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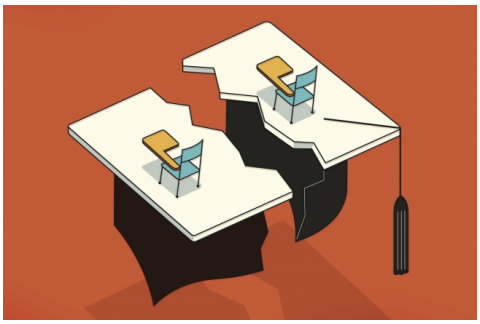
The 'Two Cultures' Fallacy

Stop pitting science and the humanities against each other.



Harry Campbell for The Chronicle Review

By Jennifer Summit and Blakey Vermeule
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When we were teaching at Stanford in the late 2000s, the terms "techie" and "fuzzy" became cultural touchstones: The "techies" majored in engineering and the sciences, the "fuzzies" in arts and the humanities. Faculty and administrators deplored those words, and students furiously debated them, but the terms — and the split they describe — have become an unshakable stereotype.

Of course, polarization between the humanities and the sciences is by no means unique to Stanford. We hear it when politicians challenge public universities to justify spending on departments outside STEM fields; we hear it when humanities scholars counter that the value of their fields transcends practical application. Defenders of the humanities insist that they teach foundational values and skills; their detractors taunt them for offering "worthless" degrees.

The terms of the debate have become so familiar that speakers on both sides, however vehement or heartfelt their arguments, appear to be reading from a well-worn script. So ingrained is this conflict that it is easy to believe it describes a fundamental division in human knowledge. Although we are literary scholars, we are not here to defend the humanities against the sciences, but instead to show how an age-old debate has both created the division and can show the way past it.

STEM fields have now absorbed the virtues traditionally associated with the *vita activa:* practical application toward the public good; an emphasis on productivity, utility, and outcome; and an approach to learning that has come to be called "instrumental" by both supporters and detractors.

The humanities, on the other hand, are generally identified with the traditional values of the *vita contemplativa:*

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imagination, speculation, reflection, and an alignment with higher values beyond the "merely" practical, political, and economic.

cultivate an active lifelong curiosity?

Those who enter the conflict on either side appear to believe that it is winnable by a well-argued essay or a clever riposte. "One would think that writers in the humanities would be delighted and energized by the efflorescence of new ideas from the sciences. But one would be wrong," wrote Steven Pinker in 2013. Leon Wieseltier shot back: "It is not for science to say whether science belongs in morality and politics and art."

We believe something different. Seeing the conflict as a carry-over of the ancient debate between the active life and the contemplative life explains why the two sides have remained so intransigent: Each is defined in opposition to the other, each needs the other to play counterpoint. Both sides can articulate the values they hold in emotionally satisfying but utterly imprecise contrasts: useful versus useless, material versus idealistic, narrowly careerist versus broadly learned. As long as this opposition itself remains unquestioned, any "defense" of the humanities will only reinforce and prolong the debate.

This would not pose a problem if the debate were merely a highbrow parlor game — as it has been at various stages of its long history — but the stakes now are too high to dismiss. The apparent opposition between STEM fields and the humanities distracts from the far more important and urgent question at the center of the university’s mission: What is the purpose of higher education: to prepare for a job, or to cultivate a lifelong curiosity, sense of wonder, humility toward what we don’t know, and deep civic-mindedness?

The conflict between what C.P. Snow famously called "the two cultures" will remain with us as long as we remain collectively divided about what it means to be an educated person. Until we can get out from under the debate’s deeply ingrained and oppositional terms, we will remain at a standstill.

It is natural to assume that the sciences inherently belong to the active life and the humanities to the contemplative, but such values are not intrinsic to these or any other disciplines. These divisions did not then and do not now consider or serve the education of students. To the contrary, they encourage students to perceive their education in bifurcated terms, i.e. "techies" versus "fuzzies."

The question at the heart of the university is not how to define and rank the relative prestige of the disciplines, but rather how best to bring the branches of learning together to inspire students to produce more integrated knowledge.

The modern elevation of the "active life" over the "contemplative life" has tended to benefit the sciences over the humanities. But this contemporary reality masks shifts in the relative values of the *vita activa* and the *vita contemplativa* that began long before the advent of modern science. In 14th-century Italy, a new curriculum emerged

in the universities, with the explicit aim of preparing students to contribute to the practical improvement of society. The representative philosopher for this new culture of teaching and learning was Cicero, who insisted that "service is better than mere theoretical knowledge."

As he put it, "To be drawn by study away from active life is contrary to moral duty. For the whole glory of virtue is in activity." The new curriculum responded to a demographic shift in the universities, as greater numbers of students entered with the intention of finding careers not in the church but in the secular business of the political and legal courts. Reflecting this, the emphasis on practical education for the public good expanded greatly.

Among the adherents of the new educational philosophy was the Spanish humanist Juan Luis Vives, who insisted that the educated bore the responsibility to apply their education "to the use and advantage of other people." He declared, "Having acquired our knowledge, we must turn it to usefulness, and employ it for the common good."

Vives and his contemporaries did not have in mind science — which was not yet recognized as its own field — but letters, which taught not only the communication skills essential to the lawyer and politician but also how to draw from the past to make ethical decisions in the present. The new curriculum, which emphasized literature, history, languages, and rhetoric, came to be known as the *studia humanitatis*.

Strikingly, then, the fields first associated with the *vita activa* were the humanities, whose "usefulness" and application for "the common good" made them indispensable to the training of a new class of secular bureaucrats. Long before "science" emerged as a distinct set of disciplines, the *studia humanitatis* defined a new model of useful learning that the sciences would later claim for themselves.

In 17th-century England, the nursery of the new science was the Royal Society, a gathering of amateur scholars who met regularly to share their experiments and discoveries. Writing in 1659, one of the society's founding members, the brilliant polymath John Evelyn, planned its headquarters on the model of a medieval monastery or contemplative community. He envisioned "six apartments or cells, for the members of the society … somewhat after the manner of the Carthusians" (one of the strictest and most visionary orders of medieval monks).

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In a similar spirit, the pioneer chemist Robert Boyle compared himself to a "Hermit" in his single-minded pursuit of scientific research and "averseness to society." In both cases, the world of the scientist appears to be the opposite of that of the civic-minded humanist. These early scientists borrowed the terms of the *vita contemplativa*, in part to distinguish themselves from followers of the humanities.

This may have been strategic: The Italian humanists were famously republicans, and the English Civil War, which brought down the king, allowed humanist scholars like John Milton the opportunity to exercise their rhetorical skills in the public arena during England's short-lived and politically tumultuous Interregnum. Scientists, on the other hand, could assert their political neutrality by claiming a more contemplative stance, set apart from the tumult of politics.

The restoration of the English monarchy, in 1660, marked a turning point in the rhetoric surrounding the new science, whose practitioners began to assert its uses for the public good. In *Publick Employment and an Active Life Prefer'd to Solitude* (1667), John Evelyn emphasized the civic benefits of the new science by recuperating arguments for the *vita activa* from Cicero's *De Officiis*, made familiar by generations of humanists. Reversing his earlier comparison of the scientific community with the monastic cloister, he insisted that "the Wisest men are not made in Chambers and Closets crowded with shelves; but by habitudes and active Conversations," and suggested that humanists, not scientists, enact a cloistered withdrawal in their studies. Against these bookish humanists, Evelyn insisted, "Action is the proper fruit of Science."

As the humanities and sciences emerged as separate branches of knowledge in the modern university, their opposition gave them their character and even their purpose. The academic cluster of fields known as "the humanities" was organized and named in direct reference to the early modern *studia humanitatis*, which became an institutional entity only in the first half of the 20th century, when those fields were consolidated as a single division to counterbalance the growing institutional presence of the natural and social sciences.

In *General Education in a Free Society* (1945), a Harvard committee described the humanities' mission thus: "The purpose of the humanities is to enable man to understand man in relation to himself, that is to say, in his inner aspirations and ideals." This human-centered rationale contains an implicit but pointed self-defense. If, as Ralph Barton Perry explains in his "Definition of the Humanities" (1938), "humanism testifies to the eminence of man over the rest of creation," so much the more pre-eminent are the humanities, which are dedicated to the study of "man," over the sciences, which are dedicated to the inferior works of nature. This definition, with its implicit contrast with the sciences, is still repeated — as when Geoffrey Galt Harpham writes, "Other disciplines offer knowledge about things; the humanities offer knowledge about human beings."

Such definitions set the humanities as the privileged space of the human in opposition to the dehumanized sphere of the sciences. Never mind that this dichotomy is challenged by neuroscience and genetics, which have made powerful contributions to our understanding of "the human," or that it ignores entire fields of the social sciences dedicated to the human, such as anthropology, psychology, and sociology.

In the distance between the Renaissance *studia humanitatis* and the modern humanities, however, something valuable was lost: a commitment to a shared intellectual vision that cuts across disciplinary camps. Where the humanities'

defenders today stress their distinctiveness from the other fields of knowledge, Renaissance humanists stressed their necessary connection.

As the humanist educator Aeneas Silvius Piccolomini observed in 1450, "The disciplines are interconnected, and a person cannot master one unless he seeks light from another." Others nourished understandings of the *studia humanitatis* that were sufficiently expansive to include mathematics and biology within the domain of philosophy. In his 1570 lectures on astronomy, for example, Henry Savile insisted that "these sciences of ours should be considered, and in fact are, humanities." Without the sense of marginality that animates defenses of the humanities today, early modern humanists saw their disciplines as part of a common intellectual enterprise, not as an area distinct in its practices, objects, and increasingly well-guarded turf.

In contrast, defenders of the humanities today, like Stanley Fish, are more likely to accept the "uselessness" of their subjects, set against the practical or "instrumental" orientations identified with the sciences. In the process, they disavow the practical and technical skills that formed the bedrock of the *studia humanitatis*. When defenders claim that the humanities advance "the study of, contemplation of, and exploration of what it means to be a human being," they elevate contemplative knowledge while leaving out the other half of the equation.

Indeed, some recent defenses of the humanities explicitly separate "humanistic" from "technical" (or "instrumental") education. But the deep history of the *studia humanitatis* encourages us to view the humanities as a long-term dialectic between episteme and technê, whose two poles it is necessary, though difficult, to balance. When the modern humanities embrace their definition as "useless," "contemplative," impractical, and nontechnical, they not only perpetuate the stalemate that now divides disciplines, but do so by ceding practical civic-mindedness to the sciences — and disavowing qualities that played a major role in the humanities' own historical foundation.

At the same time, scientists should recall the associations that their own predecessors made between scientific pursuit and contemplation before prioritizing practice so emphatically over theory. A disciplinary bias against theoretical physics, for example, delayed Einstein's receipt of the Nobel Prize, for which he was nominated many times before finally receiving it in 1922 (by which point his hypothesis on the photoelectric effect had been confirmed by experiments). Today most academic disciplines contain a broad mix of empirical and theoretical methods. A few disciplines, such as economics, have broadly theoretical traditions but now visibly privilege empirical over theoretical methods — a trend that has been dubbed "physics envy."

But this tendency to downgrade "theory" in the sciences and social sciences overlooks the importance of theoretical knowledge, as well its potential to contribute to practical advances. Thus the active/contemplative opposition not only separates disciplines from one another but also creates further division within the disciplines themselves. Once initiated,

the division of theory and praxis is self-replicating, carving disciplines into ever narrower slivers and leading to the absurd situation within disciplines of different minibranches holding one another in contempt.

Though the opposition between "practice" and "theory" has served to divide and subdivide disciplines, these divisions do not represent the shape of knowledge in the university today. Emerging academic fields increasingly bring the insights of two or more disciplines together to form new lines of inquiry: bioethics (biology and philosophy), digital humanities (computational methods in history and literature), philosophy of mind (philosophy, neuroscience, and, increasingly, computer science). The new field of optogenetics brings together the work of molecular biologists and neuroscientists to chart the work of the brain, and one of the most popular new fields, sustainability, brings together history, geography, economics, city and regional planning, sociology, anthropology, and engineering.

Where 20th-century disciplines defined themselves through distinction, the new fields of the 21st century are being produced through convergence. These fields, and the forms of knowledge they represent, testify to the emergence of "transdisciplinary thinking." As Howard Rheingold explains it, "transdisciplinarity goes beyond bringing together researchers from different disciplines to work in multidisciplinary teams. It means educating researchers who can speak languages of multiple disciplines." More than an amalgamation of discrete disciplines (as suggested by "multidisciplinary" or "interdisciplinary" formations), transdisciplinarity represents a way of thinking that can select perspectives, approaches, and insights from across an array of disciplines and deploy them strategically.

As researchers from the Institute for the Future suggested in their "Future Work Skills 2020" report, "While throughout the 20th century, ever-greater specialization was encouraged, the new century will see transdisciplinary approaches take center stage." Projects that bring together scientists, engineers, artists, humanists, and social scientists in ways that bridge traditional disciplinary divides produce fresh approaches to complex questions. New knowledge requires new forms of education. Where 20th-century paradigms of teaching and learning emphasized disciplinary specialization, we now need "a new culture of learning" — to quote the title of Douglas Thomas and John Seely Brown’s 2011 book.

The challenge we face as educators is how to restore imagination and creativity to students who have come to associate education with the lack of those qualities. Rather than offering lip service and window dressing, we need to step far outside our dominant models of learning, thinking, and living. Schools discourage creative thinking, the educator Ken Robinson observes, in large part through their tendency to elevate "some disciplines over others." To counter this, he suggests, "we need to eliminate the existing hierarchy of subjects."

Rather than reinforce boundaries between disciplines and the value-laden hierarchies that keep them in place, we need to accept that studies in "imagination" and "humanity" are no less vital to work and citizenship than those of "facts" and "machines." This is the time for

humanists and scientists, fuzzies and techies, to overcome the divisions of knowledge, culture, and value that separate them. Doing so will transform the disciplines themselves, and displace the oppositional framework that has for so long defined and divided them.

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