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SCIENCE AND THE ARTS

Snow's storm

C. P. Snow's 1959 diagnosis of a divide between British scientists and humanists took on new meaning in America

By **W. Patrick McCray**

In May 1959, Charles Percy Snow took the stage at the Senate House in Cambridge to give the annual Rede lecture. The British chemist-turned-novelist's appearance—a rotund jowly face atop a bulky, shambling figure—led wags to comment that the speaker was well rounded in more than just his intellect.

Snow's talk, titled "The Two Cultures and the Scientific Revolution," broadly diagnosed a problem he believed challenged the future of all western democracies. For years, he had noted that British humanists and scientists shared "little but different kinds of incomprehension and dislike" (*1*, *2*). The inability of literary scholars and scientists to understand and communicate with one another was not just an intellectual loss, Snow claimed, but something that threatened the ability of modern states to address the world's problems.

In his lecture, his analysis sharpened as he derided Oxbridge humanists as an insular community of pessimistic Luddites responsible for Great Britain's national decline. By contrast, it was scientists—Snow famously cast them as optimists with the "future in their bones"—who could spread progress and prosperity at home and abroad. And with the British civil service dominated by those with a backward-looking literary orientation, Snow claimed that the Soviet Union, where scientists and engineers were more influential, won an advantage.

Snow's diagnosis precipitated a blizzard of heated objections, ad hominem attacks, and retaliatory articles. Like the chasm between the "two cultures" itself, these vituperative volleys drew deeply on long-standing divides in British society when it came to class, education, and dominance. Seen another, equally nationalistic way, the fight was also about the role of scientific and technological expertise in postwar Britain, with Snow largely cheering for the technocrats (*3*).

THE CULTURE CLASH CROSSES THE POND

Although Snow's lecture provoked an immediate sensation in Great Britain, initial reactions in the United States were muted. It received little notice, for example, in *The New York Times* until a lengthy review of

The author is at the Department of History, University of California, Santa Barbara, Santa Barbara, CA 93106, USA. Email: pmccray@history.ucsb.edu

The Expo '70 Pepsi pavilion embodied an avante-garde collaboration between artists and engineers.

Snow's ideas, now converted into a modest-sized book, appeared in January 1960. J. Tuzo Wilson, a Canadian geophysicist, gently rebutted some of Snow's claims while demonstrating, with deference to Snow, his own familiarity with contemporary literature (*4*). Nonetheless, Wilson concluded that "no one has yet refuted" Snow's basic argument.

In the months that followed, however, Snow's judgments generated an avalanche of discussion in the United States. Columbia University made the book required reading for all freshmen. Then-senator John F. Kennedy praised Snow for his insights, and American book clubs soon began to offer *The Two Cultures* to members. What was originally formulated to diagnose specific British conditions started to diffuse into American public discourse.

SCIENCE ANXIETY IN COLD WAR AMERICA

The different importance Snow's phrase acquired in the United States can be traced, in part, to renewed attention, bordering on obsession, that policy-makers, industry leaders, and researchers gave to science and technology circa 1960. Sputnik had galvanized American efforts to reform engineering and science education as Congress passed the National Defense Education Act. This massive infusion of funds, coupled with the manpower needs of the space race and the arms race, dramatically increased the number of young people entering fields such as physics and engineering. Consequently, discussions of the two cultures from the early 1960s are best imagined with an insistent Sputnik-generated "beep-beep-beep" chirping in the background.

In the years following Snow's original lecture, articles and letters agreeing with, referencing, or rebutting his claims appeared in American science and engineering journals. *Scientific American*, for example, ran a lengthy piece by historian Asa Briggs, who expressed some agreement with Snow's general argument while challenging Snow's binary reductionism. Reviews published in *Physics Today* and the *Bulletin of the Atomic Scientists* struck similar notes.

Besides transforming Snow into a well-known public intellectual, his lecture (and the rancorous debate it provoked) transformed "the two cultures" into a metonym. Invoking the phrase became an abbreviated and efficient, if not always precise, way of referring to a more complex set of concerns. As a result, throughout the 1960s, Snow's phrase became a universal solvent into which all sorts of concerns, anxieties, and remedies could be mixed. Part of the power of Snow's phrase lay in its binary nature—the image of two cultures was easily grasped—and this aspect remains what is most widely referenced today.

The Two Cultures and the Scientific Revolution
C. P. Snow
Cambridge Univ. Press, 1959. 52 pp.

A QUEST TO HUMANIZE TECHNOLOGISTS

These dialogues were part of a much more expansive conversation about American education in the postwar period. Former chemist and Harvard president James Conant, for example, commissioned a prominent 1945 study, *General Education in a Free Society*, which proposed that all students receive a holistic liberal education that would foster creativity and more flexible, open minds (*5*). The report emphasized a need to balance coursework in the humanities and sciences so as to avoid the sort of noncommunication and specialization later seen as pervasive in Snow's two cultures.

The question of exposing future technologists to "culture" was seen as an even more pressing issue when it came to educating engineers. Engineers still struggled to be accepted as the professional equal of scientists. Caricatured as defiantly "crass, materialistic, insensitive" people whose acquaintance with the arts and literature was "limited to cheap movies and comic books," such stereotypes (these are from a 1956 study on engineering education) suggested that "humanizing" future technologists would be an even tougher task (*6*).

One suggested remedy was exposure to the fine arts. MIT's administration, for example, created a Committee for the Study of the Visual Arts led by leading art history professors and directors of major East Coast museums. The hope was that the arts and humanities would provide more than just a "cultural veneer" and actually serve a utilitarian purpose by enhancing engineers' creativity. These concerns acquired greater urgency toward the end of the 1960s, when student activists, opponents of the Vietnam War, and critics of large, impersonal, and destructive technological systems increasingly labeled engineers as amoral technocrats beholden to the large companies they served.

The tensions between instrumentalism, pragmatism, and idealism were found in other lengthy reports that piled up like so many bricks on the desks of education reformers throughout the 1960s. Although these might not reference the "two cultures problem" explicitly, they didn't need to. Building rapport between engineering, science, and the humanities had been absorbed by educators and many practicing engineers as a goal worthy of pursuit (if indeed not easily attainable). Likewise, so had Snow's two cultures concept.

ART AND TECH OUTSIDE ACADEMIA

The winds from Snow's storm were felt outside the academy as well. In the 1960s, a slew of initiatives to unite artists with scientists and engineers burst forth from corporate laboratories, cold-water flats, publishing houses, and museum galleries. An essential ingredient of all these efforts was the remarkable economic prosperity of the 1960s. Companies and corporate laboratories, buoyed by years of profitability, could afford to allow—even encourage—their scientists and engineers to partner with artists.

One of the most notable of these efforts was the New York–based group Experiments in Art and Technology. Cofounded

A figure holding a flag is reflected in the Mylar-covered ceiling of the Pepsi pavilion at Expo '70 in Osaka, Japan.

in 1966 by engineer Billy Klüver and artist Robert Rauschenberg, EAT helped connect engineers and artists and carried out a series of high-profile art-and-technology programs. Implicit—if not stated outright—as a motivation for these activities was the generative value in bringing people from different professional cultures together. Art-and-technology advocates imagined that their intervention could help solve the "two cultures problem" or at least build beachheads to an armistice. Viewed by some as too important to be left just to artists, making art was something to which engineers and scientists could and should contribute.

"STEAM": INSPIRED, PRAGMATIC, BOTH?

Creative collaboration, a primary goal of the art-and-technology movement 50 years ago, is still prized by today's corporate leaders and college administrators. Conferences, journals, and societies devoted to activities at the interfaces between art, science, and technology are proliferating. Since 2010, national education leaders have lauded the value of adding arts and design to the traditional science, technology, engineering, and math framework (labeled as "STEM to STEAM," where the "A" means Arts). These contemporary activities reflect aspirations expressed by art-and-technology advocates 50 years ago. But where the earlier collaborative efforts were fueled by economic prosperity and a pronounced sense of utopian possibilities, one senses that enthusiasm for today's STEM-to-STEAM initiatives is driven by more prosaic concerns. It's no coincidence that the most recent efforts to connect art, science, and engineering gained steam after the Great Recession of 2008–2009. Politicians regularly (and wrongly) claim that majors such as theater or history are impractical luxuries that don't lead to jobs.

Meanwhile, a prime concern for educators and policy-makers remains how and what to teach the next generation of technologists. Once again, some education experts see the integration of the arts into science and engineering curricula as an answer. Moreover, today's efforts to meld creative cultures often insinuate that technological art (or artful technology) is a pathway to commercial innovation and profits. Seen this way, STEAM advocates can sometimes appear more instrumental than idealistic in their goals.

FOCUSING ON WHAT UNITES US

A few years after Snow's imagery of two cultures at odds and incommensurate with one another migrated to the United States, *Science* published a short article challenging his claims (*7*). The author—a history professor—suggested that the divide between the sciences and the humanities wasn't as wide as imagined. His small liberal arts school had not two but "perhaps two hundred" cultures, any of which could be relentlessly esoteric and insular. But (besides a common antipathy toward campus bureaucrats), these practitioners all shared values such as academic freedom, a respect for evidence, and a belief that more knowledge and understanding was an unalloyed good thing.

At a time rife with a disregard for facts and the methods used to produce them (even when they portend a catastrophic future), perhaps Snow, were he alive today, would encourage scientists and humanists, engineers and artists, to focus on the one culture to which we all belong. ■

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