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Not the Last Word

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Not the Last Word: The Epistemology, Metaphysics, and Practical Philosophy of Resident Selection

Joseph Bernstein MD[1]

At a recent meeting of the Association of Bone and Joint Surgeons® (ABJS®), symposium panelists debated the question: "Are we still recruiting the best and the brightest?"

I think the consensus answer was in the affirmative. Then again, it may have been off-putting to say anything else, given that all of us in the room—the products of prior selection cycles—are beneficiaries of that word "still." So, on the plane home, I decided to tackle this question philosophically, as my title suggests. Here's what I deduced.

Epistemology

Epistemology is the branch of philosophy concerned with knowledge: What do we know, and how certain can we be that we know it? For residency selection, the answers are "not enough" and "not enough."

At its core, residency selection is a diagnostic test: It takes, as input, a candidate and outputs a prediction about future performance. We are attempting to diagnose potential. Once framed this way, familiar questions follow: What is the sensitivity and specificity of this test?

Specificity is potentially answerable. By measuring the frequency by which accepted applicants ultimately do not attain excellence, we can at least theoretically determine our diagnostic false-positive rate. Specificity is then calculated as the complement of that false-positive rate. The caveat of "at least theoretically" must be used here, as there are real questions about feasibility. Excellence, or the lack of it, may not be manifested for many years, and even then, we have only crude markers, such as obtaining board certification or avoiding malpractice claims.

Yet specificity is only half of the story. We also should want to know how many outstanding future orthopaedic surgeons we reject. This metric—the sensitivity of diagnosing future excellence—is beyond answer, even theoretically. That's because the applicants not chosen are forever lost to follow-up. The counterfactual question, "How would the unselected have functioned had we selected them?" remains unobserved and indeed unobservable. Those students got on with their lives. And any examination of their career trajectories after the Match is hopelessly confounded by their subsequent life experiences.

There is a subtler source of confusion as well, one known as Berkson's paradox: When two traits are independent or even positively correlated in the general population, but possessing only one is sufficient to pass through a selection filter, these traits will appear negatively correlated within the selected group. For example, in residency selection, if superlative "intellectual ability" or "interpersonal skills" is each sufficient enough to get noticed, then among those admitted, the ones who score highest in one dimension will tend to score lower on the other. The result is that program directors—who observe residents exclusively within the filtered pool—will systematically perceive tradeoffs that do not exist in nature,

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J. Bernstein ✉, University of Pennsylvania, 424 Stemmler Hall, Philadelphia, PA 19104, USA, Email: orthodoc@uphs.upenn.edu

[1]Department of Orthopaedic Surgery, University of Pennsylvania, Philadelphia, PA, USA

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such as this notorious statement: "The book-smart ones lack people skills." The danger is not merely that we draw the wrong conclusions; it is that we then design subsequent selection cycles around a phantom tradeoff, compounding the error with each iteration.

Metaphysics

Next, we must examine not only the information produced by the selection process, but more deeply, what the selection process is, in its essence and in its effects.

On its face, the selection process purports to identify those with the greatest potential and select them. If it did only that, working as an oracle that could peer into the future and return a reliable answer, there would be little more to say here. But the selection process is a system with externalities, producing effects on applicants beyond simply sorting them. It does not merely evaluate candidates, it shapes them. Applicants respond rationally to incentives. If research productivity is rewarded, applicants will produce research, independent of intellectual curiosity. If away rotations are auditions, applicants will undertake them at the considerable expense of not only travel and hassle, but also with the opportunity cost of foregone learning in other fourth-year courses.

With that, the process selects not only for grit and intelligence, but also for complaisance, conformity, and connections. It selects against skeptics, risk-takers, and outsiders.

Ontology

As noted, the question posed at the symposium was whether we are recruiting the best and the brightest. The word "we" deserves scrutiny. For this, we can turn to ontology, which asks what kind of thing something is. In the context of residency selection, the ontological question is whether there is an actor at all, and if so, who is doing the acting?

Residency selection is the aggregate product of roughly 175 independent programs, each acting in its own perceived interest, each defining its own criteria, and each responding to its own constraints. What exists is a decentralized, adaptive network—more like an ant colony than a democracy—which produces an emergent phenomenon where the whole ends up being greater than the sum of its parts. If there is no unified "we," the question of whether we are selecting the best may lack a coherent referent. In turn, to speak of "we" gives the wrong impression about what reform efforts can yield. In particular, little can be achieved unilaterally.

Nonetheless, coordinated action among programs is a difficult proposition, for reasons ranging from differing incentives to anti-trust law, saying nothing of intra-program competition. The first step is recognizing that the "we" doing the selecting is not a deliberating agent; it is, at best, an invisible hand.

Ethics

Solving the information problems above is not enough. The selection process must also survive ethical scrutiny to make sure that it meets the profession's obligations to patients, applicants, and to itself.

The purpose of the profession is to deliver competent, compassionate care, and the selection process must serve that end. It is easy to claim that we select in the interest of patients, but it is hard to demonstrate that. Doing so requires precisely the kind of outcome data and correlational analysis that the field has not systematically pursued.

We also have obligations to applicants: to treat them fairly, to avoid measuring them by unjust criteria, and to ensure that access to the profession is not unduly constrained by factors unrelated to merit. A process that systematically advantages applicants with resources, connections, and institutional prestige is not a meritocracy, even if (many of) the criteria applied are genuinely predictive of merit.

The costs imposed on applicants, both financial and psychological, deserve moral scrutiny on their own terms. Away rotations, research years, and application travel all constitute the price of admission. Any honest, ethical accounting must ask whether the marginal gains in predictive accuracy justify what we are asking candidates to spend and sacrifice. To be clear, it's not enough to say that away rotations provide some useful information; it's whether they produce enough. Ideally, programs would answer that question as if they were paying all rotators' travel and living expenses.

Last, the profession owes itself a selection process that is resilient to shocks. The cautionary tale comes from anesthesia. In 1996, after a long run of ortho-level fill rates, anesthesiology had 622 unfilled residency positions—more than 60% of the total available [2]. Our field may have an abundance of qualified applicants now, but the anesthesiology experience illustrates how quickly such an equilibrium can unravel.

One way to improve resilience is to make sure the applicant pool is as large as possible. Orthopaedic surgery has room for improvement on that front, as it currently fails to attract applicants

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proportionately from the female half of the medical school class. While efforts to increase the applicant pool may seem unnecessary when it is already large, better recruitment of women applicants would increase the specialty's resilience to future shocks, quite apart from the many other good reasons I favor such efforts. At present, robust applicant numbers allow us to ignore this vulnerability. A selection process designed only for the best of times, however, is a luxury we cannot afford.

Praxis

Praxis means theory put into action. Having established what we know, what the process produces, who is responsible, and what obligations govern it, we are positioned to ask the practical question: What should be done?

The Stoic philosophers remind us that what is within our control is our own judgment and our response. Therefore, a philosophical analysis must be coupled with action: the collection of longitudinal data linking applicant characteristics to meaningful outcomes; thoughtful experimentation with alternative approaches, within the bounds of fairness and ethics; and modification to current practices when the data demands it.

Resident selection is too important to be guided solely by intuition, tradition, and anecdote. We have built an elaborate system around assumptions that are surprisingly underexamined. It may now be time to study it with the same rigor we bring to the questions we ask in every other part of orthopaedics. If we are not willing to do that, if we are not up for the job, we should stop congratulating ourselves for asking how well we are still doing.

Terrance D. Peabody MD

Department Chair and Edwin Warner Ryerson Professor of Orthopaedic Surgery, Feinberg School of Medicine, Northwestern Medicine

Full disclosure: I did not match into orthopaedic surgery. I was accepted before the Match became the all-consuming exercise it is today, when programs could get to know applicants, interview them, and offer them jobs. You know, the way hiring works in most professions.

As a humble state-school graduate, I appreciate Dr. Bernstein's essay and the opportunity to expand my vocabulary. Someday I may take up crossword puzzles so that understanding words like "epistemology," "ontology," and "praxis" will pay off.

My last contribution to this forum [1] focused on what I consider the greatest failure of resident recruitment: signaling. Students are forced to declare interest in a limited number of programs so that selection committee members are spared the inconvenience of reviewing hundreds of applications. The winners of this system are program administrators, not the students who may become future colleagues. The process has never been more expensive, inefficient, or unfair, and more students are going unmatched than ever.

The question here, though, is whether orthopaedics is still recruiting "the best and the brightest." My response is simple: The best and brightest at what? Surgical skills? Medical knowledge? Research productivity? Leadership? Professionalism? Financial success? Before we decide whether we are succeeding, we should define what success looks like.

Dr. Bernstein is right that we have no idea how much talent we lose before residency selection even begins. Orthopaedic surgery remains largely absent from much of the medical school curriculum, and students often perceive the specialty as an exclusive club requiring the right connections, shadowing opportunities, conference attendance, and enough research projects to fill a CV, even if many never touch research again. We will never know how many outstanding future orthopaedic surgeons decide the barrier to entry is not worth it.

By almost any objective measure, however, the current system produces a competent workforce. Orthopaedic surgery is not suffering from a crisis of technical incompetence. When disciplinary issues arise, they more often involve a lack of professionalism, communication, and judgment. While these types of problems often start to show in one's college years, they will not be revealed on an application or curriculum vitae; they can only be noticed through honest evaluations, recommendations, and close, personal observations.

My larger concern is that the current process increasingly selects people who view orthopaedic surgery as a career rather than a calling. Many residents are exceptionally talented, accomplished, and well-rounded. Yet, I have noticed that increasing numbers are seeking additional degrees and titles to match the lifestyles they think they deserve, which are insulated from the more difficult parts of the job—emergency calls, complex infections, patients who lack medical insurance, and the realities of serving the sick at inconvenient times. The challenge is not identifying who can do the job today; it is identifying who will still be willing to do the hard parts of the job now and 30 years from now.

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That raises the more important question: What values, virtues, and sense of responsibility should we be selecting for—and how do we foster them during training? If we can define these things, then we can consider a way to measure and assess them that will lead to the kind of effective investigation that Dr. Bernstein describes.

Safdar N. Khan MD, FAOA, FAAOS

The Peter and Sophie Pappas Endowed Chair in Spine Surgery and Vice Chair for Surgical Innovation, School of Medicine, University of California, Davis

Dr. Bernstein's essay exposes an uncomfortable truth: Residency selection is an imperfect attempt to predict an unknowable future. His central argument—that we possess remarkable confidence despite profoundly limited knowledge—is persuasive. Yet, having moderated the symposium that inspired this reflection, I left the ABJS meeting with a different impression.

The most important question may not be whether we are selecting the "best and the brightest," but whether we have mistaken the destination for the voyage itself. Homer's *Odyssey* reminds us that greatness is never revealed at the moment of departure. Odysseus does not become the man who returns to Ithaca because he possessed exceptional credentials before setting sail; he becomes that person through storms, failures, temptation, sacrifice, and resilience. His character is not merely measured by the journey—it is forged by it.

Orthopaedic surgery residency is much the same.

Our current discourse often assumes that excellence exists as a latent trait, waiting to be discovered through increasingly sophisticated selection metrics. We search transcripts, publications, interviews, recommendation letters, personality assessments, and away rotations as though assembling enough data will eventually reveal the future master surgeon. Yet, potential is not a static property. It is dynamic, adaptive, and profoundly shaped by environment, mentorship, adversity, and opportunity. The resident who struggles during intern year may become the surgeon whose judgment is sought by colleagues decades later. Conversely, the applicant who appears flawless on paper may never develop the humility, resilience, or capacity for growth that defines true mastery.

This does not diminish Dr. Bernstein's philosophical concerns; rather, it extends them. If the selection process itself changes applicants—as he correctly argues—it follows that residency programs should change residents even more profoundly. The voyage matters at least as much as the point of embarkation.

The Greek hero also reminds us that ambitious journeys require guides. Odysseus's divine guide, Athena, does not sail his ship, but neither is she absent—she intervenes at critical moments, offering wisdom rather than certainty. Likewise, mentors do not create greatness; they foster the conditions in which greatness can emerge. The profession's responsibility therefore extends beyond selecting residents to cultivating them. If our educational environment cannot transform ordinary talent into extraordinary surgeons, then no refinement of the Match algorithm will rescue us.

Perhaps this also reframes Dr. Bernstein's concern regarding the collective "we." Residency selection may indeed resemble an invisible hand composed of nearly 200 independent programs. Yet the profession has a shared purpose that transcends decentralized decision-making. We are not merely selecting colleagues; we are stewarding a tradition. Every resident inherits centuries of accumulated craftsmanship, judgment, and professional identity before eventually passing it on to the next generation.

The *Odyssey* ends with a homecoming: The hero returns as a changed man. Residency should aspire to the same transformation. Our greatest success should not be predicting who applicants already are; it should be helping them become what they could not yet imagine. Perhaps, then, the enduring measure of our profession is not whether we recruit the best and the brightest, but whether we remain worthy of those who entrust us with their journey—the odyssey of becoming an orthopaedic surgeon.

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