

Older Than Snow: The *Two Cultures* And The *Yale Report Of 1828*

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Abstract

C.P. Snow's *The Two Cultures and the Scientific Revolution* represents the most famous reincarnation of a debate concerning the clash of academic cultures in higher education. This essay explores the similarities and differences in the circumstances surrounding Snow's lecture addressing a widening gap between the scientific and literary cultures of the mid-twentieth century and the reactions to a similar "clash of cultures" in antebellum America. This nineteenth century episode was a debate between the traditional culture of classical education and the nascent culture of practical, professional education. The traditional culture in higher education was vigorously and eloquently defended in a report composed by the faculty at Yale College. Although the time and circumstances were different, the parallels between the arguments heard in 1959 and those put forth in 1828 are remarkably similar.

Introduction

In his famous *Two Cultures* lecture of 1959, C.P. Snow concluded his analysis of the divide between the traditional literary culture and the recently evolving culture of science by calling for educational reform as a proposed bridge between the two:

Closing the gap between our cultures is a necessity in the most abstract intellectual sense, as well as in the most practical.... For the sake of the intellectual life, for the sake of this country's special danger, for the sake of the western society living precariously rich among the poor, for the sake of the poor who needn't be poor if there is intelligence in the world, it is obligatory for us and the Americans and the whole West to look at our education with fresh eyes.¹

Over a century earlier, in America, another writer asked a similar question. The two cultures in conflict were different, but the nature of the conflict—as well as the author's proposal to bridge the gap between the cultures—was substantially the same:

The man of science is often disposed to assume an air of superiority, when he looks upon the narrow and partial views of the mere artisan. The latter in return laughs at the practical blunders of the former. The defects in the education of both classes would be remedied, by giving them a knowledge of scientific principles, preparatory to practice.²

¹ C.P. Snow, *Two Cultures: And a Second Look. An Expanded Version of the Two Cultures and the Scientific Revolution* (Cambridge: The University Press, 1964), 50.

² *Reports on the Course of Instruction in Yale College; By a Committee of the Corporation, and the Academical Faculty* (New Haven: Printed by Hezekiah Howe, 1828), 17-18.

This second quote comes from the *Yale Report*, a response by the faculty of Yale to a call for change to the college curriculum in order to accommodate shifting needs in American society. In this essay, I will seek to highlight the parallel crises that facilitated Snow's *Two Cultures* lecture and the *Yale Report*, while discussing the similarities—as well as the differences—between the two responses.

The *Two Cultures*

C. P. Snow's "Rede Lecture" of 1959, titled the *The Two Cultures and the Scientific Revolution*, brought to a boil a question that had simmered for some time among scientists and non-scientists alike. Snow bemoaned the ever-widening chasm between scientists and the literary elite—a chasm that Snow found especially pronounced within the inner sanctums of Oxford and Cambridge. Snow was a scientist by training, but a novelist by vocation. He thought himself uniquely qualified to comment upon the communication barriers he found between the culture of the literary elite and the culture of the scientist:

I felt I was moving among two groups—comparable in intelligence, identical in race, not grossly different in social origin, earning about the same incomes, who had almost ceased to communicate at all, who in intellectual, moral and psychological climate had so little in common that instead of going from Burlington House or South Kensington to Chelsea, one might have crossed an ocean.³

Among Snow's goals in the *Two Cultures* lecture was to investigate this lack of communication and make suggestions for remedies. In the process, Snow produced what many in the literary elite considered a blatant frontal attack.

³ Snow, 2.

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Snow asserted that although scientists may have a pessimistic view towards the condition of individuals (we all die alone), they held a more optimistic view of the human condition. Scientists tend to seek out what may be done to help the human condition. By the same token:

The non-scientists have a rooted impression that the scientists are shallowly optimistic, unaware of man's condition. On the other hand, the scientists believe that the literary intellectuals are totally lacking in foresight, peculiarly unconcerned with their brother men, in a deep sense anti-intellectual, anxious to restrict both art and thought to the existential moment.⁴

Snow continued his attack on the self-righteousness of the literary elite. These intellectuals scoff at scientists who have not read major works of literature. Yet the same literary dons do not know the Second Law of Thermodynamics, which, according to Snow, is the scientific equivalent to Shakespeare. For Snow, “the great edifice of modern physics goes up, and the majority of the cleverest people in the western world have about as much insight into it as their neolithic ancestors would have had.”⁵

Snow's call for a better understanding between the cultures of science and literature was in part a plea for a revision of the British education system in order to address the profound new needs arising from the Industrial Revolution. He maintained that Western intellectuals, outside of scientists, had not understood—even rejected—the Industrial Revolution. Calling the literary intellectuals “natural Luddites,” Snow went so far as to accuse the establishment of using the wealth produced by the Industrial Revolution to train young men for the purpose of perpetuating the culture.⁶ Worse yet (at least from Snow's viewpoint), while the traditional Western culture reaped the fruits of

⁴ Ibid., 5.

⁵ Ibid., 15.

⁶ Ibid., 22.

the advances in science and technology, the third world struggled. For Snow, “one truth is straightforward. Industrialization is the only hope of the poor.”⁷

The Rede Lecture ignited debate from both ends of the academic spectrum. Literary critic F. R. Leavis launched a particularly vicious attack on the *Two Cultures* lecture and on Snow himself. In his “Richmond Lecture” of 1962, Leavis claimed that it was “ridiculous to credit him [Snow] with any capacity for serious thinking about the problems on which he offers to advise the world....”⁸ Leavis found Snow completely ignorant of the history of recent civilization and of the human history of the Industrial Revolution. He disparaged Snow as someone who “doesn’t know what he means, and doesn’t know he doesn’t know.”⁹

The Snow-Leavis controversy dominated the early history of debate over Snow’s *Two Cultures* lecture, and continues to play a role in the discussion today. A part of the evolving debate involved claims about various means by which the chasm between the two cultures might be bridged. Snow himself hoped initially that social history might serve as such a bridge; later he invested his hopes in the history of science, “not to bridge a cultural divide, but to serve as a refuge for the reading of progress in history.”¹⁰ While Snow placed his hopes in history of science, Leavis steadfastly maintained that “The sources for understanding social conditions and historical change were not parish registers [i.e. historical statistics] but great writers.” It was literature, according to Leavis, that “provided the essential point of entry into assessing the state of any

⁷ Ibid., 25.

⁸ F. R. Leavis, *Two Cultures? The Significance of C. P. Snow* (New York: Pantheon Books, 1963), 16.

⁹ Ibid., 29.

¹⁰ Guy Ortolano, “Human Science or a Human Face? Social History and the ‘Two Cultures’ Controversy,” *Journal of British Studies* 43, Issue 4 (Oct 2004): 504.

civilization....”¹¹ Although the debate has expanded, it has come no closer to a conclusion. This should not come as a surprise, however, since Snow’s lecture did not really open the debate, but simply restated an issue that has arisen in various contexts at various times throughout history.

The Yale Report

For students of American history, the year 1828 rings a familiar bell—the year Andrew Jackson was elected president, signifying a victory for the “common man” in the young democracy. As part of this newfound political voice, Americans were also questioning the traditional higher education system. More and more American voices were rising in protest demanding that higher education be changed to meet the unique needs of a growing mercantile nation. Several decades earlier, Benjamin Rush, a physician and chemistry professor at the College of Philadelphia, who also happened to be a signer of the Declaration of Independence, summarized this thinking:

We occupy a new country. Our principle business should be to explore and apply its resources, all of which press us to enterprize [sic] and haste. Under these circumstances, to spend four or five years in learning two dead languages, is to turn our backs upon a gold mine, in order to amuse ourselves catching butterflies.¹²

Such rhetoric led to a request by Noyes Darlin—who happened to be a Yale alumnus, judge, state senator, and member of the College Corporation—that Yale president Jeremiah Day investigate the possibility of changing the curriculum to reflect the changing needs of the country. Day formed a committee charged with considering the consequences of omitting the study of the dead languages as a curricular requirement at

¹¹ *Ibid.*, 500.

¹² Quoted in Melvin I. Urofsky, “Reforms and Response: The Yale Report of 1828,” *History of Education Quarterly* 5, no. 1 (March, 1965): 53.

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Yale College. Furthermore, the committee was to consider whether Yale might either require a knowledge of these languages for entrance or offer the languages to those who “choose to study them after admission.”¹³ This committee, composed of President Day and the Governor of Massachusetts, among other luminaries, immediately asked the faculty to review the subject and write a report outlining their recommendations.

The report produced by the faculty of Yale College was composed of two parts. The first was a summary of the plan of education at the college and the second was “an inquiry into the expediency of insisting on the study of the ancient languages.”¹⁴ In part one, the faculty argued that the “appropriate object of a college” is to “LAY THE FOUNDATION OF A SUPERIOR EDUCATION.”¹⁵ The report reiterates this thesis many times over:

The object [of a college education] is not to *finish* his education; but to lay the foundation, and to advance as far in rearing the superstructure, as the short period of his residence here will admit. If he acquires here a thorough knowledge of the principles of science, he may then, in a great measure, educate himself. He has, at least, been taught *how* to learn.¹⁶

In pursuit of this educational goal, the Yale faculty maintained the need for a curriculum that instilled mental *discipline* and developed the *furniture* of the mind. They argued, and continued to argue throughout the report, that a traditional literary education was an ideal conduit through which to attain these goals:

The question is then presented, whether the college shall have all the variety of classes and departments which are found in academies; or whether it shall confine itself to the single object of a well proportioned and thorough course of study. It is said that the public now demand, that the doors should be thrown open to all; that education ought to be so modified, and varied, as to adapt it to the exigencies of the country, and the prospects of different individuals; that the instruction

¹³ *Reports*, 3.

¹⁴ *Ibid.*, 3.

¹⁵ *Ibid.*, 6.

¹⁶ *Ibid.*, 14.

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given to those who are destined to be merchants, or manufacturers, or agriculturalists, should have a special reference to their respective professional pursuits.¹⁷

In short, the faculty response was that while they supported professional training and education, the responsibility for such education should fall on the academies and professional schools, not on the colleges. The college, as a *literary institution*, held to higher standards than academies. To succumb to pressure to change these higher standards might, in the short run, result in more students, but in the long term would lead to the destruction of the reputation of the college.¹⁸

After defending the traditional curriculum, the faculty proceeded to argue that such a curriculum was actually better suited to the needs of the United States than one that would provide only a partial, or specialized, education. The faculty maintained that “Our republican form of government renders it highly important, that great numbers should enjoy the advantage of a thorough education.”¹⁹ In Europe, where only a few elite were destined for public service, the mass of people had no need for higher education. However, in America, “where offices are accessible to all who are qualified for them,” and where “*Merchants, manufacturers, and farmers*, as well as professional gentlemen, take their places in our public councils,” the opportunity for a thorough education is of the utmost importance.²⁰

In the second part of the *Yale Report*, the committee charged with the original investigation supported the findings of the faculty. They agreed that maintaining the current mode of instruction was vital to the nation’s interests. The committee supported

¹⁷ Ibid., 24.

¹⁸ Ibid., 26.

¹⁹ Ibid., 29.

²⁰ Ibid.

the argument that classical learning was particularly well-suited to the needs of the nation. The study of ancient literature by a young American student “can hardly fail to imbue his mind with the principles of liberty, to inspire the liveliest patriotism, and to excite to noble and generous action.”²¹ Such study, then, was “peculiarly adapted to the American youth.”²²

The *Yale Report* was extremely influential in ante-bellum higher education. After the report was reprinted in the *American Journal of Science and Arts* in 1829, its message spread throughout the country. The list of American colleges implementing or continuing the basic plan of education laid out by the *Yale Report* is long: Middlebury College, Western Reserve, Illinois College, the University of Alabama, the College of California,²³ Miami of Ohio, Randolph-Macon, DePauw, Beloit College, the University of Georgia, North Carolina, and South Carolina²⁴ is only a sample of such imitators of the Yale model. Princeton was also a bastion of classical education and its faculty supported the conclusions of the Yale faculty.²⁵ In response to proposed changes to the classical curriculum at Harvard a year before the appearance of the *Yale Report*, the *Western Review* editorialized:

Should the time ever come when Latin or Greek should be banished from our Universities, and study of Cicero and Demosthenes, of Homer and Virgil should be considered as unnecessary for the formation of a scholar, we should regard mankind as sinking into absolute barbarism, and the gloom of mental darkness as likely to increase until it should become universal.²⁶

Such sentiments were shared by most—but not all—involved in higher education.

²¹ Ibid., 51.

²² Ibid.

²³ Frederick Rudolph, *Curriculum: A History of the American Undergraduate Course of Study Since 1636* (San Francisco: Jossey-Bass, 1977), 72-73.

²⁴ Uroksy, 61-62.

²⁵ Ibid.

²⁶ Ibid., 57.

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There were those who believed strongly that higher education in American was in need of change. In addition to the aforementioned attempt to update the curriculum at Harvard—a partially successful effort at best—Amherst College also established a parallel program substituting modern languages and other studies for the classics for those students who chose such a path. The program was dropped in 1829.²⁷

The best known early attempt at building a new model for higher education in America may be found in Thomas Jefferson's vision for the University of Virginia. Jefferson had in mind a very practical education for the student body. He believed that among the purposes of a higher education were:

To form statesmen, legislators and judges...; To expound the principles and structure of government, the laws which regulate the intercourse of nations...; To harmonize and promote the interests of agriculture, manufactures and commerce...; To develop the reasoning faculties of our youth, enlarge their minds, cultivate their morals, and instill into them the precepts of virtue and order; To enlighten them with mathematical and physical sciences, which advance the arts...; And, generally, to form them to habits of reflection and correct action, rendering them examples of virtue to others, and happiness within themselves.²⁸

In order to accomplish these goals, Jefferson devised a plan to divide his university into ten groups, each headed by a professor. Ancient languages would be just one of the groups, no more and no less important than the others. Among the very practical fields of study envisioned by Jefferson were modern languages, botany, anatomy, government, municipal law, the study of projectiles and military architecture (studied within the division of pure mathematics), and applications of chemistry to agriculture (studied under the division of physics). Such a plan for a practical education was exactly the sort of change the authors of the *Yale Report* resisted.

²⁷ Ibid., 54.

²⁸ Thomas Jefferson, "Report of the Commissioners for the University of Virginia," in *The Portable Thomas Jefferson*, ed. Merrill D. Peterson, 334-335 (New York: Penguin Books, 1977).

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Historians have put forth various interpretations of the *Yale Report*. The traditional interpretation is represented by historian of education Frederick Rudolph who characterized the report as “a classic statement in the defense of the old order”²⁹ that “gave a convincing defensive weapon to people who wanted the colleges to stay as they were.”³⁰ Furthermore, Rudolph argued, the *Yale Report* “provided a rationale and a focus for comprehending a course of study that was wandering somewhere in the no-man’s land between inflexibility and disintegration.”³¹ However, Rudolph also pointed out that rather than interpreting the *Yale Report* as “a dramatic last stand in defense of impractical studies,” it should be seen as an argument “for the practicality of what others considered impractical.”³² This interpretation depends on the argument put forth by the authors of the *Yale Report* that the study of ancient languages and literature provides a valuable foundation for those who go on to professional studies.

More recent studies have called into question this traditional view of the *Yale Report* as a conservative document written by men actively resisting change of any kind to the college curriculum. Roger Geiger has argued that the Yale faculty was at the forefront of reinventing classical study to help prepare students for professional studies. Yale led the way in changing the basic premise of the college from preparation for the ministry to preparation for professional study.³³ The *Yale Report* was not a de facto defense of classical studies as the only proper course of college study, but simply a statement of the belief that the classics provide a superior foundation for the development

²⁹ Frederick Rudolph, *The American College and University: A History* (New York: Alfred A. Knopf, 1962), 130.

³⁰ *Ibid.*, 135.

³¹ Rudolph, *Curriculum*, 67.

³² *Ibid.*, 13.

³³ Roger Geiger, ed., *The American College in the Nineteenth Century* (Nashville: Vanderbilt University Press, 2000), 4-5.

of mental discipline. In fact, according to this interpretation, the *Yale Report* should be read as a cohesive argument for this two-fold purpose: the preparation for professional studies and the cultivation of mental discipline.³⁴

Jurgen Herbst extended this revised interpretation of the *Yale Report*. Herbst argued that the *Yale Report* was a document that “laid the basis for the modernization of the college curriculum in the nineteenth century.”³⁵ Herbst reiterated that the authors of the *Yale Report* were arguing that the theory of faculty psychology did not depend on the subjects taught; in fact, relying on natural philosophy as an educational foundation would work as well as classical languages.³⁶ The authors of the *Yale Report* were not as concerned about retaining the study of the classics as they were in “presenting a finely wrought and carefully argued case for a pedagogy of mental discipline based on the theory of faculty psychology.”³⁷

Herbst’s argument—that the authors of the *Yale Report* believed that natural philosophy, i.e. science, would serve equally well as a course of study for the college—addresses another very common misconception about the *Yale Report*; that the document represents a clash between science and the classical literature at Yale. Quite the contrary, the report can in no way be interpreted as anti-science. Jeremiah Day, President of Yale and one of the authors of the report, was a long-time professor of mathematics; Benjamin Silliman, the second of the three primary authors, was a professor of natural philosophy and founder and editor of *The American Journal of Science and Arts*, the leading

³⁴ Roger Geiger, “The Era of Multipurpose Colleges in American Higher Education, 1850-1890,” in *Ibid.*, 140.

³⁵ Jurgen Herbst, “The Yale Report of 1828,” *International Journal of the Classical Tradition* 11, Issue 2 (Fall 2004): 214.

³⁶ *Ibid.*, 231.

³⁷ *Ibid.*, 214.

scientific journal in the country. It would be very difficult to believe that from the pens of these two men would come a document minimizing the importance of science in the curriculum. In fact, Herbst argued that “the *Yale Report* attempted to find and justify ways of joining the wisdom of the past to the science of the future.”³⁸

Historian of science Stanley Guralnick was among the first to claim that the *Yale Report* had been misrepresented as “a defense of the older eighteenth-century curriculum with its overemphasis upon Latin and Greek at the expense of the new scientific disciplines....”³⁹ Like others after him, Guralnick maintained that the document was “Merely defending the concept of a defined course of study for all students.”⁴⁰ That course of study could just as easily be drawn from any number of disciplines, including the sciences. In contrast to the traditional view of the *Yale Report* taken by Rudolph, a revised understanding of the document interprets the authors’ intentions not as a defense of the classical languages, and not as a denial of the importance of reforms, but rather as “a grand answer to all the inchoate suggestions that colleges did not fit the scheme of Jacksonian democracy because they failed to reach all the skills by which some men might achieve their measure of financial success.”⁴¹

Two Cultures and the Yale Report

Regardless of the interpretation one adopts, the *Yale Report* offers an excellent example of the clash between two cultures over a century before C.P. Snow made the term famous. On the one hand, the established culture of the traditional academic

³⁸ Ibid., 230.

³⁹ Stanley M. Guralnick, “Sources of Misconception on the Role of Science in the Nineteenth-Century American College,” *Isis* 65, no. 3 (Sep., 1974): 353.

⁴⁰ Ibid.

⁴¹ Stanley M. Guralnick, *Science and the Ante-Bellum American College* (Philadelphia: The American Philosophical Society, 1975), 30.

world—a culture that valued classical education—found itself fighting for its very existence. On the other hand, representatives of the nascent culture of mercantilism and industrialism began demanding that higher education address the needs of a new world. The established culture reacted to the upstart culture in a way very similar to Snow’s characterization of the literary elite’s reaction to the scientific revolution—with “screams of horror.”⁴²

Certain themes stand out when analyzing the *Yale Report* in the context of a conflict between two cultures. Which culture was appropriate for American colleges, the traditional culture of ancient languages and literature, or a new culture of entrepreneurial capitalism?⁴³ The conflict itself “revolved around the kind of education appropriate for society’s cultured elite.”⁴⁴ The same question was central to Snow’s lecture of 1959. The cultures in conflict were different; however, the conflict itself was much the same.

One of the most striking similarities between the problems defined by the *Yale Report* on the one hand and by C.P. Snow on the other is that both addressed the perception of a conservative body resisting change in the status quo. Of course, Snow infamously referred to the literary intellectuals as “natural Luddites.”⁴⁵ Snow, the would-be historian, claimed:

Far-sighted men were beginning to see, before the middle of the nineteenth century, that in order to go on producing wealth, the country needed to train some of its bright minds in science, particularly in applied science. No one listened. The traditional culture didn’t listen at all: and pure scientists, such as there were, didn’t listen eagerly.⁴⁶

⁴² Snow, 25.

⁴³ Herbst, 216.

⁴⁴ *Ibid.*, 215.

⁴⁵ Snow, 22.

⁴⁶ *Ibid.*, 23.

Snow was speaking of essentially the same difficulties faced by the authors of the *Yale Report*. In some respects, Jeremiah Day and the Yale Corporation in their report of 1828, “embraced the uses of the past, but they withdrew from the uncertainties of the future.”⁴⁷

A similar sentiment appears in 1959: “If the scientists have the future in their bones,” Snow contended, “then the traditional culture responds by wishing the future did not exist.”⁴⁸

The *Yale Report*, in defense of the continued exclusion of modern languages from the basic curriculum, argued:

To suppose the modern languages more practical than the ancient, to the great body of our students, because the former are now spoken in some parts of the world, is an obvious fallacy. The proper question is,—what course of discipline affords the best mental culture, leads to the most thorough knowledge of our own literature, and lays the best foundation for professional study.⁴⁹

Whereas Snow called literary intellectuals of the twentieth century Luddites because they feared advancing science and technology, we might refer to these Yale professors as classical Luddites because they feared the advance of modern literature in the curriculum.

A central component of Snow’s *Two Cultures* lecture was education; in fact, Snow believed the only way out of the two cultures conundrum was “rethinking our education.”⁵⁰ He worried that other countries might be able to change their educational systems to address the cultural divide, but Britain might be unable to change due to its “fanatical belief in educational specialization.”⁵¹ Snow wrote that there were those who argued that the traditional exam was “the only way to keep up standards, it was the only fair test of merit, indeed, the only seriously objective test in the world,” while reformers

⁴⁷ Rudolph, *Curriculum*, 75.

⁴⁸ Snow, 11.

⁴⁹ *Reports*, 39.

⁵⁰ Snow, 18.

⁵¹ *Ibid.*, 17.

maintained that the these exams were killing the creativity of aspiring mathematicians.⁵² Snow's attack on the sort of British conservatism that defended the existence of the Tripos exams for so long echoes the attacks on the conservative American colleges such as Yale in the early nineteenth century.

In a remarkable parallel passage, the authors of the *Yale Report* responded to the accusation that “the public examinations at most of our places of education, except West Point, have been miserable farces, which have imposed on nobody, not even on the students subjected to them.”⁵³ The Yale faculty defended their methods of examinations, calling their system “a powerful incentive to study” as well as providing a means “of forming a satisfactory opinion of the attainments of each individual student.”⁵⁴ These passages indicate that college faculty in both nineteenth-century America and twentieth-century England faced similar criticisms concerning their methods of examining students.⁵⁵

At several points, the goals of the *Yale Report* and the *Two Cultures* lecture diverge. In fact, in at least one context the two cultures conflict of 1820s Yale stands in juxtaposition with the conflict set out by C.P. Snow. Whereas the two cultures in conflict in 1950s Britain were the cultures of the literary elite and the scientists, no such antagonism existed at Yale. To attest to this, one must only note that in addition to President Day, the two primary authors of the *Yale Report* were Benjamin Silliman, a professor of chemistry and one of the leading American scientists of the day, and James

⁵² Ibid., 20.

⁵³ *Reports*, 46.

⁵⁴ Ibid., 47.

⁵⁵ Of course, this question will certainly forever be a part of education. Today, assessment is one of the most talked about—and probably one of the least understood—tools in education. Twenty-first century educators struggle with the proper place of examinations and other assessment tools just as did their nineteenth-century predecessors.

L. Kingsley, a noted classicist and professor of ancient languages. What would be to Snow 130 years later two cultures, was at Yale a collaboration between two men belonging to the same culture.

A common cause for misunderstanding the clash of cultures in ante-bellum America is a misinterpretation of the term “classical” when applied to education. Stanley Guralnick argued that classical has been erroneously interpreted as the converse of “scientific.” Guralnick claimed “The term [classical], then, was used to distinguish not the dead languages from the sciences, but liberal education from vocationalism and technical training.”⁵⁶ The two cultures in competition in 1828 were the traditional culture of liberal education and the upstart culture of professional education. Guralnick distinguished between the conflict in American education and the conflict in England: “The usual form of the argument we hear today—that the study of Latin and Greek kept science out of the educational program—did not apply in America, however true it may have been in Oxford.”⁵⁷

There is, in fact, extensive rhetoric in the *Yale Report* that reflects the sort of confluence of the literary and scientific for which Snow would call in the following century. The gap between the two cultures that Snow so desperately pleads should be closed in 1959, seems not to exist in 1828. This may be observed in many places in the *Yale Report*. The report defended the Yale faculty against the charges of resistance to change, pointing out that subjects such as chemistry, mineralogy, geology and political economy had all recently been added to the curriculum, while admitting that other improvements should and would be made to “meet the varying demands of the

⁵⁶ Guralnick, “Sources,” 358.

⁵⁷ Ibid.

community, to accommodate the course of instruction to the rapid advance of the country, in population, refinement and opulence.”⁵⁸ In fact, the report continued, courses of instruction were given in pure mathematics, physical sciences, ancient literature, English reading, logic and mental philosophy, rhetoric and oratory, written composition, and extemporaneous discussion. Each discipline played an important role in the education of a Yale student, and the faculty expressed its “doubt whether the powers of the mind can be developed, in their fairest proportions, by studying languages alone, or mathematics alone, or natural or political science alone.”⁵⁹

In spite of the insistence that an education should include all of these disciplines, the underlying importance of a classical foundation was continually maintained: “Familiarity with the Greek and Roman writers is especially adapted to form the taste, and to discipline the mind, both in thought and diction, to the relish of what is elevated, chaste, and simple.”⁶⁰ This is confirmed with a glimpse of the curriculum at Yale in the 1820s. The first three years were filled primarily with the study of classical languages, with a small amount of mathematics, history, geography, and English language sprinkled in. In the senior year, the student added composition, belles-lettres, metaphysics, and moral philosophy. Attendance at lectures covering topics in chemistry, mineralogy, geology, and other sciences were often included.⁶¹

It appears, then, that at least part of Snow’s thesis, that “we have to educate ourselves [in science and modern technology] or watch a steep decline [in Britain’s world

⁵⁸ *Reports*, 5.

⁵⁹ *Ibid.*, 9.

⁶⁰ *Ibid.*, 35.

⁶¹ Herbst, 217.

power and influence] in our lifetime”⁶² harkens back to a time when literary intellectuals such as Professor Kingsley at Yale had an appreciation for science, while scientists such as his colleague Professor Silliman understood the need for literary education. The question that arose around, and after, Snow’s lecture was “Can, and should, this type of education be accomplished in today’s world?” Snow thought the answer was it must be done, or we will all face the consequences. Others disagreed.

Michael Yudkin, a Cambridge biochemist, questioned whether the polarization of the two cultures was really a significant problem, and if it was, could anything be done to correct the problem? Yudkin claimed that “a useful scientific education of non-scientists...is not a practical aim.”⁶³ Yudkin maintained that it is of questionable importance at best to teach non-scientists scientific “facts,” but it is important for scientists to experience art and literature. He accused Snow of mistakenly equating “scientific knowledge and artistic experience.”⁶⁴

Yudkin’s incredulity over the efficacy of a superficial scientific education mirrors similar concerns cited in the *Yale Report*. Yudkin’s claims also parallel arguments made by others concerning the converse problem—that of a superficial literary education. Chemist and Harvard president, James B. Conant, in a foreword to Thomas Kuhn’s *The Copernican Revolution*, asserted that a person is considered educated if he or she had mastered several languages and had “retained a working knowledge of the art and literature of Europe.” This knowledge does not necessarily need to be very deep, but

⁶² Snow, 39-40.

⁶³ Michael Yudkin, “Sir Charles Snow’s Rede Lecture,” in *Two Cultures? The Significance of C.P.Snow*, by F.R. Leavis, 57 (New York: Pantheon Books, 1963). The essay by Yudkin, which first appeared in *The Cambridge Review*, is attached to this printing of Leavis’ famous attack on Snow in Leavis’ Richmond Lecture of 1962.

⁶⁴ *Ibid.*, 62.

rather the kind of “knowledge which can be readily worked into a conversation at a suitable social gathering.” Such superficial knowledge is good for those who don’t really enjoy art and literature, but “feel compelled” in certain social situations “to enter into a discussion of these subjects....” Luckily, it is not difficult to maintain such a working knowledge of the arts and literature: “The price of admission to the cultural tradition of a European nation is paid once and for all when one is young.”⁶⁵ These words are remarkably similar to a rather cynical passage found in the *Yale Report*. The author, commenting on the results obtained from a partial education—the type of education the faculty at Yale was actively resisting—wrote of the possessor of such superficial learning: “If he fails to enlighten his countrymen by his intellectual superiority, he may at least attract their gaze by the tinsel of his literary ornaments. This is the allurements to a hurried and superficial education.”⁶⁶

It is interesting to note that Conant’s comments appeared in print two years before Snow’s lecture. Conant maintained a position very similar to the one Snow later presents. The former Harvard president claimed that not only is there little concern about the inclusion of science in European education, he doubted the literary elite would even recognize any importance to understanding science, unless one was a scientist or engineer.⁶⁷ Conant continued by pointing out that it was not unusual for a scientist to have the ability to participate in a literary discussion; yet, it was virtually impossible for anyone except a scientist to participate in a scientific discussion.⁶⁸ Furthermore, Conant maintained that the primary difference between the two cultures (although he does not

⁶⁵ James B. Conant, “Foreword,” in *The Copernican Revolution: Planetary Astronomy in the Development of Western Thought* by Thomas Kuhn (Cambridge, MA: Harvard University Press, 1957): xiii.

⁶⁶ *Reports*, 28.

⁶⁷ Conant, xiv.

⁶⁸ *Ibid.*, xv.

use this term) is that the relative merits of Shakespeare's plays have been debated and will continue to be debated for the foreseeable future, while "No one either admires or condemns the metals or the behavior of their salts."⁶⁹ These arguments resonated in Snow's lecture of 1959.

The risks inherent in the rapid progress of science are also a key component of the two cultures debate, just as the inherent risks of industrialization weighed heavily on the minds of the Yale faculty in 1828. While President Day of Yale seemed "uneasy about the prospects of a nation at the mercy of superficially educated demagogues and uncouth millionaires,"⁷⁰ concerns over the modern two cultures conflict invoke similar fears about a world at the mercy of the culture of science.

Recent commentators have continued to point out differences between the two cultures that may account for the seemingly unbridgeable chasm between them. One such difference is the rate at which each culture changes. Snow said, "Literature changes more slowly than science. It hasn't the same automatic corrective, and so its misguided periods are longer."⁷¹ The same slow evolutionary process might also apply to other fields besides literature. Science has indeed experienced immense change and upheaval over the last half-millennium, while, some argue, theories on morals, aesthetics, politics, and other social sciences have not. Ladislav Kovac points out that although Aristotelian science is no longer cited by modern scientists, Aristotle's works on the social sciences and humanities are cited in abundance.⁷² Then one might ask, "Was Aristotle wrong in his understanding of simple events, such as the movement of a thrown stone, and was he

⁶⁹ Ibid.

⁷⁰ Rudolph, *Curriculum*, 71.

⁷¹ Snow, 8.

⁷² Ladislav Kovac, "Two Cultures Revisited: New Widening Gaps," *World Futures: The Journal of General Evolution* 58, Issue 1 (2002): 4.

right in his intuition concerning such complex phenomena as human behavior and social dynamics?”⁷³ Of course not! It is more likely that knowledge of the social sciences and humanities has not kept pace with the knowledge of the physical and biological sciences, so much so that the social sciences “may resemble the state of physics in the pre-Galileo period.”⁷⁴

In order to address the disparities between the “hard” sciences and the social sciences, Kovac calls for a renewed emphasis on what he calls the cultural sciences to help deal with the complex changes brought about by science.⁷⁵ David Barash echoes this point: “Progress in the humanities typically does not threaten science, whereas the more science advances, the more the humanities seem at risk.”⁷⁶ Barash reaffirms that as science advances, the wisdom required to deal with its outcomes becomes ever more critical for our future.

At least a portion of the disagreement between twentieth century intellectuals, like Snow and Yudkin, over the role of science in education might simply be attributed to misunderstood viewpoints. The authors of the *Yale Report* defended the idea that a single curriculum—one that involved instruction in both ancient languages and modern sciences, as well as other selected subjects—was appropriate, even essential for proper education. This seems to be the very principle on which Yudkin questions Snow: should

⁷³ Ibid.

⁷⁴ Ibid., 5. Part of the blame for the lag in social sciences, according to the Kovac, is lack of funding. He provides statistics that show mathematics, physical sciences, geosciences, biological sciences, and computer and information sciences accounted for over 68 percent of the National Science Foundation funding for 2001. The social, behavioral, and economic sciences combined received less than five percent of the total funding.

⁷⁵ Ibid., 5.

⁷⁶ David P. Barash, “C.P. Snow: Bridging the Two-Culture Divide,” *Chronicle of Higher Education* 52, Issue 14 (Nov. 25, 2005): B10. Barash argues that we have only paid lip service to building bridges between the two cultures with interdisciplinary programs because the programs themselves have become institutionalized: “Society scarcely benefits from those who achieve renown in Mongolian metaphysics by speaking only Mongolian to the metaphysicians, and only metaphysics to the Mongolians.”

non-scientists be subjected to a scientific curriculum? However, in spite of Snow's famous rhetoric about the lack of knowledge of the Second Law of Thermodynamics among the literary elite, the majority of Snow's lecture does not address his concern for teaching non-scientists a smattering of scientific facts, but rather is a call for revising the curriculum to encourage the education of more *professional* scientists and technologists. Snow believed that science and technology were the only hope to close the gap between rich and poor countries.

Snow expressed his concern that Britain, and to some extent, the United States, was falling behind the Soviet Union and would continue to fall further behind if their educational systems did not change. The problem, however, looks much different when seen from a position after the fall of the Soviet Union. One recent commentator on Snow and his concerns for scientific education, Yuval Levin, argues that, although it is true that the Soviet Union produced more scientists, engineers, and technologists than did the West, "the West always maintained an advantage in both practical applications and theoretical advances."⁷⁷

In hindsight, nearly a half-century after Snow first delivered his address and over a century-and-a-half after the *Yale Report*, the outcome of the Cold War seems to reinforce the belief held by the Yale faculty that the special needs of a democratic nation require a different sort of education—an education that lays a theoretical foundation in preparation for professional (or technical) training. One who is trained in practical knowledge, the *Yale Report* argued, without a theoretical base, may be able to accomplish a certain task and perform a certain job, but his labors are "confined to the narrow path

⁷⁷ Yuval Levin, "Snow's two cultures—and ours," *Public Interest* 153 (Fall 2003): 62.

marked out to him by others.”⁷⁸ On the other hand, the marriage of practical applications to theoretical study is also vital (although not in the scope of the college curriculum). The Yale faculty recognized the potential dangers inherent in a gap between the applied and the theoretical in much the same way Snow would describe diverging cultures of applied and pure science in 1959. According to the *Yale Report*, “To bring down the principles of science to their practical application by the laboring classes, is the office of men of superior education. It is the separation of theory and practice, which has brought reproach upon both.”⁷⁹

The biggest fear expressed by the Yale faculty was that by compromising the curriculum in the face of outside pressures, the American democracy would be put at risk:

Let the value of a collegiate education be reduced and the diffusion of intelligence among the people would be checked, the general standard of intellectual and moral worth lowered, and our civil and religious liberty jeopardized, by ultimately disqualifying our citizens for the exercise of the right and privilege of self-government.⁸⁰

Whereas Snow believed that a lack of scientific education would eventually lead to the downfall of England, the Yale faculty steadfastly maintained that a general, or liberal, education was the only hope for the future of America.

Which two cultures?

The primary purpose of this essay has been to present similarities between the two cultures crisis popularized by C.P. Snow and the clash between two (different) cultures that precipitated the preparation of the *Yale Report* in 1828. In doing so, it becomes obvious that the clash between two competing cultures was not conceived with Snow’s

⁷⁸ *Reports*, 17.

⁷⁹ *Ibid.*

⁸⁰ *Ibid.*, 52.

lecture, but has been with us for much longer. Of course, many other two cultures situations have existed throughout history, and many of them have received considerable attention from historians and sociologists.

Snow himself conceded that there were actually more than two cultures. For instance, sociologists may not consider themselves a part of the literary culture; and even within the culture of science, biologists and physicists do not “always completely understand each other,”⁸¹ indicating they may possibly be considered two different cultures. The Industrial Revolution also resulted in a gap between pure and applied science. Pure scientists, Snow contended, may be almost as ignorant of industrialization as humanists. “It is permissible to lump pure and applied scientists into the same scientific culture, but the gaps are wide.”⁸²

Is the two cultures conflict alive today? There are two volumes on my bookshelf, both of which carry the simple title of *Genius*. One, by noted humanist Harold Bloom, is an exploration of the genius of great literary and philosophical minds, from Socrates to Thomas Mann. The second, by noted science writer James Gleick, is a biography of the physicist Richard Feynman. So what qualifies as genius—extraordinary literary gifts or extraordinary scientific accomplishments? It seems that the answer to that question continues to depend on to which culture you belong.

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⁸¹ Snow, 9.

⁸² *Ibid.*, 31.

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