to focus physicians on
 279 meeting these goals to the possible detriment of other patient priorities. In spite of
 280 our not knowing how “pay-for-performance” plans affect actual quality of care (as
 281 opposed to aspects of quality assessable by measures), it appears increasingly likely
 282 that such plans will be imposed by payors with the strongest possible incentives
 283 behind them: financial penalties for failure to conform to quality measures. The
 284 Secretary of Health and Human Services has indicated that Medicare will look to
 285 quality measurement as a means to save money in future, suggesting that such
 286 penalties will have substantial effects on physicians (Aston 2006).

287 **Avoiding harm from objective assessment of physician work**

288 If in fact physician work is only partly amenable to objectification and our measures
 289 of quality focus exclusively on that component, rewarding quality so measured
 290 might actually worsen the quality of care that patients receive through the
 291 discouragement of physician work not captured by measurement. Publicizing
 292 the results of quality measurement might actually steer patients toward physicians
 293 who deliver worse rather than better care and destroy patient trust in physicians who
 294 overall are doing a good job.¹⁰ We can avoid these outcomes if, in seeking to assess
 295 quality, we seek to assess it completely rather than in only some of its aspects.
 296 Unfortunately, assessing the judgment-dependent aspects of physician work is
 297 difficult. Because judgment is inescapably perspectival, it can be appreciated

9FL01 ⁹ CMS Office of Public Affairs (2007). Press Release, Center for Medicare and Medicaid Services
 9FL02 Website, http://www.cms.hhs.gov/apps/media/press_releases.asp. Accessed 18 May 2007.

10FL01 ¹⁰ A point forcefully made by O'Neill (2003).

298 properly only by those who share the relevant perspective, in this case the
 299 perspective of the physician skilled at medical practice. Thus non-medically trained
 300 chart auditors will be unable to assess clinical judgment. Only competent physicians
 301 can do so. This is an unsurprising conclusion; we all know that those skilled at a
 302 given task are good judges of others attempting it. Yet peer review, the assessment
 303 method for physician work suggested by this consideration, is fraught with
 304 difficulties.

305 Insofar as we wish to assess physician judgment, the gold standard would be real-
 306 time scrutiny of physicians in action by other competent physicians. This would be
 307 expensive and logistically awkward outside of academic settings, as well as being
 308 subject to limitations imposed by the Hawthorne effect. Less direct forms of
 309 scrutiny might still be much more useful if performed by physicians than by others;
 310 chart review can reveal aspects of judgment to physicians reading “between the
 311 lines” that chart auditors are blind to. While the examination of patient charts does
 312 not allow comparison between documentation and clinical reality, diagnostic and
 313 other errors of judgment often become clear in the medical record through the
 314 passage of time as the needs of sick patients and the character of illness declare
 315 themselves whether or not met and perceived when they should have been obvious.

316 Review of physician work at the level of the individual case by other competent
 317 physicians offers a way to assay physician judgment and thus supplement the
 318 incomplete picture of health care quality offered by objective measures. Such
 319 review can achieve reliability if sampling is suitably wide. Patient perspectives on
 320 the care they have received offer access to another aspect of health care quality that
 321 might be assayed through interviews or surveys. Methods such as these are needed
 322 to supplement the reporting of health care quality measures if we are to properly
 323 judge the quality of physician performance. While objective measurement has
 324 brought improvement to diverse areas of American life, focus upon such measures
 325 to the exclusion of other aspects of quality has likely contributed to disaster in
 326 business (Zimmerman 2007), in law enforcement (Dewan and Goodman 2007), and
 327 in other important activities. Only if we are assessing something close to actual
 328 health care quality rather than limited aspects of it can we be confident that our
 329 corrective actions to improve quality in health care will do good rather than harm.

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332 References

- 333 Accreditation Council for Graduate Medical Education, Outcome Project. 2001. Chicago [http://www.
 334 acgme.org/acWebsite/home/home.asp](http://www.acgme.org/acWebsite/home/home.asp)
 335 Aston, Geri. 2006. HHS Chief: Get ready for quality reporting. *American Medical News*. 2 October 2006.
 336 Center for Medicare and Medicaid Services. 2007. Groundbreaking Medicare payment demonstration
 337 results in substantial improvement for hospital patient care. 26 January 2007. Center for Medicare
 338 and Medicaid Services website, http://www.cms.hhs.gov/apps/media/press_releases.asp
 339 Cussins, Adrian. 2002. Experience, thought and activity. In *Essays on nonconceptual content*, ed.
 340 York H. Gunther. Cambridge: MIT Press.
 341 Devitt, Michael. 2006. *Ignorance of language*. Oxford: Oxford University Press.

- 342 Dewan, Shaila, and Brenda Goodman. 2007. Prosecutors say corruption in Atlanta Police Dept. is
 343 widespread. *The New York Times*. 27 April 2007.
- 344 Dreyfus, Hubert L. 2002. Intelligence without representation: Merleau-Ponty's critique of mental
 345 representation. *Phenomenology and the Cognitive Sciences* 1:367–383.
- 346 Epstein, Arnold M. 2006. Paying for performance in the United States and abroad. *New England Journal*
 347 *of Medicine* 335: 406–408.
- 348 Hanna, Patricia, and Bernard Harrison. 2004. *Word and world: Practice and the foundations of language*.
 349 Cambridge: Cambridge University Press.
- 350 Haugeland, John. 1998. Mind embodied and embedded. In *Having thought: Essays in the metaphysics of*
 351 *mind*, ed. J. Haugeland. Cambridge: Harvard University Press.
- 352 Hayward, Rodney A., et al. 2004. Quality improvement initiatives: Issues in moving from diabetes
 353 guidelines to policy. *Diabetes Care* 27(supp. 2): B54–B60.
- 354 Huddle, Thomas S., and Gustavo R. Heudebert. 2007. Taking apart the art: The risk of anatomizing
 355 clinical competence. *Academic Medicine* 82: 536–541.
- 356 Institute of Medicine of the National Academies. 2006. *Pathways to quality health care: Performance*
 357 *measurement; accelerating improvement*. Washington: The National Academies Press.
- 358 Lindenauer, Peter K., et al. 2007. Public reporting and pay for performance in hospital quality
 359 improvement. *The New England Journal of Medicine* 356: 486–496.
- 360 McDowell, John M. 2002. Wittgenstein on following a rule. In *Rule-following and meaning*, ed. A. Miller
 361 and Cr. Wright. Montreal: McGill-Queen's University Press.
- 362 Nelson, James Lindemann. 2001. 'Unlike calculating rules'? Clinical judgment, formalized decision
 363 making, and Wittgenstein. In *Slow cures and bad philosophers: Essays on Wittgenstein, medicine*
 364 *and bioethics*, ed. C. Elliott. Durham: Duke University Press.
- 365 Noe, Alva. 2005. *Action in perception*. Cambridge: MIT Press.
- 366 O'Neill, Onora. 2003. Trust with accountability? *Journal of Health Services Research & Policy* 8: 3–4.
- 367 Rosenthal, Meredith B. 2005. Early experience with pay-for-performance: From concept to practice.
 368 *Journal of the American Medical Association* 294: 1788–1793.
- 369 Schatzki, Theodore R. 2003. A new societist social ontology. *Philosophy of the Social Sciences* 33: 174–202.
- 370 Stroud, Barry. 1996. Mind, meaning and practice. In *The Cambridge companion to Wittgenstein*.
 371 Cambridge: Cambridge University Press.
- 372 Taylor, Charles. 2000. What's wrong with foundationalism?: Knowledge, agency and world. In *Heidegger,*
 373 *coping and cognitive science: Essays in honor of Hubert L. Dreyfus*, vol. 2, ed. M. A. Wrathall and
 374 J. Malpas. Cambridge: The MIT Press.
- 375 Zimmerman, Ann. 2007. Home depot tries to make nice to customers. *The Wall Street Journal*. 20
 376 February 2007.
- 377