The Post-Industrial University as We Know It:
Daniel Bell's Vision, Today's Realities
By Steven Brint

The main line of Daniel Bell's argument about universities is clear: In post-industrial society, universities are a central institution, more central even than corporations, and their gravitational pull will increase as the post-industrial sector of the economy grows. High-tech industry and quality-of-life services create the economic foundations of post-industrial society. The post-industrial sector's class structure is arranged in a pyramidal form consisting of a dominant group of scientists and scientific administrators at the top, a middle stratum of professors and engineers, and a bottom layer of teaching assistants, junior faculty, and technicians. Its ethos is meritocratic and scientific, leavened by a commitment to providing opportunities for talented individuals from families with limited resources.

Yet the book in which Bell lays out this argument, *The Coming of Post-Industrial Society*, cannot be read as a straightforward exposition of an argument about the direction of social change. The text includes many second thoughts in the form of side commentaries, layers of qualification, quotations intended both to support and to interrogate the argument, and instructive stories that illustrate the moral conundrums and open questions facing post-industrial society.

Take one example: On the surface, science appears to be the directing force in postindustrial society, yet Bell vacillates as to whether science or scientists can be

such a force. Government, not the scientific community itself, controls the direction of policy, and it has little appetite for a "coordinated attack on big problems."[1] Moreover, government-funded science is mainly for defense, not for the peaceful uses envisaged in Bell's "Scientific City" of the future. Bell himself raises questions as to whether these realities can be overcome.[2]

Bell later uses the story of J. Robert Oppenheimer to add another layer of ambiguity on the relationship between science and political power. Oppenheimer, the leader of the Manhattan Project during World War II, was alternately chosen by, cowed by, tempted by, and ultimately destroyed by the politically powerful. Bell's Oppenheimer is a symbol of the man of creativity who flies too close to the sun of political calculation. Yet he concludes his reflections by quoting Andrei Sakharov's faith in the method of science as "a defense against any kind of political subjugation."[3] So perhaps science is not destined to be dominated by its political masters: "The charismatic aspect of science gives it its 'sacred' quality as a way of life for its members…. It is the tension between those charismatic elements and the realities of large-scale organization that will frame the political realities of science in postindustrial society."[4]

Such are the perplexities and pleasures of Bell's style. What can seem on a first reading to be a relatively straightforward social scientific analysis and confident prediction is better read as a complex literary text, full of uncertainty and doubt, and replete with problems that can be resolved in multiple ways. Depending on how the future unfolds, the university could turn out to be axial—or not.

These ambiguities make a reassessment of Bell's thinking about higher education all the more interesting. Despite all his qualifications, he did lay out a grand vision of the future of universities. But how central have universities become to innovation and economic growth? Have the forces driving higher education diverged from the understanding Bell had of them? Has the content of a college education followed the model that Bell advocated? Confronting Bell's vision with a half-century's experience may help us better understand how universities are continuing to evolve now.

The Centrality of the University?

Bell's work on knowledge as an engine of development was of a piece with the thinking of other mid-century social analysts. Joseph Schumpeter's emphasis on the role of technological innovation in economic development was a major influence.[5] In the 1950s, Robert Solow formalized Schumpeter's insight by showing that technical advance explained the large residual in growth rates that remained after taking into account the classical factors of production (land, labor, and capital).[6] Economists such as Zvi Griliches[7] and Vernon Ruttan[8] demonstrated that technological innovations in agriculture had greatly improved farm productivity; the sociologist Everett Rogers traced the process of diffusion that allowed technological innovations to spread through relevant sectors of the economy.[9]

By the mid-1960s, a long line of liberal academics had written about the economic power of knowledge. Fritz Machlup provided the first estimate of the size of the contributions to GDP of what he called "the information economy."[10] Clark

Kerr heralded the rise of the "multiversity" as a central institution providing research and expert advice to help solve society's problems.[11] Peter Drucker coined the term "knowledge worker" to identify individuals who contribute to organizations based on expertise first developed in universities and subsequently honed in professional and managerial occupations.[12] John Kenneth Galbraith's analysis of "the new industrial state" highlighted the significance of a "techno-structure" of engineers, scientists, and professionally trained managers running large organizations and a "scientific and cultural estate" consisting principally of academics, writers, and artists.[13] Not much later, Gerald M. Platt and Talcott Parsons published what amounted to a paean to cognitive rationality as the cultural daemon of advanced societies and of the university as the institution most responsible for producing it.[14]

As early as 1959, Bell was working on related themes. Unsatisfied with his first unfinished portraits, he published a two-part essay on post-industrial society in 1967[15] and his book on the subject six years later. Bell's assertion of the centrality of basic science and theoretical knowledge as the fount of post-industrial society became one of his more noteworthy contributions (as was his interrogation of these claims). In *The Coming of Post-Industrial Society*, he writes that "just as the business firm was the key institution of the past hundred years because of its role in organizing production for the mass creation of products, the university – or some other form of a knowledge institute – will become the central institution of the next

hundred years because of its central role as the new source of innovation and knowledge."[16]

The university as a source of theoretical knowledge was crucial to Bell's argument. Nineteenth-century inventors "were indifferent to science and the fundamental laws underlying their investigations,"[17] whereas innovation in the twentieth century, he argued, came to depend on theoretical knowledge. Thomas A. Edison is for Bell the epitome of the talented tinkerer of a bygone era when it was possible to make revolutionary breakthroughs in technology without training in the relevant science. But further development of electrodynamics "could only come from engineers with formal training in mathematical physics."[18] Chemistry for Bell is another example of the primacy of theoretical knowledge: "One must have a theoretical knowledge of the macromolecules one is manipulating in order to recombine and transform compounds."[19] But while Bell provides some other examples, he fails to present any systematic evidence for the claim that university-based theoretical knowledge is the key to post-industrial innovation.

The evidence from the history of science does not support Bell's claim. The current consensus is that scientific progress occurs through a number of channels, including the development and application of theory (or basic research), pure empiricism, and what Donald Stokes refers to as "use-inspired basic research,"[20] that is, basic research with an applied goal in mind. Codification is important in the progress of science, but codification is only a means to organize what is known so that others can readily access it. Tinkering remains an important feature of

scientific progress, as the history of the personal computer makes clear.[21] In a study of the 50 most important inventions between 1955 and 2005, I show that some inventions that made the list – such as bullet-proof Kevlar – were invented using brute-force experimentation with a wide variety of possible compounds. Many others – magnetic resonance, in vitro fertilization, the HIV protease inhibitor, the polymerase chain reaction, the birth control pill – grew out of a combination of theoretical knowledge and what amounts to inspired tinkering.[22] Those who have looked into the origins of important scientific discoveries also find a range of forces at work, some tied to theory, some tied to empirical observations, with quite a bit of movement between the two.[23]

If theoretical knowledge is only one source of innovation, Bell's assumption about the priority of academic research loses force. No one today would argue that corporations such as Apple, Google, and Microsoft depend on universities for innovation. Indeed, corporations are involved in virtually every important invention that succeeds in the marketplace. In contrast, universities figure prominently in about two out of five of the 50 important inventions I studied[24] – an exceptional record given their small share of total research and development funds, but not as much as what one might expect from the axial institution of post-industrial society.

New conceptual understandings originate today in a wide variety of institutional settings, not just in universities. For example, total quality management, the triple bottom line (the idea that corporations should evaluate themselves in relation to labor conditions and environmental impact as well as

profit), and the balanced scorecard (the idea that managers should be rate themselves on financial, customer service, internal process, and organizational learning outcomes rather than only on financial outcomes) all come from the world of business consultants. Formulas predicting film and song success originate in the entertainment industry. Principles of human-centered design were developed first by IBM engineers. Scenario planning originated in the armed forces and oil companies. The role of university researchers in these developments has been to test for validity, to refine or to reject, and to feed revised understandings back to the originating institutions, whether for adoption or dismissal.[25]

Bell not only exaggerates the role of academic science; he also idealizes it:

> The community of science is a unique institution in human civilization. It has no ideology in that it has no postulated set of formal beliefs, but it has an ethos which implicitly prescribes rules of conduct. It is not a political movement that one joins by subscription, for membership is by election, yet one must make a commitment in order to belong. It is not a church where the element of faith rests on belief and is rooted in mystery, yet faith, passion, and mystery are present, but they are directed by the search for certified knowledge whose function it is to test and discard old beliefs.[26]

The limits of this understanding of science are now well-known. The "science" of eugenics legitimized racism. The atomic bomb was a product of the best scientific minds. And the science of artificial intelligence may damage civilization in ways we are currently unable to anticipate. Science is our best means to discover new truths about the natural world and social relations, but it is like other fields in which ambitious people strive to make a name for themselves. When their careers are at

stake, scientists may become invested in paradigms that obscure as much as they reveal, and, in extreme cases, may even engage in fraud.

Although he failed to explore the underside of science, Bell did reject the technocratic vision his conception of post-industrial society might have encouraged. He argued at length against the view that scientists could set the direction for policy or even for the direction of scientific organization. "The lack of a unified science policy, or a major academy or ministerial system, has meant that the 'technocratic potential' inherent in the growing influence of science and the nature of technical decision making is minimized in the American system."[27] Science is fragmented, dependent on the mission orientation of the federal government's research agencies and the system of individual project grants adopted following World War II.

More broadly, the Saint-Simonian dream of a society run on the principles of rationality is, in Bell's view, unrealizable. Scientists, engineers, and planners must be taken into account in the political process; they wend their way into administrative leadership; and the ethos of science dominates the value system of these increasingly important figures. But "it is not the technocrat who ultimately holds power, (it is) the politician."[28] Most issues cannot be settled simply based on technical criteria because value choices shape the technical criteria themselves. "Rationality, as an end, finds itself confronted by the cantankerousness of politics, the politics of interest and the politics of passion."[29]

In Bell's vision of post-industrial society, science occupied a position of high prestige and trust—more prestige and trust than it now enjoys. Less than half of Americans say that they have "a great deal" of confidence in scientific community, a figure that has remained relatively stable over three decades. It is not even clear that the ethos of science holds sway among all segments of the highly educated. Many people with degrees in the humanities, the qualitative social sciences, and the professions linked to these disciplines are skeptical of science. They criticize its unintended consequences and its alliance with powerful patrons, and they are frequently attuned to inquiries more sensitive to the lived experiences of disadvantaged and marginalized populations. Within the stratum of professionals and managers, confidence in science is lower among women and minorities.[30]

Bell saw discontent with rationality in the 1960s and 1970s as originating in anti-bourgeois, romantic impulses, but the anti-scientific temper of our times has different roots and harder edges. On the political right, it derives from religious faith and nostalgia for a past that conservatives prefer to the contemporary world that they see as being engineered by liberal elites. On the political left, criticism of science derives from a commitment to social justice as the singular priority for building a better future. These conflicts play out in the forces shaping universities today.

The Forces Shaping Higher Education

Bell identified the push for equality, more than the need for scientific and professional manpower, as the primary reason for the expansion of higher

education.[31] He deplored that a "bright but poor boy" had only about half as much chance of completing college as his "well-to-do counterpart," and he argued that if the necessary expansion of higher education was to occur, increasing numbers of students "will have to be drawn from working-class families."[32] Indeed, for Bell, a just meritocracy required the widest possible opportunities to rise from the position of one's birth.

Bell foresaw that the promotion of equal opportunity could easily become a demand for equal representation. But he failed to anticipate the extent to which the demand for equal representation would become institutionalized in universities and undermine the rationale for meritocracy. University administrators today try to have it both ways. They aspire for "excellence" and for equal representation of minorities among both faculty and students as well as the administrative staff.[33] They keep elaborate records to monitor their progress toward equal representation, and they devise additional remedies when progress fails to keep pace with their goals.

Bell thought this emphasis on representation was misguided. Quoting W.G. Runciman, he wrote that all people should be accorded respect, but not all deserve equal praise, and the meritocracy "in the best meaning of that word" is made up of those worthy of praise—the people who are the best in their fields, as judged by their peers.[34] Bell claims that "a society that does not have its best men at the head of its leading institutions is a sociological and moral absurdity."[35] The omission of women from that statement is only the most obvious difficulty with it. Failures of

leadership by people who are thought to be "the best" inevitably raise questions about who the best are. Were the best people running the Afghanistan War over two decades of futility? Were they running Exxon Mobil during their many decades of denying climate change? Were they running Lehmann Brothers prior to the Great Recession?

For Bell, the requirement that merit take precedence over representation is particularly strong in the university because universities are based on the capacity of those in authority to make valid judgments: "knowledge is a form of authority and education is the process of refining the nature of authoritative judgments."[36] He adds, "There is every reason why a university has to be a meritocracy, if the resources of the society – for research, for scholarship, for learning – are to be spent for 'mutual advantage,' and if a degree of culture is to prevail."[37]

Since *The Coming of Post-Industrial Society*, however, the momentum in universities has been with the egalitarians. The old, allegedly meritocratic regime favoring white men looks in retrospect like a system of opportunity hoarding. Once-marginalized groups, notably women and Asian-Americans, now outperform white males on virtually all measures of academic achievement and performance.[38] They have clearly strengthened universities, contributing to the vast increase in research in recent decades. Although leadership in science and engineering remains largely in the hands of white and Asian men, women have made inroads in the other professions, the life sciences, the social sciences, and to an even greater degree in

the interpretive disciplines.[39] Among the faculty, full-throated defenders of meritocracy have become rare.[40]

But meritocracy remains even if its advocates are quiet. Access to faculty and administrative positions has been expanded, but the opportunity to climb the faculty ranks still depends on scientific and scholarly output. Those engaged at the highest levels in their disciplines have often found the drive for diversity irrelevant or an impediment to their interests, while those committed to equal representation have just as often viewed leading disciplinary professionals as elitists. Even in the most liberal bastions of academe, the faculty remains uneasy about the more intrusive policies put into place to advance diversity, equity, and inclusion goals.[41] The scholars who are most in favor of such policies tend to be ones whose work focuses explicitly on the injustices perpetrated against marginalized groups.

A primary source of university strength comes from its monopolization of legitimate credentials for access to well-remunerated and powerful positions in the economy. Here advanced degrees are particularly important. People with advanced degrees are, as Bell indicated, concentrated in a handful of industries. To identify which industries belong to the post-industrial sector, I use a simple criterion: 10 percent or more of their employees need to have post-graduate degrees. Computers, software, and other high tech industries such as pharmaceuticals and telecommunications, health, legal services, media, museums and galleries, government, finance, insurance, and higher education itself meet this criterion. As contributors to GDP, these "knowledge sector" industries have been gaining ground

over time – by my count contributing just one-quarter to GDP in 1959, up to two-fifths in 1997, and nearly 50 percent today.[42]

At the same time, manufacturing of durable and nondurable goods, warehousing and storage, transportation, and sales in wholesale and retail trade are large contributors to GDP and none of these industries belong in the post-industrial sector. Nor do post-industrial industries account for all of the fastest-growing industries.[43]

Although Bell discusses "populist" resistance to professional power, he did not envision that such sentiments could be as powerful as the forces driving the rise of science and the universities. The partisan divisions that are now so apparent are rooted, in large part, in the near-even balance between the post-industrial sector and the traditional agricultural, industrial, and commercial sectors. Post-industrial progressivism rules in the big cities and their suburbs, especially on the northeastern and western seaboards; traditionalism rules the exurbs, the small towns, and the heartland.[44] The possibility of an economic victory by the forces of post-industrialism and a political victory by the forces of traditionalism is one that Bell did not contemplate, but we cannot avoid confronting.

What forces, then, are dominating the development of the universities? In the advanced societies, as they now exist, universities are best understood as institutional hubs and innovation partners. They link institutions and elites and contribute to technological progress, but they are no more central than other institutional hubs or other innovation partners such as high-tech firms and federal

research agencies. I adopt the term "hub" from the work of Richard Arum, Elizabeth Armstrong and Mitchell Stevens, who see the university's power as stemming largely from its capacity to connect elites from different institutional spheres: "privileged families" that send their children to selective undergraduate programs; professional schools that train future occupational leaders; prominent figures in government, the arts, and business who welcome honorary degrees and speaking engagements; and wealthy patrons who donate money and put their names on buildings and entire schools.[45]

The complementary idea of a national innovation system[46] implies that universities, states, and corporations all have roles to play in the creation, dissemination, and ultimately the production of new science-based technologies. States very often provide the funding for foundational research, sometimes supported by corporations with an interest in potential applications. University labs are most important for basic research, but they also work on applications. Corporations are essential for the production and marketing of new technologies, of course, and they also conduct the majority of "downstream" research leading to marketable products. In some industries corporations are the primary producers of use-inspired basic research; in other industries universities are more important. In the United States, the computer software and pharmaceutical industries illustrate two polar cases. New software comes mainly from in-house research in software companies, while new drugs are discovered as often in university life science and medical labs as in the labs of pharmaceutical firms. Nevertheless, high-technology

firms, regardless of industry, locate near leading academic centers, sometimes to draw directly on the expertise of their faculty and even more commonly to recruit their graduate students. Corporate scientists also benefit from sabbatical periods spent working in the labs of leading academic scientists and engineers.

Undoubtedly the contributions of universities to economic development have increased since Bell wrote, but so too have the contributions of corporations and governments. R&D statistics suggest a moderate increase in the university's share, from 10% of total U.S. R&D in 1973, the year *The Coming of Post-Industrial Society* was published, to 13-14% in recent years.[47] Of course, these statistics only scratch the surface of the complex interactions between R&D-producing sectors and leave out entirely the steady flow of university-trained scientific personnel who are largely responsible for the corporate and government contributions to R&D.

The major research universities have grown stronger in the years since Bell wrote about them. Their strength does not derive primarily from the generation and codification of theoretical knowledge, as Bell argued. Instead, their success is due to high levels of investment combined with the interplay of three dynamic growth logics, which can be described as oriented to intellectual progress, new markets, and social inclusion.

Compared to the state-centered national innovation systems in most of the world, the U.S. system has a greater variety of revenue sources. Philanthropic support, student tuition, and corporate fund supplement national and state research funds and subsidies. By 2015, the federal government alone poured $65

billion into student financial aid, made hundreds of billions available in subsidized loans, and disbursed more than $30 billion to universities for research and development. Donors provided billions of dollars more.[48]

"Logics of development" are guiding ideas joined to institutionalized practices. The first of these, the logic of intellectual progress, is the commitment to knowledge discovery and transmission in the disciplines and at their interstices. The second, the logic of expanding into new markets, results in a proliferation of degree programs and an increased focus on the use of university research to advance economic development. The third, the logic of social inclusion, reflects the effort to use colleges and universities as instruments of social change by expanding opportunities to members of once-marginalized groups. All three have contributed to the distinctive orientation of America's leading research universities over the last 40 years.

But if we look beyond the top four dozen or so thriving institutions, we can see that the challenges facing colleges and universities are daunting. The quality of undergraduate teaching and learning is urgently in need of improvement. Since the early 1960s, undergraduate study time has declined by half across every type of institution and major, and academic requirements have followed a similar downward course.[49] A great many lower-division classes are taught by underpaid adjunct faculty who do not generally perform as well in the classroom as tenured or tenure-track faculty and do not maintain as high academic standards.[50] Few faculty members have tried to implement the findings of the now-extensive research

literature on effective teaching practices.[51] The low quality of teaching reflects an implicit pact among students who do not want demanding course work, faculty members who would rather spend their time on research and socio-professional activities, and administrators who are more interested in maintaining and expanding enrollments than ensuring the quality of teaching and learning.[52]

Affordability is the other great challenge. College and university net costs after financial aid are not as out of control as they are often depicted to be in the media, but they have nevertheless risen faster than inflation.[53] This rise has been accompanied by the well-publicized growth in student indebtedness. Most students do not take on unmanageable debt,[54] but loan repayment *is* a major problem because it begins for new graduates at a time when their salaries are not only low but also highly variable from year to year.[55] Nor have Pell grants for low-income students kept up with college costs.[56] Low-income students have consequently found themselves unable to afford top-quality public institutions, even if they are qualified for admission, creating a more homogeneous elite stratum in states with leading flagship universities.[57]

The campus climate for speech may seem a trivial problem in comparison, but it is an issue that greatly concerns the public and consequently contributes to the university's problems of legitimation.[58] The benefits of diversity and inclusion policies have been genuine, but they have come at a price. In politically correct campus environments, students and faculty members are expected to speak the right words and have the right attitudes. In some cases, explicit support for an

aggressive "call-out" culture against anyone who is seen as failing to conform to campus norms does inhibit alternative views.[59] All of this creates a tense cultural climate in which advocates feel the university has not gone far enough to redress historical wrongs and skeptics find themselves walking on egg shells for fear of giving offense.[60]

The Reforming of General Education

Bell's ideas about the social and economic role of universities is captured in *The Coming of Post-Industrial Society*, but his outlook on what should be taught to students can be found only in *The Reforming of General Education*, a now little-read, book-length report written by Bell in 1966 for Columbia University's provost at the time, David B. Truman.[61]

In the 1950s and early 1960s, the Columbia general education program was widely admired as a model for colleges. It consisted of (1) two terms of humanities (sometimes referred to as "lit-hum") focusing on "great books," from the ancient world to the Enlightenment; (2) two terms of history and social analysis (called rather misleadingly "contemporary civilization") focusing on classical texts in social and political thought, and (3) a two-term science sequence encompassing both the history of science and the methods and principles of scientific disciplines. By the mid-1960s this structure was fraying for a variety of reasons. Some professors, particularly in the sciences, resisted teaching outside of their specialty areas. Science students were also rebelling against a constraining structure that did not allow them to spend as much time as they desired in their areas of concentration.

The adoption of departmental requirements for majors in 1956 increased the pressure on the general education courses.

Bell's solution was not to give in to centrifugal forces but rather to weave general education more deeply into the four-year curriculum. Instead of a yearlong course in humanities, he proposed three semesters with the third semester taking up great works of modernism, such as those of Joyce, Eliot, Freud, and Nietzsche. Rather than abolish the yearlong course in contemporary civilization, he proposed two years of course work: a first term in Greek and Roman history, second and third terms of work on Western history with an option to focus on political, economic, or social history, and a fourth term for work in a specific social science discipline. This fourth term could include comparative studies, particularly of non-Western cultures. Instead of a yearlong science requirement, he proposed a two-year sequence in either physics and math or biology and math.[62]

Perhaps needless to say, neither Columbia nor any other college ever adopted this complicated structure. As a curriculum planner, Bell proved too little concerned about either faculty or student interests. The model he envisioned stood no chance of satisfying faculty members who wanted a more compact structure, particularly those in science who wanted students to spend more time in their areas of concentration. And it certainly made no effort to appeal to students who felt similarly.

But what Bell had to say about the values of general education continues to resonate. He set out four working principles. The first was to help students see the

big issues looming ahead so that they would be prepared to address them. The second was to make students aware of the intellectual and civic traditions they have inherited, as well as the limitations of those traditions. The third was to combat premature specialization so that students could better grasp the underlying human condition, the persistent issues of morals and politics, and the webs of relationships in which humans are enmeshed. The fourth was to integrate knowledge through the use of multiple disciplinary lenses to provide greater insight into both great works and contemporary problems.[63]

Throughout, Bell's interest was in expanding the analytical, perceptual, and imaginative powers of undergraduates in the service of mature judgment. For this reason, he opposed orthodoxy of any type, including any fixed list of great works that purport to illustrate moral or aesthetic principles. He emphasized the limitations of even the greatest of conceptual schemes. Quoting William James, he wrote: "Concepts are 'maps of relations,' but by their nature they are 'forever inadequate to the fullness of the reality to be shown,' a reality that consists 'of existential particulars' of which 'we become aware only in the perceptual flux.'"[64] The context of history was essential "for all the schemata of men are bound to the vicissitudes of events and the crossroads they present."[65] One lives, he stated, "often in (the) painful alienation of doubt, not certainty." And yet this, too, is a state of grace for "doubting pleases…no less than knowing."[66] "The ends of education are many," he argued, "to instill an awareness of the diversity of human societies and desires; to be responsive to great philosophers and imaginative writers who have

given thought to the predicaments that have tried and tested men; to acquaint a student with the limits of ambition and the reaches of humility; to realize that no general principle or moral absolute, however strongly it may be rooted in a philosophical tradition, can give an infallible answer to any particular dilemma."[67]

In spite of his evident interest in nonwestern cultures, Bell did not doubt that the grounding for this approach should be based on works in the western intellectual tradition. Shortly after *Reforming* was published, the forces of equal representation exploded that conventional assumption. The grounding of general education in the Western intellectual tradition came under fierce attack beginning in the late 1960s at Amherst and culminating in the Stanford protests of the 1980s.[68] Western civilization stood accused of racism, sexism, and imperialism, overshadowing for campus radicals whatever intellectual merits its greatest thinkers may have had. Since that time those who advocate the grounding of general education in the Western intellectual tradition have come to occupy a marginalized status in most colleges and universities. Not a single elite college in the country currently requires a course in Western civilization. In contrast, during the 25-year period from 1975 to 2000, courses on diversity and non-western cultures were among the fastest growing of the new requirements. (The other principal trend was toward greater representation of basic skills courses, such as introductory math and English composition.)[69]

Bell believed that the reliance on distribution requirements as a foundation for general education was "an admission of intellectual defeat" because it served up

a "mishmash of courses that are only superficially connected."[70] The majority of colleges and universities have nevertheless gone down this defeatist path, finding it a successful method to bring a degree of peace to academic departments worried about capturing their share of student enrollments and thereby securing their future prospects.[71]

There are new stirrings in this seemingly moribund territory. Over the last two decades, the American Association of Colleges & Universities (AAC&U) has attempted to shift general education away from a focus on content to a focus on skills. AAC&U initially identified five "core competencies" – analytical and critical thinking, oral communication, quantitative reasoning, and written expression -- and has sought to embed these in the general education curriculum whatever content form it may take.[72] Some promising content models have also been proposed, including the University of North Carolina's "making connections" curriculum which focuses on how the disciplines study questions and how students might integrate these methods and results in ways that cross traditional disciplinary lines.[73] Harvard now requires just six semester-long general education courses, with at least one from each of four broad areas: aesthetics and cultures; ethics and civics; histories, societies, and individuals; and science and technology in society. These are high-status courses, often taught by celebrated professors, and proposals must be approved by a faculty committee.[74]

None of the dominant models nor any of the new approaches provide the depth of thinking about the aims of general education that a reader will find in

Bell's report. It is debatable whether the lessons of *The Reforming General Education* are transferrable to non-elite institutions. But for those who are interested in the education of elites, the philosophical passages in the text bear more than a single reading.

[SKIP 1 LINE]

Bell's greatness certainly does not come from the accuracy of his predictions – these are a mixed bag at best. It stems rather from his capacity to help us think more deeply. He provides analytical models that are often illuminating and always worth considering. He criticizes the plausible but naïve views of his predecessors, whether these derive from the Marxist insistence of economic determinism or the Saint-Simonian dream of rationalized rule. His asides are rich in erudition, provoking us to expand our own intellectual horizons. He asks the right questions, the provocative questions, even when his answers have proven inadequate to historical developments he could not foresee.[75]

Individual paragraphs and sections gleam like precisely cut gemstones. Consider, to provide just one example, his justification for great literature as a feature of general education:

> The humanities have a different intent [than the sciences or social sciences]: to heighten sensibility (that fusion of intellect and feeling) and to impart a sense of coherence about human experience – (in the themes of) heroism, pride, love, loneliness, tragedy, confrontation with death…. A great novel has no 'nature,' as if it were a natural object and therefore subject to some fixed discussion of its qualities and propensities…(I)t can be read in different ways…and each of these ways is… a valid facet of human emotions…. Hence the concentric sense of uncovering new meaning as one

> confronts, over a period of time, a genuinely imaginative work…. The humanities…combine 'fixed reason with wayward spirit.' And this unique combination of order and freedom, rule and spontaneity, limitation and potential is a necessary realm of experience for renewing the animal spirits and the guiding intelligence of man.[76]

In the incisiveness of his investigations, the clarity of his analytical frameworks, the scope of his erudition, and even the persistent questioning of his own conclusions, we can see Bell for what, at his best, he truly was: not a great sociologist or a great prognosticator, but a great educator of human sensibility and judgment. He teaches us about how to make necessary distinctions and how to create standards for sorting out the meretricious from the good, two of the tasks he set for a university education. The reader who turns to his work will be rewarded with an intellectually thrilling journey -- and the experience of confronting a vivid future that, for better or worse, did not emerge as he expected.

Notes

[1] Daniel Bell, *The Coming of Post-Industrial Society: An Essay in Social Forecasting* (New York: Basic Books, 1973), 249.

[2] Bell, *The Coming of Post-Industrial Society,* 261-2.

[3] Bell, *The Coming of Post-Industrial Society*, 408.

[4] Bell, *The Coming of Post-Industrial Society,* 408.

[5] Joseph Schumpeter, *Capitalism, Socialism, and Democracy.* (New York: Harper & Row, 1947).

[6] Robert M. Solow, "A Contribution to the Theory of Economic Growth." *Quarterly Journal of Economics* 70 no. 1 (1956): 65-94.; Robert M. Solow, "Technical Change and the Aggregate Production Function." *Review of Economics and Statistics* 39 no. 3 (1957): 312-30.

[7] Zvi Griliches, "Hybrid Corn: An Exploration in the Economics of Technological Change." *Econometrica* 25 no. 4 (1957): 501-22.

[8] Vernon W. Ruttan, "The Contribution of Technological Progress to Farm Output, 1950-75." *Review of Economics and Statistics* 38 no. 1 (1956): 61-9.

[9] Everett Rogers, *The Diffusion of Innovations* (New York: The Free Press of Glencoe, 1962).

[10] Fritz Machlup, *The Production and Distribution of Knowledge in the U.S.* (Princeton: Princeton University Press, 1962).

[11] Clark Kerr, *The Uses of the University* (Cambridge, MA: Harvard University Press, 1963).

[12] Peter F. Drucker, *The Effective Executive* (New York: Harper & Row, 1967).

[13] John Kenneth Galbraith, *The New Industrial State* (Boston: Houghton-Mifflin, 1967).

[14] Gerald M. Platt and Talcott Parsons, *The American University* (Cambridge, MA: Harvard University Press, 1973).

[15] Daniel Bell, "Notes on Post-Industrial Society (I)" *The Public Interest* no. 6 (Winter 1967): 24-35; Daniel Bell, "Notes on Post-Industrial Society (II)" *The Public Interest* no. 7 (Spring 1967): 102-18.

[16] Daniel Bell, *The Coming of Post-Industrial Society,* 344.

[17] Bell, *The Coming of Post-Industrial Society,* 20.

[18] Bell, *The Coming of Post-Industrial Society*, 20.

[19] Bell, *The Coming of Post-Industrial Society,* 21.

[20] Donald E. Stokes, *Pasteur's Quadrant: Basic Science and Technological Innovation* (Washington, DC: Brookings Institution Press, 1997).

[21] Walter Isaacson, *The Innovators: How a Group of Hackers, Geniuses and Geeks Created the Digital Revolution* (New York: Simon and Schuster, 2015).

[22] Steven Brint, *Two Cheers for Higher Education: Why American Universities Are Stronger than Ever – and How to Meet the Challenges They Face* (Princeton: Princeton University Press, 2018), 92-5.

[23] Arturo Casedevall and Ferric C. Fang, "Revolutionary Science." *mBio* 7 no. 2 (2016), 1-6; Nathan Rosenberg, *Studies on Science and the Innovation Process* (Singapore: World Scientific Publications, 2010).

[24] Brint, *Two Cheers for Higher Education*, 92-5.

[25] Brint, *Two Cheers for Higher Education*., 55-9.

[26] Bell, *The Coming of Post-Industrial Society,* 380.

[27] Bell, *The Coming of Post-Industrial Society,* 249.

[28] Bell, *The Coming Post-Industrial Society,* 360.

[29] Bell, *The Coming of Post-Industrial Society,* 366.

[30] The statement about declines among professionals and managers is based on unpublished analyses I conducted with Michaela Curran on General Social Survey data, 1974-2018. The results of these analyses are available on request.

[31] Bell, *The Coming of Post-Industrial Society,* 318.

[32] Bell, *The Coming of Post-Industrial Society,* 240.

[33] Steven Brint, "Creating the Future: The 'New Directions' in Research Universities." *Minerva* 43 no. 1 (2005): 23-50.

[34] Bell, *The Coming of Post-Industrial Society,* 454.

[35] Bell, *The Coming of Post-Industrial Society,* 454.

[36] Bell, *The Coming of Post-Industrial Society,* 423.

[37] Bell, *The Coming of Post-Industrial Society,* 454.

[38] Thomas A. DiPrete and Claudia Buchmann, *The Rise of Women: The Growing Gender Gap in Education and What It Means for American Schools* (New York: Russell Sage Foundation Press, 2013); Arthur Sakamoto, Kimberly A. Goyette, and ChangHwan Kim, "Socioeconomic Attainments of Asian Americans" *Annual Review of Sociology* 35 (2009): 255-76.

[39] See, e.g., Steven Brint, Komi T. German, Kayleigh Anderson-Natale, Zeinab F. Shuker, and Suki Wang, "Where Ivy Matters: The Educational Backgrounds of U.S. Cultural Elites." *Sociology of Education* 93 no. 2 (2020): 153-72.

[40] For an interesting exception, see Anthony Kronman, *The Assault on American Excellence* (New York: Basic Books, 2019).

[41] Komi T. German, *Diversity, Equity and Inclusion Policies on a Liberal University Campus: The Faculty's Response.* Unpublished doctoral dissertation, Department of Psychology, University of California, Riverside, 2020.

[42] Brint, *Two Cheers for Higher Education,* 70-74. Some estimates of the share of national economic output produced by knowledge sector industries are significantly lower than mine. Antonipillai and Lee, for example, find a 38 percent share of GDP in 2014. Their estimate is based on the 81 American industries that generate the most patents and trademarks. Justin Antonipillai and Michelle Lee, *Intellectual Property and the U.S. Economy: 2016 Update* (Washington DC: Economics and Statistics Administration and United States Patent Office, 2016).

[43] Brint, *Two Cheers for Higher Education,* 75.

[44] See, e.g., Eduardo Porter, "How the GOP Became the Party of the Left Behind." *The New York Times* (January 28, 2020), B1, B6.

[45] Richard Arum, Elizabeth A. Armstrong, and Mitchell L. Stevens, "Sieve, Incubator, Temple, Hub: Empirical and Theoretical Advances in the Sociology of Higher Education" *Annual Review of Sociology* 34 (2008): 127-51.

[46] Richard R. Nelson (ed.) *National Innovation Systems: A Comparative Analysis* (New York: Oxford University Press, 1993).

[47] National Center for Science and Engineering Statistics, *Academic R&D in the United States.* Washington, DC: National Science Foundation, 2020, Figure 5B-1.

[48] Brint, *Two Cheers for Higher Education,* 205-7, 243-7.

[49] Philip S. Babcock and Mindy Marks, "The Declining Time Cost of College: Evidence from a Half Century of Time Use Data." *Review of Economics and Statistics* 93 no. 2 (2011): 468-78.

[50] Paul D. Umbach, "How Effective Are They? Exploring the Impact of Contingent Faculty on Undergraduate Students." *Review of Higher Education* 30 no. 2 (2007): 91-123.

[51] For a useful guide to teaching practices supported by this research, see Carl Wieman and Sarah Gilbert, "The Teaching Practices Inventory: A New tool for Characterizing College and University Teaching in Mathematics and Science" *CBE Life Sciences Education* 13 no. 3 (2014): 552-69.

[52] Richard Arum and Josipa Roksa, *Academically Adrift: Limited Learning on College Campuses* (Chicago: University of Chicago Press, 2011), 3-13.

[53] College Board, *Trends in College Pricing* (New York: College Board, 2019).

[54] Beth Akers and Matthew M. Chingos, *Game of Loans: The Rhetoric and Reality of Student Debt* (Princeton: Princeton University Press, 2016).

[55] Susan Dynarski, "An Economist's Perspective on Student Loans in the United States." *The Brookings Institution ES Working Papers Series* (Washington DC: Brookings Institution, 2016).

[56] Suzanne Mettler, *Degrees of Inequality: How the Politics of Inequality Sabotaged the American Dream* (New York: Basic Books, 2014).

[57] Kati Haycock, Mary Lynch, and Jennifer Eagle, *Opportunity Adrift: Our Flagship Universities Are Straying from Their Public Mission* (Washington DC: The Education Trust, 2010).

[58] Karen Tumulty and Jenna Johnson, "Why Trump May Be Winning the War on Political Correctness." *The Washington Post* (January 4, 2016).

[59] For extended discussions, see Greg Lukianoff and Jonathan Haidt, *The Coddling of the American Mind: How Good Intentions and Bad Ideas Are Setting up a Generation for Failure* (New York: Penguin, 2018); and Keith E. Whittington, *Speak Freely: Why Universities Must Defend Free Speech* (Princeton: Princeton University Press, 2018).

[60] See, e.g., William Deresciewicz, "On Political Correctness: Power, Class, and the New Campus Religion" *American Scholar* (March 6, 2017).

[61] Daniel Bell, *The Reforming of General Education: The Columbia University Experience in Its National Context.* (New York: Columbia University Press, 1966).

[62] Bell, *The Reforming of General Education,* 290-2.

[63] Bell, *The Reforming of General Education,* 50-2.

[64] Bell, *The Reforming of General Education*, 287.

[65] Bell, *The Reforming of General Education*, 289.

[66] Bell, *The Reforming of General Education,* 312.

[67] Bell, *The Reforming of General Education,* 312.

[68] Gilbert Allardyce, "The Rise and Fall of the Western Civilization Course." *American Historical Review* 87 no. 3 (1982): 695-725.

[69] Steven Brint, Kristopher Proctor, Scott Patrick Murphy, Lori Turk-Bicakci and Robert A. Hanneman, "General Education Models: The Changing Meanings of Liberal Education in American Colleges and Universities, 1975-2000" *The Journal of Higher Education* 80 no. 6 (2009): 605-42.

[70] Bell, *The Reforming of General Education*, 285.

[71] Three other relatively popular models for general education are evident, according to my group's study of college catalogs. One of these focused on traditional liberal arts subjects with a heavy dose of philosophy and literature. This model was most popular at religiously affiliated private colleges, and particularly Catholic colleges. Another centered on cultures, both western and nonwestern. and ethics. This model was most popular at progressive, non-affiliated liberal arts colleges. The final model was distinctive in requiring courses in economics and government (and sometimes also in technology), under the influence of political conservatives in some southern and Midwestern states who have made these courses obligatory in their states' public universities. See Brint et al. "General Education Models."

[72] American Association of Colleges & Universities, *Liberal Education and America's Promise* (Washington DC: AAC&U, 2005).

[73] University of North Carolina, *General Education Curriculum and Degree Requirements* (Chapel Hill: University of North Carolina, 2019).

[74] Harvard College, *General Education Program* (Cambridge MA: Harvard College, 2019).

[75] On the future of science policy, for example, he asks: "Will the allocative process simply be one of immediate responses to urgent definitions, either of defense or even of social needs, because of the 'discovery' of pollution, poverty, urban chaos or other social ills, or will there be an effort to spell out a coordinated set of policies based on some considerations o national goals defined in long-range terms? Will the current system of 'administrative pluralism' in which individual agencies hold power be maintained or will there be some coordinated system to unify science? If science has

expanded mainly for defense posture will there be an equivalent effort in support of domestic social needs?" Bell, *The Coming of Post-Industrial Society,* 261-2.

[76] Bell, *The Reforming of General Education*, 175-6.

Bibliography

Akers, Beth and Matthew M. Chingos. *Game of Loans: The Rhetoric and Reality of Student Debt.* Princeton: Princeton University Press. 2016.

Allardyce, Gilbert. "The Rise and Fall of the Western Civilization Course." *American Historical Review* 87 no. 3 (1982): 695-725.

American Association of Colleges & Universities. *Liberal Education and America's Promise.* Washington DC: AAC&U. 2005.

Antonipillai, Justin and Michelle Lee, *Intellectual Property and the U.S. Economy: 2016 Update.* Washington DC: Economics and Statistics Administration and United States Patent Office. 2016. https://www.uspto.gov/sites/defalt/files/documents/IPandtheUSEconomySept2016.pdf/.

Arum, Richard, Elizabeth A. Armstrong, and Mitchell L. Stevens. "Sieve, Incubator, Temple, Hub: Empirical and Theoretical Advances in the Sociology of Higher Education" *Annual Review of Sociology* 34 (2008): 127-151.

Arum, Richard and Josipa Roksa. *Academically Adrift: Limited Learning on College Campuses.* Chicago: University of Chicago Press. 2011.

Babcock, Philip S. and Mindy Marks. "The Declining Time Cost of College: Evidence from a Half Century of Time Use Data." *Review of Economics and Statistics* 93 no. 2 (2011): 468-478.

Bell, Daniel. "Notes on Post-Industrial Society (I)" *The Public Interest* no. 6 (Winter 1967): 24-35;

Bell, Daniel. "Notes on Post-Industrial Society (II)" *The Public Interest* no. 7 (Spring 1967): 102-118.

Bell, Daniel. *The Coming of Post-Industrial Society: An Essay in Social Forecasting.* New York: Basic Books. 1973.

Brint, Steven. "Creating the Future: The 'New Directions' in Research Universities." *Minerva* 43 no. 1 (2005): 23-50.

Brint, Steven. *Two Cheers for Higher Education: Why American Universities Are Stronger than Ever – and How to Meet the Challenges They Face.* Princeton: Princeton University Press. 2018.

Brint, Steven, Komi T. German, Kayleigh Anderson-Natale, Zeinab F. Shuker, and Suki Wang. "Where Ivy Matters: The Educational Backgrounds of U.S. Cultural Elites." *Sociology of Education* 93 no. 2 (2020): 153-172.

Brint, Steven, Kristopher Proctor, Scott Patrick Murphy, Lori Turk-Bicakci and Robert A. Hanneman. "General Education Models: The Changing Meanings of Liberal Education in American Colleges and Universities, 1975-2000." *The Journal of Higher Education* 80 no. 6 (2009): 605-642.

Casedevall, Arturo and Ferric C. Fang. "Revolutionary Science." *mBio* 7 no. 2 (2016): 1-6.

College Board. *Trends in College Pricing.* New York: College Board. 2019. https://research.collegeboard.org/trends/college-pricing/

Deresciewicz, William. "On Political Correctness: Power, Class, and the New Campus Religion" *American Scholar* (March 6, 2017). https://theamericanscholar.org/on-political-correctness/#.Xf6JKkdKhaQ

DiPrete, Thomas A. and Claudia Buchmann, *The Rise of Women: The Growing Gender Gap in Education and What It Means for American Schools.* New York: Russell Sage Foundation Press. 2013.

Drucker, Peter F. *The Effective Executive.* New York: Harper & Row. 1967.

Dynarski, Susan. "An Economist's Perspective on Student Loans in the United States." *The Brookings Institution ES Working Papers Series.* Washington DC: Brookings Institution. 2016. https://www.brookings.edu/wp-content/uploands/2016/06/economist_perspective_student_loans_dynarski.pdf/

Galbraith, John Kenneth. *The New Industrial State.* Boston: Houghton-Mifflin. 1967.

German, Komi T. *Diversity, Equity and Inclusion Policies on a Liberal University Campus: The Faculty's Response.* Unpublished doctoral dissertation. Department of Psychology. University of California, Riverside. 2020.

Griliches, Zvi. "Hybrid Corn: An Exploration in the Economics of Technological Change." *Econometrica* 25 no. 4 (1957): 501-522.

Harvard College. *General Education Program*. Cambridge MA: Harvard College. 2019. https://gened.fas.harvard.edu/regquirements/

Haycock, Kati, Mary Lynch, and Jennifer Eagle. *Opportunity Adrift: Our Flagship Universities Are Straying from Their Public Mission*. Washington DC: The Education Trust. 2010.

Isaacson, Walter. *The Innovators: How a Group of Hackers, Geniuses and Geeks Created the Digital Revolution*. New York: Simon and Schuster. 2015.

Kerr, Clark. *The Uses of the University*. Cambridge, MA: Harvard University Press. 1963.

Kronman, Anthony. *The Assault on American Excellence*. New York: Basic Books. 2019.

Lukianoff, Greg and Jonathan Haidt. *The Coddling of the American Mind: How Good Intentions and Bad Ideas Are Setting up a Generation for Failure*. New York: Penguin. 2018.

Machlup, Fritz. *The Production and Distribution of Knowledge in the U.S.* Princeton: Princeton University Press. 1962.

Mettler, Suzanne. *Degrees of Inequality: How the Politics of Inequality Sabotaged the American Dream*. New York: Basic Books. 2014.

National Center for Science and Engineering Statistics. *Academic R&D in the United States*. Washington DC: National Science Foundation. 2020. https://ncses.nsf.gov/pubs/nsb20202/academic-r-d-in-the-united-states#:~:text=R%26D%20conducted%20by%20higher%20education,NP%202018%3A%20Table%202).

Nelson, Richard R. (ed.) *National Innovation Systems: A Comparative Analysis*. New York: Oxford University Press. 1993.

Platt, Gerald M. and Talcott Parsons. *The American University*. Cambridge, MA: Harvard University Press. 1973.

Porter, Eduardo. "How the GOP Became the Party of the Left Behind." *The New York Times*. January 28, 2020.

Rogers, Everett. *The Diffusion of Innovations*. New York: The Free Press of Glencoe. 1962.

Rosenberg, Nathan. *Studies on Science and the Innovation Process*. Singapore: World Scientific Publications. 2010.

Ruttan, Vernon. "The Contribution of Technological Progress to Farm Output, 1950-75." *Review of Economics and Statistics* 38 no. 1 (1956): 61-69.

Sakamoto, Arthur, Kimberly A. Goyette, and ChangHwan Kim. "Socioeconomic Attainments of Asian Americans." *Annual Review of Sociology* 35 (2009): 255-276.

Schumpeter, Joseph. *Capitalism, Socialism, and Democracy*. New York: Harper & Row. 1947.

Solow, Robert M. "A Contribution to the Theory of Economic Growth." *Quarterly Journal of Economics* 70 no. 1 (1956): 65-94.

Solow, Robert M. "Technical Change and the Aggregate Production Function." *Review of Economics and Statistics* 39 no. 3 (1957): 312-330.

Stokes, Donald E. *Pasteur's Quadrant: Basic Science and Technological Innovation*. Washington, DC: Brookings Institution Press. 1997.

Tumulty, Karen and Jenna Johnson. "Why Trump May Be Winning the War on Political Correctness." *The Washington Post* (January 4, 2016). https://www.washingtonpost.com/politics/why-trump-may-be-winning-the-war-on-political-correctness/2016/01/04/098cf832-afda-11e5-b711-1998289ffcea_story.html

Umbach, Paul D. "How Effective Are They? Exploring the Impact of Contingent Faculty on Undergraduate Students." *Review of Higher Education* 30 no. 2 (2007): 91-123.

University of North Carolina. *General Education Curriculum and Degree Requirements*. Chapel Hill: University of North Carolina. 2019. https://catalog.unc.edu/undergraduate/general-education-curriculum-degree-requirements/

Whittington, Keith E. *Speak Freely: Why Universities Must Defend Free Speech*. Princeton: Princeton University Press. 2018.

Wieman, Carl and Sarah Gilbert. "The Teaching Practices Inventory: A New tool for Characterizing College and University Teaching in Mathematics and Science" *CBE Life Sciences Education* 13 no. 3 (2014): 552-569.