ABSTRACT. Working retrospectively in an uncertain field of knowledge, physicians are engaged in an interpretive practice that is guided by counterweighted, competing, sometimes paradoxical maxims. "When you hear hoofbeats, don’t think zebras," is the chief of these, the epitome of medicine's practical wisdom, its hermeneutic rule. The accumulated and contradictory wisdom distilled in clinical maxims arises necessarily from the case-based nature of medical practice and the narrative rationality that good practice requires. That these maxims all have their opposites enforces in students and physicians a practical skepticism that encourages them to question their expectations, interrupt patterns, and adjust to new developments as a case unfolds. Yet medicine resolutely ignores both the maxims and the tension between the practical reasoning they represent and the claim that medicine is a science. Indeed, resolute epistemological naivete is part of medicine's accommodation to uncertainty; counterweighted, competing, apparently paradoxical (but always situational) rules enable physicians simultaneously to express and to ignore the practical reason that characterizes their practice.

KEY WORDS: clinical reasoning, phronesis, aphorisms, medical education, interpretation

"It is an old maxim of mine that when you have excluded the impossible, whatever remains, however improbable, must be the truth."

--Sherlock Holmes, "The Beryl Coronet"

As readers of signs, physicians are engaged in an interpretive practice. Their education in biology and the lessons of clinical experience often make their thinking seem rapid, easy, even "automatic." Yet as they work to identify causes for the effects they observe, they must take into account and accommodate the uncertainties inherent in diagnosing and treating illness in particular human beings. Their guides in this endeavor are not only the covering laws of biology but, oddly enough, counterweighted, often competing, sometimes paradoxical rules of practice. Chief among them is the traditional wisdom about zebras.

"When you hear hoofbeats, don’t think zebras" is clinical medicine’s most frequently heard maxim. Useful advice in itself, the zebra rule epitomizes the practical reasoning used by physicians for the never entirely
certain task of caring for sick people. It is medicine's epistemological watchword. Comparable wisdom about practice — taking the patient's history, conducting a physical examination, ordering tests, choosing therapy — takes the form of paired and competing rules.\(^1\) Alone, each maxim reeks of certainty, especially when uttered by an experienced physician. But each can be seriously qualified or contradicted by another maxim delivered with equal authority or (less frequently) by evidence of its clear disregard in practice. "The patient is telling you the diagnosis," beginning history-takers learn; but nothing, not even test results from another hospital, is more suspect than a fact reported by a patient. "Always do a review of systems," students are told by clinical preceptors who long ago stopped asking their patients how their bodies are functioning in areas unrelated to the presenting symptoms. That no one has objected to or investigated this odd pedagogical habit of handing out potentially contradictory bits of advice highlights the nature of clinical knowing. It may also prompt us to ask whether this blind spot is useful in itself; how self-conscious ought a physician's knowledge be?

The zebra aphorism, epitome of medicine's counterweighted method of teaching and reinforcing the exercise of good clinical judgment, is unique only in its compactness. "Don't think zebras" is a self-contained contradiction, a paradox. "But wait," a young clinician is likely to object, "Isn't that backward? Surely it's, 'If you hear hoofbeats, think zebras.'" As a matter of fact it is not, but the reversal is instructive, almost as interesting as the aphorism itself. Far from suggesting that such old saws are best ignored as either the trivial pleasantries of a scientific discipline or the unavoidable byproducts of grueling work at the borders of life and death, this reversibility is a further instance of paradox and contradiction in clinical education. It is as if the one maxim lacking a paired opposite had generated its own competing rule.

The injunction *not* to think about zebras is strange enough. Even to a generation that learned about its bad guys from crime drama instead of westerns, hoofbeats prompt the idea of horses. Zebras represent the rare to locally non-existent. Why would a clinical instructor waste good breath advising, even commanding, a novice physician to think obvious, ordinary thoughts? The answer in part lies in medicine's thoroughness in the face of uncertainty. As a practical intellectual field based in human biology, clinical medicine prides itself upon covering the bases, the waterfront, every possibility. Consequently, when a set of symptoms is presented to medical attention, the ordinary is not necessarily the most obvious explanation. Reputations, even whole careers at the pinnacle of academic medicine, depend on thorough-going familiarity with and rapid recognition